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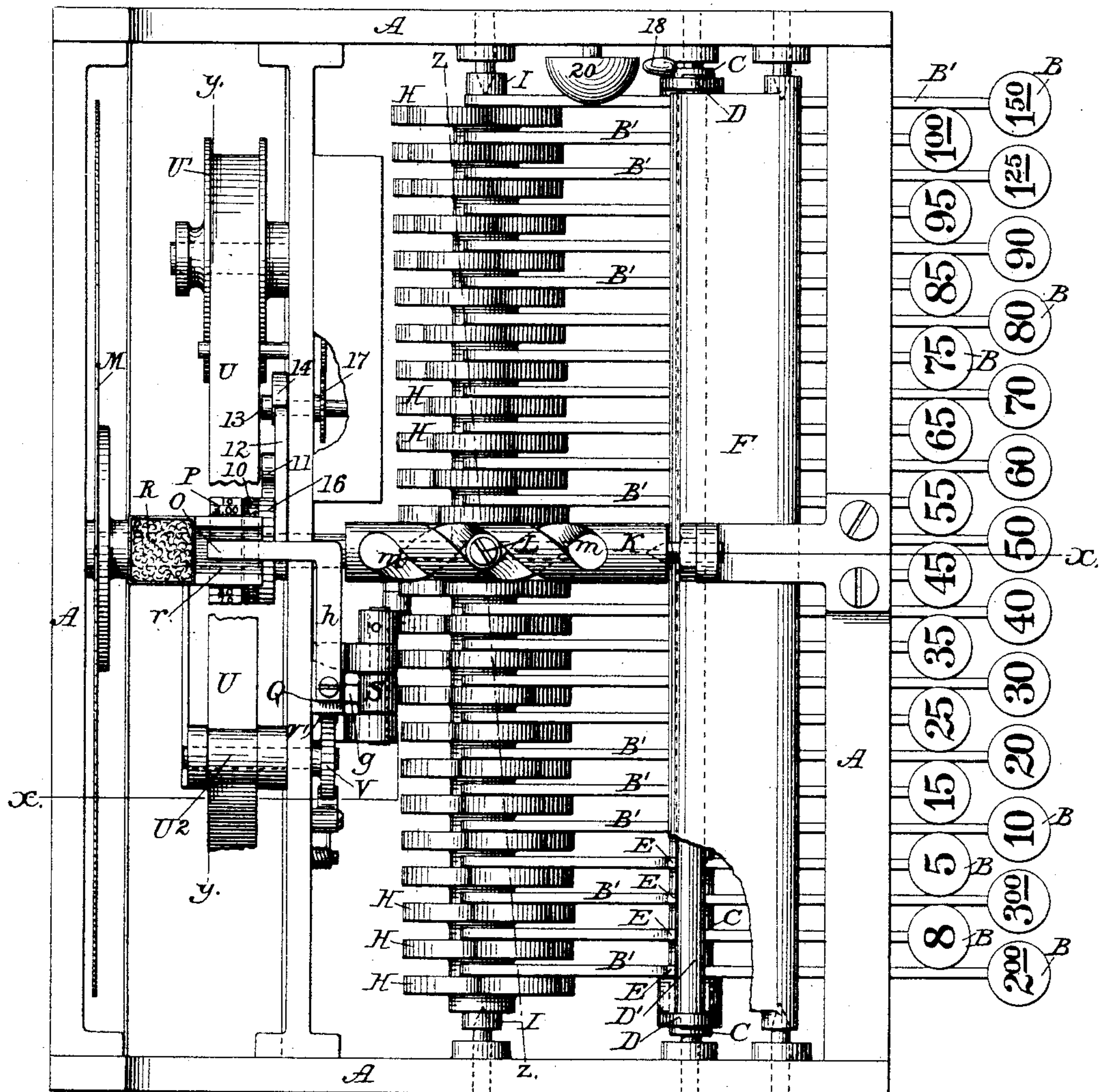
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C. KRUSE & C. W. WEISS.  
CASH INDICATOR AND RECORDER.

No. 447,031.

Patented Feb. 24, 1891.

*Fig. 1.*



*Attest:*

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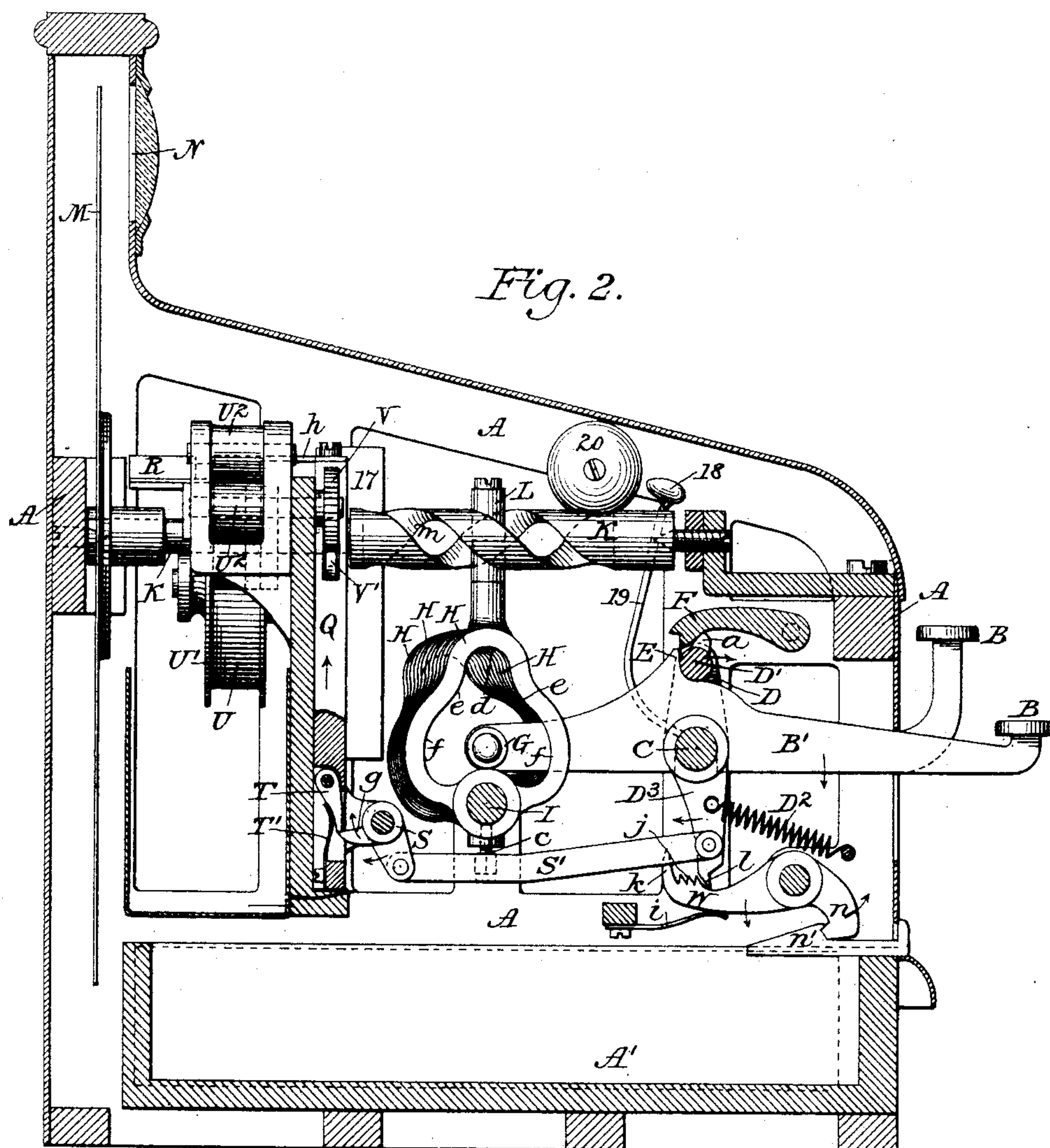
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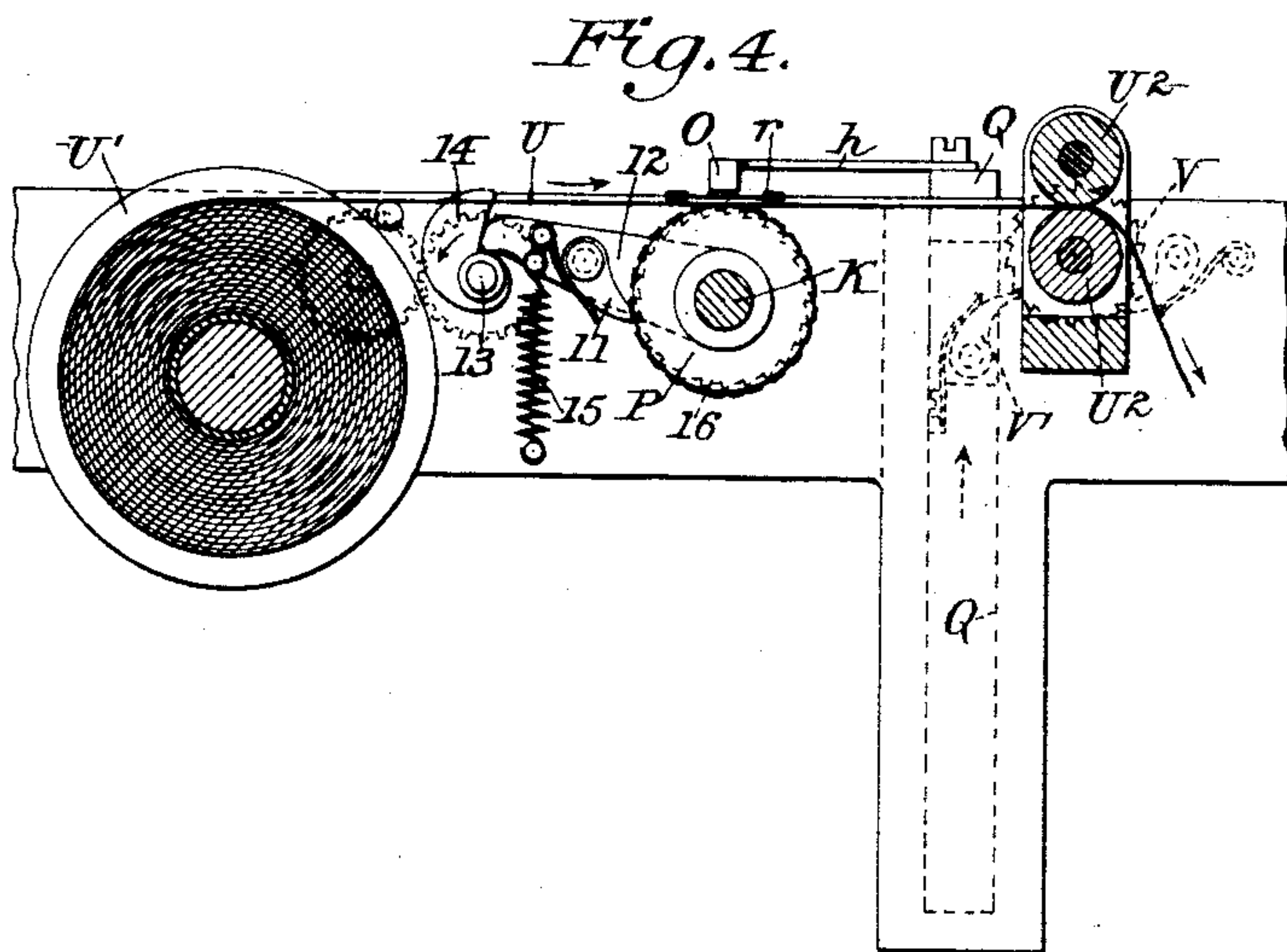
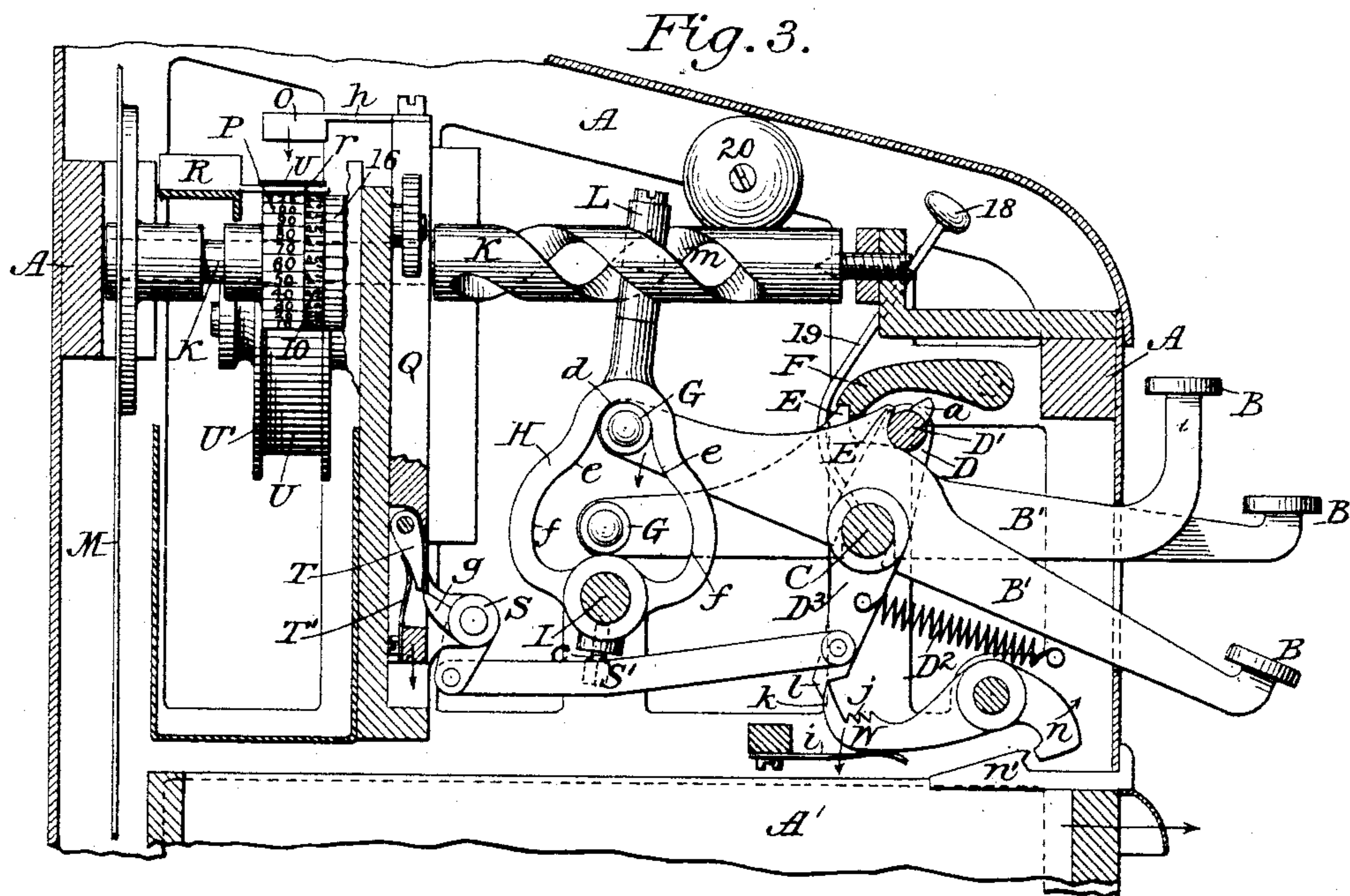
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# UNITED STATES PATENT OFFICE.

CHARLES KRUSE, OF NEW YORK, AND CARL W. WEISS, OF BROOKLYN,  
NEW YORK.

## CASH INDICATOR AND RECORDER.

SPECIFICATION forming part of Letters Patent No. 447,031, dated February 24, 1891.

Application filed September 26, 1889. Serial No. 325,157. (No model.)

*To all whom it may concern:*

Be it known that we, CHARLES KRUSE, of the city and county of New York, in the State of New York, and CARL W. WEISS, of Brooklyn, in the county of Kings, in said State, have invented certain new and useful Improvements in Apparatus for Indicating and Recording Cash Payments, &c.; and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, making a part of this specification.

This invention relates to an improvement in cash-recorders for indicating cash payments.

It has for its object to produce a simple effective machine which shall not only indicate and record the amount paid, but also the time of recording the same.

It consists in the construction, arrangement, and combination of the several mechanical devices involved in the machine, as hereinafter described and claimed.

Said devices embrace a series of keys corresponding with and severally designated by the unit and its multiples by which the cash payments to be made are to be noted, an indicating device bearing the several numbers by which the keys are designated, said numbers being made to appear singly at a suitable sight-opening in the case of the machine each by the movement of the appropriate key, a type-carrier bearing a series of type severally representing the key-numbers, and which by the movement of the same key are severally brought to line of print synchronously with the display of the like number at the sight-opening, and, furthermore, in combination therewith and with suitable printing mechanism, of an auxiliary type-carrier bearing type to indicate the divisions of time, which by a clock-movement are successively brought into position for imprint upon the blank strip which receives the imprint of the cash-recording type.

In the accompanying drawings, Figure 1 is a plan view of our improved chronometric cash-recorder with the top of its casing removed to exhibit its working parts, the machine being constructed to record payments

of five cents or multiples thereof. Fig. 2 is an irregular vertical section in line  $x x$  of Fig. 1; Fig. 3, a similar section illustrating the movement of a key and the parts actuated thereby, and Fig. 4 a detached sectional view in line  $y y$  of Fig. 1.

Similar letters and numbers indicate like parts in all of the figures.

A A is the frame of the machine, having a cash-drawer A' fitted in the lower portion thereof.

B B are the keys, and B' B' the key-levers by which the cash registering and indicating mechanism is operated. These key-levers are mounted to oscillate upon a single shaft C, extending from end to end of the frame A A, with their outer arms carrying the keys B B projecting in front. Every alternate arm is bent upward, so as to carry its key higher than that on either side of it (see Fig. 2) and closer to the front plate of the casing. The keys are thus disposed in two rows (see Fig. 1) for the sake of compactness and ease of selection.

The key-levers B' B' are made to rest loosely upon the shaft C, being detached therefrom, and the shaft itself is left free to rock in its bearings at each end. Arms D and D are made to project upwardly from the shaft at each end thereof to rock with it, and are connected by a rod D', extending above the key-levers parallel with the shaft C. The key-levers B' are severally formed each with an offset E upon its upper side to engage the inner side of the rod D', as shown in Figs. 2 and 3, and the rod is swung normally into engagement with said offsets by the stress of a spring D<sup>2</sup>, applied to an arm D<sup>3</sup>, projecting from the shaft C opposite the arms D. A pivoted dog consisting of a plate F is made to extend the length of the rod D' parallel therewith, and is hinged at one edge in position to allow its opposite edge to drop and rest upon the rod D' when the latter is in its normal position immediately over the shaft C. The free front edge of this plate or dog F is longitudinally notched and adapted thereby to engage and rest upon the offsets E E of the key-levers when left unsupported by the rod D', as shown in Fig. 3. A toe  $a$  is made to project from the rod D' to engage the dog



F and facilitate lifting the same after it has dropped by reason of the withdrawal of the rod from it.

The inner arm of each key-lever B' is fitted at its end with a lateral roller G, adapted to engage the inner edge of one of a series of open cams H H, having substantially the form shown in the accompanying drawings, Figs. 2 and 3. Each cam H is fitted upon a rock-shaft I, which is mounted beneath the inner ends of the keys in suitable bearings at each end of the frame, so as to extend parallel with the key-shaft C. The cams H H for the entire set of keys are all made to correspond, and they are so adjusted and secured each by means of a set-screw *c* (see Fig. 2) to the rock-shaft I as to project above the shaft with their upper ends ranging in a diagonal line (see broken line *z z*, Fig. 1) whose vertical plane will intersect that of the shaft I, preferably at about the middle of its length. The inner edge or periphery of the upper end of each open cam H is made in the form of a semicircular curve *d*, Figs. 2 and 3, of a diameter slightly larger than that of the roller G, the ends of the semicircle being continued tangentially with an outward ogee curve *e*, enlarging in diameter in its lower member at *f*, as shown in Figs. 2 and 3. Each cam is so adjusted as that when the cam is in its normal position, if its key B is depressed so as to elevate the friction-roller G on the inner end of its key-lever B', the roller shall strike against the ogee curve *e* on one side of the cam, and acting as a wedge against it in its upward movement will swing the cam-plate H over, as shown in Fig. 3, and thereby cause it to turn the shaft I to a corresponding extent. This movement will cause a similar movement in the same direction of all the other cams H H, their movement being free because of the fact that the roller for each rests normally in the enlarged lower portion of the cam, as shown in Fig. 1.

A slotted shaft K is mounted at a right angle with the shaft I above the cams H H to revolve in suitable bearings at the front and rear of the machine, and preferably in the center thereof.

A helical slot *m* is cut through the shaft K, and an arm L is made to project from the shaft I, or from the one cam-plate H, which may be in position under the shaft K, up through said slot *m*, whereby when the shaft I is oscillated in the one direction or the other the corresponding movement of the arm L within the helical slot will cause the shaft K to revolve to the same extent.

An indicating wheel or dial M is mounted upon the outer end of the shaft K, and upon its face are marked numbers or characters severally corresponding with those on the keys B B, the periphery of the wheel being divided into as many equal spaces as there are keys, each to receive its appropriate number or character.

The cam placed at one end of the shaft I

and actuated by the key at one end of the series is so adjusted as that when moved by its key it will cause said shaft I to oscillate in manner as described far enough to cause the shaft K to make a half-revolution in the one direction from its initial point, and the cam at the opposite end of the shaft I, actuated by the key at the opposite end of the machine, will when moved by said key cause the shaft K to make a half-revolution in the opposite direction, so that if after the key at one extreme of the series has been played and the key at the other extreme be next played the arm L will be caused to make its full sweep and the shaft K and its indicating-wheel M a complete revolution.

The intermediate cams are so adjusted as that the movement of each under the action of its appropriate key and roller will rotate the shaft I a distance proportionate to the angle at which the cam is adjusted thereon, so that the rotation of the shaft K will be differentiated by that of the several cams in manner as described. The movement of any one key will thus operate to cause the shaft to rotate far enough to bring the particular figure on the indicating-disk M which corresponds with the key played to a sight-opening N, which is provided in the upper part of the casing for the exhibition of said numbers singly, as shown in Fig. 2.

A type-wheel P, (see Figs. 1, 3, and 4,) having peripheral divisions corresponding to those on the indicating-wheel M and bearing in the same order type indicating the numbers or characters on said wheel and on the corresponding keys, is mounted upon the shaft K to rotate with it, and is so adjusted as to bring to a line of print the same character as is brought to view on the indicating-wheel M at the sight-opening N. The type on the type-wheels may be inked after each impression by means of any of the forms of inking devices known to the art. Preferably we employ for the purpose a thin inking-pad or piece of inked ribbon stretched in a suitable frame *r*, which is fixed immediately over the line of print, said pad or ribbon being connected with a lateral fountain R, containing sponge or other absorbent material saturated with ink. The imprint is obtained from the type upon a suitable piece or strip of paper placed over the same under the ribbon by the blow of a hammer O, mounted on an elastic arm *h*, projecting to the line of print from a bar Q, playing freely with a longitudinal movement in suitable ways at one side of the shaft K, so that the bar when raised shall drop automatically, either by gravity or under the stress of a spring. The descent of the bar is arrested in time to allow the momentum of the hammer alone to carry it down upon the type by springing the elastic arm *h*, and this arm will, after the blow is delivered, lift the hammer clear of the type. The hammer O is lifted for its blow at each oscillation of the shaft C, pro-



duced, as described, by the depression of any one of the keys through the intervention of a pivoted bell-crank lever S, one of whose arms is coupled by a link S' (see Fig. 3) to the free end of the arm D<sup>3</sup>, projecting from the shaft C, and the other, in the form of a toe g, is made to rest normally under the end of a trip-latch T, pivoted to the bar Q, carrying the hammer, and swung normally into position to be engaged by the toe g by a spring T'. As the lever S is oscillated in unison with the oscillation of the shaft C, the toe g is swung upward, carrying with it the bar Q, until, moving in an arc, the end of the toe passes out from under the end of the latch T and leaves the bar Q unsupported to drop back automatically to its first position. As the toe subsequently returns to its normal position the pivoted latch T yields as the toe bears against it to allow the toe to pass under it, its spring T' being compressed meanwhile in readiness to throw out the latch to its normal position when released.

The recording-strip U, upon which the cash payments are recorded, is carried on a level with the type at line of print on the recording type-wheel P from a reel U' on one side of said wheel to and between feed-rollers U<sup>2</sup> U<sup>2</sup> at the other side, as shown in Fig. 4, and between the type and the inking ribbon or pad r. It is fed forward intermittently each time the hammer is lifted to produce an imprint by means of a ratchet-wheel V on the end of one of the feed-rollers, the ratchet being in position to be actuated by a spring-actuated pawl V', (see dotted lines in Fig. 4,) pivoted upon the reciprocating bar Q, carrying the hammer, whereby the ratchet is moved one step at each outward movement of the bar. A return or reverse movement of any one of the keys before it has fully completed its stroke is prevented by means of a pivoted dog or lever W, one arm of which is adapted to swing upward into contact with the free end of the arm D<sup>3</sup> on the shaft C, its contact being enforced by the stress of a spring i.

The edge of the lever W which bears against the end of the arm D<sup>3</sup> is serrated, as at j, Figs. 2 and 3, and it terminates in a long upwardly-projecting tooth k, while the end of the arm D<sup>3</sup> is notched and shaped to present an angular tooth l, which will engage the notches j j as said arm D<sup>3</sup> swings over them, and will in sliding over the inner face of the tooth k operate as a wedge to force down the lever W until it slips beyond it, whereupon the tooth k will drop into the notch in the end of the arm D<sup>3</sup> and there rest as the latter completes its movement. The engagement of the tooth l with the notches j j and finally with the toothed end k of the lever will prevent a backward movement of the arm D<sup>3</sup> until the lever is depressed, and thereby released from said arm. So soon as the arm D<sup>3</sup> has been thus swung to its inward position by the depression of a key B and the

key is released the key will, by reason of its independent movement upon the shaft C, return to its normal position, leaving the arm D<sup>3</sup> locked by the lever W, and so long as the arm D<sup>3</sup> remains thus locked the rod D' will be clear of the dog F, which will consequently be free to engage and lock all the keys until the arm D<sup>3</sup> is released. The release of said arm to unlock the keys is effected by means of a wedge-shaped lug n', fitted to the cash-drawer A' in position to engage and lift whenever the drawer is pulled open, an arm n, projecting from the pivotal hub or shaft of the lever W, in a direction opposite to that of said lever W. (See Figs. 2 and 3.) The lifting of the arm n will operate to depress the lever W and thereby release its tooth k from the arm D<sup>3</sup>, which will then fly back under the stress of its spring D<sup>2</sup> to its normal position, as shown in Fig. 2. The lug n' on the drawer A' is also made to engage with the arm n when the latter returns to its normal position after the lug has passed back under it, so as to automatically lock the drawer in its closed position, as shown in Fig. 2, and the drawer may not be released until the arm n has been lifted by a movement of the lever W, produced, as described, by the play of one of the keys B.

The time at which each movement of either of the keys to produce a record on the strip U is made is recorded on the strip by means of a time-recording type-wheel 10, mounted to revolve loosely on the shaft K by the side of the cash-recording type-wheel P. This time-wheel 10, bearing upon its periphery type indicating the several hours of the day, or such other subdivisions of time as may be desired, is made of the same diameter as the adjoining cash-recording type-wheel P, so that the type on both shall come to the same line of print under the same hammer, inking-pad, and recording-strip. This time-wheel 10 is actuated by means of an oscillating pawl 11, Fig. 4, engaging a ratchet-wheel 16, attached to the time-wheel and having teeth equal in number to the number of type on said wheel. This pawl is pivoted upon an oscillating arm 12, swinging upon the shaft K, with its free end resting upon a cam or toe 14 on the spindle 13, which is made to rotate by means of a clock 17, of any approved construction, mounted in the frame or case of the machine. The cam 14 is adapted by its form, as shown in Fig. 4, to lift the free end of the arm 12 at each revolution thereof far enough to bring the pawl 11 into engagement with a fresh tooth on the ratchet-wheel 16. The arm is held in engagement with the cam, and is retracted to cause the ratchet-wheel engaged by its pawl 11 to turn one step each time it is lifted by the stress of a spring 15.

Where the type-wheel is made to print the hours, the cam 14 is secured upon the hour-spindle of the clock 17, so that said cam shall be revolved once in every hour. The revolution of the cam, actuated by the clock-work,



will thus operate to turn the time-recording type-wheel 10 one step in each hour, so as to bring the type denoting the hour of the day to line of print. Each imprint from the cash-recording wheel P will thus bear with it an imprint of the hour in which it was made, both impressions being made simultaneously upon the one strip U by the one movement of the same hammer O.

10 A hammer 18, carried upon the end of an elastic rod 19, secured to the rock shaft C, is made by each return movement of said shaft, after it has been oscillated by the depression of one of the keys B, to strike a bell 20 to indicate the fact that a key has been played, and thereby call attention to the amount recorded as it appears at the sight-opening N.

We claim as our invention—

1. The combination, with the printing mechanism in a cash-recording machine, of two independent type-carriers, a clock actuating automatically one of the type-carriers to indicate time, a manual device actuating the other type-carrier to indicate different values, and a recording-strip actuated automatically by said manual device and moving over both type-carriers to receive an imprint from each, substantially in the manner and for the purpose herein set forth.

2. The combination, in a cash-recording device with its cash-recording type-wheel and its printing and feed mechanisms, substantially as herein described, of a time-recording type-wheel mounted to produce an imprint simultaneously with the imprint from the cash-recording wheel upon the same strip, a clock, a rotating spindle actuated by the clock-work, a cam upon said spindle, a swinging pawl actuated by said cam in its revolution, and a ratchet wheel engaged by said pawl and connected with the time-recording wheel, substantially in the manner and for the purpose herein set forth.

3. The combination, in a cash-recorder, of an indicator, a cash-printing wheel controlled by the indicator, a time-printing wheel controlled by a clock, a single recording-strip adapted to receive an imprint from both the cash and time wheels, and feed mechanism operated by the movements of the recording mechanism, substantially in the manner and for the purpose herein set forth.

4. The combination, in a cash-recorder, of a set of keys having different values, a cash-recording type-carrier actuated and adjusted immediately by said keys, a time-recording type-carrier, a clock mediatingly actuating and adjusting the same, a recording-strip adapted to receive an imprint from both type-carriers, feed mechanism actuated by the movement of each key to move the recording-strip, and printing mechanism actuated automatically at each movement of the feed mechanism to produce an impression upon the recording-strip simultaneously from both type-carriers, substantially in the manner and for the purpose herein set forth.

5. The combination, in a cash recording or indicating machine, of a rock-shaft, a helically-slotted shaft mounted to rotate transversely to the axis of said rock-shaft, an arm carried by the rock-shaft to oscillate with it and project into engagement with the helical slot in the rotating shaft, a series of duplicate open cams differentially adjusted upon said rock-shaft and secured to it, and a series of oscillating key-levers each made to engage at its inner end the curved inner face of one of said cams, whereby the oscillation of either key-lever will produce an oscillation of the cam and its shaft and a corresponding movement of the arm carried by the shaft to produce a movement of the slotted rotating shaft engaged thereby, substantially in the manner and for the purpose herein set forth.

6. The combination, in a cash-machine, with its cash-drawer A', of a series of key-levers B' B', a rock-shaft C, upon which said levers are loosely pivoted, a parallel rod D', carried by said shaft upon radial arms D D to contact with the several levers and be moved by either, an arm D<sup>3</sup>, projecting from said shaft to oscillate with it, a pivoted lever W, engaging the arm D<sup>3</sup> to be oscillated by it, and a lug or catch n', projecting from the drawer to normally engage and be locked by said lever when the drawer is closed and be freed from said engagement by the oscillation of the lever W, substantially in the manner and for the purpose herein set forth.

7. The combination, in a cash-machine, of the series of key-levers B' B', the rock-shaft C, upon which they are loosely pivoted, the hinged dog F, adapted when free to lock automatically the entire series of keys, and the parallel rod D', carried by the shaft C, to engage the dog F and move it clear of the levers when the keys are all at rest, and which is released from the dog to free it when the shaft is rocked by the movement of any one key, substantially in the manner and for the purpose herein set forth.

8. The combination, in a cash-machine, of the series of key-levers B' B', the rock-shaft C, upon which they are loosely pivoted, the dog F, adapted to engage and lock the entire series of keys when in their normal position, the rod D', carried by the shaft C, to engage the dog and free it from engagement with said key-levers unless the shaft be rocked by the movement of a key, the arm D<sup>3</sup>, projecting from said shaft C, the pivoted lever W, engaging said arm D<sup>3</sup> to hold it when swung forward by the play of a key, the cash-drawer A', and the lug n' upon the said drawer actuating said lever W when the drawer is opened, to release the arm D<sup>3</sup>, and thereby unlock the keys, substantially in the manner and for the purpose herein set forth.

9. The combination, in a cash-recorder, with the cash-recording type-carrier, the recording-strip led over the same to receive an imprint therefrom, and the interposed inking device, of the feed mechanism moving said



strip, the reciprocating bar actuating said feed mechanism, the rock-shaft actuating immediately by its oscillation said reciprocating bar and having arms extending radially from either end thereof, a parallel rod connecting said arms, and a series of key-levers pivoted loosely upon the rock-shaft and made to severally engage said parallel rod when a key is depressed, whereby the depression of a key is made to feed the recording-strip forward, substantially in the manner and for the purpose herein set forth.

10. The combination, in a cash-recorder, substantially as described, with its cash-recording type-carrier, its actuating-keys, the inking device, the recording-strip led over the type on the type-carrier, the feed mechanism moving said strip, and the reciprocating bar actuating said feed mechanism, substantially in manner as described, of the hammer carried by said reciprocating bar to drop at each movement thereof upon the type and produce an imprint therefrom upon the recording-strip, substantially in the manner and for the purpose herein set forth.

11. The combination of a rock-shaft, a helically-slotted shaft mounted to rotate trans-

versely to the axis of said rock-shaft, a wheel carried by said rotating shaft and bearing a series of peripheral characters, an arm carried by the rock-shaft to engage the helical slot in the rotating shaft, and means for actuating the rock-shaft, substantially in the manner and for the purpose herein set forth.

12. A type-carrier for indicating or printing letters, figures, or characters denoting time and controlled by a clock or time-piece, in combination with a type-carrier for indicating or printing numbers to indicate cash payments and controlled by a series of keys having different values, and a recording-strip carried over both type-carriers to receive an impression from each, the movement of which is produced by the action of the printing or impression mechanism, substantially in the manner and for the purpose herein set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

CHAS. KRUSE.  
CARL W. WEISS.

Witnesses:

A. N. JESBERA,  
E. M. WATSON.