(No Model.) 3 Sheets—Sheet 1.

H. A. ALM.

CASH REGISTER.

No. 381,520. Patented Apr. 24, 1888.

FIG. 1.

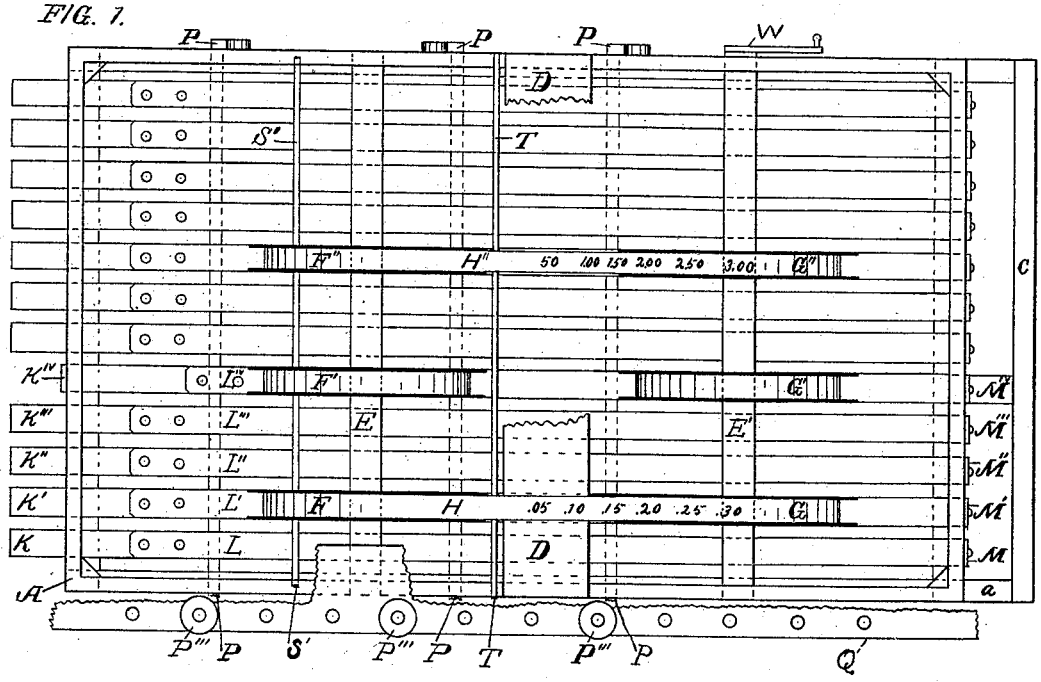
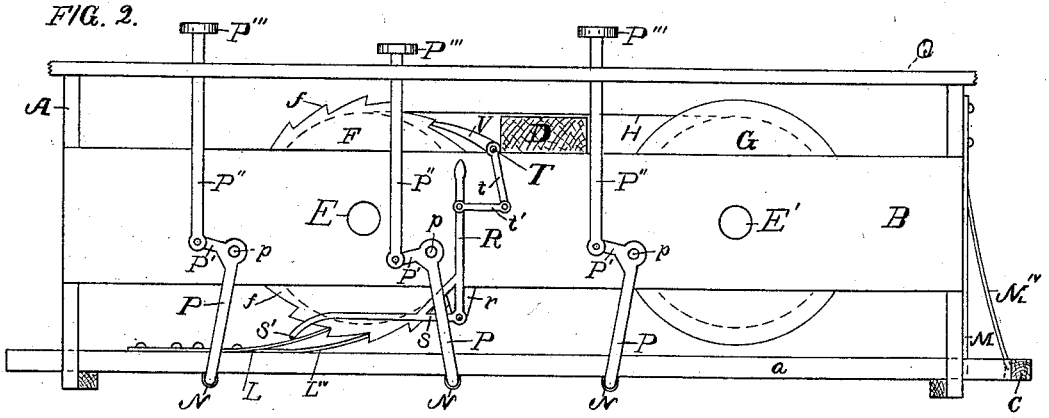


FIG. 2.



Witnesses
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By his Attorney
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(No Model.) 3 Sheets—Sheet 2.

H. A. ALM.

CASH REGISTER.

No. 381,520. Patented Apr. 24, 1888.

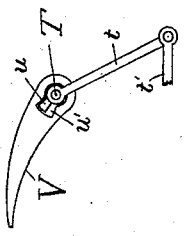

FIG. 3.

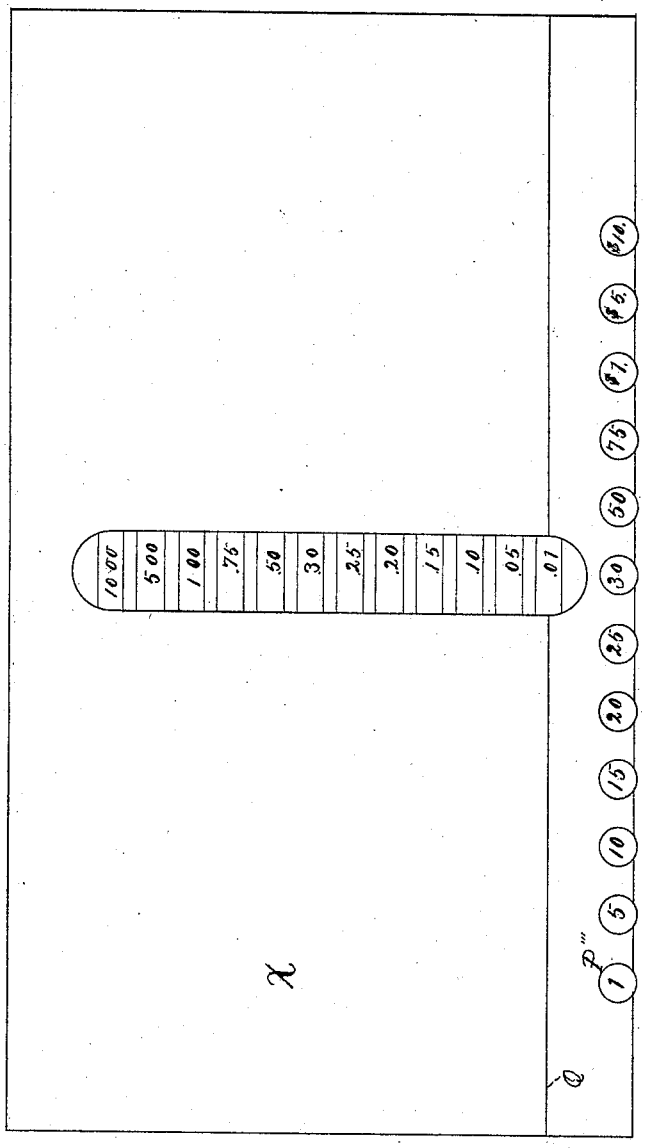

FIG. 4.

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(No Model.) 3 Sheets—Sheet 3.

H. A. ALM.

CASH REGISTER.

No. 381,520. Patented Apr. 24, 1888.

FIG. 5.

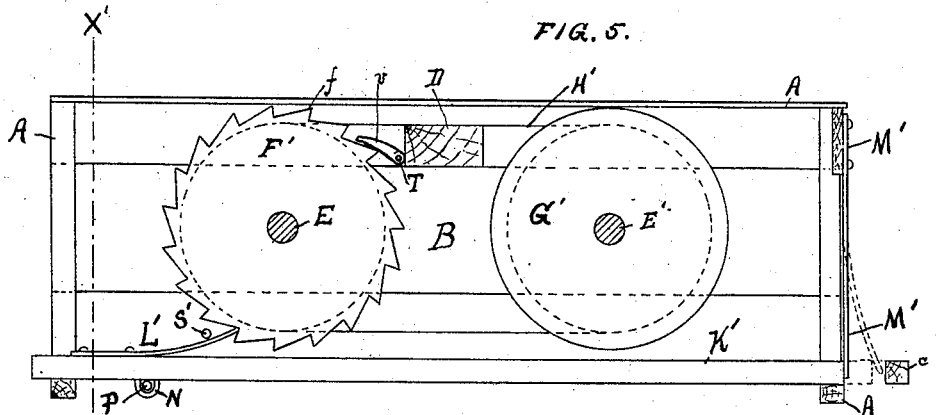
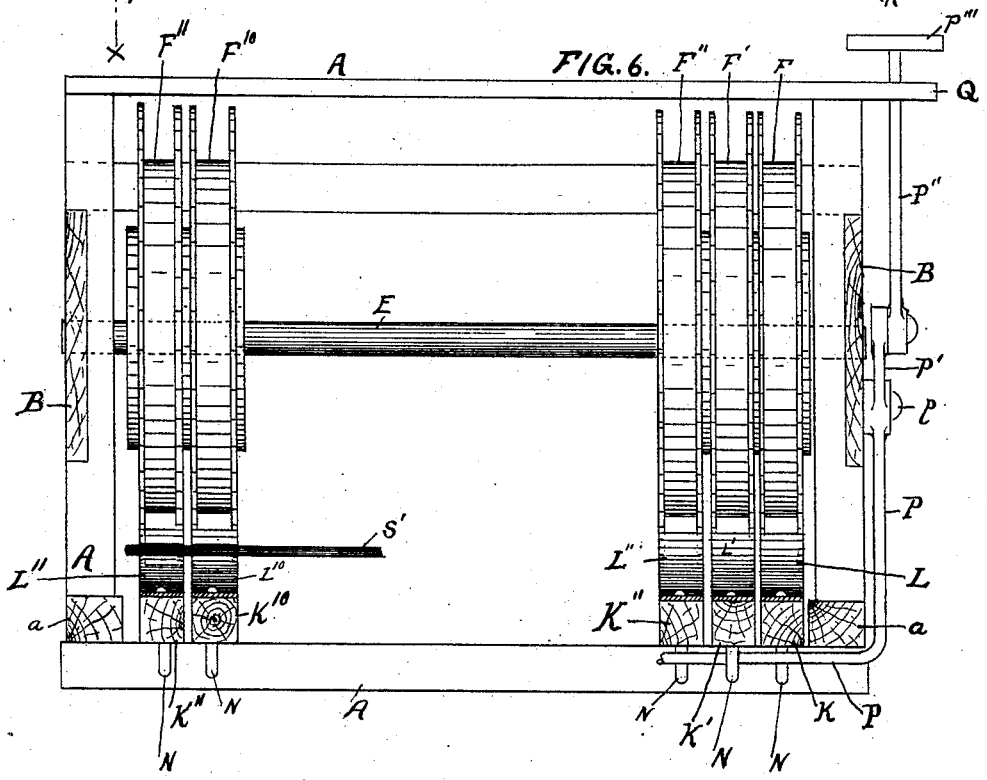


FIG. 6.



Witnesses.
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By his Attorney
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UNITED STATES PATENT OFFICE.

HANS A. ALM, OF RED LAKE FALLS, MINNESOTA.

CASH-REGISTER.

SPECIFICATION forming part of Letters Patent No. 381,520, dated April 24, 1888.

Application filed June 23, 1887. Serial No. 242,206. (No model.)

To all whom it may concern:

Be it known that I, HANS A. ALM, a citizen of the United States, and a resident of the city of Red Lake Falls, county of Polk, and State of Minnesota, have invented a certain new and useful Cash-Register, of which the following is a specification, reference being had to the accompanying drawings.

My invention has for its object to provide a simple, economical, and efficient device for making and exhibiting to the eye a constant summary of the cash receipts in stores and similar places for any given period—as a business day.

It consists of the mechanism hereinafter described and particularly claimed.

In the drawings, like letters referring to like parts throughout, Figure 1 is a plan view of my device detached from its inclosing-case. Fig. 2 is a side elevation of the same. Fig. 3 is a detail of one of the locking-pawls; and Fig. 4 is a plan view, on a reduced scale, of the device as it appears in its inclosing-case. Fig. 5 is a vertical longitudinal section through the entire device on line between the sliding bars marked K and K′, respectively; and Fig. 6 is a vertical cross-section on the line X X′ of Fig. 5, all of the tapes and part of the sliding bars having been removed.

A is a suitable skeleton frame, preferably rectangular and oblong in shape. B are side strips attached to or forming a part of the same.

D is a flat cross-tie attached to the tops of the strips B at their longitudinal center, serving as a brace and also as a face-plate under the registering-tapes.

E and E′ are shafts arranged crosswise of the skeleton frame and supported by bearings in the strips B. The shaft E is fixed and the shaft E′ is journaled so that it may turn in its bearings.

On the shaft E are placed a series of tape-drums, F F′ F″, &c., and on the shaft E′ are placed a corresponding series of tape-drums, G G′ G″, &c., all of which are loose on their respective shafts and are independent of each other; and the drums G G′, &c., are so attached to the shaft E′ (as between suitable friction-disks, not shown) that they may be made to turn with the shaft, as well as on the same. The ends or heads of the drums F are provided with ratchet-teeth *f* on their peripheries. These drums F and G, F′ and G′, &c., work together in pairs for winding and unwinding registering-tapes H H′, &c., which are attached to the same, the series F F′, &c., being the winding and G G′, &c., being the unwinding drums. Each of these tapes is divided into divisions which are multiples of a common unit, and numbered accordingly with the respective denominations in money in a constant direction. For example, the five-cent tape will be marked 5 cents at end of first unit of length, 10 at end of second-space division, 15 at third, and so on. The one-cent tape, twenty-five-cent tape, the dollar tape, and so on, will all be similarly graduated.

Under the tape-drums, and resting freely on the end cross-ties of the skeleton frame, are a series of independent sliding bars, K K′, &c., which are provided each with a spring-pawl, L L′, &c., for engaging with the ratchet-teeth *f* and turning the drums F F′, &c. A series of resistance-springs, M M′, &c., are attached to one end of the frame, and serve to oppose the sliding of the bars K K′ and to return them to their original position after the end of their forward stroke. The longitudinal bottom side girders, *a*, of the frame A are extended beyond the forward end of the frame, and are connected by the cross-tie *c* on a level with the ends of the sliding bars K, which serve as a stop, limiting the forward stroke or movement of said bars. In each sliding bar is an eyebolt or staple, N, through which passes the horizontal part of an operating-lever, P, which is provided with rigid vertical extensions or arms pivotally attached at their extremities to the opposite sides of the skeleton frame, as shown at *p*. One of the vertical arms of this lever P is provided with a bell-crank extension, P′. To the free end of the crank-arm P′ is pivotally attached an operating-key lever, P″, and extending upward through guides in a suitable index-plate, Q, and provided with a finger-disk, P‴. All the operating-keys are arranged in a common line on the index-plate, and each disk is marked with its proper unit denomination of money.

To pendent lugs *r* on the under sides of the strips B is pivotally attached a bell-crank lever, R, provided with horizontal arms S, extending inside the skeleton frame to the rear

of the shaft E, and the arms S are connected by a cross-rod, S′, which lies directly over the face of the spring-pawls L.

Across the frame, directly in front of the cross-brace D, is placed a rock-shaft, T, which is provided with a crank-arm, *t*, on one extremity, connecting, through a link, *t′*, with the vertical arm of the lever R. Loosely pivoted on this shaft T are a series of pawls, V, corresponding in number with the drums F and engaging with the ratchet-teeth *f* on the same, for locking the said drum after each of its forward movements and preventing it from slipping or turning backward on the return of its sliding bar. These pawls have only a limited movement on the shaft T, and are made to turn with the shaft by a projecting pin or feather, *u*, which rests in a recess, *u′*, cut out of the pawl, or in any other suitable way.

By pushing the vertical arm of the lever R toward the rear of the frame the pawls V are raised upward and the pawls L are pressed downward out of engagement with the ratchet-teeth *f*, and the registering-tapes may be rewound back onto the drums G, ready for the next day's work, in any suitable manner, as by the crank W on one end of the shaft E′. Any suitable box or case, as X, may be used for inclosing the mechanism, the top of which should be cut away directly over the dial-plate D, for exposing to the eye the amounts registered on the different tapes.

As many sets of registering-tapes, drums, and operating-levers are used as it is desired to have units of denomination.

As before stated, each tape is graduated, beginning with some definite unit, and marked with different sums which are multiples of the initial unit denomination—as "5 cts.," "10 cts.," "15 cts.," &c.—any two of which are a like distance apart on the registering-tape. Each stroke on the operating-lever for that particular arm and its tape will move the tape forward one unit of distance. So with all the others, the distance varying with the initial unit adopted, but all the tapes bringing their figures into the cross-line directly over the dial-plate D seen through the slot in the top of the case.

The operation is evident from the description now given. The register is kept in some most convenient position—as, near the money-drawer. At the beginning of the day's business the tapes are all wound back onto the unwinding-drums G, and the cross-line on the dial-plate reads "zero." Whenever the clerk receives any money he strikes the proper key or combination of keys to register the given amount, and at any time—as at the close of the day's business—the total receipts up to that moment will be shown by simply footing the figures on the cross-line over the dial-plate. This register was especially designed to meet the necessities of country stores and small shops, where an organized system of help, on the principle of a division of labor and any elaborate system of book-keeping, is impracticable.

It is a very serviceable check, also, on petty thefts, and effects a great saving in time over memorandum-tablets and blotter-books.

I have shown and described a specific form of lever mechanism for operating my drums and registering-tapes, all of which is of my invention; but I do not wish to be confined to this alone. It will readily be understood that other forms and arrangement of levers may be equally well used for the purpose without departing from the spirit of my invention.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. The combination, with a suitable supporting-frame, as A B, of drum-supporting shafts E and E′ on said frame, the tape holding and unwinding drum G′, mounted on the shaft E′, the tape receiving and winding-up drum F′, mounted on the shaft E and provided with the ratchet-teeth *f*, a registering-tape, H, marked at fixed common distances apart with multiple denominations of a common money unit mounted upon said drums and unwinding from one to the other, a sliding bar, K, provided with a spring-pawl, L, for engaging said ratchet-teeth *f*, a pivoted bell-crank lever, P, for actuating said sliding bar, and a retraction-spring, M, for returning said sliding bar to its normal position after its stroke, substantially as and for the purpose set forth.

2. In a cash-register, the combination, with the tape holding, unwinding, and winding-up drums F and G, the ratchet *f*, attached to the wheel F, the sliding bar K, provided with the spring-pawl L for engaging said ratchet, the pawl-shaft T, the locking-pawl V, mounted on said shaft and having a limited movement independent of the shaft, the depressing-rod S′ directly above the pawl L, a crank, *t*, attached to the shaft T, the pivoted bell-crank lever R, having one arm rigidly attached to the rod S′, and the link *t′*, connecting the other arm of said bell-crank lever to the crank *t*, substantially as described.

HANS A. ALM.

In presence of—
JOHN M. BOYLE,
JAMES MEEHAN, Jr.