

May 1, 1923.

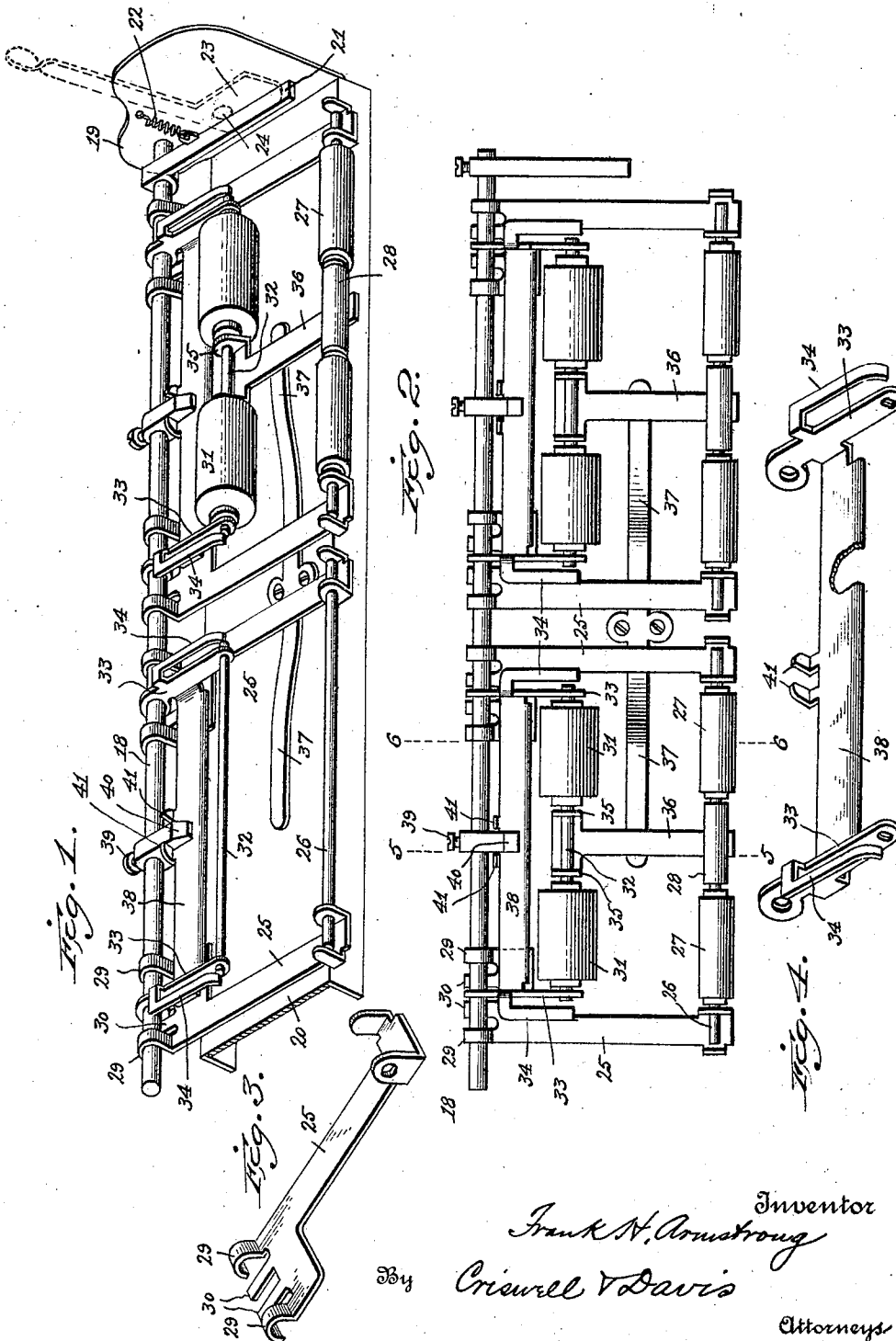
1,453,582

F. H. ARMSTRONG

TYPEWRITING MACHINE

Filed Dec. 27, 1918

2 Sheets-Sheet 1



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Criswell & Davis
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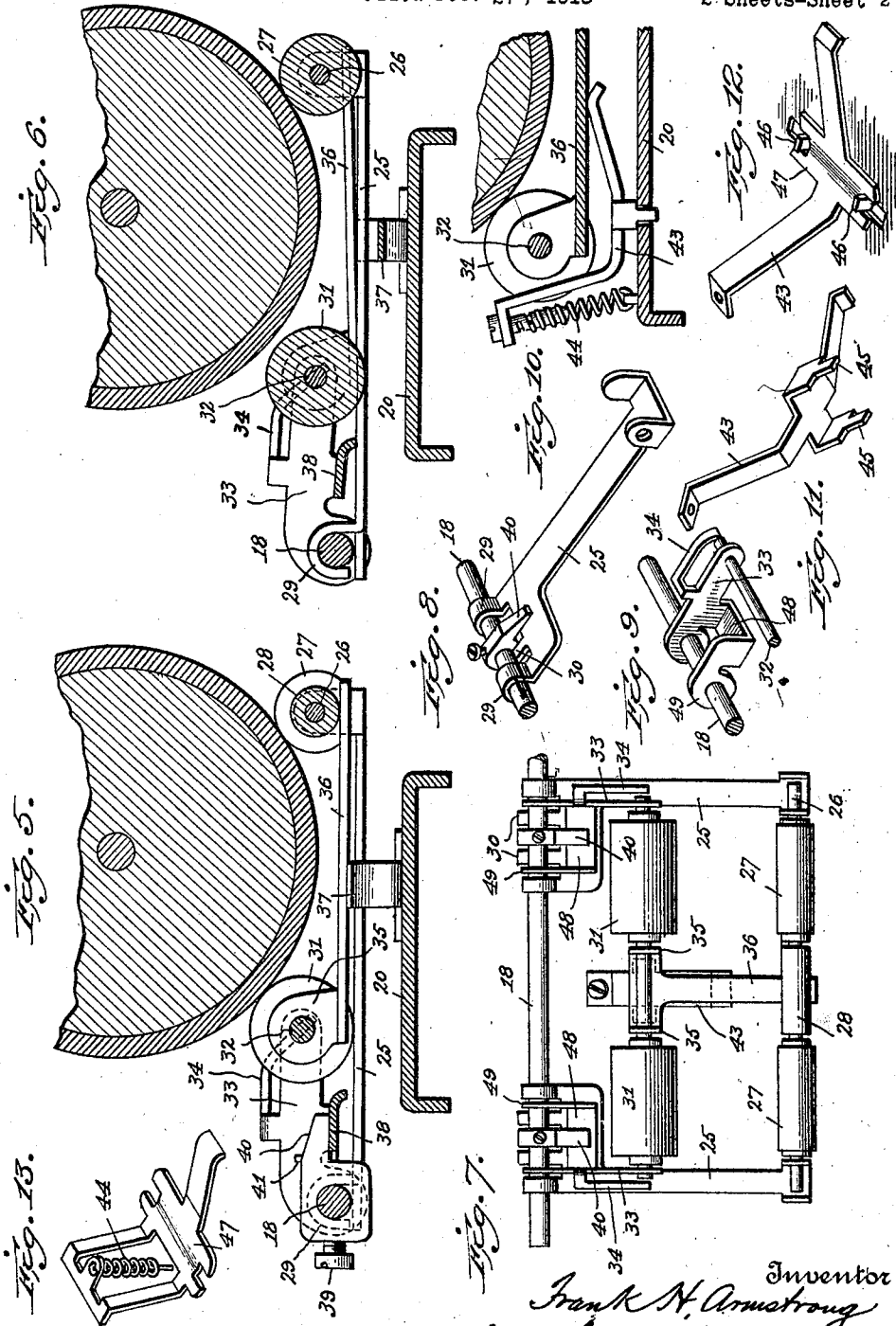
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UNITED STATES PATENT OFFICE.

FRANK HUBBERT ARMSTRONG, OF AUBURN, NEW YORK, ASSIGNOR TO CORONA TYPE-WRITER COMPANY, INC., OF GROTON, NEW YORK, A CORPORATION OF NEW YORK.

TYPEWRITING MACHINE.

Application filed December 27, 1918. Serial No. 268,579.

To all whom it may concern:

Be it known that I, FRANK H. ARMSTRONG, a citizen of the United States of America, and a resident of Auburn, county of Cayuga, State of New York, have invented certain new and useful Improvements in Typewriting Machines, of which the following is a full and clear specification.

This invention has relation to that type of paper-feeding means broadly covered in my copending application Serial No. 256,195, filed September 30, 1918.

In the drawings—

Fig. 1 is a perspective view of a portion of a paper-feeding appliance embodying my invention;

Fig. 2 is a plan view of a paper-feeding appliance embodying the same structure partly illustrated in Fig. 1;

Fig. 3 is a perspective view of one of the bars which support the front feed roll shafts;

Fig. 4 is a perspective view of the swinging frame carrying the rear feed-roll-shaft;

Fig. 5 is a vertical sectional view on the line 5—5 of Fig. 2, both front and rear feed-rolls being shown in operative position;

Fig. 6 is a similar view on the line 6—6 of Fig. 2, the rear feed-rolls being swung to release position;

Figs. 7, 8, 9, 10, 11, 12 and 13 are detail views showing modifications.

Referring to the drawings annexed by reference characters, 18 designates a rock-shaft journaled in the usual end flanges 19 of the platen-carriage at a point to the rear of the platen and approximately on a level with the space between the platen and the carriage 20. This rock-shaft is adapted to be rocked forwardly a limited distance by any suitable mechanism operable manually; I prefer for this purpose a forwardly-extending arm 21 adapted to be held in its up position by spring 22 against one edge of a cam-lever 23 pivotally mounted on the shaft 24 of the platen and adapted when rotated forwardly to swing the arm 21 downwardly a predetermined distance and to lock it in that position.

The front paper-feed devices consist of two U-shaped frames, each of which consists of a pair of flat bars 25 carrying at their forward ends a shaft 26 on which is mounted two front feed-rolls 27, these rolls being spaced apart on said shaft by a loose sleeve

28. The rear ends of the bars 25 are pivotally hung upon the rock-shaft 18 by means of a pair of upwardly-bent hooks 29 formed on the rear ends of the bars 25, which hooks engage over the top side of the shaft, and a pair of rearwardly-extending fingers 30 engaged under the shaft, the rear ends of bars 25 being laterally broadened to ensure a broad bearing on the shaft, to thereby avoid undue lateral swinging of the front ends of the carrier-bars 25.

The rear paper feed devices consist of two frames each of which comprises a feed-roll shaft 32 journaled in the forward ends of two arms 33 pivotally connected at their rear ends to the rock-shaft 18, a pair of feed rolls 31 being loosely mounted on shaft 32 and said arms 33 being provided with integral fingers 34 bent so as to have their forward extremities in axial alinement with the shaft 32 and thus act as shaft-stops to prevent undue endwise movement of the shaft in the bearing-arms 33.

The rear feed-rolls 31 on each shaft 32 are spaced apart by a pair of separated upstanding lugs 35 carried at the rear end of the bar 36 whose forward end bears upwardly against the spacing sleeve 28. A suitable spring mechanism is arranged to bear upwardly against the two equalizing bars or levers 36 to thus normally or resiliently press all of the feed-rolls against the platen. In Fig. 2 I show a double flat spring 37 for this purpose, this spring extending longitudinally of the carriage and being fastened about midway its length to the top-face of the carriage and having its free ends bearing respectively up against the bars 36.

The end-bars 25 are approximately on a level with the under side of the rock-shaft 18, while the carrier-arms 33 for the rear feed-roll-shaft 32 project forwardly in a higher plane, so that the axis of said shaft 32 is in a plane above the rock-shaft and the under side of the rear feed-rolls 31 are approximately on a level with the upper side of the end-bars 25. The two carrier-arms 33 for each rear feed-roll shaft are connected together at their rear ends by a bar or plate 38 so that the arms 33 will swing in unison and undue torsional action of the roll-shaft 32 will be avoided. Adjustably affixed by means of the set-screws 39 to the rock-shaft are two forwardly-projecting tappets 40 which normally lie against the

upper side of the bars 38 and serve to lock the rear feed-roll supports against undue endwise movement with respect to the rock-shaft by being interlocked with pairs of up-
 5 standing lugs 41 formed on the rear edges of the bars 38. As stated, the forwardly projecting tappets 40 lock the rear feed roll supports against undue endwise movement with respect to the platen and the rock-shaft,
 10 but it will be understood that there will be sufficient space between the lugs 41 to allow a limited play of the rear feed roll supports, to thus give a limited free play to the rear feed-rolls, to enable them to readily accommodate
 15 themselves to work-sheets of different thicknesses, inequalities of platen surface, etc. The two supporting frames for the front feed-rolls are held against undue endwise movement with respect to the rock-shaft 18
 20 and the platen by so attaching the arms 33 to the rock-shaft that their rear depending ends shall extend downwardly between the separated fingers or lugs 30 carried by the carrier-bars 25, the space between these lugs,
 25 however, being a sufficient degree wider than the engaging part of the bar 33 to permit the front roll supports to have a slight endwise play with respect to the rock-shaft, to thereby enable said front roll supports and
 30 the rolls carried thereby to have a sort of universal-adjustment capacity with respect to the platen surface.

It will be observed that through the medium of the bars 36, both the front and the
 35 rear feed-rolls will be held resiliently against the platen and that the supports or carriers of these rolls are so constructed and arranged that these rolls shall not only be capable of yielding independently away from
 40 the platen, but shall also have a limited skewing capacity as well as a capacity to shift slightly endwise with respect to the platen, thereby ensuring at all times proper frictional action against the work-sheets, ir-
 45 respective of inequalities of platen, thickness of paper and presence of erasure-rubings and other foreign matters that might lodge between the sheets and the platen. When the rock-shaft is rocked forwardly to
 50 release the feed-rolls from the platen, this being done through the medium of the cam-lever 23 or other suitable means, the first action will be to swing the rear feed-rolls away from the platen, this being done
 55 through the medium of the tappets or arms 40 which engage the top-side of the connecting bars 38 and swing the rear feed roll shafts 32 downwardly. During this initial downward movement of the feed roll shafts
 60 32, no movement of the front feed-roll-structure takes place, but at a predetermined point in the downward movement of the rear feed-rolls, the front edges of the bars 38 will engage the top-sides of the end-bars 25,
 65 as shown in Fig. 6, and thus lock the end-

bars to the rock-shaft so that a further rotation of the rock-shaft will pry or swing down the forward ends of the end-bars and thus take all of the front feed-rolls away
 70 from the platen the desired distance. Instead of the spring 37 I may employ two spring-actuated levers 43 for pressing upwardly on bars 36, as shown in Figs. 7 to 12. The pivotal connection of the levers 43
 75 to the platen-carriage may be by way of a pair of integral lugs 45 formed on each lever and arranged to extend through openings formed in the carriage-plate 20, as shown in Figs. 10 and 11, or by striking up a pair of
 80 lugs 46 from the carriage-plate and having these lugs engage notches in the ends of a broad bearing-plate 47 formed integral with the lever, as shown in Figs. 12 and 13. With
 85 each of these ways of connecting the levers to the platen carriage, it will be observed that I avoid the use of pivots or other parts requiring machining. The forward ends of levers 43 engage under the bars 36 and the rear ends of the levers are normally pulled
 90 downward by springs 44 connected at their ends with the levers and platen carriage.

In Figs. 7, 8 and 9, I show another way of connecting the carriers 33 to the rock-shaft. In this modified form of the device, it will
 95 be observed that I do away with the long connecting-bar 38, using instead a short lateral bar or flange 48 formed integral with the bar-like carrier 33 and having its end connected to the rock-shaft by a rearwardly-
 100 extending ear 49, to thus provide for each carrier 33 a broad and substantial connection with the rock-shaft. With this arrangement, it is desirable that instead of one tappet 40 for each rear roll shaft supporting frame, I employ four of these tap-
 105 pets, one being arranged to engage each one of the short bars or plates 48, each of these tappets being arranged to engage between the fingers 30 of the end-bars 25 in the same manner as that in which said fingers are en-
 110 gaged in the other structure by means of the rear ends of the carrier-arms 33. The operation of this modified structure is the same as in the structure in which the long bars 38 are employed.

The nature and scope of the invention having been thus indicated and its preferred embodiment having been specifically described, what is claimed as new is:

1. In a paper feed mechanism, the combination of a platen, a rockable cast-off shaft, means for rocking said cast-off shaft, a one-piece sheet metal feed-roll frame pivoted directly to the cast-off shaft to swing about the cast-off shaft when said shaft is stationary and provided with bearings for a feed-roll shaft, a tappet on the cast-off shaft adapted to engage and swing the frame away from the platen when said shaft is rocked in one direction, lugs on the frame at oppo-
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site sides of the tappet, means for yieldably urging the frame toward the platen, a feed-roll shaft extending through the bearings on the frame, a feed-roll loosely mounted on the

5 feed-roll shaft between said bearings, and integral bendable stops on the frame bendable into alignment with the ends of the feed-roll shaft for holding the shaft in the frame.

10 2. A feed-roll mount comprising a flat sheet metal member having end portions bent at right angle thereto to form shaft supports, said end portions being provided with apertures, a feed-roll shaft having its

15 ends extending through said apertures, a feed-roll loosely mounted on said shaft between said end portions, and bendable stops formed on said end portions and bent into

20 alinement with the ends of the shaft to prevent endwise withdrawal of the shaft from said end portions and spaced slightly from the ends of the shaft.

3. In a typewriting machine, the combination of a platen carriage, a platen rotatably

25 mounted on the carriage, a cast-off rock shaft journalled on the carriage, a frame pivotally held at its rear edge to the rock shaft, a rear feed roll shaft supported at its

30 ends in said frame, a front feed roll shaft, feed rolls on the feed roll shafts, a pair of independent members pivotally held at their rear ends to the rock shaft and each provided adjacent its forward end with a bearing

35 for one end of the front feed roll shaft, and means whereby the feed rolls will be shifted away from the platen when the rock shaft is rotated in one direction.

4. In a typewriting machine, the combination of a platen carriage, a platen rotatably

40 mounted on the carriage, a cast-off rock shaft journalled on the carriage, a frame pivotally held at its rear edge to the rock shaft, a rear feed roll shaft supported at its

45 ends in said frame, a front feed roll shaft, feed rolls on the feed roll shafts, a pair of independent members pivotally held at their rear ends to the rock shaft and each provided adjacent its forward end with a bearing

50 for one end of the front feed roll shaft, means for yieldably pressing the feed-roll shafts toward the platen, and means whereby the rear feed roll shaft will be shifted away from the platen in advance of the front feed roll shaft when the rock shaft is

55 rotated in one direction.

5. In a typewriting machine, the combination of a platen carriage, a platen rotatably

60 mounted on the carriage, a cast-off rock shaft journalled on the carriage, a frame pivotally held at its rear edge to the rock shaft, a rear feed roll shaft supported at its ends in said frame, a front feed roll shaft, feed rolls on the feed roll shafts, a pair of independent members pivotally held

65 at their rear ends to the rock shaft and each

provided adjacent its forward end with a bearing for one end of the front feed roll shaft, means for pressing both feed roll shafts toward the platen, and a tappet on the rock shaft adapted to engage and swing

70 the rear feed roll shaft supporting frame away from the platen, said frame being adapted to engage and swing the front shaft supporting members away from the platen after an initial cast-off movement

75 of the frame.

6. In a typewriting machine, the combination of a platen carriage, a platen rotatably mounted on the carriage, a cast-off

80 rock shaft journalled on the carriage, a frame pivotally held at its rear edge to the rock shaft, a rear feed roll shaft supported at its ends in said frame, a front feed roll shaft, feed rolls on the feed roll shafts, a pair

85 of independent members pivotally held at their rear ends to the rock shaft and each provided adjacent its forward end with a bearing for one end of the front feed roll shaft, a bar extending transversely of the carriage and pressing upwardly against

90 both feed roll shafts, a spring pressing upwardly against said bar, and means on the rock shaft for swinging the rear feed roll shaft supporting frame away from the platen, said frame being adapted to engage and

95 swing the front roll shaft supporting members away from the platen.

7. In a typewriting machine, the combination of a platen carriage, a platen rotatably mounted on the carriage, tandem feed

100 rolls, independent supporting means for the rolls both located at the same side of the rock shaft and connected at one end to the rock shaft to swing freely about said shaft and slide longitudinally of the shaft, and

105 a tappet on the rock shaft for rocking the supporting means for one of the feed roll shafts away from the platen, said independent shaft supporting means being interlocked with each other at their points of

110 connection with the shaft to limit relative movement therebetween longitudinally of the shaft and said tappet being interlocked with the supporting means of one of said shafts to thus limit the sliding movement of the

115 two supporting means on the rock shaft, the supporting means rocked by the tappet being adapted to engage and rock the other roll supporting means.

8. In a typewriting machine, the combination of a platen carriage, a platen rotatably mounted on the carriage, tandem

120 feed rolls, independent supporting means for the rolls both located at the same side of the rock shaft and connected at one end to the

125 rock shaft to swing freely about said shaft and slide longitudinally of the shaft, and a tappet on the rock shaft for rocking the supporting means for one of the feed roll shafts away from the platen, said independent shaft

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supporting means being interlocked with each other at their points of connection with the shaft to limit relative movement there-between longitudinally of the shaft and said 5
 5 tappet being interlocked with the supporting means for one of said shafts to thus limit the sliding movement of the two supporting means on the rock shaft, the supporting means rocked by the tappet being adapted to engage and rock the other roll supporting means, a member for pressing both rolls toward the platen, and resilient means for exerting pressure on said member.

9. In a typewriting machine, the combination of a platen carriage, a platen rotatably mounted on the carriage, a cast-off rock shaft journaled on the carriage, a rear feed roll shaft, supporting means for the rear feed roll shaft pivotally held to the 20
 20 rock shaft, a front feed roll shaft, bars supporting the front feed roll shaft at the same side of the rock shaft as the rear feed roll shaft and provided at one end with hooks engaging over the rock 25
 25 shaft and fingers engaging under the rock shaft, feed rolls on the feed roll shafts, means on the rock shaft for rocking the rear feed-roll shaft supporting means away from the platen into engagement with the bars 30
 30 successively cast off the rear and front rolls, and means for normally urging the rolls toward the platen.

10. In a paper feed mechanism, the combination of a platen, a rock shaft, means for 35
 35 rocking said shaft, a rear feed-roll frame having a longitudinal member and roll-shaft supporting end members pivoted on the rock shaft, a rear roll shaft supported on said end members, a tappet on the rock shaft engaging over said longitudinal member of the rear roll frame, a front feed-roll shaft, supporting means for the front feed roll shaft normally spaced below the longitudinal member of the rear roll frame and pivotally held to the rock shaft, and feed-rolls 45
 45 on the front and rear roll and shafts.

11. In a paper feed mechanism, the com-

50
 50 combination of a platen, a rock shaft, means for rocking said shaft, a rear feed-roll frame having a longitudinal member and roll-shaft supporting end members pivoted on the rock shaft, a rear roll shaft supported on said end members, a tappet on the rock shaft engaging over said longitudinal member of the rear roll frame, a front feed-roll shaft, supporting means for the front feed roll shaft normally spaced below the longitudinal member of the rear roll frame and pivotally held to the rock shaft, feed-rolls on the front and rear roll shafts, and spring-urged 60
 60 means independently pressing the front and rear roll shafts toward the platen.

12. In a typewriting machine, the combination of a platen carriage, a platen rotatably mounted on the carriage, a pair of 65
 65 aligned rear feed roll shafts, a pair of aligned front feed roll shafts, a pair of spaced feed rolls on each shaft, a pair of pressure distributing members each connected with two tandem feed roll shafts intermediate the rolls on the shafts, and a bowed 70
 70 spring on the carriage having its ends connected with said members.

13. In a typewriting machine, the combination of a platen carriage, a platen rotatably mounted on the carriage, a pair of 75
 75 aligned rear feed roll shafts, a pair of aligned front feed roll shafts, a pair of spaced feed rolls on each shaft, a cast off rock shaft on the carriage, independent supporting means for each shaft pivotally held to the rock shaft, means on the rock shaft for swinging the supporting means for the rear shafts away from the platen into engagement with the supporting means for the 85
 85 front shafts, a bowed spring secured midway its ends to the carriage, and a pair of bars resting on said spring at opposite sides of its longitudinal center and each connected with a front feed roll shaft and a rear feed roll 90
 90 shaft intermediate the rolls on said shafts.

This specification signed this seventeenth day of December, A. D. 1918.

FRANK HURBERT ARMSTRONG.