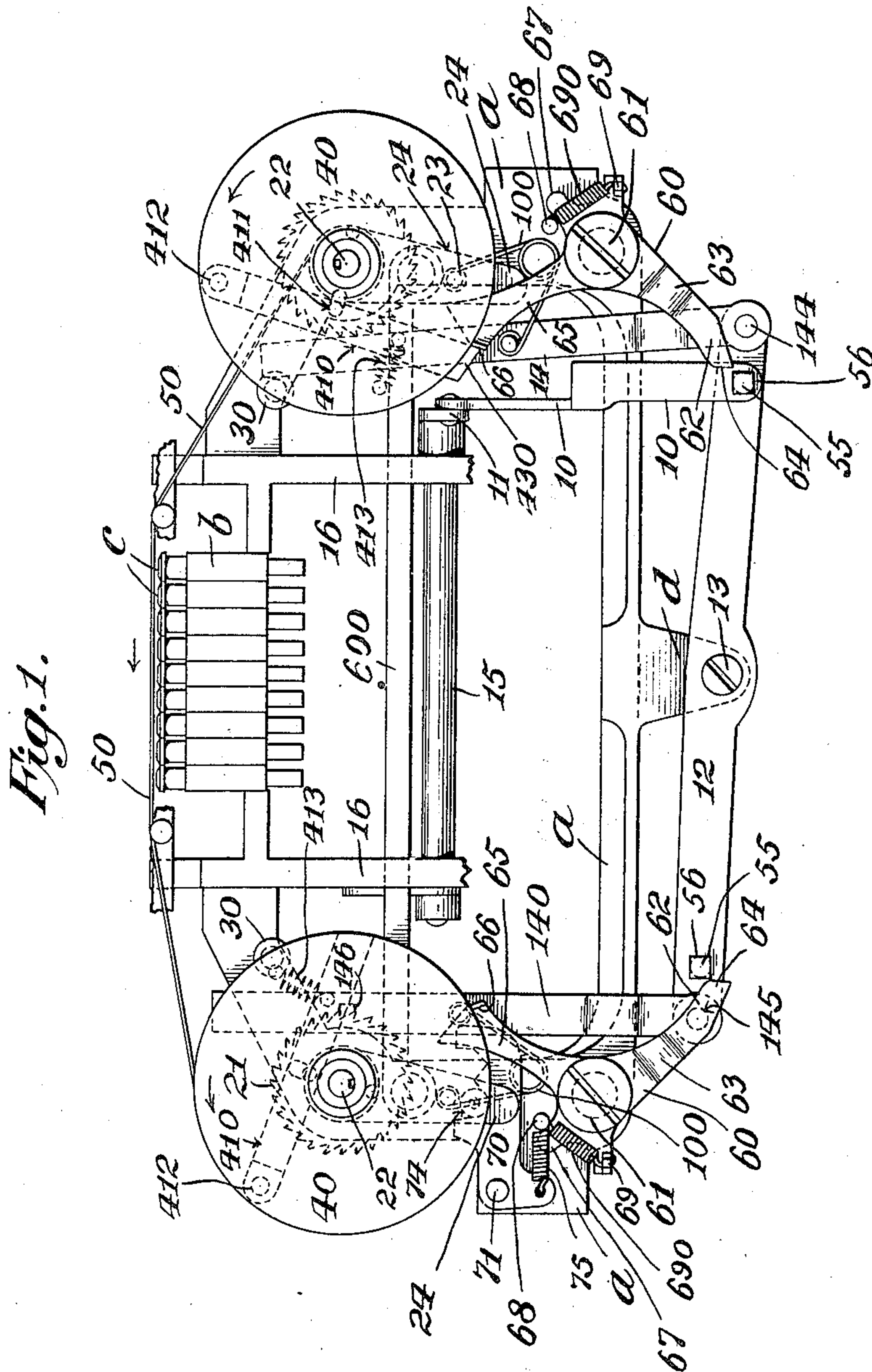


W. CALLAM.
RIBBON FEEDING AND REVERSING MECHANISM FOR ADDING MACHINES.
APPLICATION FILED JUNE 11, 1908.

917,246.

Patented Apr. 6, 1909.

3 SHEETS—SHEET 1.



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Fig. 2.

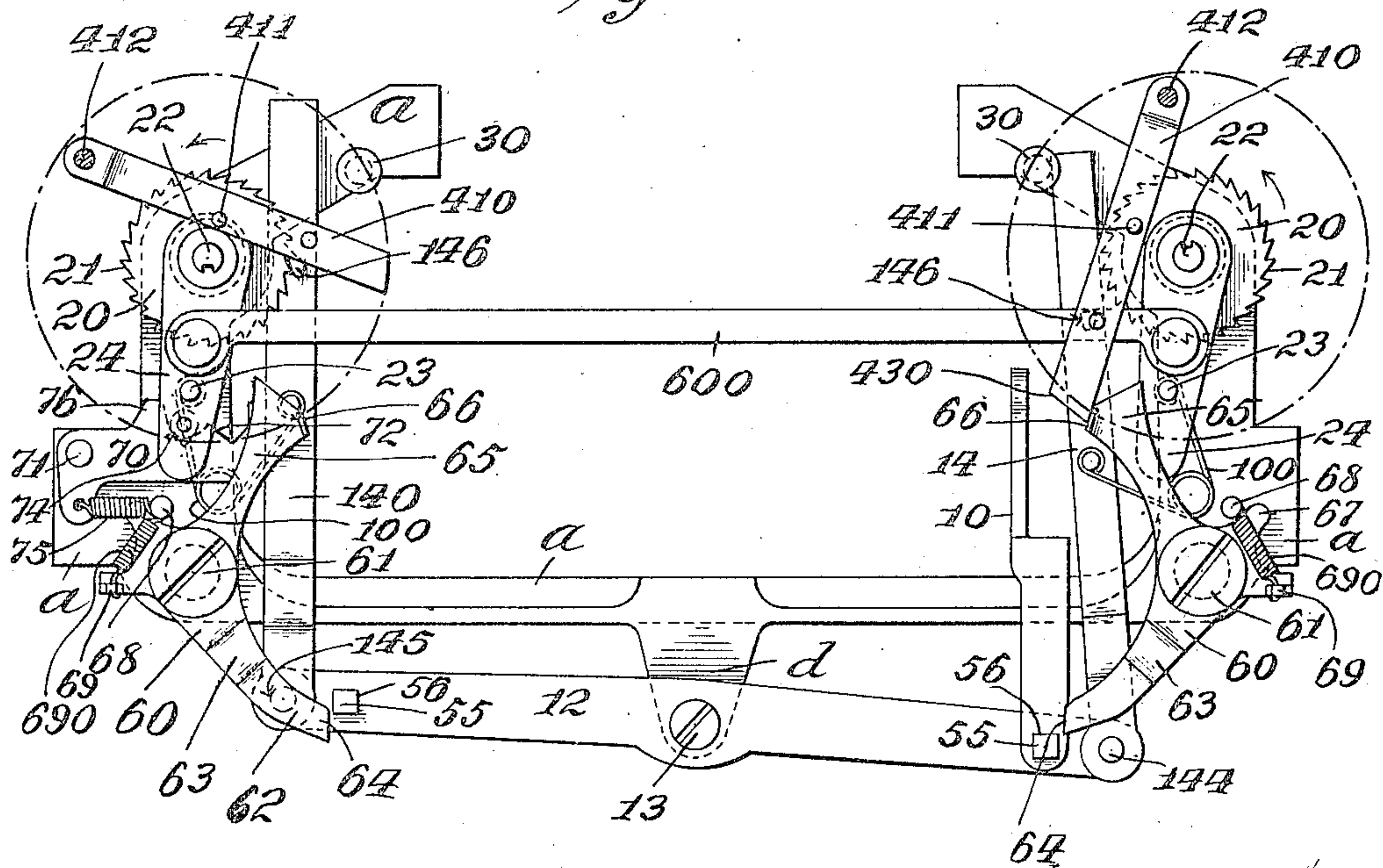


Fig. 3.

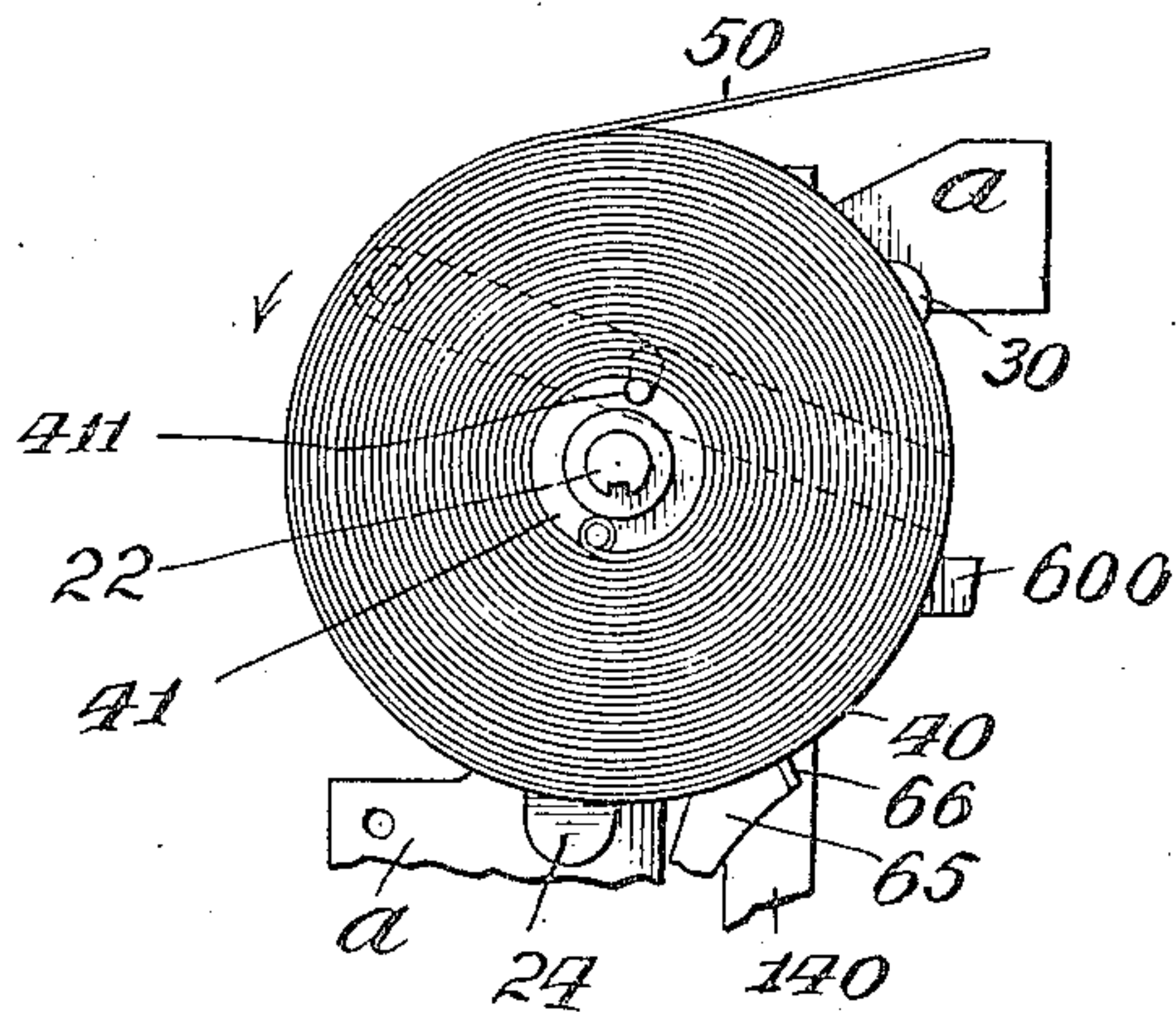
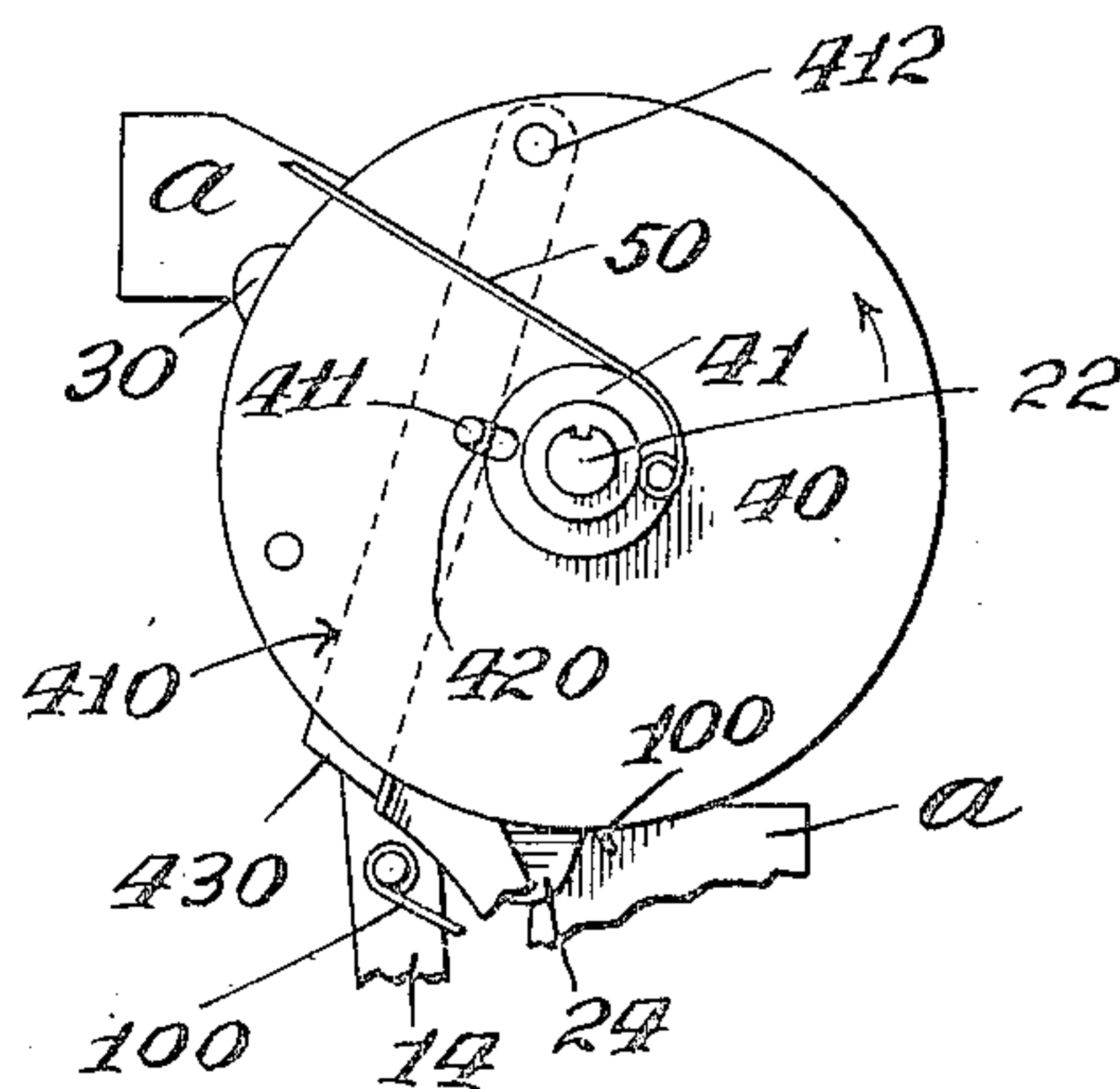


Fig. 4.



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Fig. 5.

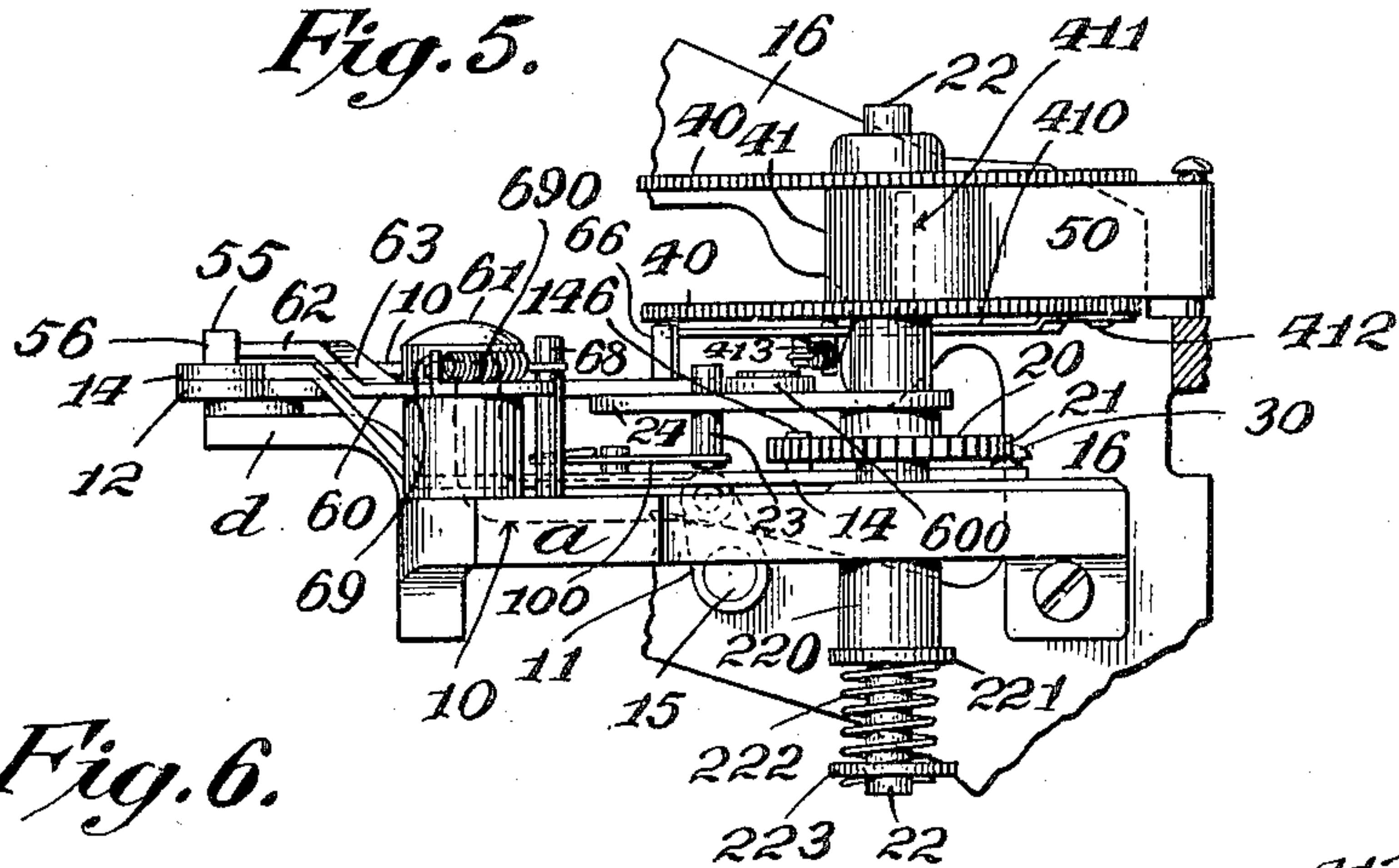


Fig. 6.

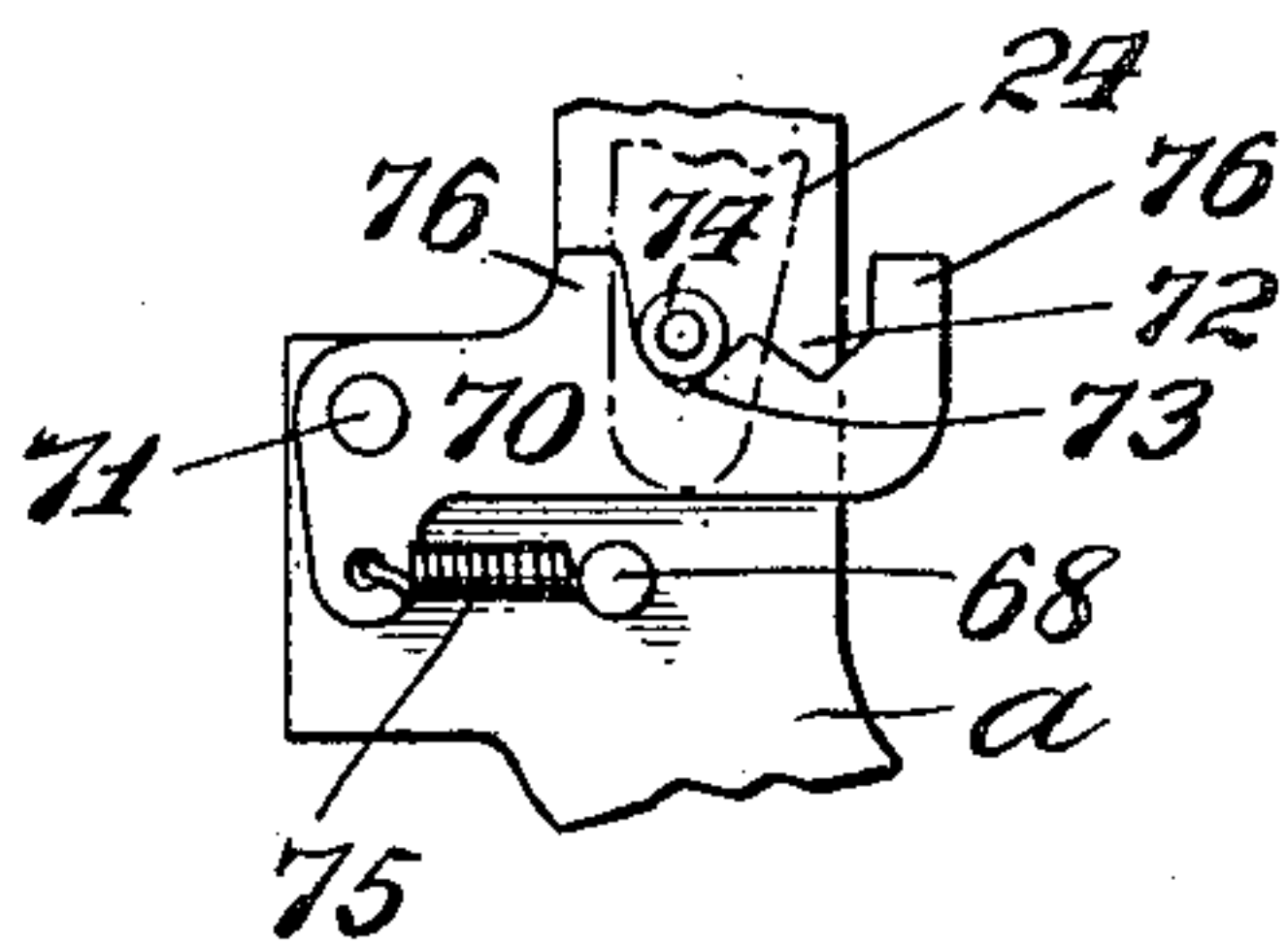


Fig. 7.

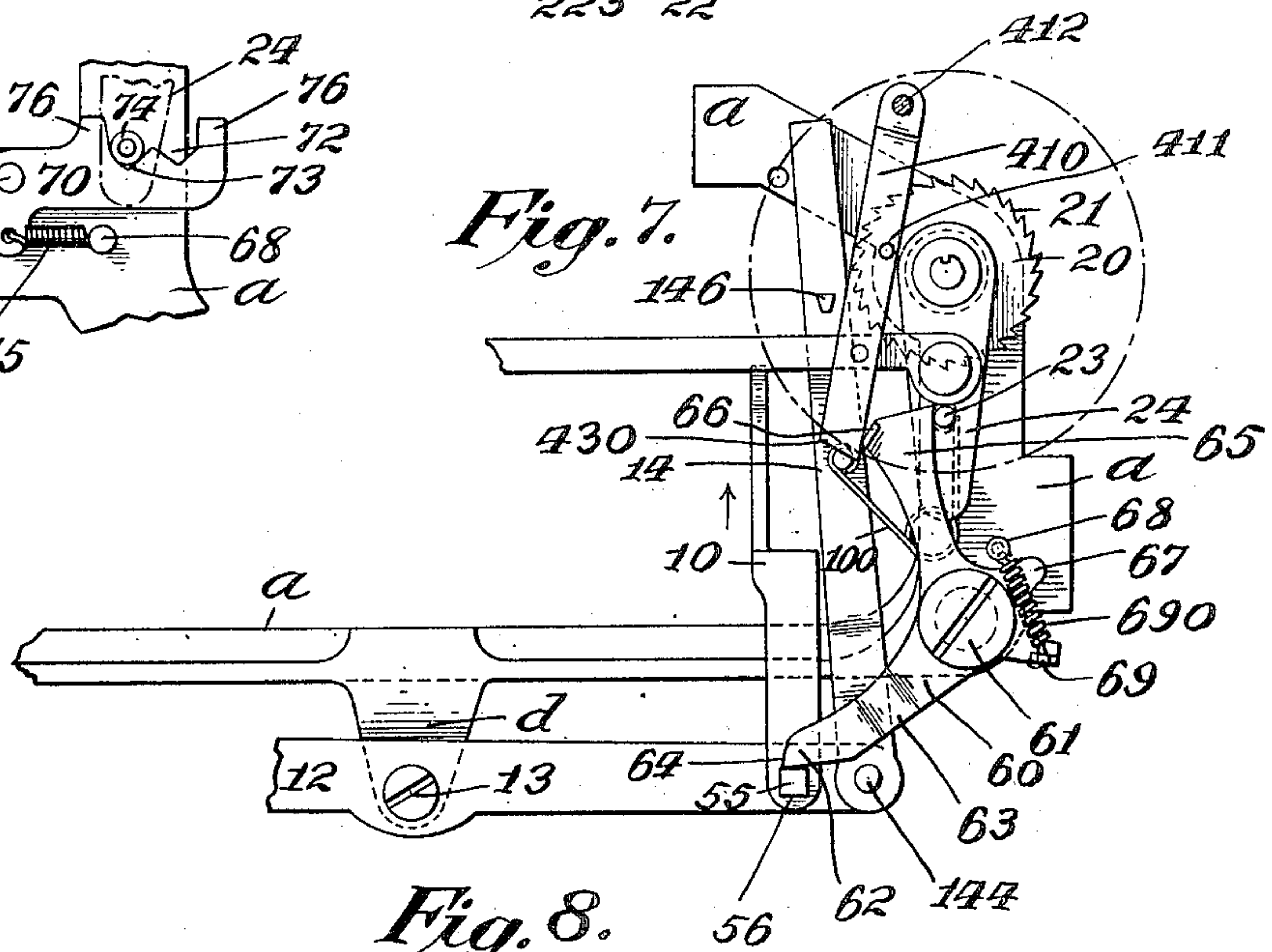
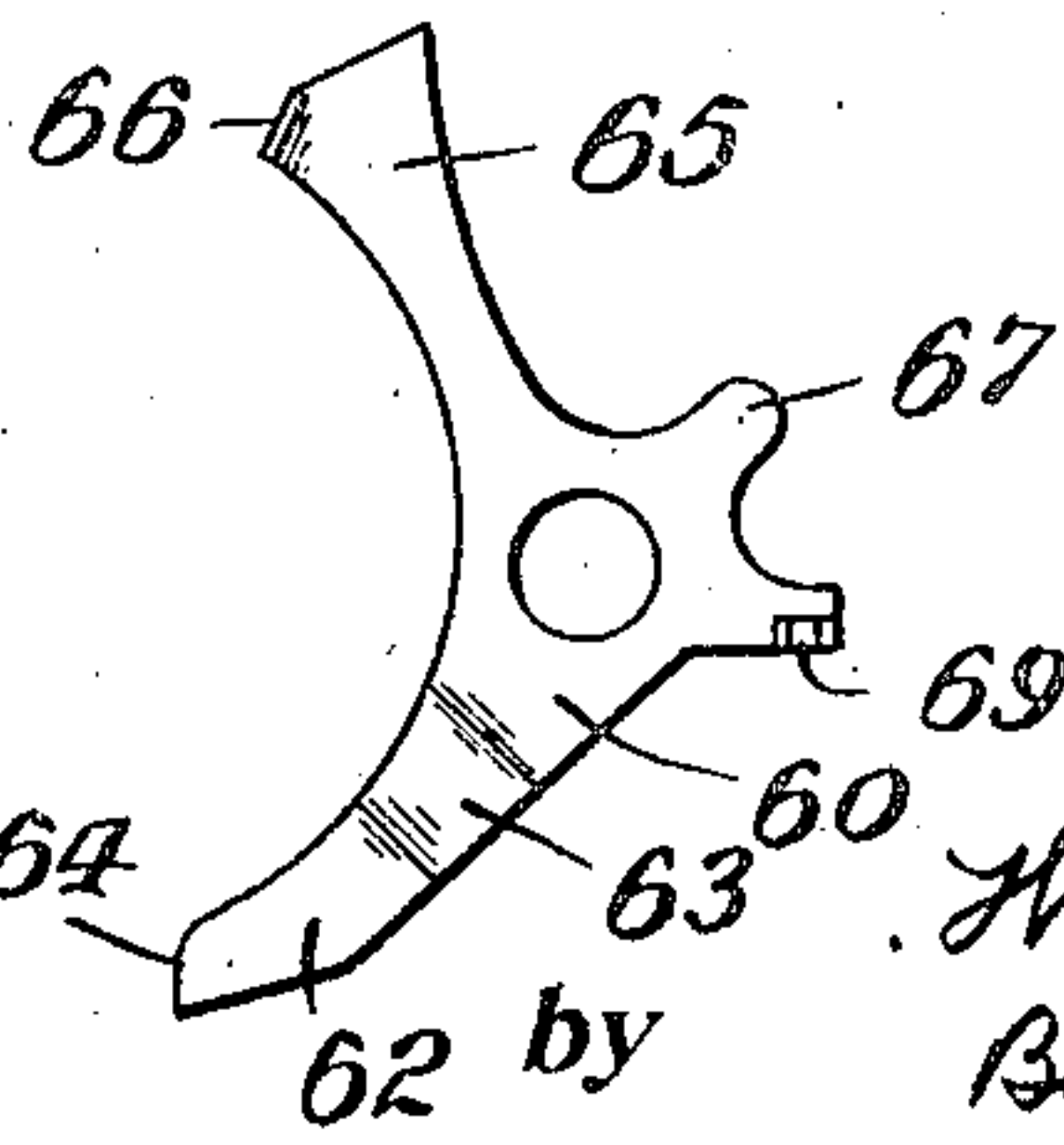


Fig. 8.



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UNITED STATES PATENT OFFICE.

WILLIAM CALLAM, OF WILKES-BARRE, PENNSYLVANIA, ASSIGNOR TO THE ADDER-MACHINE COMPANY, OF KINGSTON, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

RIBBON FEEDING AND REVERSING MECHANISM FOR ADDING-MACHINES.

No. 917,246.

Specification of Letters Patent.

Patented April 6, 1909.

Application filed June 11, 1908. Serial No. 437,818.

To all whom it may concern:

Be it known that I, WILLIAM CALLAM, a citizen of the United States, residing at Wilkes-Barre, in the county of Luzerne and State of Pennsylvania, have invented certain new and useful Improvements in Ribbon Feeding and Reversing Mechanisms for Adding-Machines, of which the following is a specification.

10 The invention relates to ribbon feeding and reversing mechanisms for adding machines, and the like, and its novelty consists in the construction and adaptation of the parts, as will be more fully hereinafter pointed out.

Specifically the invention is an improvement upon the ribbon feeding and reversing mechanism used on the well known Wales adding machine, described in Letters Patent of the United States No. 796,024, issued August 1, 1905. In the use of the Wales machine, as with other machines of this same general nature, considerable trouble arises due to the strains brought upon the ribbon incident to reversing the ribbon moving mechanism. It was necessary to have the ribbon wound sufficiently compact upon the spools to reverse the movement immediately after the release of the mechanism and it was difficult to secure the degree of compactness of winding of the ribbon necessary to its prompt and efficient action.

The object of the present invention is to use the ribbon merely as a means for setting the reversing mechanism which latter is thereafter actuated by power derived from the main shaft of the machine, relieving the ribbon from the duty of itself actuating the reversing mechanism.

40 In the drawings, Figure 1 is a top plan view of a portion of an adding and printing machine provided with my invention; Fig. 2 is a similar view with the ribbon spools and some other parts removed; Fig. 3 is a detail top plan view of the left spool with its upper disk removed; Fig. 4 is a view similar to Fig. 3 but of the right spool. In Fig. 3 the ribbon is shown almost completely wound on the left spool and in Fig. 4 the ribbon is shown almost completely unwound from the right spool. Fig. 5 is a side elevation of the parts shown in Fig. 1. Fig. 6 is a detail plan view of the positioner. Fig. 7 is a detail plan view of the mechanism beneath the

right spool and Fig. 8 is a detail of the reversing lever.

In the drawings, *a* represents part of the frame of an adding and printing machine the type bars being indicated at *b* and the faces of the type at *c*.

The inking ribbon is represented at 50 and is adapted to be passed in front of the type-faces along the line of print, so that the impact of the type will force the ribbon smartly against a suitable platen provided for that purpose (and which is not shown) to press the ink against the paper carried by the platen to receive the impression of the particular type or types actuated.

A bracket *d* is provided on the frame of the machine. On this is pivoted a yoke 12 adapted to be reciprocated on its pivot 13 by means of a link 10 connected to a crank 11 secured to a rock shaft 15 mounted in a supplementary frame 16 and which shaft is rocked at each actuation of the main shaft of the machine through mechanism not shown and irrelevant to the present description.

14 and 140 are two pawl rods pivoted at 144 and 145 respectively to the yoke 12 and which by its oscillations are reciprocated longitudinally of the machine. 146 are pawls upon these rods and are adapted to engage with the teeth 21 formed on the peripheries of the wheels 20 of the ribbon spools 41. The pawls 146 are yieldingly held in engagement with the teeth 21 by means of grasshopper-springs 100 which also serve to move the pawl rods as hereinafter described. The wheels 20 are each secured upon a vertical shaft 22 to which is keyed a ribbon spool 41 provided with two guide disks 40. Beneath each wheel 20 and depending from the frame *a* is a cylindrical flange 220. Below it is a disk 221 and below it a similar disk 223, both keyed to the shaft. Between them is a coiled tension spring 222 serving as a yielding frictional connection between the shaft 22 and the frame *a*. A lever 24 is loosely mounted to oscillate on each shaft 22. They are each provided with a transverse pin 23 the lower end of which is engaged by the spring 100 and the upper end of which is engaged by the reversing lever 60 hereinafter referred to. A cross rod 600 connects the levers 24 together and causes them to move in unison.

Stop screws 30 are secured at suitable points on the frame *a* to limit the movements of the pawl rods 14 and 140. Each ribbon spool has an end of the ribbon 50 removably secured to it so that it can be wound in either direction without being disengaged therefrom. An oblong radial slot 420, (Fig. 4), is formed in the spool 41 and lower disk 40, and is adapted to receive a pin 411 secured to and projecting upwardly from a setting lever 410, pivotally mounted at 412 on the lower disk 40 and under tension of a spring 413 constantly tending to pull it away from the center of the spool. When it is pulled outward as far as it will go its extremity 430 projects beyond the periphery of the disk.

60 is a reversing elbow lever secured to the frame *a* of the machine by a pivot 61. Its front arm 62 is bent upwardly at 63 to bring it above the level of the link 10 so that its extremity 64 will engage with the upper end 55 of a pin 56 secured to the yoke 12 and passing through the link 10. The rear arm 65 of the lever 60 is provided with a finger 66 projecting upwardly to engage with the tip 430 of the setting lever 410. The lever 60 is further provided with a stop arm 67 adapted to engage a pin 68 secured to the frame *a*, and with an ear 69 between which and the pin 68 is a spring 690 which serves to keep the arm 67 in contact with the pin 68.

Secured to the frame *a* of the machine by a pivot 71 near the left spool is a positioner 70 having two notches 72 and 73 adapted to engage with a roller detent 74 mounted beneath the left lever 24, and provided with a spring 75 adapted to maintain said engagement. The notches 72 and 73 correspond substantially to the correct position of the detent 74 when the pawl 146 is out of and in engagement with the teeth 21 of the wheel 20. It serves to fix the position of the lever 24 accurately when it has been moved to either one of its two positions. It is provided with two guard arms 76 which prevent its accidental disengagement from the detent 74.

The mode of operating the device is as follows:—Suppose the parts are in the respective positions shown in Figs. 1, 2, 3 and 4. The ribbon 50 has been wound upon the left spool and the reciprocation of the link 10, as it oscillates the yoke 12, moves the pawl rods 14 and 140. The former is, however, not in an actuating position while the latter is, and each of its reciprocations moves its pawl 146 against the teeth 21 of the left wheel 20, and therefore rotates the shaft 22 and left ribbon spool intermittently and by a step by step motion. The detent 74 is also held in the notch 73 of the positioner 70 and the setting lever 410 of the left wheel is completely within the periphery of said wheel while the setting lever 410 of the right wheel has moved

outside of the periphery of its wheel (see Fig. 4) because the ribbon 50 no longer confines the pin 410 in the inner end of the slot 420 and the spring 413 has caused the lever 410 on the right wheel to move away from the spool 41. The next actuation of the main shaft of the machine moving the ribbon 50 toward the left another step, in the manner well understood in the art, causes the right spool 41 and disk 40 to rotate and moves the extremity 430 of right lever 410 against the finger 66 of the reversing lever 60 and swings the latter on its pivot 61 bringing its end 64 back of the upper end 55 of the pin 56, just as the yoke 12 has moved to permit of such movement of the lever 60 (see Fig. 7). At the next actuation of the main shaft, the link 10 is reciprocated as usual. Its pin 56 engages the end 64 of the lever 60 and swinging the latter on its pivot brings the arm 65 into contact with the pin 23 and moves the right lever 24, the connecting bar 600 and left lever 24, causing the roller detent 74 to pass from the notch 73 to the notch 72. The movement of the levers 24 has been communicated to the pawl rods 14 and 140 through the grasshopper springs 100 and has caused the right pawl rod 14 to engage with the teeth 21 on the right wheel 20 and the left pawl rod 140 to disengage from the teeth 21 on the left wheel 20. The next actuation of the main shaft will cause the right wheel to rotate one step in the reverse direction. As this continues the ribbon is wound on the right spool and unwound on the left spool and, as the winding continues, the ribbon encircles and incloses the right pin 411 and pulls it back into the slot 420 and so brings the end 430 of the right lever 410 again within the periphery of the right disk 40. The continued rotation of the right wheel will, as the ribbon is unwound from the left wheel, finally bring into operation the reversing mechanism attached to that wheel and cause the direction of movement of the ribbon spools to be again reversed.

As will now readily be understood the improved device provides means whereby the reversing of the ribbon is caused by the actuation of the main shaft by a direct connection therewith and no longer entirely depends upon the mere pull of the ribbon as it is wound on its spool, but the movement of the ribbon serves merely to allow the setting lever to be moved to its operative position when thereafter the power to actuate the reversing lever comes from the main shaft of the machine and not from the tension on the ribbon.

What I claim as new is:—

1. In an adding and printing machine having a main shaft, a ribbon moving mechanism comprising a ribbon spool, a ribbon thereon, an actuating pawl therefor, a setting lever normally held in an inoperative posi-

tion by the ribbon on the spool, a reversing lever adapted to be actuated from the main shaft of the machine; to move the actuating pawl out of an engaging position with the ribbon spool, and automatic means for moving the setting lever into engagement with the reversing lever when the ribbon is unwound.

2. In an adding and printing machine having a main shaft, a ribbon moving mechanism comprising a ribbon spool, a ribbon thereon, an actuating pawl therefor, a setting lever normally held in an inoperative position by the ribbon on the spool, a reversing lever adapted to be actuated from the main shaft of the machine to move the actuating pawl out of an engaging position with the ribbon spool and automatic means for moving the setting lever into engagement with the reversing lever when the ribbon is unwound, comprising a slot 420 and a retracting spring 413.

3. In an adding and printing machine having a main shaft, a ribbon moving mechanism comprising a ribbon spool, a ribbon thereon, an actuating pawl therefor, a setting lever normally held in an inoperative position by the ribbon on the spool, a reversing lever adapted to move the actuating pawl out of an engaging position with the ribbon spool, automatic means for moving the reversing lever into the path of a reciprocating part of the machine whereby the energy for moving the actuating pawl from its engaging position is derived from the main shaft of the machine.

4. In an adding and printing machine having a main shaft, a ribbon moving mechanism comprising a ribbon spool, a ribbon thereon, a ratchet wheel on the spool shaft, an actuating pawl therefor and a connection between the pawl and the main shaft of the machine whereby the position of the pawl with relation to the ratchet wheel is changed, comprising a reciprocating part of the machine, a reversing lever and a setting lever normally held in an inoperative position by the ribbon wound on the spool but adapted to move against the reversing lever to bring it into the path of said reciprocating part when the ribbon is unwound.

5. In an adding and printing machine having a main shaft, a ribbon moving mechanism comprising a ribbon spool, a ribbon thereon, a ratchet wheel on the spool shaft, an actuating pawl therefor and a connection between the pawl and the main shaft of the machine whereby the position of the pawl with relation to the ratchet wheel is changed, comprising a reciprocating part of the machine, a reversing lever, a setting lever normally held in an inoperative position by the ribbon wound on the spool, and automatic means to move the setting lever into an op-

erative position and against the reversing lever.

6. In an adding and printing machine having a main shaft, a ribbon moving mechanism comprising a ribbon spool, a ribbon thereon, a ratchet wheel on the spool shaft, an actuating pawl therefor and a connection between the pawl and the main shaft of the machine whereby the position of the pawl with relation to the ratchet wheel is changed, comprising a reciprocating part of the machine, a reversing lever, a setting means and automatic means to move the setting lever against the reversing lever, comprising a pin on the setting lever held by the ribbon and a spring tending to act against the same.

7. In a ribbon feeding mechanism, the combination of a ribbon spool, an actuating pawl therefor, means for reciprocating the pawl, means for moving the position of the pawl with respect to the spool, comprising a reversing lever, means for moving it into the path of the pawl reciprocating means, and a connection between the reversing lever and the pawl, consisting of a spring adapted to be moved by the reversing lever and secured to the pawl.

8. In an adding and printing machine, a ribbon handling mechanism comprising two spools on one of which the ribbon is wound as it is unwound from the other, actuating pawls, one for each spool, a connection between the pawls, reversing levers adapted to be actuated from a moving part of the machine and setting levers normally held inoperative by the ribbon wound on the spool whereby one of the reversing levers is tripped into an engaging position with such moving part when the ribbon is unwound from one of the spools.

9. In an adding and printing machine, a ribbon handling mechanism comprising two spools on one of which the ribbon is wound as it is unwound from the other, actuating pawls one for each spool, a connection between the pawls, reversing levers adapted to be operated by a moving part of the machine actuated from the main shaft, setting levers normally held inoperative by the ribbon wound on one of the spools whereby one of the reversing levers is tripped into an engaging position with such moving part when the ribbon is unwound from one of the spools, and a detent adapted to hold the parts in the positions into which they have thus been moved until the ribbon is unwound from the other spool.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM CALLAM.

Witnesses:

HENRY A. GORDON,
M. E. STUCH.