

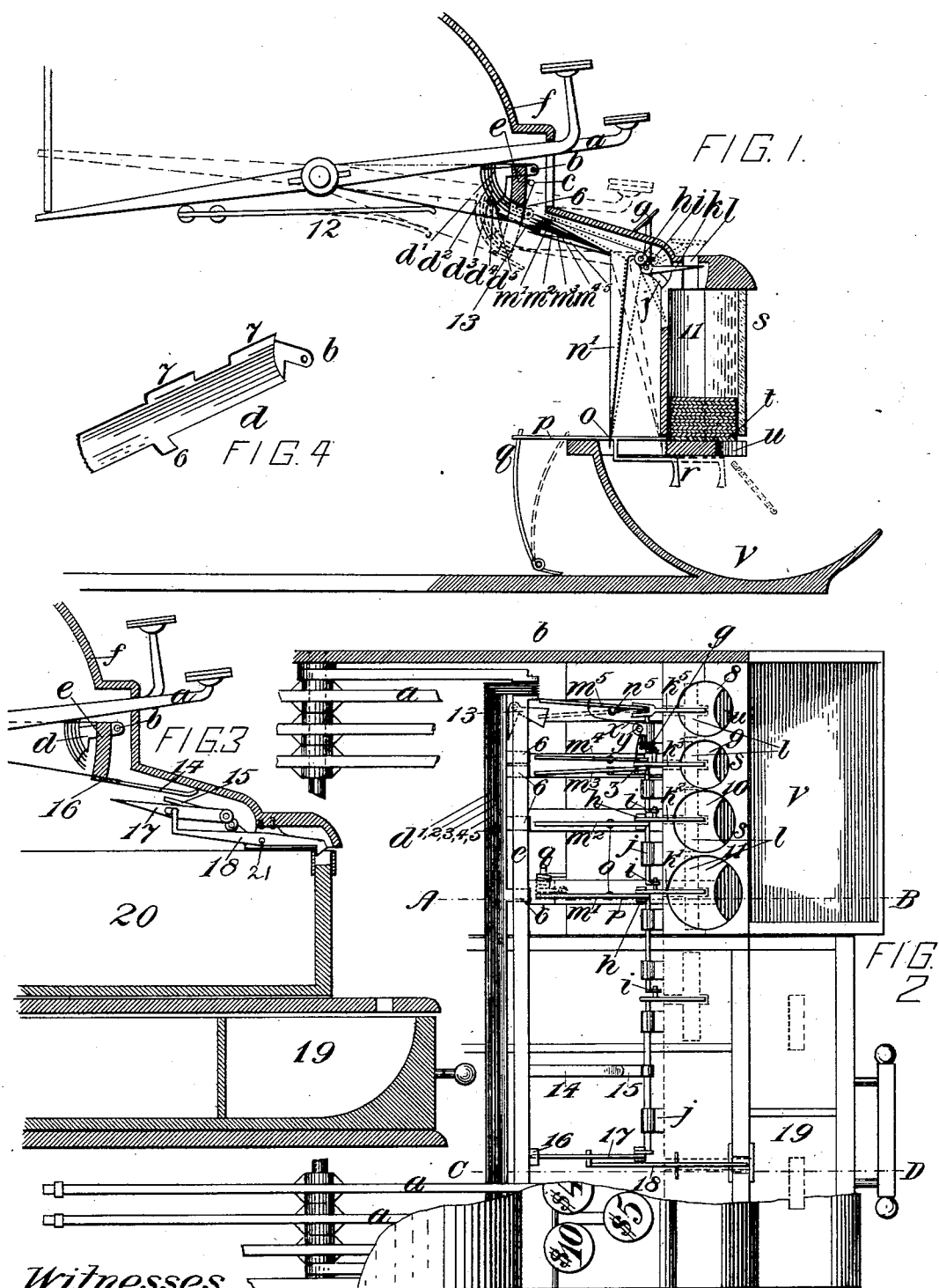
(No Model.)

3 Sheets—Sheet 1.

G. W. HOLLINGSWORTH.
AUTOMATIC CHANGE MAKER.

No. 590,435.

Patented Sept. 21, 1897.



Witnesses

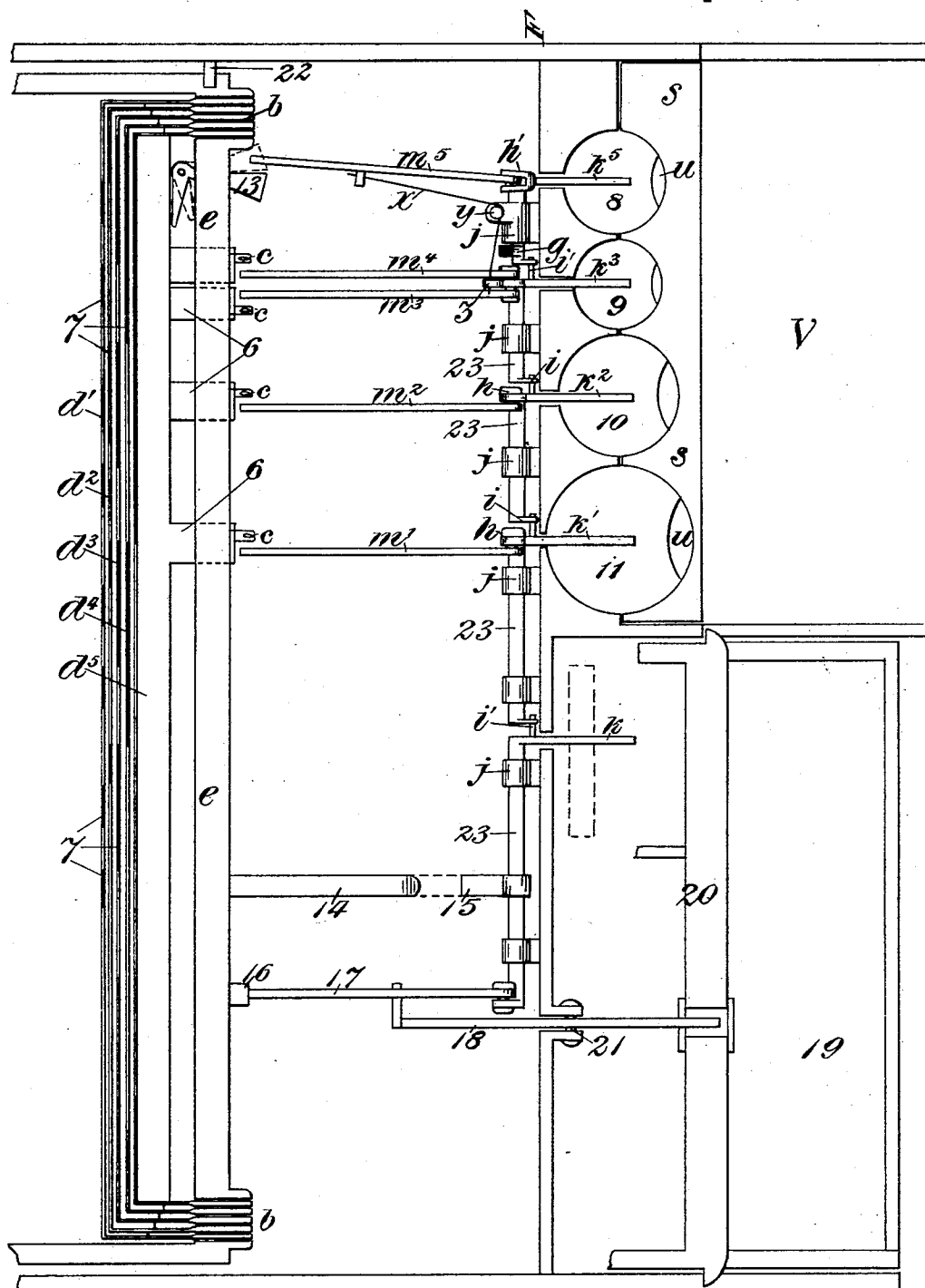
Marv E. Alden
Max. Gibut

Inventor
George W. Hollingsworth

G. W. HOLLINGSWORTH.
AUTOMATIC CHANGE MAKER.

No. 590,435.

Patented Sept. 21, 1897.



Witnesses
Chas. H. Hurminger
Chas. H. Hurminger

FIG. 5

Inventor
Geo. W. Hollingsworth

UNITED STATES PATENT OFFICE.

GEORGE W. HOLLINGSWORTH, OF CINCINNATI, OHIO.

AUTOMATIC CHANGE-MAKER.

SPECIFICATION forming part of Letters Patent No. 590,435, dated September 21, 1897.

Application filed November 18, 1893. Serial No. 491,336. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. HOLLINGSWORTH, a citizen of the United States, residing at Cincinnati, in the county of Hamilton, State of Ohio, have invented a new and useful Automatic Change-Maker, of which the following is a specification.

My invention relates to the improvement of change-makers, and is designed to be used separately or in connection with a cash-register the keys of which operate the ejector-slides and a bill-drawer incidentally as required.

My objects are to automatically discharge into an open receptacle the exact change simultaneously with the registration of the sale and by the same stroke of the key, thus relieving the clerk of the necessity of figuring the amount of change due the customer and counting it out, avoiding any possibility of mistake, and closing the drawer after each sale. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figures 1 and 3 are vertical sections through A B and C D, respectively, on Fig. 2. Fig. 2 is a plan view of the mechanism with most of the casing and keys removed. Fig. 4 shows part of one of the selectors. Fig. 5 is an enlarged view of part of the construction shown in Fig. 2. Fig. 6 is a vertical section through E F on Fig. 5. Figs. 7 and 8 are vertical sections referred to later.

The same characters represent similar parts throughout.

The coin-tubes 8, 10, and 11 for five-cent, twenty-five-cent, and fifty-cent pieces, respectively, are each provided with one ejector-slide $p p p$, but the coin-tube 9 for ten-cent pieces has two slides, one over the other, as shown in Fig. 6. This is necessary, as two dimes are often required in making change. Each of the five slides is provided with a spring $q q q$ and also a bell-crank lever pivoted at $h h h$. The object of the bell-crank lever is to transfer the vertical motion of the selector-trips $6 6 6$ to the horizontal motion of the slides. The arms $n' n^2 n^3 n^4 n^5$ of the bell-cranks pass through the slides at $o o o$. The other arms $m' m^2 m^3 m^4 m^5$ engage the trip projections $6 6 6$ of the selectors.

The selectors $d' d^2 d^3 d^4 d^5$ are segments of concentric cylinders with centers at $b b$ on

the U-shaped bar e . The ends of said bar turn on the same axis as the keys a and the middle part passes entirely across the series of keys and is held up stiffly in position by the springs 12. A stop 22 is provided, which holds the bar e about a quarter of an inch from the keys a . The selectors have prearranged projections $7 7 7$ on their upper edges (see Fig. 4) and are held up against the keys by the small springs $c c c$.

It will be seen that when a key descends it will carry down with it one or more of the selectors about a quarter of an inch before the key strikes the bar e . This sends the trip projections $6 6$ out in front of the bar to engage their respective bell-crank arms $m' m^2 m^3 m^4 m^5$. Then the bar e descends, forcing down the bell-crank arms, and consequently the ejector-slides are forced forward, discharging the coins. Now it is evident that any combination of coins may be discharged by arranging the selector projections $7 7$.

The projections on each of the five selectors are as follows: On the five-cent selector d' they are under the ninety-five, eighty-five, seventy, sixty, forty-five, thirty-five, twenty, and ten cent keys. On the first ten-cent selector d^2 they are under the ninety, eighty-five, eighty, sixty-five, sixty, fifty-five, forty, thirty-five, thirty, fifteen, ten, and five cent keys. On the ten-cent selector d^3 they are under the eighty, fifty-five, thirty, and five cent keys. On the twenty-five-cent selector d^4 they are under the seventy-five, seventy, sixty-five, sixty, fifty-five, twenty, fifteen, ten, and five cent keys. On the fifty-cent selector d^5 they are under the fifty, forty-five, forty, thirty-five, thirty, twenty-five, twenty, fifteen, ten, and five cent keys. This arrangement is different from other machines in that the value of the key struck is not the same as the discharge—that is, the seventy-five-cent key does not discharge seventy-five cents, but twenty-five cents. In fact, the keyboard is simply reversed. The ninety-five-cent key discharges five cents, the ninety-cent key ten cents, and so on through the series, the key always discharging the complement of its value to one dollar. Therefore as the key represents the amount of the sale the discharge will be the change due from one dollar—that is, the money received being one

dollar and the sale thirty-five cents when that key is struck the discharge will be sixty-five cents, the amount of change due. It is evident this would not be if a fifty-cent piece had been received instead of a dollar. Therefore I have provided a jointed shaft or a series of short pieces 23 23, turning in the bearings *j j j*. To each section of this shaft is fixed one of the crank-arms *k k' k² k³ k⁵*, that extend across the slot-openings *l l l* in the path of the coins deposited, also a short crank-arm which carries the pivots *h h h* of the bell-crank levers, the object being to provide a construction whereby any coin that passes through one of the slots *l l* will carry the slot-arms down and the bell-crank levers forward away from the trips 6 6 6. I also provide the small crank-arms *i i i* and the pins *i' i' i'* (similar to a lathe dog and lug) to carry the motion of one section of the shaft 23 to the next higher denomination or to the left. Consequently the bell-crank levers for all those sections are also drawn forward out of reach of the trips. Thus it is evident that the discharge will be limited to the tubes to the right or coins of less value than the smallest one received, which is the object of this part of the mechanism. Thus the exact change will be discharged into the receptacle *v* whenever a one-dollar, fifty-cent, or twenty-five-cent piece is received; but owing to the irregular progression in the values of the smaller coins it is necessary to modify the five-cent discharges when a dime is received. It is not necessary to modify the ten-cent discharge because when a dime is received none is discharged.

When a twenty-five-cent piece is received, the change must be naught, five cents, ten cents, fifteen cents, and twenty cents for twenty-five, twenty, fifteen, ten, and five cent sales, and eliminating the dimes we have naught, five cents, naught, five cents, and naught for these sales, respectively; but should dimes be received instead of a twenty-five-cent piece the change will be five cents, naught, five cents, naught, and five cents for the sales, respectively, or exactly the reverse for each sale. It is also evident that this will be the case if twenty-five cents, fifty cents, or seventy-five cents be added to the sales and money received. Therefore it is necessary to reverse the action of the five-cent trip whenever a dime is received for a sale. For this purpose I provide a special trip-piece 13, working horizontally in conjunction with the five-cent selector *d'*; also a rigid wire *x*, which passes through a small arm *z* on the ten-cent section of shaft 23. Said wire passes loosely around a stanchion *y* and the other end is attached to the arm *m⁵*. Therefore when the dime-shaft has been turned forward the rigid wire *x*, turning at *y*, will bring the arm *m⁵* from its normal position to a position under the trip 13 and is operated in that position whenever the five-cent selector is unused; but as the trip 13 takes the position over the nor-

mal position of the arm *m⁵* (shown by the dotted lines on Fig. 5) whenever the five-cent selector is used the trip 13 passes down and no discharge is made. The reverse happens when the arm *m⁵* is in normal position or when no dime has been received. Thus the purpose of reversing the action of the five-cent discharge is accomplished.

It will be noticed that there is no coin-tube for the silver dollar. The reason is there are also paper dollars in circulation, and although it is feasible to not only handle the silver dollar mechanically, but also all the denominations of paper money, yet we deem it more practical to use a drawer for all except fractional currency. The silver dollar is deposited into the drawer through a slot similar to the others. Said slot is also provided with an arm *k*, attached to the last or one-dollar section of the shaft 23. To this section are also attached the arm 15 and a small crank carrying the arm 17, similar in construction to the small cranks carrying the bell-crank. Said arm 17 engages the permanent trip 16 only when it is not drawn forward in similar manner to the bell-cranks. The drawer-catch 18 is pivoted at 21 and is operated by the arm 17. Thus the drawer is released whenever no coin has been placed in any of the slots. The reason for this is that when no coin has been received there must be a bill or check to pay for the sale. The arm 15, attached to the dollar-section of the shaft, is brought up against the arm 14, attached to the bar *e*, by the quarter-turn made by the shaft. The arm 14 pushes the arm 15 back into place every time the bar *e* descends on every sale, and thereby the entire shaft is thrown back into normal position through the crank-arms *i i* and pins *i' i'*.

The small key or button *g* (shown in Fig. 8) is attached to the five-cent section of the shaft 23 and is used to disconnect all the bell-cranks, so a sale may be registered independently of the change-maker.

The front half *s* of the coin-tubes is removable and made of glass, so the coins may be readily seen and removed or supplied.

Having described the functions of the parts, it is only necessary to demonstrate them collectively.

The clerk having received one or more coins for a sale places them in their respective slots *l l l*. Such of the slot-arms as are of equal or greater nominal value are carried down, leaving the lesser arms with their bell-cranks in normal positions to engage the trips, but only such trips as are indicated by the selectors under the key struck engage the bell-cranks. The depressing of the upper arm of the bell-cranks forces the lower arms and slides forward and discharges the coins into the open receptacle *v*. Then it is only necessary for the clerk to pick up the change and hand it to the customer without any mental calculation. If a bill has been received for the sale, all the bell-cranks, as well as the drawer trip-

arm 17, remain in position, and when a sale is registered by striking the required key the full fractional change is discharged and the drawer opens. The clerk deposits the bill and closes the drawer. As an example, say the sale is sixty cents and cash received fifty cents and twenty-five cents, equals seventy-five cents. The coins are placed in their respective slots. This leaves both of the ten-cent and five-cent bell-cranks normal. Now referring to the prearranged projections under the sixty-cent key, we find them on the twenty-five cent, first ten-cent, and five-cent selectors, but the twenty-five-cent bell-crank has been drawn out of reach of the trip, so that when the sixty-cent key is struck only ten cents and five cents are discharged, making fifteen cents, the amount of change due. The drawer does not open in this case.

The description being complete, what I claim, and request Letters Patent for, is—

1. In a change-maker having coin-tubes the combination therewith of a set of keys a transverse bar operated by the keys, a set of selectors attached to said bar with projections arranged slightly above said bar to first engage the keys; and trips which upon movement of the bar engage the ejector-slides.

2. In a change-maker having coin-tubes provided with ejector-slides and receiving slot-openings, the combination therewith of a set of keys, a set of slide-selectors operated by the keys and arm across each of the slot-openings to limit the action of the selectors.

3. In a change-maker having coin-tubes provided with ejector-slides and receiving coin-slots, the combination therewith of a set of keys a set of slide-selectors operated by the keys an arm across each of the slots and mechanism to communicate the action of one of the slot-arms to the slot-arm of the next higher denomination.

4. In a change-maker having coin-tubes with receiving-slots and ejector-slides, keys and selectors for the proper discharge of coins the combination therewith of a set of arms one across the receiving-slot of each tube, a jointed shaft to which the slot-arms are attached to prevent discharge from one or more of the tubes.

5. In a change-maker having coin-tubes with ejector-slides and receiving coin-slots the combination therewith of a jointed shaft or rods each with cams operating the next and each section of said shaft having an arm in the coin-slots, bell-cranks connected with each slide and pivoted eccentrically on the several sections of the shaft and key-operated trips engaging the slides through the bell-cranks as and for the purpose described.

6. In a change-maker having coin-tubes provided with ejector-slides and receiving-slots, a set of key-operated trips and selectors, the combination therewith of shiftable arms attached to the ejector-slides and engaging the trips, and a second set of arms in the receiving-slots and attached to the slide-arms to shift the latter from normally engaging with the trips for the purpose described.

7. In a change-maker with coin-tubes provided with ejector-slides and coin-slots also keys, trips and arms operating the ejector-slides the combination therewith of a shiftable five-cent trip, a shiftable five-cent arm engaging the trip and ejector-slide; and a ten-cent-receiving arm; also an arm attached to said receiving-arm and also attached to the shiftable five-cent arm to shift the position of the latter relative to the normal and temporary position of said trip or any simple mechanism to reverse the action of the five-cent trip when a dime is received.

8. In a change-maker having coin-tubes with receiving-slots and ejector-slides the combination therewith of a set of key-operated trips, shiftable slide-arms engaging the trips and arms or other mechanism in the slot-openings to shift the slide-arms, a sectional shaft to which the slot-arms are attached, cams attached to each section of the shaft to operate the next section so as to shift the slide-arms of greater nominal value, and mechanism attached to the ten-cent-slot arm to reverse the action of the five-cent trip, all substantially as described.

GEORGE W. HOLLINGSWORTH.

Witnesses:

MAX GIBERT,

MARY C. ALDEN.