April 23, 1957 F. D. PALMER 2,789,481

CARRIER CARTON ASSEMBLING MACHINE

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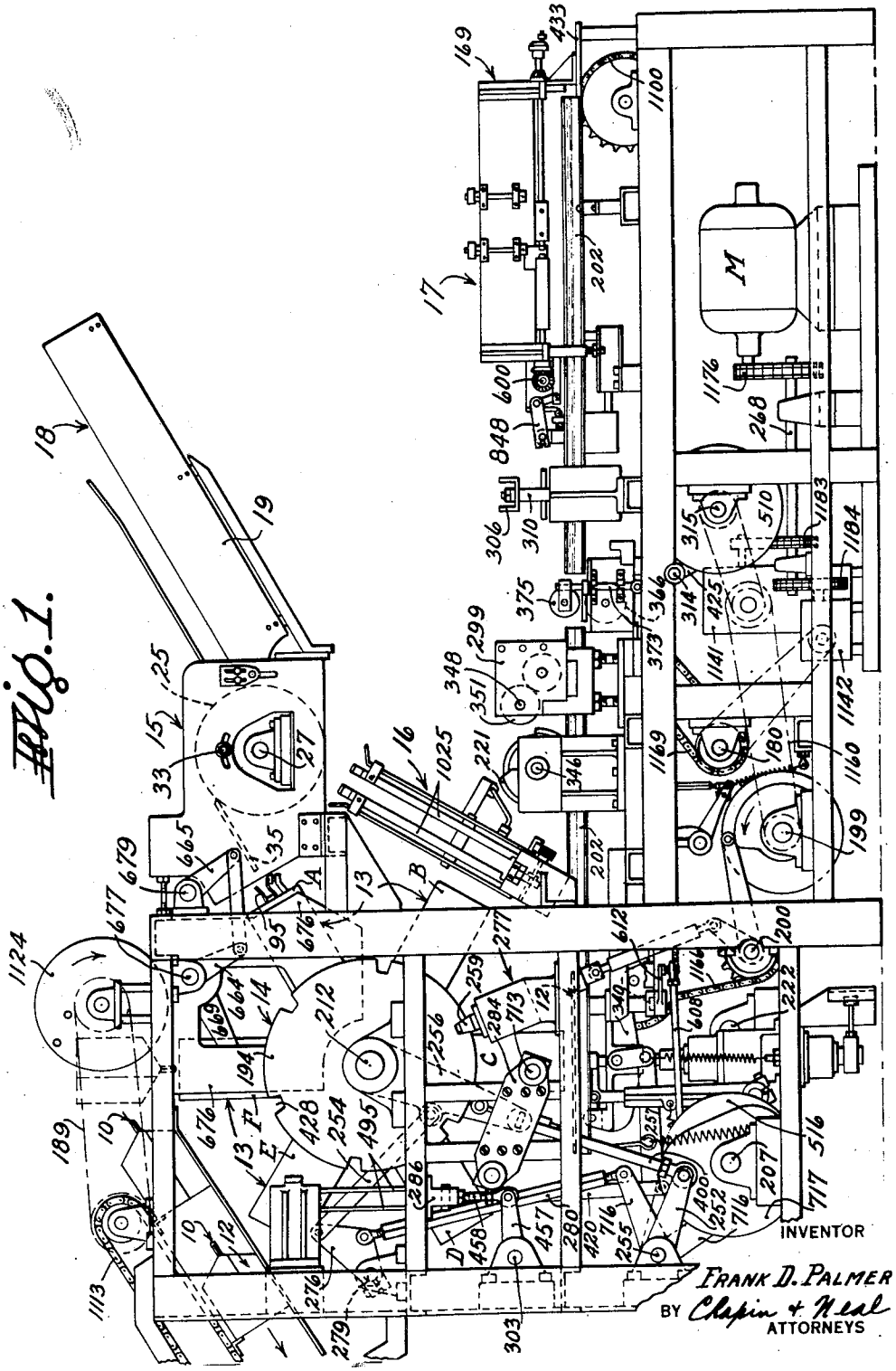

Fig. 1.

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CARRIER CARTON ASSEMBLING MACHINE

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Fig. 2.

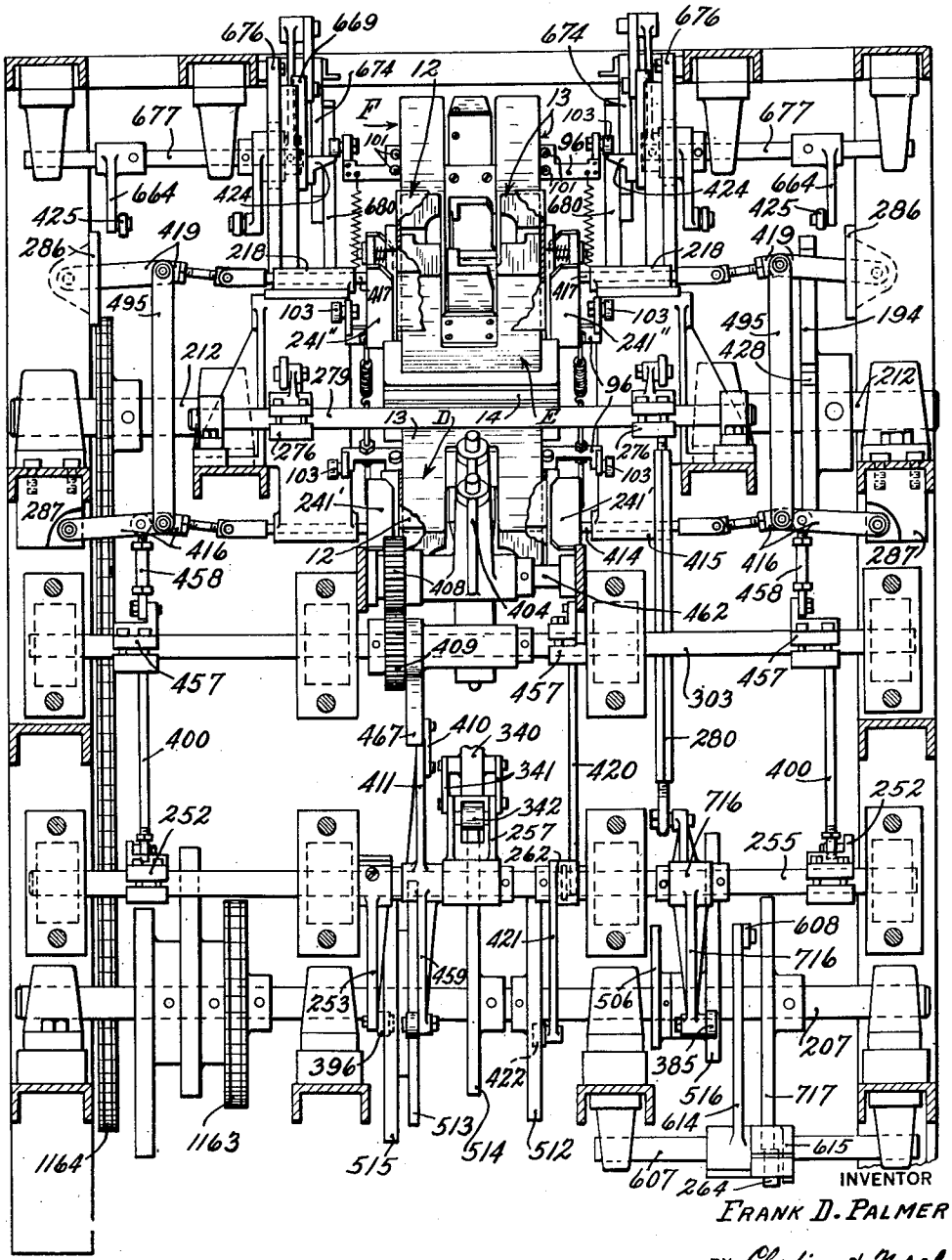

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Fig. 3.

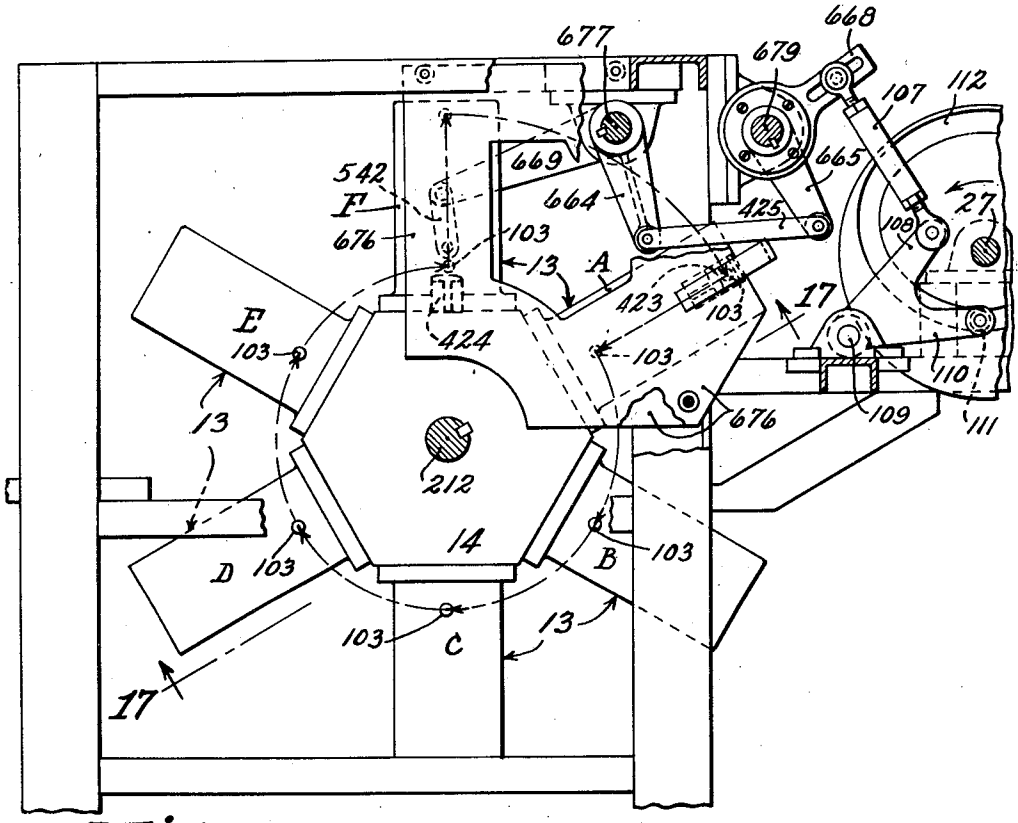
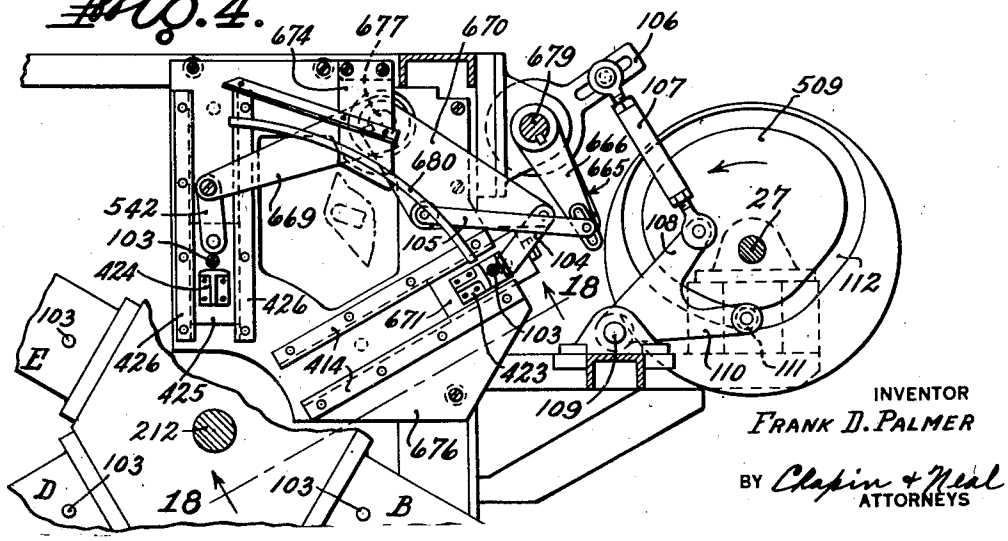


Fig. 4.



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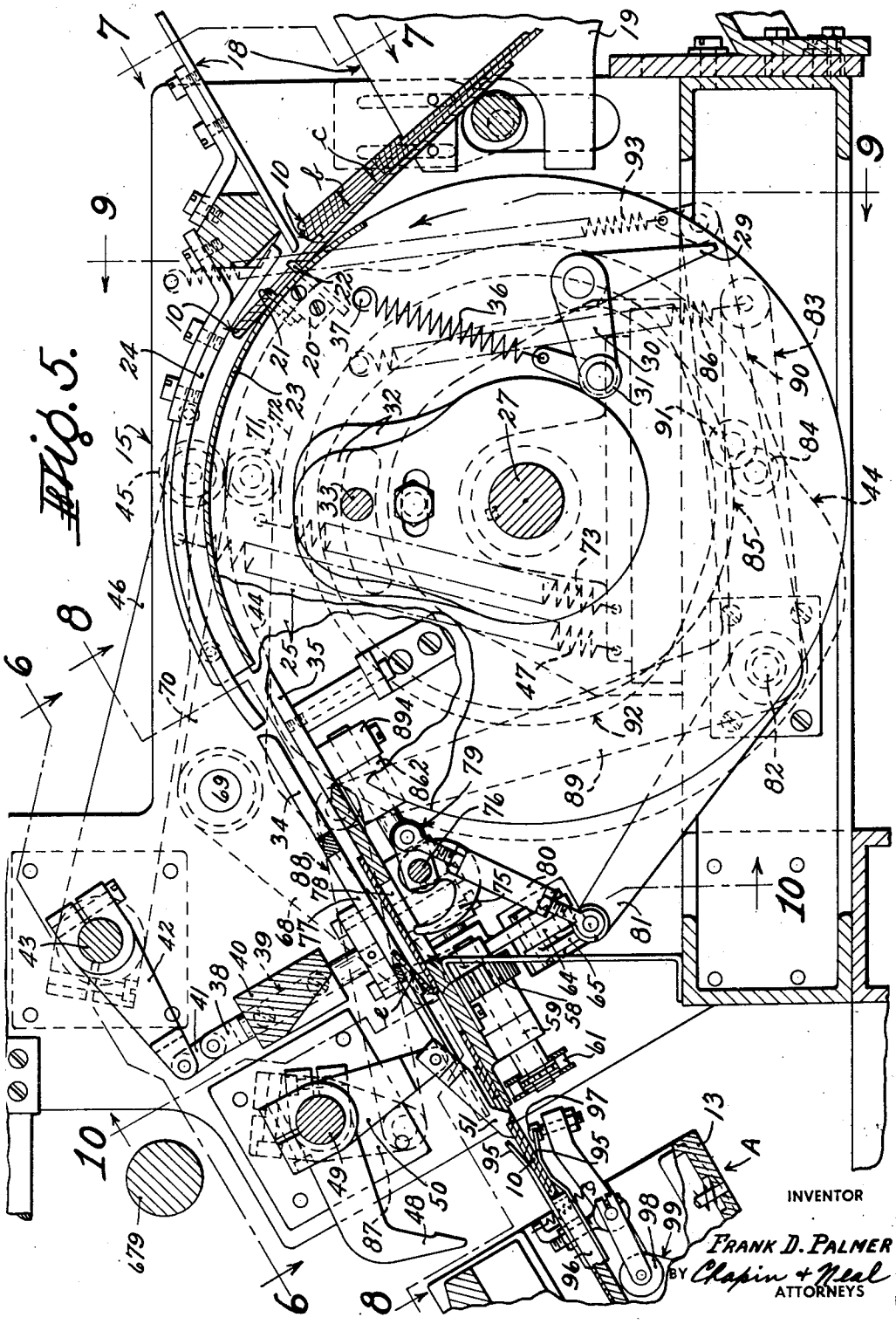

Fig. 5.

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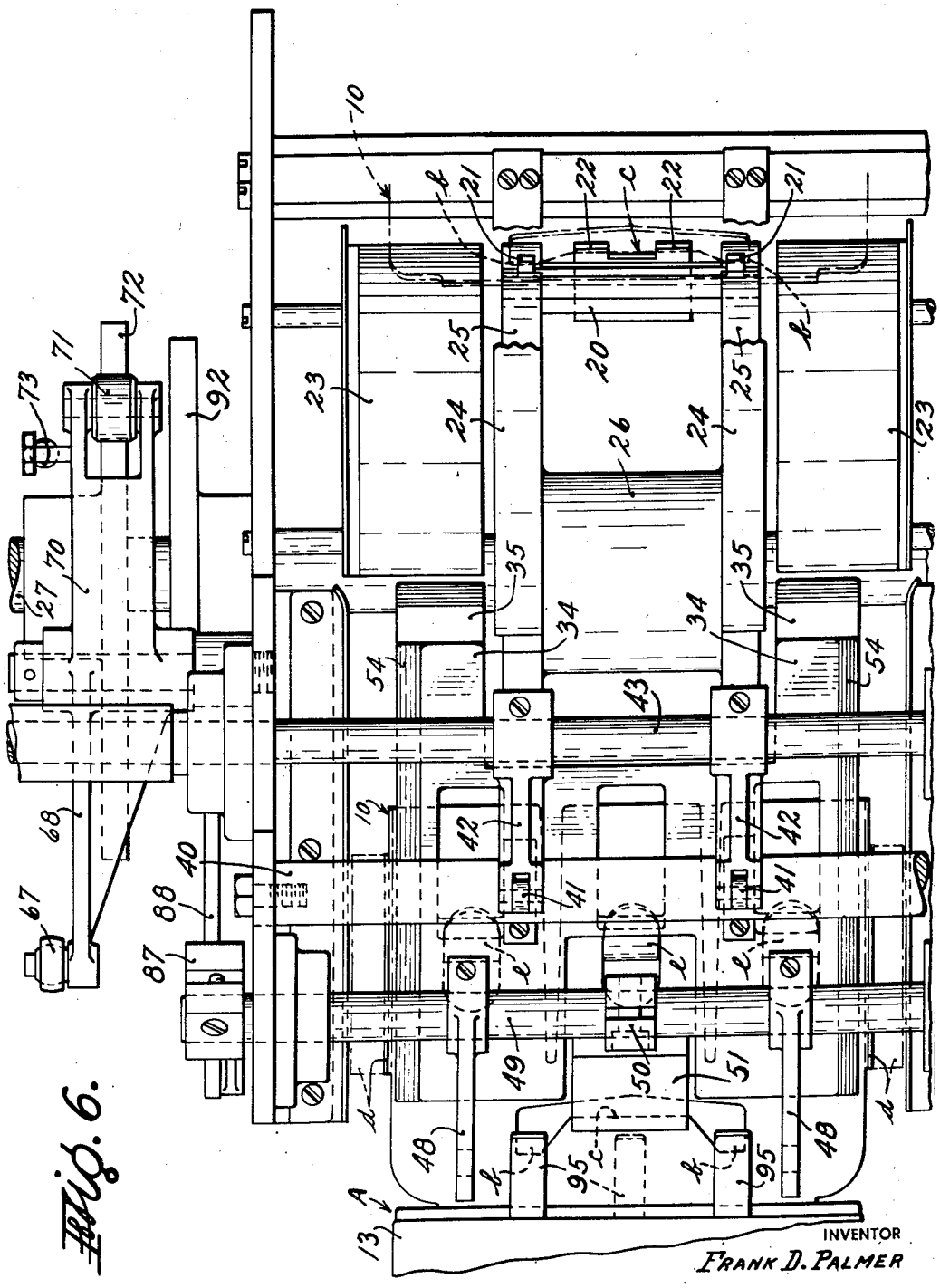

Fig. 6.

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Fig. 7.

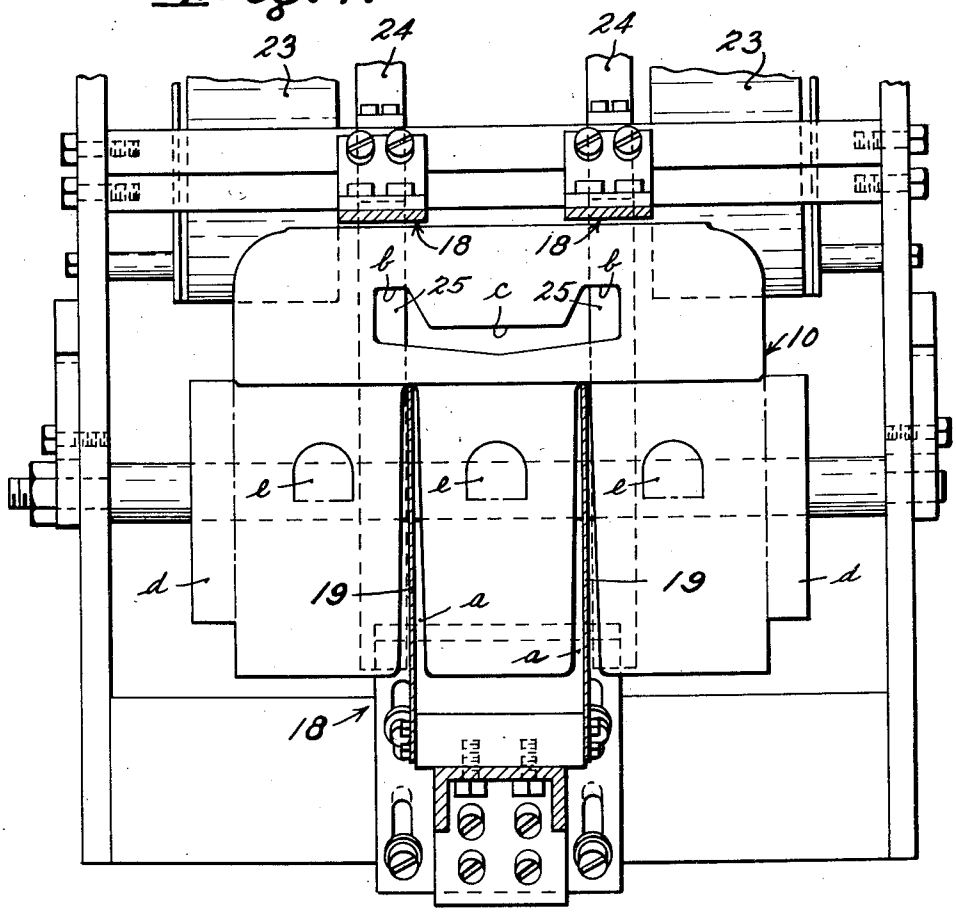

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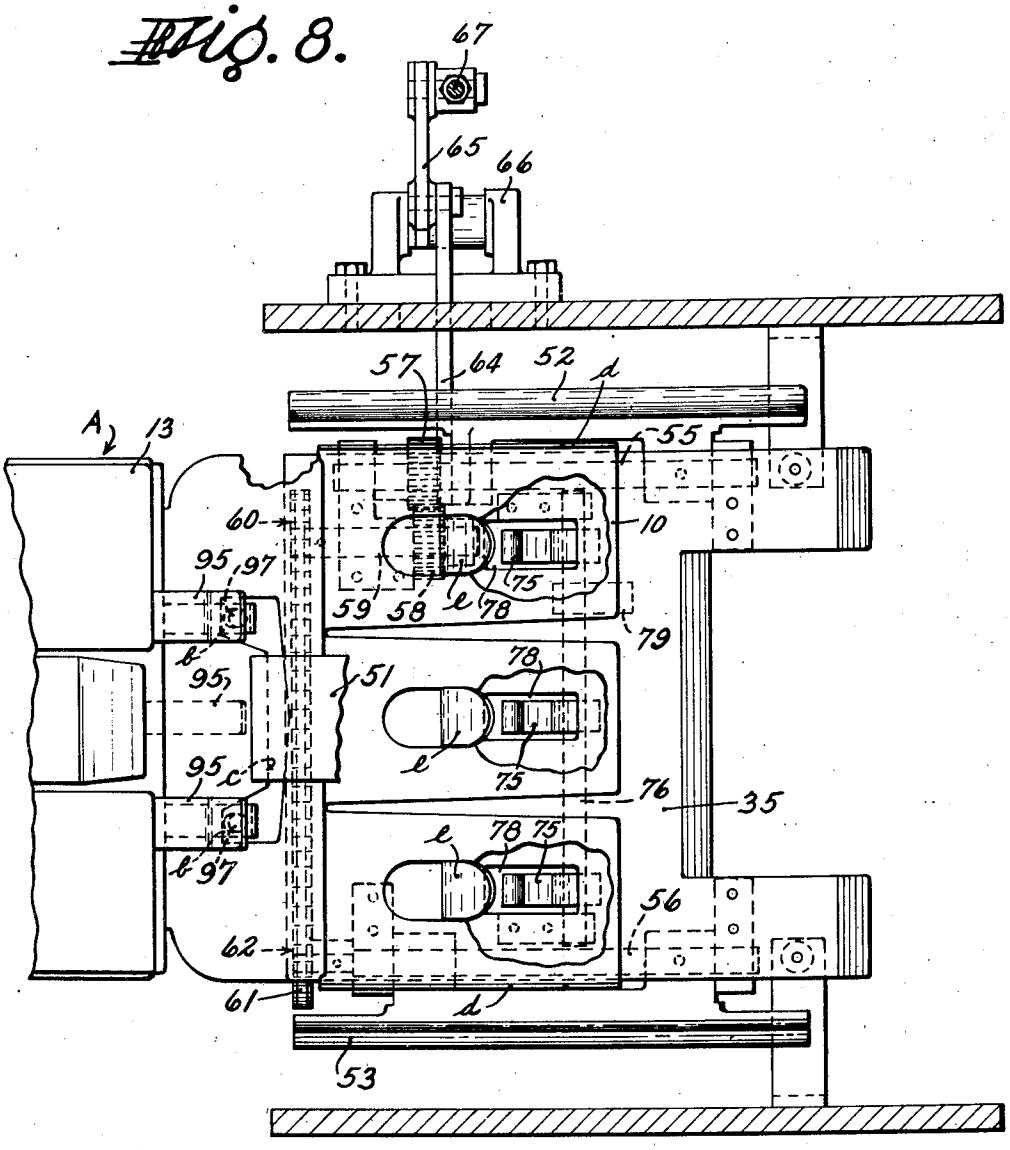
Fig. 8.



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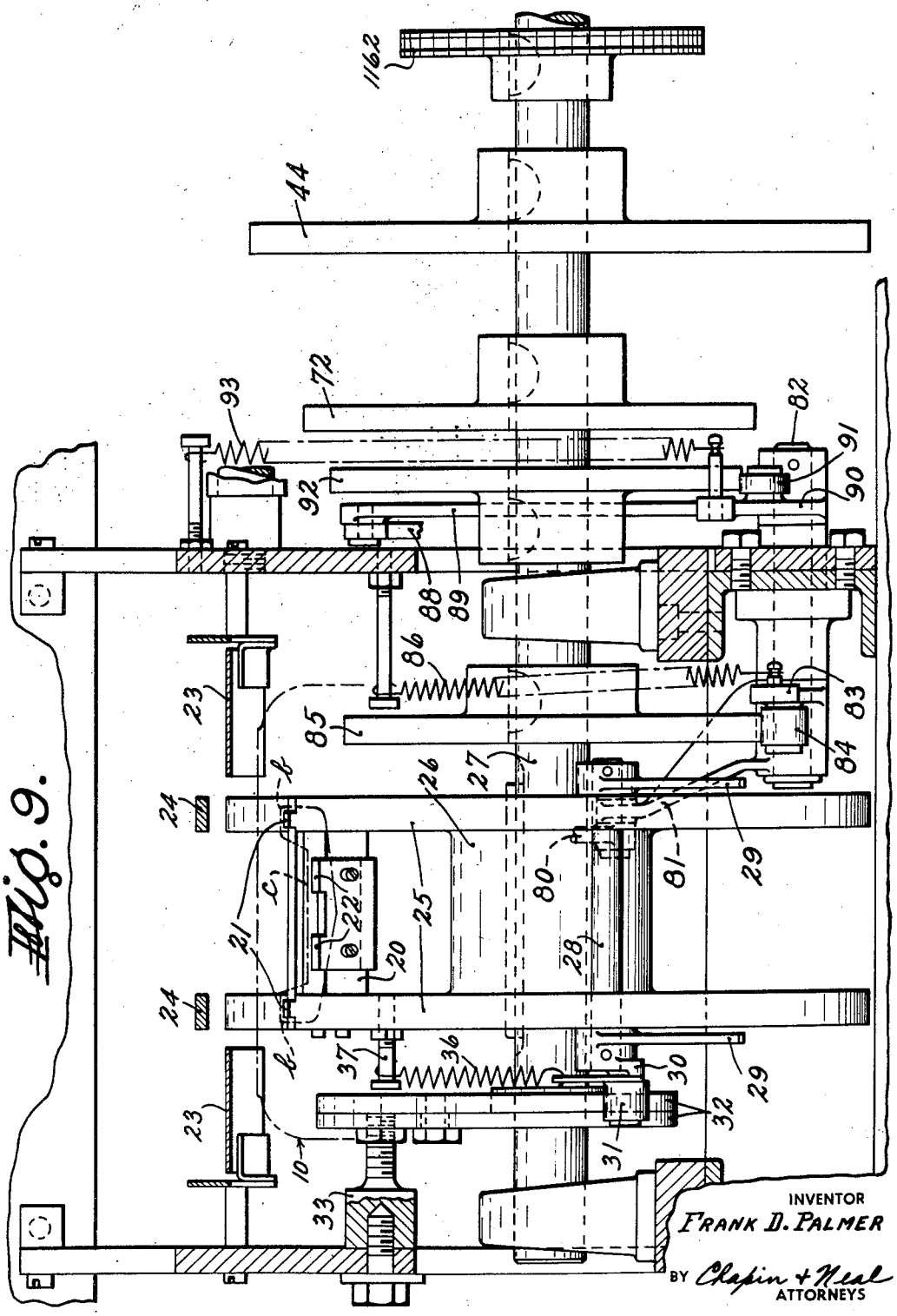

Fig. 9.

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Fig. 10.

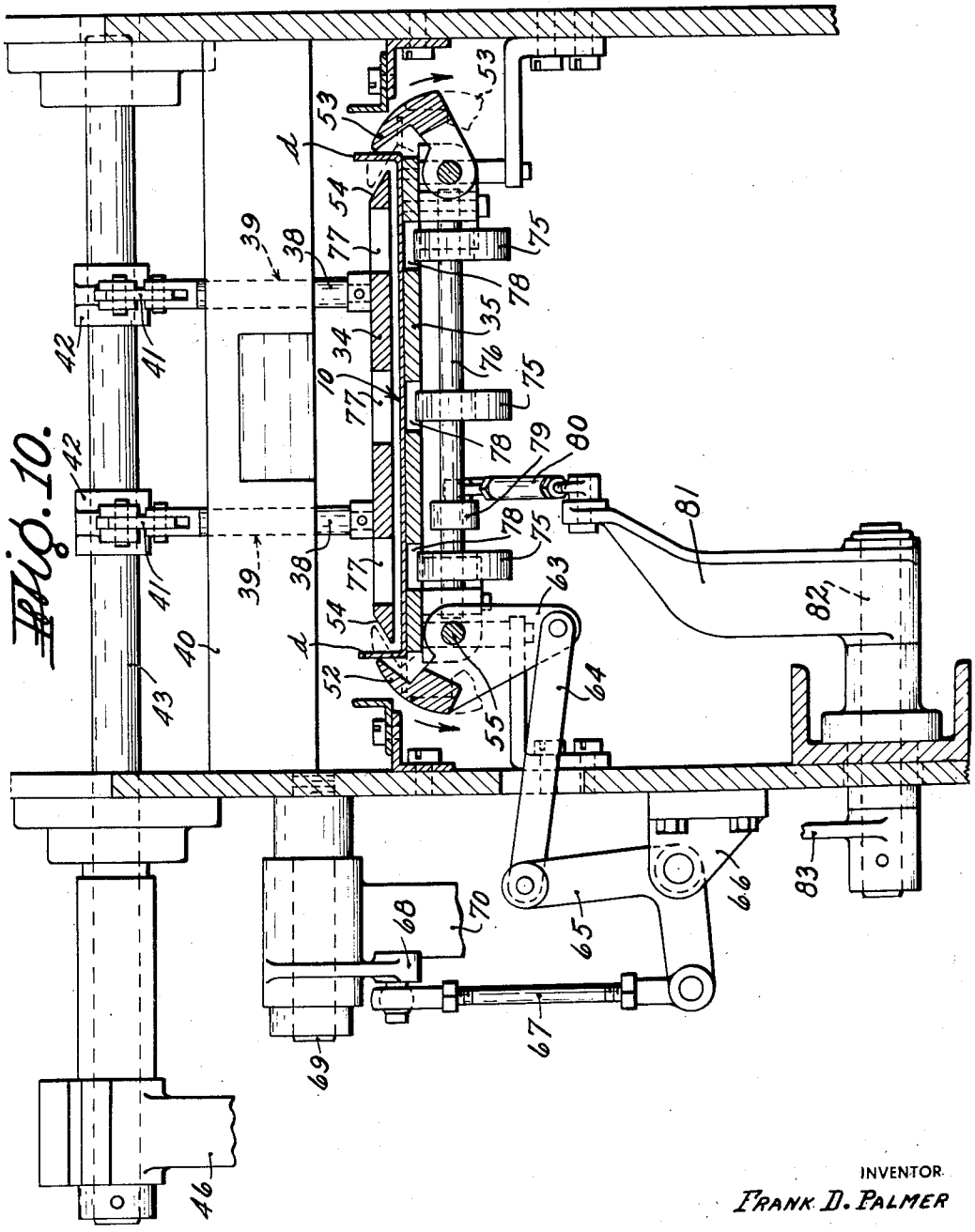

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Fig. 11.

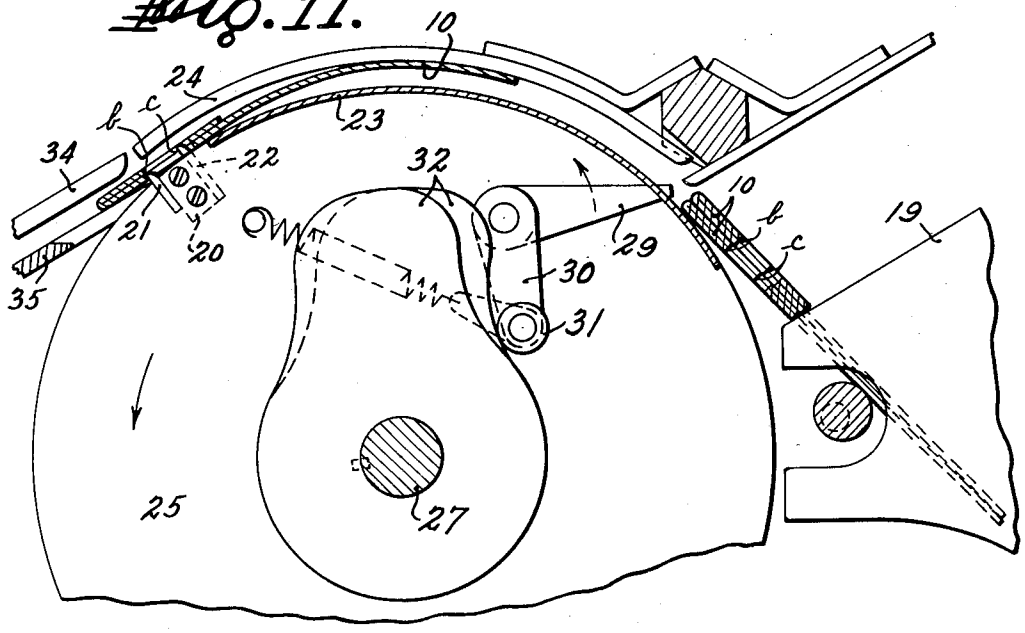

Fig. 12.

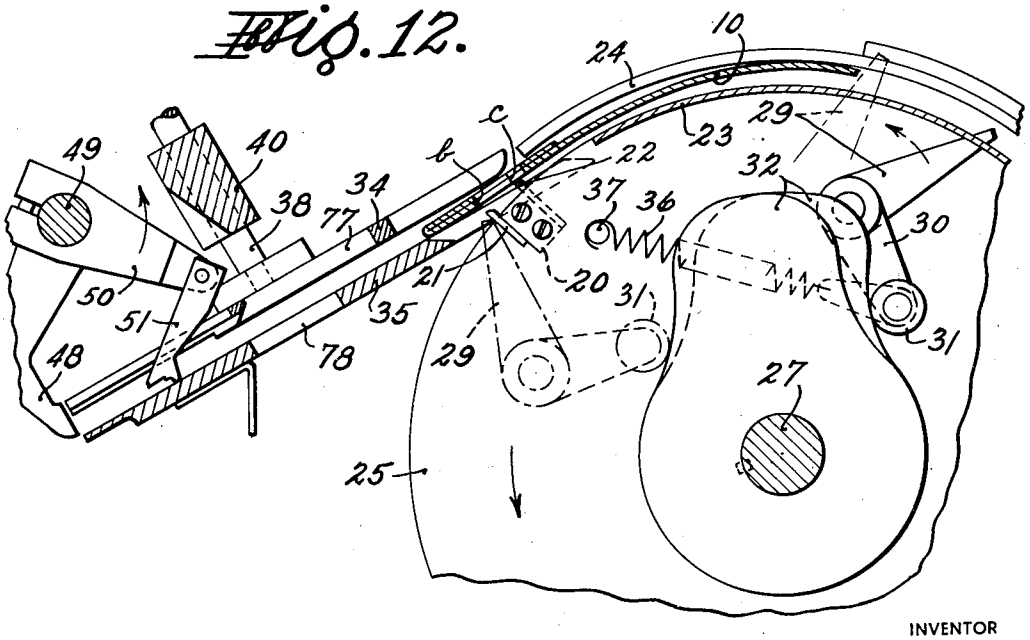

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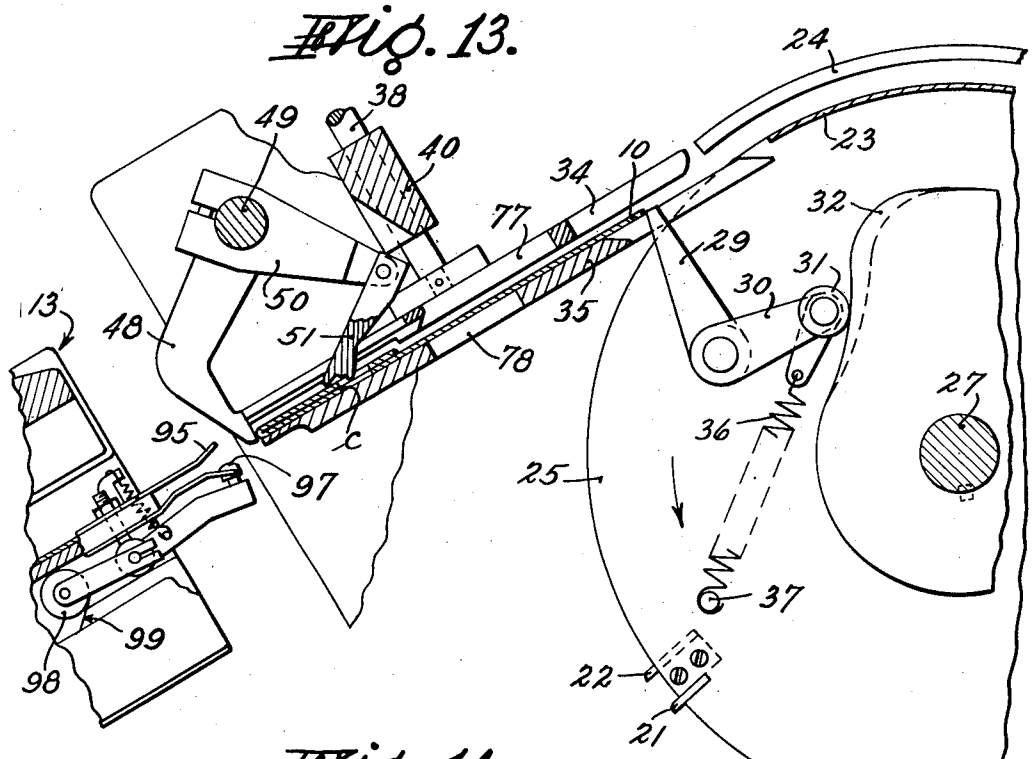
Fig. 13.



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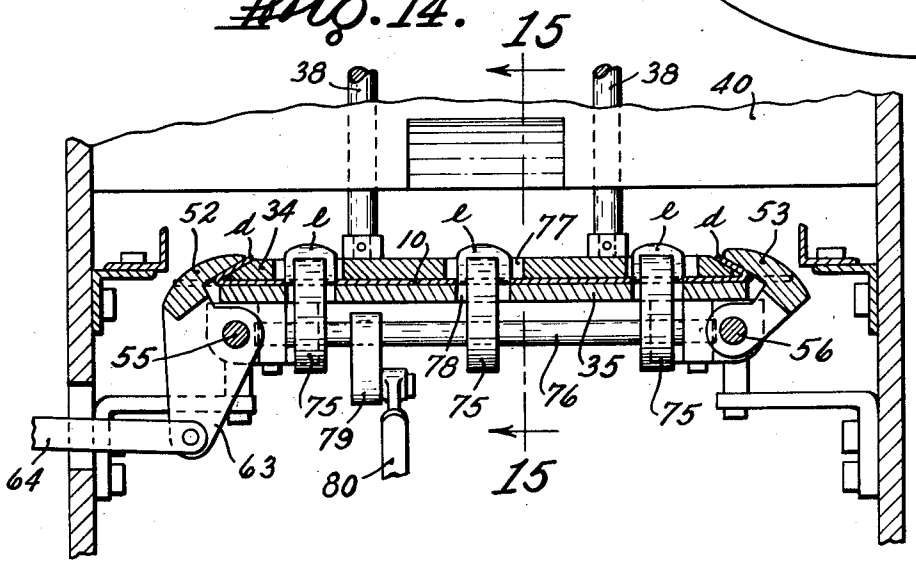

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Fig. 15.

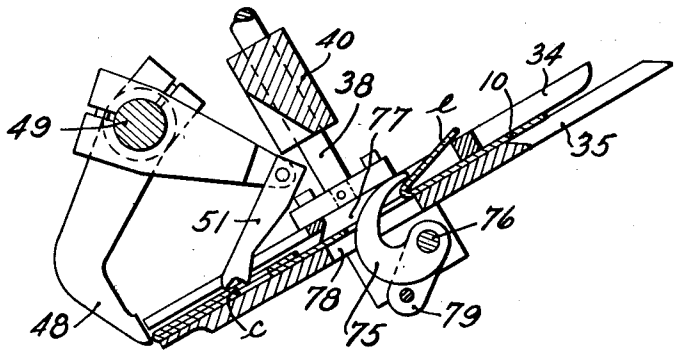
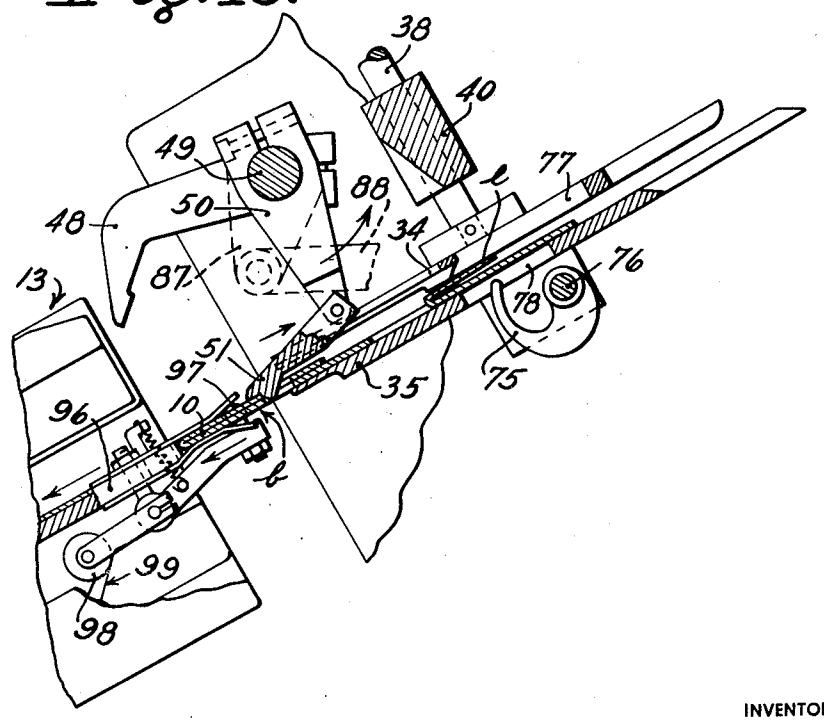


Fig. 16.



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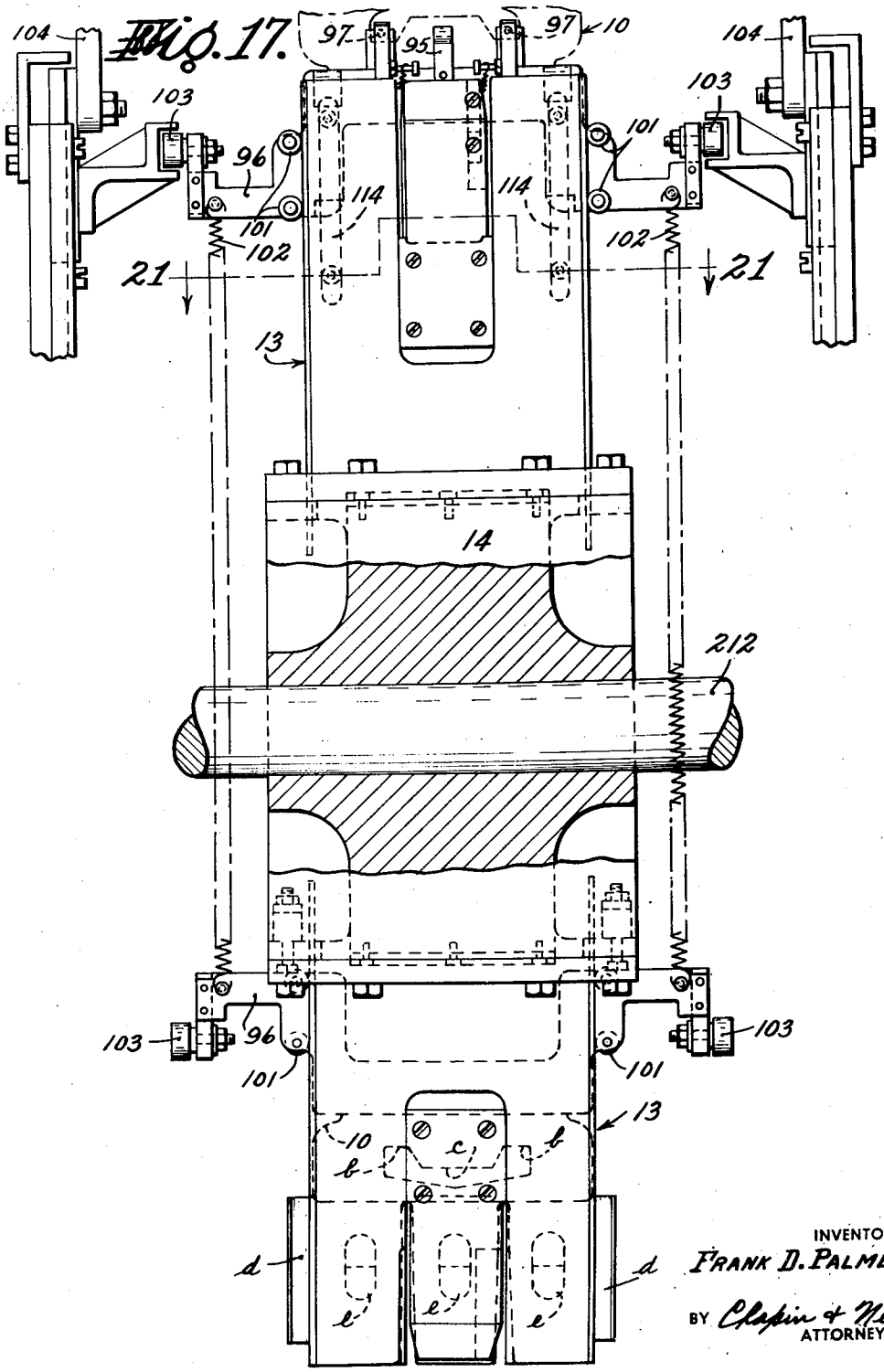

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Fig. 18.

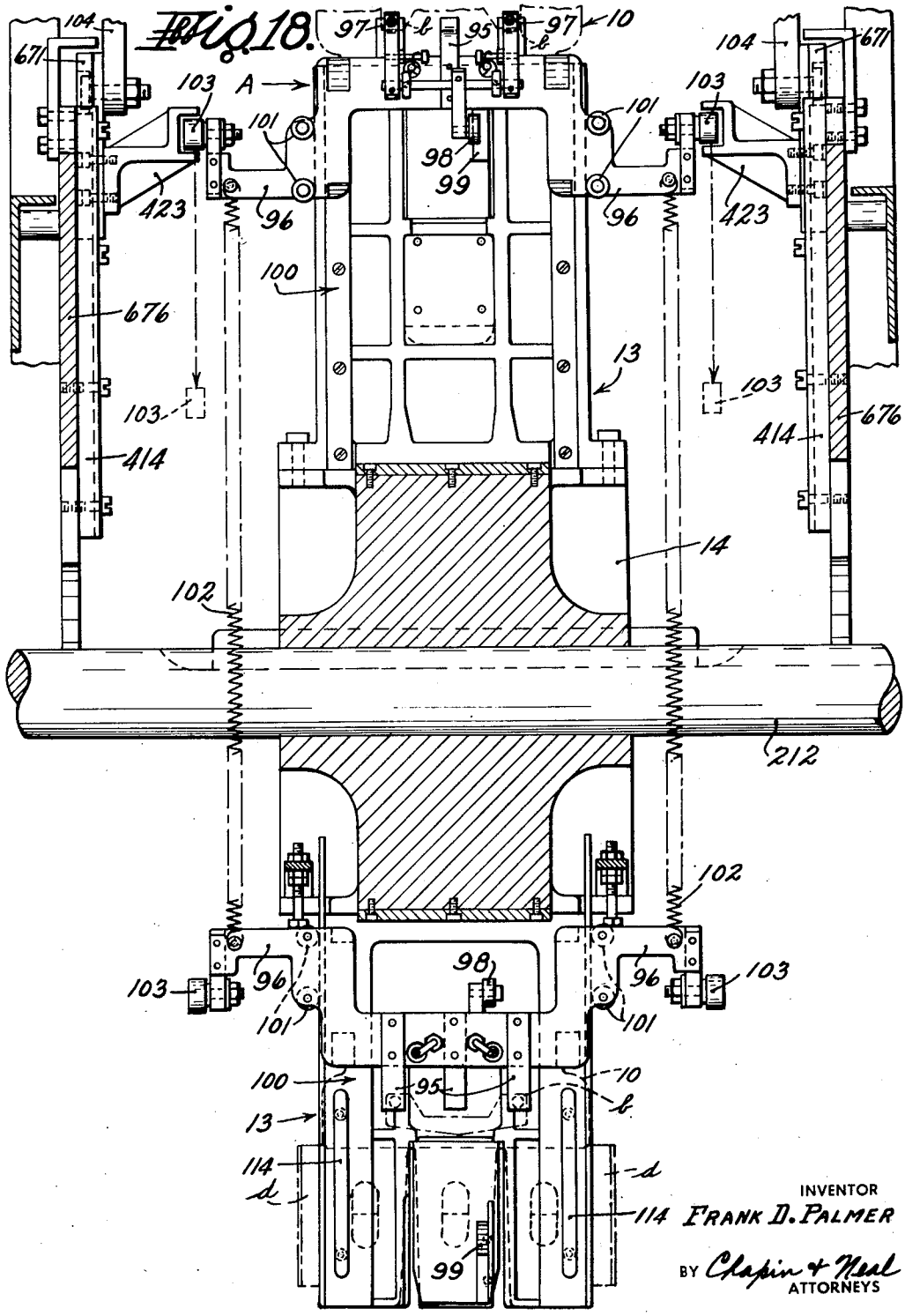

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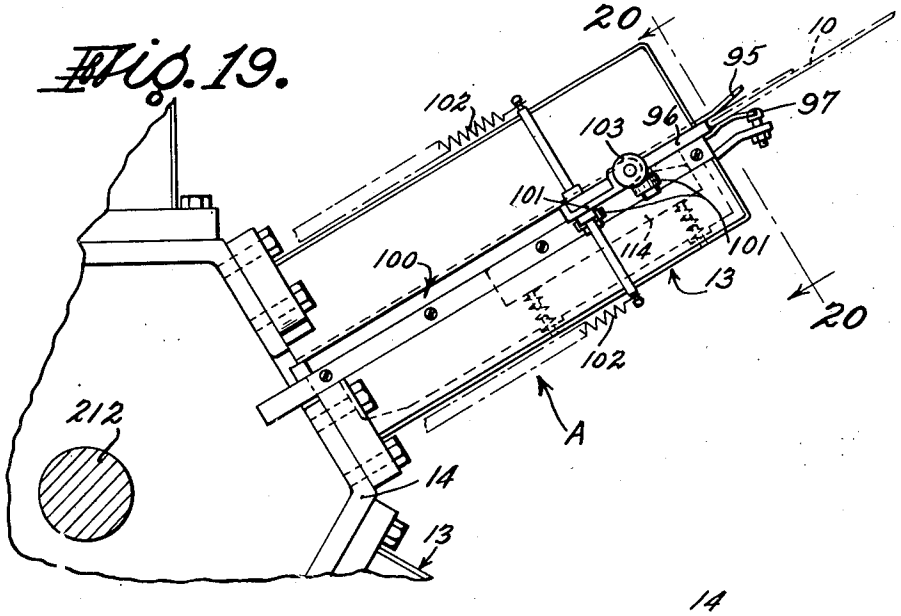
Fig. 19.



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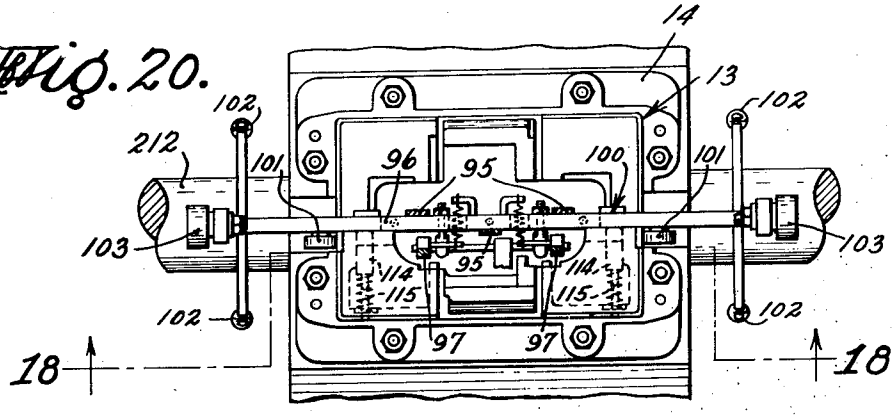

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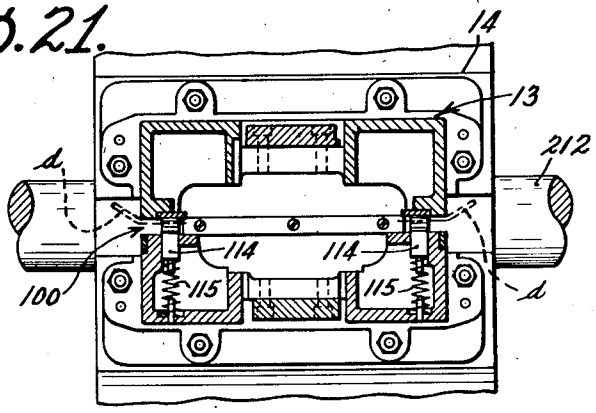

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Fig. 22.

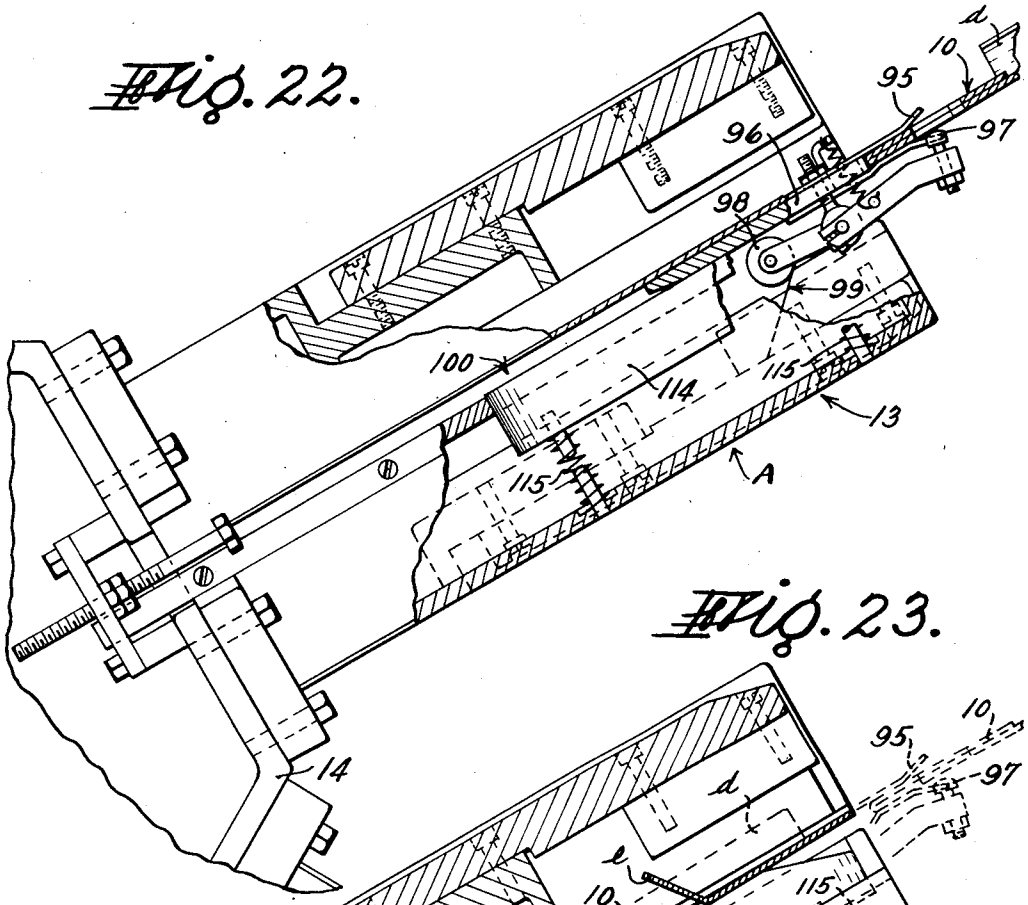
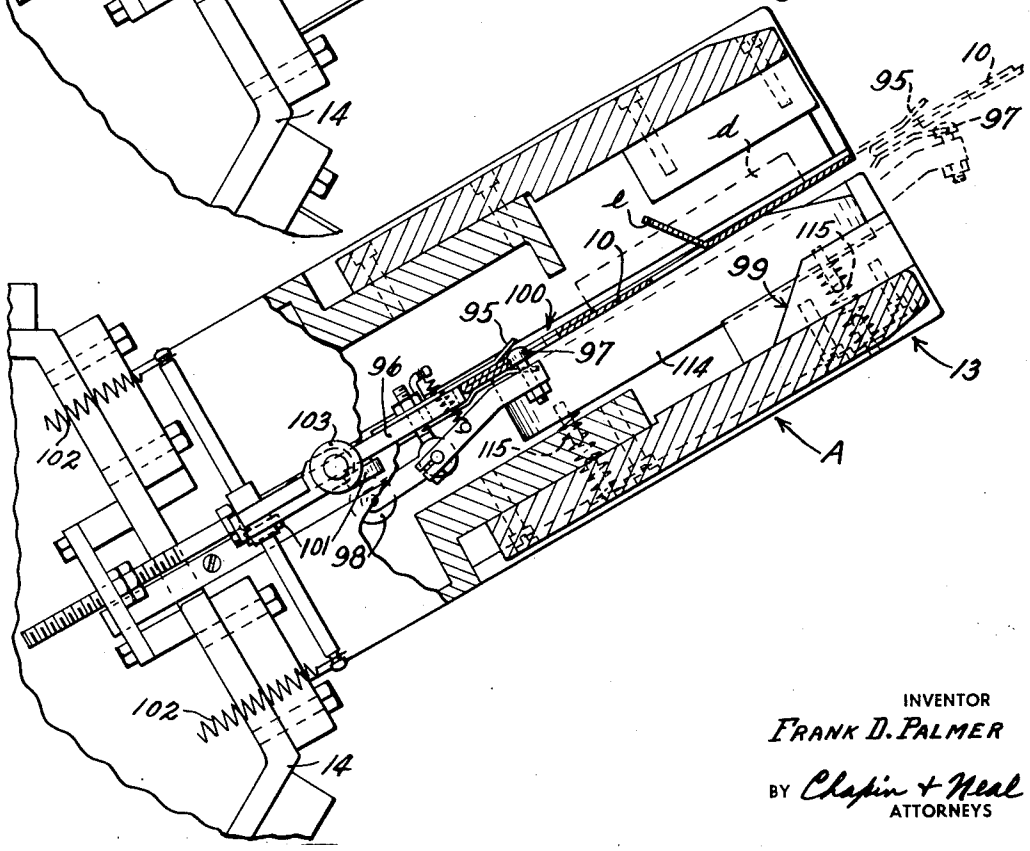


Fig. 23.



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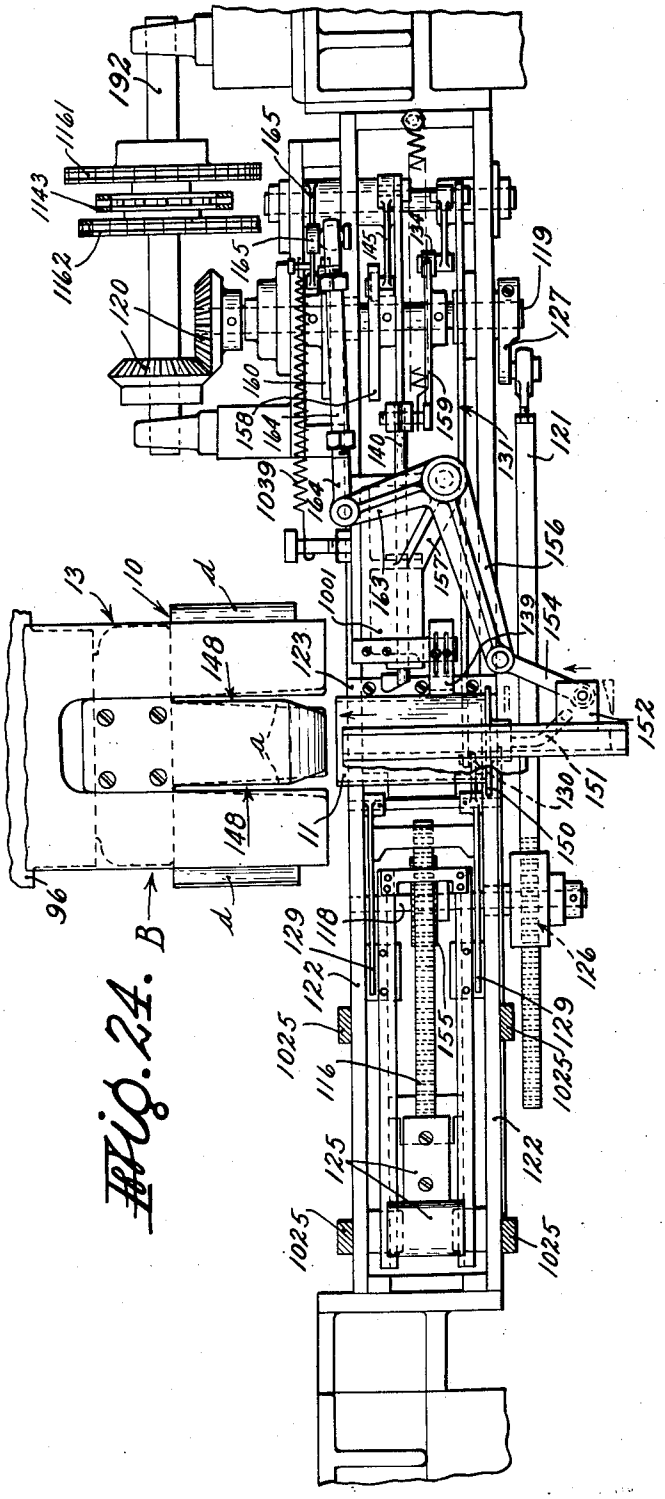

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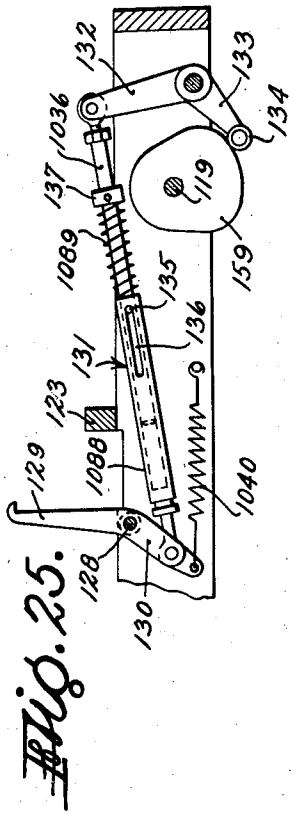

Fig. 25.

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Fig. 27.

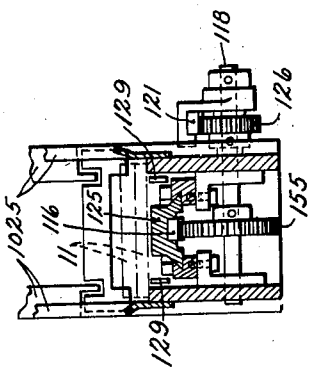

Fig. 26.

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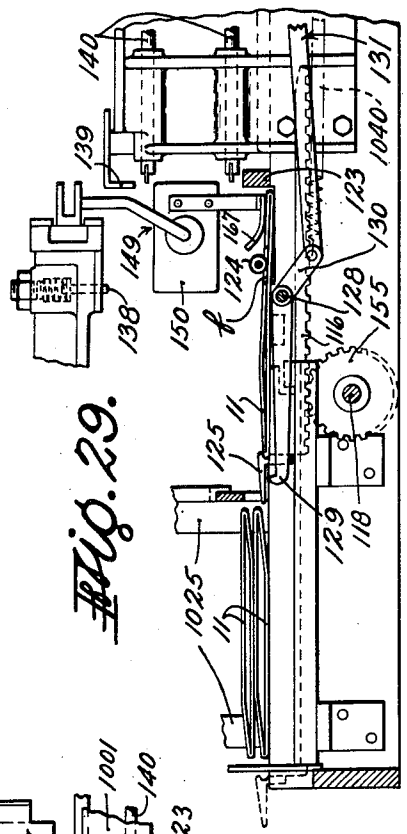


Fig. 29.

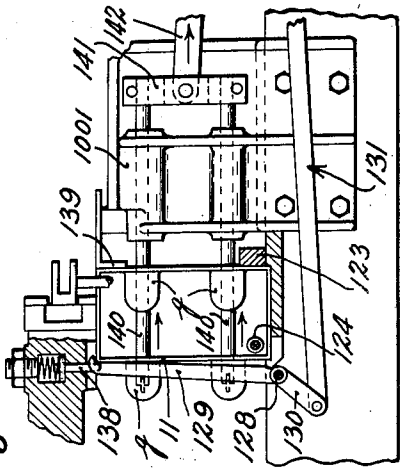
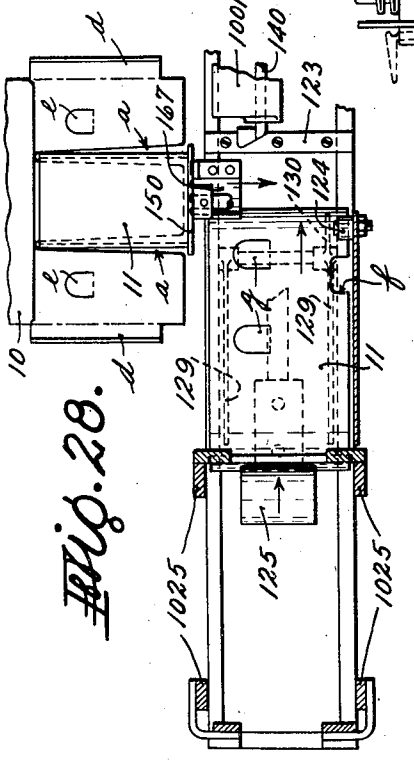


Fig. 32.



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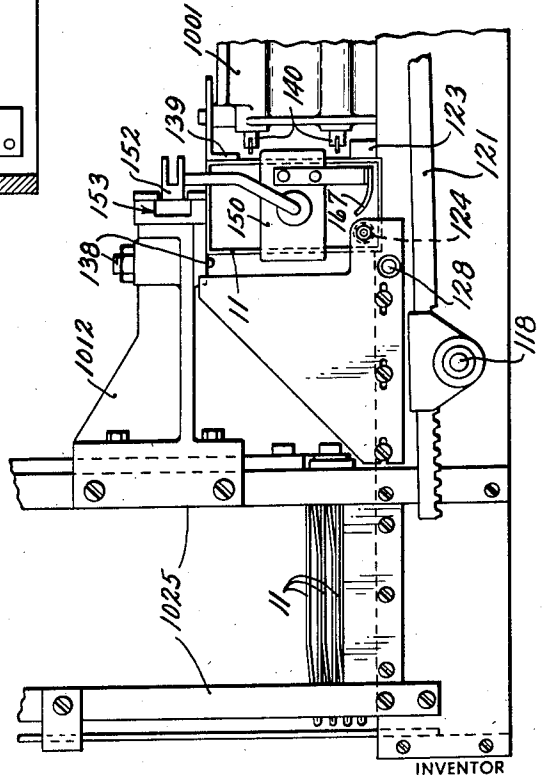

Fig. 34.

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Fig. 30.

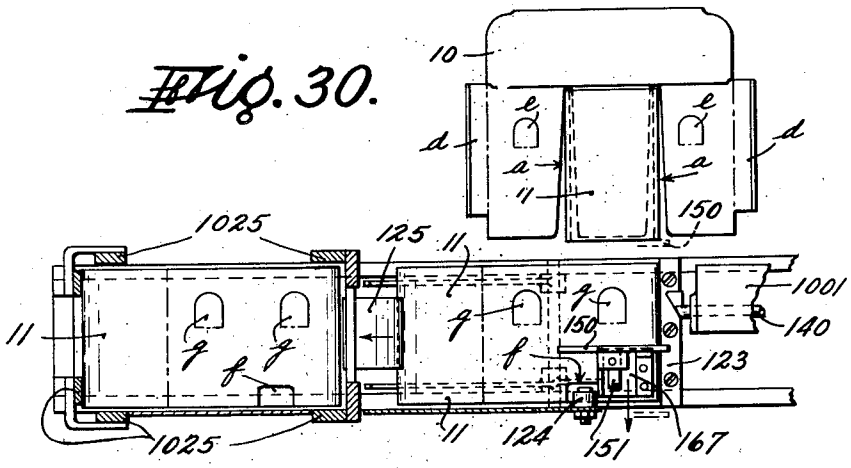


Fig. 31.

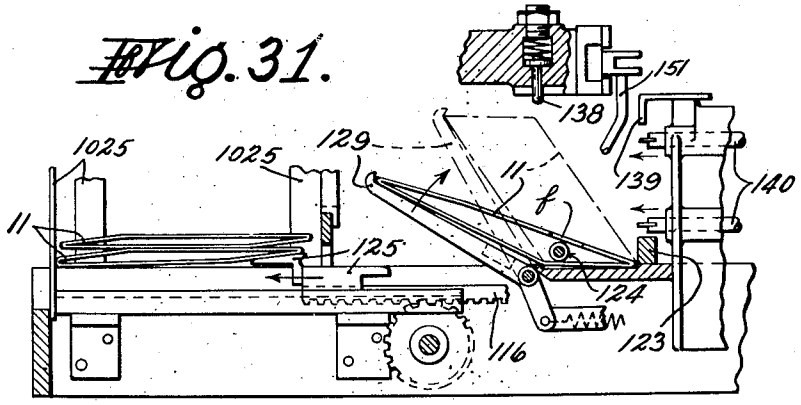
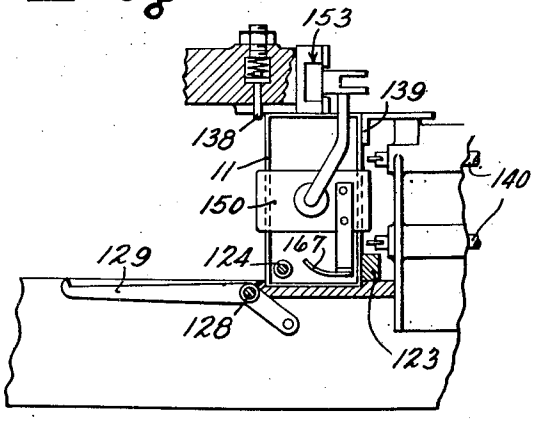


Fig. 33.



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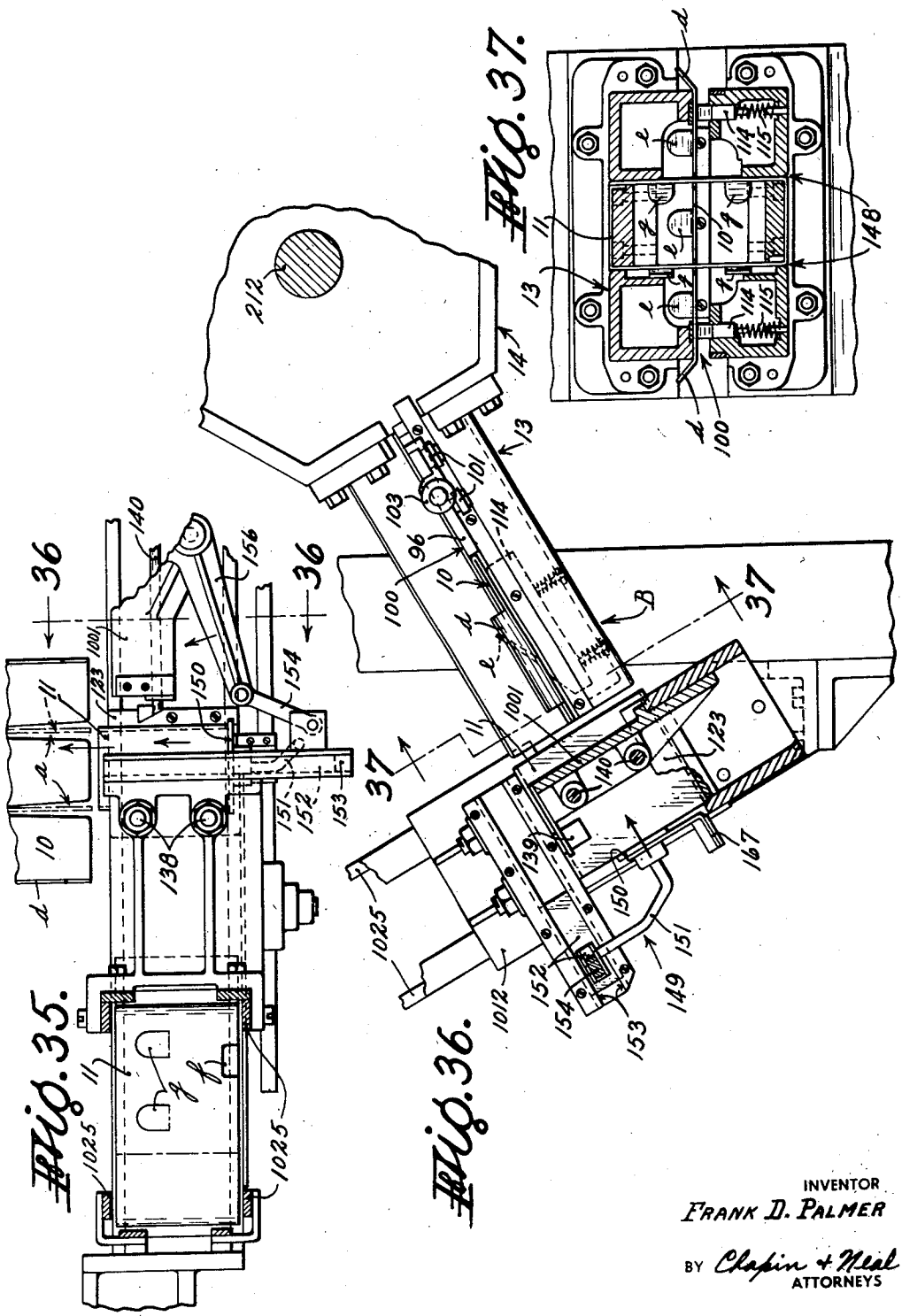

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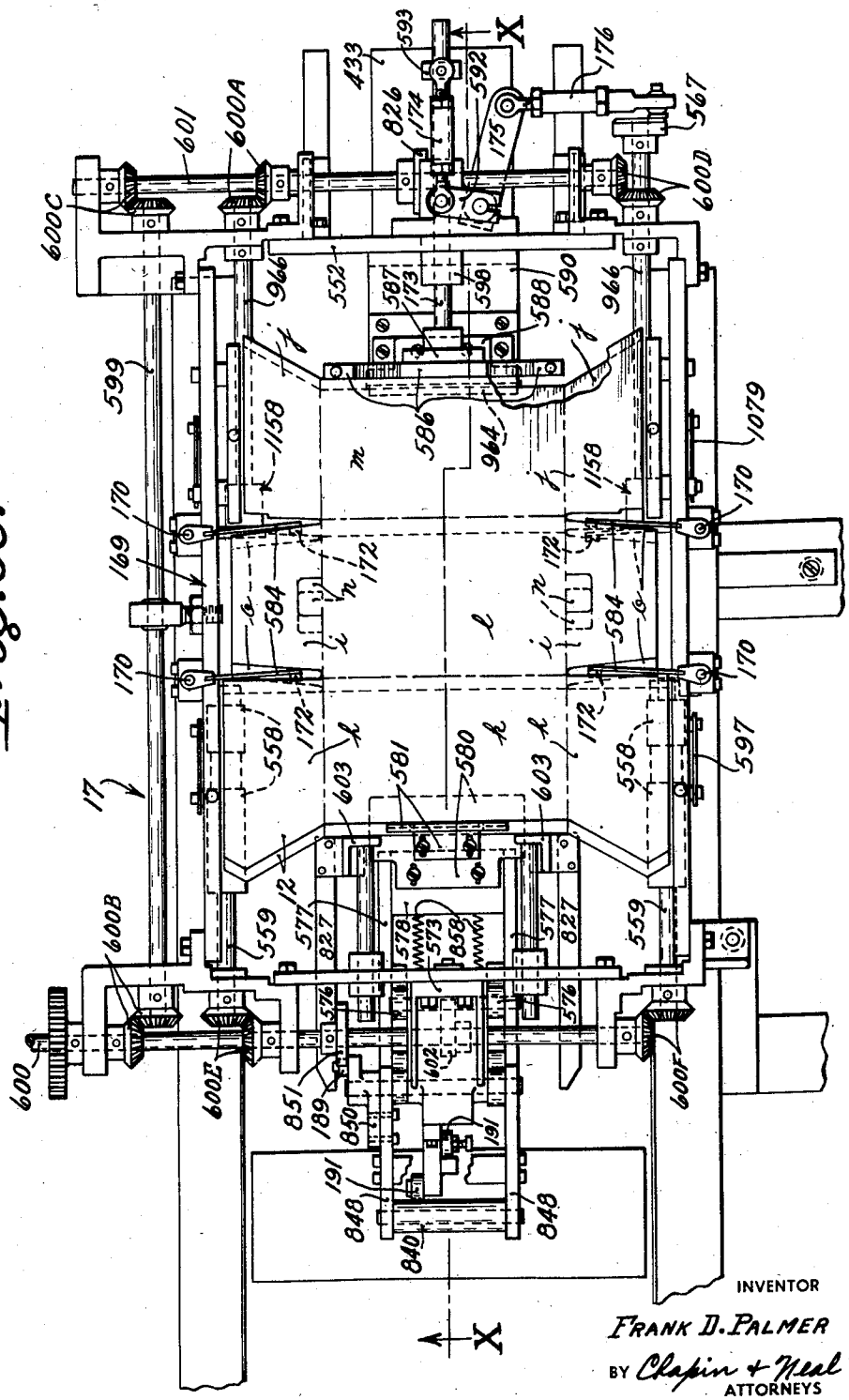

Fig. 38.

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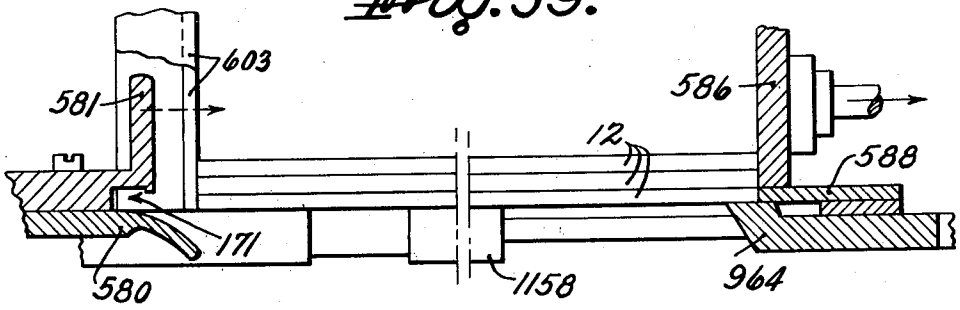
Fig. 39.



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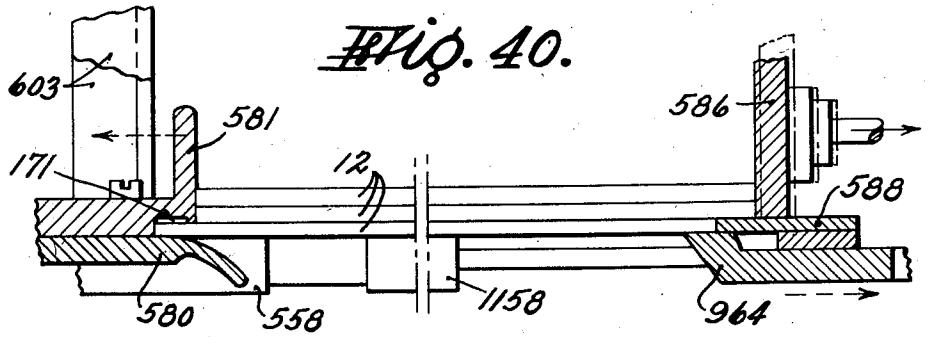

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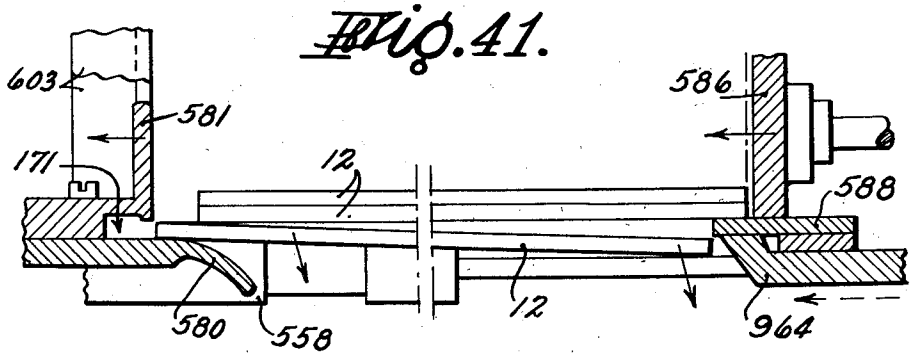

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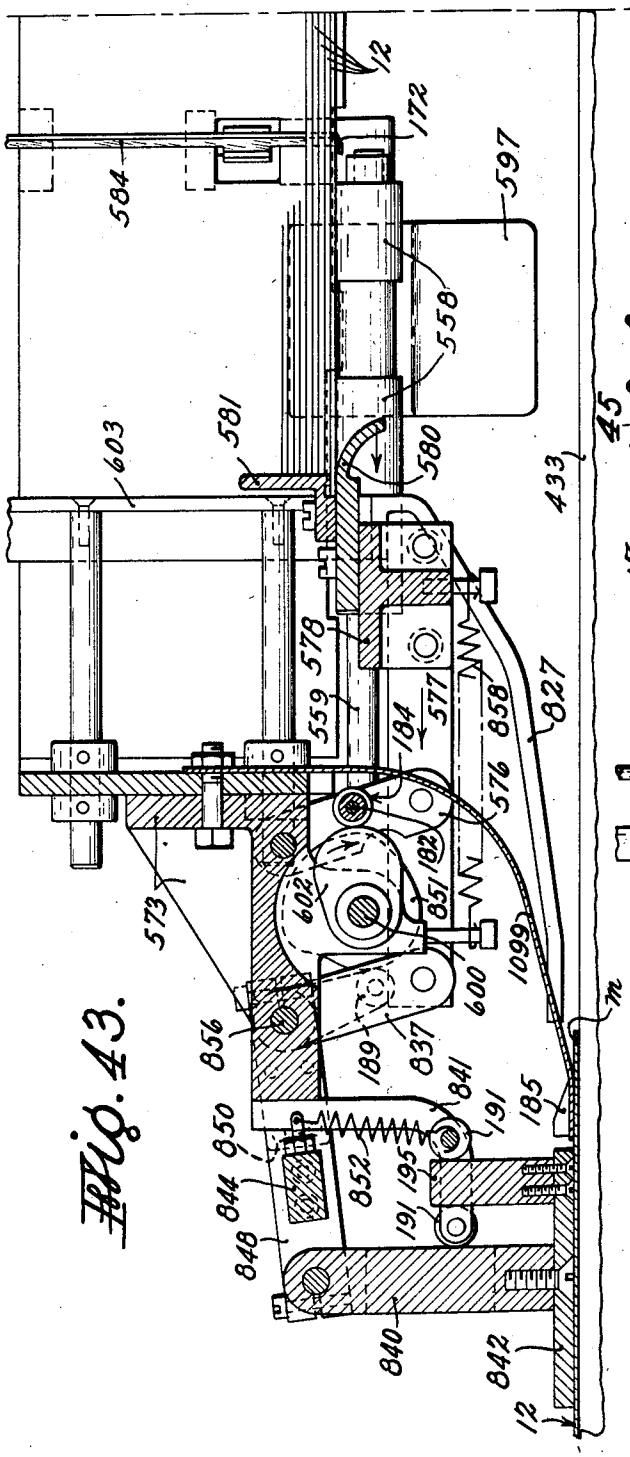

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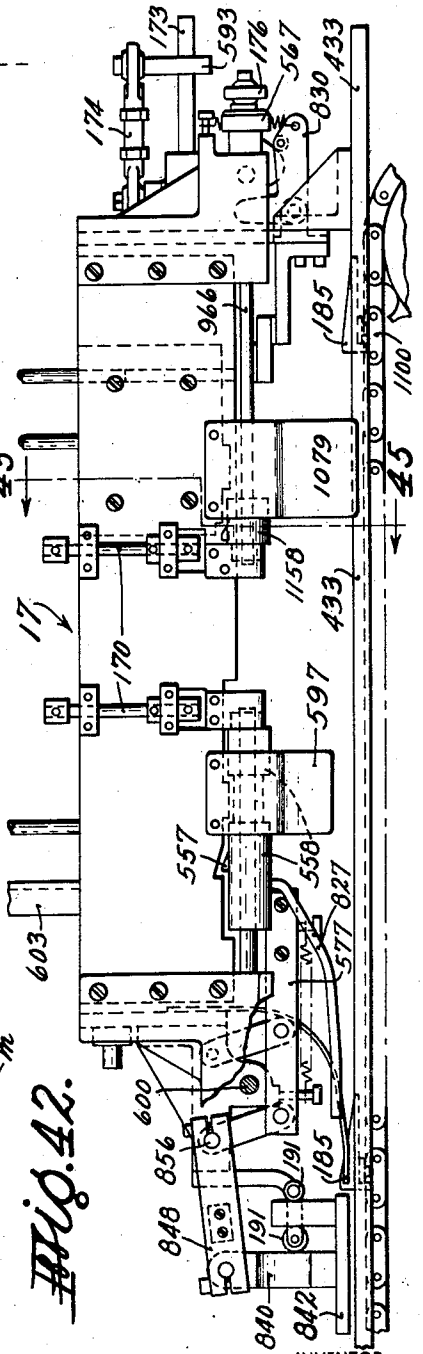

Fig. 42.

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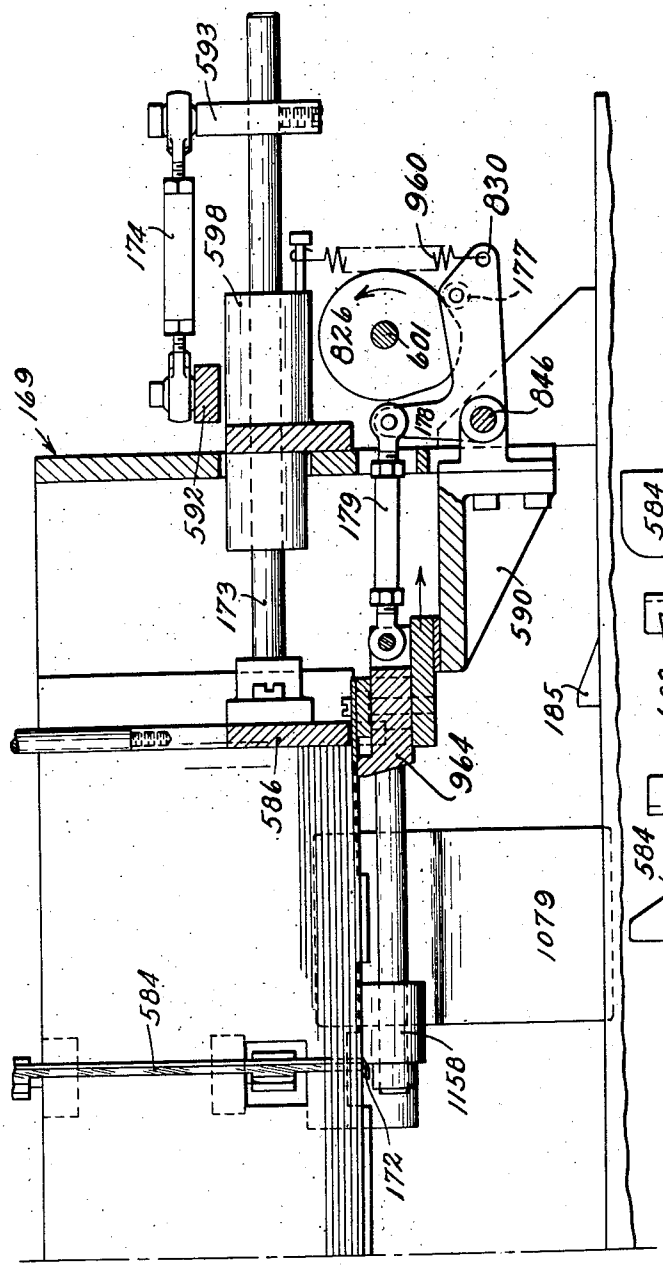

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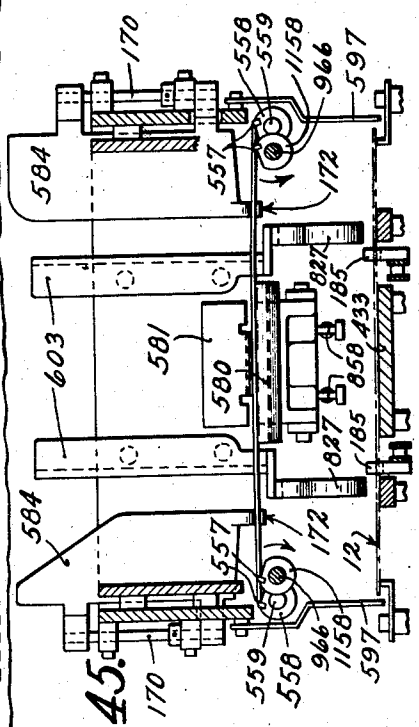

Fig. 45.

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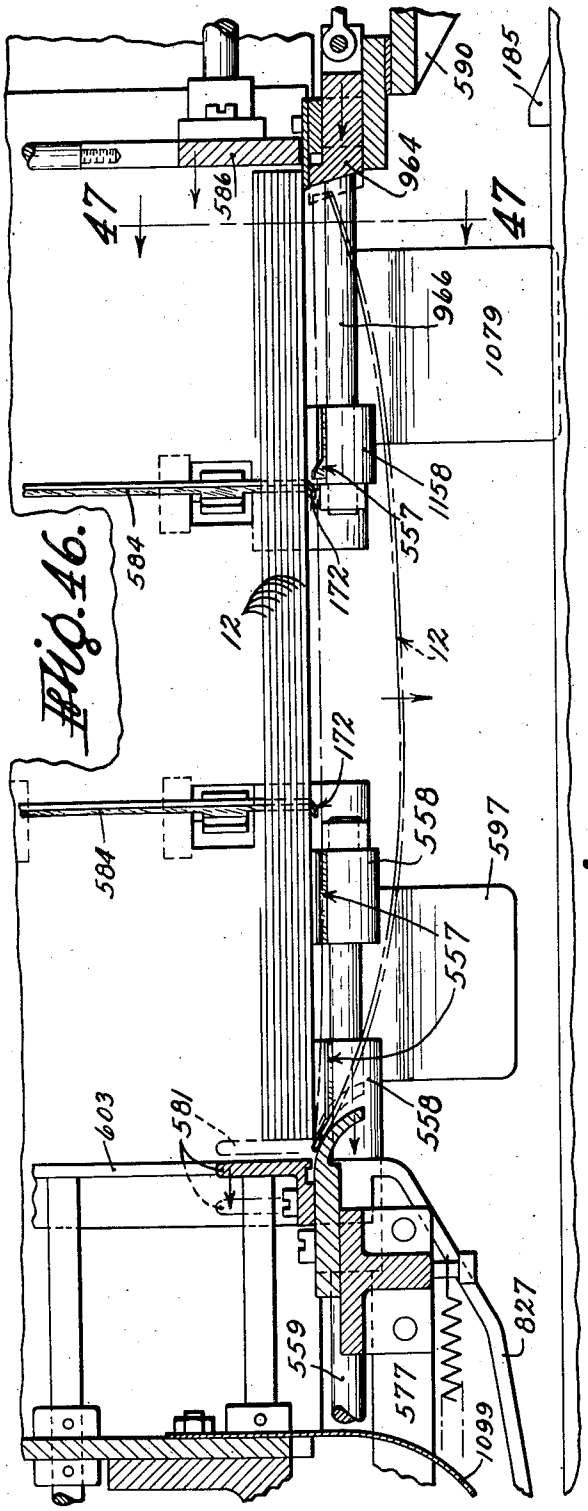

Fig. 46.

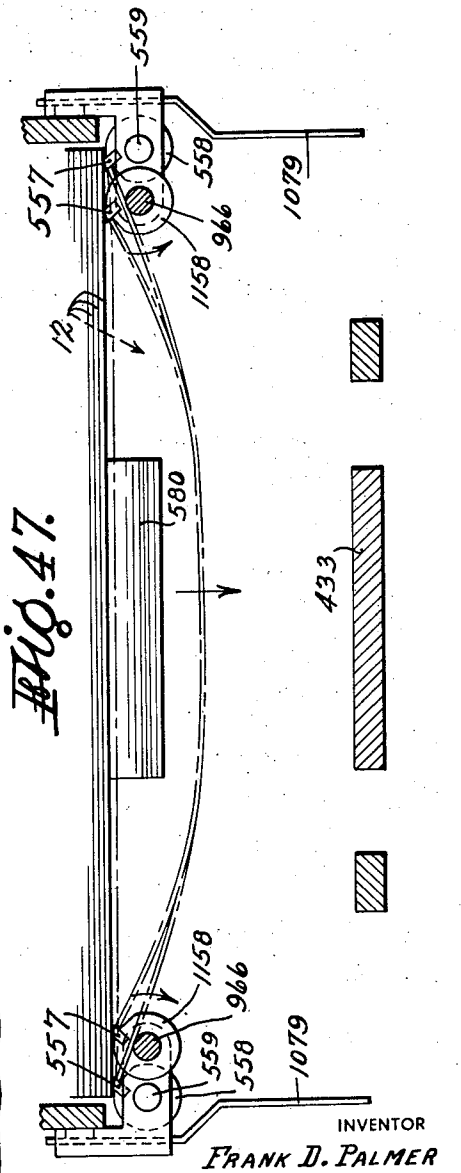

Fig. 47.

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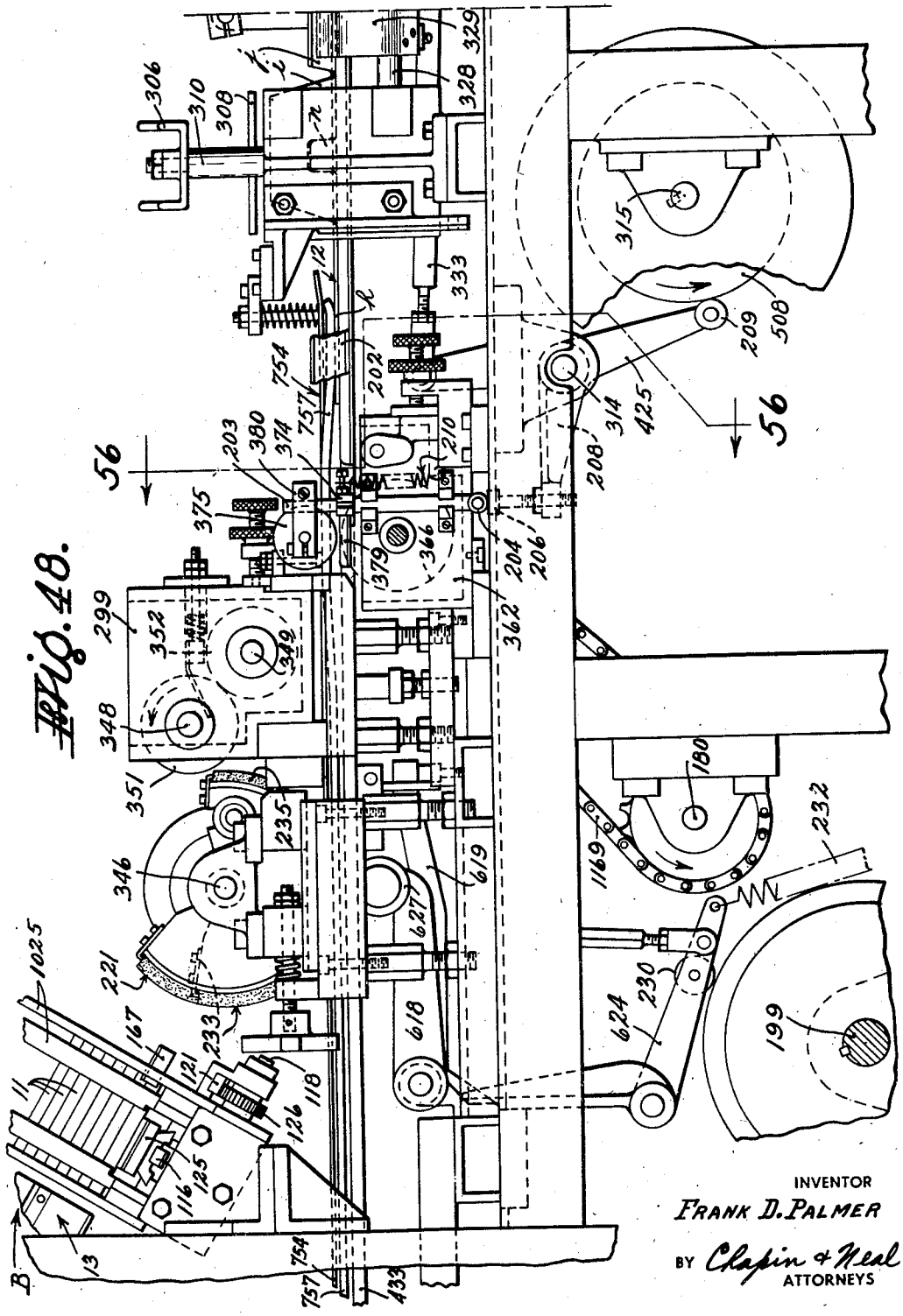

Fig. 48.

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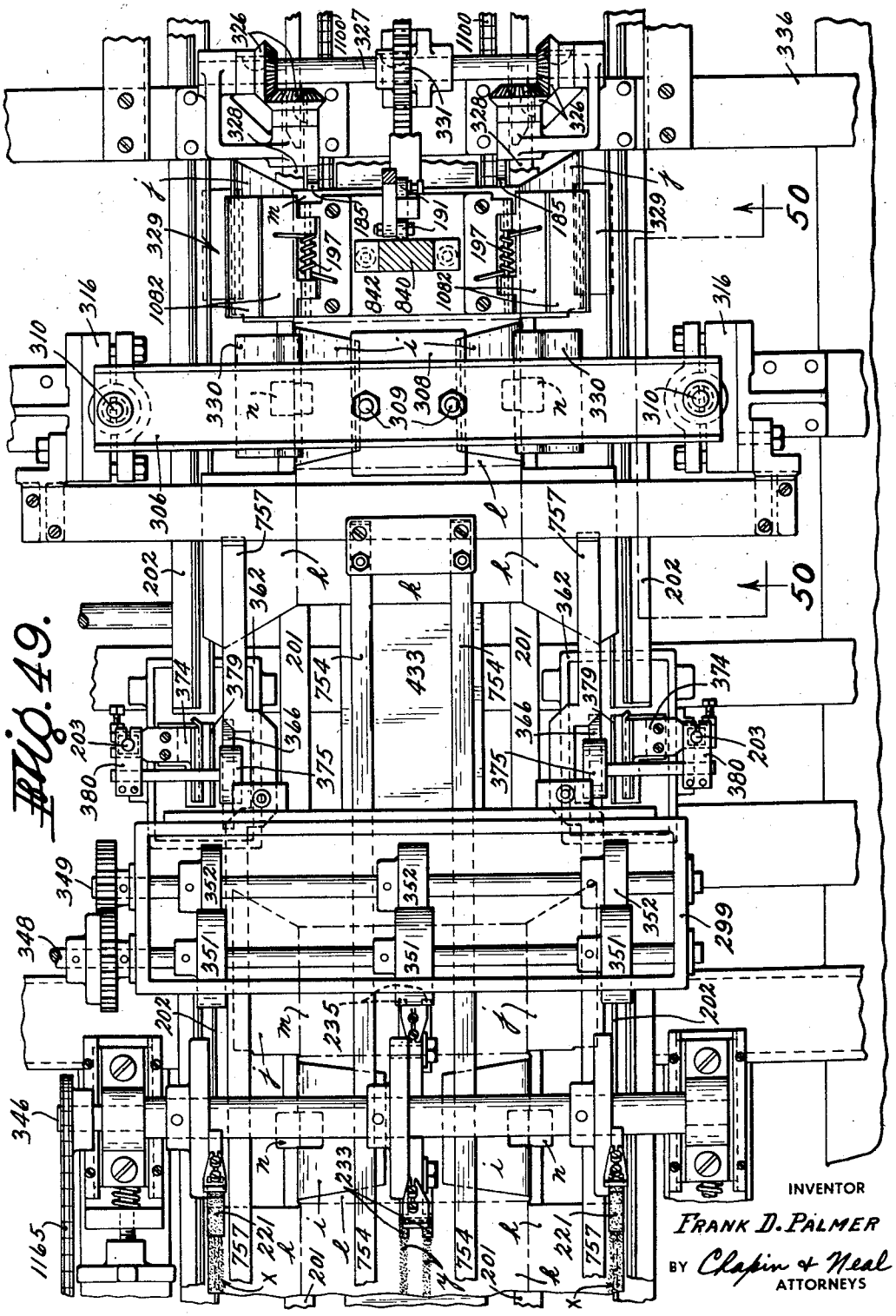

Fig. 49.

INVENTOR
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Fig. 50.

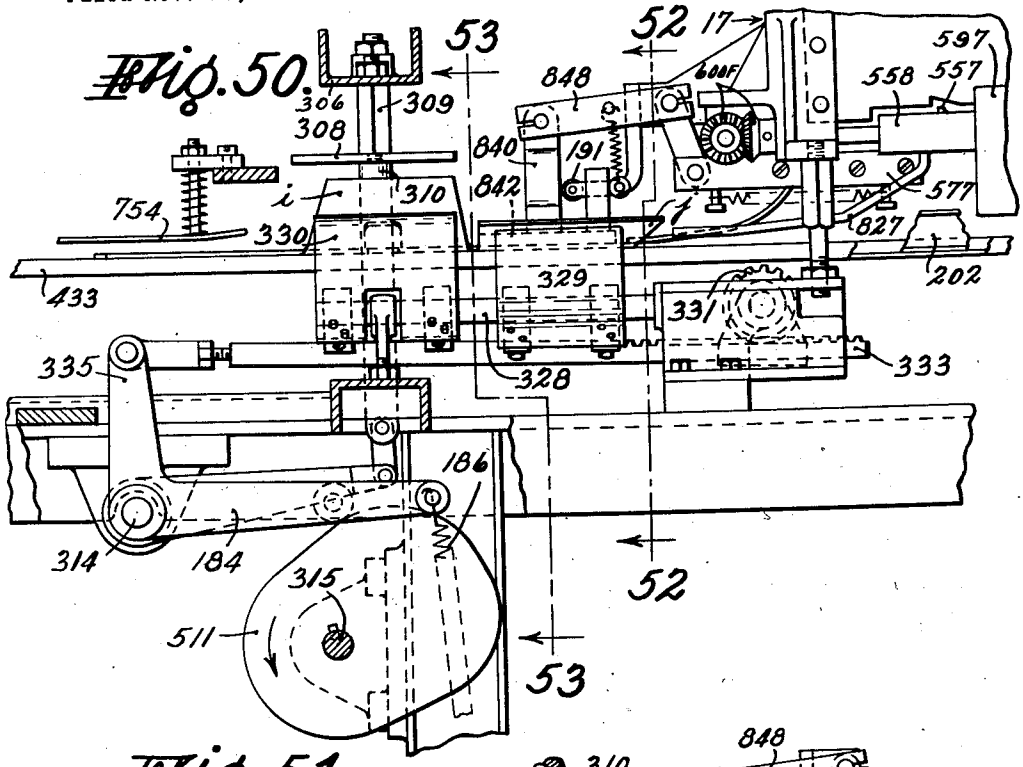

Fig. 51.

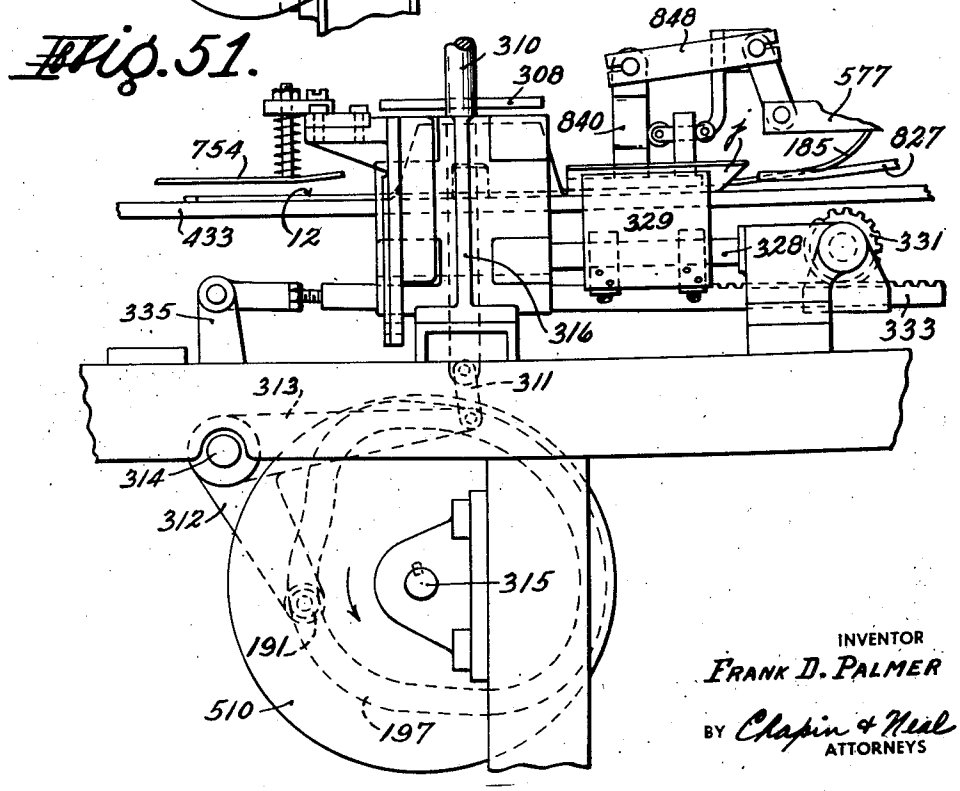

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Fig. 52.

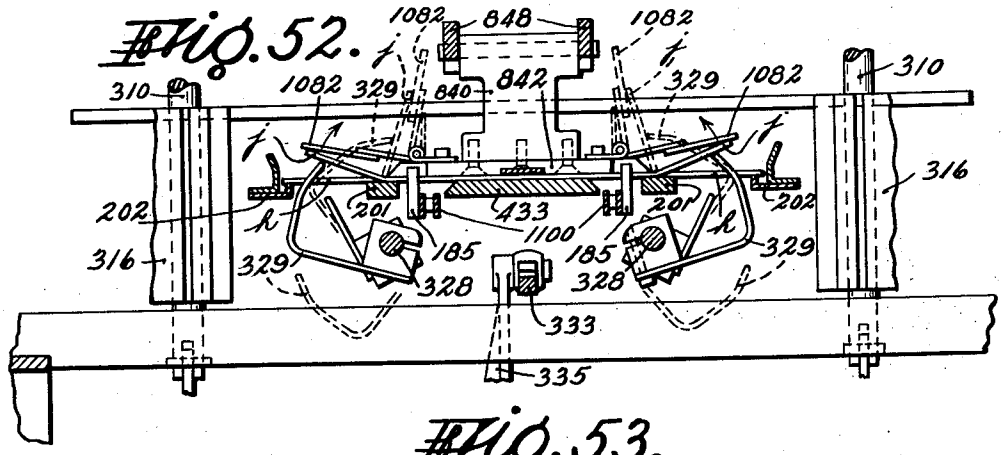

Fig. 53.

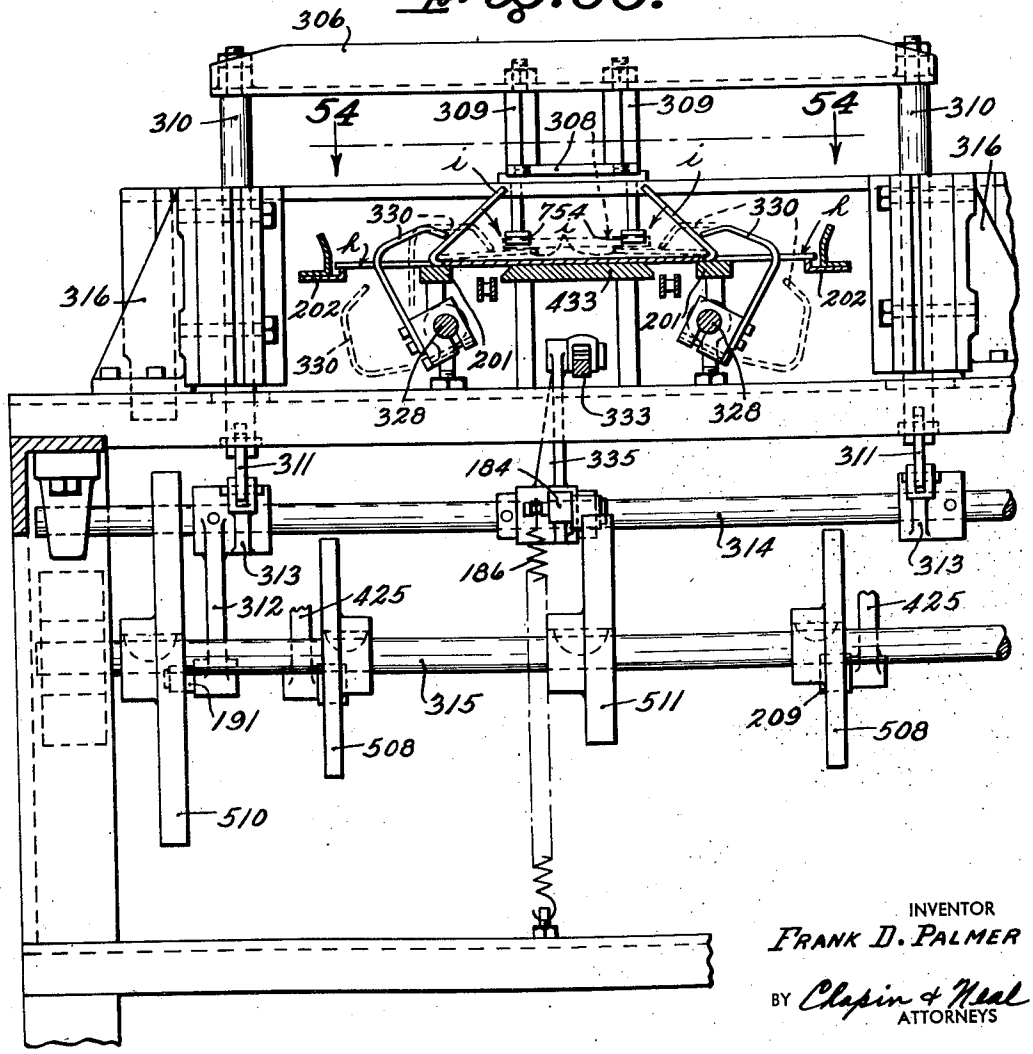

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Fig. 54.

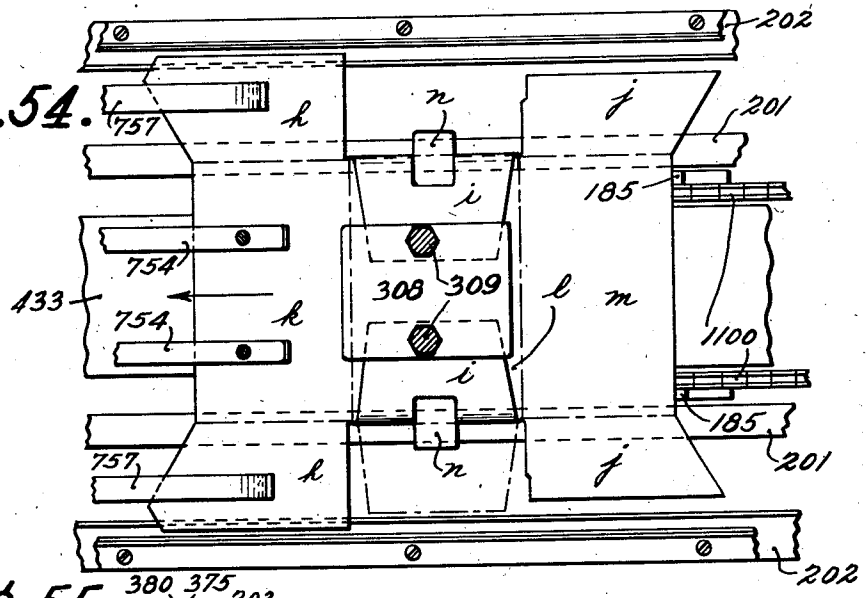


Fig. 55.

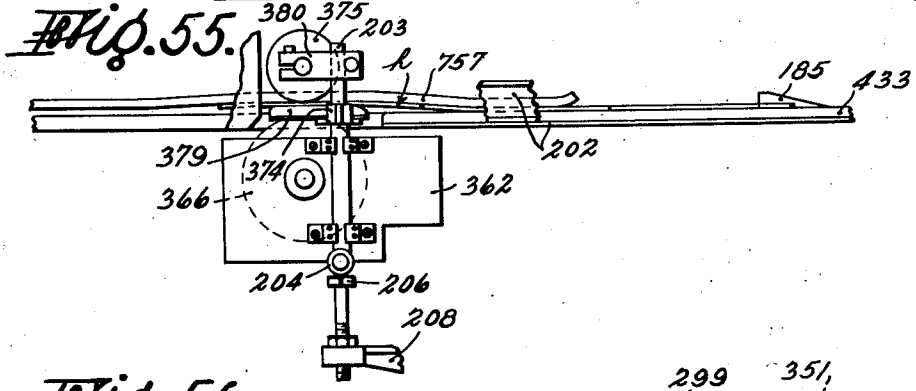
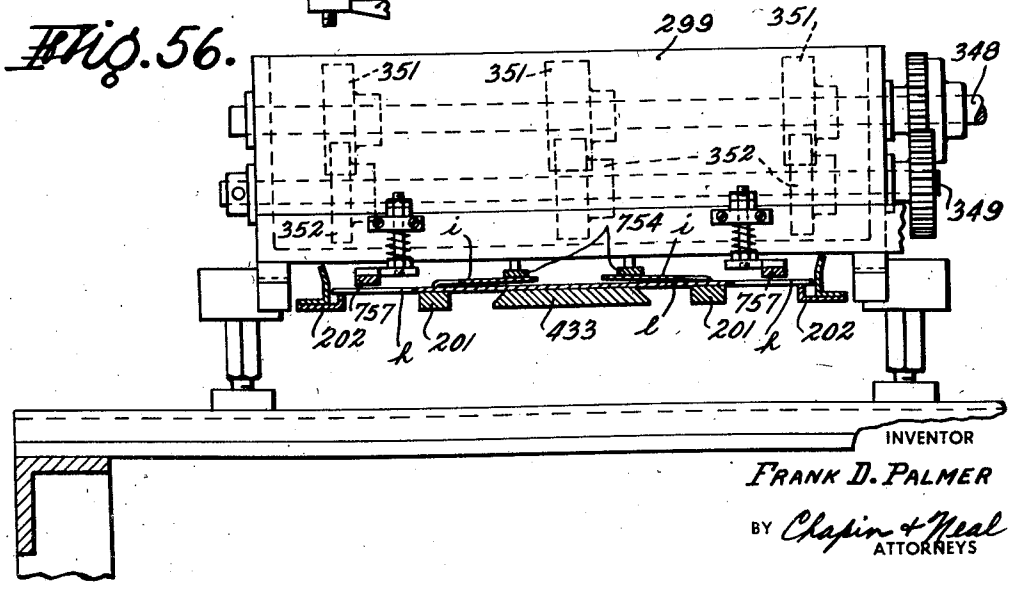


Fig. 56.



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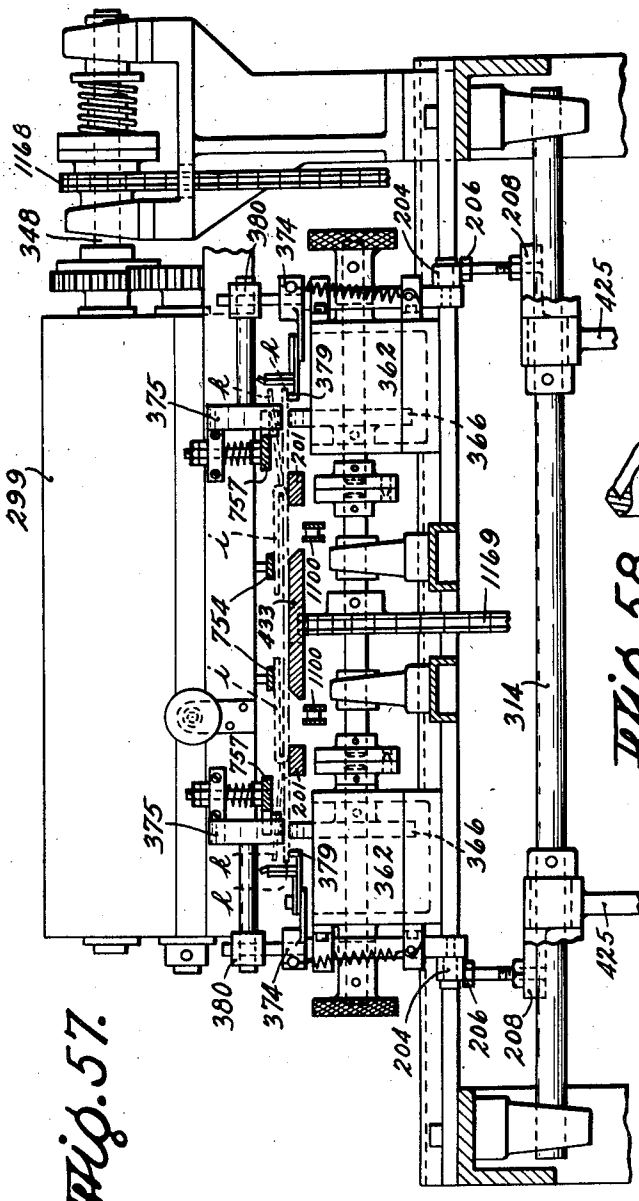

Fig. 57.

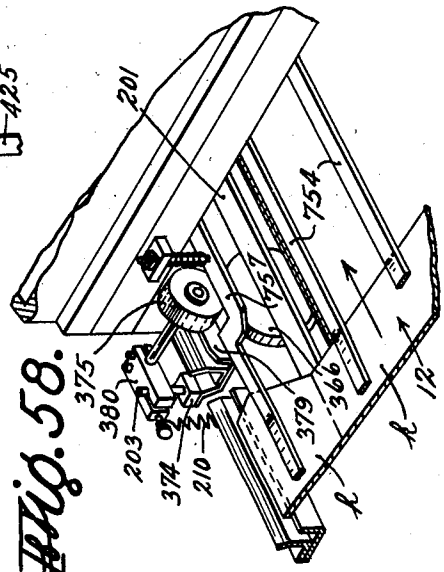

Fig. 58.

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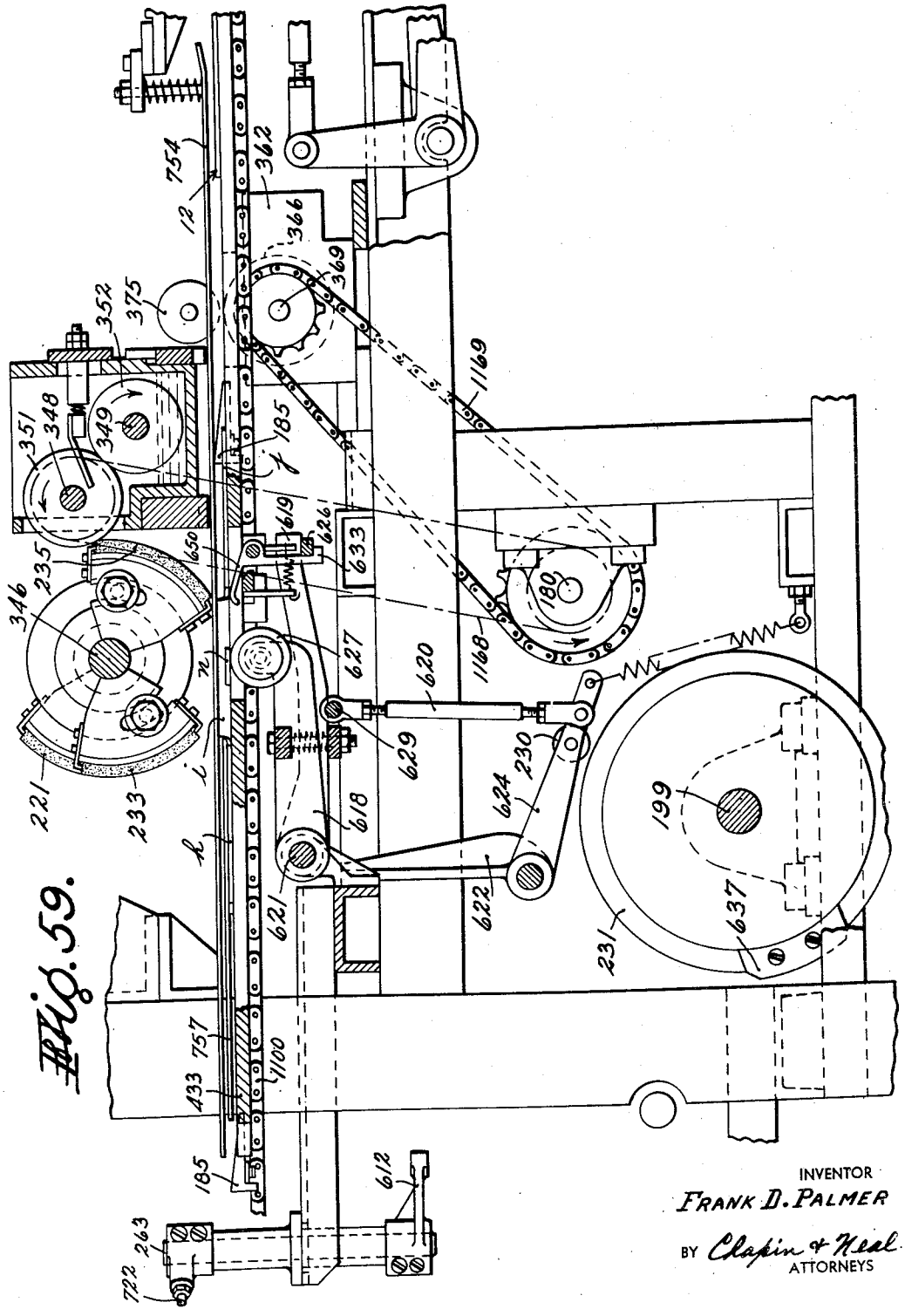

Fig. 59.

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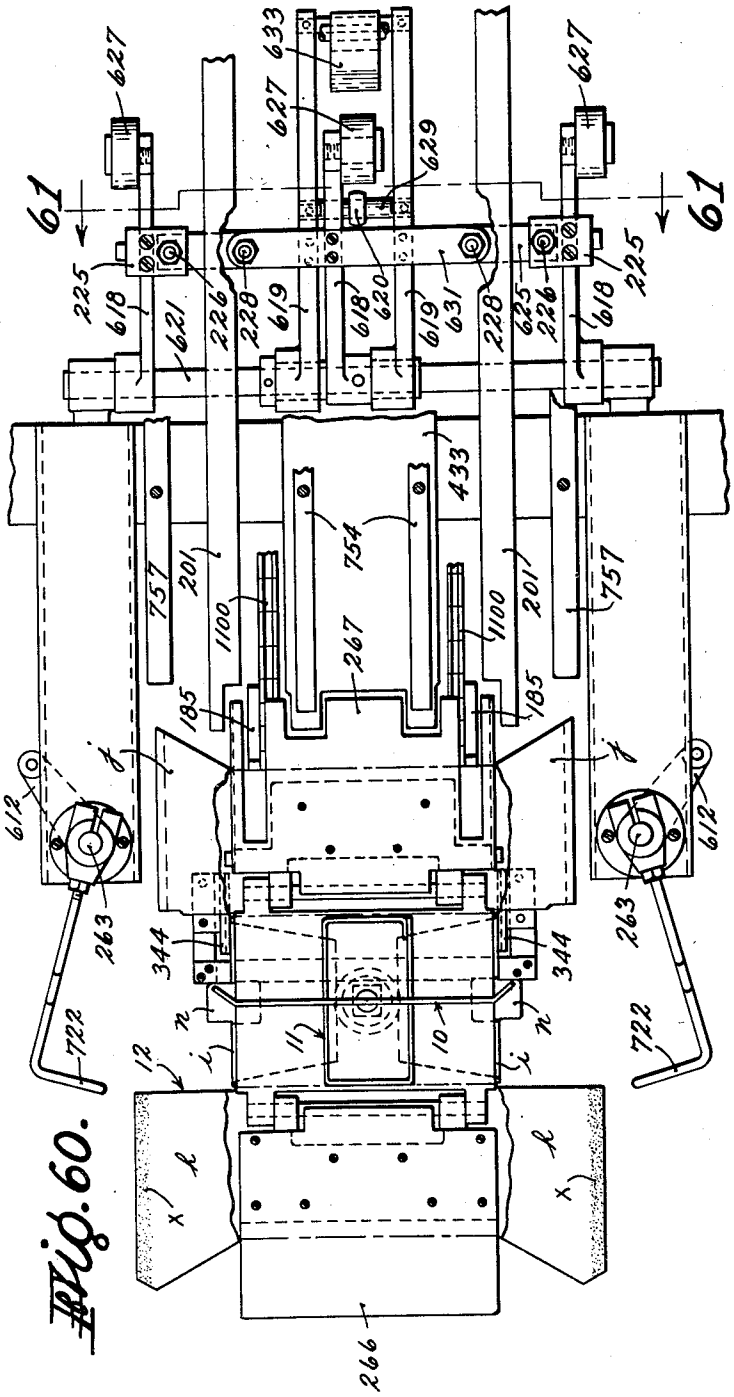

Fig. 60.

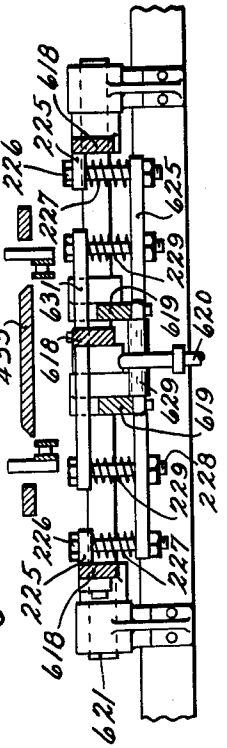

Fig. 61.

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Fig. 62.

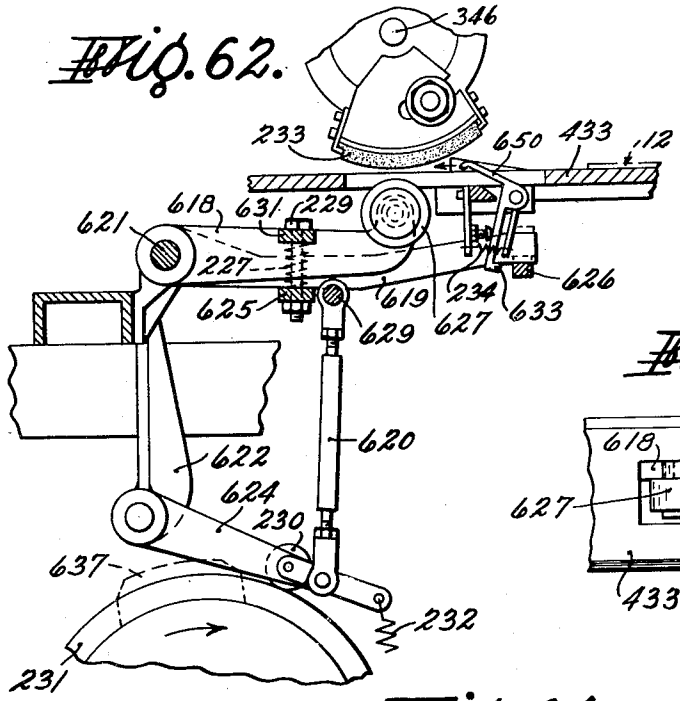

Fig. 63.

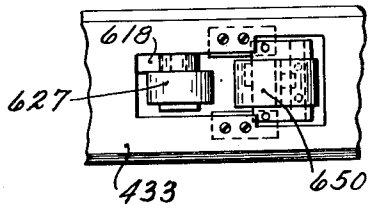

Fig. 64.

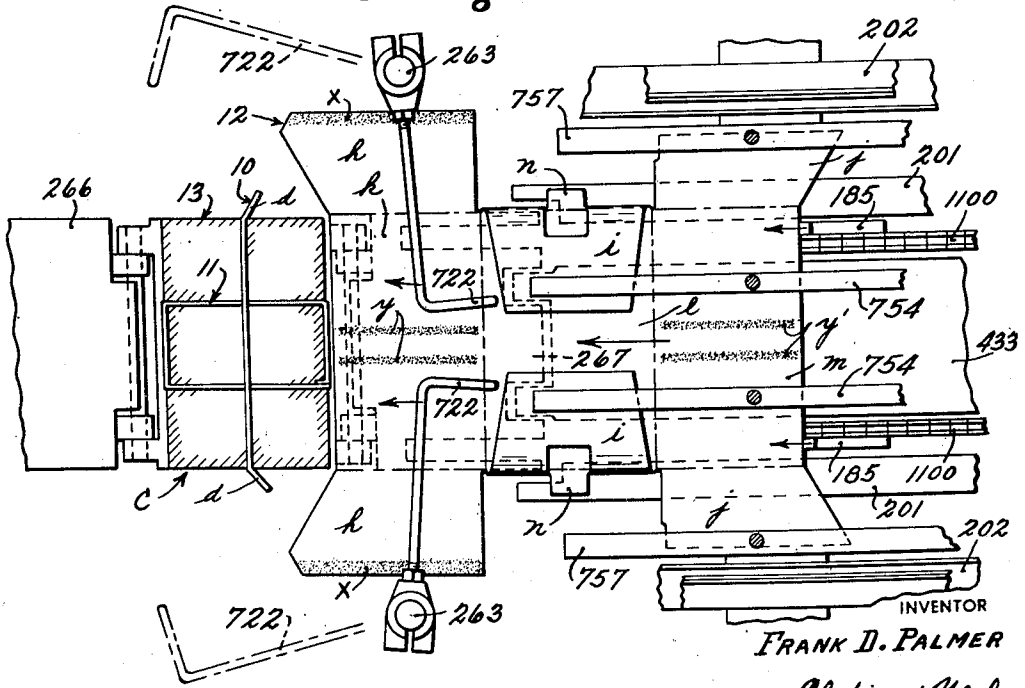

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Fig. 65.

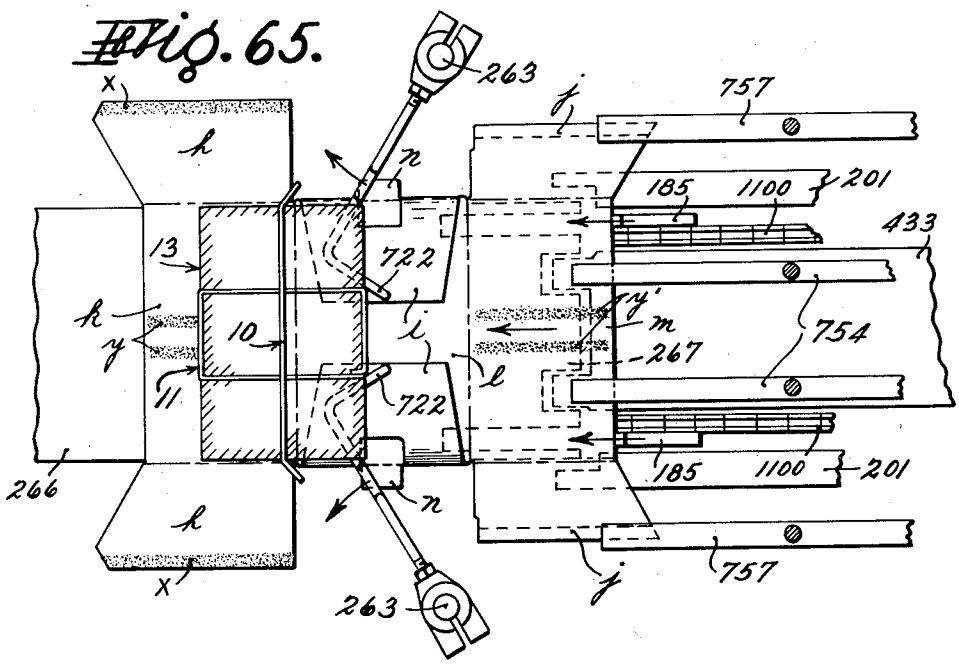

Fig. 66.

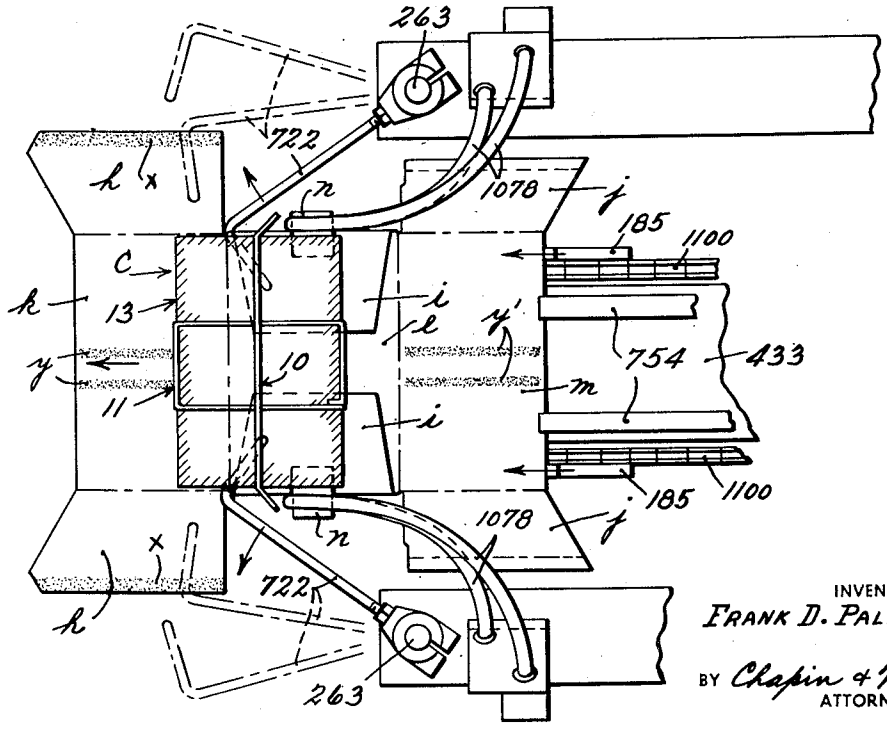

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Fig. 67.

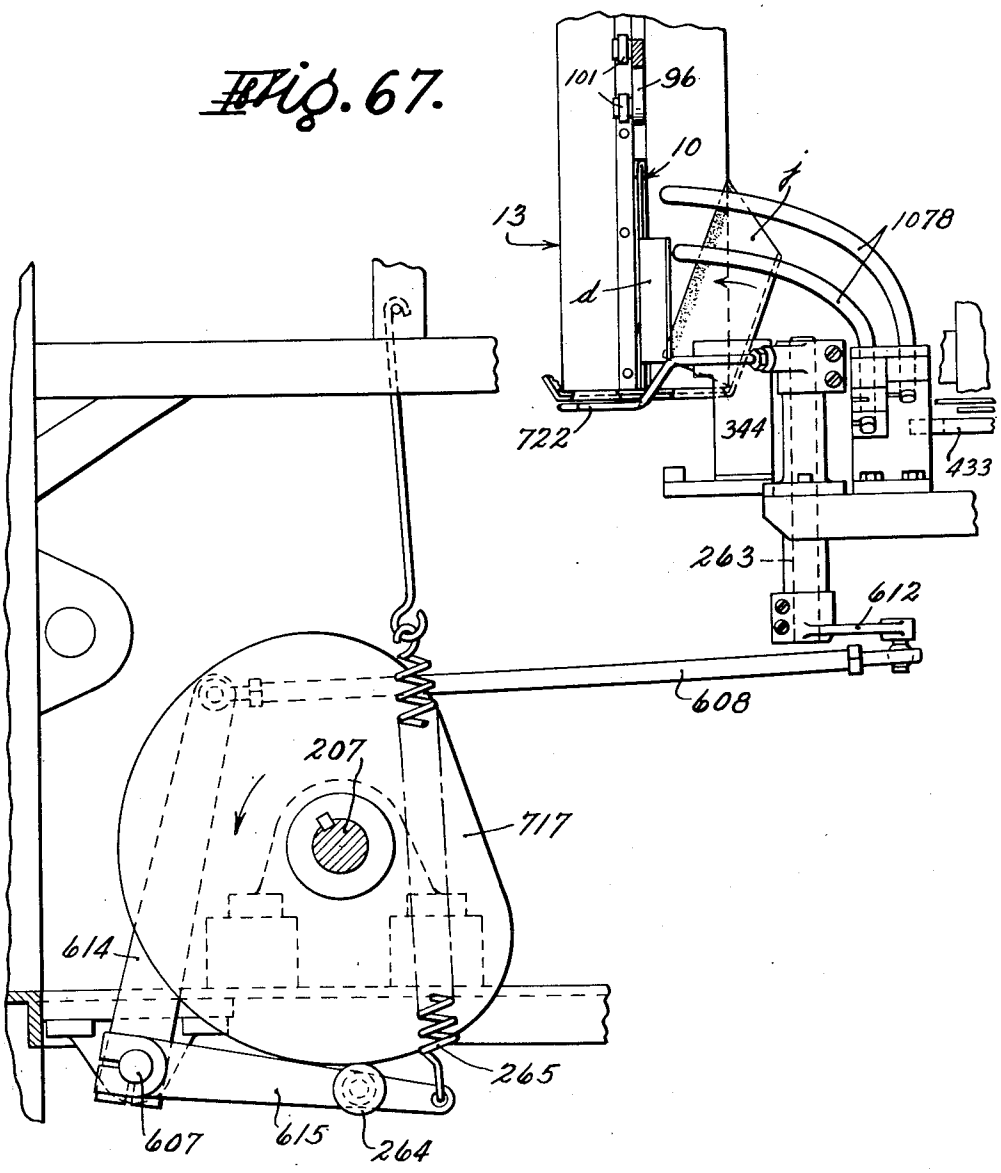

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Fig. 69.

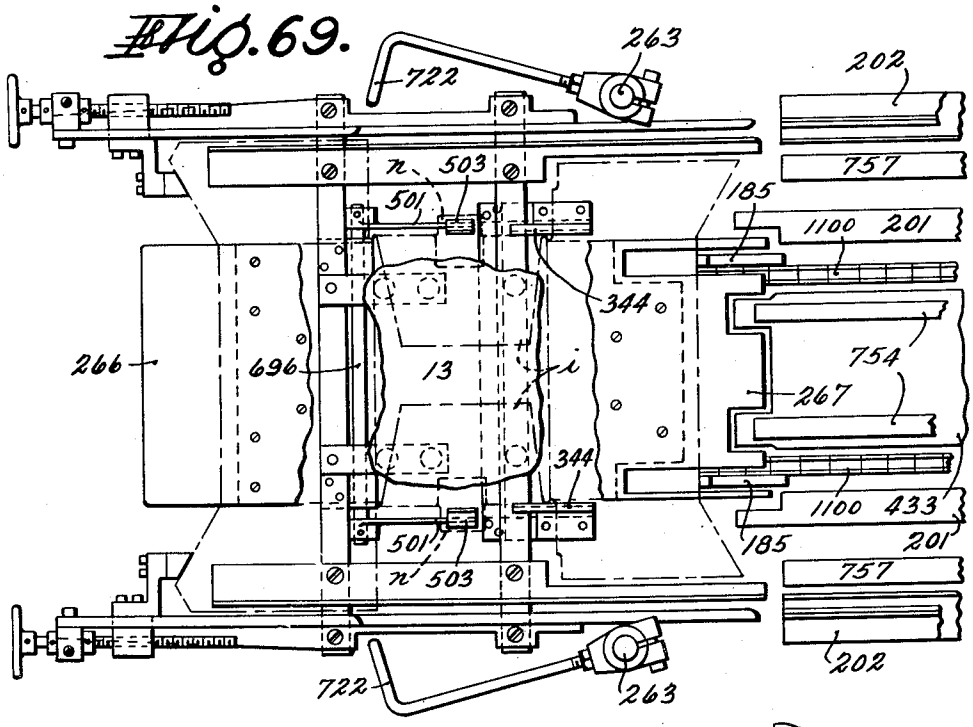

Fig. 68.

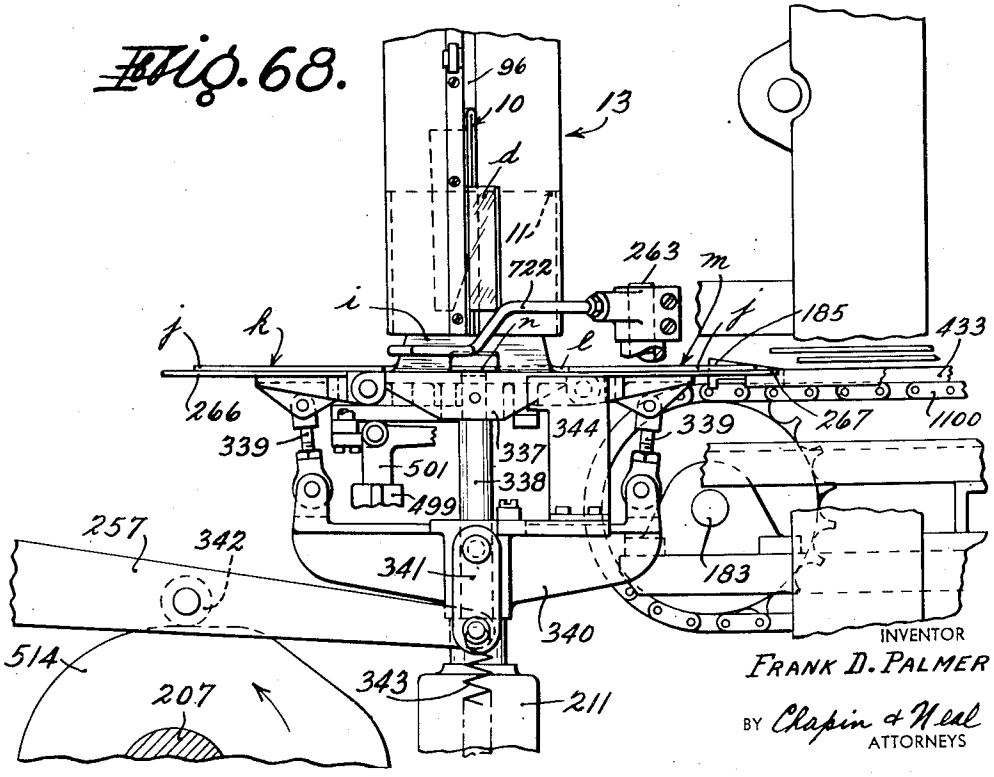

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Fig. 70.

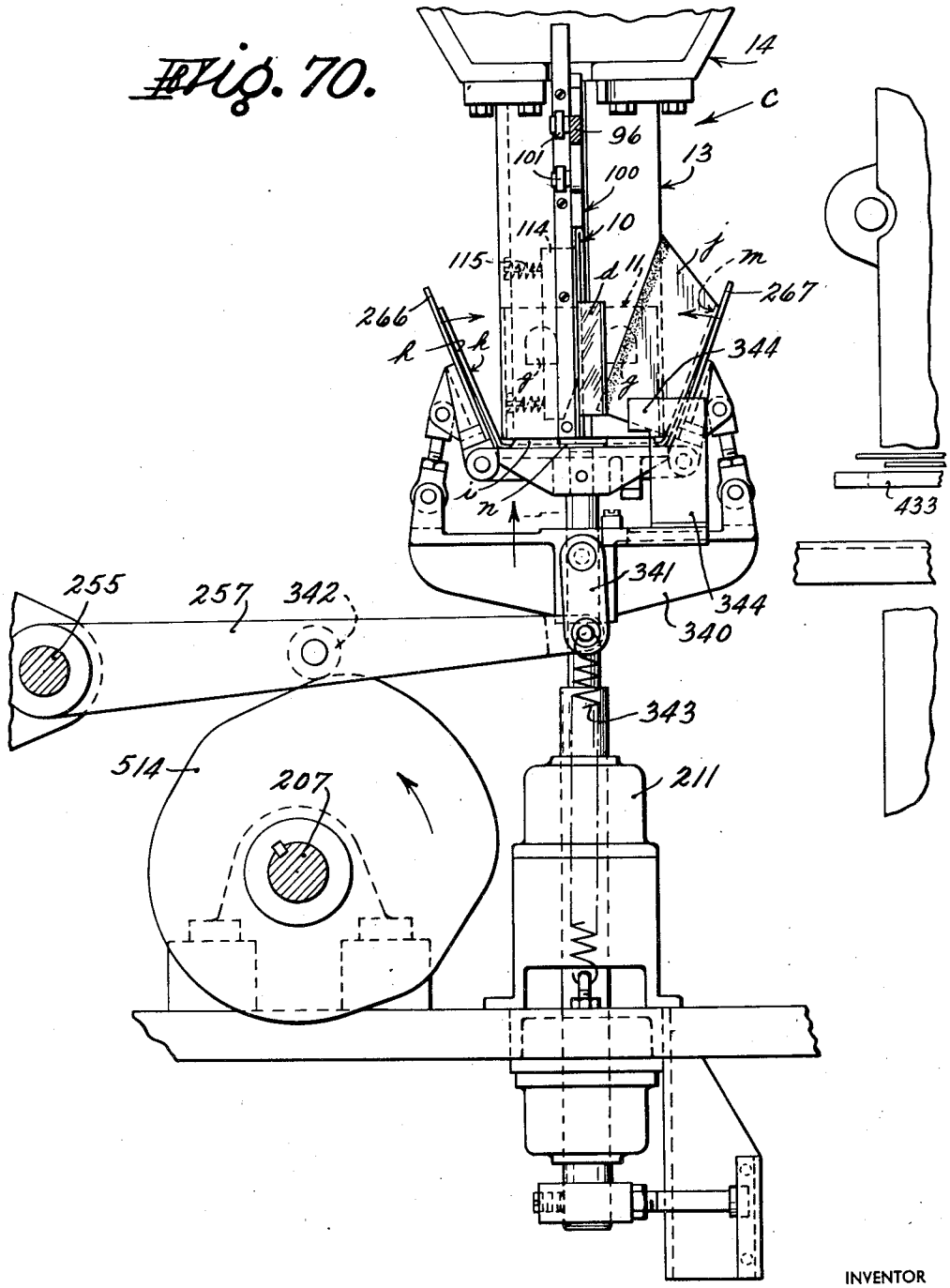

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Fig. 71.

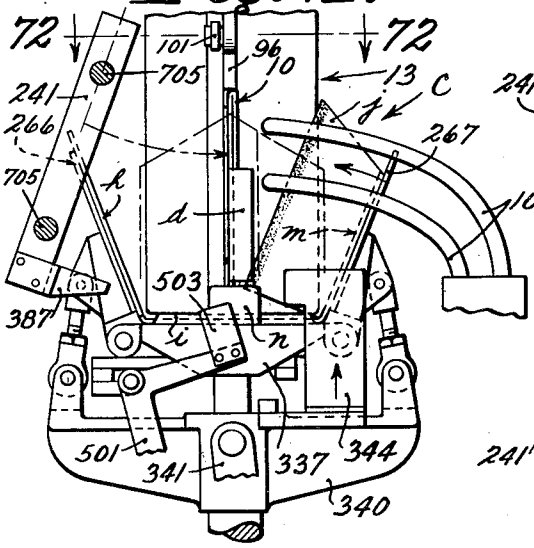

Fig. 72.

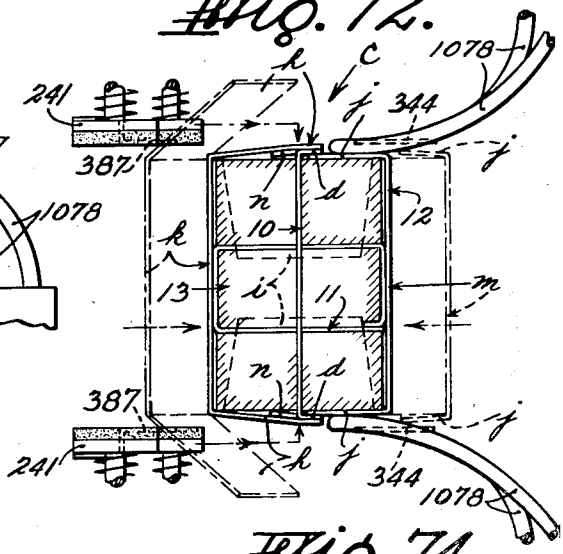

Fig. 73.

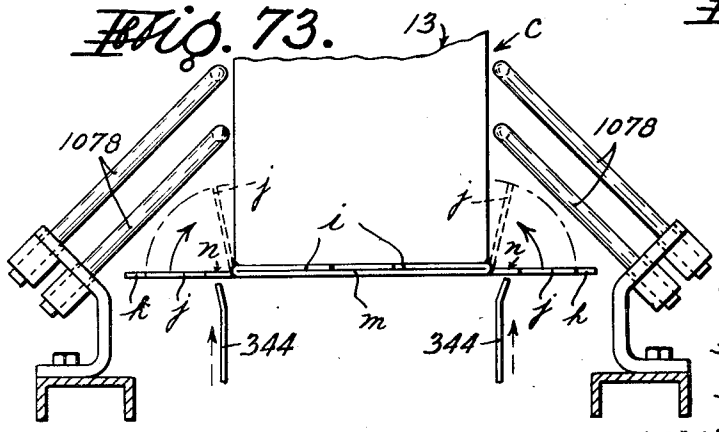

Fig. 74.

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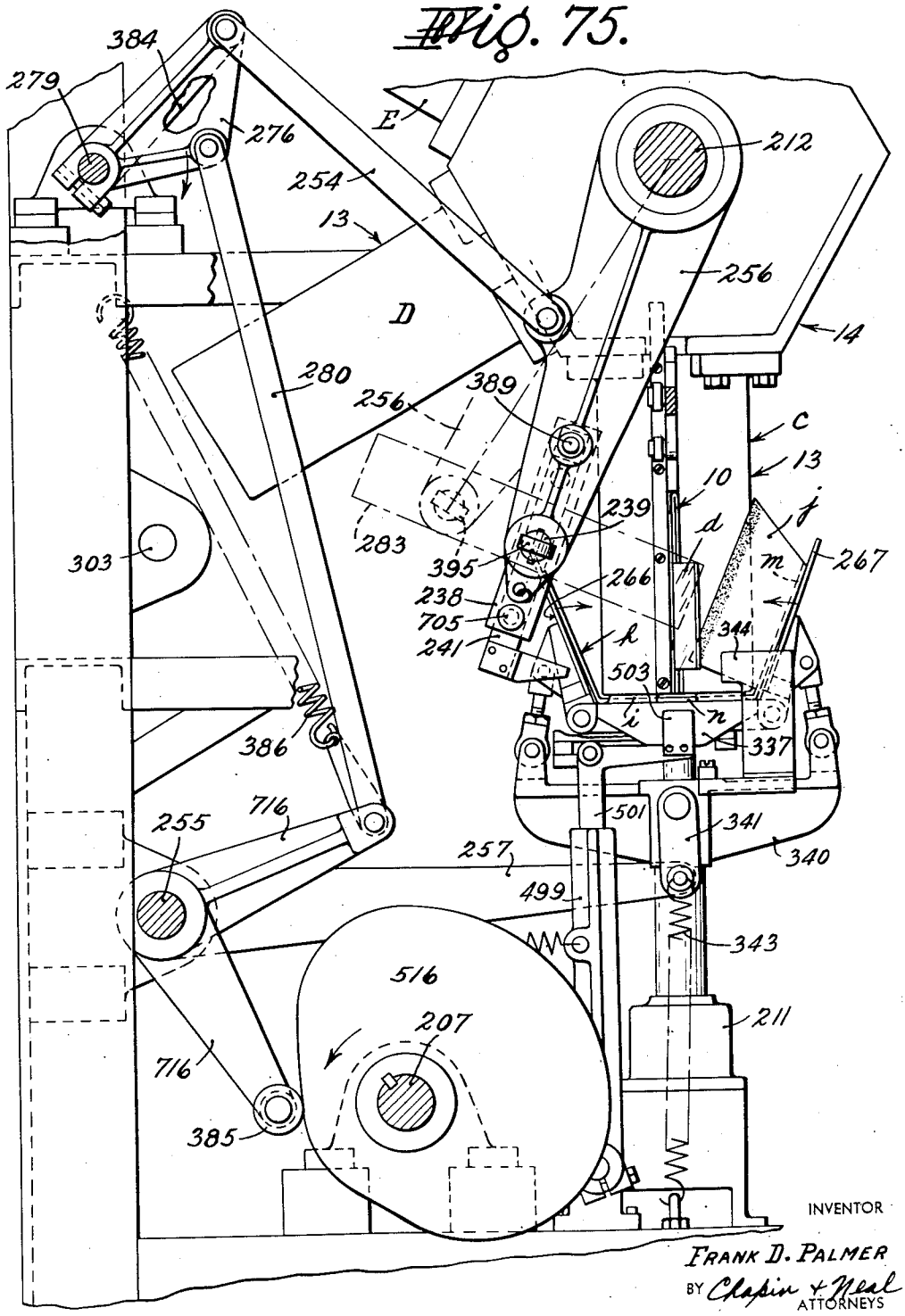
Fig. 75.



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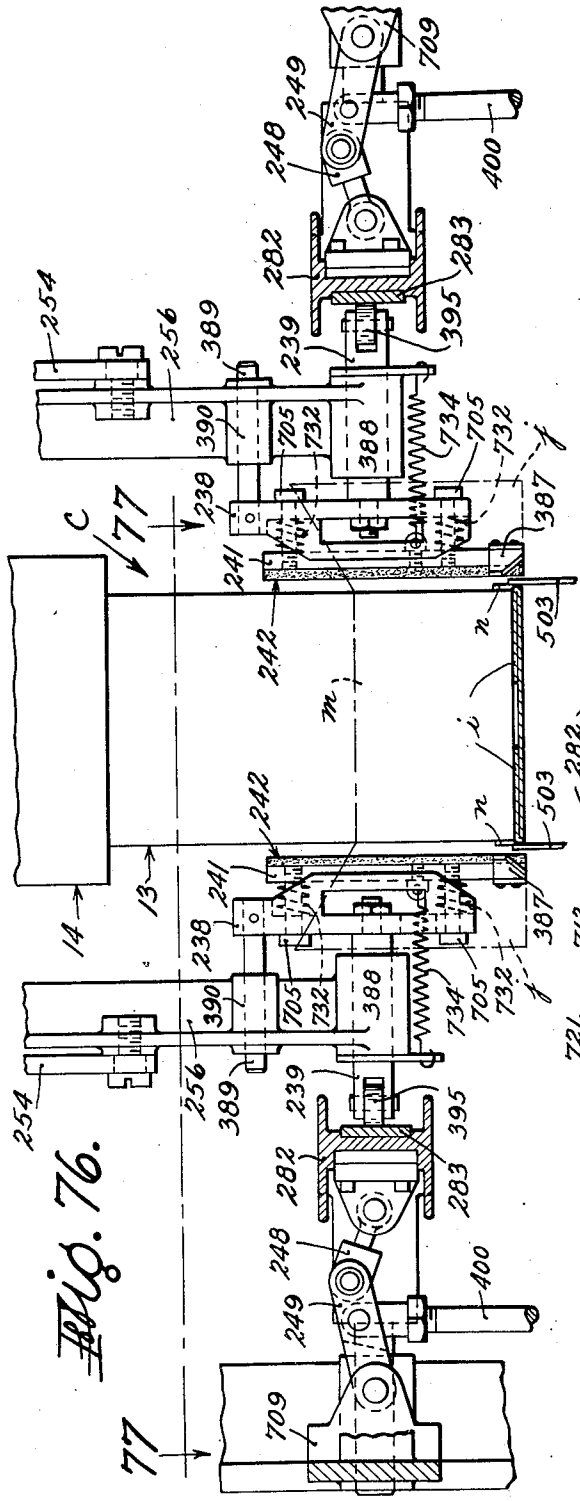

Fig. 76.

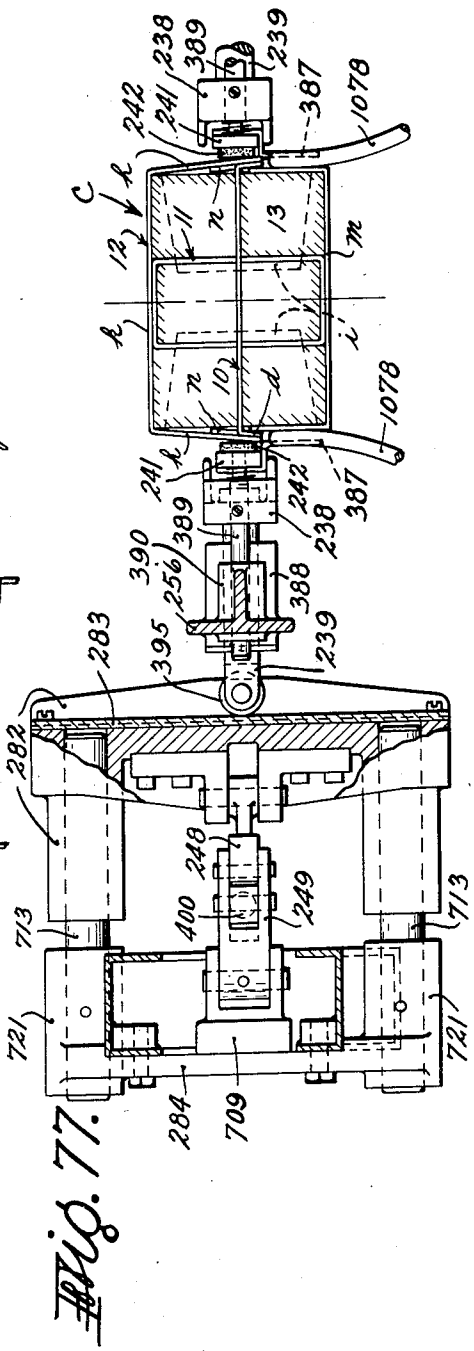

Fig. 77.

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Fig. 78.

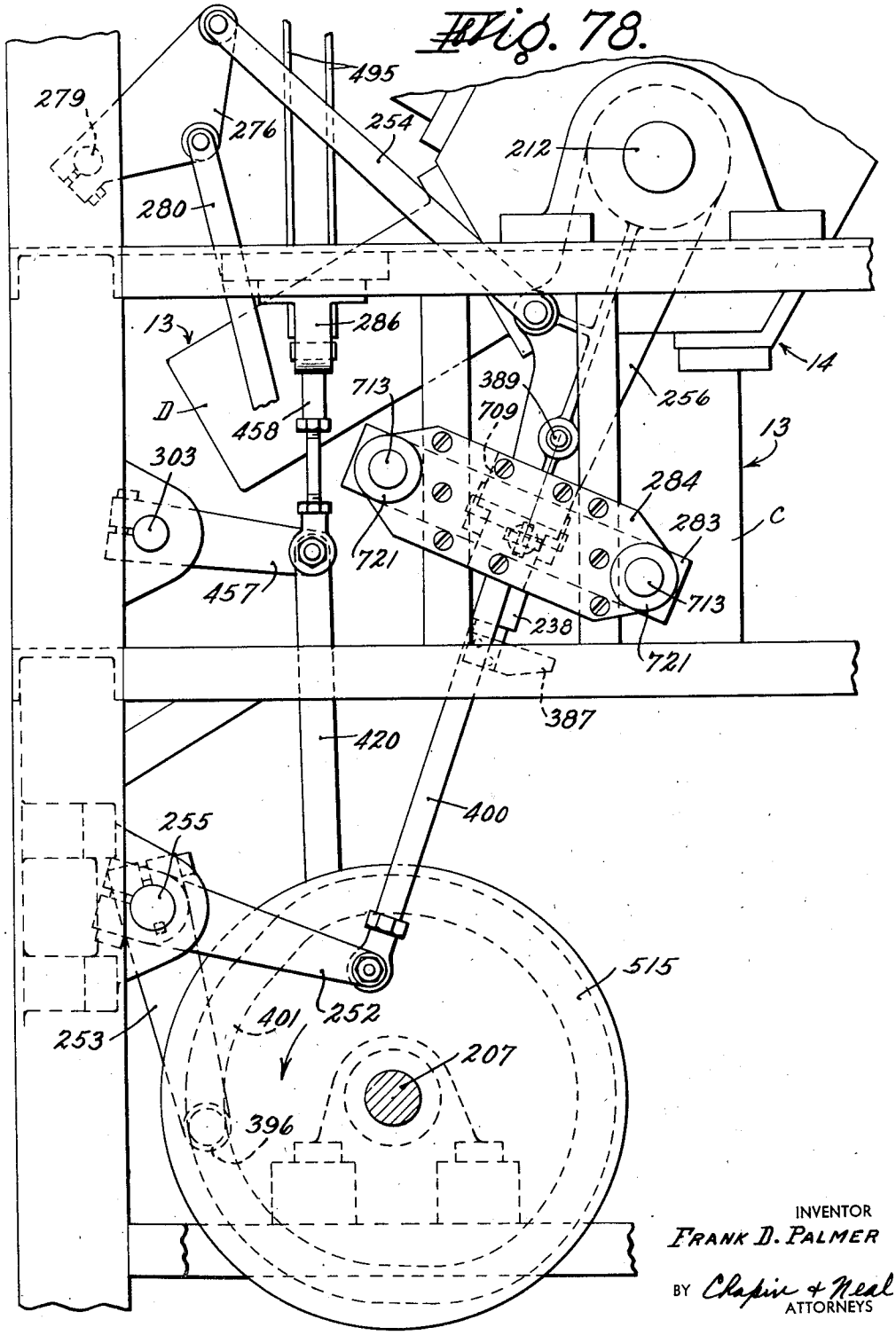

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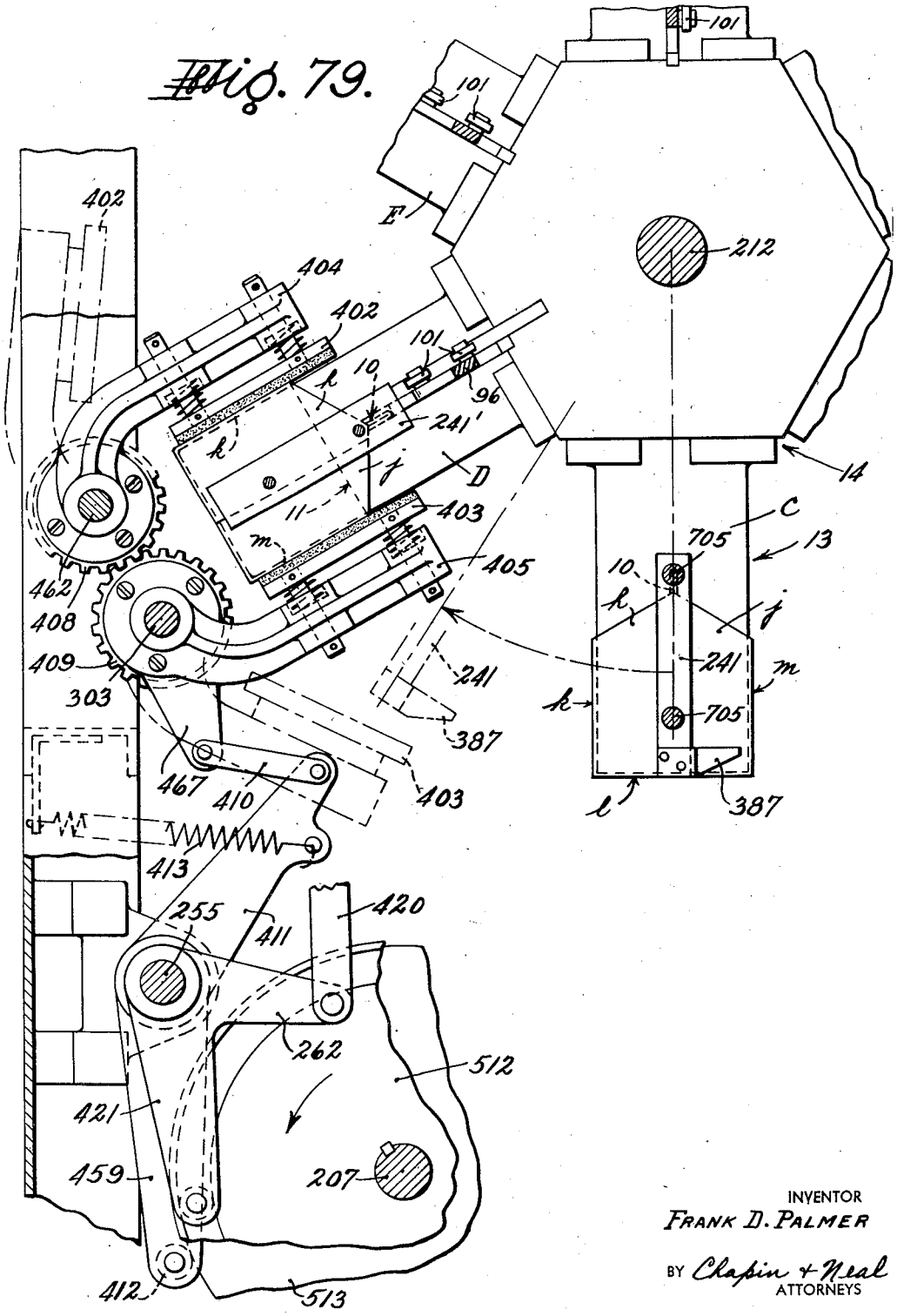
Fig. 79.



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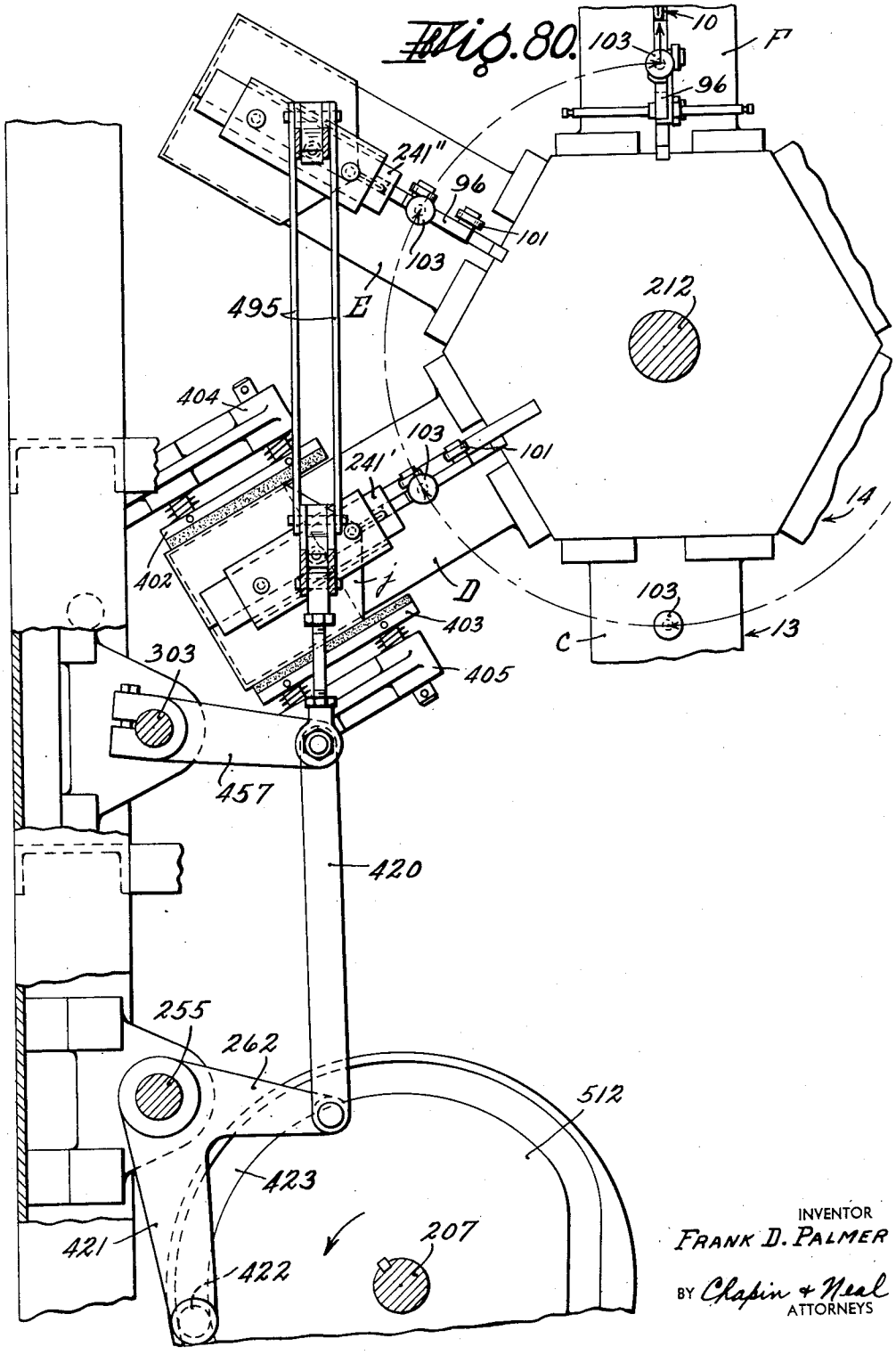

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Fig. 81.

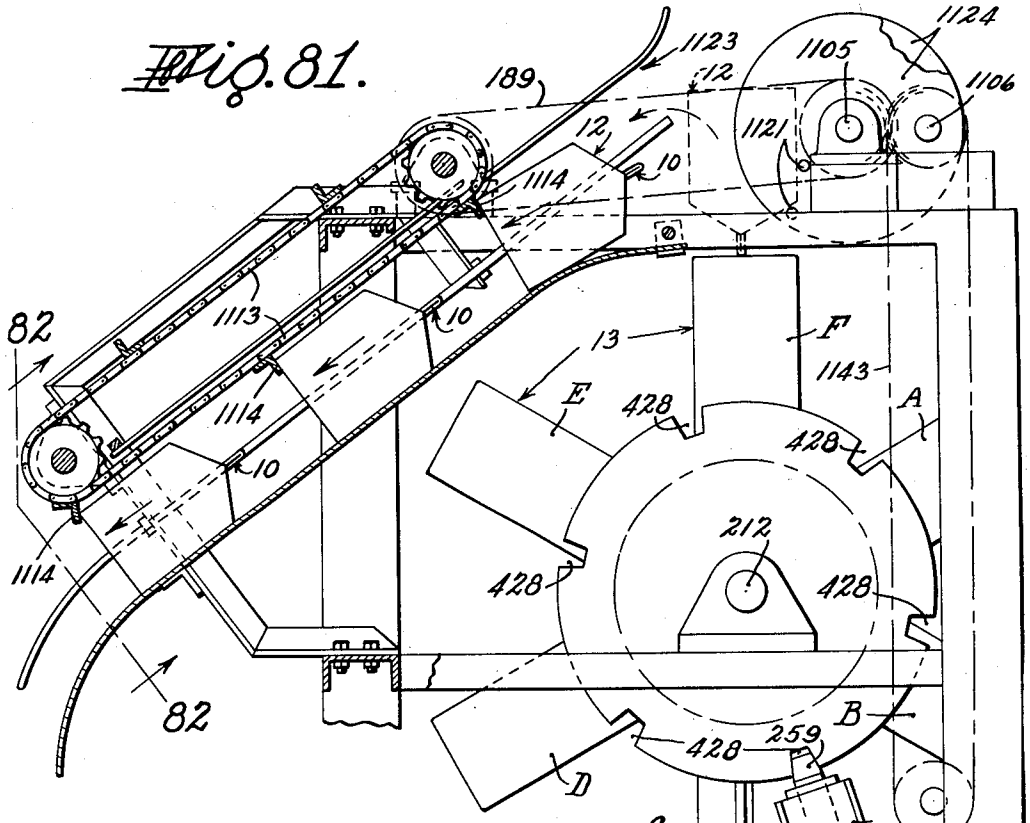
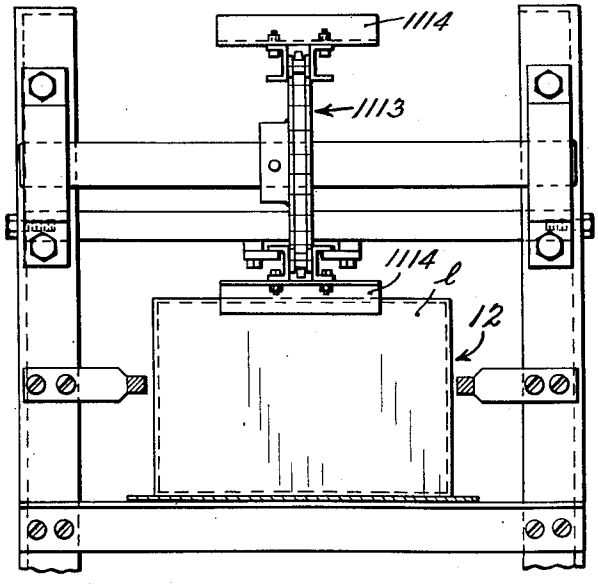


Fig. 82.



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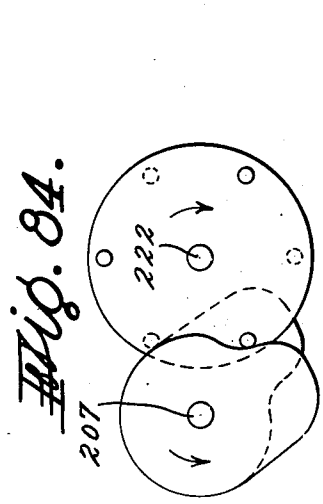

Fig. 84.

Fig. 83.

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Fig. 86.

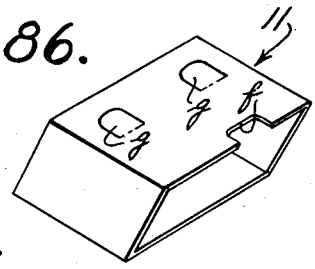


Fig. 87.

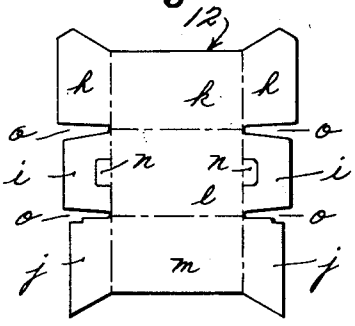


Fig. 85.

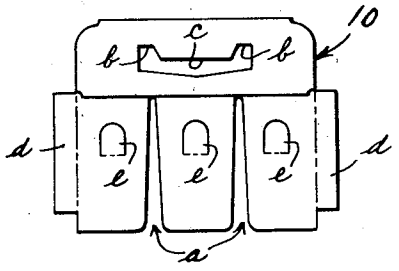
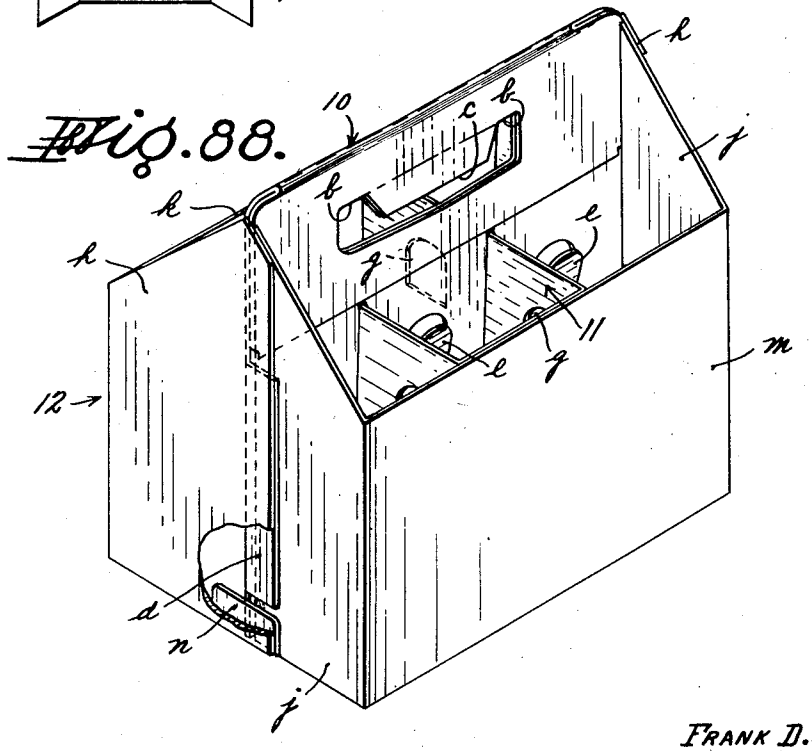


Fig. 88.



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United States Patent Office 2,789,481 Patented Apr. 23, 1957

2,789,481

CARRIER CARTON ASSEMBLING MACHINE

Frank D. Palmer, Winter Park, Fla., assignor to Package Machinery Company, East Longmeadow, Mass., a corporation of Massachusetts

Application November 17, 1953, Serial No. 392,608

12 Claims. (Cl. 93—37)

This invention relates to a machine for assembling bottle carriers and more particularly carriers of the type disclosed in co-pending application Serial No. 292,639, filed June 10, 1952, now Patent No. 2,693,298.

The general object of the invention is to provide a machine capable of receiving the several elements, making up the carrier, in blank form and successively setting up the elements and assembling and securing them together in complete carrier form.

A more specific object is to provide means for supporting one or more partition members in a predetermined position together with means to fold a preformed shell forming blank, having opposed wall forming members, around the so-supported partition or partitions to bring portions of the latter into contact with the opposed wall members of the shell for connection thereto.

Other and further objects residing in the details of construction and their combination will be made apparent in the disclosures of the accompanying drawings and in the following specification and claims.

In the accompanying drawing which shows a machine illustratively embodying the invention,

Fig. 1 is a side elevational view of a machine embodying the invention;

Fig. 2 is an end elevational view, parts being omitted, looking from the left in Fig. 1;

Fig. 3 is a detail view of the handle inserter and ejector portion of the machine, similar to Fig. 1 but on a larger scale;

Fig. 4 is a detail view showing the handle inserter and ejecter mechanism;

Fig. 5 is a fragmentary longitudinal sectional view showing the means for feeding the handle element from the handle supply to the mandrel at station A of Fig. 3;

Fig. 6 is a top plan view of the structure shown in Fig. 5;

Fig. 7 is a sectional view substantially on line 7—7 of Fig. 5;

Fig. 8 is a sectional view substantially on line 8—8 of Fig. 5;

Fig. 9 is a sectional view substantially on line 9—9 of Fig. 5;

Fig. 10 is a sectional view substantially on line 10—10 of Fig. 5;

Figs. 11, 12 and 13 are fragmentary views similar to Fig. 5 but showing successive steps in feeding the handle member to the mandrel;

Fig. 14 is a detail sectional view similar to Fig. 10 showing the folders in a different position;

Fig. 15 is a sectional view substantially on line 15—15 of Fig. 14;

Fig. 16 is a view similar to Fig. 15 with parts in a different position;

Fig. 17 is a sectional view substantially on line 17—17 of Fig. 3;

Fig. 18 is a view similar to Fig. 17 but showing the mandrel in section;

Fig. 19 is a side view of one of the mandrels with the gripped handle preparatory to insertion;

Fig. 20 is an entrance end view, with parts in section, of one of the mandrels, substantially on line 20—20 of Fig. 19;

Fig. 21 is a sectional view substantially on line 21—21 of Fig. 17;

Fig. 22 is a view similar to Fig. 19 on a larger scale with parts broken away;

Fig. 23 is a view similar to Fig. 22 but with the handle positioned in the mandrel;

Fig. 24 is a generally top plan view of the sleeve feeding mechanism showing its relative position with respect to the mandrel;

Fig. 25 is a detail view of the sleeve setting up linkage;

Fig. 26 is an elevational view of the mechanism shown in Fig. 24;

Fig. 27 is a sectional detail on line 27—27 of Fig. 26;

Fig. 28 is a detail plan view showing the sleeve partially advanced;

Fig. 29 is a side elevation showing the sleeve in fully advanced position ready for opening up;

Fig. 30 is a detail plan view of the sleeve positioned as in Fig. 29 preparatory to opening;

Fig. 31 is a detail view showing the sleeve partially opened;

Fig. 32 is a detail view showing the sleeve tab folders advanced;

Fig. 33 is a detail view similar to Fig. 31 showing the sleeve opened and ready for insertion in the mandrel;

Fig. 34 is a detail view similar to Fig. 26 but showing the mounting for the hold down roller;

Fig. 35 is a detail plan view of the mechanism for inserting the sleeve in the mandrel;

Fig. 36 is a section substantially on line 36—36 of Fig. 35;

Fig. 37 is a section substantially on line 37—37 of Fig. 36;

Fig. 38 is a plan view of the shell hopper;

Figs. 39, 40 and 41 are diagrammatic sectional views showing the steps of separating a blank from the hopper;

Fig. 42 is a front elevation of the structure of Fig. 38;

Figs. 43 and 44 together form a sectional view, on a larger scale, substantially on line X—X of Fig. 38;

Fig. 45 is a section on line 45—45 of Fig. 42;

Fig. 46 is a detail central view on the line *x*—*x* of Fig. 38 showing the stripper mechanism in blank releasing position;

Fig. 47 is a sectional view on line 47—47 of Fig. 46;

Fig. 48 is a side elevational view of the folding and gluing mechanism between the shell hopper and mandrel;

Fig. 49 is substantially a plan view of the structure shown in Fig. 48;

Fig. 50 is a side elevational view partly in section of the center and end flap folder;

Fig. 51 is a view similar to Fig. 50 but showing the drive for the flap pressure plate;

Fig. 52 is a section on line 52—52 of Fig. 50;

Fig. 53 is a section on line 53—53 of Fig. 50;

Fig. 54 is a substantially plan view of the center part of the mechanism shown in Fig. 53 showing the center flap holding mechanism;

Fig. 55 is a side detail view of the means for raising the forward flaps;

Fig. 56 is a sectional view substantially on line 56—56 of Fig. 48;

Fig. 57 is a transverse sectional view similar to Fig. 56 but showing the forward flap raising means;

Fig. 58 is a detail perspective view of the forward flap raising means;

Fig. 59 is a side elevational view partly in section showing the gluing mechanism;

Fig. 60 is a plan view of the blank detecting means;

Fig. 61 is a section substantially on line 61—61 of Fig. 60;

Fig. 62 is a detail side view of the blank detecting mechanism;

Fig. 63 is a detail plan view of the detector latch;

Figs. 64, 65, and 66 are plan views showing successive steps in the delivery of the shell blank to the mandrel;

Fig. 67 is a detail elevational view showing the means for operating the flap holding fingers;

Fig. 68 is a view showing the initial position of certain of the shell blank folding members;

Fig. 69 is a plan view of the structure shown in Fig. 68;

Fig. 70 is a view similar to Fig. 68 but showing the folders advanced;

Fig. 71 is a detail view showing additional folding members;

Fig. 72 is a sectional view substantially on line 72—72 of Fig. 71;

Fig. 73 is a view of certain of the folders looking from the right of Fig. 71;

Fig. 74 is an elevational detail view showing the tab tucking mechanism;

Fig. 75 is a detail view of the means actuating the forward end flap folding and pressing arm;

Fig. 76 is a view looking from the right of Fig. 75;

Fig. 77 is a view taken substantially on line 77—77 of Fig. 76;

Fig. 78 is a view similar to Fig. 75 showing the presser actuating means;

Fig. 79 is a detail view of the side wall pressers;

Fig. 80 is a view similar to Fig. 79 but showing the seam pressers at stations D and E;

Fig. 81 is a detail view showing the discharge conveyor;

Fig. 82 is a sectional view on line 82—82 of Fig. 81;

Fig. 83 is a diagrammatic view of the drive mechanism of the machine;

Fig. 84 is also a diagrammatic detail of a portion of the drive mechanism;

Fig. 85 is a detail view of the handle portion member of the carrier;

Fig. 86 is a detail view of the sleeve member;

Fig. 87 is a detail view of the shell blank; and

Fig. 88 is a detail view of the parts shown in Figs. 85, 86 and 87 as assembled by the machine to form a carrier.

As described in detail in said co-pending application Serial No. 292,639, now Patent No. 2,693,298, the type of bottle carrier adapted to be assembled by the machine of the present invention comprises a combined handle and partition member as generally indicated at 10 in Fig. 85, a sleeve generally indicated at 11 in Fig. 86, and a shell or body member generally indicated at 12 in Fig. 87. These elements are successively fed to and assembled on each of a plurality of mandrels generally indicated at 13 carried by a rotating turret generally indicated at 14 (Figs. 1 and 3).

As shown in Figs. 1 and 5, the handle-partition members 10, hereinafter for convenience referred to as the handles, are fed from a handles supply mechanism generally indicated at 15, the sleeves 11 are fed from the sleeves supply mechanism generally indicated at 16, and the shells 12 are fed from the shell supply mechanism generally indicated at 17. The handles are fed from a magazine 18 which comprises spaced plates 19 which engage in the partition receiving slots *a* of the handles (Fig. 7). The path followed by the handles from the magazine 18 to the mandrel 13 at position A of Fig. 1 is shown in Fig. 5.

Referring to the latter figure the lowermost handle 10 is withdrawn from the magazine 18 by a feeding member 20 provided with a pair of spaced fingers 21 which respectively engage in the opposite ends *b* of the handle opening of the handle member and a pair of fingers 22 which engage the central portion *c* of said opening (as shown in Figs. 6 and 9) to draw the handle from the magazine as shown in Fig. 5. The member 20 carries the handle over spaced side plates or rails 23 and beneath guide members 24 in Figs. 6 and 7. Member 20 is carried by spaced disks or flanges 25 (Fig. 9), on rotary carrier 26 rotatably mounted on a shaft 27 driven by a chain 1162 from shaft 192 later referred to. Secured outwardly on a rock shaft 28 mounted on said flanges are a pair of pusher fingers 29. Fixed to shaft 28 is an arm 30 carrying cam roll 31 engaging an adjustable cam 32 fixed to the frame by a bracket 33. As the leading edge of the handle reaches the forward end of the guide plates 24 (as shown in Fig. 5) the leading edge is entered between upper plate 34 and a lower plate 35.

As shown in Fig. 12, as the fingers of member 20 disengage the handle opening, the fingers 29 are swung upwardly by cam 32 to the dotted line position of Fig. 12 where the fingers engage the trailing edge of the handle member 10 and advance it between the plates 34 and 35 as shown in Fig. 13. Cam roll 31 is held in contact with cam 32 by a spring 36 connected between the roll and a fixed pin 37 carried by one of the flanges 25.

Referring to Figs. 5, 6, 8 and 10, the upper plate 34 is mounted for vertical reciprocation by means of pins 38 fixed to and extending upwardly from the upper face of the plate. The pins 38 extend through and are guided in bores 39 formed in a cross bar 40. The upper ends of pins 38 are connected by links 41 to arms 42 fixed to a rock shaft 43. Shaft 43 is oscillated by a cam 44 secured to shaft 27 and engaged by a cam roll 45 carried by an arm 46 fixed to shaft 43 and held in engagement with the cam by spring 47. Upper plate 34 is moved upwardly to admit the handle member freely between plates 34 and 35 under the propulsion of fingers 29. As best shown in Fig. 13 the fingers 29 leave the handle member 10 against movable stop members 48 fixed to a rock shaft 49 which also carries an arm 50 to which is freely pivoted a pusher 51 which engages the central portion *c* of the handle opening as the handle comes to rest against stops 48 and is released by fingers 29.

Referring now to Figs. 8, 10 and 14, the upper plate 34 is moved downwardly by its cam to clamp the handle member 10 against lower plate 35. Substantially simultaneously with the downward movement of the upper plate 34 elongated folders 52 and 53 are swung upwardly to fold the edge flaps *d* of the handle member upwardly and against the edge of upper plate 34, as shown in Figs. 10 and 14, the edges of plate 34 being beveled as indicated at 54 to cooperate with the folders. The folders 52 and 53 are affixed to respective rock shafts 55 and 56.

As best shown in Fig. 8, rock shaft 55 carries a gear 57 which meshes with a gear 58 fixed to a stub shaft 59 which also carries a sprocket 60 which is connected by a sprocket chain 61 with sprocket 62 fixed to rock shaft 56 for simultaneous operation of the latter shaft from shaft 55.

Rock shaft 55 (see Fig. 10) carries an arm 63 which is connected by a link 64 to one arm of a bell crank 65 pivoted in the bracket 66. The other arm of the bell crank 65 is connected by a link 67 to one arm 68 of a bell crank, pivoted at 69, the other arm 70 of which carries a cam roll 71 (Figs. 5 and 6) held in contact with a cam 72, fixed to shaft 27, by a spring 73.

Substantially simultaneously with the folding of the edge flaps by the folders 52—53 the three central tabs *e* are folded backward by three hook shaped fingers 75,

Figs. 5, 10, 14 and 15, secured to a rock shaft **76**. Upper plate **34** and lower plate **35** are provided respectively with openings **77** and **78** to permit passage of the hooks. To effect oscillation of shaft **76**, said shaft is provided with an arm **79** connected by a link **80** to one arm **81** of a bell crank mounted on pivot shaft **82**, the other arm **83** of which (Figs. 5 and 9) carries intermediate its ends, a cam roll **84** held in engagement with a cam **85**, fixed to shaft **27**, by a spring **86**.

Upon completion of the folding of the edge flaps *d* and tabs *e* by folders **52—53** and hook fingers **75** respectively, as shown in Figs. 14 and 15, the hook fingers are retracted as shown in Fig. 16, the folders **52—53** returning to an intermediate position (shown in Fig. 10) permitting the flaps *d* to spring back to vertical positions where they are held and guided by members **52—53** as the handle member is advanced to and drawn into the mandrel as will now be described.

As previously pointed out, and as shown in Figs. 13, 15 and 16 the forward edge of the handle member **10** rests against stop members **48** and pusher **51** is engaged in the handle opening. As upper plate member **34** is lifted to release the handle member, rock shaft **49** is rocked from the position of Figs. 13 and 15 to the position of Fig. 16 to simultaneously raise the stops **48** and advance the pusher **51** to move the handle member toward the mandrel. Shaft **49** is rocked by means of an arm **87** fixed thereto (Fig. 5) and connected by a link **88** to one arm **89** of a bell crank, the other arm **90** of which carries, intermediate its ends, a cam roll **91** held against a cam **92**, fixed on shaft **27**, by a spring **93**. As the handle member is advanced by pusher **51** the tabs are held in rearwardly folded position by the upper plate **34** as shown in Fig. 16.

The pusher **51** moves the leading edge of the handle member between spring fingers **95**, as shown in Fig. 5, and against a cross bar **96** slidably mounted in the mandrel **13**, as shortly to be described. The pusher **51** and bar **96** move together to the position shown in Figs. 16 and 18, at which time spring actuated catches **97** pivoted to the bar and previously held in the open position of Fig. 5 by a cam roll **98** riding on a fixed cam **99** within the mandrel, are inserted in the ends *b* of the handle opening as the roll moves off the cam, as shown in Fig. 16. At this point shaft **49** is rocked to return pusher **51** and stops **48** to their original position and the handle member is drawn into the mandrel by the catches **97**, as shown in Fig. 23.

As is best shown in Figs. 17 through 23, each bar **96** slides in the transverse slot **100** formed in the mandrel and has four guide rollers **101** supported on portions extending outwardly from the sides of the mandrel. Each mandrel is provided with a bar **96** and associated parts. The portions **101** of the bars positioned in diagrammatically opposed mandrels are connected by springs **102** which constantly bias the bars to the bottom of their slots. In the handle receiving position A of the mandrels, as shown in Fig. 18, rolls **103** carried by the bars **96** are held in channeled brackets **423** carried by slides **671** reciprocable in guideways **414** supported by plates **676** on the frame, Figs. 2, 3, 4 and 18. As shown in the latter figure each roll has been guided onto the lower web of the adjacent channel **423** from an arcuate guide member **680** from the previous mandrel station F, as later more fully described.

The slides **671**, which carry the respective channel brackets **423** are connected by a link **104**, one of which is shown in Fig. 4, to the free end of triangular shaped levers **670** freely pivoted on the shaft **677**. Each lever **670** is connected by an adjustable link **105** to an arm **666** fixed to a rock shaft **679**.

An arm **106** fixed to shaft **679** is connected by a link **107** to one arm **108** of a bell crank pivoted at **109**, the other arm **110** of the bell crank carrying a cam roll **111** which engages in a cam groove **112** in cam **509** secured

to the constantly rotating shaft **27**. Under the action of cam **509**, bracket **423** is moved along guideways **414** to move the bar **96** radially inwardly of the mandrel to draw the handle member inwardly of the mandrel as shown in Fig. 23, with the side flaps *d* of the handle members extending outwardly from the sides of the mandrel, as indicated in dotted lines in Figs. 18 and 21, and positioned at an angle due to the previous folding operation, and the tabs *e* are free to return to a partially outstanding position as shown in Figs. 23 and 37.

Elongated members **114** (Fig. 21) engage the edge portions of the handle member **10** to press the latter firmly against the adjacent wall of the mandrel under the action of springs **115**. With the handle member thus held within the mandrel, the mandrel turret is indexed to bring the so-loaded mandrel to position B of Fig. 3, in which position the sleeve member **11** is inserted in the mandrel in assembled position with respect to the handle member.

Referring to Figs. 24 and 26 the flattened partition forming sleeve members **11** are stacked in a magazine **1025** offset to one side of the end face of the mandrel at position B by a stripper member **125** fixed to the end of a rack **116** driven by a gear **155** on a stub shaft **118**. The stripper member **125** is reciprocated by means of a crank **127** fixed to cam shaft **119** driven through bevel gears **120** from shaft **192**, later referred to, and pivotally connected to a rack link **121** which engages a gear **126** fixed to stub shaft **118** which also carries gear **155** meshing with rack **116** which carries the stripper member **125**. The ends of the sleeves, as they advance from the magazine, are supported on guides **122** and are advanced by the stripper member **125** against a stop **123**. As the sleeve advances towards the stop **123** its outer edge passes beneath a roll **124**, as shown in Fig. 28, and as the sleeve engages stop **123** (Fig. 29) roll **124** passes through slot *f* formed in an upper wall of the sleeve, as shown in Figs. 29 and 30, and into engagement with the lower wall of the sleeve. Fixed to a cross shaft **128** extending transversely of the path of movement of the sleeves is a pair of setting up arms having upwardly extending fingers **129** at their free ends. As the sleeve comes to rest against stop **123** fingers **129** lie at the rear of the trailing edge of the sleeve, as shown in Fig. 29. As the stripper member **125** returns to its original position the setting up arms or fingers **129** are swung upwardly as shown in Fig. 31 to bring the sleeve into rectangular set up position, as shown in Figs. 32, 33 and 34, the roll **124** holding the lower wall member of the sleeve in place during the setting up operation (Fig. 31). Fingers **129** are operated as shown in Fig. 25. Cross shaft **128** carries an arm **130** connected by a spring link **131** to one arm **132** of a bell crank, the other arm **133** of which carries a cam roll **134** engaging cam **159** fixed to shaft **119**.

As shown in Fig. 25 link **131** consists of a tubular member **1088** in which the rod **1036** telescopes for sliding movement within the tube, limited by pin **135** carried by rod **1036** and engaging in slot **136** formed in member **1088**. A spring **1089** surrounding rod **1036** is pressed between the end of member **1088** and a collar **137** fixed to rod **1036** and normally maintains pin **135** in the outer end of slot **136**, the spring **1089** yielding in the event any excessive load is placed on the arms **129** in the setting up operation. A spring **1040** maintains roll **134** in contact with cam **159**. As the sleeve is swung to set up position its passes under a spring detent pin **138** which holds the sleeve in set up position upon the return of the arms **129**, the upper portion of the set up sleeve engaging a guide and stop member **139** (Figs. 31 through 35).

As shown in Figs. 26, 28, 29, 30, 31, and particularly 32, tabs *g* formed in the walls of the sleeve **11** are opened by a pair of plungers reciprocably mounted in a guide member **1001**. The rear ends of the plungers **140** are connected by a cross head **141** to which is pivoted a link **142** pivotally connected at its other end to one arm **143** of a bell crank pivoted on pivot shaft **144**. The other arm **145** of the bell crank carries a cam roll **146** engaging a

cam 158 fixed on shaft 119. A spring 147 maintains roll 146 against cam 158. As the plungers 140 are advanced by cam 158 they successively engage the tabs *g* on the opposite side walls of the sleeve, as shown in Fig. 32, to break the tabs open at substantially right angles to the walls to which they are attached.

As the tab breaking plungers 140 are retracted, the mandrel in which the handle member was inserted at station A arrives at station B and the set up sleeve is moved into the slots 148 of the mandrel and into the slots *a* of the partition portion of the handle member 10, as shown in Figs. 24, 35, 36 and 37, by a pusher 149. Pusher 149 comprises a plate 150 carried by an arm 151 extending from a head 152 slidably mounted in a channel 153 formed in a bracket 1012, as shown in Figs. 24 and 26. To reciprocate pusher 150 to insert the set up sleeve into the mandrel, head 152 is connected by a link 154 to one arm 156 of a bell crank pivoted to the bracket 157 extending from guide member 1001, the other arm 163 of the bell crank being connected by a link 164 to the one end of a lever 165, the other end of which is pivoted on pivot shaft 144. Lever 165 intermediate its ends carries a cam roll 166 engaging a cam 160 fixed to cam shaft 119. A spring 1039 with its opposite ends connected respectively to member 1001 and lever 165 keeps roll 166 against cam 160.

As best shown in Fig. 26 sleeve pusher 150 carries an adjustably mounted shoe 167 which upon the return stroke of pusher 150 (Figs. 28 and 30) serves to guide the incoming sleeve, which is being fed forward as the pusher is returned, towards the stop 123. In the fully retracted position of pusher 149 (Fig. 36) the shoe 167 has cleared the sleeve so that it does not interfere with the setting up of the sleeve.

Referring to Figs. 38 and 42 the shell blanks 12 are stacked in a magazine 169. The edge portions of side flap *h* of the lowermost blank rest upon opposed pairs of rolls 558, and the edge portions of side flaps *j* rest upon opposed rolls 1158. Vertical wing members 584 are freely pivoted at 170 to the side walls of the magazine and engage in the slots *o* formed between flap *h, i, j* of the blanks. The rear and forward end portions of the lowermost blank are alternately supported and released respectively by a movable rear shelf 964 and a movable forward shelf 580 as the body of the stack is being reciprocated, by forward and rear pushers 581 and 586 respectively, to separate the lowermost blank from the stack as will now be described with reference to Figs. 39, 40 and 41.

As shown in Fig. 39 the forward edges of the stack of blanks 12 are in engagement with fixed forward stops 603, and the rear pusher 586 is in its extreme advanced position and in engagement with the rear edges of the stack of blanks with the exception of the lowermost blank, the rear edge of which is engaged by a fixed separator blade 588. The pusher 581 with shelf 580, which are secured together as a unit, are in extreme retracted position out of contact with the blanks. From the position of Fig. 39 pusher 581 and shelf 580 move toward the forward edge of the blanks, pusher 581 engaging the stack of blanks above the lowermost blank. As the pusher 581 continues its movement, pusher 586 retreats to the position of Fig. 40, the forward edge of the lowermost blank, which is held against movement by blade 588, enters a recess 171 formed in pusher 581, the forward edge of the blank resting on shelf 580 and the rear edge on shelf 964. Thus the stack of blanks is moved rearwardly over the lowermost blank which is offset from the stack as shown in plan in Fig. 38. The rear shelf 964 is then withdrawn as shown in Fig. 41 freeing the rear edge of the lowermost blank, and both pushers 581 and 586 substantially simultaneously with the withdrawal of shelf 964 start their return toward the position of Fig. 39, the retreat of shelf 580 freeing the forward edge of the blank. As the lowest blank is thus separated from the stack, fingers 557, shortly to be described, carried by rolls 558 and 1158 engage the side edges of the blank to complete the separation of the lower blank from the stack. After the separated lowermost blank clears the retracted shelf 964 the latter is returned to the position of Fig. 39.

It will be understood that the blanks are not as precisely confined between the pushers 581 and 586 as is indicated in the diagrammatic showing of Figs. 39, 40 and 41. There is sufficient tolerance in the engagements of the various parts with the blanks to assure free and uninterrupted handling of the blanks. The wings 584 swing freely with the shifting stack and help to maintain stack alignment. The lower edges of the wings 584 are provided with forwardly and downwardly directed fingers 172 (Figs. 38, 45 and 46), which extend below the lowermost blank and guide the latter as it is offset from the stack and separated therefrom.

As best shown in Figs. 38 and 44 pusher 586 is secured to a rod 173 guided in a boss 598 carried by the adjacent end wall 552 of the magazine. A link 174 is pivoted at one end to a collar 593 secured to rod 173 and at the other end to one arm 592 of a bell crank, the other arm 175 of which is connected by a link 176 to a crank 567 fixed to the end of shaft 966 which also carries one of the rolls 1158. Shaft 966 and its companion shaft which carries the other roll 1158 are driven from a shaft 601 by bevel gears 600A and 600D, shaft 601 in turn being driven from a shaft 599 through bevel gears 600C. Shaft 599 is driven through bevel gears 600B from a driven shaft 600. Shaft 559 and its companion shaft which carry rolls 558 are driven from shaft 600 through bevel gears 600E and 600F. Shaft 601 carries a cam 826 engaged by a cam roll 177 carried by one arm 830 of a bell crank pivoted at 846 to a bracket 590, the other arm 178 of the bell crank being connected by a link 179 to shelf 964 which is guided in its movement by bracket 590. A spring 960 maintains cam roll 177 in contact with cam 826.

Referring to Figs. 38 and 43 pusher 581 and shelf 580 are shown as carried by a cross head 578 fixed to the forward ends of parallel bars 577 suspended from parallel links 837 and 576 from a bracket 573 supported from the front wall member of the magazine. The links 576 are connected by a rod 182 carrying a cam roll 184 which is held against a cam 602 by spring 858. Cam 602 is carried by the power shaft 600 and thus advances and retracts pusher 581 and shelf 580, the forward and back motion of 581 and 580 being acompanied by a slight downward movement which is insignificant in the operation of the device and which is not indicated in Figs. 39, 40 and 41.

As best shown in Fig. 46 the blank supporting rolls 558 and 1158 are each provided with stripper blades 557 which engage the edges of the separated lower blank and bowing it downwardly, assuring prompt clearance for the return of shelf 964 and driving the blank free of the magazine.

Referring to Figs. 42 and 43, as the lowermost blank is driven from the hopper it is guided by side plates 597 and 1079 onto an intermittently operated conveyor chain 1100 where it is picked up by pusher lugs 185 on the chain and advanced beneath a clamping plate 842. The leading edge of the blank is guided beneath the plate 842 by guide fingers 827 and 1099. Plate 842 is carried by a vertical post 840 pivoted between arms 848, the other end of arms 848 being fixed to a rock shaft 856 mounted in bracket 573. An arm 850 is bolted or otherwise fixed to one of the arms 848 and carries a cam roll 189 which engages a cam 851 fixed to shaft 600. Cam roll 189 is held against cam 851 by a spring 852 connected to a cross piece 844 extending between the arms 848 and a downwardly extending bracket 841 fixed to bracket 573. Bracket 841 carries opposed guide rolls 191 which engage opposite sides of a vertical guide block

195 carried by the plate 842. Plate 842 engages the rear panel *m* of the blank.

As shown in Figs. 49, 50, 51 and 52 wing plates 1082 are hinged to the ends of plate 842 and extend over the rear end flaps *j*. Flap folders 329 fixed to rock shafts 328 are rocked upwardly, as shown in Fig. 52, while the blank is held between the plate 842 and plate 433 which extends between the conveyor chains. Folders 329 force the flaps *j* upwardly against the resistance of wing members 1082 which are biased toward an extended position by hinge torsion springs 197.

As shown in Fig. 52, folders 329 bend the flaps *j* sharply around the edges of plate 842 to "break" the creases by which the flaps are connected to the body of the blank, the folders 329 then retreat, wings 1082 returning the flaps to extended position but biased upwardly to the breaking operation.

As shown in Fig. 49 folder shafts 328 are connected through bevel gears 326 to a shaft 327 which carries a pinion 331 (Fig. 50) which meshes with a rack 333, one end of which is connected to arm 335 of a bell crank pivoted at 314, the other arm of the bell crank 184 carrying a cam roll 185 which is held in engagement by a spring 186 with a cam 511 fixed on a continuously rotating cam shaft 315.

Forwardly of plate 842 and folders 329 shafts 328 carry a second set of folders 330 as shown in Figs. 49, 50 and 53. As shown in the latter figure, folders 330 acting slightly in advance of folders 329 (Fig. 52) engage central end flaps *i* and fold them over onto the body of the blank, as shown in dotted lines in Fig. 53, and beneath a presser plate 308. Plate 308 is carried at the ends of rods 309 extending downwardly from a cross beam 306 which is carried by vertical rods 310 vertically reciprocating in brackets 316 (Figs. 51 and 53). The lower ends of rods 310 are connected by links 311 to arms 313 fixed to rock shaft 314. Shaft 314 carries an arm 312 provided with a cam roll 191 engaging in a groove 197 formed in cam 510 fixed to cam shaft 315, by which plate 308 is moved downward to engage flaps *i* and press them against the body of the blank (as indicated in dotted lines in Fig. 53) as the folders 330 retreat.

Plate 308 is then raised by cam 510 to substantially the position shown in dotted lines in Fig. 53 maintaining flaps *i* in position to enter beneath rails 754 (Figs. 53, 54, 56 and 57) which hold the flaps in folded position until the blank passes beneath the mandrel to which it is to be applied as later described.

The blank is now advanced along side supporting rails 201 (Figs. 52, 53 and 54) with the flaps *h* riding on flanged outer rails 202 by the pushers 185 of conveyor chains 1100.

As the blank is advanced by the conveyor the forward side flaps *h* pass beneath guides 757, Figs. 48 and 49, and over rail sections 379 and beneath presser rolls 375, offset from rail sections 379 so as to be in vertical alignment with glue rolls 366 rotating in glue pots 362. Glue rolls 366 are driven by a chain 1169 from shaft 177. Rail sections 379 and rolls 375 are carried by respective brackets 374 and 380, as shown in Figs. 48 and 49, fixed to respective vertical rods 203. The lower end of each rod 203 is provided with a roll 204 which rests on a head 206 carried by one arm 208 of a bell crank pivotally mounted on shaft 314, the other arm 425 of the bell crank carrying a cam roll 209 engaging a cam 508 fixed to cam shaft 315. A spring 210 holds the roll 204 in contact with its head 206 and holds the cam roll against its cam 508. As the flaps *h* are carried onto the rail sections 379 the cams 508 raise the sections 379 and rolls 375 upwardly lifting flaps *h* out of contact with the glue rolls 366. By the time that rear end flaps *j* reach the sections 379 cams 508 have lowered the sections 379 and rolls 375 to normal position as shown in Fig. 48 so that glue rolls 366 apply a band of glue to the under surface of flaps *j*.

On the continued advance of the blank by conveyor 1100, lines of glue *x* (Fig. 49) are applied to the upper sides of flaps *h* at their edge portions and a double line of glue *y* is applied to the center of panel *k* of the blank. Referring to Figs. 48 and 49, the lines of glue *x* are applied by segments 221, fixed to an intermittently rotated shaft 346, and receiving glue from geared supply rolls 351 and 352, on respective shafts 348 and 349 (Figs. 48 and 49) from a glue pot 299. Shaft 348 is chain driven from a shaft 180 later described. Similarly the double line of glue *y* is applied to panel *k* by segments 233 also fixed to shaft 346 and receiving glue from the center supply rolls 351—2. Rolls 627 engaging the under side of the blank yieldingly press the blank against the several segments. As shown in Figs. 59, 60 and 61 the rolls 627 are carried by respective arms 618, pivoted on a cross shaft 621. The outer arms 618 are provided with brackets 225 through which extend bolts 226 carried by a cross bar 625. Springs 227 surrounding bolts 226 yieldingly connect the brackets 225 to bar 625. Similarly the inner arm 618 which carries the inner roll 627 also carries a bar 631 which is similarly yieldingly connected by bolts 228 and springs 229 to cross bar 625.

As shown in Figs. 60, 61 and 62, the several rolls 627 are adapted to be moved out of contact with the glue segments in the absence of a blank to be glued. For this purpose spaced levers 619 pivoted on shaft 621 extend over, and are secured to, bar 625 and connected together at their free ends by a latch bar 626. Levers 619 are connected by a tie rod 629 which is connected by a link 620 to a lever 624 pivoted to a bracket 622 and carrying a cam roll 230 held against cam 231 by a spring 232. Cam roll 231 carries a high 637 which engages roll 230 to raise levers 619 and raise rolls 627 into operative position as a blank carried by the conveyor approaches. If a carton blank is present, pivoted latch 650 is depressed by the blank, swinging catch 633 beneath latch bar 626, see Fig. 59, so that as cam roll 230 leaves the high 637 the rolls 627 are held in operative position. In the event no blank is presented, latch bar 626 is not engaged by the catch 633 since the latter is held retracted by light spring 234 and rolls 627 are lowered to inoperative position (Fig. 62) as cam roll 230 leaves high 637.

As previously stated conveyor 1100 is intermittently operated and shaft 346 and the blank are brought to rest in the position shown in Figs. 49 and 59, that is after the glue bands *x* and *y* have been applied to flaps *h* and panel *k*. During the first portion of the succeeding cycle of operation of the conveyor and shaft 346 a third pair of segments 235 (Figs. 49 and 59) apply spaced bands of glue *y'* to panel *m* in line with lines *y*, as shown in Figs. 64, 65 and 66. No glue is applied to panel *l*, or inturned flaps *i*.

From the gluing operation just described the shell blank is advanced by the blank conveyor to a position beneath the mandrel which has advanced from sleeve receiving station B to station C. Referring to Figs. 64, 65 and 66, the infolded flaps *i* of the blank as they pass from the restraint of spring pressed upper rails 754, Fig. 64, are engaged by swinging fingers 722 which swing, over the blank, as the blank advances beneath the mandrel, to hold the flaps *i* down until the flaps have passed to a position beneath the mandrel where they are engaged and held in place by the end face of the mandrel (Figs. 65 and 66), after which the fingers 722 swing outwardly clear of the mandrel as shown in dotted lines in Fig. 66.

As shown in Fig. 67, the fingers 722 are carried on the upper ends of vertical shafts 263, the lower ends of which are provided with crank arms 612 connected by links 608 to arms 614 fixed to a rock shaft 607. An arm 615 fixed to rock shaft 607 carries a cam roll 264 which is held against a cam 717, fixed to a constantly rotating shaft 207, by a spring 265, cam 717 thus actuating fingers 722 as above described.

As shown in Fig. 66, the shell blank comes to rest with the center panel *l* resting on a platform **337** and in line with the end of the mandrel, the panels *k* and *m* resting respectively on plates **266** and **267** hinged to the sides of platform **337**. Platform **337** is fixed to the upper end of a plunger **338** guided in a vertical bearing **211**. The plates **266** and **267** are connected by respective links **339** to a yoke **340** slidable on plunger **338**. Plunger **338** is moved upwardly, by means later described, carrying yoke **340** with it until the center panel *l*, with its infolded flaps *i*, is pressed against the end of the mandrel, the yoke **340** moving with the plunger maintaining the panels *k* and *m* in the plane of panel *l*.

Referring to Figs. 68 and 70, the yoke **340** is connected by a link **341** to an arm **257** which carries a cam roll **342** held by a spring **343** against a cam **514** fixed to shaft **207**. During the upward movement of plunger **338** cam **514** raises arm **257** at the same speed so no relative movement takes place between the plunger and yoke. As the plunger comes to rest with the blank against the end of the mandrel, the cam **514** continues to raise arm **257** lifting yoke **340** and swinging plates **266** and **267** upwardly as shown in Figs. 70, 71 and 72. Yoke **340** also carries vertical plates **344**, which engage flaps *j* and swing the latter upwardly into engagement with curved guides **1078** which, as the upward movement of the yoke brings plate **267** to a vertical position and folds panel *m* against the adjacent side of the mandrel, guides the flaps *j* against the ends of the mandrel and beneath the outwardly inclined flaps *d* of the handle member **10** which is within the mandrel. As panel *m* and its flaps *j* are thus being set up around the mandrel, tucker blades **503** (Fig. 71) are swung upwardly to fold tabs *n* against flaps *j* below the lower edges of flaps *d*.

Tucker blades **503** (Fig. 74) are fixed to one arm **345** of L-shaped levers pivoted at **696** to the platform **337**. The other arms **501** each carry a roll **502** riding in a guide groove **381** formed in the end portion of an arm **499** fixed to a rock shaft **497**. An arm **498** is fixed to the rock shaft **497** and carries a cam roll **382** held in engagement with a cam **506** by a spring **383**. Cam **506** is carried by the cam shaft **207**.

As the above setting up operations are taking place plate **266** carrying panel *k* and its flaps *h* is also swinging upwardly and flaps *h* are folded inwardly with their edge portions overlapping flaps *d* and tabs *n*, as shown in Fig. 72. The folding of flaps *h* is accomplished by folding and presser members **241** which, as best shown in Fig. 75 are carried by arms **256** freely pivoted on the mandrel turret shaft **212** at opposite sides of the mandrel. Arms **256** are connected by links **254** to arms **276** and **384** fixed to a pivot shaft **279**, one arm as **276** being connected by a link **280** to arm **716** of a bell crank, freely pivoted on shaft **255**, the other arm of which carries a cam roll **385** held in engagement by a spring **386** with a cam **516** fixed to shaft **207**. As shown in Figs. 71 and 72, members **241**, as they swing into position at the sides of the mandrel, engage the outstanding flaps *h* and, as plate **266** comes to a vertical position, lay flaps *h* in overlapping relation with flaps *d* and tabs *n*. A finger **387** carried at the end of each member **241** (Figs. 71 and 72) after engaging the bottom edge portions of flap *h*, holds the lower part of the overlapped portions of the flaps and tabs in place.

In some forms of carriers the tabs *n* are omitted in which case, as will be understood, fingers **503** will be omitted.

The carrier is now completely assembled in and on the mandrel as shown in Fig. 72 and members **241** which have moved into pressing position as they carry flaps *h* to final position, are in position to apply pressure to the glued vertical overlaps, as shown in Fig. 72. Referring to the latter figure, the members **241**, which are faced with rubber or other suitable material as indicated at **242**, are yieldingly mounted on shoes **238** by headed pins

705 slidable in the shoes against the compression of springs **732** surrounding the pins. The shoes are fixed to rods **239** slidably mounted in bosses **388** formed in the arms **256** previously referred to. The shoes **238** are held against rotation by pins **389** sliding in bosses **390** in arms **256**. Springs **734** draw the shoes **238** toward the arms **256**. The outer end of rods **239** carry rolls **395** which engage channel members **282** provided with wear plates **283**. The channel members are reciprocated toward and from the mandrel by toggle arms **248** and **249** pivoted respectively to the channel members **282** and to brackets **709**. As the arms **256** swing in the direction of the mandrel in the folding operation just described, the toggles are broken so that members **241** are spaced from the mandrel as shown in Fig. 76. Upon completion of the assembly of the carrier on the mandrel the toggles **248—249** are made to move the shoes **238** against the action of springs **734**, toward the mandrel and press the members **241—2** yieldingly against the overlapped and glued "seams." Upon retreat of plates **266** and **267** and platform **337** the turret is indexed to carry the loaded mandrel from station C to station D, and arms **256**, with the presser members **241** pressing the seams, move back to the dotted line position of Fig. 75 where the toggle is broken to release the pressers **241**, the mandrel moving on to position D. The toggles **248—9** are operated by means of links **400** pivotally connected at one end to the toggle arms **249** and at the other, as shown in Fig. 78, to arms **252** fixed to rock shaft **255** to which is also fixed an arm **253** carrying a cam roll **396** riding in a cam groove **401** formed in a cam **515** fixed to constantly rotating cam shaft **207**.

At station D the assembled carrier on the mandrel is engaged on the sides formed by panels *k* and *m* which received the central glue lines to adhere said panels to the ends panels of the sleeve **11**, by presser members **402** and **403** as shown in Fig. 79. Referring to the latter figure, upper and lower presser members **402** and **403** are shown as spring mounted on arms **404** and **405** connected to respective meshing gears **408** and **409** rotatably mounted on shafts **462** and **303**. The gear **409** carries an arm **467** connected by a link **410** to arm **411** of a bell crank, the other arm **459** of which carries a cam roll **412** held by a spring **413** against cam **513** fixed on constantly rotating cam shaft **207**. Cam **513** through the described linkage and gears **408** and **409** swings the pressers **402** and **403** from the dotted line position of Fig. 79, where they clear the mandrels as the latter rotate to station D, to the full line position shown, in which they press the panels *k* and *m* against the ends of sleeve **11** during the dwell of the mandrel at station D. Substantially simultaneously the "seam" sides of the carrier are engaged (Fig. 80) by side pressers **241'** similar in construction and mounting to pressers **241** above described. As shown in Fig. 80 the seam sides of the carrier on the mandrel at station E are also engaged by similar pressers **241''**. Pressers **241'** and **241''** are linked together by links **495** (Fig. 2) for simultaneous operation. Pressers **241'**, see Fig. 2, are carried by rods **414**, sliding in bosses **415** and connected by toggles **416** to side frame brackets **287**. Pressers **241''** are carried by rods **417**, sliding in bosses **218** and connected by toggles **419** to the side frame brackets **286**. The toggle pins of toggles **419** and **416** are connected by links **495**. One of the arms of toggles **416** are connected by links **458** to arms **457** fixed on rock shaft **303**. A centrally located arm **457** on shaft **303** (Fig. 2) is connected by a link **420** (see Fig. 80) one arm **262** of a bell crank, pivoted on shaft **255**, the other arm **421** of which carries a cam roll **422** riding in groove **423** of a cam **512** fixed on cam shaft **207**.

From the pressing station E the mandrel moves to station F, Fig. 80. At station F, see Figs. 3, 4 and 18, the rolls **103** of the bars **96**, which are now at the bottom of the mandrels, ride onto shelves **424**, Fig. 4, carried by slides **425** working in guide ways **426** supported by

plate 676 on the frame, one of which is shown in Fig. 4. Slides 425 are connected by links 542 to arms 669 fixed to short rock shafts 677 to which are also fixed (see Fig. 3) arms 664. Arms 664 are connected by links 425 to arms 665 fixed to rock shaft 679. Thus as shaft 679 is rocked to draw a handle-portion member into the mandrel at station A, as previously described, the shelves 424 are raised to lift the bar 96 to the top of the mandrel at station F and strip the finished carrier from the mandrel by bar 96 pushing on the handle 10 (Fig. 18). Shelves 424 bring the rolls 103 into alignment with arcuate guides 680 supported from plates 674, Fig. 4, and upon the next advance of the mandrels rolls 103 are carried along guides 680 and into channel slides 423 for the start of a new assembly operation.

The path taken by the rolls 103 is indicated in dot-dash lines in Fig. 3.

Referring to Fig. 81, the completed carriers, as they are stripped from the mandrels at station F, are engaged by pins or bars 1121 carried by discs 1124 and knocked into a chute 1123. In chute 1123 the carriers slide against the flights 1114 of a chain conveyor 1113 which discharges them in an orderly manner. Conveyor 1113 is driven by a chain 189 from a shaft 1105, carrying the discs 1124 and gear driven from shaft 1106. Shaft 1106 is driven by a chain 1143 later referred to.

As indicated at 277, Fig. 81, a properly timed latch 259 is provided, engaging in recesses 428 in a disc 194 of the mandrel turret to lock the mandrels in place at the several stations.

As shown in Fig. 83, the various cam and power shafts are driven from a motor M which drives a shaft 268 through chain 1176. Shaft 268 delivers power to reducer boxes 1141 and 1142 through chains 1183 and 1184. From reducer 1141 shaft 315, which drives the shell blank rear and center folders, is driven by chain 182 and from shaft 315 a chain 1174 drives a gear 187 meshing with a gear 188 on shaft 600 from which the shell hopper delivery mechanism is driven. Also from reducer box 1141 power shaft 199 is driven by chain 1160. Shaft 192 from which the sleeve feeding mechanism receives power is driven by a chain 1161 from shaft 199. The chain 1143 which drives the discharge mechanism, and chain 1162 which drives shaft 27 of the handle feed mechanism are powered from 192. The main cam shaft 207, previously referred to, is driven from shaft 199 by a chain 1163. Shaft 222 receives intermittent power from shaft 207 by any suitable means, such as the conjugate cam drive diagrammatically shown in Fig. 84. Shaft 212 of the turret is driven from intermittent shaft 222 by a chain 1164 and shaft 346 of the glue segments is driven from shaft 222 by a chain 1165. Shaft 200 is driven by a gear transmission from shaft 222 which is connected by a chain 1166 to shaft 183 of the shell conveyor 1100. A chain 1167 drives power shaft 180 from the reducer 1142. Top glue roll shaft 348 is driven from shaft 180 by a chain 1168 and lower glue roll 366 on shaft 369 is driven from shaft 180 by chain 1169.

What is claimed is:

1. A machine for assembling bottle carriers and the like which comprises a mandrel formed with a slot opening to one end and to opposite sides of the mandrel, means to insert a partition member in said slot with a portion of said member exposed at opposite sides of the mandrel, means to fold a preformed blank having opposed wall forming members around said mandrel with portions of said opposed wall forming members in contact with the exposed portions of the partition member and means to secure said contacting portions together.

2. A machine for assembling bottle carriers and the like which comprises a series of movable mandrels each formed with a partition receiving slot opening to one end and to opposite sides of the mandrel, means to intermittently move said mandrels to and through successive stations, means at one of said stations to insert a partition in said slot with a portion thereof exposed at opposite sides of the mandrel, means at a succeeding station to advance to preformed blank having a bottom panel and side wall members against the end of the mandrel with said bottom panel coinciding with the end of the mandrel, means at said last-mentioned station to fold said side wall members against the sides of the mandrel with portions of said wall members in contact with the exposed portions of the partition members, and means to secure said contacting portions together.

3. A machine for assembling bottle carriers and the like as recited in claim 2, the mandrels being mounted on a rotating turret.

4. A machine for assembling bottle carriers and the like as recited in claim 2, the mandrels being mounted radially on a rotating turret and having pressing means at successive stations to press opposite side faces of the assemblies on the mandrels.

5. A machine for assembling bottle carriers and the like which comprises a series of movable mandrels each formed with a plurality of partition receiving slots opening to one end and to opposite sides of the mandrel, means to intermittently move said mandrels to and through successive stations, means at one or more of said stations to insert partition members in said slots with portions thereof exposed on opposite sides of the mandrel, means at a succeeding station to fold a blank around said mandrel with portions thereof in contact with the exposed portions of the partition members and means to secure said contacting portions together.

6. A machine for assembling bottle carriers and the like which comprises a series of movable mandrels each formed with intersecting slots opening to one end and to opposite sides of the mandrel, means carried by each mandrel for drawing a partition member into the slot thereof with portions of the partition exposed on opposite sides of the mandrel means to advance a blank means to apply adhesive to portions thereof and means to fold said blank around the mandrel to enclose the four sides and the slotted end thereof with glued portions of the blank engaging the exposed portions of the partition member.

7. A machine for assembling bottle carriers and the like which comprises a mandrel formed with a transverse slot opening to one end and to opposite sides of the mandrel, means to insert a partition member into said slot with edge portions thereof extending outwardly of said slots at the sides of the mandrel, means to wrap a preformed blank having a pair of forward and a pair of rear side flaps around the mandrel with the edge portions of one of said pairs of flaps beneath and the other of said pairs overlapping said extended edge portions of the partition and means to secure together the overlapping portion.

8. A machine for assembling bottle carriers and the like as recited in claim 7 wherein the securing means comprises means to apply adhesive to one face of the edge portions of one of the pairs of flaps and to the opposite face of the edge portions of the other pair of flaps.

9. A machine for assembling bottle carriers and the like which comprises a mandrel formed with a transverse slot opening to one end and to one pair of opposite sides of the mandrel, and a pair of slots at an angle to said first slot and opening to the same end and to the other pair of opposite sides of the mandrel, means to insert a partition member in said transverse slot with edge portions thereof extending outwardly thereof, means to insert a rectangular sleeve partition member in said pair of slots with opposite walls of the sleeve extending between the slots on opposite sides of the mandrel, means to wrap a preformed blank having a pair of forward and a pair of rear side flaps around the mandrel, with the edge portions of one of said pairs of flaps beneath and the other of said pairs of flaps overlapping said extended edge portions of the first partition member and with

the portions of said blank between the flaps overlying the portions of the sleeve member exposed on the faces of the mandrel and means to secure together the contacting portions of the blank and the partition members.

10. A machine for assembling bottle carriers and the like as recited in claim 9 wherein the securing means comprises means to apply adhesive to those portions of the blank in contact with the exposed portions of both said partition members.

11. A machine for assembling bottle carriers and the like as recited in claim 10 having means to separate a blank from a stack of blanks and advance it to the gluing means.

12. A machine for assembling bottle carriers and the like as recited in claim 9 having means reciprocal in said transverse slot to draw the partition member therein, and means reciprocably mounted outwardly of the mandrel to push said sleeve member into said pair of slots.

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