March 5, 1946. W. C. PFEIFFER 2,396,199

CONTROLLER ATTACHMENT FOR ADDRESSING MACHINES

Filed Feb. 12, 1940 11 Sheets-Sheet 1

FIG. 1.

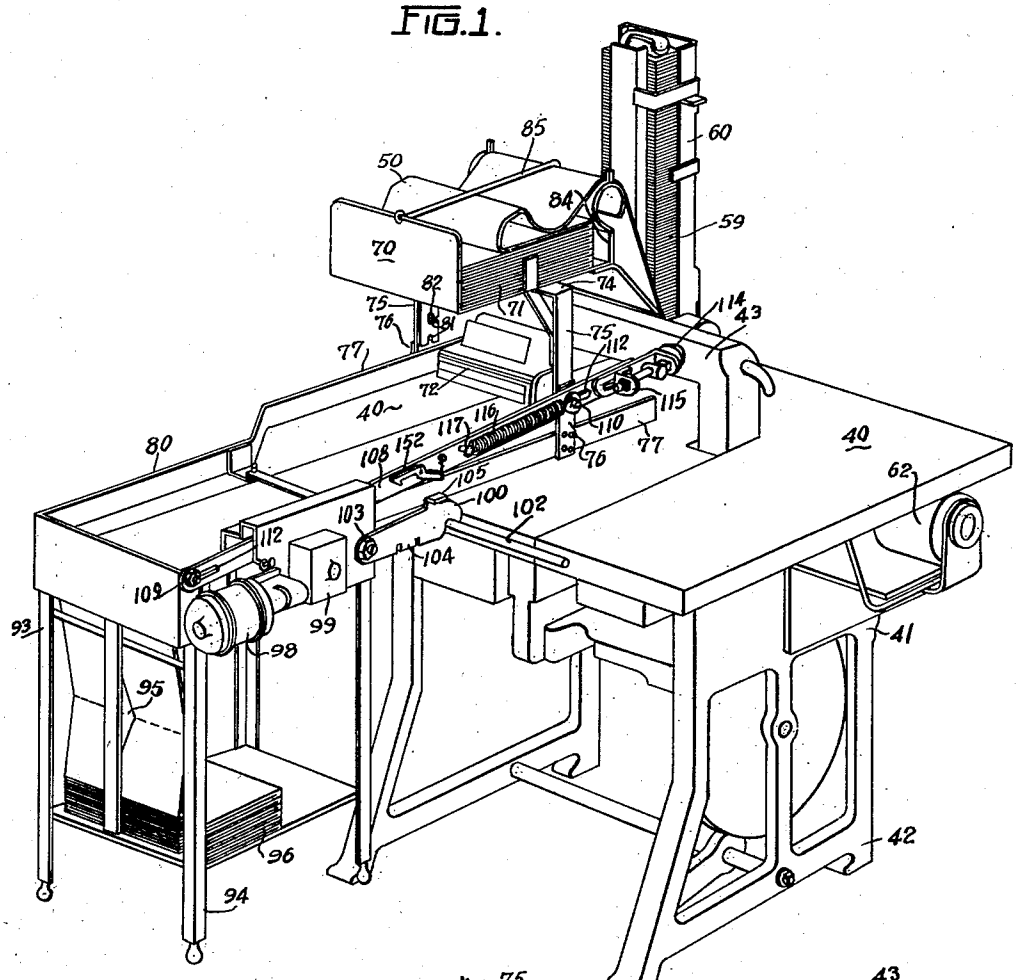
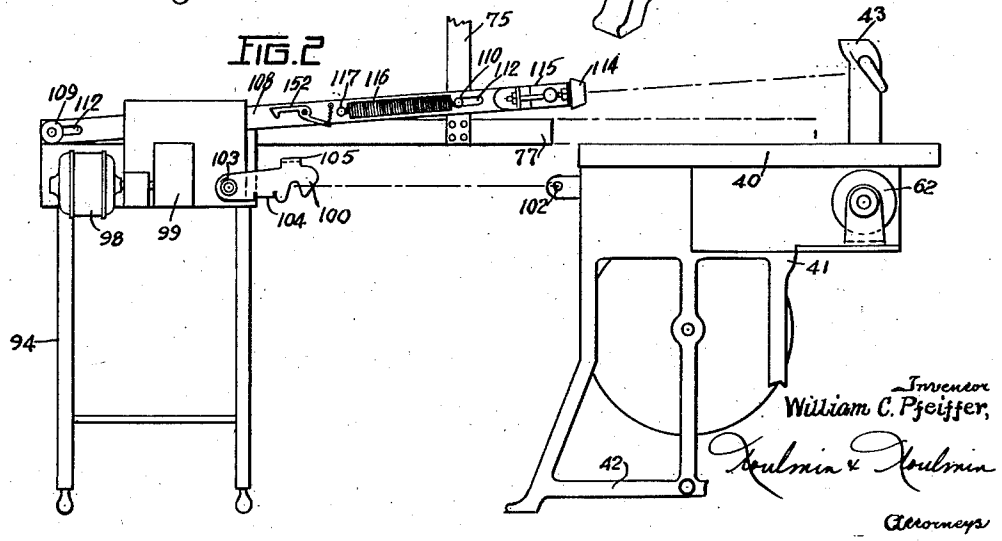


FIG. 2.



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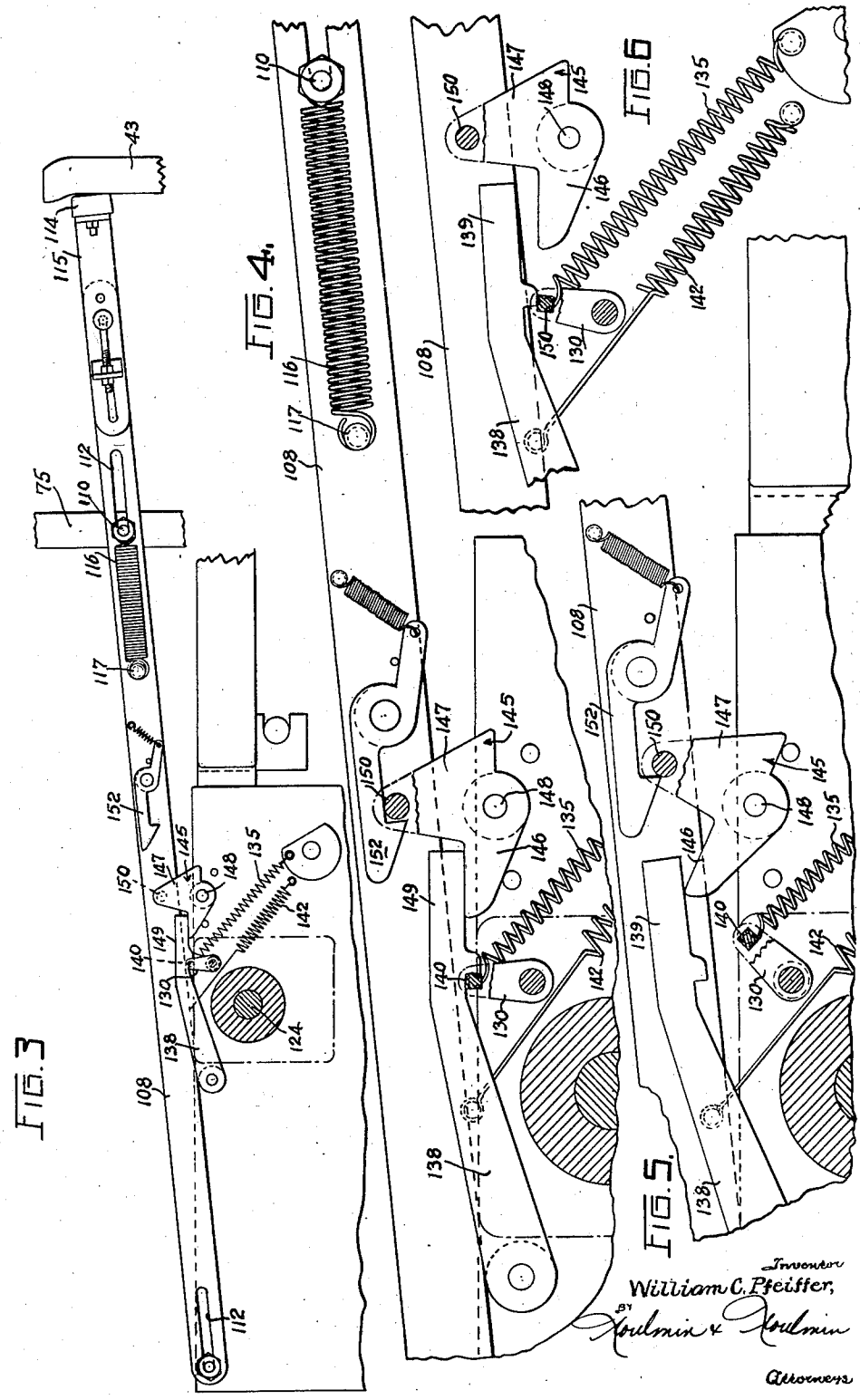
March 5, 1946. W. C. PFEIFFER 2,396,199

CONTROLLER ATTACHMENT FOR ADDRESSING MACHINES

Filed Feb. 12, 1940 11 Sheets-Sheet 2



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CONTROLLER ATTACHMENT FOR ADDRESSING MACHINES

Filed Feb. 12, 1940 11 Sheets-Sheet 3

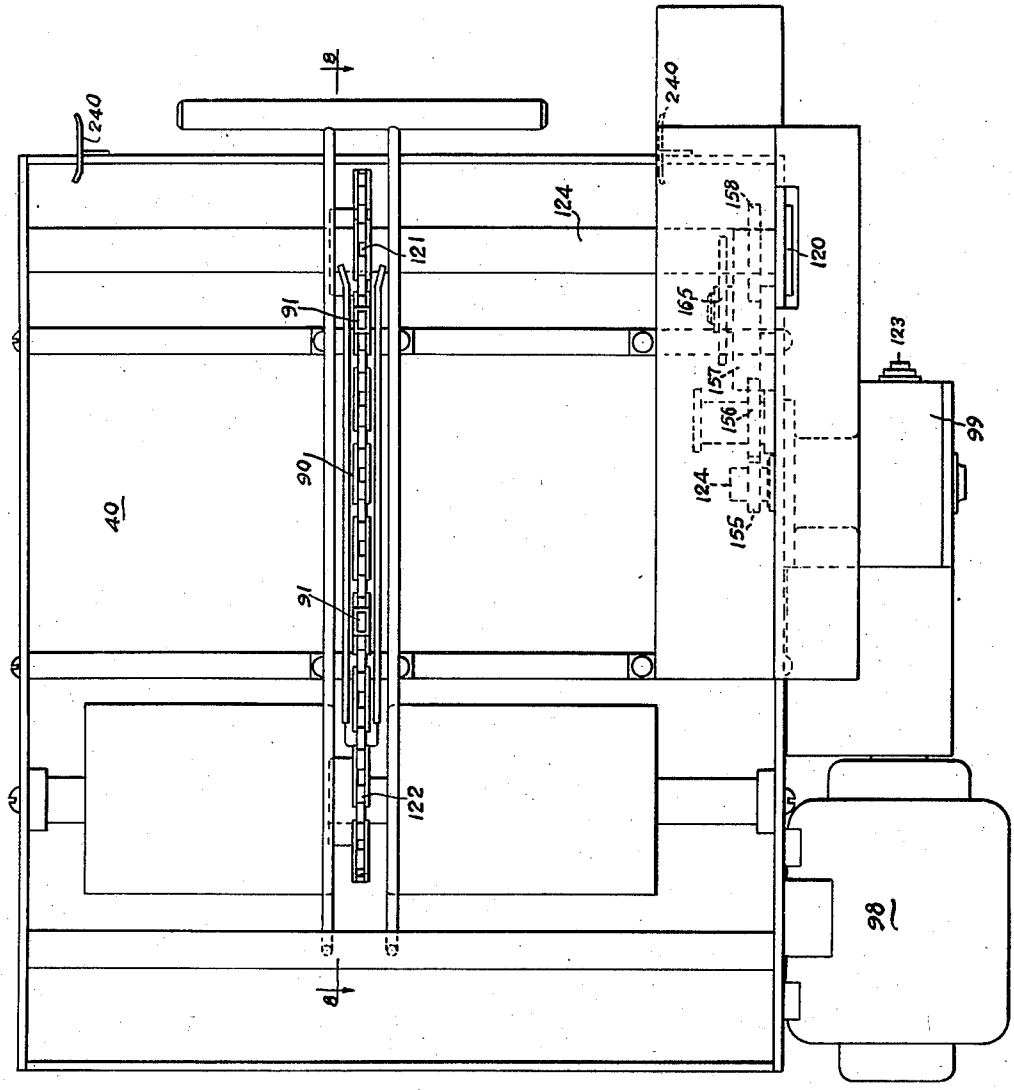

FIG. 7

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CONTROLLER ATTACHMENT FOR ADDRESSING MACHINES

Filed Feb. 12, 1940 11 Sheets-Sheet 4

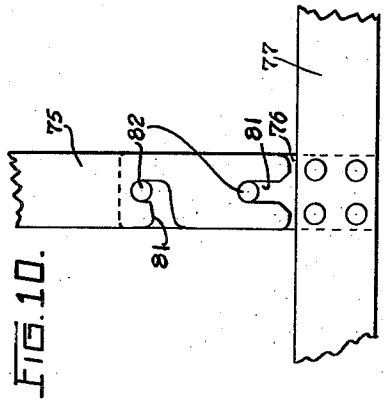
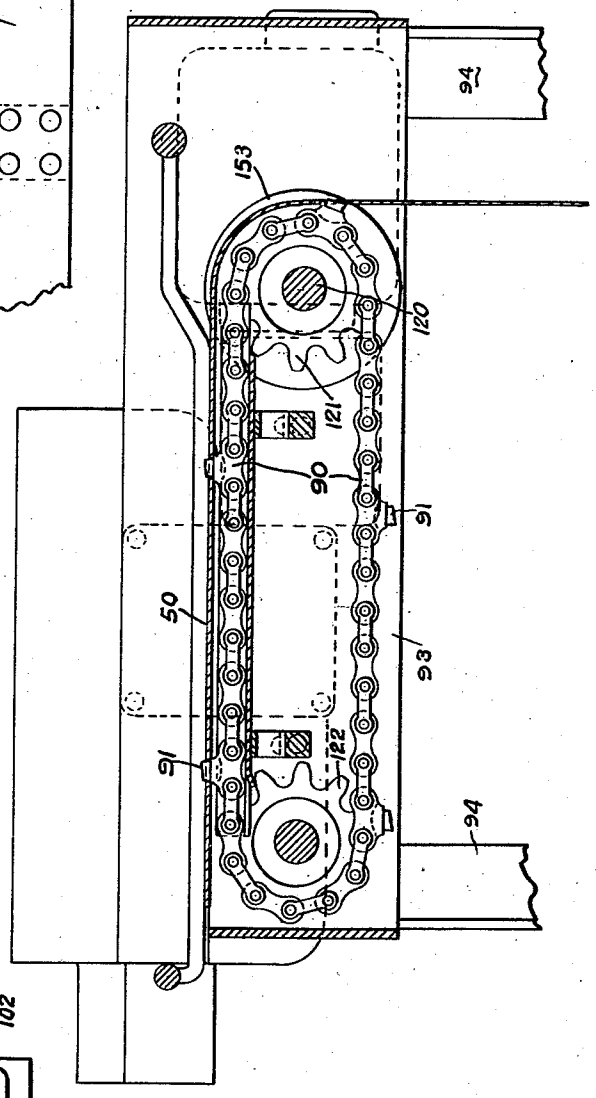


FIG. 10.



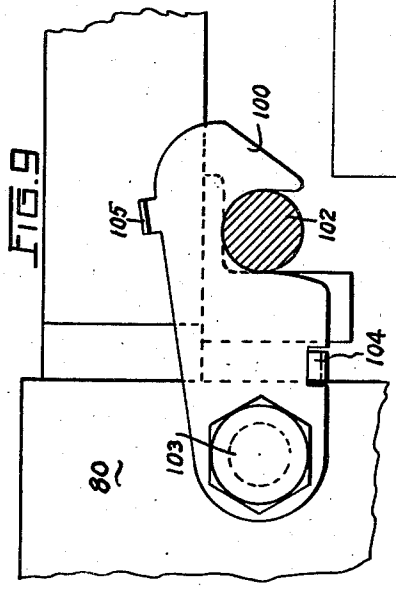


FIG. 9.

FIG. 8.

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CONTROLLER ATTACHMENT FOR ADDRESSING MACHINES

Filed Feb. 12, 1940 11 Sheets-Sheet 5

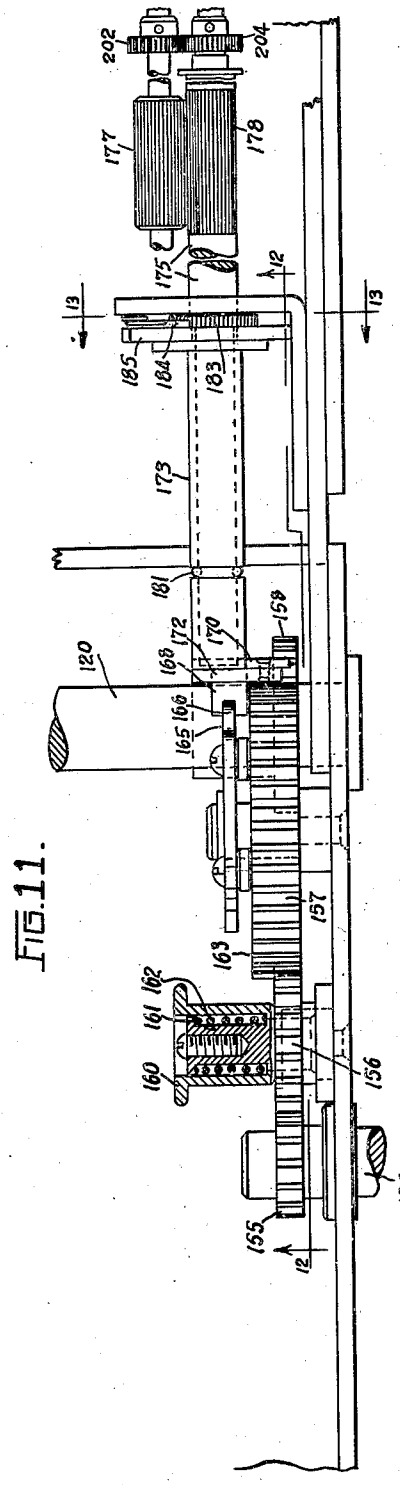

FIG. 11.

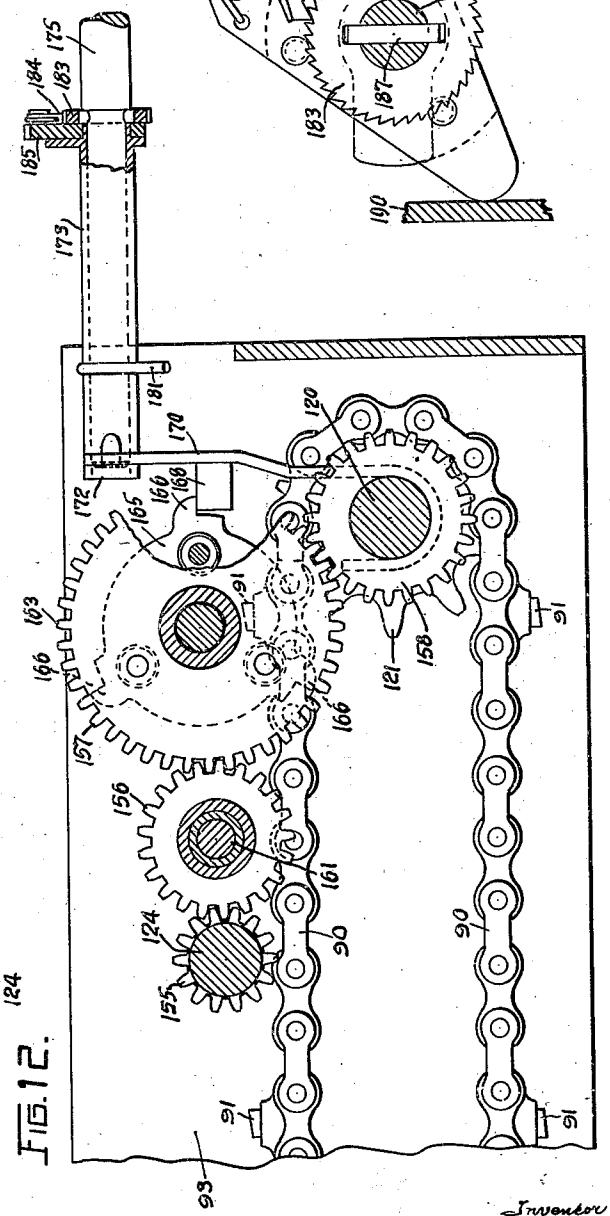

FIG. 12.

FIG. 13.

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CONTROLLER ATTACHMENT FOR ADDRESSING MACHINES

Filed Feb. 12, 1940 11 Sheets-Sheet 6

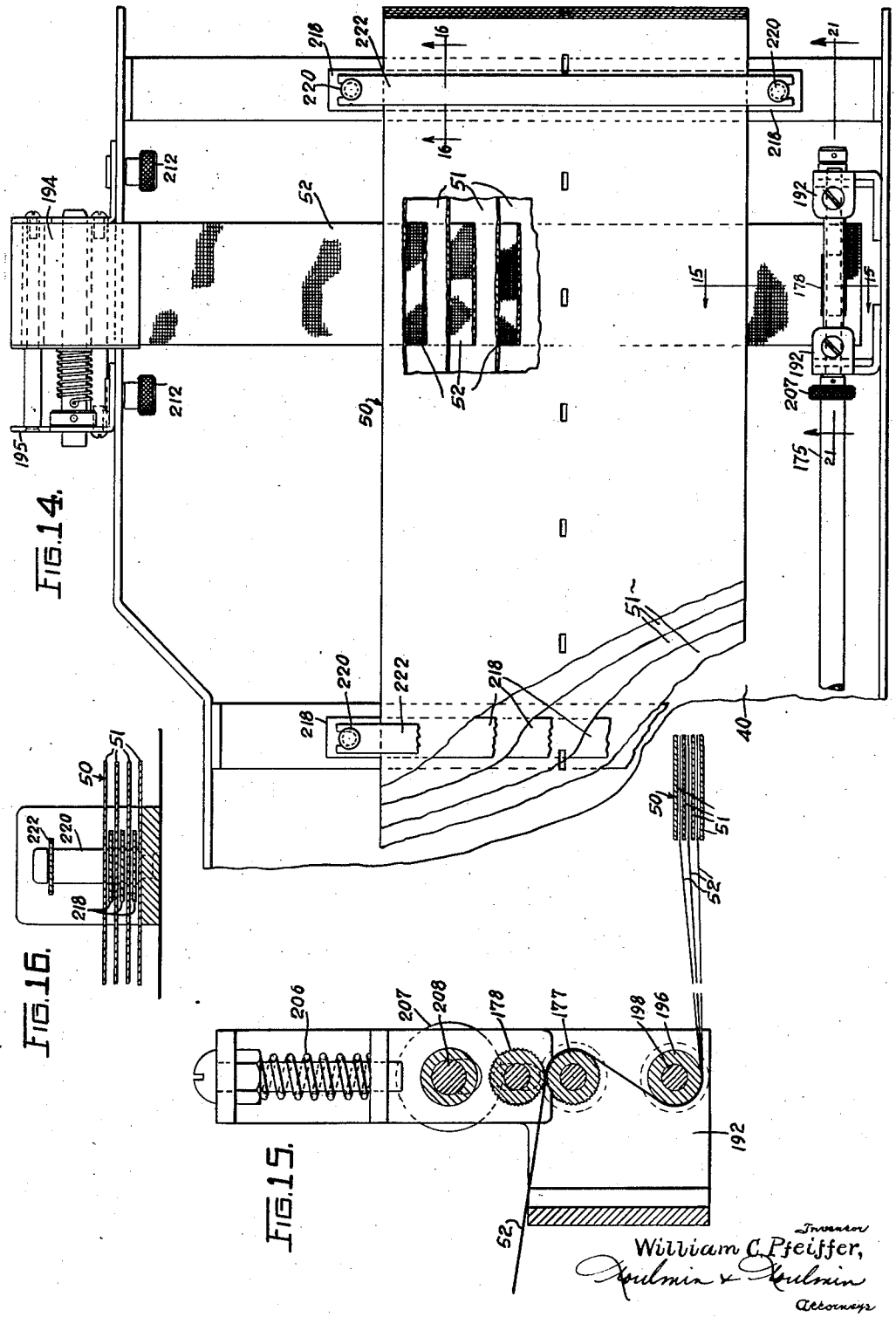

FIG. 14.

FIG. 16.

FIG. 15.

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CONTROLLER ATTACHMENT FOR ADDRESSING MACHINES

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FIG. 17.

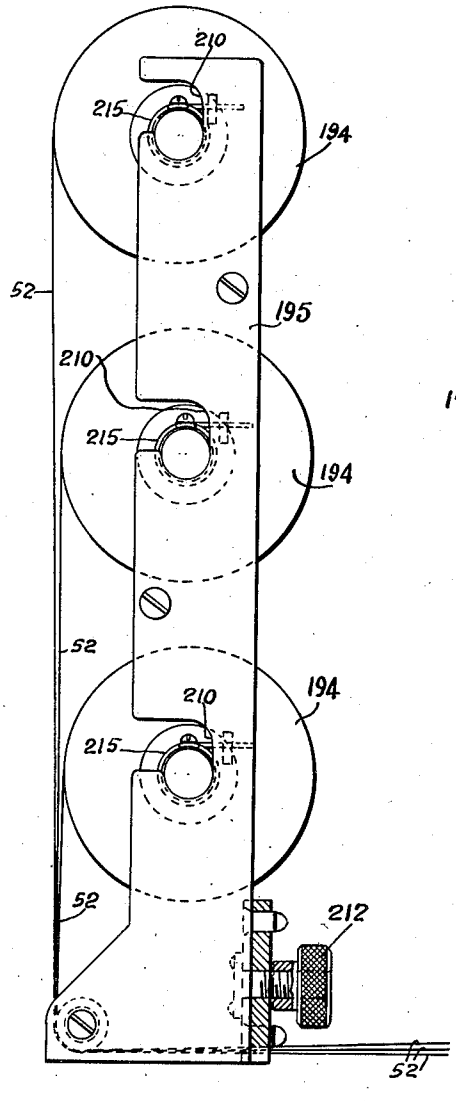
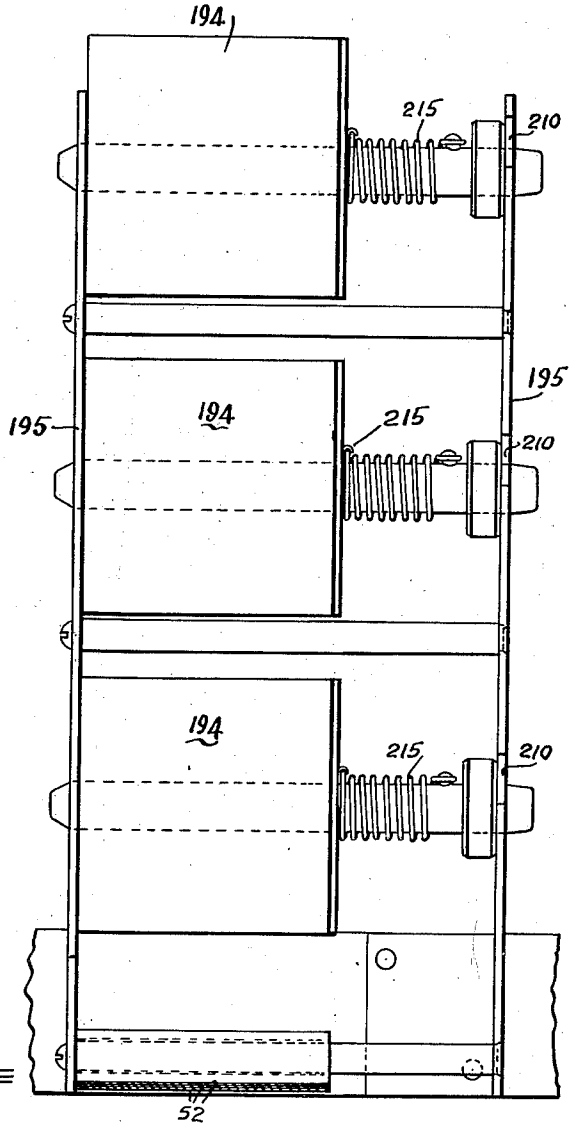


FIG. 18.



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March 5, 1946. W. C. PFEIFFER 2,396,199

CONTROLLER ATTACHMENT FOR ADDRESSING MACHINES

Filed Feb. 12, 1940 11 Sheets-Sheet 8

FIG. 19.

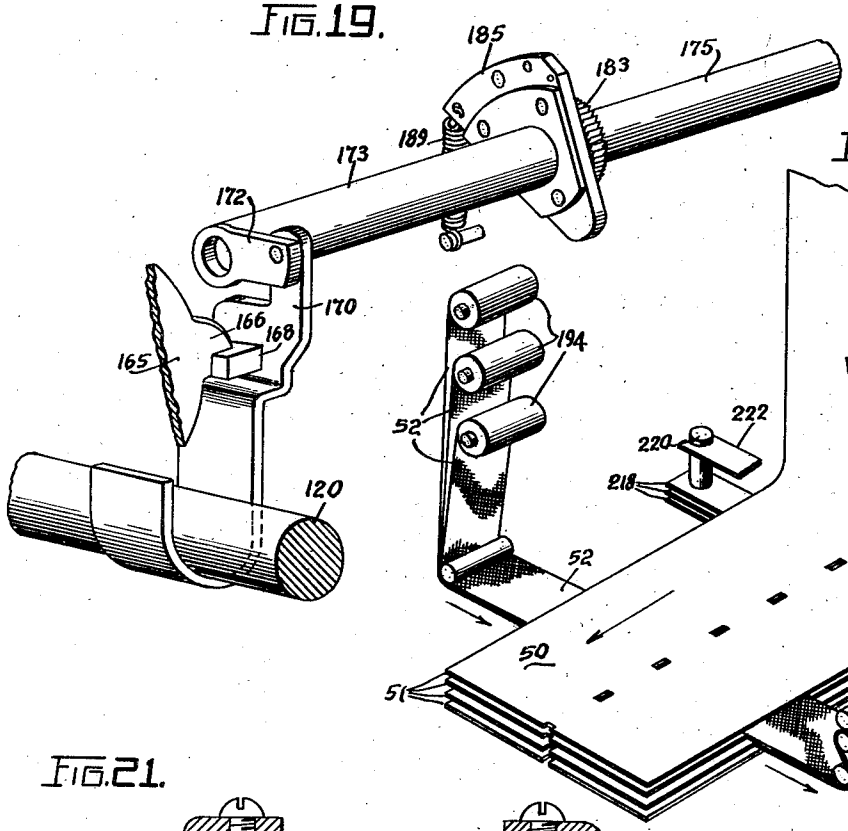

FIG. 20.

FIG. 21.

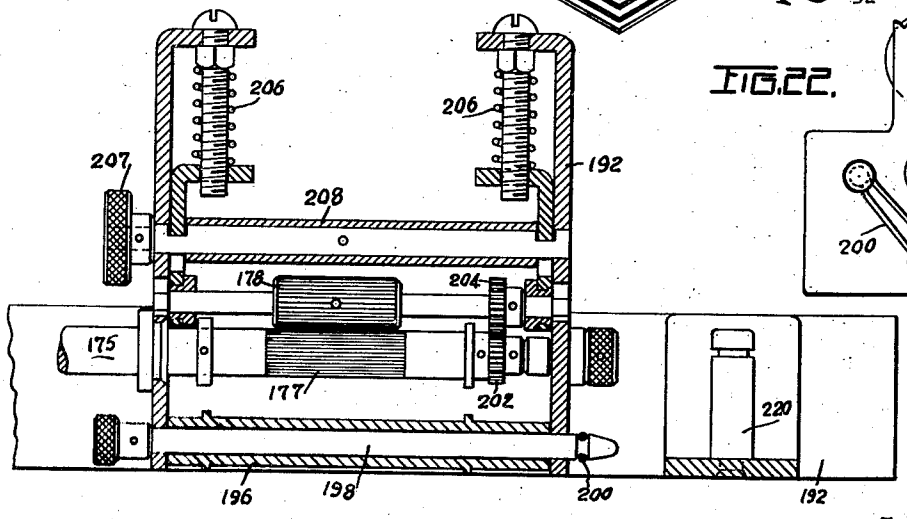

FIG. 22.

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CONTROLLER ATTACHMENT FOR ADDRESSING MACHINES

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FIG. 23

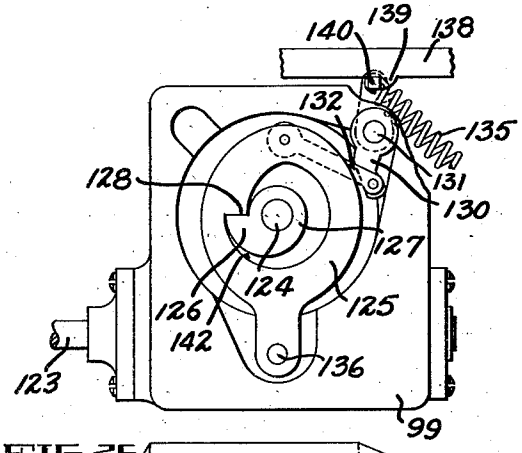


FIG. 24

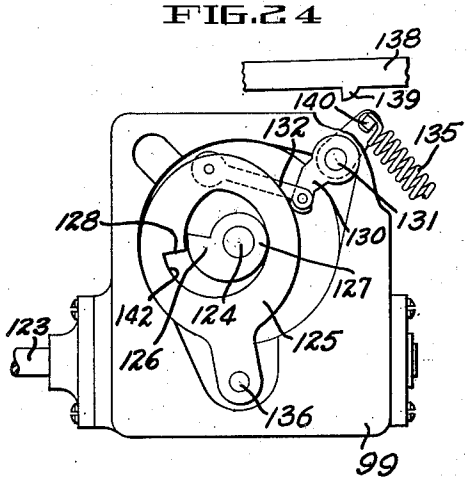


FIG. 25

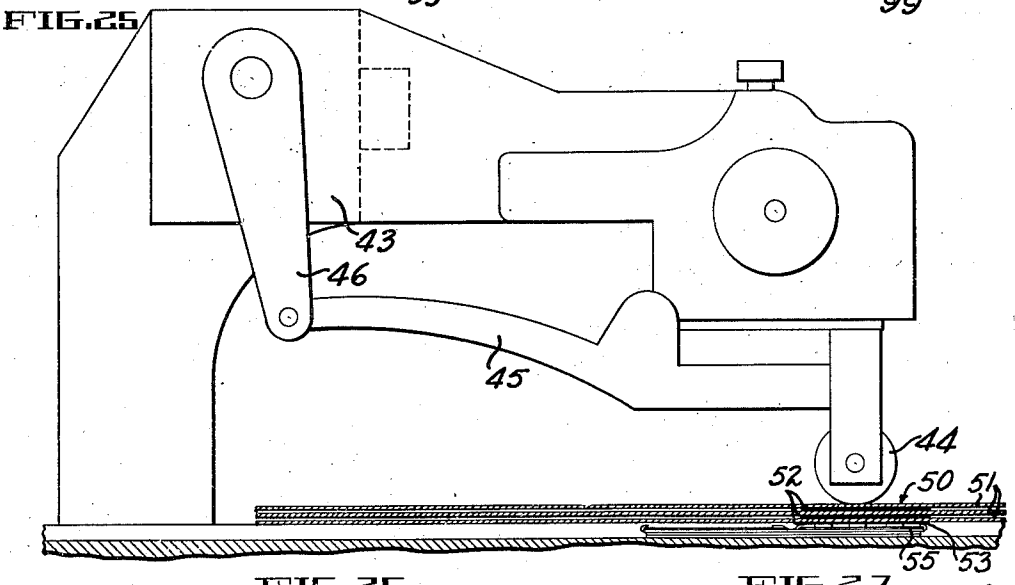


FIG. 26

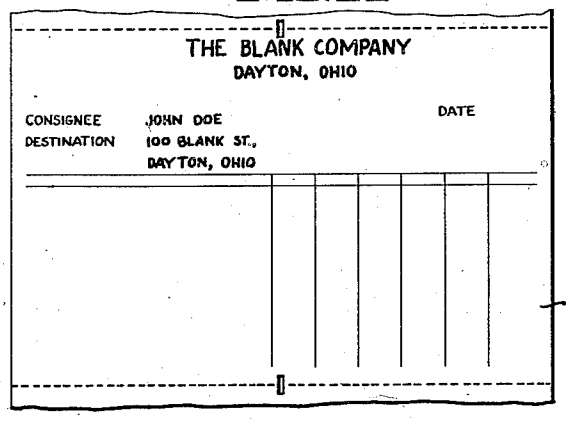
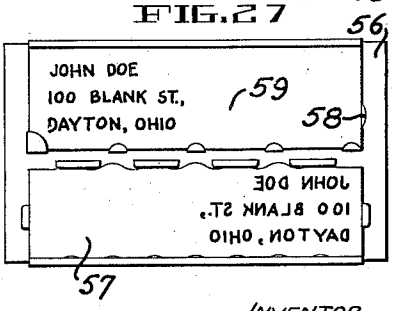


FIG. 27



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CONTROLLER ATTACHMENT FOR ADDRESSING MACHINES

Filed Feb. 12, 1940 11 Sheets-Sheet 10

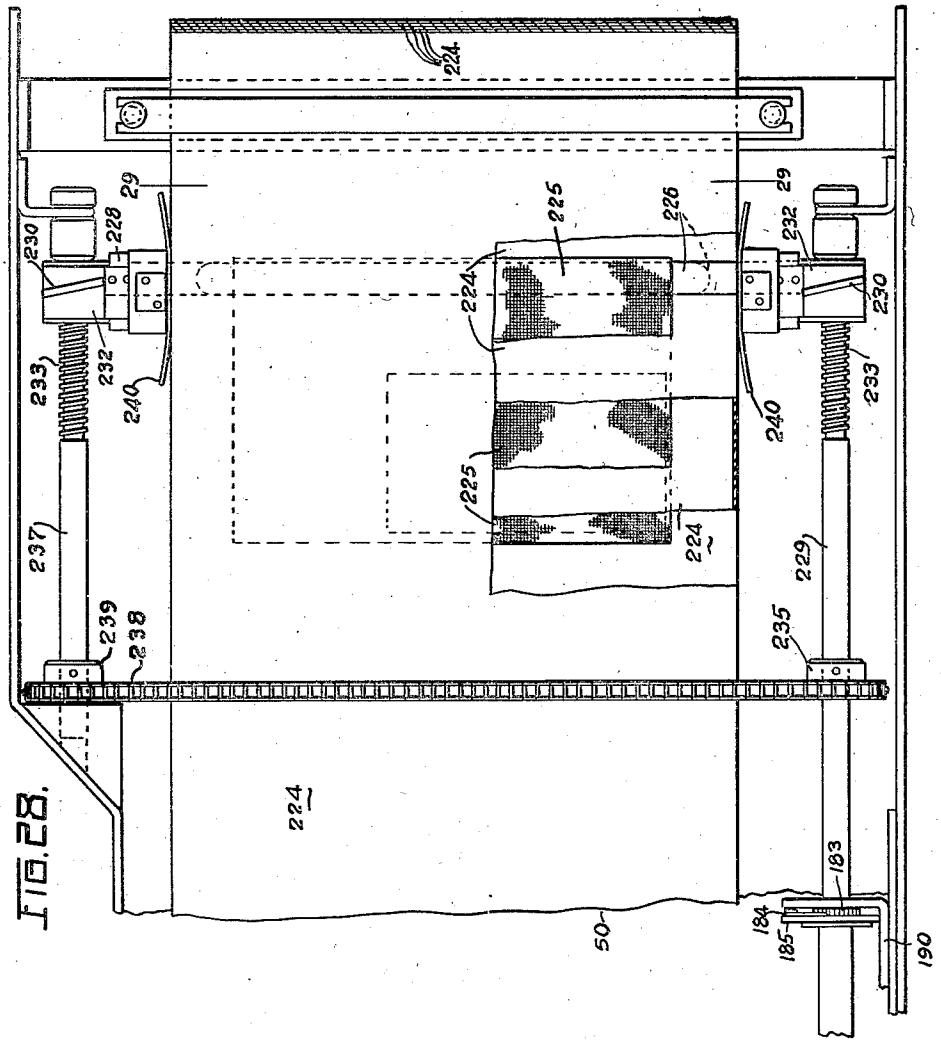

FIG. 28.

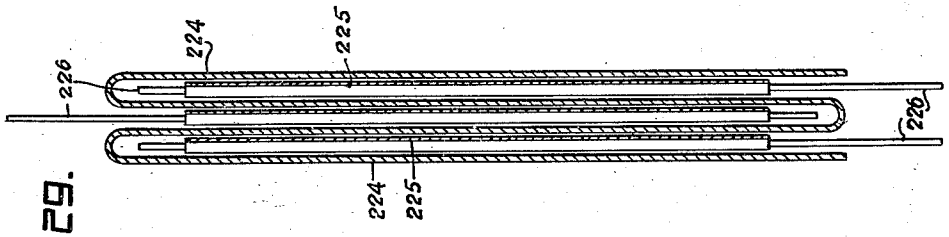

FIG. 29.

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CONTROLLER ATTACHMENT FOR ADDRESSING MACHINES

Filed Feb. 12, 1940 11 Sheets-Sheet 11

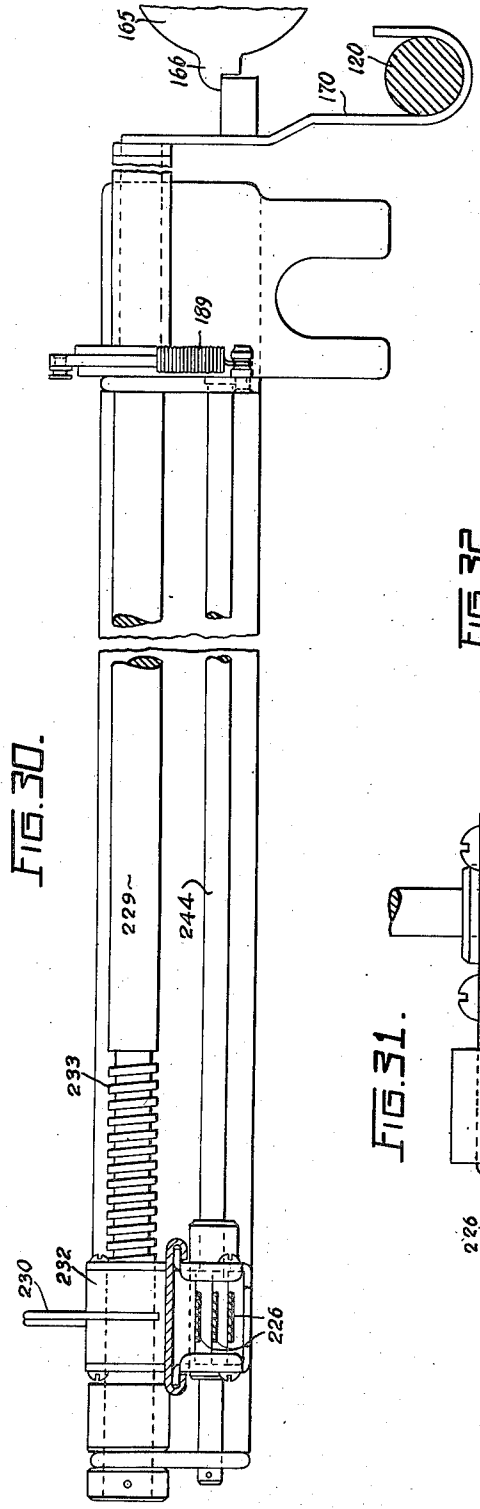

FIG. 30.

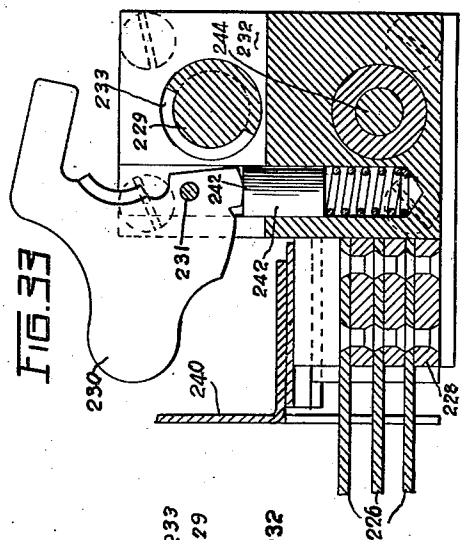

FIG. 33.

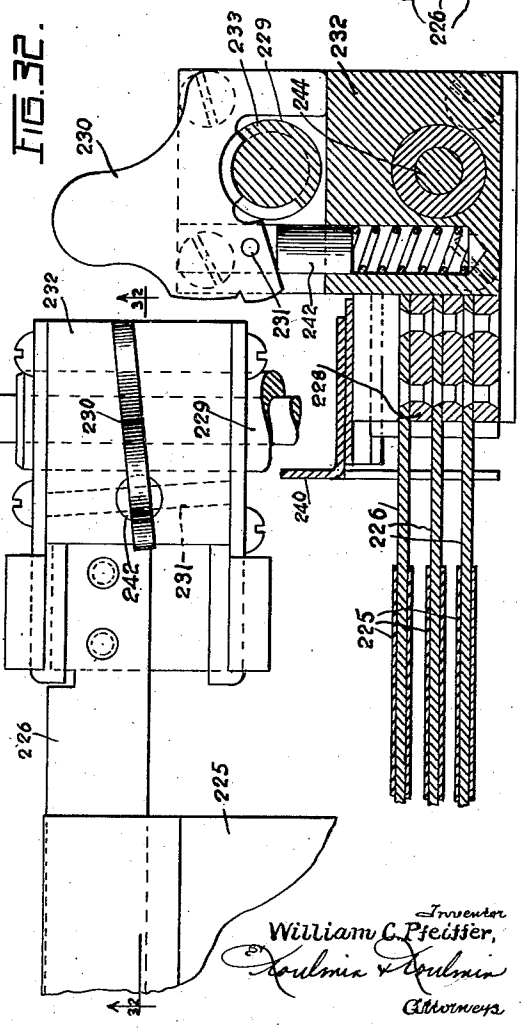

FIG. 32.

FIG. 31.

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Patented Mar. 5, 1946 2,396,199

UNITED STATES PATENT OFFICE

2,396,199

CONTROLLER ATTACHMENT FOR ADDRESSING MACHINES

William C. Pfeiffer, Dayton, Ohio, assignor to The Egry Register Company, Dayton, Ohio, a corporation of Ohio

Application February 12, 1940, Serial No. 318,404

2 Claims. (Cl. 101—57)

This invention relates to attachments for addressing machines or similar devices, and more particularly to an automatic controller mechanism adapted to be attached to address printing machines for automatically feeding the continuous sheet forms through the machine.

It is an object of this invention to provide an attachment for address printing machines, commonly referred to as Addressographs, comprising an electric automatic controller for feeding the paper sheets to be addressed through the machine and to further increase the versatility of this type of machine, making it more efficient and adapted for a greater number of uses.

Another object of this invention is to provide an improved attachment for address printing machines of this type which permits the use of multiple copy continuous forms without using one-time pre-inserted carbons.

Another object is to provide an attachment for printing machines of this character having interleaving carbons between continuous forms by means of a simple mechanism that automatically advances carbons with each impression, so that no two impressions come on exactly the same spot, producing clear, sharp copies, and utilizes the complete surface of the carbon sheets.

Another object is to devise an auxiliary attachment for address printing machines whereby the carbon sheets are held in position by carbon holders and are moved between the copy sheets and over the printing plate automatically so that the entire surface of the carbon paper is used.

Another object is to provide an improved mechanism for feeding multiple copy continuous forms to a printing machine wherein the carbon sheets are "floated" between the forms and automatically shifted so as to present new carbon surfaces after each printing operation and wherein simplified means is provided for installing new paper during use.

Another object is to provide an automatic controller attachment for printing machines of this type for feeding continuous forms into the machine and holding the copy forms in perfect registration irrespective of the number of copies used and the speed of operating the machine.

Still another object is to provide an automatic feeder attachment for address printing machines which will operate in synchronism with the operation of the printing machine and automatically feeds a continuous strip of paper or multiple copy forms from a fan-folded pack through the machine whereby the forms are printed upon and thereafter restacked in a fan-folded pack.

These and other objects and advantages will be apparent to those skilled in the art from the following description taken in connection with the drawings in which:

Figure 1 is a perspective view of an address printing machine provided with the automatic feeding attachment of this invention;

Figure 2 is a side elevation view of the address printing machine showing the feeder mechanism in detached position;

Figures 3, 4, 5 and 6 are fragmentary side elevation views illustrating the different operating positions of the reciprocating tripping arm mechanism for initiating engagement of the clutch to bring about operation of the continuous form feeding mechanism;

Figure 7 is a plan view of the mechanism for engaging and moving the continuous sheet forms through the machine;

Figure 8 is a vertical sectional view taken substantially on the line 8—8 of Figure 7 and looking in the direction of the arrows;

Figure 9 is a detail elevation view of the latch mechanism for removably attaching the auxiliary form feeding attachment to the addressing machine;

Figure 10 is a detail fragmentary view illustrating the manner of fastening the support for the fan-folded stack of continuous sheets in position to be fed into the address printing machine;

Figure 11 is a plan view of one form of carbon paper feeding mechanism, partly in section, with certain associated parts of the machine being broken away to more clearly illustrate the construction of the mechanism;

Figure 12 is a fragmentary elevation view taken substantially on the line 12—12 of Figure 11, showing the gear train utilized for operating the carbon feeding mechanism shown in Figure 11;

Figure 13 is a detail view of the ratchet and pawl means on the carbon feeding mechanism taken substantially on the line 13—13 of Figure 11, looking in the direction of the arrows;

Figure 14 is a plan view, partly in section,

showing the interleaved arrangement of the continuous forms and carbon sheets with associated mechanism;

Figure 15 is a vertical sectional view taken through the carbon sheet feeding mechanism illustrated in Figure 14 and taken substantially on the line 15—15 of Figure 14;

Figure 16 is a detail sectional view taken on the line 16—16 of Figure 14 and looking in the direction of the arrows;

Figure 17 is a side elevation view of the frame and associated parts for supporting the carbon sheet rolls;

Figure 18 is a similar front elevation view of the carbon sheet roll support showing the spring pressed retarding means associated therewith;

Figure 19 is a detail perspective view illustrating the arrangement of the carbon feeding mechanism including the ratchet and pawl mechanism;

Figure 20 is a view in perspective illustrating the positioning of the carbon sheets interleaved between the continuous paper printed forms and the electrical conducting members associated therewith;

Figure 21 is a vertical sectional view of the carbon sheet feeding mechanism adjacent the knurled carbon feeding rollers and taken substantially on the line 21—21 of Figure 14;

Figure 22 is a detail view showing the construction for securing the carbon paper feed rolls in place;

Figures 23 and 24 are side elevation views of the clutch mechanism illustrating the tripping means for initiating operation of the clutch and actuation of the feeding mechanism whereby the continuous sheet forms are advanced a predetermined distance through the machine;

Figure 25 is an elevation view, partly in section, of the address printing press means showing the address printing plate and interleaved paper sheet forms in position for printing;

Figure 26 shows a portion of a typical continuous sheet after having been advanced through the address printing machine and having an address printed in the proper place thereupon;

Figure 27 represents a typical address plate for printing upon the sheet forms with attached printed index card;

Figure 28 represents a plan view, partly in section, of a modified screw type carbon sheet holder and feeding mechanism for use with continuous sheet forms which comprise a lengthwise folded section;

Figure 29 is a sectional view taken substantially on the line 29—29 of Figure 28 showing the manner of "floating" carbon paper between the copy sheet forms;

Figure 30 is a detail elevation view of the screw type carbon feeding mechanism illustrated in Figure 28;

Figure 31 is a fragmentary detail view of mechanism for attaching the carbon sheet holder means to the supporting side screws;

Figure 32 is a sectional view taken on the line 32—32 of Figure 1 and showing the structural arrangement of the carbon holder and transverse feeding means;

Figure 33 is a similar sectional view as Figure 32 showing the structural details of the carbon holder and arrangement for disconnecting the carbon holder members from the screw shaft for resetting the carbon feeding mechanism.

In general, it has been the practice to supply names, addresses and other constant information on continuous forms, invoices, statements, payroll checks, etc., by the use of printing machines utilizing printing plates or the like having the desired subject matter embossed or otherwise formed thereon. By the use of such machines printed impressions may be made at the rate of ninety to one hundred per minute. Heretofore, however, it has been necessary in the making of multiple copies to interleave the carbon sheets by hand and to use one-time pre-inserted carbon duplicating means.

This invention provides an attachment for interleaving carbon between continuous length multiple sheet forms which are to be printed upon at spaced intervals by means of a simple mechanism which automatically moves the carbon sheet after each impression. In this way clear, sharp copies of the printing are made and substantially all the carbon sheet is utilized. By means of this attachment continuous copy sheet forms are automatically fed to the printing position to be imprinted and then advanced into a receiving hopper and fan-folded into a pack. A pack of the continuous sheet forms to be printed upon is placed in the feeding hopper of the address printing machine of the attachment and adjusted so as to be fed through the printing machine. The auxiliary feeding mechanism is so designed and connected that it operates in synchronism with the address printing machine whereby, after each stroke of the printer stamper arm, the continuous sheet forms are automatically advanced to bring the next form in position to receive an impression, and the interleaved carbon sheets are simultaneously moved so as to present a new surface.

By the use of the auxiliary feeding attachment of this invention, the output of the printing machine may be substantially increased, and there heretofore time-consuming, tedious, wasteful manual operations of removing carbon sheets and pre-arranging the aligning copy sheet sheet forms, etc., are eliminated. Furthermore a more efficient and versatile machine which is adapted for a great number of uses is provided.

Referring to the drawings in detail, particularly Figures 1, 2, and 25, the feeder attachment of this invention is shown and described as an auxiliary mechanism for use with address printing machines. It will be appreciated, however, that the automatic feeder mechanism of this invention may be used as an attachment for various types of printing machines to automatically feed continuous sheet material in position to be printed upon and then advancing the printing sheet into a suitable receiver where it is stacked in a fan-folded pack.

In the drawings a typical address printing machine is illustrated comprising a flat table top member 40 which is supported by the frame generally designated 41 having legs 42. A stamper arm 43 carries a roller platen 44 which is arranged to be reciprocated by rod 45 which is attached to the reciprocating lever 46. When the stamper arm 43 swings forward the roller platen 44 is brought down against the paper sheet generally designated 50 which is to be printed upon, and the roller is reciprocated by the back and forth movement of the member 46.

In the addressing machine shown, multiple copy continuous forms 51 interleave with carbon paper sheets 52 are used. Address plate means 55 is utilized as the printing plate and a ribbon 53 is positioned between the printing plate and paper so as to transfer the imprint on the paper

sheet. The printing plate may be made in different styles as required for producing the desired imprint. As illustrated in Figure 27, the address plate preferably comprises a frame 56 having a removable printing plate 57 carrying the data to be transcribed, and an adjacent section 58 for receiving a card index member 59. The printing plate may be of one-piece construction or made of several pieces.

Extending upward at the back of the platen 44 is a printing plate magazine 60 for holding a stack of printing plates 59 which are advanced from the magazine to printing position beneath the ribbon 53 during operation of the machine. A motor 62 is suitably arranged for driving the machine. Appropriate means, not shown, is also provided for controlling the operation of the printing machine.

Automatic feeder attachment

The feeder attachment, as illustrated in Figure 1, comprises in general a hopper 70 which is adapted to receive the fan-folded pack 71 of continuous sheet forms to be printed upon. Hopper 70 is supported over the printing head 72 by means of a bracket 74. Leg members 75 are removably fastened to the inner side of the upright pieces 76 which in turn are secured to the side bars 77 attached to the feeding mechanism generally designated 80, and extending over the table top 40 at opposite sides of the printing head 72. The extremities of the legs 75 are grooved as at 81 to receive pins 82 on the members 76, as illustrated in Figure 10, to removably lock the pieces together.

On the rear side of the hopper 70 there is provided a guide means 84 over which the sheet of material to be printed upon is drawn and fed forward over the table 40 under the printing head 72. A spring guide means 85 is suitably positioned on the hopper 70 and arranged to frictionally engage upon the surface of the continuous sheet material as it is drawn from the hopper 70 to bring about an orderly removal of the sheet material from the fan-folded pack 71.

Feeder mechanism

The mechanism for feeding the continuous forms in the addressing machine and generally designated 80 comprises an endless chain feeding means 90 having spaced lugs 91 fixed on the chain links which is adapted to engage in similar spaced holes or slots in the continuous sheet 50 being printed, as shown in Figure 8, so as to draw the sheet material through the printing machine. This mechanism is supported on the frame, generally designated 93, which comprises the legs 94. The leg members may be made adjustable in length so as to properly positioned the feeding mechanism relative to the table 40 of the printing machine. In the lower part of frame 93 a compartment is provided for receiving the imprinted sheet forms which are ejected from the feeding mechanism. Preferably means are utilized, as at 95, for guiding the printed forms so as to restack them in a fan-folded pack, as shown at 96 in Figure 1.

Intermittent driving of the chain means 90 is effected by means of a motor 98 which is operatively connected through suitable clutch means 99 and gearing mechanism to advance the continuous sheet forms an accurate predetermined distance after each printing operation. The feeding attachment is provided with latch means 100 on each side of the feeding mechanism 80 which is adapted to engage over the extended rod member 102 positioned at the front of the address printing machine, as shown in Figures 1 and 2.

The latch 100 is constructed as illustrated in Figure 9 and is pivotally attached to the side of the feeding member 80, as at 103, and is normally held in horizontal position by the member 104 so as to automatically latch the feeding mechanism to the address printing machine when it is moved up against the front of the machine and in position for the latches 100 to engage the bar 102, as shown in Figures 1 and 2. An extending lug 105 is provided on top of the latch 100 for manually raising the latch member out of engagement with the bar 102 when the feeding attachment is to be disconnected from the address printing machine.

For initiating the operation of the feeding mechanism an actuating lever, generally designated 108, is provided which is positioned on one side of the feeding mechanism 80 and is supported at the outer end of the feeding mechanism by means of the pin 109. Adjacent the other end the lever 108 is supported on the side of the bracket portion 75 by means of the pin 110. Longitudinal movement of the lever 108 relative to the pin means 109 and 110 is provided for by means of the slots 112. Adjacent the inner end of the lever 108 a resilient bumper means 114 is provided to engage the forward face of the stamper arm 43 of the address printing machine, as illustrated in Figure 1. Adjustment of the length of the lever 108 is made by means of the slotted bracket member 115 which is fastened to the resilient bumper means 114.

A coil spring means 116 is attached to the operating lever 108, as at 117, and at the other end is secured to the pin 110 on the bracket 75. The spring coil means 116 urges the lever 108 to the right and against the stamper arm 43 of the address printing machine so that it is reciprocated when the stamper arm is moved back and forth during the printing operation.

Clutch actuating mechanism

Mounted on the feeder mechanism 80 adjacent the reciprocable feed control lever 108 is a clutch member 99 which functions to bring about rotation of the output shaft 124 which is adapted to drive the sprocket 121 carrying the chain 90 a predetermined amount, such as for example a single revolution. Any suitable mechanism may be utilized for this purpose which will upon actuation move the chain 90 engaging the continuous sheet forms a predetermined distance intermittently as required. Clutch mechanism, such as shown and described in my copending application Serial No. 258,015, filed February 23, 1939, may be utilized for this purpose, as illustrated in Figures 23 and 24.

This clutch mechanism 99 comprises essentially an input shaft 123 and an output shaft 124 for driving the endless chain 90 over the sprocket wheel members 121 and 122. The output shaft 124 of the clutch mechanism drives the shaft 120 of the sprocket wheel 121 by means of the gear train illustrated in Figure 12. The input shaft 123 is continuously driven by the motor 98 during the operation of the machine and rotation of the output shaft 124 is controlled by the movement of the locking plate 125. Movement of the locking plate 125 to the left, referring to Figures 23 and 24, disengages the step portion 126 from the cam 127 which is fastened to the output shaft from the shoulder 128 on the plate 125. Rota-

tion of the output shaft 124 is effected by suitable spring mechanism within the clutch casing so that when the cam 127 is released from the locking plate 125 the clutch operates to rotate the output shaft a predetermined amount such as a complete revolution, as illustrated in Figures 23 and 24.

For shifting the locking plate 125 to initiate an operating cycle of the clutch a lever 130 which is pivoted as at 131 adjacent the locking plate 125 is provided having one end connected by means of a link 132 with the locking plate 125. A spring 135 attached to the opposite end of the lever 130 tends to actuate the movement of the lever to cause link 132 to swing the locking plate 125 about its pivot to disengage the cam portion 126 from the shoulder 128 and start an operating cycle of the feeding mechanism. Normally the clutch actuating lever 130 is held in the position shown in Figure 23 by the lever 138 which carries a latch portion 139 for engaging a square pin 140 disposed on the outer end of the lever 130. The spring 142 urges the lever 138 to remain in position to contact the pin 140 when it is returned to its original position, as shown in Figure 23.

Upon rotation of the output shaft and cam member 127 the cam portion 126 contacts the cam surface 142 on the locking plate 125 and forces it to the right moving the shoulder 128 in position to engage the cam portion 126 and stop rotation of the output shaft when it reaches the position shown in Figure 23. At the same time, the clutch tripping lever 130 returns to its non-operating locked position, as shown in Figure 23, so that it is ready to be released to start another cycle of clutch operation. In this way while the motor shaft rotates the input shaft continuously, the output shaft of the clutch rotates only when the clutch tripping arm 138 is raised to permit the spring 135 to move the lever 130 and connecting link 132 to shift the locking plate 125 so as to start the actuation of the clutch to rotate the output shaft 124 a single complete revolution.

Clutch tripping mechanism

For tripping the lever 138 to bring about operation of the clutch a bell crank member 145 is provided having the arms 146 and 147. This bell crank member is pivoted as at 148 and arranged so that the arm portion 146 engages underneath the extended portion 149 of the lever 138. The other arm portion 147 carries a pin 150 which is positioned to be contacted by the latch means 152 which is carried by the reciprocable feed control lever 108. When the lever is shifted forward by the stamper arm 43 of the address printing machine, the latch 152 engages the pin 150 of the bell crank 145 and upon return of the stamper arm 43 after the printing operation, the lever 108 is shifted longitudinally to the right by the tension of the coil spring 116. This movement rotates the bell crank 145 which raises the lever 138 releasing the clutch tripping lever 130 which initiates the operation of the clutch.

When the printing head 43 swings upward and down a printing operation is effected and the operating lever 108 of the feeding mechanism is placed in the position shown in Figure 4 so that when the printing head 43 returns to its non-printing position the actuating lever 108 will be moved to the right bringing about a tripping of the clutch lever 138. Actuation of the clutch causes a limited feeding movement of the chain 90 and feed rolls 153 so as to advance the paper sheet a predetermined distance. The operation of the tripping mechanism for actuating the clutch is illustrated in Figures 2, 3, 4, 5 and 6.

Manual feeding adjustment mechanism

As shown in Figures 11 and 12, the output shaft 124 of the clutch drives the sprocket shaft 120 through the gear train comprising the mesh gears 155, 156, 157 and 158. By using different sets of gears the feeding mechanism can be changed so that the distance which the sheets being printed upon are advanced after each printing operation can be made to accommodate different sized sheet forms.

Manual movement of the feeding mechanism is provided for by means of the attachment 160 on the gear 156 which permits manual disengagement of the gear 156 with the clutch operating gear 155. Manual adjustment of the feeding mechanism is necessitated when threading the paper or sheets to be printed upon in the machine preparatory to starting printing operation. The gear 156 is slidable axially along its shaft 161 against the spring 162 which normally maintains the gear 156 in mesh with gear 155, as shown in Figure 11.

The gear teeth 163 on the gear 157 are of such a width relative to the gear teeth of gear 156 that the latter can be moved out of mesh with gear 155 and still be retained in mesh with gear 157. In this way the operator by grasping the member 160 and pulling outward against the spring 162 can disengage the gear 156 from gear 155 and rotate the feeding mechanism forward or backward, as desired, to adjust the position of the paper threaded in the machine. Upon releasing the member 160 the spring 162 forces the gear to slide axially into its normal position in mesh with gears 155 and 157, as shown in Figure 11.

Carbon feeding mechanism

The mechanism for feeding the carbon sheet material between the continuous paper sheet forms 50 and 51 is illustrated in Figures 11 to 22 inclusive. This part of the machine consists of a cam plate member 165 which is fixed to rotate with the gear 157 and comprises the spaced cam portions 166. The cam portions 166 are adapted upon rotation of the gear 157 to engage the shoulder 168 on the member 170, as shown in Figures 12 and 19. The lower end of the member 170 is carried around the shaft 120 and is thus guided during its movement in the path of the cam portion 166 on the cam 165. Attached to the upper end of the member 170 is a crank arm 172 which is secured to a sleeve member 173 rotatably mounted on the shaft 175. This shaft is arranged to drive the knurled rollers 177 and 178 which are arranged to draw carbon paper between the continuous moving sheets 51 being printed upon. Axial movement of the sleeve relative to the shaft 175 is prevented by the U-shaped locating pin 181 which is positioned over the sleeve 173 and in engagement with the circular groove in the shaft 175, as illustrated in Figures 11 and 12.

Rotation of the shaft 175 is brought about at intervals, as the cam portions 166 contact the shoulder 168 swinging the member 170 downward and rotating the sleeve 173 through the ratchet and pawl member 183 and 184 associated with the spring actuated member 185. The member 185 is attached to the sleeve 173 and carries the pawl 184 which engages the ratchet 183, and the shaft 175 is suitably fastened by means of the pin 187 to the ratchet 183. Rotation of the shaft 175 and knurled rollers 177 and 178 is effected

by clockwise movement of the member 185 by the sleeve member 173 which motion is transferred to the shaft 175 by means of the pawl 184 engaging the ratchet 183. Counterclockwise movement of the sleeve 173 and attached member 185, as shown in Figure 19, is effected by the coil 189.

The member 185 is of elongated shape and the end opposite the spring 189 is adapted to contact the bracket member 190 to limit its return movement under the action of the coil spring 189.

The knurled carbon sheet feeding rollers 177 and 178 are suitably arranged in the frame 192 at the side of the continuous sheet forms so as to draw the carbon sheets transversely beneath the continuous forms from the feed rolls 194 arranged on the rack 195 on the opposite side of the machine, as shown in Figure 20. The carbon sheets 52 which are interleaved between the paper forms are carried over the idler roll 196 in the lower portion of the frame 192 and are carried between the knurled rollers 177 and 178, as illustrated in Figures 14 and 20.

Provision is made for disassembling the idler roller 196 by means of the removable shaft 198 by removing the pin 200 engaging over the outer end, as illustrated in Figures 21 and 22. The knurled roller 178 is driven by the lower knurled roller 177 through the gears 202 and 204 on the ends of the knurled roller shafts. Means is provided through the spring pressed members 206 for separating the knurled roller 178 from the lower roller 177 by rotating the shaft 208 by means of the knurled manual operating means 207. The axial shafts of the carbon feed rolls 194 are positioned in slots 210 in the supporting end frame pieces 195, as illustrated in Figure 17. Adjustment is provided for positioning of the carbon sheet roller frame 195 by means of the knurled adjusting screw 212 located at the base of the frame, as illustrated in Figure 17. Each of the carbon feed roll members 194 is equipped with spring actuated brake means 215 for preventing coasting of the rolls during operation of the machine.

Static electricity control

Due to the development of static electricity between the carbon sheets 52 and continuous moving form sheets 50 and 51, which results in a tendency to drag the carbon sheets along with the moving continuous paper sheet forms which are being printed, there is arranged between the sheets the copper strip members 218, as shown in Figures 16 and 20. These copper strips or equivalent electrical connecting members are suitably retained on the end posts 220 and a guide strip 222 is arranged across the top of the sheets to maintain the continuous sheet forms in position to be contacted with the metal strips 218 as the sheets are moved along under the printing head. Suitable electrical conducting means is connected to the posts 220 for grounding the electric charge induced by the moving paper sheets.

Modified carbon sheet holding mechanism

In Figures 28 to 33 inclusive, there is illustrated a modified mechanism for retaining the carbon sheets interleaved between the continuous sheet forms when use is made of continuous sheet forms which are folded lengthwise, such as indicated by the paper sheets 224 as illustrated in Figure 29. In this instance transverse movement of the carbon sheet is impossible. The sheets of carbon 225 are held on thin bars 226 which are supported on a spindle means 228 which in turn is mounted on the screw bars 229 and 237. The carbon sheets are pasted or otherwise secured to the members 226 and are "floated" between the sheets as illustrated in Figure 29.

The spring pressed hinged screw follower 230 is hinged as at 231 on the supporting block 232 which is attached to the spindle 228 carrying the carbon bars 226. One or more of the carbon sheet retaining bars 226 may be positioned in the spindle member 228 and clamped into position so as to hold the carbon sheet in between the folded continuous sheet forms, as illustrated in Figure 29. This clip is adapted to be swung in engagement with the screw threads 233 on the shaft 229 and upon rotation of the screw shaft 229 the block 232 and associated spindle carrying the carbon sheet forms are moved longitudinally along the shaft. In this instance the screw shaft 229 replaces the shaft 175 in the mechanism illustrated in Figure 19.

Duplicate carbon holding mechanism, as illustrated in Figures 31, 32 and 33, is provided on the opposite sides of the moving sheet forms as illustrated in Figure 28, and the gear 235 is arranged on the screw shaft 229 which drives the opposite screw shaft 237 by means of the chain and sprocket 238 and 239, respectively. Paper side guide means 240 is provided on the spindle 228 of the carbon sheet holders for maintaining the paper sheet forms in alignment as they pass along.

When the carbon sheet holders 226 have been moved along by the supporting block member 232 to the end of the screw portions 233 on the rod members 229 and 237 the operator will manually reset the carbon sheets at the other end of the screw shaft by raising the hinged clip 230 which engages the screw threads 233 of the rod so as to allow the spring pressed plunger 242 to hold the hinged clip 230 out of engagement with the screw threads. After the carbon sheet holders are positioned at the opposite end of the screw thread the hinged screw follower 230 will be reset to engage the screw and permit repeated movement of the carbon sheets. The member 228 which supports the carbon sheet rod members 226 is suitably guided on the rod 244, as shown in Figure 30.

Operation

In the operation of the machine as illustrated, the address printing machine is synchronized with the movement of the automatic feeding control mechanism so that by means of the attachment continuous copy sheet forms are automatically fed to the printing position and thereafter printed upon and then the tripping mechanism on the feeding attachment actuates the clutch to bring about a predetermined accurate movement of the continuous sheet forms so as to advance them out of the printing machine and at the same time actuate the carbon sheet feeding mechanism so as to move the carbon sheets to present new surface. In the automatic feeder mechanism illustrated the continuous sheet forms are withdrawn from a fan-folded pack and moved beneath the printing mechanism and thereafter ejected into a compartment and fan-folded into a finished pack form.

It will be understood that different types of forms, continuous sheet or otherwise, may be used with this invention and that printing mechanism other than addressograph machines may be employed with the auxiliary feeding attachment of this invention.

It will be understood also that this invention is not limited to the exact details of construc-

tion illustrated but may be varied to suit different conditions and uses.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent is:

1. An auxiliary attachment for printing machine operable in synchronism therewith through separate driving means comprising: means for holding a fan-folded pack of continuous length sheet forms; means including an endless movable member engageable with said continuous sheet intermittently for advancing said forms through said printing machine, said endless member being adapted to keep said forms in register; means continuously driven in association with said printing machine for controlling the movement of sadi endless member, whereby said forms are advanced a predetermined distance and positioned in register for imprinting thereon; carbon sheet material interleaved with said continuous sheet forms; means in association with said endless member for moving said carbon sheet in synchronism with the movement of said forms, said carbon sheet moving in opposite direction to said continuous sheet forms and a predetermined distance lesser than the distance traveled by said sheet forms; and means for restacking the printed continuous sheet forms in a fan-folded pack.

2. In combination with a printing machine, an auxiliary attachment operable in synchronism therewith through separate driving means wherein continuous strip fan-folded stationery receives at longitudinally spaced intervals imprinted legends comprising: feeding means adapted for differentially advancing in opposite directions superimposed strips of fan-folded stationery material and carbon sheet material past an imprinting position in register with each other; a prime mover adapted to drive said feeding means separate from the prime mover of said printing machine in synchronism therewith; means adapted to move said carbon sheet material longitudinally and in opposite direction to the movement of said stationery material after each imprinting operation, said carbon sheet material being moved a distance lesser than the distance said stationery material is moved; and means adapted intermittently to associate the driving means of said printing machine and said auxiliary attachment whereby the movement of said stationery material, carbon sheet material, and printing machine is brought into operative synchronism.

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