

June 4, 1935.

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2,003,364

FEEDING MECHANISM FOR PRINTING PRESSES

Original Filed Sept. 23, 1931 7 Sheets-Sheet 1

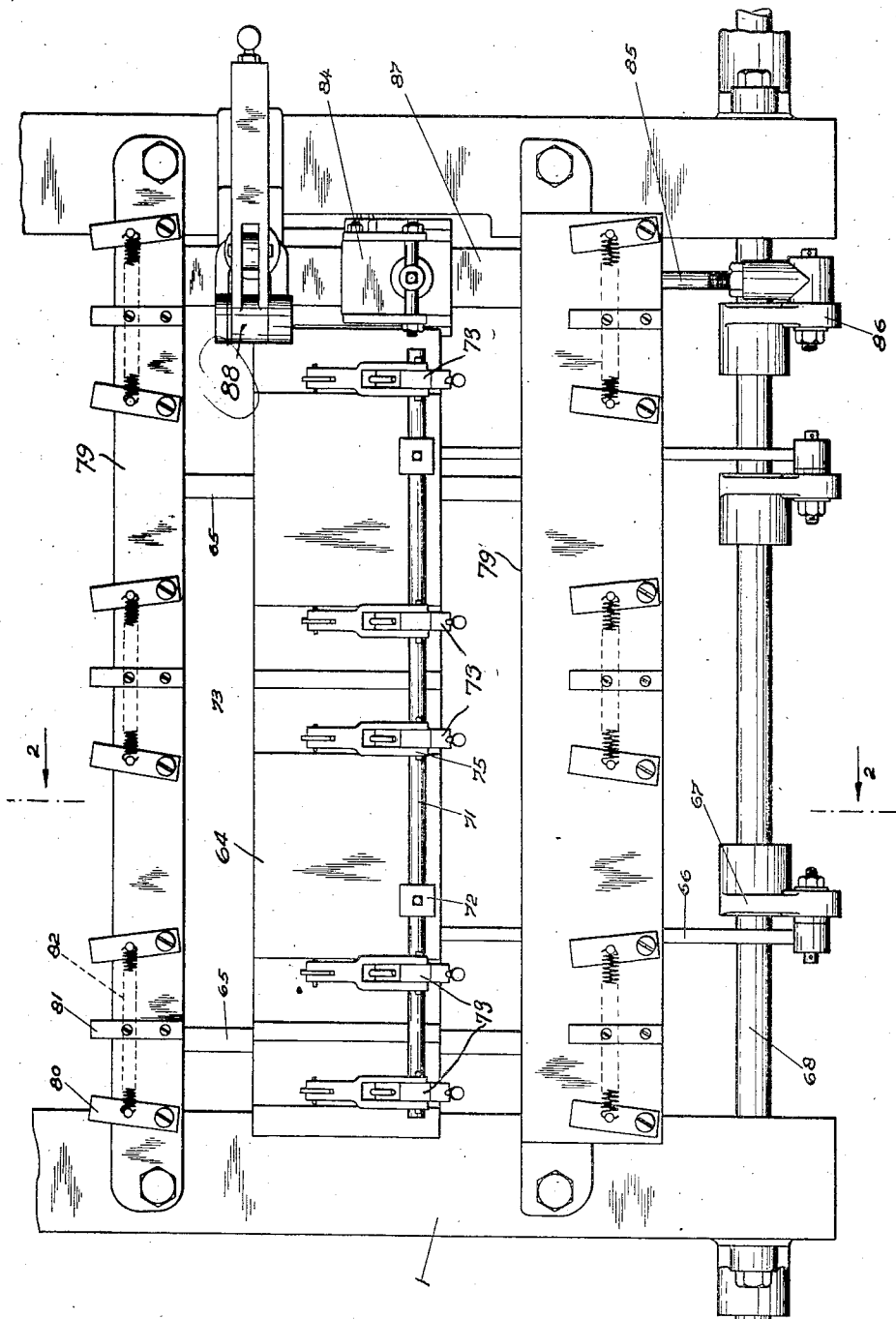


Fig. 1

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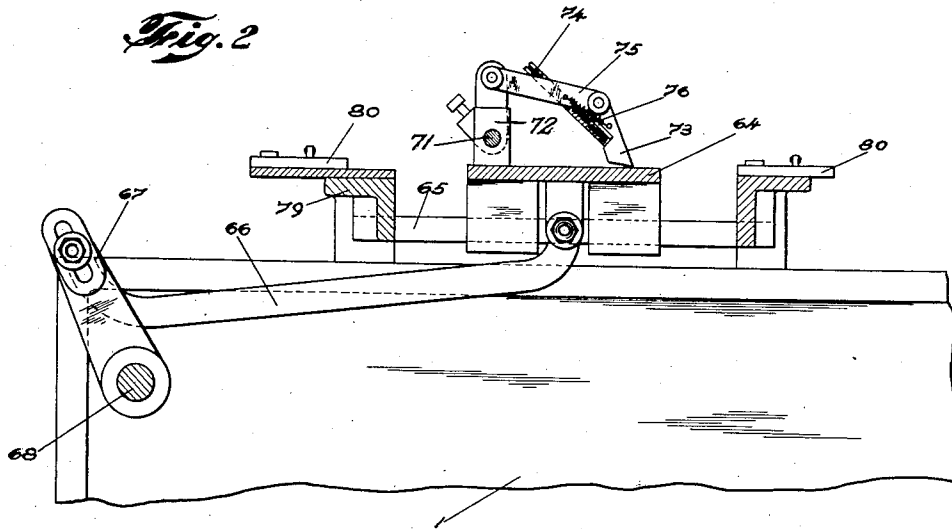
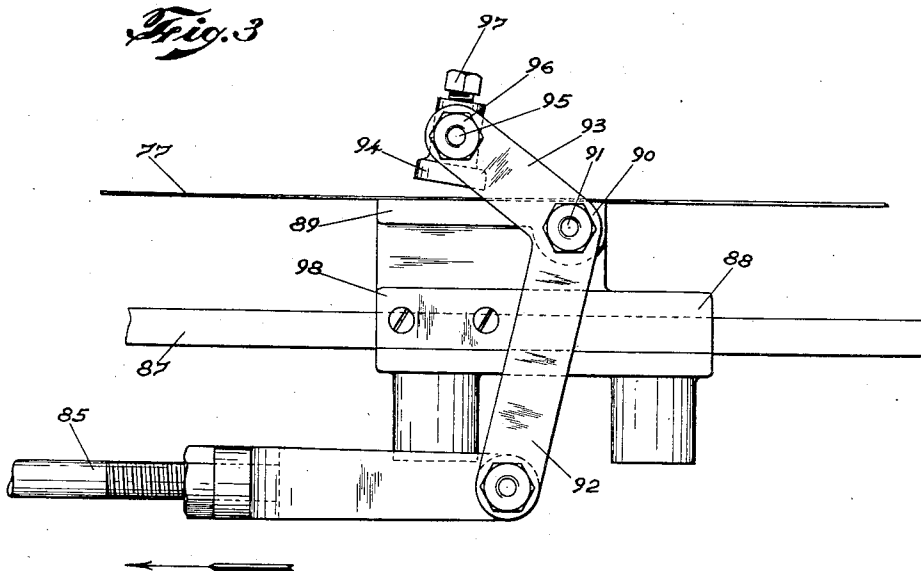
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FEEDING MECHANISM FOR PRINTING PRESSES

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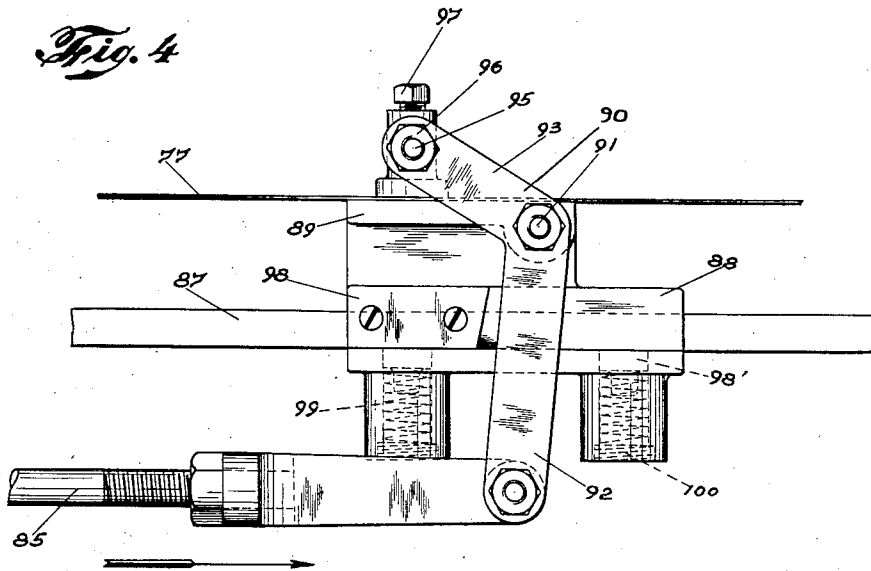
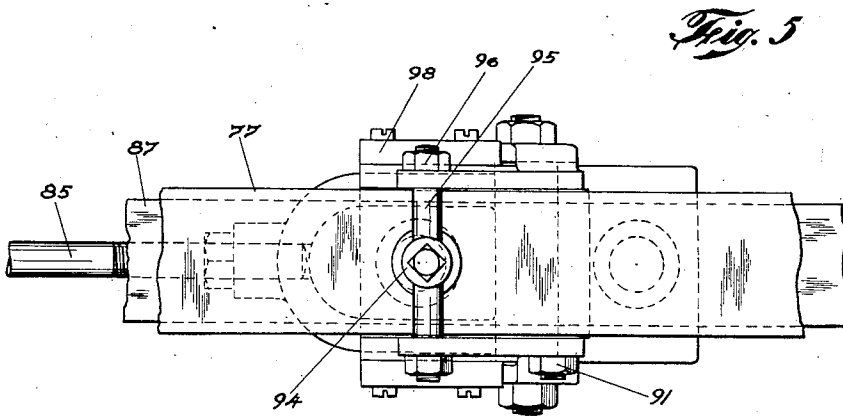
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FEEDING MECHANISM FOR PRINTING PRESSES

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FEEDING MECHANISM FOR PRINTING PRESSES

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Fig. 6

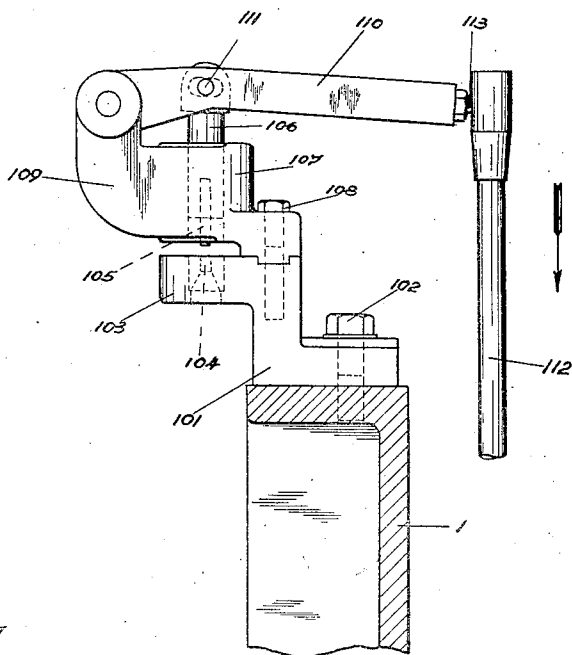
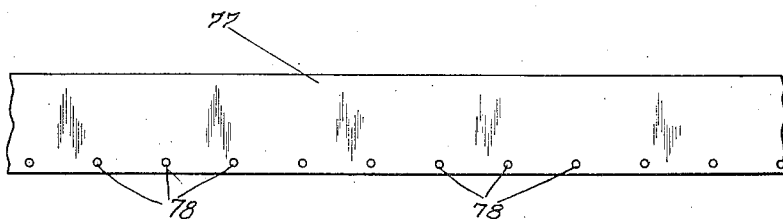


Fig. 7



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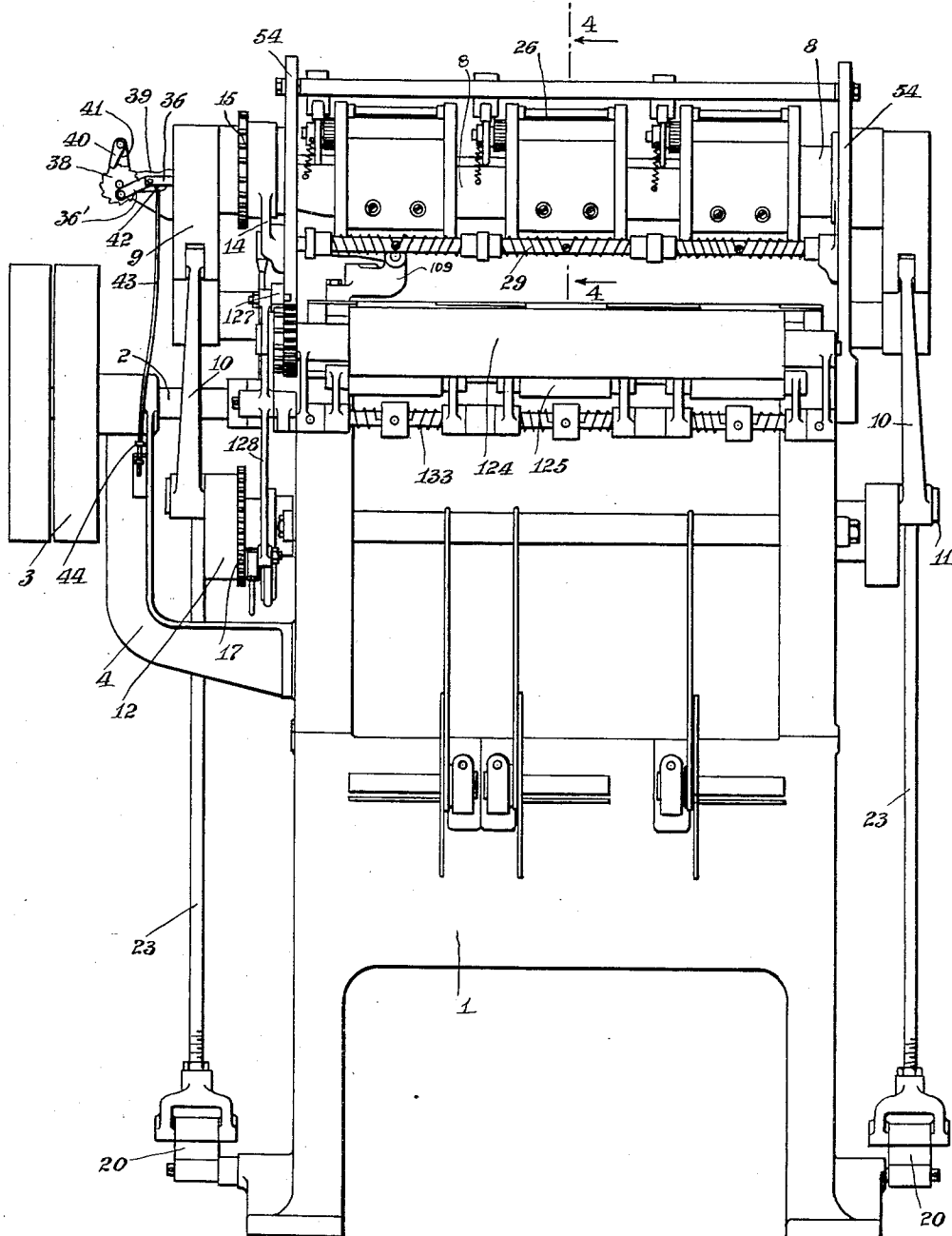
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FEEDING MECHANISM FOR PRINTING PRESSES

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Fig. 8.



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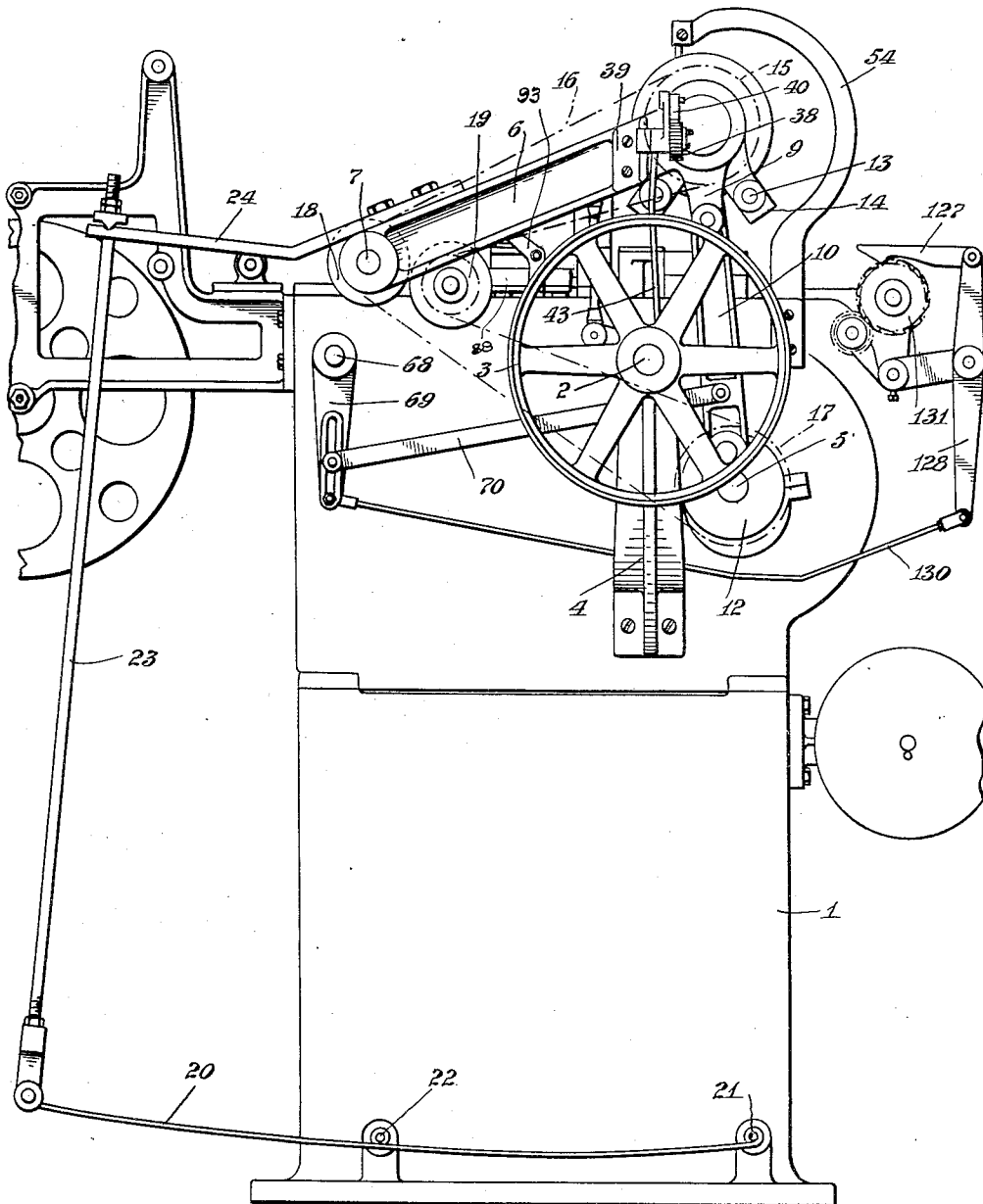
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FEEDING MECHANISM FOR PRINTING PRESSES

Original Filed Sept. 23, 1931 7 Sheets-Sheet 6

Fig. 9.



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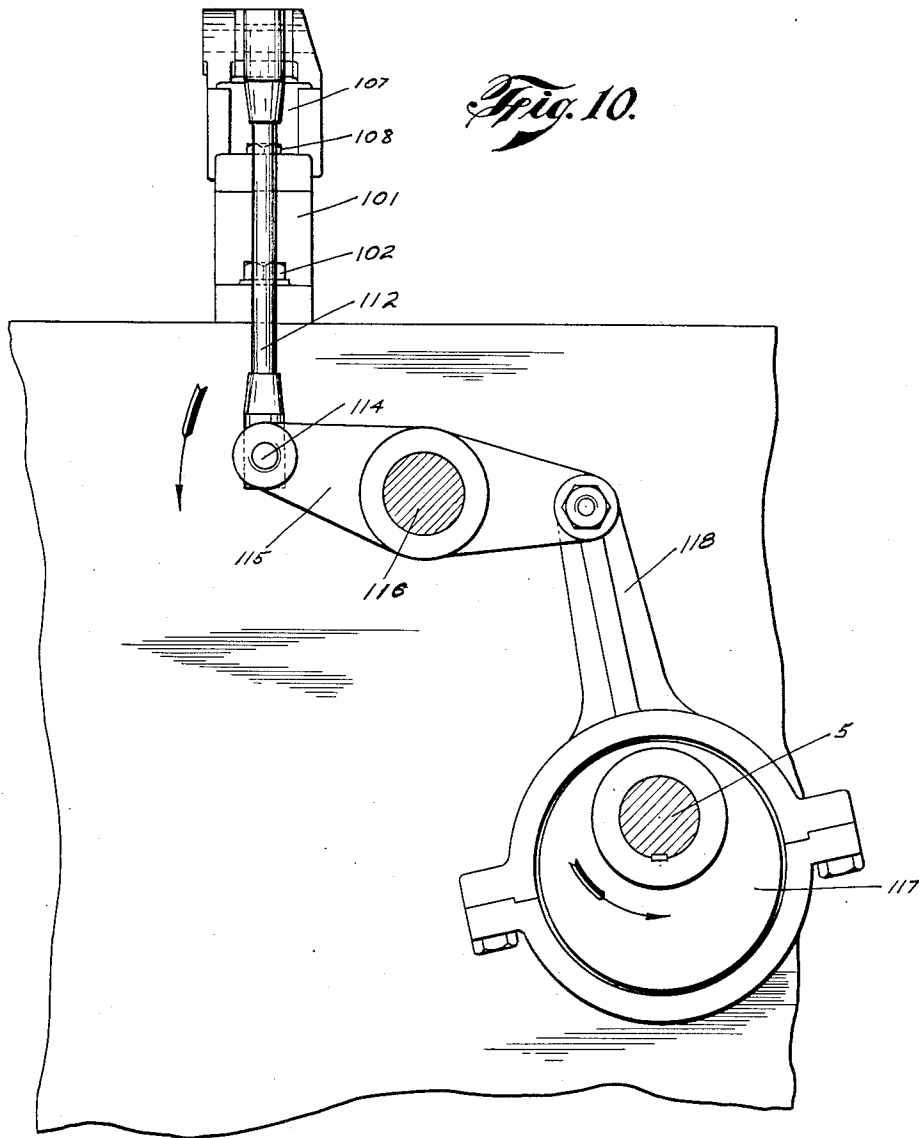
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FEEDING MECHANISM FOR PRINTING PRESSES

Original Filed Sept. 23, 1931 7 Sheets-Sheet 7



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2,003,364

FEEDING MECHANISM FOR PRINTING
PRESSES

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Original application September 23, 1931, Serial
No. 564,615. Divided and this application June
28, 1932, Serial No. 619,685

8 Claims. (Cl. 164—88)

The present application is a divisional application of applicant's copending application Ser. No. 564,615 for Printing machine, filed September 23, 1931.

5 The present invention relates to printing machines and embodies, more specifically, an improved form of printing machine which is adapted particularly for printing on one or both sides of a continuous band or tape. More specifically,
10 the invention embodies an improved printing machine of the above character which is constructed to print, upon one or both sides of a band or tape, subject matter at spaced intervals, whereby tags bearing such subject matter may be stamped
15 therefrom in subsequent operations.

In machines of this character now available, the feed mechanism for advancing the tape through the machine is a source of frequent trouble and requires constant attention to maintain the same properly serviced.
20

In order that a machine may be provided to overcome the disadvantageous characteristics enumerated above, the present invention has been designed and an object thereof is to provide a
25 printing mechanism for printing suitable legends or indicia at spaced intervals upon a continuous band or tape, such mechanism being provided with an improved feed mechanism for advancing the tape effectively through the machine.

30 A further object of the invention is to provide an improved feed mechanism of the above character wherein the tape is engaged frictionally and advanced through the printing machine by a friction drive which automatically engages and dis-
35 engages itself from the tape to advance the latter through the printing machine periodically.

A further object of the invention is to provide, in combination with a feeding mechanism of the character described above, a punching mechanism
40 which is synchronously operated with the feed mechanism to perforate tape as it is fed into a printing machine in order to facilitate the subsequent feeding of the tape through the machine.

A further object of the invention is to provide
45 an improved tape guiding mechanism and feed mechanism for advancing the tape through the printing machine in a plurality of successive stages.

Further objects, not specifically enumerated
50 above, will be apparent as the invention is described in greater detail in connection with the accompanying drawings, wherein:

55 Figure 1 is a plan view of a feeding mechanism for printing machines, this view showing the feed mechanism for advancing tape through the ma-

chine, as well as the tape guide and punching mechanism.

Figure 2 is a detail view in section, taken on line 2—2 of Figure 1, and looking in the direction of the arrows, showing the secondary tape feeding mechanism.

Figure 3 is a view in end elevation showing the tape feeding mechanism for advancing the tape into the printing machine.

Figure 4 is a view in end elevation showing the tape feeding mechanism of Figure 3 in its tape engaging position, preparatory to advancing the tape into the printing machine.

Figure 5 is a plan view of the feed mechanism shown in Figures 3 and 4.

Figure 6 is a view in side elevation, showing a punching mechanism constructed in accordance with the present invention.

Figure 7 is a plan view of a portion of the tape after it has passed through the punching mechanism of Figure 6.

Figure 8 is a view in end elevation showing the printing machine constructed in accordance with the present invention.

Figure 9 is a view in side elevation showing the machine of Figure 8.

Figure 10 is a view in end elevation showing the punch and punch actuating mechanism of Figure 6.

In as much as the specific printing mechanism is shown and described in applicant's copending application, above identified, the details thereof will not be described herein.

Referring particularly to Figures 8 and 9, the frame of a printing machine is shown at 1, a power shaft 2 and driving pulley 3 being mounted thereon. The overhanging end of the power shaft 2 is journaled in a bracket as seen in Figure 1.

A countershaft 5 is journaled upon the frame and receives power from the shaft 2 by means of gears or other suitable driving mechanism.

The printing machine includes a reciprocable frame 6 which is journaled upon the frame 1 at 7. A head or carrier 8 is mounted upon the end of frame 6 and the frame and head are provided with downwardly extending arms 9 which are engaged by pitmen 10 which are journaled upon crank arms 11, eccentrically mounted upon heads 12, secured to the ends of countershaft 5. Rotation of shaft 5 thus reciprocates the head 8.

Ink rollers 13 are mounted upon a rotatable frame 14 upon which a sprocket 15 is secured. A suitable chain, indicated in dot and dash lines at 16 engages the sprocket 15 and a driving

sprocket 17 which is mounted upon the counter-shaft 5. An idler sprocket 18 is mounted upon the axis of the frame mounting 6 whereby arcuate movement of the arm or frame 6 is provided without disturbing the drive from the relatively stationary driving sprocket 17 to the movable sprocket 15. A take-up idler sprocket 19 is mounted upon the frame 1 to take up any slack in the driving chain. In this fashion, reciprocation of head 8 is effected simultaneously with the continuous rotation of the frame 14 which carries the inking rollers 13. Movement of the frame 6 is facilitated by means of spring arm 20 which is anchored at 21 to the frame of the machine and engages a fulcrum 22 mounted thereon. The end of arm 20 is connected to a rod 23 which is secured to the end of a substantially rigid arm 24, connected on the frame 6. Movement of the frame 6 is thus yieldingly resisted and the spring 20 serves as a counterbalancing mechanism to relieve the driving means of the weight of the frame 6.

Inking plates upon the head 8 are moved back and forth in a direction parallel to the axis of the head 8 by means of an axially movable rod 36, mounted upon the head 8. Axial movement is imparted to the shaft 36 by means of a link 36' which is journaled eccentrically upon a ratchet wheel 38 mounted upon a bracket 33 upon the frame 6. As the frame reciprocates, a pawl 40, mounted upon arm 41 which is pivoted upon the bracket 39, engages the teeth of the ratchet wheel and effects rotation thereof, the reaction to such rotation being transmitted to the bracket 4 and stationary frame 1 through an arm 42 which is secured to the arm 41 and which is pivoted to a distance rod 43. The end of the distance rod 43 is anchored to the bracket 4 by means of suitable spacing nuts 44 and, in this fashion, reciprocation of the frame 6 effects the gradual back and forth movement of the said inking plates.

The mechanism for feeding the tape through the machine is shown in Figure 1 and includes a head 64 which is transversely mounted upon the frame 1 and slidable upon guides 65. Reciprocating motion is imparted to the head 64 by means of arms 66 which are hinged to arms 67, secured upon a rock shaft 68. The rock shaft 68 is journaled in the frame of the machine 1 and is rocked by any suitable driving means such as 59 and 80, Figure 9.

Upon the head 64 a shaft 71 is journaled by means of standards 72, articulated pawls 73 being journaled upon the shaft 71 and adapted normally to engage the upper surface of the head 64. A set screw 74 normally spaces the pawl 73 from a link 75 and spring 76 maintains the elements yieldingly in a position shown in Figure 2. As the head 64 moves to the left, as viewed in Figure 2, the pawl 73 rides over a tape 77, adjacent one edge of which apertures 78 have been punched in a manner to be described hereinafter. Movement of the pawls 73 in the reverse direction effects the engagement of the apertures 78 to advance the tape through guides which will now be described.

Pivoted upon transverse frame members 79 are outer guide members 80. An intermediate guide member 81 is secured between the spaced outer guide members and springs 82 normally urge the pivoted guide members toward the stationary member. The opposed sides of the guide members are formed with grooves between which the tape 77 slides.

A primary tape feeding mechanism is shown at

84 and is actuated by a link 85, connected to a crank arm 86 upon the rock shaft 68. Upon a guide 87, carried by the frame 1 of the machine, a head 88 is slidably mounted, the head being provided with a horizontal table 89 upon which the tape 77 rests. A bell crank arm 90 is pivoted at 91 to the head 88 and its lower arm 92 is pivotally connected to the end of rod 95. The other end 93 of the bell crank lever 90 carries a presser foot 94 the angular position of which about an axis 95 may be adjusted by means of a nut 96. The spacing of the presser foot 94 from the table 89 may be varied by means of a set screw 97 and the side of the head 88 is provided with a stop plate 98. Upon movement of the rod 85 in the direction of the arrow of Figure 3, the arm 92 engages the stop plate 98 and presser foot 94 is lifted from the tape 77. Continued movement of the arm 85 causes the head 88 to be moved to the left until a reversal in direction of movement of the rod 85 takes place. The initial movement of rod 85, during such reversal, causes the presser foot 94 to fall upon the tape 77 and press the same against the table 89. Continued movement of the rod in the direction shown by the arrow in Figure 4, causes the head 88 to advance the tape until the reversal of the direction of movement of the rod 85 takes place. To provide suitable friction to prevent movement of the head 88 except when the presser foot 94 or the arm 92 engage the tape 77 and stop plate 98, respectively, friction shoes 98' are carried by the head 88 and are urged against the underside of the guide 87 by means of spring 99. Taps 100 may be provided to form suitable spring seats and adjust the pressure exerted upon the shoes 98'. In this fashion, the band or tape is initially threaded through the driving mechanism shown in Figures 1, 3, and 4 and through the punch shown in Figures 1 and 6 to the feeding mechanism shown in Figure 2 which lies just above the upper extremity of Figure 1.

As the tape is advanced into the printing machine by the primary feeding mechanism described above, one edge thereof is perforated at spaced intervals to enable the dogs 73 to move the tape in a positive manner subsequently. The mechanism for perforating the tape is shown in Figure 6 and includes a bracket 101 which is mounted upon the frame of the machine 1 by means of suitable bolts 102. The bracket is formed with a horizontal punch plate 103 which is formed with a recess 104 to cooperate with a punch 105. The punch 105 is carried in a holder 106 which is slidably mounted in a bracket 107, secured to the bracket 101 by means of bolts 108. An arm 109 is formed on the bracket 107 upon which arm a lever 110 is pivoted. This lever is connected to the punch holder 106 through a suitable lost motion connection 111 and its extremity is secured to a rod 112 by means of a universal joint 113. The rod 112 is connected through a universal joint 114 to a crank 115 which is journaled upon the frame of the machine at 116. The other end of the crank 115 is connected to an eccentric 117 by means of a connecting rod 118. Movement of the eccentric 117 is synchronized with the movement of the link 85 to depress the punch 105 during movement of the link 85 in the direction of the arrow shown in Figure 3. In this fashion, the tape is perforated during each pause in the movement thereof into the printing machine, such pauses being occasioned by the movement of the feeding mechanism in the direction of the arrow shown in Figure 3.

It will thus be seen from the foregoing description that a printing machine has been provided, wherein an improved feeding mechanism is embodied to feed a continuous tape through the machine in an effective manner and simultaneously perforate the tape along one of its edges. In this connection, the feeding and punching mechanism is designed to relieve the elements thereof from shocks and stresses to which such mechanisms have heretofore been subjected and the repair thereof is thus required more infrequently.

While the invention has been described with specific reference to the accompanying drawings, it is not to be limited, save as defined in the appended claims.

I claim as my invention:

1. A slide mounted upon a frame, an arm pivoted on the slide, means to reciprocate the arm in a plane parallel to the direction of motion of the slide, a stop on the slide against which the arm engages to limit pivotal movement in one direction, and an adjustable presser foot on the arm to engage the slide and limit pivotal movement of the arm in the other direction whereby the means to reciprocate the arm also reciprocates the slide when the arm engages the stop and the presser foot engages the slide.

2. A slide mounted upon a frame, an arm pivoted on the slide intermediate its ends, means connected on one end of the arm to reciprocate the same in a plane parallel to the direction of motion of the slide, a stop on the slide against which the arm engages to limit pivotal movement thereof in one direction, and an adjustable presser foot on the arm to engage the slide and limit pivotal movement of the arm in the other direction whereby the means to reciprocate the arm also reciprocates the slide when the arm engages the stop and the presser foot engages the slide.

3. A slide mounted upon a frame, an arm pivoted on the slide, means to reciprocate the arm, a stop on the slide against which the arm engages to limit pivotal movement in one direction, a presser foot on the arm to engage the slide and limit pivotal movement of the arm in the other direction, and a friction shoe on the slide to engage the frame.

4. A slide mounted upon a frame, an arm pivoted on the slide, means to reciprocate the arm in a plane parallel to the direction of motion of the slide, a stop on the slide against which the arm engages to limit pivotal movement in one direction, a presser foot on the arm to engage the

slide and limit pivotal movement of the arm in the other direction whereby the means to reciprocate the arm also reciprocates the slide when the arm engages the stop and the presser foot engages the slide, a friction shoe on the slide to engage the frame, and means to adjust the tension of the shoe.

5. A slide mounted upon a frame, an arm pivoted on the slide, means to reciprocate the arm in a plane parallel to the direction of motion of the slide, a stop on the slide against which the arm engages to limit pivotal movement in one direction, a presser foot on the arm to engage the slide and limit pivotal movement of the arm in the other direction whereby the means to reciprocate the arm also reciprocates the slide when the arm engages the stop and the presser foot engages the slide, and spaced friction shoes on the slide to engage the frame.

6. A tape feeding mechanism comprising a frame, slidable means on the frame, means to reciprocate the slidable means, means on the slidable means to engage a tape frictionally, perforating means on the frame, means actuated by the reciprocating means to actuate the perforating means to perforate tape fed from the friction means, a table, a dog on the table to engage successive perforations made by said perforating means in the tape, and means actuated synchronously with the reciprocating means to reciprocate the table.

7. A tape feeding mechanism comprising a frame, slidable means on the frame, means to reciprocate the slidable means, means on the slidable means to engage a tape frictionally, perforating means on the frame, means actuated by the reciprocating means to actuate the perforating means to perforate tape fed from the friction means, a table, a dog on the table to engage successive perforations made by said perforating means in the tape, said dog normally being urged against the tape by gravity, and means actuated by the reciprocating means to reciprocate the table.

8. A tape feeding mechanism comprising a frame, a slidable means on the frame, means to reciprocate the slidable means, means on the slidable means to engage a tape frictionally, perforating means on the frame, and means actuated by the reciprocating means to actuate the perforating means to perforate tape fed from the friction means.

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