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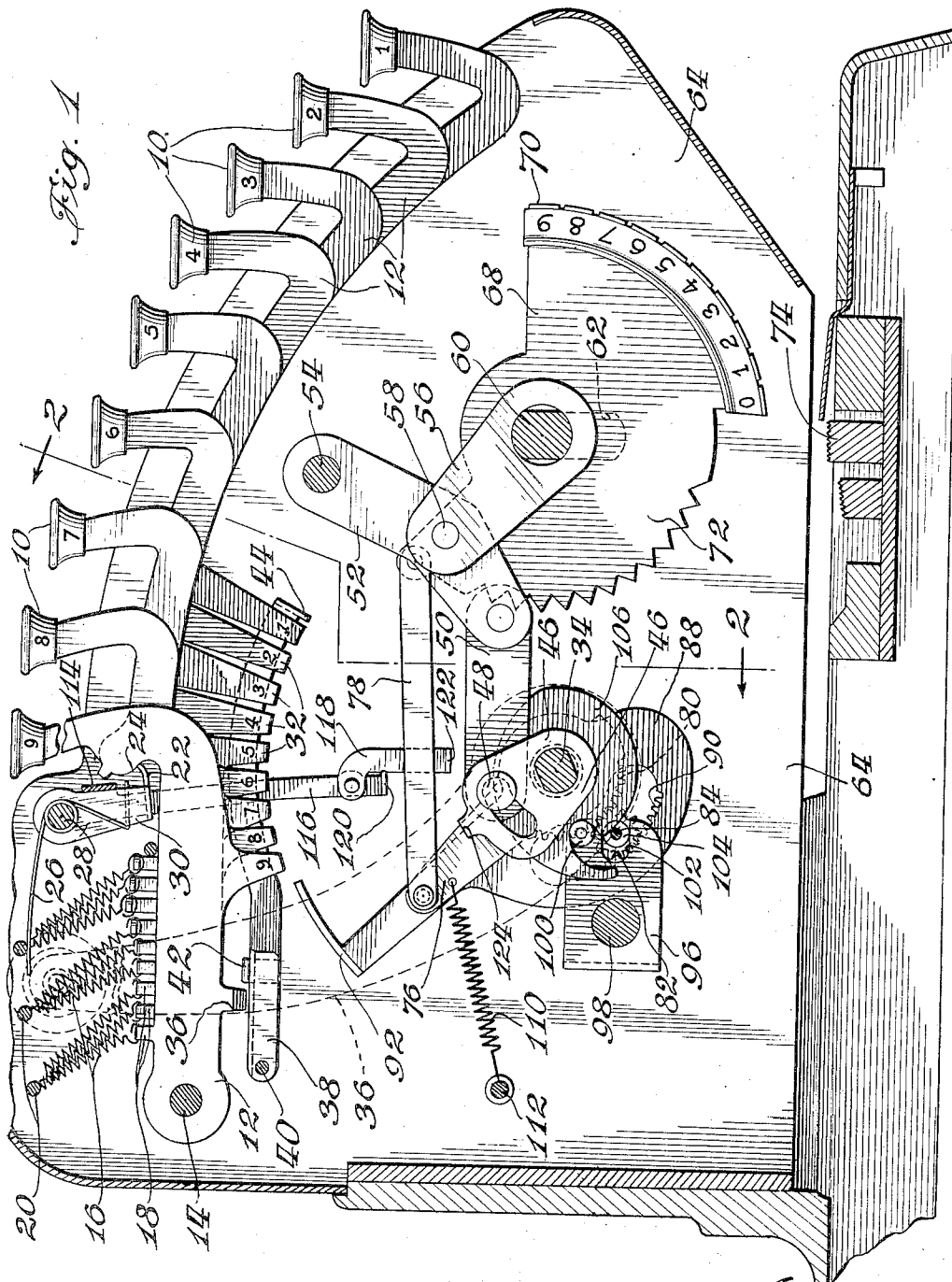
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2,016,345

DIFFERENTIAL STOP MECHANISM FOR CHECK WRITERS

Filed Feb. 15, 1934

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

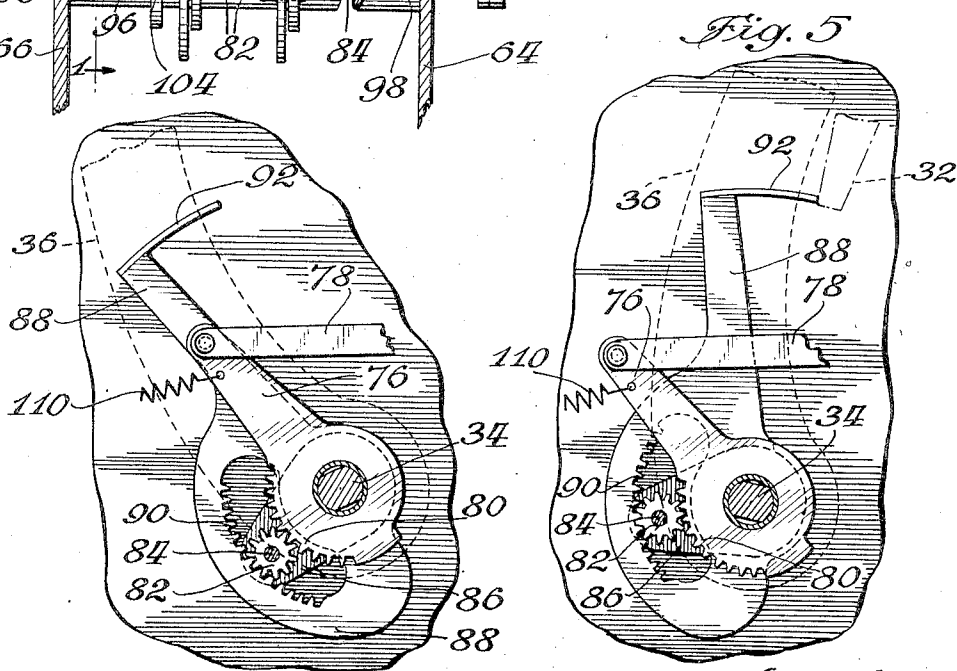
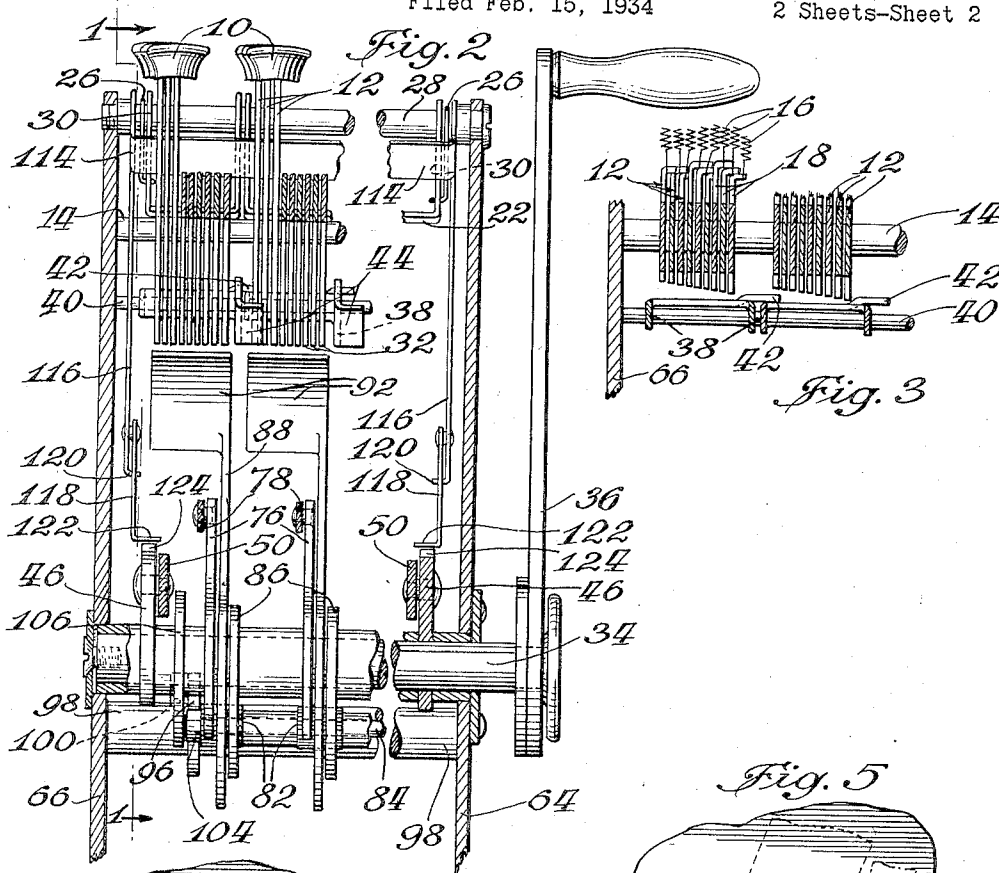


Fig. 4

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UNITED STATES PATENT OFFICE

2,016,345

DIFFERENTIAL STOP MECHANISM FOR
CHECK WRITERSOle Slettevold, Chicago, Ill., assignor to The Hed-
man Manufacturing Company, Chicago, Ill., a
corporation of Illinois

Application February 15, 1934, Serial No. 711,300

5 Claims. (Cl. 101-93)

My invention relates, generally, to differential type set-up mechanisms for check writers and similar machines. More particularly, my invention relates to a planetary gear mechanism for differentially setting the type segments of check writers in accordance with the depression of the amount keys.

Various types of check writers in which the amount type are controlled by depressible keys have been proposed and used, but have not been generally satisfactory, among other reasons, because of the relatively great amount of power required for their operation. It has been the general practice in devices of this kind to bias the type segments for movement by means of springs individual to each of the segments. In hand operated check writers the amount of power required to operate the platen to secure the printing impression is relatively great, and the additional load of these springs attached to the type segments has increased the amount of power necessary for operating the machine. Furthermore, unless the springs for moving the type segments are considerably stronger than normally necessary, any unusual friction which interferes with the free movement of the type segments causes them to stick, with the result that the amount imprinted will be incorrect. Or, the excessive friction may prevent the segments from returning to normal position upon completion of the operation of the machine.

In the machine of my invention, mechanism is provided positively to move the type segments to their respective positions determined by the depressed keys, and positively to return the segments to normal position upon the completion of the printing operation.

It is, therefore, an object of my invention to provide improved means for differentially positioning the type carrying elements of check writers in accordance with the setting of the amount keys.

Other objects will appear from the following description, reference being had to the accompanying drawings, in which

Figure 1 is a vertical sectional view taken on the plane of the line I—I of Figure 2;

Figure 2 is a transverse vertical sectional view of two banks of the keys and associated mechanism;

Figure 3 is a fragmentary sectional view showing the zero stop setting mechanism;

Figure 4 is a fragmentary view showing the

differential actuator mechanism in normal position; and

Figure 5 is a view similar to Figure 4, showing the actuator in moved position.

My present invention may be utilized in a check writer of the general type disclosed in the co-pending application of John W. Carlson, Serial No. 617,553, filed June 16, 1932, or may be suitably modified to be usable in key-set check writers of other types.

In the drawings the check writer is illustrated as having nine keys 10, secured to key bars 12 which are pivoted upon a rod 14 extending transversely of the machine. The keys are normally held in their upper positions, as shown in Figure 1, by tension springs 16, which are stretched between lugs 18 formed on the key stems and rods 20 which extend transversely of the machine. A latch bail 22 is provided for each row of key bars to hold any key which may have been actuated in its depressed position.

The latch bail 22 normally engages beneath a rounded projection 24 formed on each of the key stems, the latch bail 22 being held in such position by a torsion spring 26 wound about a rod 28 upon which the arms 30 of the latch bail 22 are pivoted. The latch bail 22 is swung counterclockwise a sufficient distance upon depression of any one of the keys to cause release of any key which may have been previously depressed and held in depressed position by the latch bail. Each of the key stems has a stop portion 32, the ends of these stops normally being the same radial distance from the axis of the operating shaft 34.

Each of the key bars 12 has a projecting lug 36 overlying a zero stop arm 38 pivoted upon a rod 40. The lugs 36 are of different length so that irrespective of which key is depressed, the zero stop arm 38 will be moved through the same angular distance. There is a stop arm 38 for each bank of keys and each stop arm is provided with a sidewardly projecting lug 42 (Figure 3) which lies above the stop arm of the adjacent lower order bank of keys. Each stop arm has a stop portion 44 which projects sidewardly into the general plane of the stop projections 32 of the adjacent lower order bank of keys. It will thus be seen that depression of a key in one of the banks of the higher denominational orders will automatically cause setting of the zero stops in all of the banks of lower order.

It is, therefore, unnecessary to provide a "0" key and the setting up of amounts on the keyboard will thus be greatly expedited because of the

elimination of the operation of pressing "0" keys.

Rigidly secured to the shaft 34, adjacent each end thereof, is a slotted arm 46. A pin 48 rides in the slot formed in the arm 46, the pin being carried by a link 50 which is pivotally connected to a toggle lever 52, the latter being pivoted upon a cross rod 54. A toggle link 56 is pivoted to the toggle lever 52 by means of a pin 58, the other end of the toggle link 56 being pivotally connected to the type segment shaft 60 which is mounted for vertical sliding movement in slots 62 formed in the side plates 64, 66 of the machine.

Type carriers 68 are mounted for free rotation upon the shaft 60, the carriers having type 70 thereon and being provided with a saw-toothed segment 72. The type are adapted to engage a platen 74 rigidly mounted in the base of the machine. An aligner bar (not shown) is provided for engagement with the notches in the segments 72, thereby accurately to align the type segments just prior to the making of the printing impression.

The type segments are differentially positioned by means of an arm 76 mounted for free rotation upon the shaft 34, the arm 76 being connected to the type carrier 68 by a link 78. The arm 76 has a gear segment 80 formed thereon, this segment meshing with a planetary pinion 82 mounted for free rotation upon a shaft 84 carried by a pair of arms 86 which are pivoted upon the shaft 34. A slotted actuator 88 is pivoted upon the shaft 34 and has an internal gear segment 90 meshing with the pinion 82. The outer end of the actuator 88 has a wide flange 92 formed thereon for engagement with any one of the stop projections 32 of the key bars.

A bail 96 is pivotally mounted upon a cross rod 98, each arm thereof carrying a roller 100. Each arm has an open end slot 102 formed therein to receive a roller 104 rotatably mounted on the end of the shaft 84. The bail 96 is actuated by means of a notched disc 106 rigidly secured to the shaft 34. Each of the actuator arms 76 has one end of relatively weak tension spring 110 secured thereto, the other end of the spring being anchored to a cross rod 112. It will be understood that suitable means for inking the type will be provided, such, for example, as shown in the aforesaid application of John W. Carlson.

The set keys are released shortly prior to the completion of the return stroke of the operating handle by means of a bail 114, the arms 116 of which are pivoted on the rod 28 and the cross bar of which lies in front of the arms 30 of the latch bars 22.

Pivotally secured to the end of the arm 116 is a wiper pawl 118 which is held in the position shown in Figure 1 in abutment with a sidewardly projecting lug 120 of the end of the arm 16 by gravity or by a suitable spring. The end of the wiper pawl 118 has a sidewardly projecting lug 122 which is adapted to be engaged by a projection 124 formed on the arm 46.

Suitable repeat key means may be provided to swing the wiper pawl 118 out of the path of the projection 124 when it is desired to maintain the amount set up on the keyboard for a plurality of operations of the machine.

In operating the check writer of my invention, the amount is set up on the keyboard by depression of the required keys in the usual manner, each key being held in depressed position by its associated latch bar 22, and the zero stops 44 in all denominational orders to the right of the first significant figure being automatically set up.

After the amount has been thus set up upon the

keyboard, the operating handle 36 is swung forwardly. During the initial portion of this forward rotation of the operating shaft 34, the bail 96 will be swung counterclockwise (Figure 1), thereby swing the arms 86 which carry the shaft 84 and pinions 82 in a clockwise direction. As the pinions are swung clockwise the actuators 88 are likewise swung clockwise, since the arms 76 are initially held in their normal position by the tension springs 110. Each of the actuators 88 will thus swing forwardly until it strikes a set stop 32 or a zero stop 44, whereupon the pinion 82 will ride upon the internal gear segment 90 of the actuator and drive the associated arm 76 clockwise, thereby moving the type carrier to set position. It will be apparent that the type carriers are thus positively moved. If there is no key stop 32 or zero stop 44 in position to arrest the actuator 88, the latter will continue its clockwise movement slightly beyond the zero stop 44, but the type carrier will not be moved from its normal position. Thus, a logotype, such as shown, for example, in said application of John W. Carlson, may be moved into juxtaposition with the type carrier set to the first significant figure in the amount being printed.

During this initial portion of the movement of the operating shaft 34, the pin 48 carried by the link 50 will ride freely in the slot formed in the arm 46, but after all of the type carriers have been set, the arm 46 will move the link 50 forwardly and, through the toggle levers 52, 56, move all of the type carriers downwardly to effect the printing impression upon the check. Upon the return stroke of the operating handle the type carriers will be raised to normal position, and, near the end of the return stroke, the hook portion of the disc 106 will engage the roller 100 and swing the bail 96 clockwise, thereby swinging the planetary pinion shaft 84 counterclockwise. During this counterclockwise movement the planetary pinions will restore both the actuators 88 and the type carriers to their normal positions.

While a particular embodiment of the invention is shown, it will be apparent to those skilled in the art that various modifications in design and construction may be made without departing from the spirit of the invention.

What is claimed as new and desired to be secured by Letters Patent of the United States is:

1. In a key set check writer, the combination of a row of key-set stops, an arm engageable with one of said stops when the latter is moved to stopping position upon depression of its associated key, a type carrying element, an actuating arm connected to said type carrying element for differentially positioning the latter, a differential pinion moved a determined distance upon each operation of the machine, and gear teeth associated with said stop arm and said actuating arm, respectively, and meshing directly with said pinion so as to be differentially moved thereby.

2. In a key set check writer, the combination of a row of key-set stops, a stop element engageable with one of said stops when the latter is moved to stopping position upon depression of one of the keys, a type carrier, an actuating member associated with said type carrier for differentially positioning the latter, a pinion moved a predetermined distance upon each operation of the machine, internal gear teeth on said stop element and external gear teeth on said actuating member, the gear teeth on said stop element and the gear teeth on said actuating member both meshing directly with the teeth of said pinion, whereby

said element and said member will be differentially moved complementary distances determined by the key-set stop.

3. In a check writer, the combination of an
5 operating handle, an oscillatory shaft movable thereby through a predetermined angle, a plurality of rows of key set stops, a pair of arms secured to said shaft, a bail rod carried by said arms, a plurality of pinions freely rotatable upon
10 said bail rod, a plurality of type segments, a plurality of arms pivoted on said shaft, each having an operative connection with one of said type segments and each having a gear segment meshing with one of said pinions, and a plurality
15 of stop arms, each freely pivoted on said shaft

and having a part movable in the path of a row of said stops and each having an internal gear segment meshing with said pinion.

4. The combination defined in claim 3 characterized by the provision of means operated by the oscillatory shaft near the end of its operating stroke for causing movement of the type segments into engagement with a check to be printed.

5. The combination defined in claim 3 characterized by the provision of an arm secured to the oscillatory shaft and a wipe pawl engaged by said arm upon the return stroke thereof to release the key set stops.

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