

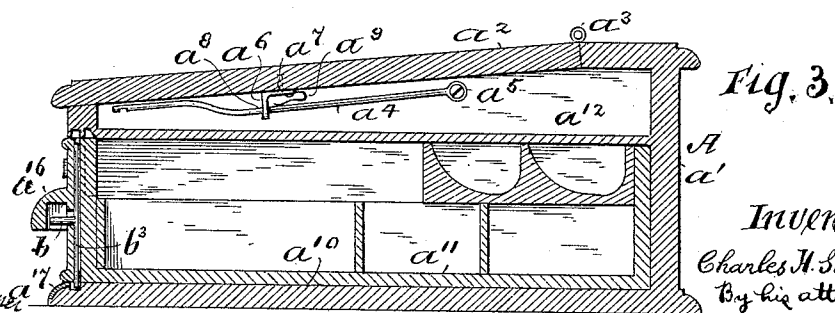
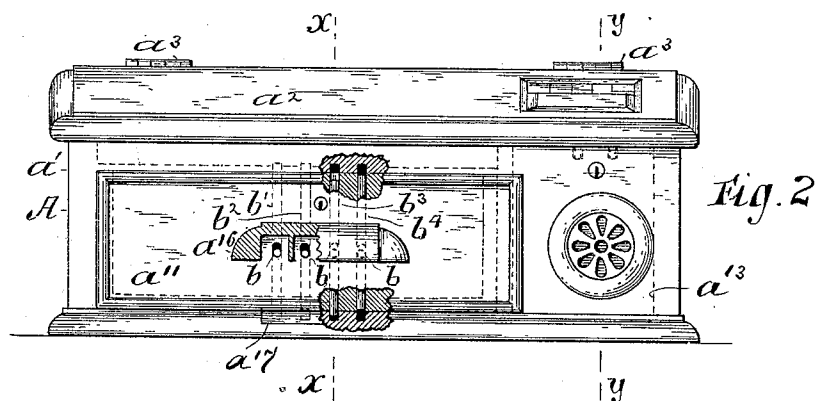
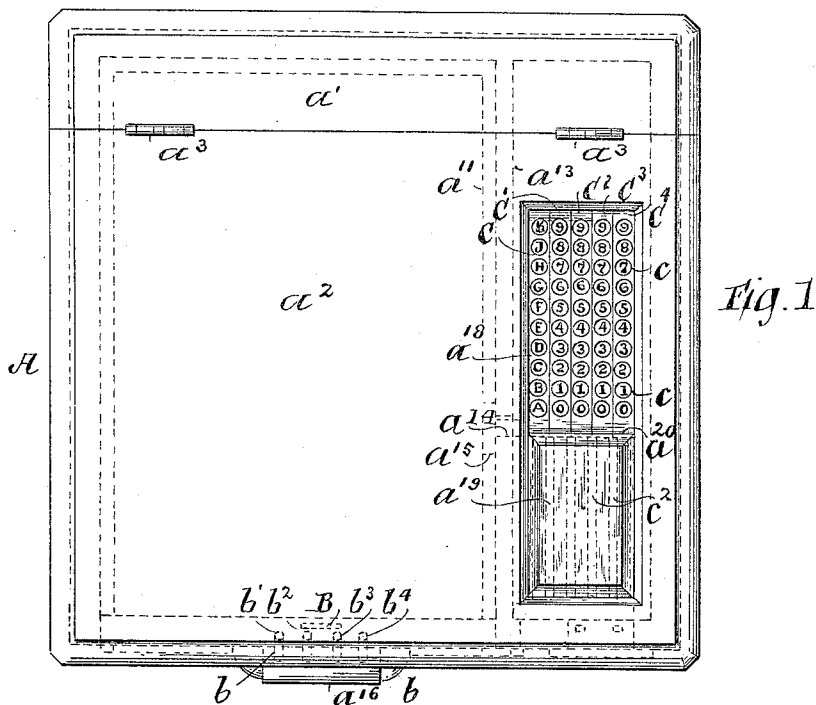
(No Model.)

4 Sheets—Sheet 1.

C. H. SHAW.
CASH DRAWER AND REGISTER.

No. 527,220.

Patented Oct. 9, 1894.



Witnesses
Geo. Wadman
Sarah A. Palmer

Inventor
Charles H. Shaw
By his attorney
Edwin H. Brown

(No Model.)

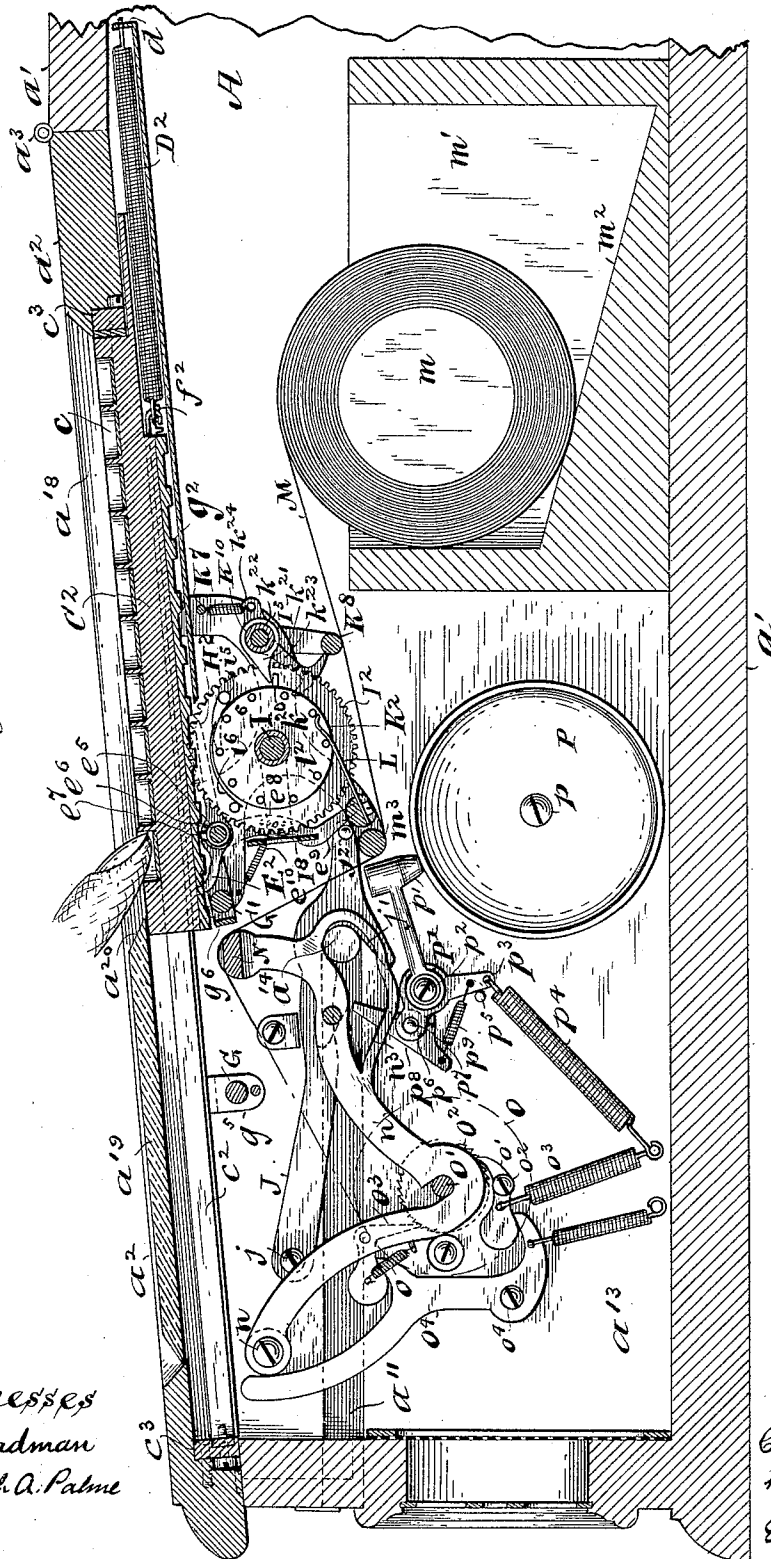
4 Sheets—Sheet 2.

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Fig. 4



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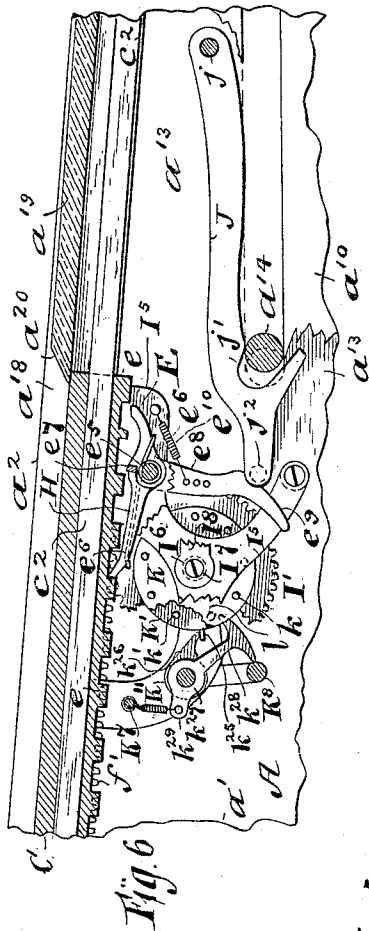
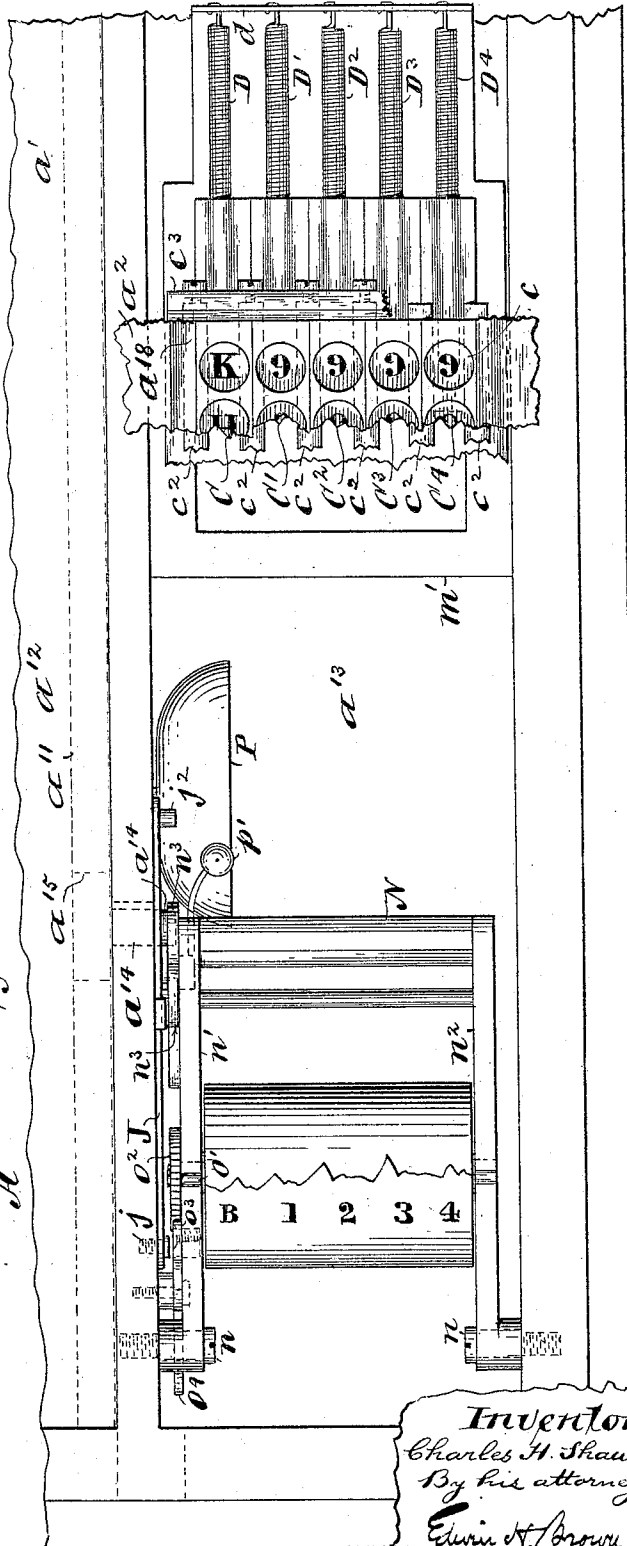


Fig. 5



Witnesses
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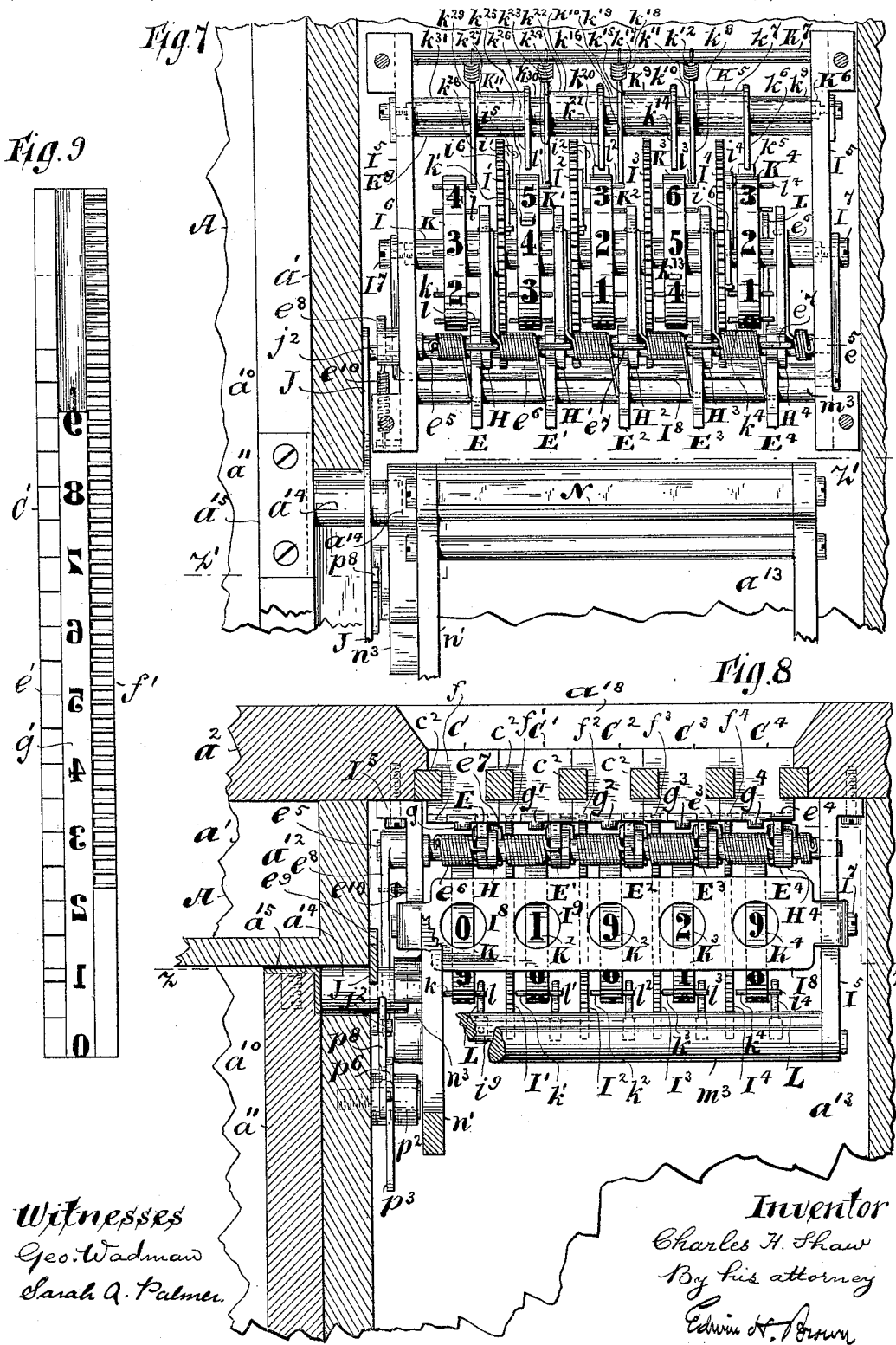
(No Model.)

4 Sheets—Sheet 4.

C. H. SHAW.
CASH DRAWER AND REGISTER.

No. 527,220.

Patented Oct. 9, 1894.



UNITED STATES PATENT OFFICE.

CHARLES H. SHAW, OF BROOKLYN, NEW YORK.

CASH DRAWER AND REGISTER.

SPECIFICATION forming part of Letters Patent No. 527,220, dated October 9, 1894.

Application filed January 8, 1894. Serial No. 496,032. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. SHAW, of Brooklyn, Kings county, and State of New York, have invented a certain new and useful Improvement in Cash Drawers and Registers, of which the following is a specification.

I will describe a cash drawer and register embodying my improvement, and then point out the novel features in the claims.

In the accompanying drawings, Figure 1 is a top view of a cash drawer and register embodying my improvement. Fig. 2 is a front elevation of the same, certain parts at the front of the drawer being broken away to illustrate how the drawer is locked. Fig. 3 is a transverse vertical section taken at the plane of the dotted line $x-x$, Fig. 2. Fig. 4 is a transverse, vertical section on a much larger scale, this section being taken at the plane of the dotted line $y-y$, Fig. 2. Fig. 5 is a top view illustrating a compartment of a cash drawer fitted with registering mechanism, and it also shows a portion of the cover and some mechanism which is secured thereto. Fig. 6 is a transverse vertical section illustrating certain parts which are shown in Fig. 4, but Fig. 6, shows the parts from a different side. Fig. 7 is a sectional plan, taken at the plane of the line $z-z$, Fig. 8, and including a top view of adding mechanism. Fig. 8 is a sectional front elevation taken at the plane of the line $z'-z'$, Fig. 7. Fig. 9 is a bottom view or inverted plan of a sliding printing bar comprised in the machine.

Similar letters of reference designate corresponding parts in all the figures.

A designates a case which is here shown as made in the form of a desk having a body a' , and a cover a^2 , which is connected to the body by hinges a^3 . A prop or brace a^4 Fig. 3 which is pivoted by a screw a^5 to the inside of the body co-acts with a catch a^6 fastened to the underside of the cover. This catch may consist of a plate bent between its ends at an angle, one portion being fastened by screws a^7 to the cover and the other portion being provided with a hole a^8 for receiving the end of the prop or brace. The prop or brace near the end is transversely notched so that when its end portion is moved into the hole a^8 , it

may be swung transversely to cause its notch to engage with the edge portion of the hole. A spring a^9 fastened to the plate a^6 and bent to impinge against the prop or brace will serve to move the latter transversely after its passage into the hole in the catch and thus the prop or brace will be made to engage with the catch and will also be held in engagement with it. To disengage the prop or brace from the catch it will have to be moved transversely against the resistance of the spring and then the cover may be swung downward.

The body a' of the case is divided into three compartments. One is a compartment a^{10} , which is fitted with a drawer a^{11} and is intended to hold cash. Another compartment a^{12} is arranged immediately above the drawer and is serviceable for holding papers. The third compartment a^{13} contains the cash register. The drawer a^{11} may be of any suitable form, divided into any suitable number and style of compartments for bills and for coin. On that side of the drawer which is toward the cash register compartment a^{13} , is a lateral projection a^{14} shown in Figs. 7 and 8 which will advantageously be made in the form of a round stud. This projection may advantageously be formed integral with a plate a^{15} and secured to the drawer by means of screws passed through the plate and engaged with the drawer.

I have shown in Figs. 2 and 3 the drawer as provided with a lock B which may be of any ordinary type and also with bolts b' , b^2 , b^3 , b^4 .

C, C', C², C³, C⁴ Fig. 1 designate slides fitted in an opening a^{18} in the cover a' of the case A. As shown this opening is of rectangular form and is located near the right hand edge of the cover. The upper portion, or in other words that portion which is the nearer to the back of the case, is open so that the fingers of the cashier may reach the slides, but the lower part is preferably covered by a plate of glass a^{19} . These slides C', C², C³, C⁴ are the means whereby the cashier can indicate and register the amounts of purchases and they are therefore, preferably marked 0, 1, 2, 3, 4, 5, 6, 7, 8, 9; these series of figures running lengthwise of the slides and from the front to the rear of the case. Pref-

erably there will be cavities c with which the fingers of the cashier may be engaged, but any other construction of finger holds which will facilitate the adjustment of the slides by impingement of the fingers will answer the purpose. As here shown the cavities c are circular and the figures are arranged at the bottoms of these cavities. The slides are adjusted with reference to that edge a^{20} of the glass plate a^{19} which is the nearer to the back of the case and hence this edge is an index. The edge a^{20} of the plate is preferably beveled. The advantage of this construction is that the cashier will place his finger in the cavity of each slide whose number is to be brought into proximity to the edge a^{20} of the plate a^{19} and afterward the slide will be drawn down until his finger is arrested by the said edge a^{20} . The beveling of this edge will also have the effect of lifting the finger out of engagement with the slide, which is of considerable advantage in working quickly.

Looking at Fig. 1, it will be seen that all the figures of the slides are rearward of the edge a^{20} of the plate a^{19} and that the row of figures on the slides C' , C^2 , C^3 , C^4 , adjacent to said edge will be 0, 0, 0, 0. If, for example, it were desired to record 1, 2, 3, 4, the finger would be inserted in the cavity belonging to the figure 1 of slide C' , and that slide would be pulled forward until the finger of the cashier would be arrested by the edge a^{20} of the plate a^{19} . The same operation would be performed with reference to the slide C^2 except that the cashier would place his finger in the cavity marked with the figure 2, and he would proceed similarly with regard to the slides C^3 , C^4 , excepting only that he would place his finger in the cavities belonging to the figures 3 and 4.

It may be advantageous to make the figures on the slides C' , C^2 distinctive from those on the slides C^3 , C^4 , as for instance, the figures on the slides C' , C^2 may be black and those of the slides C^3 , C^4 red. When made distinctive it will be easier to distinguish dollars from cents, when making a record quickly. It will be understood from what has been said that in the example given of the working of the machine by adjusting the slides C' , C^2 , C^3 , C^4 to bring their figures 1, 2, 3, 4, into a line adjacent to the edge a^{20} of the plate a^{19} , that there will be given an indication of \$12.34. The slide C is similar in all respects to the slides C' , C^2 , C^3 , C^4 , except that it has a row of letters A, B, C, D, E, F, G, H, J, K, instead of figures. These letters run rearwardly in the same manner as the figures. This slide is for the purpose of indicating the person making any particular sale.

A convenient way of supporting the slides C , C' , C^2 , C^3 , C^4 is to provide their sides with grooves and to fit them to rods c^2 which are fastened together by cross-bars c^3 as shown in Figs. 5 and 8. The rods c^2 and the cross-bars

c^3 will be fastened together by screws passing through the cross-bars and entering tapped holes in the ends of the rods. Thus I form a complete frame which may be fastened into the opening a^{18} in the cover in any suitable manner, as for instance, by rabbeting the under side of the cover, fitting the frame into the rabbet and then securing it there by means of a cross-plate d or otherwise.

With the slides C , C' , C^2 , C^3 , C^4 , are combined a number of springs D , D' , D^2 , D^3 , D^4 , which at one end are fastened to the slides and at the other end are fastened to a transversely bent edge of the plate d as shown in Fig. 4. As here shown the slides are grooved on their under sides longitudinally and at about midway between their side edges, and the springs lie in these grooves; their ends being fastened to the slides at the ends of the grooves. These springs are for the purpose of returning the slides to their normal position after they have been adjusted to register any purchase. Detents are used to hold the slides in position after adjustment. In the present instance they consist of pawls E , E' , E^2 , E^3 , E^4 , engaging with ratchet teeth or projections e , e' , e^2 , e^3 , e^4 formed on the under sides of the slides Figs. 6 and 8. I have shown the slides as having these ratchet teeth or projections formed in a row along one edge at one side of the grooves before mentioned, and I have shown the slides as provided at the other edge with gear teeth, f' , f^2 , f^3 , f^4 . Between the ratchet teeth or projections e , e' , e^2 , e^3 , e^4 , and the gear teeth, f' , f^2 , f^3 , f^4 , and in line with the grooves before mentioned, the slides are provided with rows of types corresponding to the symbols which are arranged on the top of the slides. For instance, on the under side of the slides C' , C^2 , C^3 , C^4 , are rows of figures 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, and on the under side of the slide C are letters A, B, C, D, E, F, G, H, J, K. These types are in the present instance formed upon rubber strips g , g' , g^2 , g^3 , g^4 , which are inserted in grooves that are in line with the grooves previously mentioned for accommodating the springs. The types project and are intended for printing. They may be inked in any suitable manner. A convenient way will be to so arrange them with reference to inking rolls that some of the types will be passed over the latter each time the slides are moved.

Fig. 4 designates an inking roll of absorbent material which is to be kept saturated with ink. It is journaled in two brackets g^5 which in the present instance are fastened to the under side of the cover a^2 of the case A. G' designates a second inking roll which may be supported in the same manner by brackets g^6 attached to the under side of the cover a^2 of the case A. I employ two inking rolls to insure the inking of all the types.

Pawls E , E' , E^2 , E^3 , E^4 , which co-act with the ratchet teeth e , e' , e^2 , e^3 , e^4 , to prevent movement of the slides in a direction opposite that

to which the slides move when they are adjusted, are loosely mounted upon a shaft e^5 . On this shaft are also loosely mounted pawls, H, H', H², H³, H⁴, which prevent the movement of the slides in the opposite direction. To secure the pawls thus to the shaft e^5 they may advantageously be fastened to independent sleeves which move freely upon the shaft. Each pawl is provided with a shoulder and the two pawls which control the movement of any slide are spring pressed against a stop or pawl adjuster on the shaft e^5 . This spring may advantageously be coiled around the shaft and its ends brought to bear against a pair of pawls thus pressing them in contact with the stop or pawl adjuster e^7 .

The shaft e^5 upon which the two sets of pawls E, E', E², E³, E⁴ and H, H', H², H³, H⁴, are independently mounted is provided with a pawl adjuster e^7 consisting of a longitudinal projection or projections intermediate of shoulders, with which the two sets of pawls are provided. A convenient way of making this pawl adjuster is to drive a number of staples radially into the shaft. Then the pawl adjuster will be composed of a number of projections instead of a single projection. Obviously, by adjusting the shaft e^5 in one direction the pawls H, H', H², H³, H⁴, will be rendered inert, and the pawls E, E', E², E³, E⁴ will be left free to operate. A reverse movement of the shaft will have the reverse effect, or in other words will suppress the pawls E, E', E², E³, E⁴ and allow the pawls H, H', H², H³, H⁴ to operate. The shaft e^5 has affixed to it an arm e^8 having a cam surface e^9 . A spring e^{10} is at one end fastened to this arm e^8 and at the other end fastened to part of a frame I⁵. Normally this spring e^{10} so adjusts the shaft e^5 as to move the pawls E, E', E², E³, E⁴ into engaging positions, and to suppress the other pawls H, H', H², H³, H⁴.

With the arm e^8 is combined a lever J which is here shown as fulcrumed by a screw j to one side of the compartment a^{13} . The stud or projection a^{14} on the side of the drawer a^{11} serves among other things to swing this lever J vertically, as will be hereinafter more fully described. It is sufficient now to say that when the drawer is closed, the arm e^8 will be adjusted by the spring e^{10} into such position as to render the pawls E, E', E², E³, E⁴ operative and the pawls H, H', H², H³, H⁴, inoperative. When the drawer is moved outward, a little way, the stud a^{14} will by working forward in an oblique slide or notch j' formed in the lever J, raise said lever and cause a pin j^2 with which it is provided to co-act upon the cam e^9 of the arm e^8 in such a manner as to rock the shaft e^5 far enough to move the pawls E, E', E², E³, E⁴ out of engagement with the slides C, C', C², C³, C⁴. Owing to this the initial outward movement of the drawer will release the slides and allow them to return to their normal position. A further outward movement of the drawer will have the effect of adjusting the pawls E, E', E², E³, E⁴ further

out of operative position and will adjust the pawls H, H', H², H³, H⁴ into operative position, thereby locking the slides until the drawer is closed again.

I may here remark that each of the springs e^6 is intended to be of less power than the spring e^{10} , so that any one of the pawls E, E', E², E³, E⁴ may be moved by the passage of a slide over it without moving the rock shaft e^5 . The spring e^{10} , however, is intended to be of considerably less force than the aggregate force of any two springs e^6 , so that if any one attempts to adjust two of the slides at any one time, the resistance of the two springs e^6 belonging to the opposite pawls will be sufficient to rock the rock shaft against the resistance of the spring e^{10} and will therefore, throw the entire set of pawls H, H', H², H³, H⁴ into engagement with the ratchets or projections e , e' , e^2 , e^3 , e^4 of the slides, so as to lock the slides against any possibility of adjustment. The object of preventing the movement of two slides at one and the same time is to avoid any possibility of interfering with an adding mechanism which I employ.

With the racks f' , f^2 , f^3 , f^4 on the under side of the slides C', C², C³, C⁴, co-act gear wheels I', I², I³, I⁴. (Best shown in Figs. 4 and 7.) These gear wheels are mounted loosely upon a non-rotary rod or arbor I⁶ which at the ends is sustained by screws I⁷ passing through the side pieces of the frame I⁵. These gear wheels are provided on their sides with pawls i' , i^2 , i^3 , i^4 which are pivotally connected to the wheels by pins or screws i^5 and are combined with springs i^6 for the purpose of making them co-operate with a number of side teeth or pins k' , k^2 , k^3 , k^4 , extending from the sides of adding wheels K', K², K³, K⁴ which are mounted loosely upon the rod or arbor I⁶. When the gear wheels I', I², I³ are moving in one direction, the pawls i' , i^2 , i^3 , i^4 , will simply play idly over the pins or side teeth of the wheels. This will happen under the motion which the gear wheels have while the slides are returning to their normal positions. When the slides are adjusted in the reverse direction to register a purchase, the gear wheels will be rotated in such direction that their pawls will impart rotary motion to the adding wheels.

The adding wheels have numbers upon their peripheries 0, 1, 2, 3, 4, 5, 6, 7, 8, 9. Opposite these adding wheels may be arranged a bar I⁸ having openings I⁹ opposite the adding wheels so that a row of numbers on the adding wheels may be read to show the total of sales.

The adding wheels are normally held in position by means of detents L which co-operate with side teeth or pins l' , l^2 , l^3 , l^4 upon the adding wheels. These detents are shown as made of springs fastened to a bar l^9 on the frame I⁵.

Besides the adding wheels K', K², K³, K⁴ there is an adding wheel K which has no motion except such as is transmitted to it from

the adjacent adding wheel K' in a manner which I shall explain in detail hereinafter, and which occurs only when a number has to be carried.

5 It will of course be understood from what has been said that the gear wheels I', I², I³, I⁴ when moved in one direction by the movement of the slides C', C², C³, C⁴ into a position to register a purchase, will carry the corresponding adding wheels K', K², K³, K⁴ with them and advance these adding wheels a number of teeth corresponding to the numbers for which the slides are adjusted. It will also be understood that when the slides 10 move in the reverse direction to resume their normal position they move the gear wheels without imparting any motion to the adding wheels and hence move the gear wheels to no purpose.

20 I will now describe the means whereby numbers are carried from one to another of the adding wheels. The adding wheel K⁴ has a radial pin or tooth k⁵ extending beyond its periphery and opposite this is one arm k⁶ of a lever K⁵ so that once in every rotation of the adding wheel K⁴, it will oscillate this lever K⁵. The lever K⁵ consists of the arm k⁶, a tubular hub or sleeve k⁷, and an arm k⁸. The tubular hub or sleeve k⁷ fits loosely upon a 30 rod or arbor K⁶ which is fastened between the side pieces of the frame I⁵. At the ends of the tubular hub or sleeve k⁷, of the lever K⁵, are tubular sleeves k⁹, k¹⁰, which serve as spacing pieces for holding the lever in position against movement lengthwise of the rod K⁶. The lever K⁵ has a third arm k¹¹ and with the latter is combined a spring k¹²; this being, as here shown, of spiral form fastened at one end to the said arm k¹¹ of the lever, 40 and at the other end to a rod K⁷ which is supported by the side pieces of the frame I⁵. The spring k¹² holds the lever in such position that its arm k⁶ will obtrude in the path of the tooth k⁵ of the adding wheel K⁴. When the 45 tooth k⁵ of the adding wheel K⁴ impinges against the arm k⁶ of the lever K⁵, the latter will be oscillated in such direction that the arm k⁸ of this lever will co-act with teeth or pins l³ on the adding wheel K³, and this will 50 have the effect of advancing the adding wheel K³ a distance of one tooth, or in other words, from one number to the next. The arm k⁸ of the lever K⁵ is shown as being made T-shaped, or in other words as having lateral projections 55 extending in opposite directions from its free end. One of these projections is for co-operating with the teeth l³ of the adding wheel K³ and the other is intended to co-act with a stop bar K⁸ extending between the side pieces 60 of the frame I⁵ or appurtenances of said side pieces. The carrying mechanisms between the tens and the hundreds, the hundreds and the thousands, &c., are similar to those described.

65 Having now explained the mechanism comprising the slides for indicating the amounts or independent purchases and the mechanism

whereby the amounts of these purchases may be added together, I will describe a printing mechanism whereby the independent purchases will be registered upon a traveling 70 strip of paper.

M Fig. 4 designates a strip of paper coiled upon a roller *m* which is arranged in a box 75 *m'* having an inclined bottom *m*²; the incline of the bottom being downward toward the rear of the case A so that when the strip of paper is drawn off the roller, the coiled portion of the strip and the roller will move up 80 the incline. As the roller in the coiled portion of the strip will always have a tendency to roll down toward the back of the box, I thus produce a very simple and efficient tension. The paper strip M passes down under 85 a roller *m*³ which is journaled between the side pieces of the frame I⁵ and thence it passes over a bed or platen N which is made in the form of a bar having a flat upper surface. The slides C', C², C³, C⁴ are brought 90 over this bed or platen and the latter has a movement toward and from the printing types which are provided on the under sides of the slides, this movement being for the purpose of presenting the paper strip to the symbols so that the latter may print upon the paper. 95

The bed or platen N is shown as supported at its ends by means of bars *n'*, *n*² which are pivoted to the sides of the compartment *a*¹³ by means of screws *n*. The arm *n'* is provided with a slot or opening *n*⁸ having lateral 100 flanges extending toward that side of the compartment *a*¹³ adjacent to which the drawer *a*¹¹ works. As the drawer is moved in and out, its projection *a*¹⁴ works into this slot or opening and produces an oscillating movement of the arm *n'* and hence the bed or platen N. This movement is produced not only 105 when the drawer moves in but also when the drawer moves out. The outward movement of the drawer locks the slides by rendering the pawls H, H', H², H³, H⁴ operative. A further outward movement of the drawer raises 110 the bed or platen so as to cause an imprint to be made upon the paper strip M by those types of the slides which then happen to be over the bed or platen. A still further outward movement of the drawer allows the bed or platen to descend and releases the slides so 115 that the latter may return to their normal position. A still further outward movement of the drawer locks the slides in their normal position and while the drawer remains open, the slides are thus kept locked for the purpose of rendering their adjustment impossible until after the closing of the drawer. The upward movement of the bed or platen produced 120 by the closing of the drawer is immaterial, because none of the slides will then be over it.

The strip M, after printing may be taken up in any desired manner, as for example, 125 by a take-up roller O affixed to a shaft O' journaled in notches in the bars *n'*, *n*² supporting the bed or platen N. The end of the paper strip may be engaged with such roller 130

by engaging it with a tangential notch. On the shaft O' is affixed a ratchet wheel O^2 . Above this ratchet wheel there is pivoted to the bar n' a pawl O^3 which is weighted and also actuated by a spring o so as to engage with the ratchet teeth. This spring is attached at one end to the pawl and at the other end to the bar n' or an appurtenance of the latter. A pawl o' , is pivoted by a screw o^2 to the side of the compartment a^{13} adjacent to the ratchet wheel O^2 . This pawl is weighted and is also combined with a spring o^3 , which at one end is connected with the pawl and at the other is connected to the compartment a^{13} . O^4 is a lever fulcrumed by a screw o^4 to the side of the compartment a^{13} and having one arm, which projects up to the top of the compartment a^{13} and two arms which project under the pawls. Each time the bar n' is raised by the movement of the drawer, a pawl o' will be caused to move over a ratchet tooth and engage with the next tooth, and when the bar n' descends, the pawl will move the ratchet wheel one tooth forward, thus taking up the paper strip to that extent.

By oscillating lever O^4 the pawls may be swung out of engagement with the ratchet so that the take-up roller can be removed or raised upwardly for the purpose of removing the printed portion of the strip M .

P designates a bell fastened by a screw p to that side of the compartment a^{13} which is adjacent to the drawer a^{11} . With this bell is combined a clapper p' consisting of one arm of a three-armed lever P' which is fulcrumed by a screw p^2 to that side of the compartment a^{13} which is adjacent to the drawer. The arm p^3 of this lever is fastened to a spring p^4 which is fastened to the side of the compartment and serves to impart the necessary impulse to the clapper for ringing the bell. This arm p^3 is not in the same plane with the clapper arm p' , but between these two arms is a tubular hub through which the screw p^3 passes. A pin p^5 limits the movement of the lever under the force of the spring p^4 . The third arm p^6 is in the same plane as the arm p^3 . The arm p^6 has pivotally connected to it by a pin p^7 a supplementary lever p^8 . One end of this supplementary lever is connected by a spring p^9 with the arm p^3 of the lever P' .

When the drawer is moved inward the projection a^{14} comes in contact with the upper end of the supplementary lever p^8 and rocks it rearwardly until said projection passes beyond such lever. Then the lever resumes its normal position so that its upper end will be in front of the projection a^{14} . When the drawer is moved outward the projection contacts with the upper arm of the supplementary lever p^8 , and as such lever cannot then yield independently of the three-armed lever P' , the bell clapper is raised against the resistance of the spring p^4 . Ultimately the projection rocks the upper end of the supplementary lever so far forward as to be able to pass

it by. Then the three-armed lever P' being released, the clapper strikes the bell, giving an alarm, that the drawer has been opened.

It will be seen that by my invention, I provide for indicating each individual purchase and the salesman who effected it, for making a permanent record of each independent purchase, together with a record of the salesman who made it, and for adding together all the purchases, all under control of a cash drawer and for ringing an alarm bell each time the drawer is opened.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of a case, slides bearing symbols, two sets of detents for preventing movement of the slides in opposite directions, the shaft e^5 supporting such detents, the bed or platen N , pivoted bars for supporting such bed or platen, and a movable part whose continued movement first actuates said pivoted bars to move the bed or platen N , and then rocks shaft e^5 to throw one set of detents out of engagement and the other set of detents into engagement, substantially as specified.

2. The combination of a case, slides bearing symbols, two sets of detents for preventing movement of the slides in opposite directions, the shaft e^5 supporting such detents, the bed or platen N , pivoted bars for supporting such bed or platen, a continuous traveling strip, a pawl and ratchet connection for moving such strip, a part through which an imprint on such strip may be seen, and a movable part whose continued movement first actuates said pivoted bars to move the bed or platen N , then rocks the shaft e^5 to throw one set of detents out of engagement and the other set of detents into engagement and finally actuates said pawl and ratchet connection to move the traveling strip to a position where the imprint just made may be seen, substantially as specified.

3. The combination of a case, slides bearing symbols, two sets of detents for preventing movement of the slides in opposite directions the shaft e^5 supporting such detents, the bed or platen N , a total adding mechanism, and a movable part whose continued movement first actuates said pivoted bars to move the bed or platen N , and then rock shaft e^5 to throw one set of detents out of engagement and the other set of detents into engagement, substantially as specified.

4. The combination of a case having a part provided with an opening, slides normally occupying this opening, a printing mechanism contained within said case, a total adding mechanism attached to said part, a drawer or slide for controlling the action of said printing and total adding mechanisms which permits of the adjustment of the slide in its normal position and locks the same from adjustment in its abnormal position, a continuous traveling strip, a supply and a take up roll for such strip, and a part substantially parallel

to said strip arranged in line with said slides, and through which the imprint from the printing mechanism may be seen immediately after said movable part has caused it to act, substantially as specified.

5. The combination of a case having a part provided with an opening, slides having printing types on their lower surfaces and indicating symbols upon their upper surfaces and which normally occupy this opening, two sets of detents for preventing movement of the slides in opposite directions, the shaft e^5 for supporting such detents, a continuous traveling strip, a part in line with said slides, under which the slides move and through which the strip may be seen, said part being substantially parallel to said strip, a printing mechanism and a drawer or slide for rocking the shaft e^5 to throw either set of detents into and out of engagement and also for feeding the strip after an imprint has been made to a position where the imprint may be immediately seen, substantially as specified.

6. The combination of slides having gear teeth on one face and indicating symbols on opposite face, the two sets of detents E, E', E², E³, E⁴ and H, H', H², H³, H⁴, the shaft e^5 to which such detents are pivoted and to which there is attached an arm e^8 , a drawer or slide for rocking the arm e^8 and shaft e^5 , and the spring e^{10} for returning the arm and the shaft, substantially as specified.

7. The combination of a number of slides, ratchets or projections upon the slides, two sets of detents which co-act with the ratchets or projections, and a drawer or movable part which when moved outwardly will release one set of detents so as to allow the slides to resume their normal position, and subsequently apply the other set of detents so as to lock the slides in their normal position until after said drawer or movable part shall have been moved in or closed, substantially as specified.

8. The combination of a number of slides, ratchets or projections on the slides, two sets of detents which coact with these ratchets or projections, to prevent motion in opposite directions, and means whereby the set of detents opposite to that which holds them in any position, will be thrown into action in an attempt to move more than one slide at once, thereby locking the slides, substantially as specified.

9. The combination of a number of slides having ratchets or projections on their faces, two sets of pawls or detents engaging with these ratchets or projections to prevent motion in opposite directions, a shaft having projections or stops arranged along its length, and to which these two sets of detents or pawls are pivoted, springs for holding one pawl or detent in each set against a common stop or projection, an arm attached to one end of said shaft, a spring attached to this arm, and to a fixed piece and of a greater strength than the strength of any one of the springs which holds the pairs of pawls or detents against a com-

mon stop, but less in strength than two of such springs, so that on an attempt to move two or more slides at once the said shaft will be oscillated and the opposite set of pawls or detents be thrown into engagement, substantially as specified.

10. The combination of a number of slides having gear teeth on one face and indicating symbols on the opposite face, two sets of detents for preventing movement of the slides in opposite directions, the shaft e^5 to which such detents are pivoted, springs for holding these detents against a set of stops or shoulders on the shaft e^5 , toothed wheels engaging with the gear teeth upon said slides, a number of adding wheels each provided with a radial tooth and a number of projecting pins or studs, a single shaft for bearing said adding and toothed wheels, a pawl and ratchet connection between each toothed wheel and an adjacent adding wheel, a two armed oscillating lever having one of its arms in the path of a radial tooth upon one of said adding wheels, and whose other arm coacts with the projecting pins or studs on the next higher adding wheel when said two armed lever is caused to oscillate by a rotation of one of the radial toothed adding wheels, substantially as specified.

11. The combination of a number of slides having gear teeth on one face and indicating symbols on the opposite face, two sets of detents for preventing movement of the slides in opposite directions, the shaft e^5 to which such detents are pivoted, springs for holding these detents against a set of stops or shoulders on the shaft e^5 , toothed wheels engaging with the gear teeth upon said slides, a number of adding wheels each provided with a radial tooth and a number of projecting pins or studs, a single shaft for bearing said adding and toothed wheels, a pawl and ratchet connection between each toothed wheel and an adjacent adding wheel, a two armed oscillating lever having one of its arms in the path of a radial tooth upon one of said adding wheels, a spring for returning the lever to its normal position, a stop for defining the normal position of the lever, the remaining arm of said two-armed lever coacting with the projecting pins or studs on the next higher adding wheel when said two armed lever is caused to oscillate by a rotation of one of the radial toothed adding wheels, substantially as specified.

12. The combination with printing mechanism of a take up roller for a paper strip, a drawer or slide having a pin or stud affixed to it, supports for said take up roller which are moved by said pin or stud, a pawl or dog supported on the supports for the take up roller, a pawl or dog pivoted to a stationary support, an independent piece coacting with said pawls or dogs and a ratchet wheel on the take up roller with which said pawls or dogs coact, substantially as specified.

13. The combination with a take up and a

supply roll for a recording strip, of a ratchet wheel, pawls or dogs engaging with this ratchet wheel, a hand piece pivoted independently of the take up roller supports whereby the pawls or dogs may be disengaged from the ratchet wheel to permit of the removal of the take up roll, substantially as specified.

14. The combination of slides having finger spaces on their upper surfaces, printing types on their lower surfaces and provided with longitudinal grooves at their sides, rods c^2 fitting into such grooves and wholly inclosed within the bodies of said slides, cross-bars c^3 fastening said rods c^2 together, a part having a beveled edge extending transversely to the length of the slides, two sets of detents for preventing the movement of the slides in opposite directions, the shaft e^5 to which such detents are pivoted and a drawer or slide for rocking the shaft e^5 , substantially as specified.

15. The combination with the glass plate a^{19} , of indicating and recording slides which move under said plate, two sets of detents for preventing movement of the slides in opposite directions, the shaft e^5 to which such

detents are pivoted, a continuous traveling strip, a take up roll for such strip whose shaft is provided with a pawl and ratchet connection, pivoted bars for supporting such take up roll, a bed or platen also supported in said pivoted bars, and a drawer or slide for rocking the shaft e^5 and actuating said pawl and ratchet connection to cause the strip to be fed under the glass plate, substantially as specified.

16. The combination of the two sets of detents H, H', H^2, H^3, H^4 and E, E', E^2, E^3, E^4 , springs for pressing these detents against a series of stops or shoulders, the shaft e^5 to which such detents are pivoted, the arm e^8 attached to such shaft, the spring e^{10} attached to such arm and a drawer or slide for rocking arm e^8 and shaft e^5 , substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES H. SHAW.

Witnesses:

ANTHONY GREF,
S. A. PALMER.