C. P. WETMORE.

ACTUATING MECHANISM FOR ADDING MACHINES.

APPLICATION FILED APR. 24, 1907.

938,532.

Patented Nov. 2, 1909.

3 SHEETS—SHEET 1.

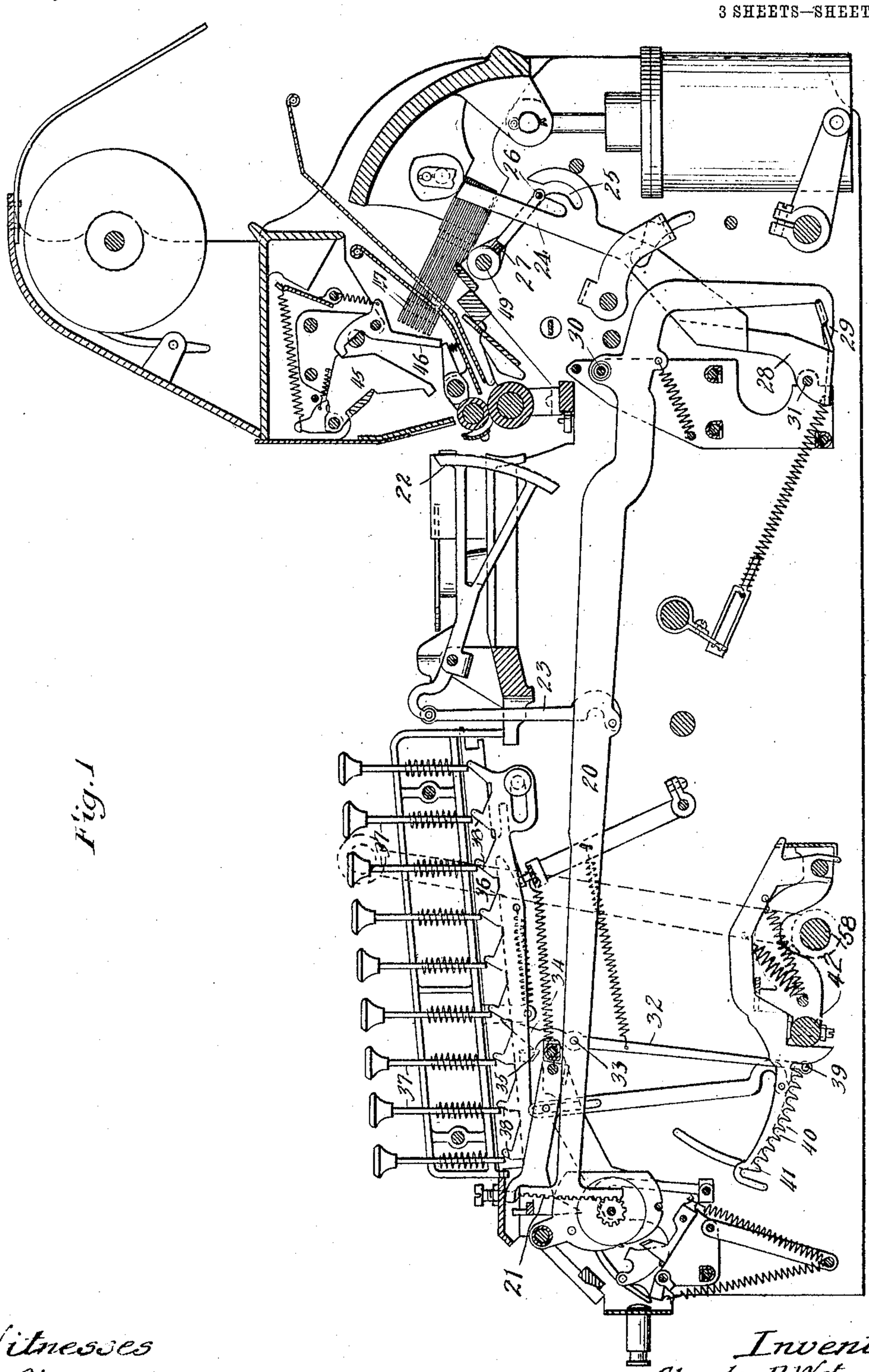

Fig. 1.

Witnesses

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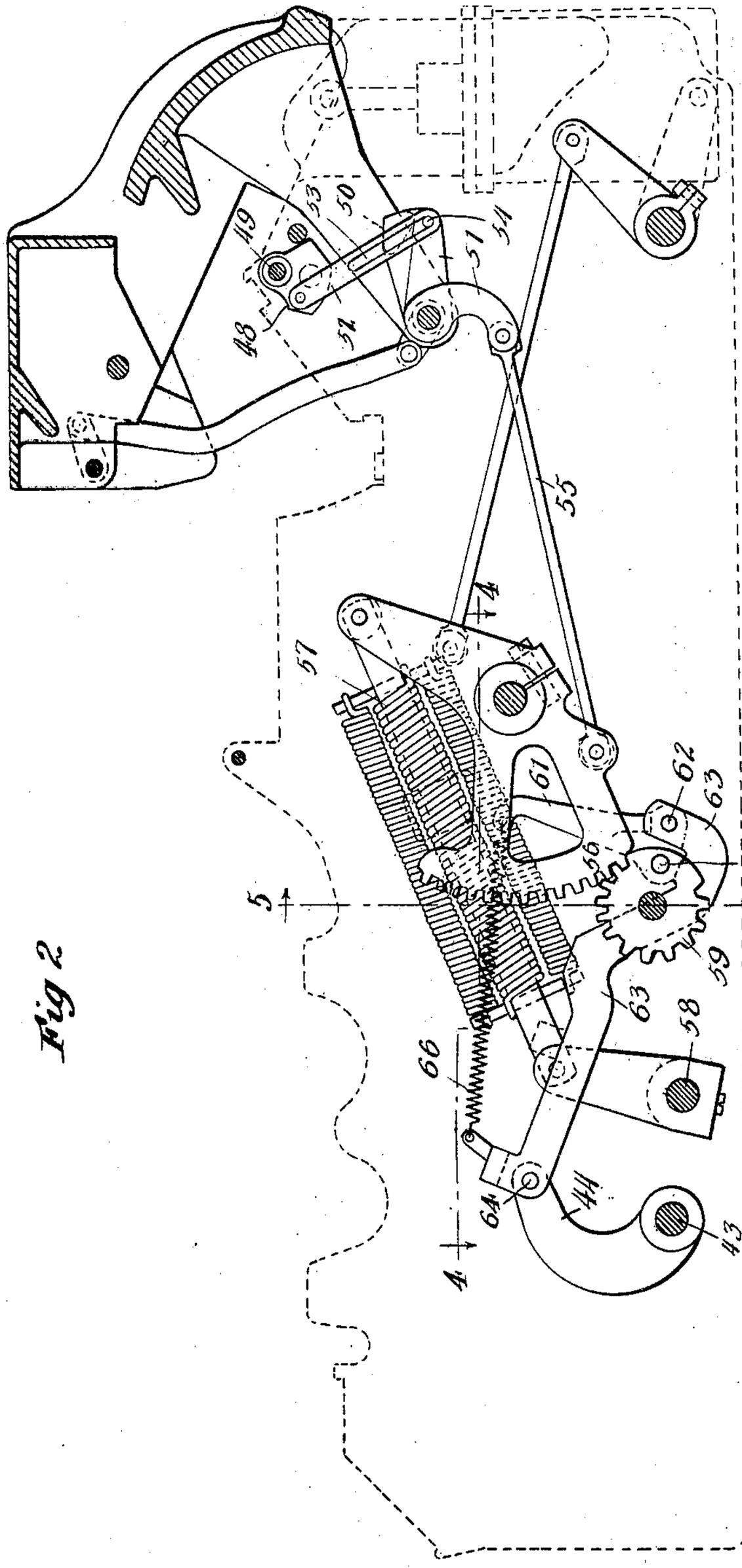

Fig 2

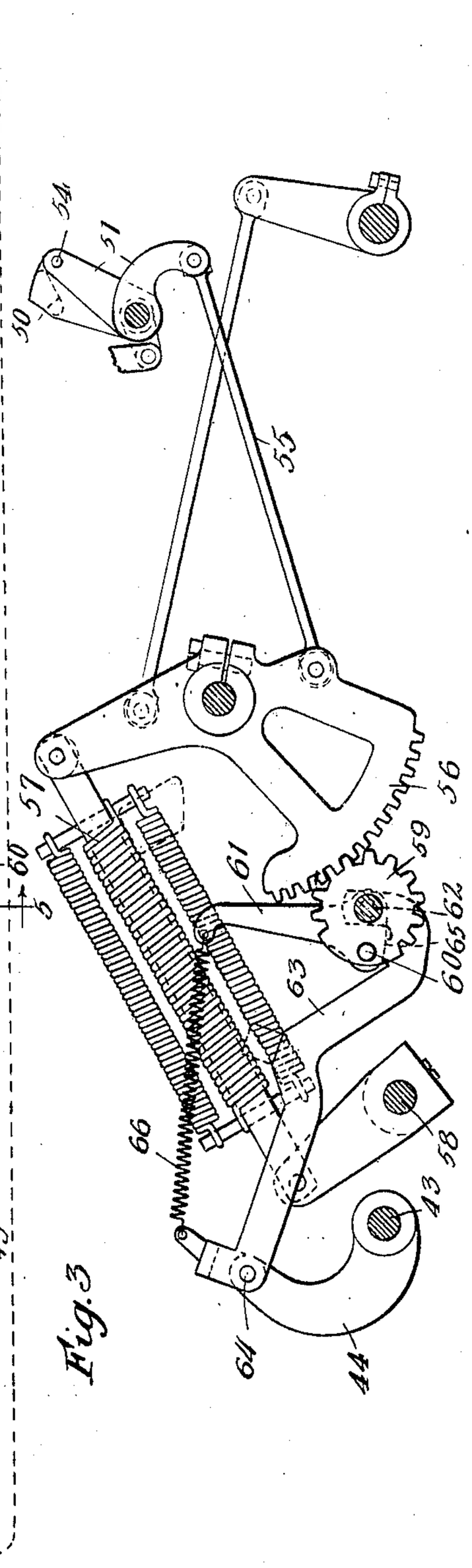

Fig. 3

Witnesses

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3 SHEETS—SHEET 3.

Fig. 4.

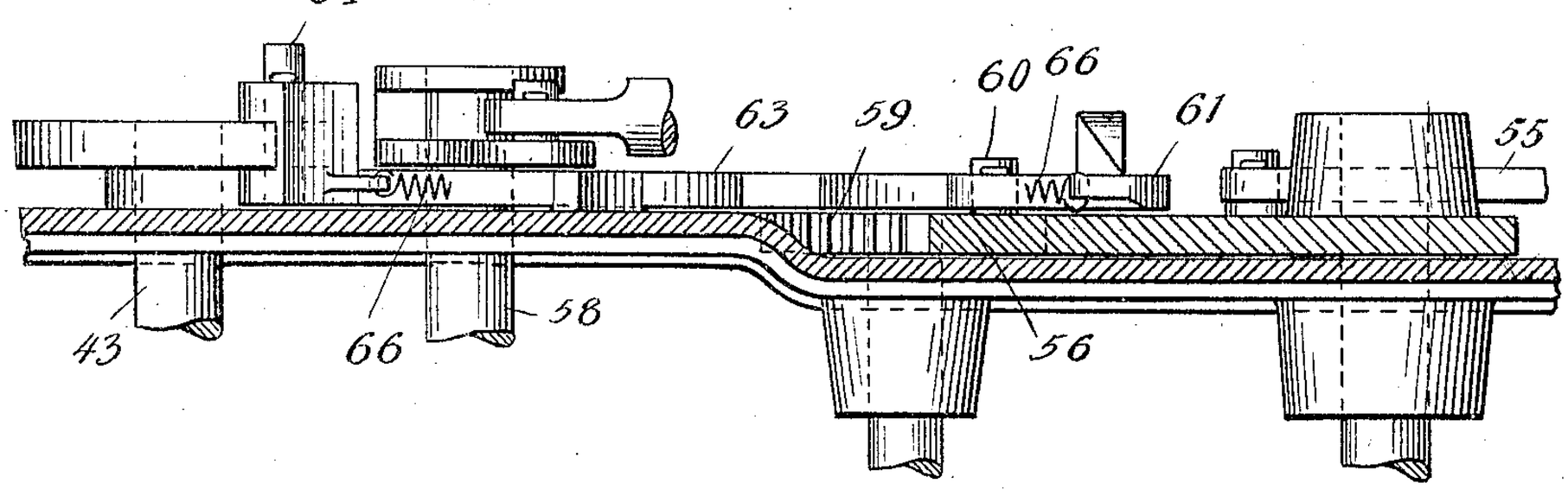
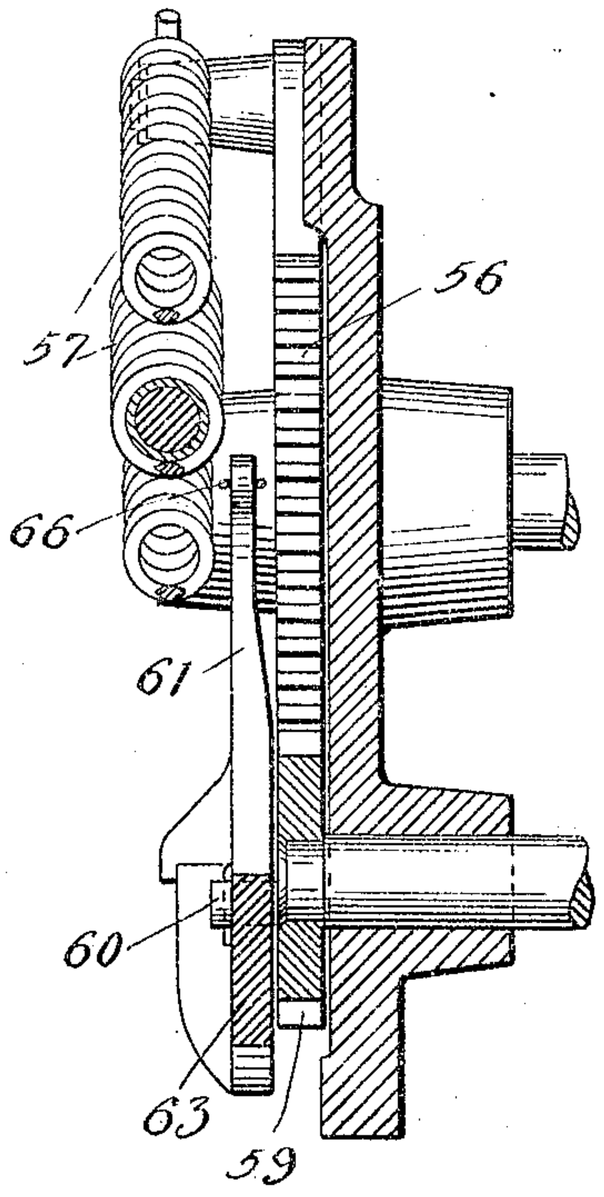


Fig. 5



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UNITED STATES PATENT OFFICE.

CHARLES P. WETMORE, OF CHICAGO, ILLINOIS, ASSIGNOR TO COMPTOGRAPH COMPANY, A CORPORATION OF ILLINOIS.

ACTUATING MECHANISM FOR ADDING-MACHINES.

938,532. Specification of Letters Patent. **Patented Nov. 2, 1909.**

Application filed April 24, 1907. Serial No. 369,973.

To all whom it may concern:

Be it known that I, CHARLES P. WETMORE, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Actuating Mechanism for Adding-Machines, of which the following is a specification.

My invention relates to printing adding machines, and the particular embodiment of it here shown is indicated as applied to the printing adding machine commonly known as the comptograph, and generally shown in the various United States patents heretofore issued to Dorr E. Felt for printing adding machines and their mechanism, and more particularly shown in the patent to Felt and Wetmore, No. 853,543, issued May 14th, 1907, and in the patent to Felt No. 644,287; and the object of my invention is to provide mechanism whereby the prime actuator may be so connected with the type positioning mechanism that the latter is brought to a positively motionless dwell, with the type in set position, before the hammer-release mechanism can possibly be actuated to the extent of releasing the type-hammers.

My invention has for further objects the effecting of such other improvements in structure and function as may be found to obtain in the devices hereinafter described or claimed.

In the accompanying drawings forming a part of this specification, Figure 1 is a vertical sectional view lengthwise through the machine, to show the general relations of the adding and type positioning and hammer-release mechanisms; Figs. 2 and 3 are lateral views of the actuating mechanism and connections hereinafter more particularly described, and Fig. 2 showing the parts in normal position, while Fig. 3 shows them in the positions taken when the prime actuator has been pulled to nearly the limit of its movement; Fig. 4 is a sectional view on line 4—4 of Fig. 2; and Fig. 5 is a sectional view on the line 5—5 of Fig. 2.

Like reference numerals indicate like parts in all of the figures.

20 is one of the series of main adding-levers of the machine and performs the threefold function of rotating the corresponding adding-wheel, by means of the segment gear 21, of setting in position the type-segment 22, by means of the connection 23, and of setting forward the tail-piece levers 24 so that their curved slots 25 will be engaged by the crossbar 26 of the comb-piece 27 when the said comb-piece is subsequently rocked downward. This forward shifting of each tail-piece lever is effected by the engagement of the tail-piece 28 with the hooked end 29 of the aforesaid main lever 20, so that when the said main lever 20 is rocked upon its pivot 30 the said tail-piece and tail-piece lever, which are secured together, will be rocked upon their pivot 31. The movement of the aforesaid main lever 20 is effected through the main-lever connection 32 that is pivoted upon said main-lever at 33. This main-lever connection is provided at its upper end with a cam-arm 34, adapted to be in constant contact with and shifted by the cam-stud 35 on the sliding cam-bar 36, which latter is shifted to greater or less extent by the depression of one or another of the keys 37, each of said keys being arranged to impinge against and shift one of the series of cams 38 that project upward from and are integral with the aforesaid sliding cam-bar. The extent of the movement of the cam-bar is thus determined by the key that is depressed, and in turn determines the extent to which the cam-stud 35 shall swing back the cam-arm 34 of the pivoted main-lever connection 32; and the extent to which said short or cam-arm of said connection is swung back determines the extent to which the long or lower arm of said pivoted connection shall be swung forward. The extreme free end of said long arm of said connection 32 carries the stud 39, and the extent to which said long arm is swung forward determines the engagement of said stud in one or another of the series of notches 40 in the forward end of the adding-arm 41 when the latter is rocked downward in the subsequent actuation of the machine. And the particular notch in which the aforesaid stud happens to engage of course determines the extent to which the main-lever 20 will be pulled down by its connection 32 upon the aforesaid rocking of the adding-arm 41. The adding-arm is secured to the main rock-shaft piece 42, whose pivot end 43 projects through the wall of the machine and is secured to the rock-shaft crank-arm 44. Thus the rocking of the said rock-shaft piece effects the movement of the adding-wheels

and the positioning of the type-segments, to the extent predetermined by the depression of the corresponding keys. But the further step of printing the amount brought to the printing line by the positioning of the type-segments, is effected by the release of the corresponding type-hammers 45, and this release is effected by the tripping of the hammer-pawls 46 through the forward movement given the corresponding U-bars 47 and tail-piece levers 24 when the comb-piece 27 is rocked downward in engagement with the curved slots 25 of the particular tail-piece levers that have been set forward into operating position. Thus, the rocking of the comb-piece causes the release of the proper type-hammers, and must occur at an instant subsequent to the type-positioning caused, as before described, by the rocking of the main rock-shaft 42. The rocking of the comb-piece 27 is effected by the movement of the comb-piece cam 48 that is secured to the outside end of the comb-piece rock-shaft 49; and the movement of the said comb-piece cam is effected by the contact with it of the cam 50 secured to the crank 51. The return movement of the comb-cam is effected through the link 52 pivoted on the said comb-cam and having a slot 53 engaging a stud 54 on the other cam 50.

The crank 51 is moved through the connection 55, whereby it is directly connected to the oscillating segment 56. The said oscillating segment 56 is oscillated through the spring conection 57, whereby it is yieldingly connected to the main crank-shaft 58 that is directly attached to the operating hand-lever of the machine. Thus, the movement of the said hand-lever directly moves the said segment 56 and directly produces the movement of the crank 51 whose cam 50 is positioned and timed to actuate the comb-cam at the proper instant. But the segment 56 also transmits the required movement to the main rock-shaft piece 42, one of whose ultimate functions is, as before explained, the positioning of the proper types at the printing line. And it is essential that the types shall be brought into the printing position before the movement of the comb-piece causes the release of the type-hammers. To this end, the main levers 20, which move the type segments 22, must be brought to a stop before the hammer-release mechanism acts. This stopping of the main levers has been variously effected but occasioned a strain upon the adding-arm and other parts, because the main rock-shaft piece has heretofore moved in complete unison with the main segment 56, and the said segment 56, in order to effect the actuation of the hammer-release mechanism, must continue its movement for a measurable distance after the main rock-shaft movement has completely effected the actuation of the type-positioning mechanism. In other words, the continued movement of the hand-lever of the machine must first effect the actuation of the type-positioning mechanism, and then go on a little farther and effect the actuation of the hammer-release mechanism. And in order to relieve the strain upon the type-positioning mechanism during this slight further movement whereby the hammer-release mechanism is actuated, it became desirable to provide such a connection between the type-positioning mechanism and the hand-lever device that the type-positioning mechanism should be brought to a positive dwell before the further movement of the hand-lever device should effect the actuation of the hammer-release mechanism. This has been accomplished by interposing between the main segment 56 and the rock-shaft crank-arm 44 a connection of such character that the said crank-arm would be moved throughout the first portion of the oscillation of the segment 56 and then come to and remain at a dead stop for the remainder of the oscillation of said segment, such remainder of said oscillation being timed to effect the actuation of the hammer-release mechanism. The particular connection thus interposed has the following described construction and operation: The segment gear on the segment 56 meshes with the mutilated pinion 59, and the oscillation of the segment effects the incomplete rotation of the said pinion. The said pinion bears a crank-stud 60 upon which is pivoted the auxiliary connection-piece 61, and upon the said auxiliary connection-piece 61 there is pivoted in turn, at 62, the main connection-piece 63, whose other end is pivotally secured, at 64, to the rock-shaft crank-arm 44. The auxiliary connection-piece 61 is so shouldered, at 65, upon the main connection-piece 63, and held thereagainst by the spring 66, and the relative positions of the pivot points 60 and 62 are so arranged, that upon the rotation of the pinion the auxiliary connection carries the main connection around with it until the pivot point 62 becomes coincident with the end of the axial bearing of the pinion itself, and thereafter the further movement of the pinion carries the auxiliary connection-pivot 60 a little farther but without disturbing the aforesaid dead center position of the pivot point 62 of the main crank. As a result, although the pinion continues its movement throughout the oscillation of the segment 56, the main connection of the rock-shaft crank-arm 44 comes to a dead-center stop and remains motionless throughout the remainder of the movement of the pinion and segment, such remainder of the movement of the segment being timed to effect the actuation of the hammer-release mechanism in the manner above described.

My invention is hereinbefore set forth as

embodied in a particular form of construction, but I do not limit it thereto or to less than all the possible forms in which the said invention, as hereinafter claimed, may be embodied and distinguished from prior devices.

I claim:—

1. In an adding-machine, in combination, a prime-actuator, hammer-release mechanism connected thereto, adding-mechanism, type-positioning mechanism having a secondary actuator member actuating all of the orders thereof, and a multiple-part connection between said prime-actuator and the secondary-actuator of said type-positioning mechanism, said connection being adapted to bring the type-positioning mechanism to a positive dwell before the action of the hammer-release, substantially as specified.

2. In an adding-machine, in combination, a prime-actuator, hammer-release mechanism, adding and type-positioning mechanism having a secondary actuator member actuating all of the orders thereof, a direct connection between said prime-actuator and said hammer-release mechanism, and an interrupted connection between said prime-actuator and the secondary-actuator of said type-positioning mechanism, the operative member of said interrupted connection being adapted to come to a dead-center stop before the continued movement of the prime-actuator causes the hammer-release, substantially as specified.

3. In an adding-machine, in combination, a direct actuator, hammer-release mechanism connected thereto, adding-mechanism, type-positioning mechanism having a secondary actuator member actuating all of the orders thereof, and a multiple-part connection between said prime-actuator and the secondary-actuator of said type-positioning mechanism, the operative member of said connection being adapted to come to a dead-center stop while the other members continue their movement in unison with the further hammer-releasing movement of the prime-actuator, substantially as specified.

4. In an adding-machine, in combination, a prime-actuator including an oscillating segment, hammer-release mechanism connected to said prime-actuator, adding and type-positioning mechanism including a main rock-shaft, and a multiple-part connection between said rock-shaft and the aforesaid segment, said connection consisting in a pinion meshing with said segment and carrying an auxiliary connection-piece to which is pivoted the main connection-piece for actuating the aforesaid rock-shaft, said main connection-piece being so pivoted to said auxiliary connection-piece that the pivot-point is brought to a dead-center stop over the axis of the pinion before the said pinion has completed its movement in mesh with the segment of the prime-actuator, substantially as specified.

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