(No Model.) 3 Sheets—Sheet 1.

G. S. KNIGHT.

MANUAL SALES RECORDER AND CASH DRAWER.

No. 563,185. Patented June 30, 1896.

Fig. 2.

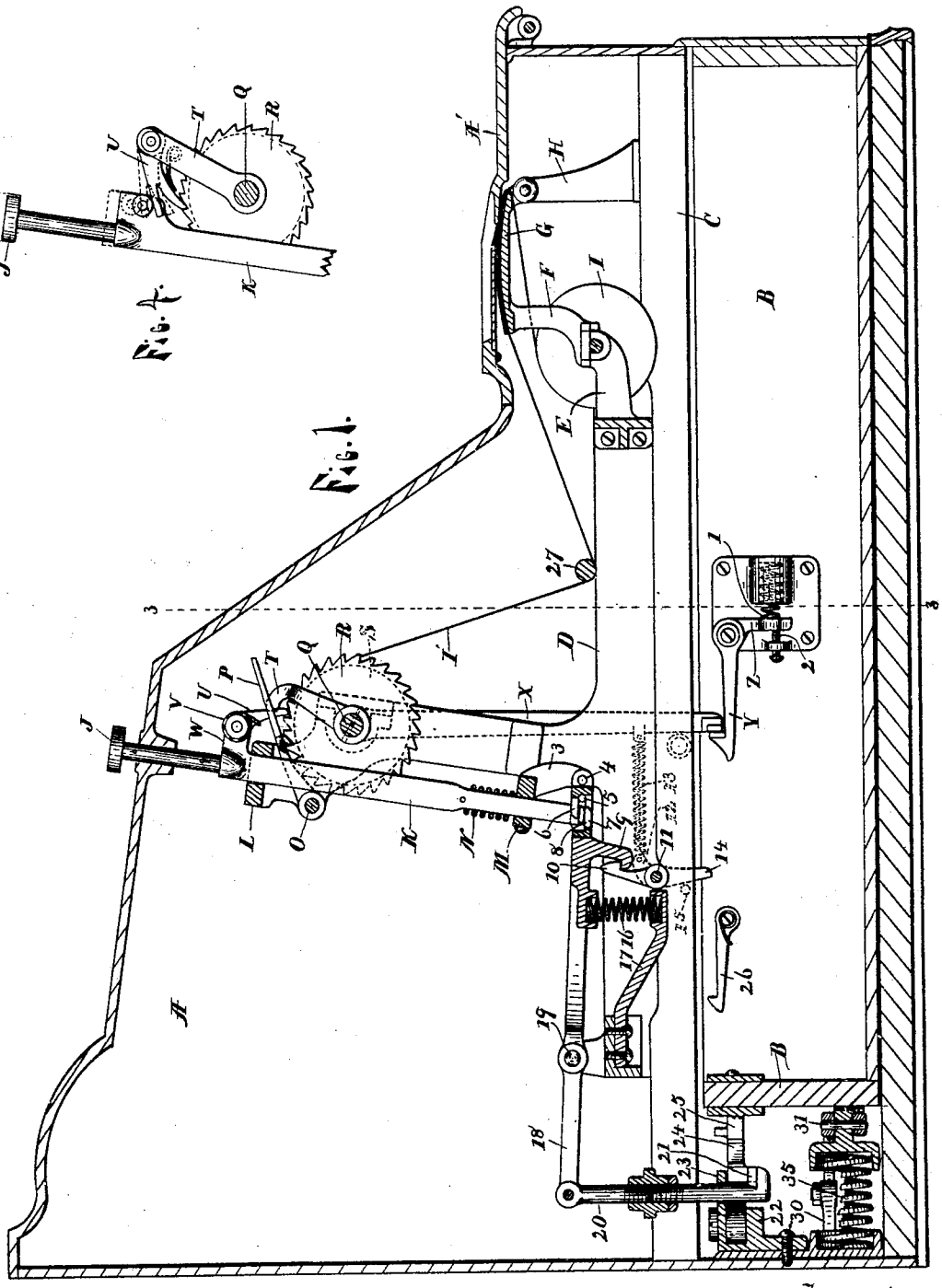

Fig. 1.

Witnesses

Christopher Hondelink

M. Louise Knight.

Inventor

George S. Knight

By Attorney

Edward Taggart

ANDREW B. GRAHAM, PHOTO-LITHO. WASHINGTON, D.C.

(No Model.) 3 Sheets—Sheet 2.

G. S. KNIGHT.

MANUAL SALES RECORDER AND CASH DRAWER.

No. 563,185. Patented June 30, 1896.

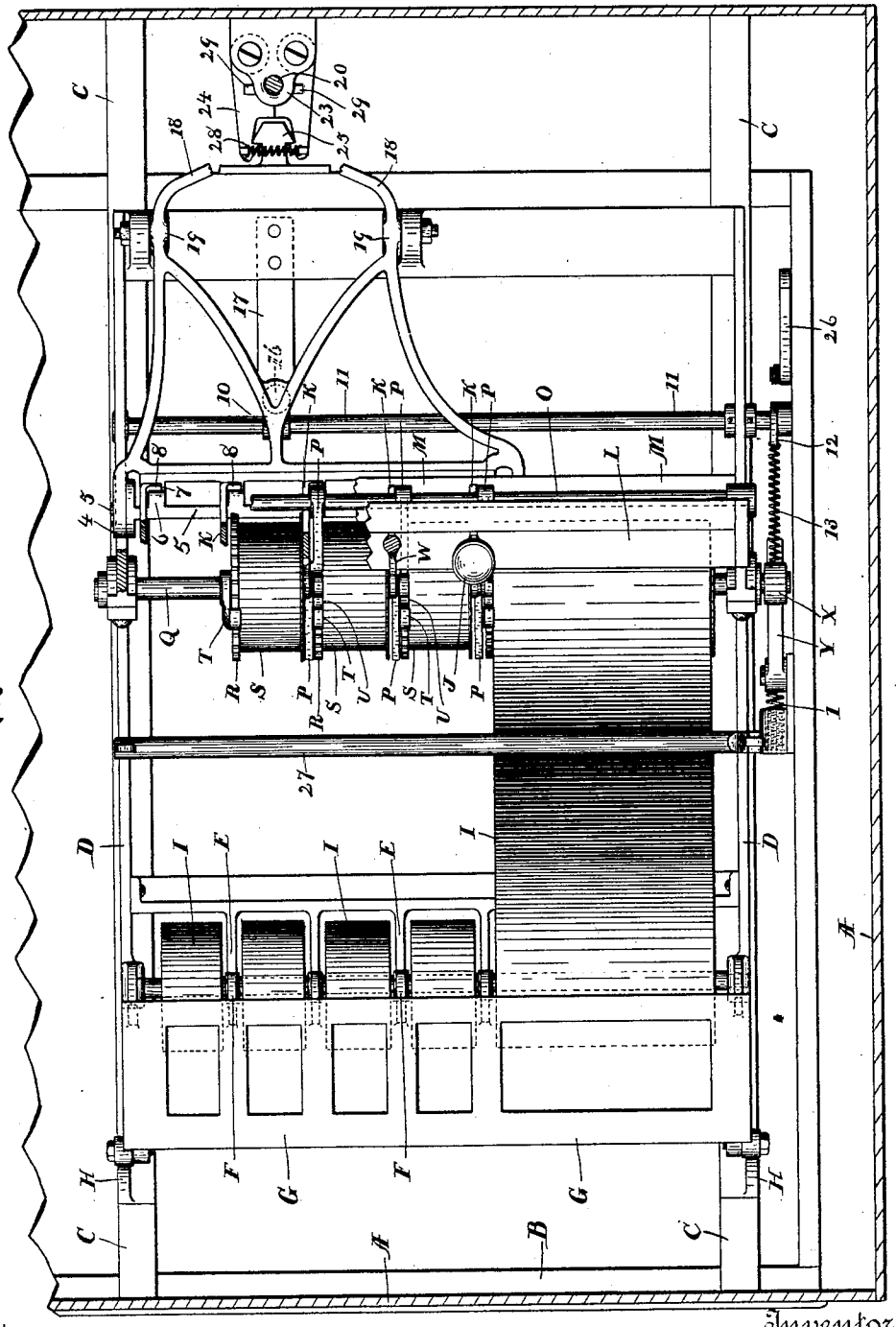

Fig. 2.

Witnesses
Christopher Kondelink
M. Louise Wright

Inventor
George S. Knight
By Attorney
Edmund Jaggard

ANDREW B. GRAHAM, PHOTO-LITHO. WASHINGTON, D.C.

(No Model.) 3 Sheets—Sheet 3.

G. S. KNIGHT.

MANUAL SALES RECORDER AND CASH DRAWER.

No. 563,185. Patented June 30, 1896.

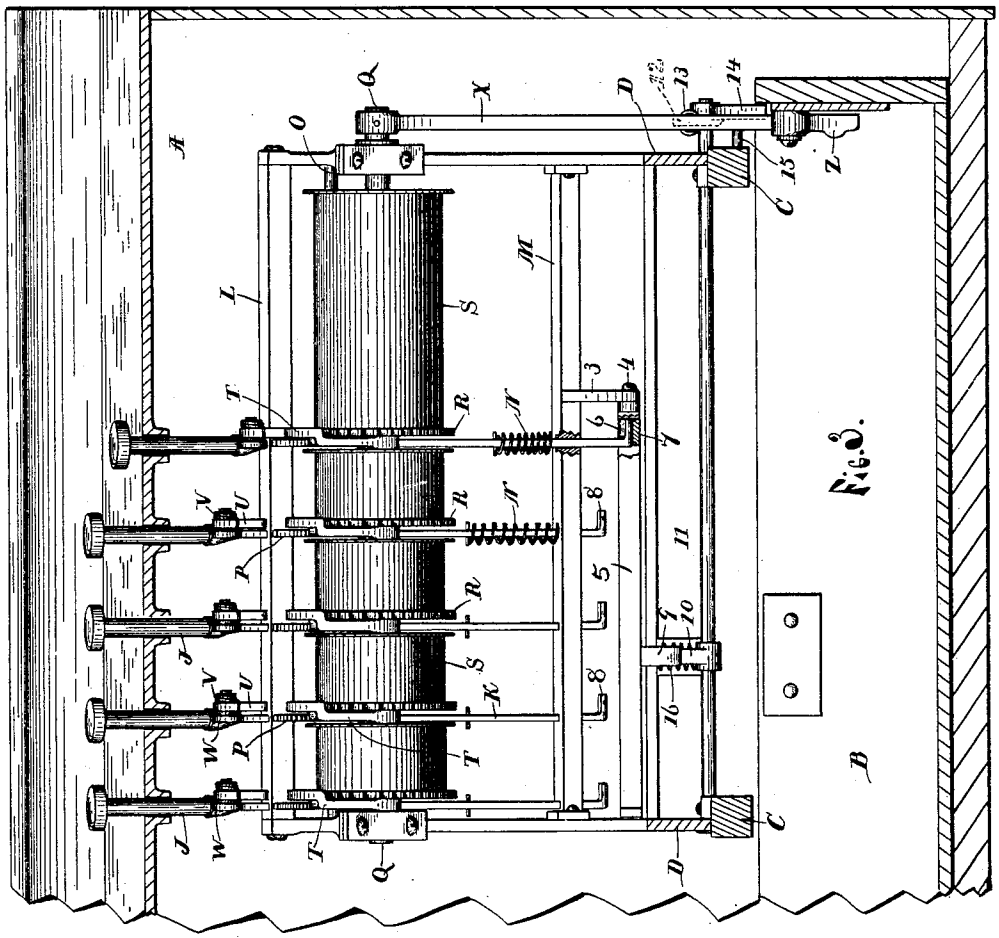

Fig. 3.

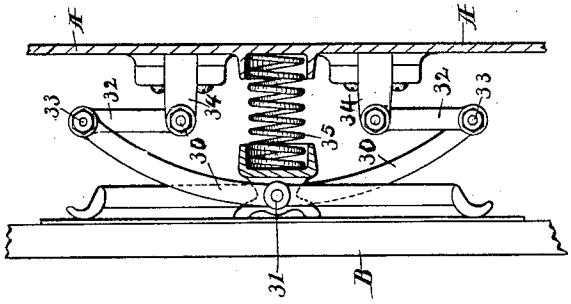

Fig. 5.

Witnesses
Christopher Vondelinde
M. Louise Wright.

Inventor
George S. Knight
By Attorney
Edward Taggart

ANDREW B. GRAHAM, PHOTO-LITHO. WASHINGTON, D.C.

UNITED STATES PATENT OFFICE.

GEORGE S. KNIGHT, OF CLEVELAND, OHIO, ASSIGNOR TO THE CHAMPION CASH REGISTER COMPANY, OF GRAND RAPIDS, MICHIGAN.

MANUAL SALES-RECORDER AND CASH-DRAWER.

SPECIFICATION forming part of Letters Patent No. 563,185, dated June 30, 1896.

Application filed February 14, 1895. Serial No. 538,371. (No model.)

To all whom it may concern:

Be it known that I, GEORGE S. KNIGHT, a citizen of the United States, residing at the city of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Manual Recorders and Cash-Drawers, of which the following is a specification.

My invention relates to improvements upon manual recorders and cash-drawers, and cash-registers, heretofore patented. Its chief objects are to lighten the pressure of the key which causes the spool to be revolved, and to provide means for giving a positive motion to the spool.

Other objects will be mentioned in detail in connection with the parts to which they refer. These objects I accomplish by means of the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a manual recorder containing my invention, showing the key depressed and having the side of the case removed in order to illustrate the internal structure and mechanism of the machine. Fig. 2 is a plan view of the same, having the top of the case removed. Fig. 3 is a front end view looking backward from the vertical plane of the line 3 3 of Fig. 1. Fig. 4 is a detached view of a modified form of the dog-and-ratchet mechanism for revolving the spools. Fig. 5 is a detached plan view of the spring and connecting mechanism for pushing open the drawer.

Similar letters and numerals refer to similar parts through the several views.

A is the outside case.

B is the drawer.

C C are the girders upon which the machine is set.

D D is the frame of the machine.

E E is a support, with bearings, upon which the feed-spools are set.

F F are curved arms attached to the plate G and forming caps or covers for the bearings of the feed-spools.

G is a plate beneath the paper, supporting the same so that it may be written upon.

H H are brackets attached to the girders C C, upon which brackets the plate G is hinged.

I I are the paper-rolls or feed-spools.

J J are the upper sections or portions of the keys, designed to be operated upon by the finger.

K K are the lower sections of the keys.

L L and M M are respectively upper and lower horizontal rails supported by the frame, said rails being correspondingly apertured for the reception of the keys which project through said rails and are guided thereby.

N N are springs operating to elevate the keys when not depressed.

O is a shaft attached at its two ends to the opposite ends of the frame, upon which turn the pawls P P.

Q is a shaft upon which are fixed the rocking arms T T, and upon which shaft revolve the spools S S and the ratchet-wheels R R, which are respectively attached to the spools.

W W are arms, formed integral with the lower sections K K of the keys, and extending laterally over the ratchet-wheels. To these arms W W are pivoted the pawls U U, which engage with the teeth of the ratchet-wheels.

V V are the springs surrounding the pivots upon which the pawls are hung, and so adjusted as to throw the pawls outward to their normal position after the ratchet-wheel has been operated.

X is a swinging arm which is, at its upper end, rigidly attached to the outer end of the shaft Q, and at its lower end is adapted to come into engagement with the drawer by means of the spring-trip Y. This spring-trip Y is pivoted upon the plate Z, which plate is attached by any suitable means firmly to the inner surface of one side of the drawer. In connection with the plate Z, a spring 1 is arranged to bear against the bent end of the spring-trip Y to hold the same in normal position to engage the swinging arm, and in connection also with the plate Z is the set-screw 2, adapted to bear against the other side of such bent arm portion of the spring-trip and regulate the tension of the spring, and adjust the position to be taken by the spring.

In the modified form of my invention, which relates to the dog-and-ratchet device and which is shown in Fig. 4, the dog is attached to the rocking arm T by a pivot, and is nor-

mally held out of operative position by means of a spring, and is carried into operative contact with the ratchet-wheel by means of a projection on the depressing key-arm, which key-arm may be provided with a friction-roller, a projection, or any other suitable means for coming in contact with the dog U. After the dog U has been lowered into operative contact with the ratchet-wheel, the swinging of the rocking arm T revolves the ratchet-wheel in substantially the same manner as the ratchet-wheel is revolved by the mechanism shown in Fig. 1.

3 is a standard depending from the frame M, rigidly attached thereon, and at its lower end supporting the pin 4, which pin forms the journal for the rocking shaft 5.

6 6 are lugs upon the rocking shaft 5, which lugs are adapted to engage with the bent foot 8 of the lower sections K K of the keys.

7 7 are lugs upon the rocking beam 18, and so arranged that the lugs 6 6 upon the rocking shaft bring the bent portion of the keys into engagement with these lugs 7 7.

9 is a hook or latch depending from the rocking beam 18.

10 is a latch pivoted upon the shaft 11, and adapted at its upper end to engage with the latch 9 when the rocking beam 18 is depressed. The shaft 11 is attached at its opposite ends to the frame.

14 is a trip rigidly attached to the shaft 11, and having the upper portion thereof in the bent form shown by 12, and attached thereto is the spring 13, which at its other end is attached to the swinging arm X.

15 is a pin upon the frame C, and acts as a stop to hold the trip 14 against the action of the spring 13.

26 is a spring-trip attached to the inside of the drawer and adapted by its spring to be held up in the position shown in the drawings, in which position, when the drawer is drawn forward, it will engage with and operate the lower end of the trip 14.

16 is a spiral spring held in position at its upper end in a socket upon the lower side of the rocking beam 18, and at its lower end held in a socket upon the upper side of the supporting-arm 17, which arm is rigidly attached to the lower surface of the frame. Upon the upper surface of the same portion of the frame are the standards 19 19, in which the pivotal rocking beam rocks.

20 is a detent, which at its upper end is pivoted to the end of the rocking beam 18, and which works vertically through a guide in or connected with the frame.

21 is the bent or extended foot of the dog or detent 20, and this foot 21 has its upper portion wedge-shaped, with the apex at the top.

22 is a supporting-bracket attached to the case and having extended therefrom the guide 23, through which the lower portion of the detent or dog is guided in its vertical motion.

24 24 are jaws which are pivoted, as shown, to the supporting-bracket 22. In Fig. 2 both sides are shown, while in Fig. 1 only the farther one appears, the nearer one being removed. These jaws are of such shape as to surround the dog or detent 20.

25 is an arrow-headed bolt attached to the rear of the drawer, and adapted to engage with the jaws at their extremities. These jaws are held together, and in position to engage with this bolt, by the spring 28, which connects the extremities of the two jaws and operates to hold them together.

27 is a bar pivoted at one end to the frame D, and latched at its other end. It acts both as a guide and as a tension-bar for the paper when the same is unwound from the spool.

One advantage of the drawer-locking device in my invention consists in the fact that when the drawer is unlocked and loosened it becomes necessary to open the drawer to a sufficient length to perform all the operation of the mechanism. This is accomplished in this manner. When the drawer has been unlocked, the wedge-shaped foot of the detent is raised sufficiently to open or spread the jaws 24 24, thereby releasing the drawer and allowing the same to be drawn out by hand, or by a spring, as the case may be, the wedge-shaped detent remaining between the jaws until the paper has completed its movement on the spool, at which point the spring-trip 26 comes in contact with and operates the trip 14, releasing the rocking beam 18, allowing the detent to again drop into locking position. Thus the full operation is completed after it has been begun, and the drawer cannot be relocked until the full operation has been carried out.

In some cases a spring is used to push open the drawer. I have shown my preferred form of spring in Fig. 5, in which 35 represents a coil-spring, secured in position between the case and the rear end of the drawer so as to be in position to shove open the drawer whenever the same shall have been unlocked. 30 30 represent arms, pivoted at 31, and also pivoted at 33 33 to the arms 32 32, which arms 32 32 are also pivoted to lugs, or other suitable projections, connected with the case and shown by 34 34.

The operation of my invention will be easily understood from the above description, the same referring especially to the parts which are new, and the parts connected therewith.

The paper I is led from the roll of paper, as shown in Fig. 1, over the plate G, under the tension-bar 27, and to the spool S and suitably attached thereto. The keys being all in upright position, I depress one of them by pressure upon the portion thereof projecting from the case. The lower end of the key is correspondingly depressed until the bent foot 8 engages with the lug 7 and depresses the front end of the rocking beam 18, which swings the rocking shaft 5 upon the pivot 4 until the lug 6 also engages on the upper side of the bent foot 8, thereby holding the bent foot 8 in its depressed condition, and

at the same time the latch 9 upon the lower portion of the rocking beam 18 engages with the spring-latch 10 and is held in such engagement through the tension of the spring 13. In this manner the key is locked in its depressed condition until this engagement shall be released. At the same time the depressing of this end of the rocking beam 18 raises the other end thereof, thereby the dog or detent is correspondingly raised, imparting to it the vertical motion. The wedge-shaped surface upon the upper portion of the bent foot 21 of this dog operates to separate from each other the jaws 24 24, and thereby the arrow-headed bolt upon the rear end of the drawer is released from its engagement. The drawer is now free to be withdrawn from the case automatically, or mechanically, as may be desired. As the drawer is withdrawn, the spring-latch Y, by virtue of its engagement with the swinging arm X, will cause this arm to swing forward, and this motion is continued until the arm is automatically released from engagement with the spring Y, such release resulting from the fact that the lower end of the arm swings in the arc of a circle. As this arm X swings, it being rigidly attached to the shaft Q, it will cause the same to rotate, and thereby will operate the rocking arms T T. These rocking arms press against and operate any one of the swinging pawls U U whose keys J may have been depressed, and thereby operate the ratchet-wheels, and also the attached spools, thus imparting to the paper roll a forward motion and causing a new paper surface to be exposed for recording purposes. The spring-trip 26 is attached to the side of the drawer at such a relative position to the other parts that at the same instant the swinging arm X releases itself from the spring-trip Y this spring-trip 26 will come into engagement with the lower portion of the trip 14 and operate the same, thereby releasing from engagement with the trip 14 the latch upon the lower portion of rocking beam 18, and such rocking beam, together with the key which is in engagement therewith, will at once be elevated to its normal position through the operation of the spring 16. At the same time the swinging arm X will return to its normal position. (Shown by the dotted lines in Fig. 1.) The back pawls P P operate by gravity or springs, and restrain the ratchet-wheel and spool from any reverse action, such restraining being advisable from the fact that the spools are loose upon the shaft.

It will be observed that when the keys are in their normal elevated position the lower end of the swinging pawl U is above the plane of the ratchet-teeth and preferably above the plane of the swinging arms T T, so that, although the swinging arms corresponding to all the ratchet-wheels are operated by the motion of the drawer, it will affect only the single ratchet-wheel and spool for which the corresponding key has been depressed.

Having thus described my invention, what I claim to have invented, and desire to secure by Letters Patent, is—

1. In a manual recorder and cash-drawer, the combination of a shaft, paper-spools loosely journaled thereon, ratchet-wheels carried by said spools, rocking arms attached to said shaft, a swinging lever rigid with the shaft, a series of depressing-keys, one for each shaft, mechanism operated by the depression of any one of said keys for swinging said lever and rocking said arms, and pawls normally held out of contact with said ratchet-wheels, any one of said pawls being thrown into contact with the adjacent ratchet-wheel and actuated to turn the latter by its corresponding rocking arm and key when the latter is depressed, substantially as described.

2. In a manual recorder and cash-drawer, the combination of a shaft, paper-spools loosely journaled thereon, ratchet-wheels carried by said spools, rocking arms attached to said shaft, a swinging lever rigid with the shaft, a series of depressing-keys, one for each shaft, mechanism operated by the depression of any one of said keys for swinging said lever and rocking said arms, and a pawl attached to each of said keys and normally held out of engagement with its corresponding ratchet-wheel, said pawl being thrown into engagement therewith by its corresponding rocking arm when the key is depressed, substantially as described.

3. In a manual recorder and cash-drawer, the combination with the drawer and locking mechanism, of the depressing-key, the rocking beam engaging with and rocked by said key and operating to unlock the drawer, a latch carried by said rocking beam, a spring-trip 10 adapted to engage said latch and locking said rocking beam and key in their depressed condition, and a spring-trip 26, carried by the drawer and adapted, when the latter is opened, to engage said trip 10 and cause it to disengage the latch on the rocking beam, substantially as described.

4. In a manual recorder and cash-drawer, the combination with the drawer and locking mechanism, of the depressing-key, the rocking beam engaging with and rocked by said key and operating to unlock the drawer, a latch carried by said rocking beam, a spring-trip 10 adapted to engage said latch and locking said rocking beam and key in their depressed condition, a spring-trip 26, carried by the drawer and adapted, when the latter is opened, to engage said trip 10 and cause it to disengage the latch on the rocking beam, and a spring for raising the rocking beam and the key to their elevated position when the trip 10 is released from engagement with the latch, substantially as described.

5. In a manual recorder and cash-drawer, the combination of the depressing-key, the rocking beam engaging with and depressed by the action of said key, the latch upon the lower surface of said rocking beam, and the

spring-trip 10 adapted to engage with such latch and lock the same in the depressed condition, and the spring 16 interposed between the rocking beam and a supporting-pocket and operating to raise the rocking beam and the key to their elevated position when the catch 10 is released from engagement with the latch, and the spring-trip 26 located upon the cash-drawer and adapted to engage with and release the spring-trip 14 and thereby release the catch 10 when the drawer is open, substantially as described.

6. In a manual recorder and cash-drawer, the combination of the depressing-key, the rocking beam engaging with and depressed by said key, the dog attached to and elevated by one end of the rocking beam when the other end is depressed, the spring-jaws engaging with the catch upon the end of the cash-drawer and normally holding the same closed, and the wedge-shaped foot of the said dog adapted, when the dog is raised, to separate the jaws and release the drawer, substantially as described.

7. In combination with a depressing-key, a pawl or dog adapted to be moved into operative position by the depression of the key, a ratchet-wheel with which said dog engages upon the downward movement of the key, a swinging lever adapted to turn the shaft upon which the paper-spools are situated, and a rocking arm operated by said swinging lever and adapted to come in contact with said pawl or dog in order to give the forward motion to the ratchet and connected mechanism, substantially as described.

In witness whereof I have hereunto set my hand and seal in the presence of two witnesses.

GEO. S. KNIGHT. [L. S.]

Witnesses:
EDWARD TAGGART,
CHRISTOPHER HONDELINK.