(No Model.) 2 Sheets—Sheet 1.

W. H. FRUEN.

MECHANISM FOR CHANGING COINS.

No. 344,824. Patented July 6, 1886.

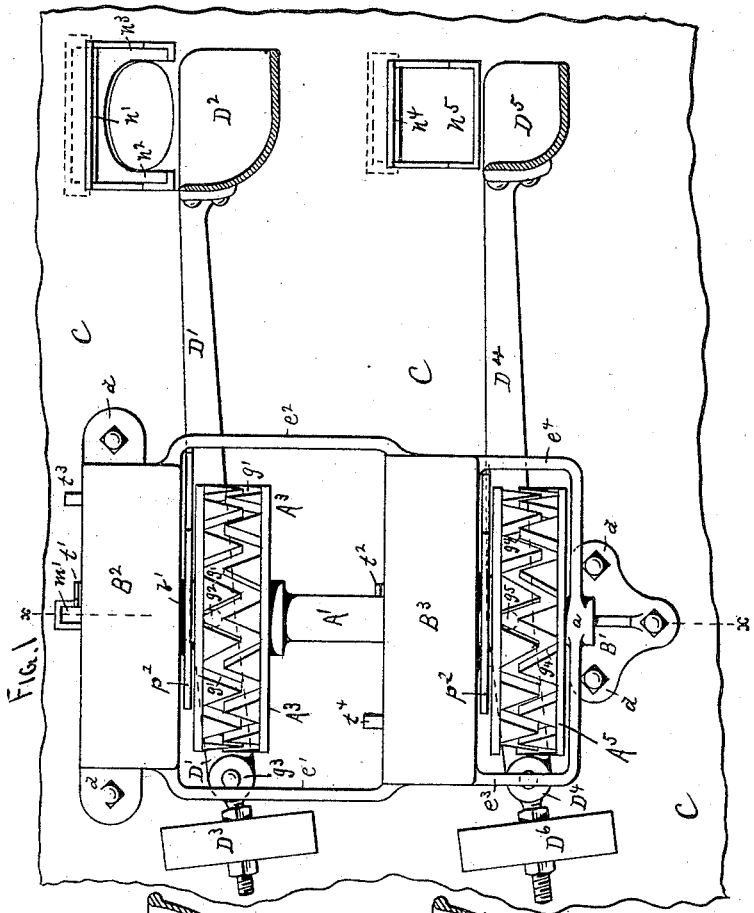

FIG. 1.

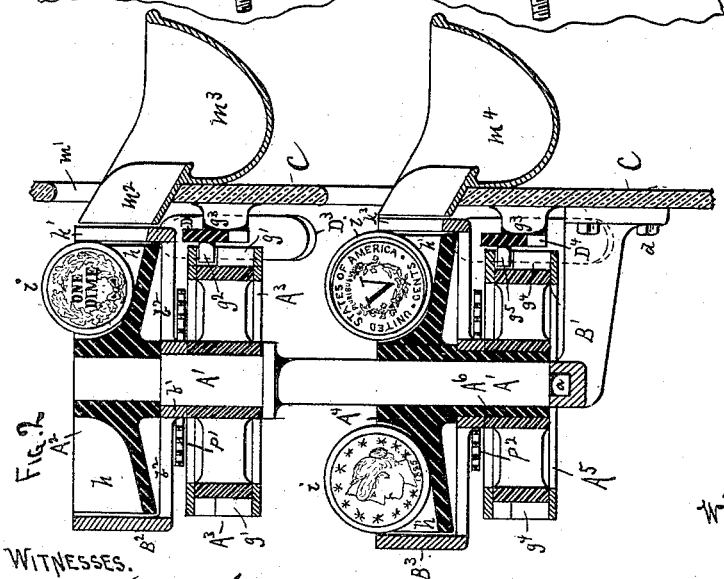

FIG. 2.

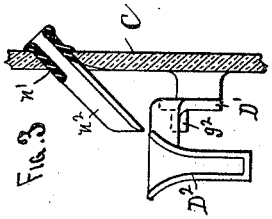

FIG. 3.

WITNESSES.
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(No Model.)

2 Sheets—Sheet 2.

W. H. FRUEN.

MECHANISM FOR CHANGING COINS.

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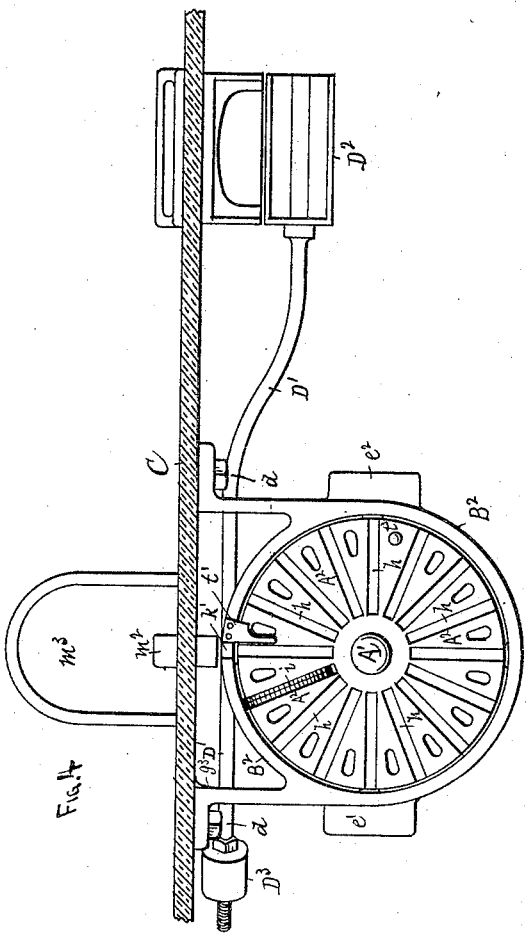

Fig. 4

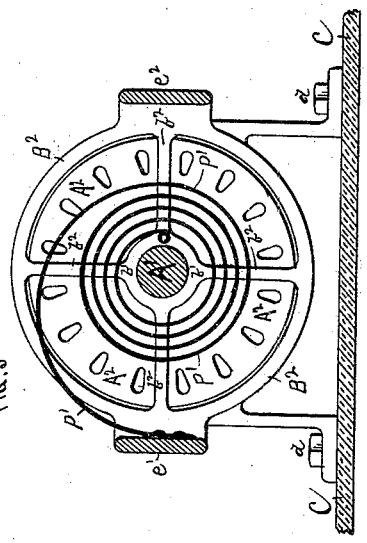

Fig. 5

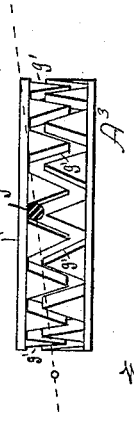

Fig. 6

WITNESSES.

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UNITED STATES PATENT OFFICE.

WILLIAM HENRY FRUEN, OF MINNEAPOLIS, MINNESOTA.

MECHANISM FOR CHANGING COIN.

SPECIFICATION forming part of Letters Patent No. 344,824, dated July 6, 1886.

Application filed September 28, 1885. Serial No. 178,493. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HENRY FRUEN, a citizen of the United States, and a resident of Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Automatic Money-Changing Mechanisms, of which the following is a specification.

This invention relates to devices for automatically returning the correct change to passengers or customers in street-cars, stores, &c.; and it consists in the construction, combination, and arrangement of parts, as hereinafter shown and described.

In the drawings, Figure 1 is a side elevation from the interior of the casing inclosing the mechanism. Fig. 2 is a sectional elevation on the line *x x* of Fig. 1. Fig. 3 is a sectional detail of one of the coin-receiving pockets and one of the operating-levers. Fig. 4 is a plan view of Fig. 1. Fig. 5 is a bottom plan view of a portion of Fig. 4. Fig. 6 is a detached view of one of the grooved drums, showing more clearly the manner in which the lever acts upon it.

A′ represents an upright shaft, stepped by its lower end at *a* in a hanger, B′, and supported at its upper end by a collar, *b*′, the latter being the hub of a ring, B^2, to which it is connected by webs or arms b^2.

C represents the frame or casing inclosing the mechanism, only a portion of one side being shown, and to this side C the ring B^2 and step B′ are secured by bolts or screws *d*, as shown. I have shown in the drawings another ring, B^3, surrounding the shaft A′ between the hanger B′ and ring B^2, the two rings being connected by ribs $e' e^2$, and the ring B^3 and the hanger B′ being shown connected by ribs $e^3 e^4$, the rings B^2 B^3, the collar *b*′, arms b^2, hanger B′, and ribs $e' e^2 e^3 e^4$ being cast in one piece.

Within the ring B^2, upon the shaft A′, is secured a disk, A^2, while upon the shaft A′, beneath the disk A^2, is secured a drum, A^3, having a zigzag groove, *g*′, formed in its periphery, as shown. The drum A^3 and the disk A^2 being both secured to the shaft A′, the revolution of the drum will be communicated to the disk. The disk A^2 is provided with grooves *h*, equidistant from each other, and radiating from the center, and formed with downwardly and outwardly inclining bottom surfaces, as shown. These radiating grooves *h* are intended to support coins *i* upon their edges within them, as shown, and their inclined bottoms will cause the coins to rest with their rims against the interior of the ring B^2 and roll out from the disk A^2 through a slit, *k*′, in the ring when the disk is revolved, so as to bring the coins opposite the slit, as hereinafter described. Opposite the slit *k* the side C of the casing is pierced with a slot, *m*′, and into this slot is secured a trough-shaped casting, m^2, forming a conduit for the coins *i* as they roll out through the slit *k*′ to guide them into a pocket, m^3, on the outside of the casing C. By this means, if the radiating grooves *h* be filled with coins and the disk A^2 revolved, the coins will be carried around with it and be held in place in the disk by the stationary ring B^2 until the grooves *h* come opposite the slit *k*′, when the coins will roll out through the slit and conduit m^2 into the pocket m^3.

As before stated, the drum A^3 has a zigzag groove, *g*′, formed in its rim, and into this groove a pin, g^2, projecting from a lever, D′, is adapted to fit, the lever being pivoted at g^3 to the casing C and extending alongside the casing and provided on its free end with a coin-receiver, D^2. The rear end of this lever D′ is provided with an adjustable counter-weight, D^3, on the end opposite the receiver D^2, so that the lever may be counterpoised, as required. Just above the receiver D^2 a coin-slot, *n*′, is formed through the side C of the casing, and from the inside of this slot two inclined arms, $n^2 n^3$, project, the slit *n*′ being just wide enough to receive a coin of a predetermined denomination—usually a silver quarter of a dollar—and the arms $n^2 n^3$ placed just far enough apart to support the coin and guide it into the receiver D^2. The slot *n*′ will not admit a coin larger than the one for which it is made, while if a smaller coin be inserted it will drop down between the arms $n^2 n^3$ behind and not into the receiver D^2, as will appear from an examination of Fig. 3. Thus the predetermined coin only will find its way into the receiver D^2. The lever D′ will be so delicately poised by the counter-weight D^3 that the weight of the coin in the receiver will be sufficient to overcome its inertia and cause

it to move downward, thus causing the pin g^2 to move downward against one of the angular sides of the zigzag groove g' and revolve the drum A^3 a short distance. When the lever D′ has moved downward a sufficient distance, the coin will roll out of the receiver D^2, which will release the lever D′ and cause the counter-weight D^3 to return it to its former position, this return movement of the lever causing the pin g^2 to act upon the next inclined side of the groove g' and revolve the drum another short distance.

The groove g' in the drum A^3 is formed with the same number of "zigzags" as there are coin-grooves h in the disk A^2, so that each complete stroke of the lever D′ will revolve the disk A^2 the distance of one of the coin-grooves, so that one of the grooves h will be brought opposite the slit K′ at each stroke of the lever. Thus, if each of the grooves h be supplied with change for a quarter, or two ten-cent pieces and one five-cent piece, set on their edges, the dropping of the quarter into the slit n' will by its action on the lever D′ cause the contents of one of the grooves h to roll out into the pocket m^3, while the quarter will be dropped from the receptacle D^2 into a box or drawer placed to receive it. The ring B^3 is provided with a disk, A^4, having radiating coin-grooves h', a drum, A^5, with zigzag groove g^4, a lever, D^4, having coin-receiver D^5, and counterpoise D^6, and with a pin, g^5, adapted to act within the groove g^4, as shown. A coiled spring, P′, will be arranged above the drum A^3, and a similar spring, P^2, will be arranged above the drum A^5, the inner end of each spring being connected to its respective drum, and the outer end of each spring being connected to the fixed frame or to the arms or connecting-bars e' e^2 e^3 e^4, as shown, so that they will cause the drum A^3 A^5 to be revolved in a certain direction. These springs are just about long enough and powerful enough to revolve the drums about one full revolution, so that they will insure the action of the drums in the proper direction.

Attached to the top of each ring B^2 and B^3 is a stop-plate, t' t^2, and projecting up from each of the radially-grooved coin-disks are stop-pins t^3 and t^4, adapted to strike against said stop-plates t' t^2, and prevent the disks being turned backward beyond a certain point. The disks A^2 and A^4 being filled with coins i, the levers D′ and D^4 will be operated by hand and the disks turned backward, (the form of the zigzag grooves g' g^4 permitting the backward movement of the disks as well as their forward) movements, until the stop-pins t^3 t^4 strike their respective stop-plates t' and t^2. Then when the coins are dropped upon the receivers D^2 or D^5 and the levers D′ or D^4 moved downward, the coiled springs, holding the edges of the zigzag grooves g' g^4 in drums A^3 A^5 against the pins g^2 g^5 in the levers D′ and D^4 will cause the pins to move down the zigzag grooves in the proper direction. The drums might be operated without the springs P′ P^2, but the presence of the springs cause the drums to act more positively and always in the right direction. Ordinarily when used on street-cars only twenty cents in change will be placed in each of the grooves h, as the remaining five cents will be retained as fare, the passenger depositing the twenty-five cents and receiving his correct change less the five cents fare. When used to return the full amount deposited, then the grooves h will be made large enough to hold the required change. Of course it will be readily understood that the device may be modified to any required extent to suit almost any transaction. One simple modification which will generally be made will be to multiply the coin-holding disks, operating drums, and levers, so as to return the proper change for the different coins—such as dollars, half-dollars, quarter-dollars, dimes, and sometimes even for coins of less value. Then, again, an additional set of the disks and levers may be used to furnish tickets or checks instead of change.

As before stated, I have shown in the drawings a second ring, B^3, and within this ring is shown a second disk, A^4, similar to the disk A^2, and having similar radiating coin-supporting grooves, h'. This ring B^3 is provided with a slit, k^3, in one side, and a coin-receiving pocket, m^4, similar to the pocket m^3 in the side C opposite to it. It is necessary that this second or lower set of devices should operate independently of the upper set, hence the disk A^4 is shown with an extended hub, A^6, on which the drum A^5 is keyed or otherwise fastened, while the hub runs loosely upon the shaft A′. By this means the disk and drums A^4 A^5 are coupled together, so that they will revolve together, while at the same time the shaft A′ will revolve within them without affecting them. Opposite the receiver D^5 is a slit, n^4, through the side C, and leading down from this slit is an inclined slide, n^5, to guide the coin into the receiver D^5. The slit n^4 will be made just large enough to receive a dime, and the lever D^4 will be so delicately poised by the counter-weight D^6 that the weight of a dime dropped into the receiver D^5 will be sufficient to overcome its inertia and revolve the disk A^4 and discharge the coins from one of its grooves h' into the pocket m^4 at each stroke of the lever D^4. The grooves h' in the disk A^4 will be made large enough to each hold a five-cent coin if the device is used on street-cars and one fare is to be retained, or two five-cent coins if the whole value of the dime dropped into the slit n^4 is to be returned. One set of disks, drums, levers, &c., may be arranged to furnish sets of tickets or checks instead of change, if required, but the general construction and mode of operating would be the same.

It is evident that the device may be extended to any limit to adapt it to return change for any or all denominations of coins by merely multiplying the sets of disks, drums, levers,

coin-receivers, &c.; but usually the number will not exceed five, viz: change for dollars, half-dollars, quarter-dollars, and dimes, and one set to supply tickets, as hereinbefore shown. The device may also be arranged to furnish change for five-cent coins, or tickets for five-cent coins.

Some other equivalent mechanism might be employed to operate the radially-grooved disks A^2 A^4 than that shown, and I do not wish to be limited to the construction shown, although I prefer the construction shown as being the most simple and accurate for the purpose.

Having thus described my invention, what I claim as new is—

1. A disk having radiating coin-supporting grooves, and a stationary ring surrounding said disk, and having a slit in one side with which the grooves in said disk successively coincide, in combination with mechanism whereby said disk may be rotated the distance of one of said radiating grooves by the weight of a coin, substantially as set forth.

2. A disk having radiating coin-supporting grooves, and a stationary ring surrounding said disk, and having a slit in one side with which the grooves in said disk successively coincide, in combination with a drum connected to and rotating with said disk, said drum having a zigzag groove in its rim, a pivoted lever having a pin which engages said zigzag groove, a coin-receiver mounted on one end of said lever, and a counterpoise on the other end thereof, substantially as set forth.

3. A disk, A^2, having coin-supporting grooves *h*, stationary ring B^2, surrounding said disk, and having slit *k'*, a drum, A^3, connected to and rotating with said disk, said drum having a zigzag groove, *g'*, in its rim, and a spring, P^2, connected at opposite ends to said drum and to a fixed part of the mechanism, in combination with a pivoted lever, D', having a pin, g^2, which engages said groove *g'*, a coin-receiver, D^2, on one end of said lever, and a counterpoise, D^3, on the other end thereof, and casing C, having coin-slit *n'* opposite said receiver, and coin-slit *m'* opposite said slit *k'*, substantially as set forth.

4. A disk having radiating coin-supporting grooves, a stationary ring surrounding said disk, and having a slit in one side with which the grooves in said disk successively coincide, and a lever having a coin-receiver, said lever co-operating with said disk to rotate the same when raised and lowered, in combination with a casing provided with a coin-slit, and guide-arms fixed to said casing on each side of said slit, which conduct coins only of a given size into said coin-receiver, substantially as set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

WILLIAM HENRY FRUEN.

Witnesses:
C. N. WOODWARD,
H. U. YOUNG.