(No Model.) 6 Sheets—Sheet 1.

T. CARNEY.

CASH REGISTER AND INDICATOR.

No. 479,701. Patented July 26, 1892.

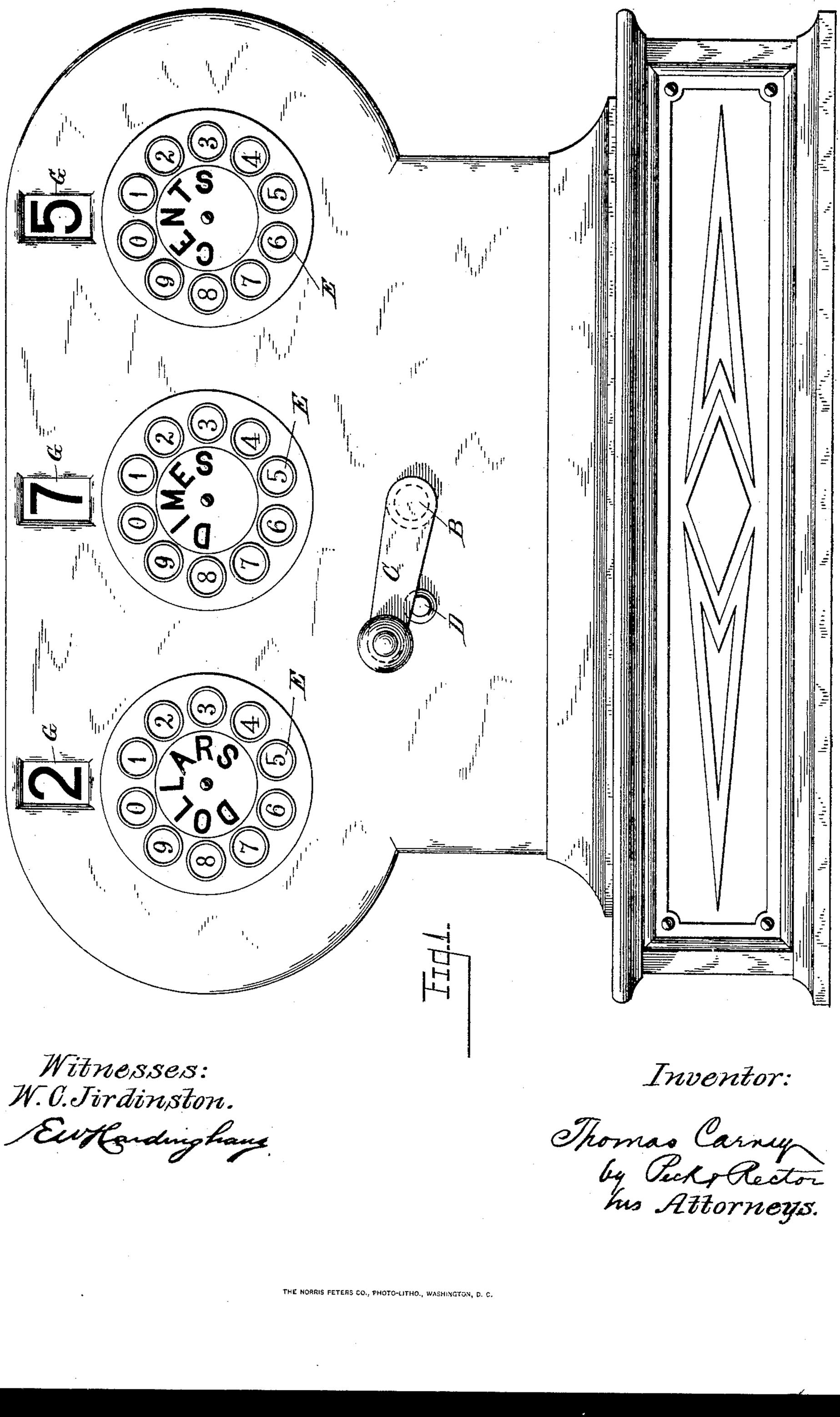

Fig. 1.

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(No Model.)

6 Sheets—Sheet 2.

T. CARNEY.

CASH REGISTER AND INDICATOR.

No. 479,701. Patented July 26, 1892.

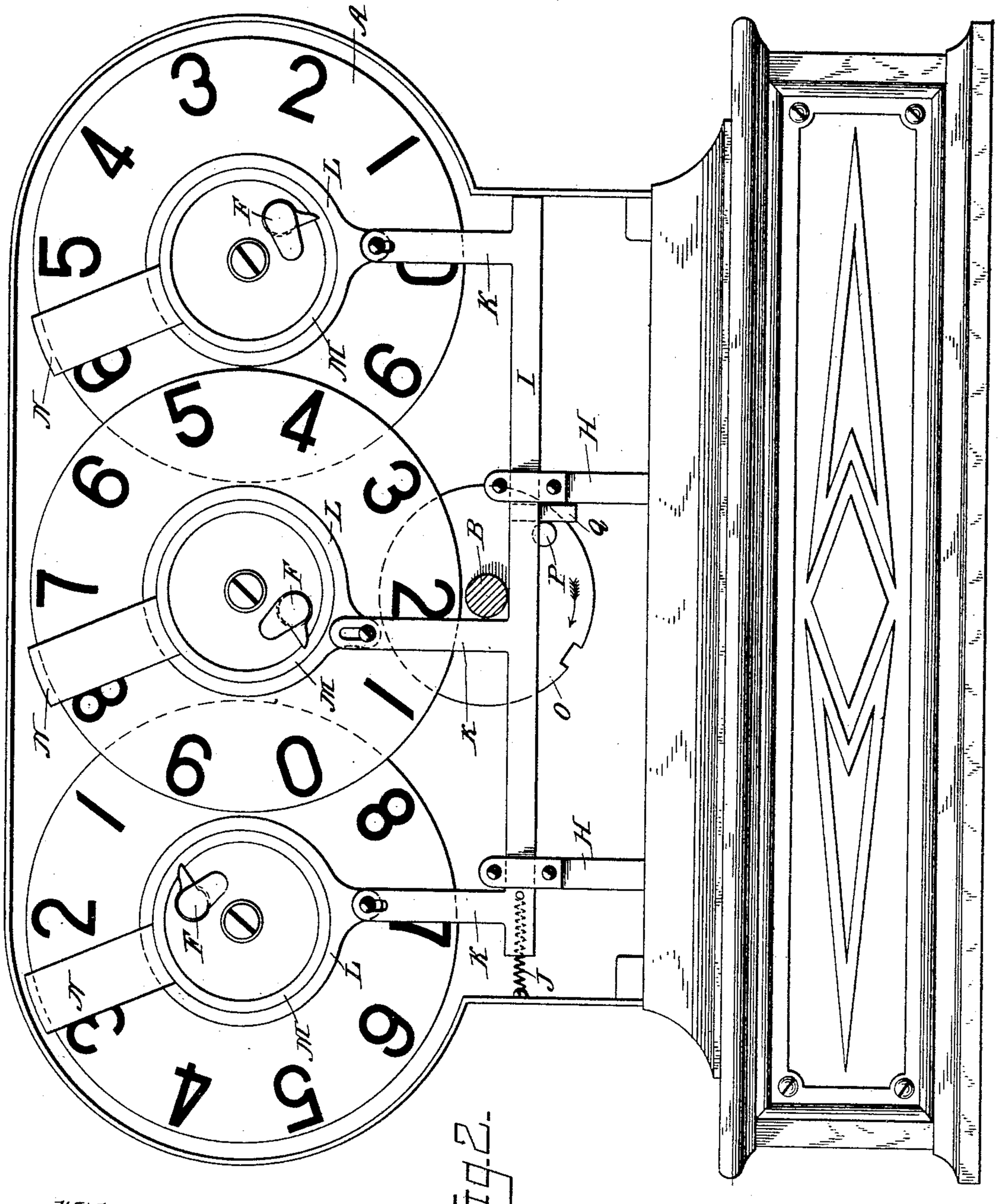

FIG. 2.

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(No Model.) 6 Sheets—Sheet 3.

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CASH REGISTER AND INDICATOR.

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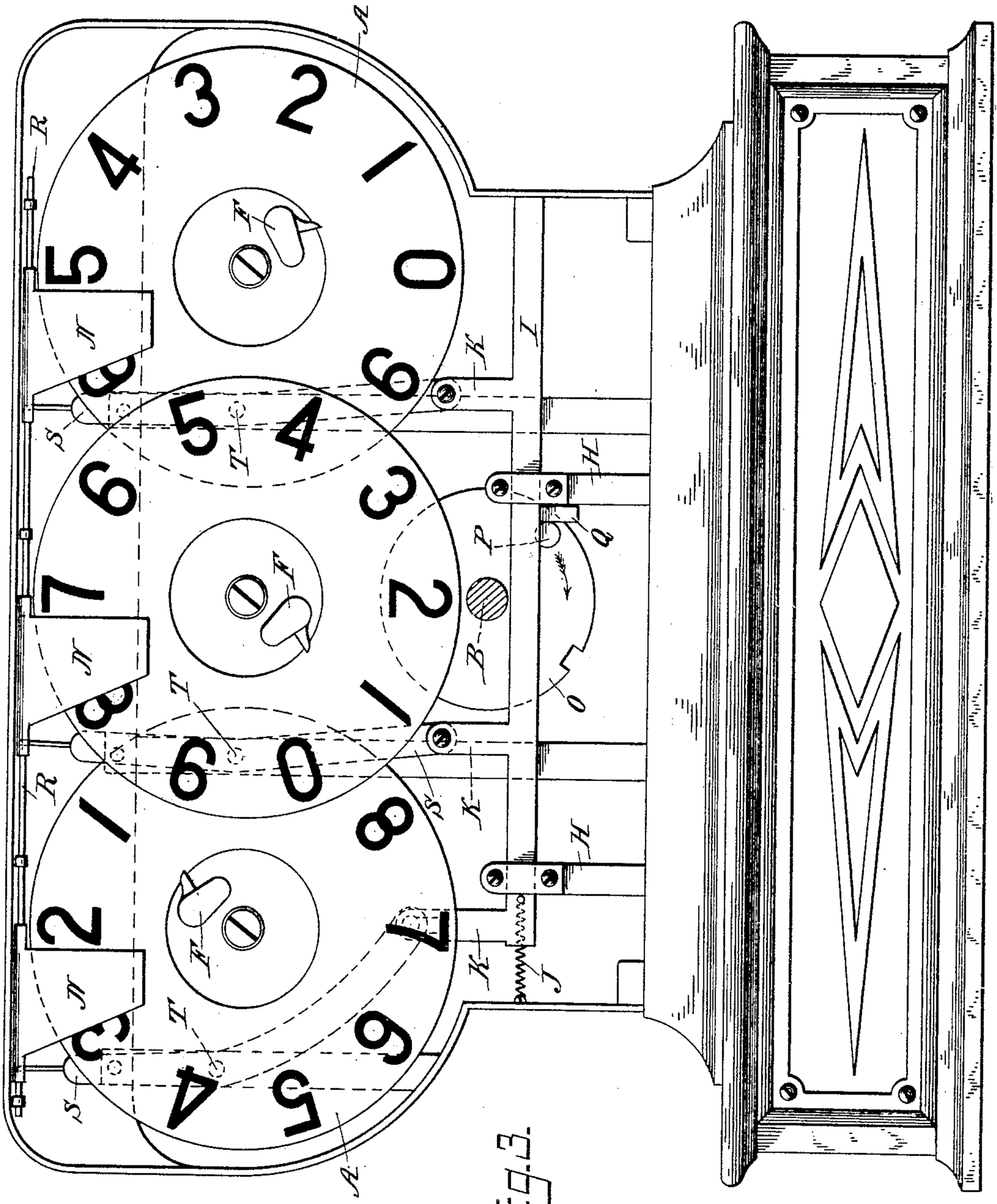

FIG. 3.

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(No Model.) 6 Sheets—Sheet 4.

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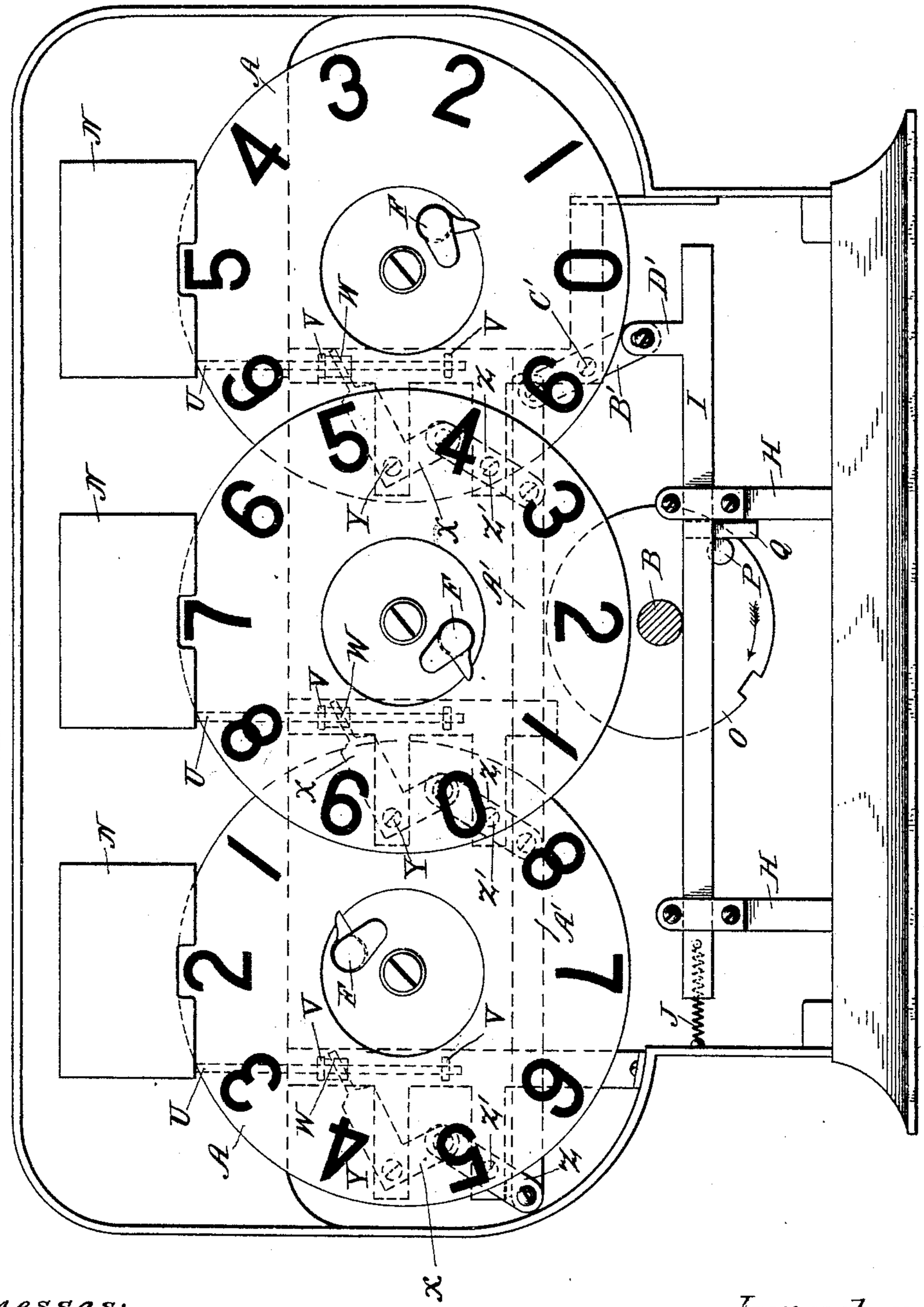

Fig. 4.

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(No Model.) 6 Sheets—Sheet 5.

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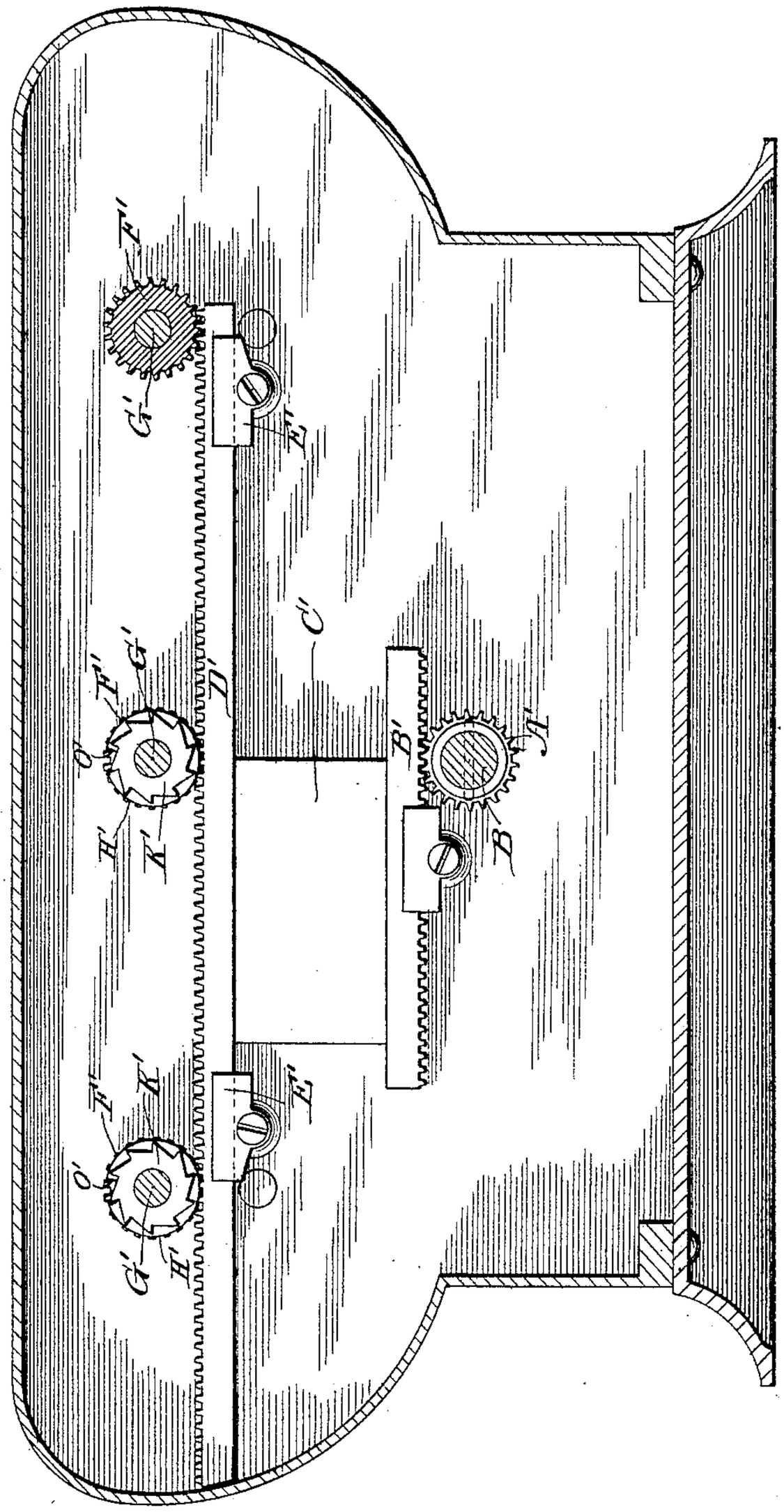
CASH REGISTER AND INDICATOR.

No. 479,701. Patented July 26, 1892.

Fig 5



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Wm. M. Rheem.

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(No Model.) 6 Sheets—Sheet 6.

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CASH REGISTER AND INDICATOR.

No. 479,701. Patented July 26, 1892.

Fig 8.

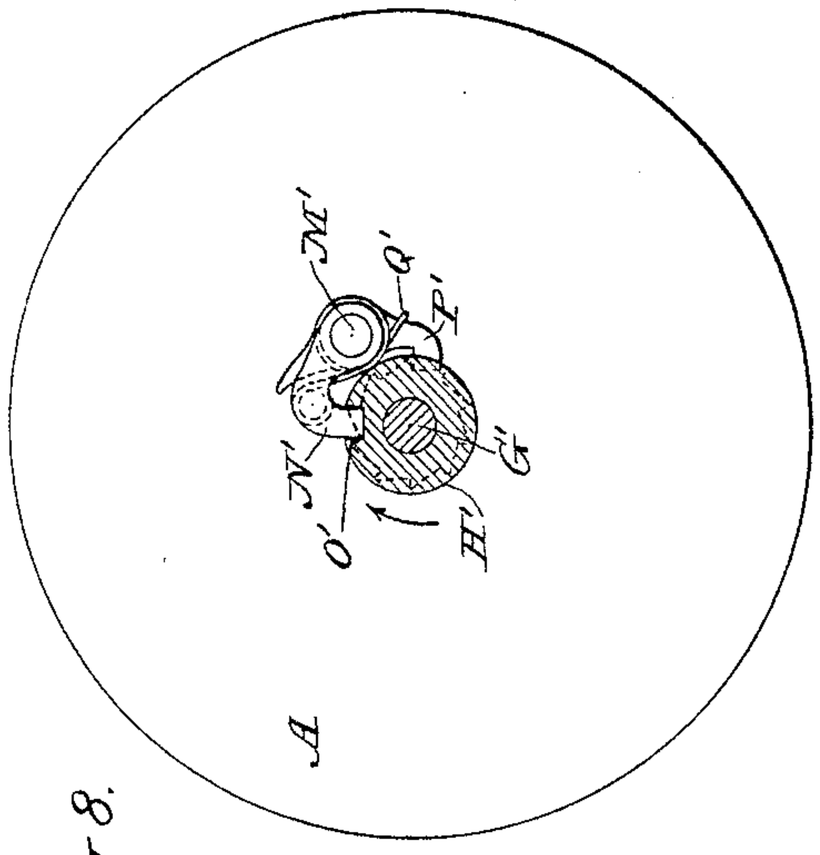


Fig 7.

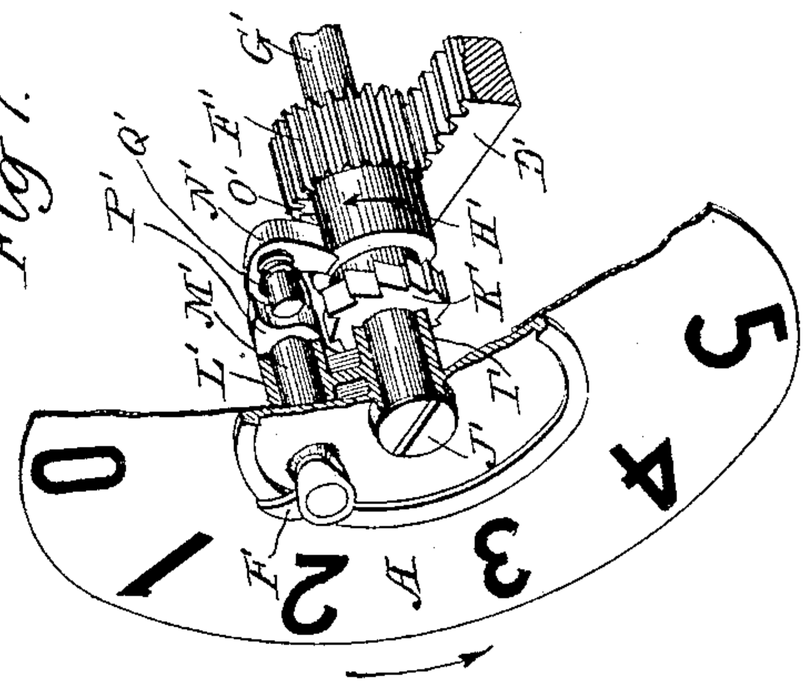
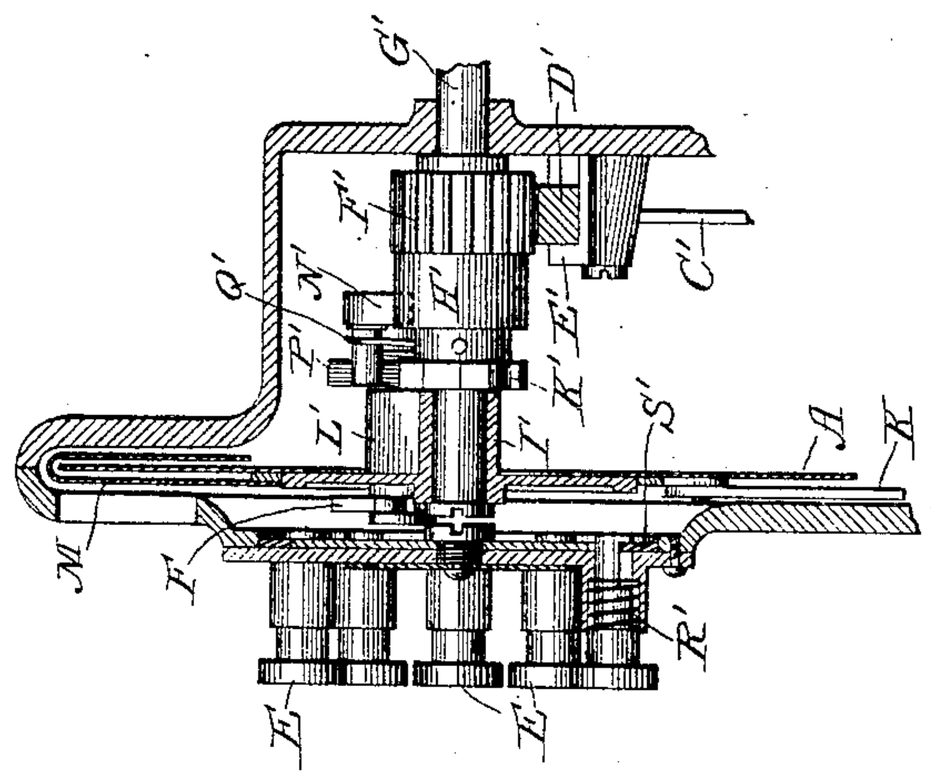


Fig 6.



Witnesses
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Wm. M. Rheem.

Inventor
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UNITED STATES PATENT OFFICE.

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CASH REGISTER AND INDICATOR.

SPECIFICATION forming part of Letters Patent No. 479,701, dated July 26, 1892.

Application filed March 5, 1892. Serial No. 423,861. (No model.)

To all whom it may concern:

Be it known that I, THOMAS CARNEY, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Cash Registers and Indicators, of which the following is a description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to an automatic screen for the indicating-dials, operating to hide the numbers thereon while the dials are being returned to "0" and moved to the new indication. Its novelty will be hereinafter set forth, and specifically pointed out in the claims.

In the accompanying drawings, Figure 1 represents a front elevation of a three-dial machine embodying my invention. Fig. 2 is a corresponding view with the front plate of the machine, which carries the operating-keys, removed and showing one method of operating the automatic screens from the driving mechanism of the machine. Fig. 3 is a view corresponding to Fig. 2, showing a second method of operating the screens; and Fig. 4, a similar view with the machine removed from its base, showing a third method of operating the screens. Fig. 5 is a vertical section of the machine in rear of the dials, showing the reciprocating racks and gears of the driving mechanism; Fig. 6, a vertical section through one of the dials and series of keys and co-operating parts shown in Fig. 2; Fig. 7, a detail perspective of one of the dials, its driving mechanism and interposed latch, some of the parts being broken away and some shown in section; Fig. 8, a vertical section in rear of one of the dials, looking toward the rear face of the dial and showing the latch for coupling it to the driving mechanism.

The same letters of reference are used to indicate identical parts in all the figures.

The machine shown in the drawings is provided with three indicating-dials A. These dials bear upon their front faces the nine digits and a cipher equally spaced, and are mounted to oscillate back and forth upon their axes through substantially a complete revolution.

The main driving-shaft of the machine is a central shaft B, suitably journaled in the lower middle portion of the frame and having secured upon its front end an operating-handle C, Fig. 1. This shaft is capable of oscillating back and forth through nearly a complete revolution. In its normal position the handle rests upon the upper side of a stop D, projecting from the forward face of the casing. A complete operation of the handle consists in turning it in the direction of the arrow until it is arrested by striking the lower side of the stop D and then returning it to normal position. This, it will be seen, is a complete revolution back and forth, less only the diameter of the stop D. The driving mechanism for the indicating-dials is geared to the shaft C in rear of said dials.

As seen in Fig. 5, the main driving-shaft B has fast upon it in rear of the vertical plane of the dials a pinion A′, which meshes with teeth upon the under side of a horizontal rack-bar B′, carried by a plate C′, secured to and depending from a second rack-bar D′, mounted to slide horizontally in guides E′, secured upon the casing or framework. The teeth upon the upper side of the rack-bar D′ mesh with pinions F′, loosely mounted upon shafts G′, journaled in the framework. Under this construction and arrangement a complete forward and backward movement of the operating-handle will cause the pinions F′ to be turned forward and back through substantially a complete revolution; also loosely mounted upon the shafts G′ and turning with the pinions F′, in this instance formed integral with the pinions, are collars H′, Figs. 6, 7, and 8. The dials A are loosely mounted by their sleeves or hubs I′ upon the front ends of the shafts G′, being held in place thereon by screws J′. Fast upon the shafts G′, between the rear ends of the dial-hubs I′ and forward ends of the collars H′, are ratchets K′, for a purpose to be presently explained. Fast upon the rear side of each of the dials A is a bearing L′, in which is journaled a rock-shaft M′. Fast upon the rear end of this rock-shaft is a detent or latch N′, spring-pressed against the periphery of the collar H′ and adapted to co-operate with a notch O′ therein. Loosely mounted upon

the rear end of the rock-shaft M′, just forward of the latch N′, is a hook-pawl P′, adapted to co-operate with the ratchet K′, a spring Q′ operating to press the pawl into engagement with the ratchet and the latch N′ against the surface of the collar H′, as seen in Fig. 8. Mounted upon the front end of each of the rock-shafts M′ in front of the dial is a trip F. These trips are free to yield in one direction against the pressure of suitable springs, but cannot turn in the opposite direction without turning the rock-shafts M′ with them, and thereby lifting the latches N′ out of the notches O′ in the collars H′. Mounted in bearings on the front wall of the casing in circles concentric to the axes of the dials are three sets of keys E, Fig. 1—one set for each dial. There are ten keys in each set, and they are numbered to correspond to the numbers and ciphers on the dials. These keys are normally held in their outward positions by springs R′, coiled around them within their bearings, as seen in Fig. 6, and when pressed inward against the resistance of their springs they are caught and held in their inward position by a suitable detaining-plate S′. When any key is presssed inward to its limit of movement, its rear end projects into the path of travel of the trip F, heretofore described, so that said key will be struck by the trip.

In Figs. 6, 7, and 8 the parts are shown in the position which they occupy when the machine is at rest and the dial is in position to expose its "0" at the reading-point. If some one of the keys be now pressed in and the operating-handle be given a full forward stroke, the pinion F′ and collar H′ will be given a complete revolution in the direction of the arrow on said collar in Fig. 7, and as they are coupled to the dial A by the latch N′, which is engaged with the notch O′ in the collar, the dial will also be given a complete revolution and its "0" be brought around to the reading-opening again. During this movement of the dial the trip F will have struck the operated key and yielded and passed by it. When the operating-handle is now given its backward stroke, the pinion F′ and collar H′ will be given a complete revolution in the reverse direction, and the dial A will be carried with them until the trip F strikes the operated key, whereupon, the trip being unable to yield in this direction, the shaft M′ will be rocked and the latch N′ lifted out of the notch O′ in the collar H′, the dial and parts carried by it being thus arrested by the engagement of the trip F with the operated key and the pinion F′ and collar H′ returning to normal position without them. In this manner at each operation of the machine the dials A are all carried around to "0" and then backward with the driving mechanism until disconnected from it by the operated keys to expose to view their numbers which correspond to such keys. During the forward movement of the dial and parts carried by it in the direction of the arrows in Figs. 7 and 8 it will be seen that the pawl P′ will slip over the teeth of the ratchet K′ and the latter will remain stationary, but during the movement of the dial in the reverse direction from its zero position to the point at which it is disconnected from the driving mechanism by the operated key the pawl P′ will carry the ratchet with the pawl, and thus at each operation of the machine the ratchet will be moved in one direction a distance corresponding to the movement of the dial from its zero position to the number determined by the operated key. The ratchet K′, as before stated, is fast upon the shaft G′, and this shaft carries the primary wheel of a train of registering-wheels, (not shown,) so that the amount indicated by each dial at each operation of the machine is added upon the corresponding set of registering-wheels.

In Figs. 6, 7, and 8 the parts are shown in the position they occupy when the dials are at "0." When the dials are not at "0," however, the latches N′ are not engaged with the notches O′ in the collars H′, but rest upon the surface of said collars. In such case when the collars are given their forward revolution by the forward stroke of the operating-handle the latches N′ will spring into the notches O′ whenever the latter come under them, and from this point on the dials will be coupled to and carried with the collars. Thus, suppose the dials to be in the position shown in Figs. 1 to 4 of the drawings in indication of a previous sale of two dollars and seventy-five cents. Now when the operating-handle C is given a full stroke in the direction of the arrow and arrested by contact with the lower side of the stop D the driving mechanism for the respective dials will be connected with their dials by the latches and will turn all of them in the direction of the arrows until their "0's" stand behind the reading-openings G in the front wall of the casing. This stroke of the operating-handle and turning of all the dials to "0" constitutes the first half of the operation of the machine. The dials remain connected with their driving mechanisms, and when the handle C is given its reverse stroke they are turned forward from "0" until their respective trips F come in contact with the particular keys E, which have been pushed in to indicate the next sale. When the trips engage these operated keys, they so move the latches as to disconnect the dials from the driving mechanism, and the dials come to rest at the points determined by the operated keys, while the driving mechanism completes its movement to normal position alone. It will thus be seen that at each forward movement of the operating-handle C all the indicators are turned to "0" and that during its backward movement they are moved by it to points determined by the operated keys to indicate the amount represented by such keys. This much of the machine is old and of familiar construc-

tion, and a more detailed description of its construction and operation is not necessary to a clear explanation of my invention, which may be now described.

Mounted in suitable supports H, Fig. 2, is a horizontally-sliding bar I, normally pulled toward the left by a spring J. Projecting upward from this bar are three arms K, connected at their upper ends to oscillating rings L, mounted upon suitable bearings M upon the faces of the respective indicator-dials. Secured to the upper sides of the rings L are the screen-plates N, adapted to vibrate back and forth between the faces of the dials and the front plate of the casing to cover and uncover the reading-openings G. Fast upon the main driving-shaft B in rear of the bar I is a disk O. A pin P projects from the front face of this disk and co-operates with a lug Q upon the rear side of the bar I and projecting below the same. When the handle C is in the normal position (shown in Fig. 1) resting upon the upper side of the stop D, the disk O will stand in the position shown in Fig. 2, and its pin P, engaging the lug Q on the bar I, will hold said bar to the right against the stress of the spring J. In this position of the parts the screen-plates N will all be thrown to the left of the reading-openings G, and the numbers upon the indicating-dials will be exposed through said openings. When the operating-handle is moved forward from normal position at the beginning of an operation of the machine and the shaft B and the disk O turned in the direction of the arrow in Fig. 2, the pin P will be carried away from the lug Q on the bar I and the spring J will pull said bar to the left, thereby throwing all of the screen-plates N to the right behind the reading-openings G and hiding the numbers on the dials. The plates N will remain in this position until the operating-handle has been given its full forward stroke and returned to normal position. Just as it reaches the latter position the pin P on the disk O will strike the lug Q on the bar I and throw said bar to the right again, thereby oscillating the plates N to the left away from the reading-openings G to expose the numbers to which the dials have been turned by this operation of the machine. It will thus be seen that the screen-plates are automatically moved into position to hide the indicating-dials as soon as the driving-shaft is moved forward from normal position, and that they continue to hide said dials until after the latter have been turned to "0" and moved to the new indication. The employment of such screens prevents fraudulent manipulation of the machine by a dishonest clerk, and also tends to prevent confusion in the indication of sales to customers and by-standers. Thus, if the preceding sale had been ninety-nine cents and the "9's" upon the first and second dials from the right should be exposed through the reading-openings and the next sale should be fifty-five cents, the screens would prevent the clerk from simply moving the operating-handle forward far enough to turn the two dials back toward "0" until their "5's" were exposed at the reading-openings. The screens compel him to give the operating-handle a full stroke forward and back, and to thereby turn the dials all the way back to "0" and move them forward until their "5's" are exposed through the reading-openings, and thereby make a proper registry of the sale. The screens tend to prevent confusion in the indication, because no numbers are exposed to view after the operation of the machine is begun until it is completed and the numbers representing the new sale are brought into view.

So far as the operation of the screens by the driving-shaft B is concerned, it will be understood that the disk O is simply a support for the pin P, and that an arm fast upon the shaft B would answer the purpose as well. The disk has been illustrated merely because it is present in the machine for other purposes and affords a convenient support for the pin.

Again, while my invention has been shown applied to a machine having three indicating-dials arranged side by side, it is evident that it is applicable to machines having either more or less than three dials.

In Fig. 3 I have shown another method of mounting and operating the screens N. In this case they are mounted to slide laterally upon a rod R, and each screen is connected to one of the arms K of the sliding bar I by a lever S, pivoted at T to the framework or a support secured thereon. Under this construction it will be seen that when the sliding bar I is moved to the left by the spring J the screens N will all be slid to the right by the levers S to close the reading-openings, and that when it is moved to the right again they will be slid to the left away from the reading-openings. The bar I is operated by the pin P on the disk O, as in Fig. 2.

In Fig. 4 I have shown how vertically-sliding screens may be combined with the dials and operated from the driving-shaft B. In this case the screens are carried upon rods U, mounted to slide vertically in suitable guides V. Each of these rods is loosely connected at W to the end of the horizontal arm of a bell-crank lever X, pivoted to the framework at Y. The vertical arm of this bell-crank is connected at its lower end by a slot and pin to the upper end of a lever Z, pivoted to the framework at Z'. The lower ends of all the levers Z are connected by a link A', which is pivoted at its right-hand end to the upper end of a lever B', pivoted to the framework at C'. The lower end of the lever B' is connected by slot and pin to a lug or arm D' upon the sliding bar I. It results from this construction that when the bar I is moved to the left the link A' will be moved to the right by the lever B', and the levers Z will throw the vertical arms of the bell-cranks X to the left and lower the screen-plates to positions behind

the reading-openings. When the bar I is slid to the right again, the link A′ will be moved to the left and the screens lifted to the positions shown in Fig. 4. The bar I is operated in the same manner as in Figs. 2 and 3.

Having thus fully described my invention, I claim—

1. In a cash-register and indicator such as described, the combination of an oscillatory indicating-dial, driving mechanism therefor, having a defined movement back and forth at each operation of the machine, a latch for connecting such mechanism with the indicating-dial to carry it backward to "0" upon one stroke of the driving mechanism and forward from "0" upon the reverse stroke of said mechanism, a series of keys co-operating with the latch to disconnect the dial from the driving mechanism at different points during the reverse stroke of the latter, and an automatic screen co-operating with the driving mechanism to hide the dial at the beginning of the forward movement of the driving mechanism and to expose it at the end of the reverse movement of said mechanism.

2. In a cash register and indicator, the combination of an oscillatory dial arranged within a casing having a reading-opening for the separate exposure of the numbers upon the dial, a driving mechanism for the dial, actuated by a rock-shaft having a definite stroke in each direction at every operation of the machine, a latch for connecting the dial with the driving mechanism to turn the dial backward to "0" upon one stroke of the rock-shaft and forward from "0" upon the reverse stroke of the shaft, a series of keys co-operating with the latch to disconnect the dial from the driving mechanism at different points during the reverse stroke of the shaft, and an automatic screen operated by the rock-shaft and movable into a position behind the reading-opening at the beginning of the forward stroke of the shaft and away from said opening during the backward stroke of the shaft.

3. In a cash register and indicator, the combination of two or more oscillatory indicating-dials arranged side by side, a driving mechanism therefor, operating to turn said dials backward to "0" and thence forward to the new indication, and two automatic screens, one for each dial, operated by the driving mechanism to hide the dials at the beginning of the operation of the machine and to expose them at the end of such operation.

4. In a cash register and indicator, the combination of two or more oscillatory indicating-dials arranged side by side within a casing having two reading-openings for the exposure of their numbers, a driving mechanism therefor, actuated by a rock-shaft and operating to turn said dials backward to "0" during one stroke of the shaft and forward to the new indication during the reverse stroke of the shaft, and two automatic screens, one for each dial, operated by the rock-shaft and movable to a position between the dials and reading-openings at the beginning of the forward stroke of the shaft to hide the dials and away from such position during the reverse stroke of the shaft to expose the dials.

5. In a cash register and indicator, the combination of two or more oscillatory indicating-dials A, arranged side by side within a casing having the reading-openings G, the oscillatory driving-shaft B, the sliding bar I, spring-pressed in one direction and actuated by the shaft B in the other, and the screens N, operated by the bar I and co-operating with the dials A and reading-openings G, in the manner described.

6. In a cash-register, the combination of two or more oscillatory indicating-dials A, arranged side by side within a casing having the reading-openings G, the oscillatory driving-shaft B, the sliding bar I, spring-pressed in one direction and actuated by the shaft B in the other, and the screen-plates N, mounted to oscillate upon axes concentric with those of the dials and connected with the bar I, substantially as described.

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