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PATENTED MAY 5, 1908.

C. P. WETMORE & F. A. NIEMANN.
RIBBON CONTROLLING MECHANISM FOR ADDING MACHINES.

APPLICATION FILED MAY 4, 1907.

2 SHEETS—SHEET 1.

Fig. 1

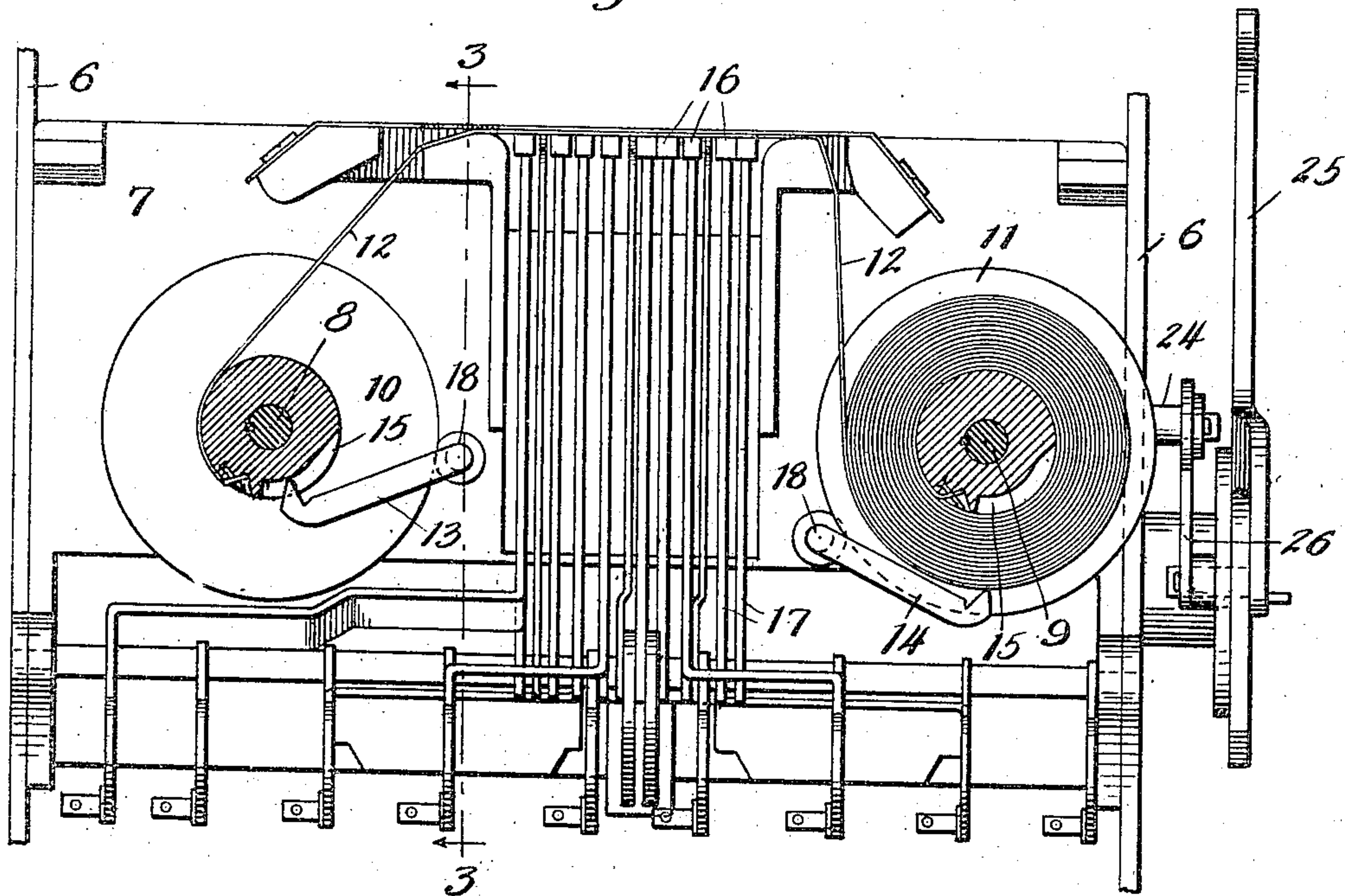
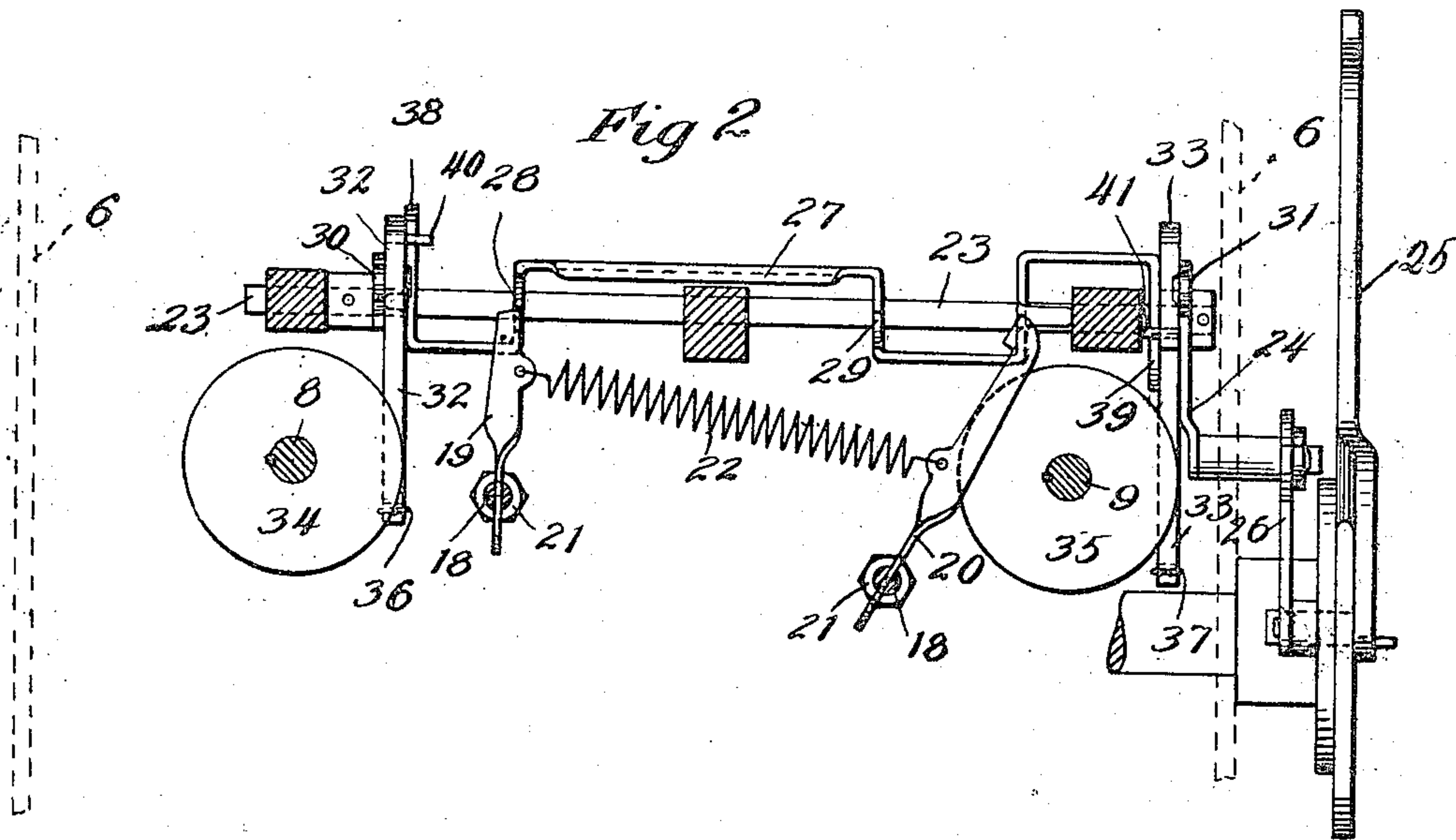


Fig. 2



Witnesses:

Wm. Guger
J. H. Munday

Inventors:

Charles P. Wetmore
Frederick A. Niemann
By Munday, Coats, Adcock & Clark,
Attorneys

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Fig. 3

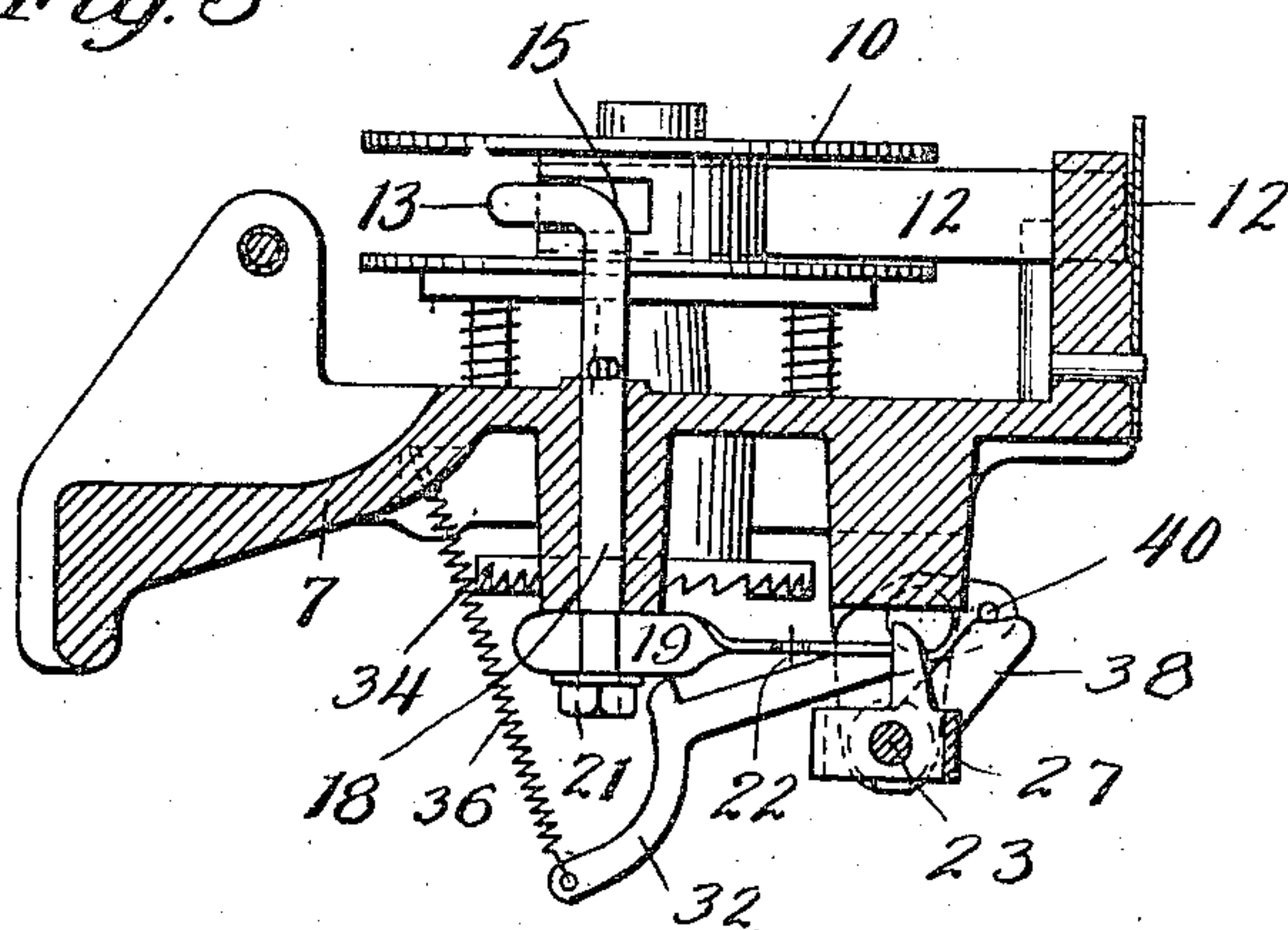


Fig. 5

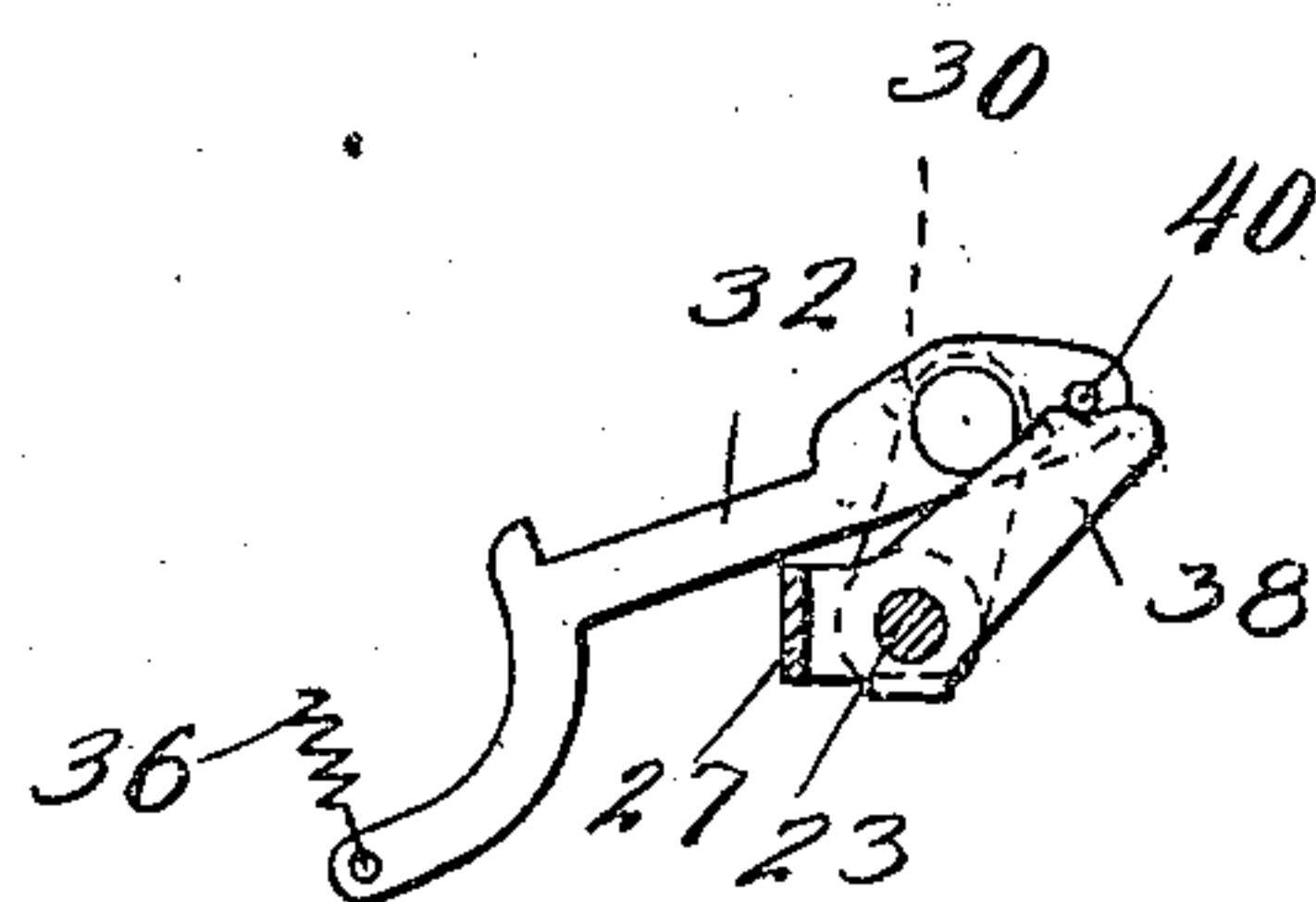
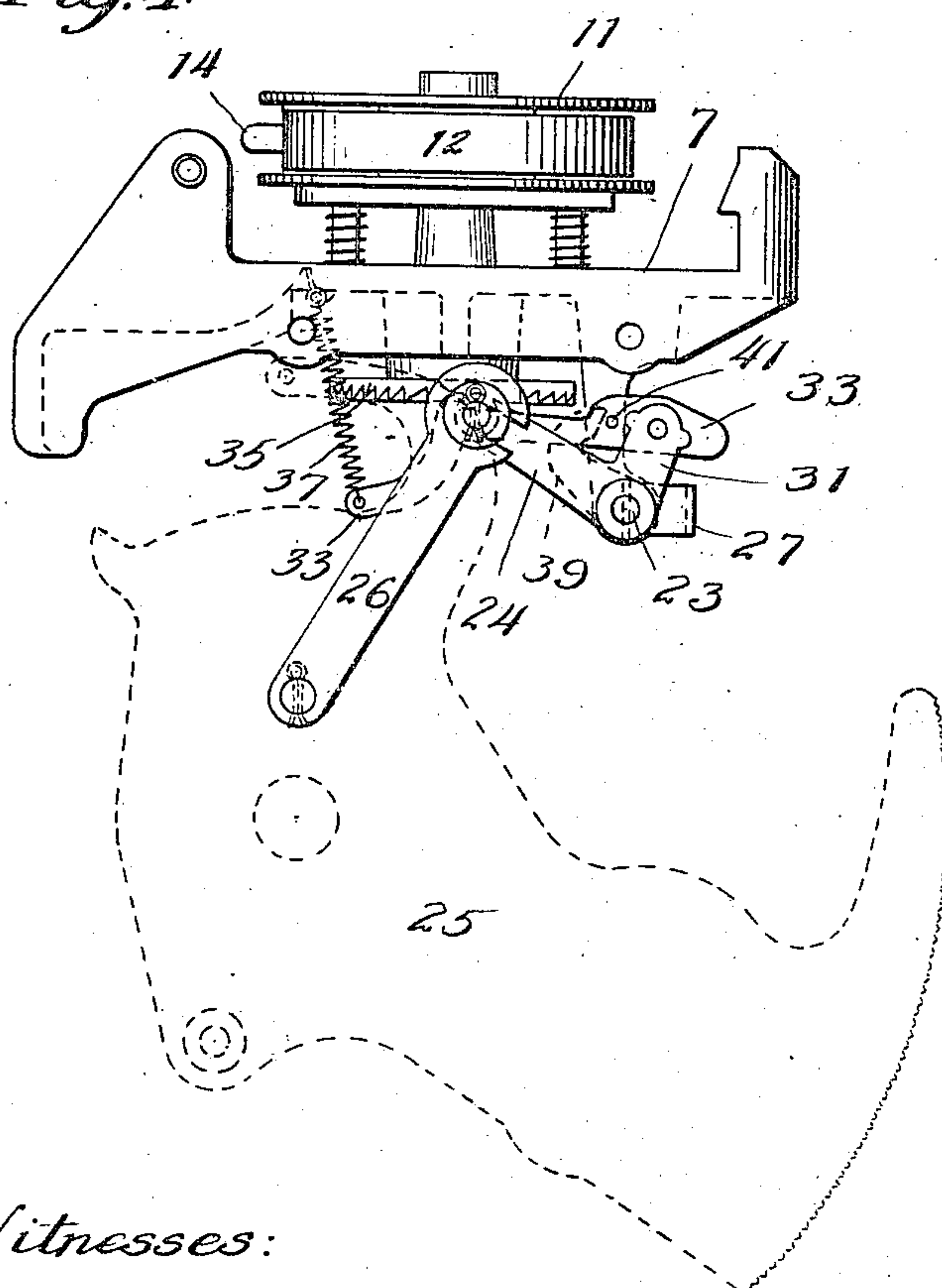


Fig. 4



Witnesses:

Wm. Geiger
H. W. Mundy

Inventors:

Charles P. Wetmore
Frederick A. Niemann
By Munday, Brant, Adcock & Clark
Attorneys

UNITED STATES PATENT OFFICE.

CHARLES P. WETMORE AND FREDERICK A. NIEMANN, OF CHICAGO, ILLINOIS, ASSIGNORS
TO COMPTOGRAPH COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

RIBBON-CONTROLLING MECHANISM FOR ADDING-MACHINES.

No. 886,747.

Specification of Letters Patent.

Patented May 5, 1908.

Application filed May 4, 1907. Serial No. 371,827.

To all whom it may concern:

Be it known that we, CHARLES P. WETMORE and FREDERICK A. NIEMANN, citizens of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Ribbon-Controlling Mechanism for Adding-Machines, of which the following is a specification.

This invention relates to the ribbon controlling mechanism of recording adding machines and more especially to that portion of the mechanism by which the direction of the feed of the ribbon is changed whenever the end of the ribbon is reached upon the spool from which it is being drawn.

The nature of the invention and the construction of the parts entering into the same are fully described below, and illustrated in the accompanying drawing, in which latter

Figures 1 and 2 are horizontal sections of that portion of an adding machine to which our invention relates, Fig. 1 being taken in a plane through the ribbon spools and Fig. 2 being taken in a plane near the bottom thereof. Fig. 3 is a section on line 3—3 of Fig. 1. Fig. 4 is a side elevation and Fig. 5 is a detail section.

In said drawing, 6, 6 represent the side frame pieces of the machine and 7 is a horizontal bed supported by said pieces. Mounted upon pivots 8 and 9 respectively are the ribbon spools 10 and 11. The ribbon 12 is shown in Fig. 1 as having been wound upon spool 11 from spool 10. The pivots 8 and 9 have their bearings in said bed piece 7, and 13 and 14 are spring actuated arms, the points of which bear against the ribbon on the spools with a constant pressure. The hub of each spool is cut away as at 15 to allow the points of the arms 13 and 14 to move toward the axis of their respective spools when the ribbon becomes unwound therefrom, so as to uncover the cut away space as plainly appears in the case of the arm 13 and spool 10. This inward movement of arms 13 and 14, sets in motion means whereby the empty spool will be reversed in the direction of its movement, and positively actuated so that it will act to draw the ribbon back upon itself. The ribbon in moving from one spool to the other passes in front of the type segments 16 mounted on the ends of arms 17 in the manner now practiced in the comptograph machines. The arms 13 and 14 are provided

with vertical pivots 18 supported in said piece 7, and at the lower ends these pivots are split and each receives the end of one of the horizontal levers 19, 20 and a holding nut 21. The levers 19 and 20 are joined by a spring 22, whose tension is exerted in drawing the levers together and furnishes the power by which the arms 13 and 14 are forced to enter the cut away spaces in the spool hubs. Transversely of the machine and supported in bearings formed in the bed piece 7 is a rock shaft 23, having a crank 24 by which it is actuated at each printing operation of the machine through the medium of the cam 25 and link 26 joined to the crank 24. The cam is actuated by the main lever of the machine in the manner customary in said comptograph machines, but other suitable mechanism may be substituted for it, and for the crank and link if desired.

Mounted upon the shaft 23 is a flat metal stop piece 27, having several right angle bends as seen at Fig. 2, openings being formed in the bent portions through which the shaft may be passed. Upon two of the right angle portions are formed stops 28 and 29, one of which is engaged at proper times by the lever 19 and the other at alternating times by the lever 20. Normally the stop piece rocks with shaft 23, as the shaft carries two cranks 30 and 31 rigid with it, one at each end, and having pawls 32 and 33 pivoted to them, and said pawls carry pins 40 and 41 which alternately engage the arms 38 and 39 rigid with the stop piece, and thereby cause the frame to move with the shaft. The engagement just referred to is broken and a new engagement immediately effected by the other pin and arm each time either of the ribbon controlled arms 13 or 14 is allowed to operate, as will be understood. The pawls 32 and 33 actuate ratchet wheels 34 and 35 on the axes 8 and 9 respectively of the ribbon spools, each pawl being drawn by an individual spring 36 and 37 toward its ratchet wheel, and both pawls being controlled as to their engagement with the wheels by arms 38 and 39, and the laterally projecting pins 40 and 41 which are located upon the pivoted ends of the pawls. Thus arm 38 engages the pin 40 when the pawl 32 should be idle and overcomes the spring 36 and lifts the pawl so it cannot engage the wheel 34, and holds it raised until the arm releases the pin by moving off the same when the time arrives for the

pawl to resume actuation of its wheel, thereby allowing the spring to act upon and depress the pawl into its acting position. In a similar manner the arm 39, which has a hook 5 formed on one side, when the pawl 33 of wheel 35 should be idle, engages the pin 41 of said pawl and thereby overcomes the spring 37 and holds the pawl above its acting position until its turn arrives for resuming actuation, when the arm moves out of engagement 10 with pin 41 and allows the pawl to resume operations.

The changes in position of the arms 38 and 39 are due to the levers 19 and 20, which act 15 alternately to lock the stop piece 27 against rocking with the shaft 23, during the short time the arms 13 and 14 are entered in the cut away space of the spool hubs. It will be noticed that lever 19 is short as compared 20 with lever 20 and that it will move in front of stop 28 when arm 13 enters its spool hub, and thereby arrest the rocking of the stop piece in one direction. This arrest causes the pin 40 which continues to move with the shaft to 25 move from under its coacting arm 38, leaving the pawl 32 free to engage its wheel. The arrest of the stop piece also causes the entrance of pin 41 into the hook of arm 39 so that the pawl 33 will then be held out of ac- 30 tion. The ribbon will now be drawn from spool 11 onto spool 10. When the ribbon has all been wound onto spool 10, the lever 14 of spool 11 will enter the cut out side of the hub of that spool, and move lever 20 so that 35 its hooked end will catch stop 29 and hold the stop piece against rocking in one direction, (the reverse of the direction of the arrest effected by lever 19) thereby freeing the pin 41 from arm 39, and allowing pawl 33 to 40 resume its actuating of wheel 35. By the same arrest of the stop piece, the arm 38 will be carried onto its pin 40 so as to hold pawl 32 out of action. The ribbon will now move from spool 10 to spool 11, and subsequent 45 operations are mere repetitions of these. The arms 13 and 14 remain in the cut out sides of the spool hubs only momentarily and are forced out by the inclined end of the cuts.

We claim:—

50 1. The combination with the spools and their actuating devices, of spring arms bearing on the ribbon, and a rocking stop piece or frame connected to said actuating devices, and means whereby said spring arms 55 may cause the momentary arrest of said stop

piece and cause it to throw the actuating devices of one spool out of action and those of the other into action.

2. The combination with the spools and their actuating devices, of spring arms bearing 60 on the ribbon, a rocking stop piece or frame receiving motion from the source of power of the machine, means whereby said arms may momentarily arrest said rocking stop piece, and connections from said piece 65 to the spool actuating devices adapted when the piece is arrested to throw the devices of one spool into action and those of the other out of action.

3. The combination with the spools and 70 their actuating devices, of spring arms bearing on the ribbon, a rocking stop piece or frame receiving motion from the source of power of the machine, means whereby said arms may momentarily arrest said rocking 75 stop piece, and tripping devices between said stop piece and said spool actuating devices adapted to throw the actuating devices of one spool into action and those of the other spool out of action whenever the stop piece 80 is arrested.

4. The combination with the ribbon spools having their hubs recessed, and spring pressed arms riding on the ribbon upon the 85 spools, of a rocking shaft actuated at each printing operation and serving to actuate the spools, a stop piece mounted on said shaft and normally rocking with said shaft, levers for arresting the rocking of the stop piece 90 whenever either of said arms enters the recessed hub of the spool on which it bears, and mechanism controlled by said stop piece and serving to carry power from said shaft to the spools.

5. The combination with the ribbon spools 95 having recessed hubs, and spring pressed arms riding on the ribbon, of a rock shaft actuated at each printing operation, a stop piece mounted on said shaft and normally rocking therewith, means for arresting said 100 stop piece whenever either arm enters the recess of its corresponding hub, and mechanism whereby the spools are actuated from the rock shaft, said mechanism being controlled by said stop piece.

CHARLES P. WETMORE.
FREDERICK A. NIEMANN.

Witnesses:

H. A. LEARN,
L. J. OTTEN.