(No Model.) 4 Sheets—Sheet 1.

B. JOHNSTON.

CASH REGISTER AND INDICATOR.

No. 446,599. Patented Feb. 17, 1891.

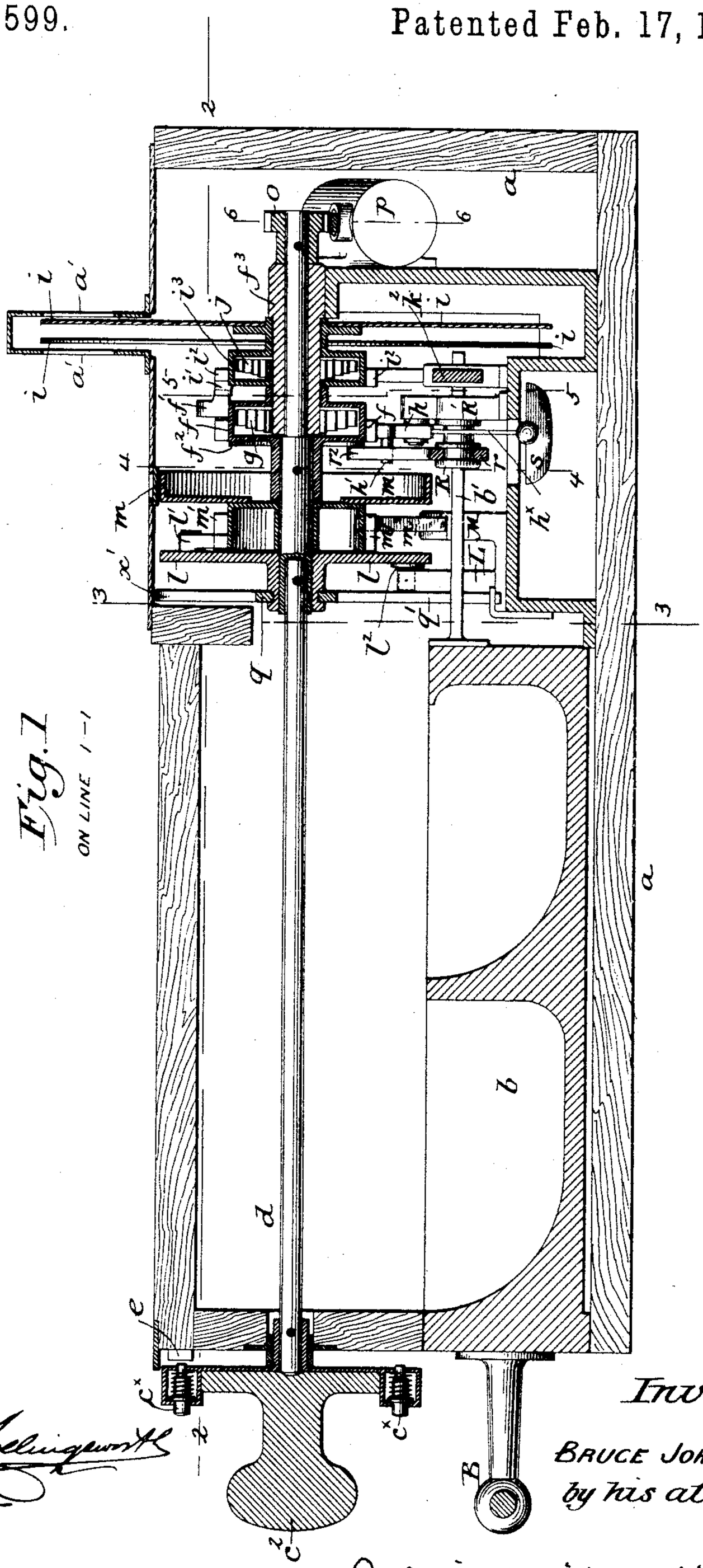

Fig. 1

ON LINE 1—1

Attest.

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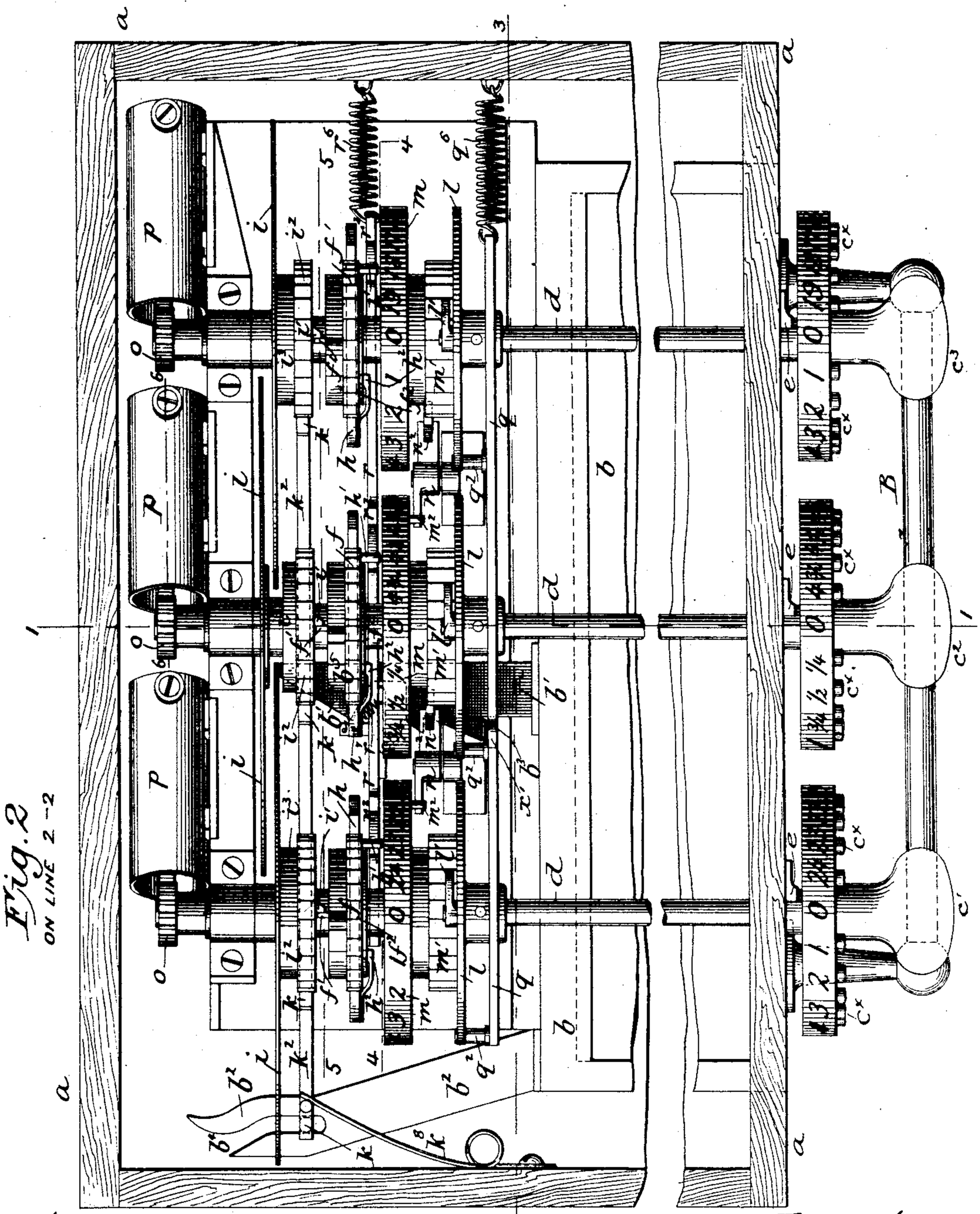

Fig. 2
ON LINE 2-2

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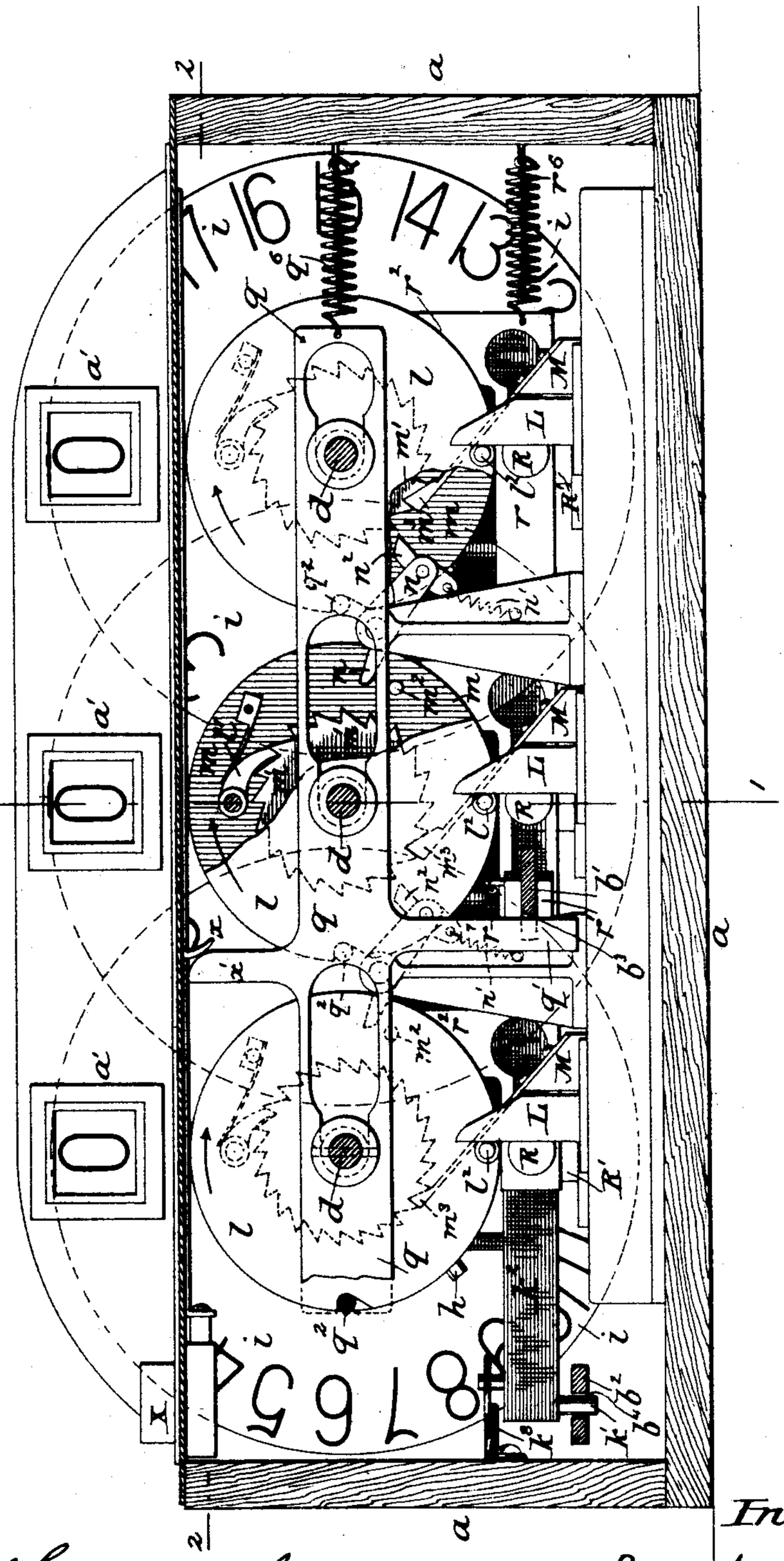

Fig. 3.
ON LINE 3—3

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No. 446,599. Patented Feb. 17, 1891.

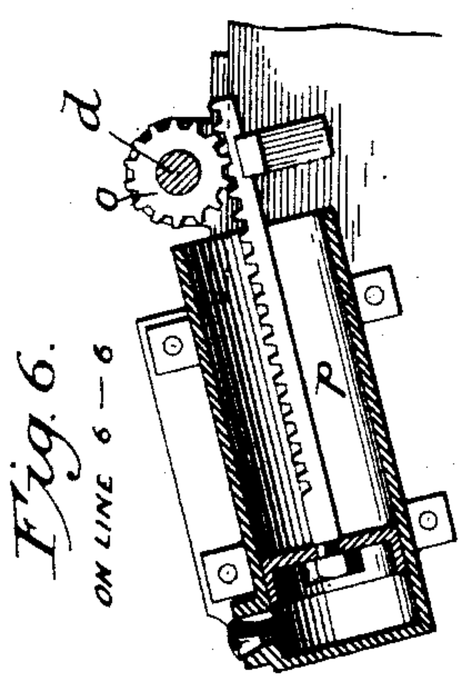

Fig. 6.
ON LINE 6—6

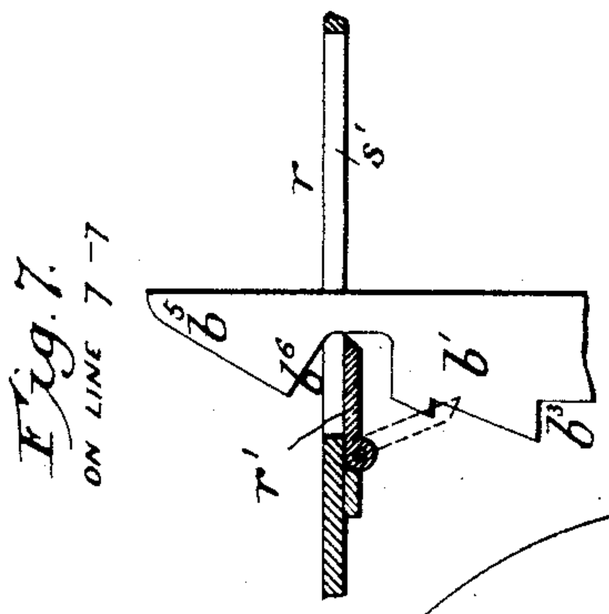

Fig. 7.
ON LINE 7—7

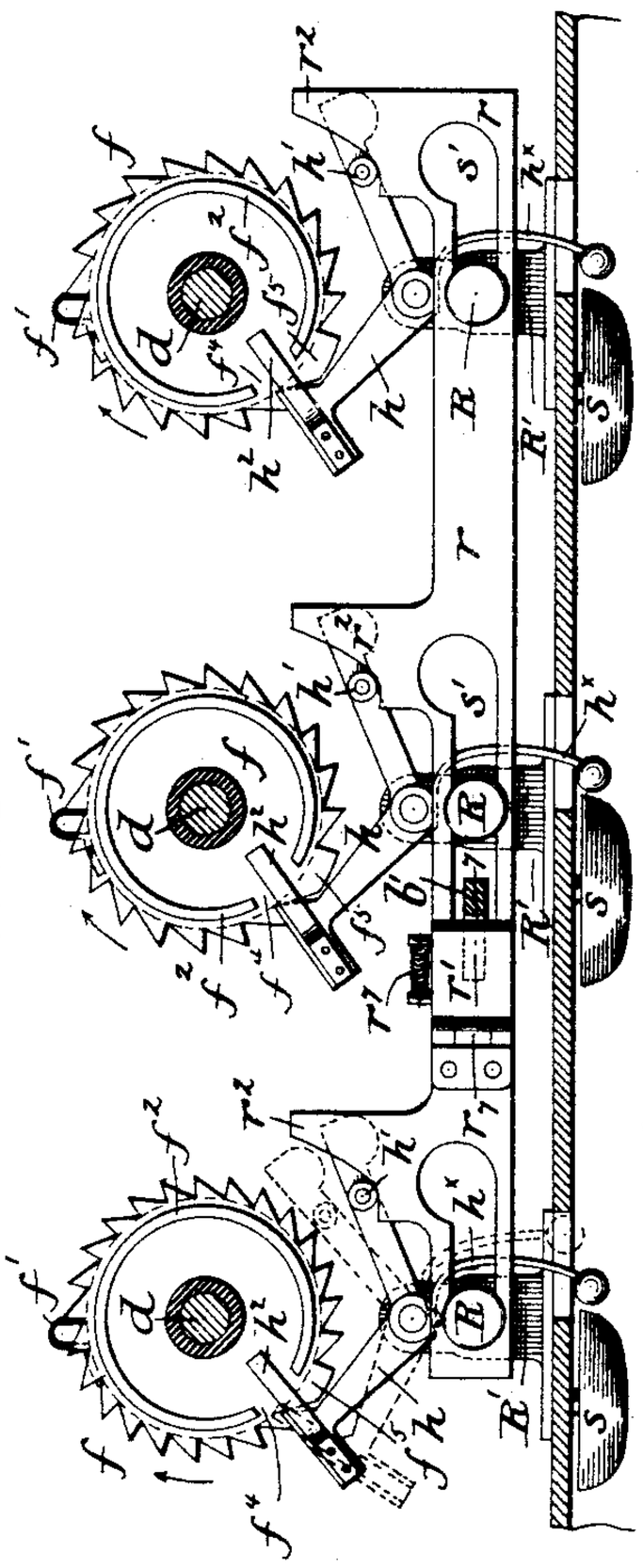

Fig. 4
ON LINE 4—4

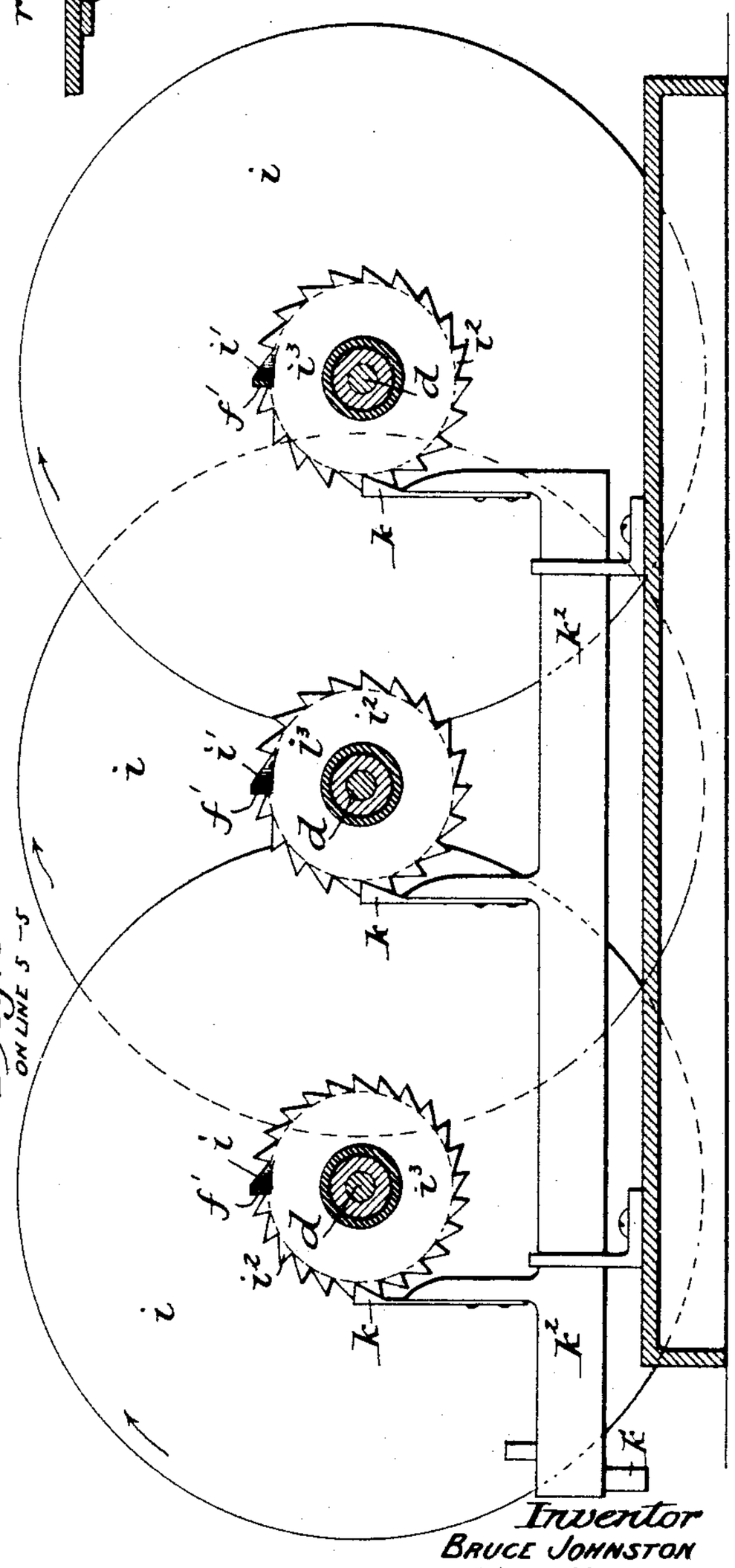

Fig. 5
ON LINE 5—5

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UNITED STATES PATENT OFFICE.

BRUCE JOHNSTON, OF CROYDON, ENGLAND.

CASH REGISTER AND INDICATOR.

SPECIFICATION forming part of Letters Patent No. 446,599, dated February 17, 1891.

Application filed July 28, 1890. Serial No. 360,252. (No model.) Patented in England June 1, 1888, No. 8,047.

To all whom it may concern:

Be it known that I, BRUCE JOHNSTON, licensed victualer, a subject of the Queen of Great Britain, residing at the King's Arms Hotel, Croydon, in the county of Surrey, England, have invented certain new and useful Improvements in Money-Tills, (for which I have received Letters Patent in Great Britain, No. 8,047, dated June 1, 1888,) of which the following is a specification.

This invention has for its object improvements in money-tills for checking and recording money taken.

In the improved till there is a money-drawer, and this can only be unlocked by turning handles, which also control an indicator visible to the customer or payee or others. Each time the cashier receives money he is intended to set this indicator to the amount to be put into the till, and if he should set it to any any lesser amount he can at once be called to account. The handles also control counting-wheels, which sum up the amounts successively shown by the indicators. Hence the counter always shows the amount which should be in the till, provided the indicator has at each operation been properly set, and supervision to insure this is easy.

The mechanical arrangements by which I carry my invention into effect are shown by the annexed drawings.

Figure 1 is a vertical section of a till constructed in accordance with my invention. This section is taken on the line 1 1 in Fig. 2. Fig. 2 is a plan with the upper part of the case removed. Fig. 3 is a section on the line 3 3 in Fig. 2. Fig. 4 is section on the line 4 4 of Figs. 1 and 2. Fig. 5 is a section on the line 5 5 of Figs. 1 and 2. Fig. 6 is a section on the line 6 6 of Figs. 1 and 2, showing particularly the air-cylinder and piston for regulating the movement of part of the counting-ing mechanism. Fig. 7 is a detailed view, the section being taken on the line 7 7 of Fig. 4.

a is the case.

b is the money-drawer, and B its handle.

c' c^2 c^3 are three handles, and d d d are axes to which these handles are fixed. For convenience of construction each axis is made in two lengths jointed together.

On each handle there is a dial—that on the handle c' indicates cents, that on the handle c^2 indicates quarters, and that on the handle c^3 indicates dollars.

Corresponding to each figure on the dial there is a press-button $c^\times$.

e e e are stop-points provided on the case, one for each dial. In setting the handles the press-button corresponding to the selected figure is pushed in and the handle is turned until it comes against the stop-point e, and the handle is then in place. On each axis d is fixed a ratchet-wheel f. It is formed as a spring-box, and contains within it a coiled spring g, attached at one end to the wheel, and at the other to the stationary bearing f^3, in which the axis turns. When the handles are set, the springs g are thus wound up, and they tend to bring back the handles as soon as they are free. This, however, does not take place immediately, because the weighted pawls h h engage with the teeth of the wheels f f.

On each axis d there is an indicating-disk i. Figures corresponding to those on the handle-dials are marked on these disks both at front and back, and the figures at the top of the disk are visible through windows a' in the case. The disks i are loose on the axes and they are turned by the wheels f in the following manner. There is a tooth f' projecting from each wheel f, which comes into contact with a corresponding tooth i' on a spring-box i^3. Fast with the disk i are ratchet-teeth formed upon the spring-box i^3, to which the disk i is fixed. Each of these spring-boxes contains a coiled spring j, (arranged in the same way as the spring g,) and this tends to keep the teeth i' f' in contact, but there are pawls k engaging with the teeth i^2, which have to be disengaged before the disks can return. There are also disks l fast upon the axes d and counting-wheels m, which are loose thereon. Upon the counting-wheels there are ratchet-teeth m', and upon the disks there are pawls l', which engage with the teeth. Hence when the axes d are turned they carry the corresponding counting-wheels m round with them; but the counting-wheels never return or rotate in the reverse direction, being held against a return movement by the pawls m^3, mounted on blocks M, as shown particularly in Fig. 3. The disks l are prevented from making more than one com-

plete revolution by laterally-projecting pins l^2 upon them, which engage with stationary upright arms L, secured to the framing of the till. These arms also limit the return movement of the disks. When the counting-wheel m on the axis of the handle c' completes a rotation, a pin m^2 upon it gives motion to a lever n, carrying a pawl n^2, engaged with the teeth m' of the counting-wheel next in series, and so this wheel is moved a step forward. A spring n' causes the return of the lever n as soon as the pin m^2 has passed.

The dial on the handle c^2 scores by quarters up to five dollars, and when the corresponding counting-wheel completes its rotation it by means of a lever n and pin m^2 turns the next counting-wheel. Each axis d also has upon it a pinion o, gearing with a rack piston-rod on a piston working loosely in a cylinder p. The piston does not tightly fit the cylinder, but it allows air to pass it. Nevertheless, it prevents the movement of the axes with undue rapidity. More especially it prevents shock when the spring operates to bring the axis back to the zero position.

The drawer b has a stem b' projecting from it, and a finger q' on a bolt q engages with a shoulder b^3 on this stem. On the bolt q there are also pins q^2, which are received into notches in the disks l. When either of the handles d is turned away from its zero position, the bolt is displaced (against the resistance of a spring q^6) and the drawer is unlocked and may now be opened. The drawer has also another stem b^2 upon it, and in this stem there is an inclined slot b^4. The slot has projecting into it a pin k' upon the sliding bar k^2, and when the drawer is opened the bar k^2 is moved endwise, and as the pawls k are fixed upon it these pawls are thus removed from the teeth i^2. A spring k^8 assists in moving the bar k^2 endwise to withdraw the pawls k from the teeth l^2. The disks i then set themselves to accord with the positions of the handles, the springs j bringing the teeth i' back to the teeth f' if it happens they are not already in contact. At the time of closing the drawer the inclined head b^5 on the stem b' passes through a hole s' in the sliding bar r, and the incline acting against a piece r', hinged to the bar, drives the bar a distance endwise toward the left, as seen in the drawings. The bar r is supported on headed arms or pins R, which project through the slots s' and are secured to uprights R', mounted on the framing of the till. The shoulders r^2 r^2, projecting upwardly from the bar r, then act against pins h' on the pawl-levers h, and the pawls are raised out of the teeth f. The pawls h are pivoted to the uprights R'. The withdrawal of the pawls h sets the axes d free, and under the influence of the springs g they return with the spring-box f to the zero-point. A spring r^6 brings back the bar r as soon as the head b^5 has passed beyond the piece r'. Each wheel f has a flange or rib f^2 upon its face, and in this rib or flange there is a notch or opening f^4, which when the wheel is at the zero-point faces the pawl, as seen in Fig. 4.

h^2 is a spring-catch provided upon the pawl h. This does not interfere with the ordinary working of the pawl; but when the pawl has been taken out of the teeth by the action of the bar r the head of the catch h^2 passes over the flange f^2 or on the outside thereof and prevents the pawl h falling in again until the wheel has returned to the zero-point, although the bar r will have been withdrawn before the return movement is complete. At the zero-point the pawl h rests on a long tooth f^5 in the wheel f, as is shown in Fig. 4, and the catch h^2 has passed again within the flange f^2.

The till-drawer being shut and locked cannot be opened again until the handles are set to fresh figures. In opening the drawer the bar r does not receive any movement, for the gate-piece r', which is hinged to it, opens and allows the head b^5 to pass out. A spring r^7 immediately closes the gate-piece ready to be acted upon by the head b^5 as the drawer is closed.

In connection with each pawl h there is a spring-hammer $h^\times$, which strikes on a bell s as the pawl drops into the teeth of the wheel f. The bells s have different sounds, and they will indicate to an observer at a distance to what amount the till is set for each opening of the money-drawer.

The till may be opened by a bolt X, operated by a key. The bolt has a lug or finger x on it, which engages with an arm x' on the bolt q. It will be observed that when the bolt q is thus withdrawn from the arm b' the drawer may be opened without operating the counting mechanism.

The operation of the apparatus has been hereinbefore set forth, but to further illustrate: When it is desired to put money into the till—twenty cents, for instance—the press-button $c^\times$, corresponding to twenty cents on the dial of the handle c', is pushed in, and the handle c' is then turned until the press-button is stopped by the stop-point e. The operation of turning the handle turns with it the disk l, which engages with the pin q^2 on the bolt q, moves it laterally, and withdraws the arm q' from engagement with the stem b', and the drawer may be opened. Before the drawer is opened, however, the disk, in turning, by means of its pawl l' engaging with the teeth m' of the counting-wheel m, turns the wheel correspondingly with the handle c'. The pawl m^3 allows the counting-wheel to turn freely toward the right, but prevents its backward movement. At the same time the spring-box f is turned a distance corresponding with the movement of the handle c', and by means of teeth f' and i' correspondingly moves the spring-box i^3 and the indicating-disk i, connected therewith. The drawer is now opened, and the slotted stem b^2 shifts the bar k^2, re-

leases the pawl *k* from the teeth i^2; but the indicating-disk does not yet return because the box i^3 is held by the engagement of the tooth i' with the tooth f' on the spring-box *f*. When the drawer is closed, the stem b', engaging with the piece r' of the bar *r*, moves this bar to the left against the force of the spring r^6, disengages the pawl *h* from the teeth f', and permits the return of the spring-box *f* to zero, and at the same time the indicating-disk returns. The stem *b* then causes the pawls *k* to again engage with the teeth r^2. When the head b^5 has passed the piece r', the piece r' enters the notch b^6 and the spring r^6 pulls the bar *r* back to its original position. When the drawer is completely closed, the arm q' on the bolt *q* enters behind the shoulder b^3 and locks the drawer. The operation of the devices connected with the other handles is substantially the same. After the counting-wheel registering cents has registered twenty-four cents the counting-wheel registering quarters is operated, one space for every revolution of the cents-wheel, by means of the pin m^2 and the pawls n n^2, before described.

What I claim is—

1. The means for indicating to the customer the amount to be placed in the till, viz: the combination of parts consisting of the handle c^2, turning the axis *d*, the tooth f', fast with the axis acting against a corresponding tooth on the indicating-disk *i*, the said indicating-disk *i*, the pawl *k* and tooth i^2, which retain the indicating-disk, the part b^2 on the drawer, which withdraws the pawl *k* when the drawer is opened, and the spring *j*, which brings the tooth i^2 in contact with f' when the disks are free, the whole so arranged, substantially as described, that the indicating-disk either before or when the drawer is opened assumes a position corresponding to that of the handle and retains this position while the drawer is closed and until it is reopened.

2. The means for locking and unlocking the till-drawer, viz: the combination of parts consisting of the stem b' on the drawer, the spring-bolt *q*, having a tongue engaging with the stem b', the handle c^2, and axes *d*, and the notched disks *l* on the axes and turning with them, the pins q^2 on the bolt entering the notches in the disks and pressed back by them when either of the axes is turned away from its zero-point, but returning with the bolt and allowing the bolt to engage when the drawer is closed and the axes have returned to the zero position.

3. The means for retaining the handles c^2 and axes *d* while the drawer is opened and until the drawer is again closed and then causing them to return to the zero positions, viz: the combination of parts consisting of the ratchet-teeth *f* on the axes, the pawls *h*, engaging with these teeth, the sliding bar *r*, which is moved as the drawer is closed, the stem b' on the drawer, which imparts this movement, the projections r^2 on the bar *r*, which serve to displace the pawls *h*, the springs *g*, which then bring back the axes, the fingers h^2 on the pawls *h*, and the notched flanges f^2 on the ratchets *f*, which serve to prevent the return of the pawls until the axes are home to the zero positions, and the gate-piece r' on the bar *r*, which by yielding when the drawer is opened releases the stem b' without any movement of the bar *r* and pawls *h*.

4. The means for keeping a continuous reckoning, viz: the combination of parts consisting of the axes *d*, the handles c^2, by which they are turned in one direction, the springs *g*, by which the axes are caused to return, the pawls l', by which the axes turn the ratchets m' and counting-wheels *m*, the said ratchets and wheels, and the pins m^2 on the wheels *m*, and the levers *n*, by which each wheel *m* as it completes its rotation moves the next wheel a tooth forward.

5. The combination, in a money-till and cash-registering apparatus, of the casing, a series of handles, their axes, counting-wheels geared with the axes and revolved thereby, indicating-disks also geared with the axes and operated thereby, a stem connected with the drawer, a bolt engaging therewith, a pin carried around with the axes of the handles and operating said bolt, pawls engaging with teeth connected with the indicating-disks, a bar on which the pawls are mounted, and a slotted finger secured to the money-drawer for operating the pawl-carrying bar.

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