

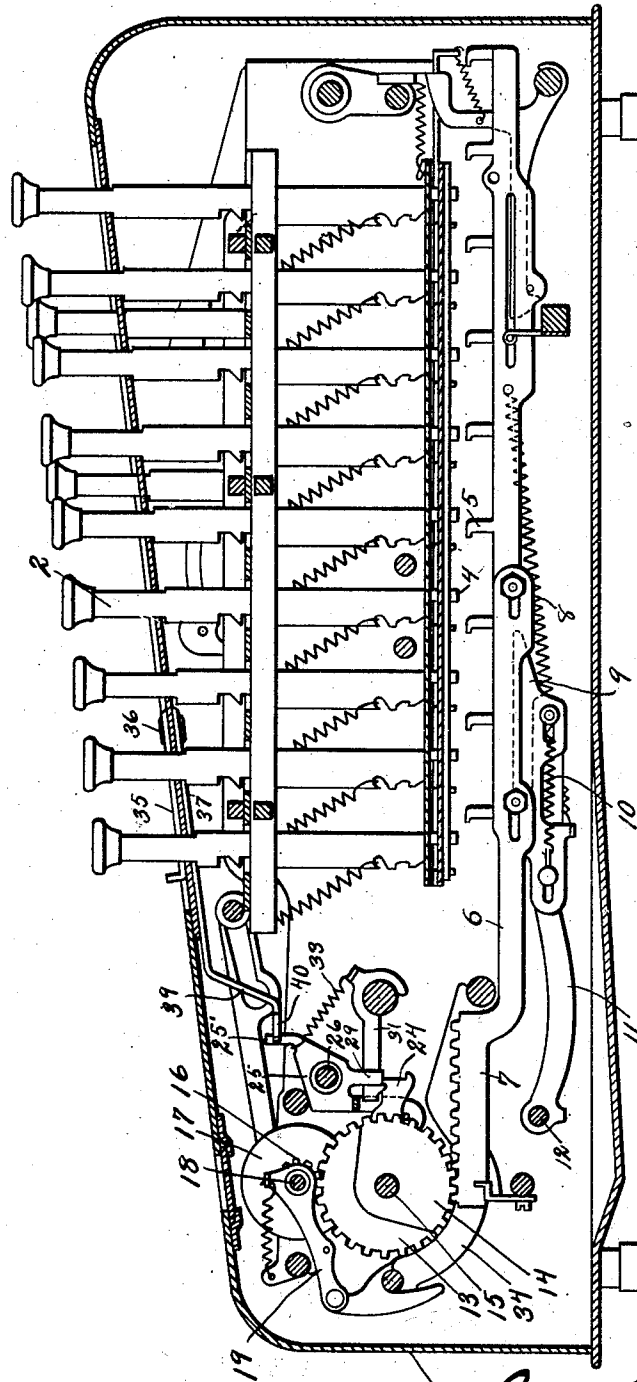
G. J. BARRETT.
TRANSFER MECHANISM FOR CALCULATING MACHINES.
APPLICATION FILED MAY 29, 1911.

1,017,843.

Patented Feb. 20, 1912.

4 SHEETS—SHEET 1.

Fig. 1.



Inventor

Witnesses
L. G. Greenfield
M. L. Glasgow.

384

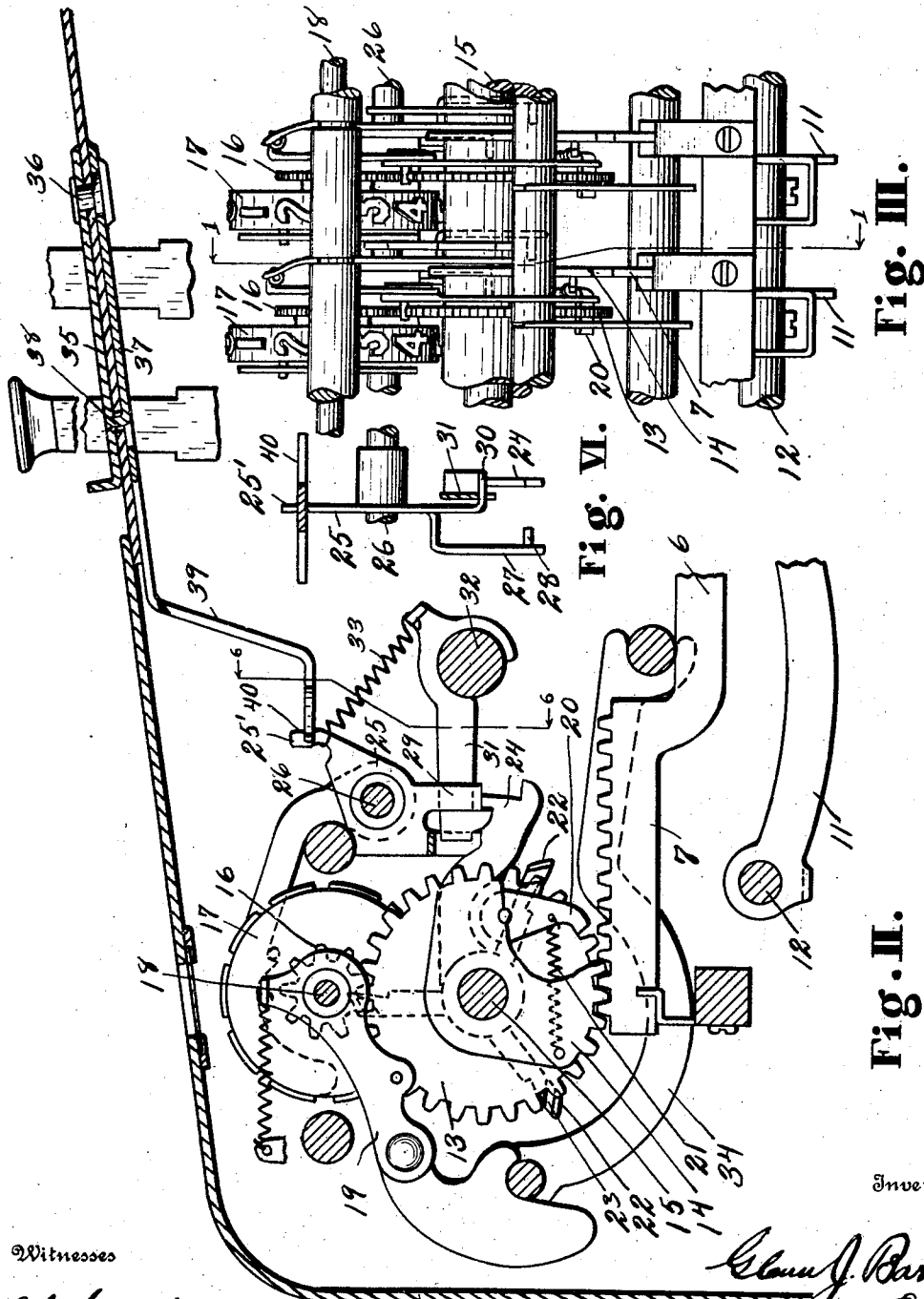
Glen J. Barrett
Charles Earl
Attorney

G. J. BARRETT.
TRANSFER MECHANISM FOR CALCULATING MACHINES.
APPLICATION FILED MAY 29, 1911.

1,017,843.

Patented Feb. 20, 1912.

4 SHEETS—SHEET 2.



Witnesses

L. L. Greenfield
M. L. Glasgow.

Inventor

Clarence J. Barrett
Chappell & Earl
Attorneys

G. J. BARRETT.
TRANSFER MECHANISM FOR CALCULATING MACHINES.
APPLICATION FILED MAY 29, 1911.

1,017,843.

Patented Feb. 20, 1912.

4 SHEETS—SHEET 3.

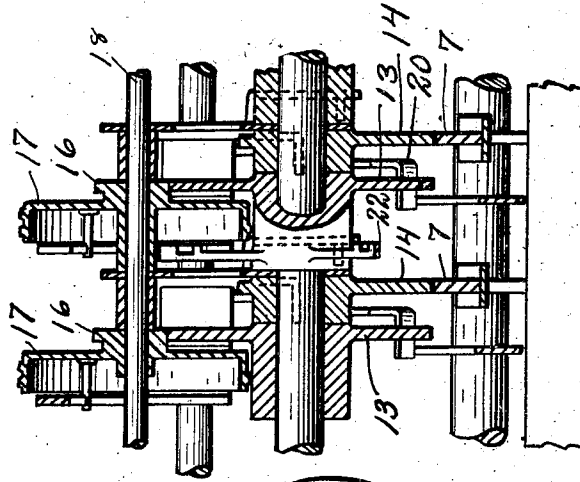


Fig. V.

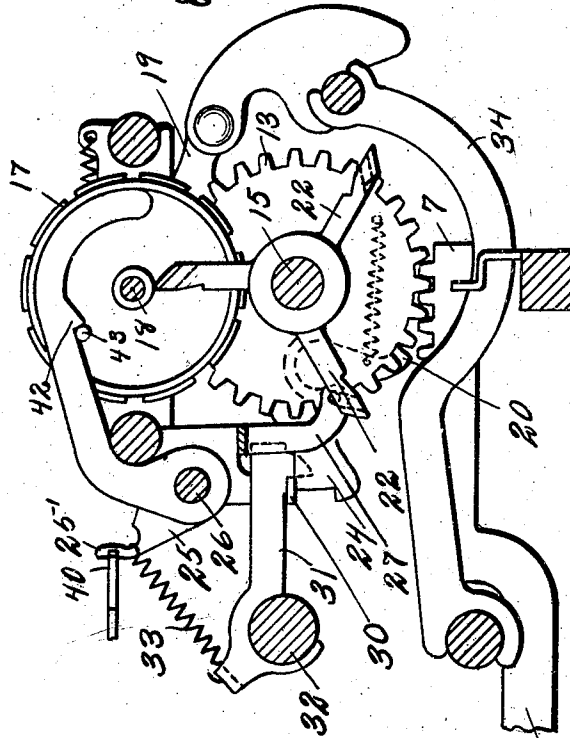


Fig. IV.

Inventor

Witnesses
L. G. Greenfield
M. L. Glasgow.

G. J. Barrett
Chapman & Earl
Attorneys

G. J. BARRETT.
TRANSFER MECHANISM FOR CALCULATING MACHINES.
APPLICATION FILED MAY 29, 1911.

1,017,843.

Patented Feb. 20, 1912.
4 SHEETS—SHEET 4.

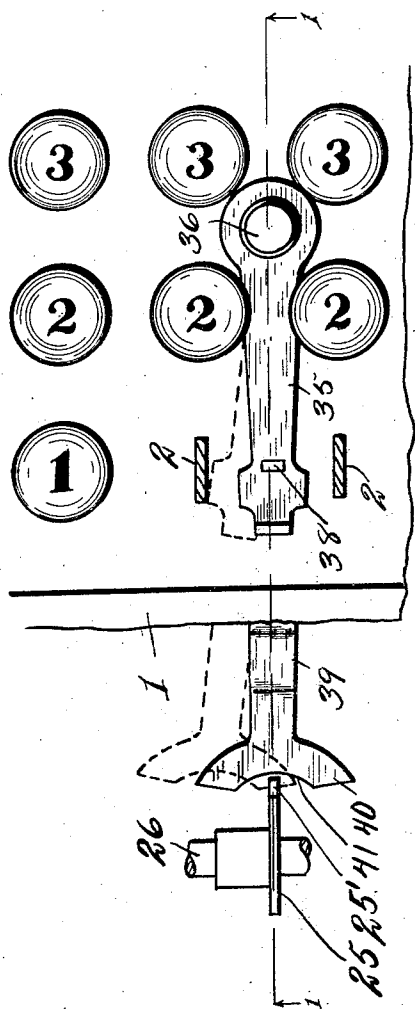


Fig. VII.

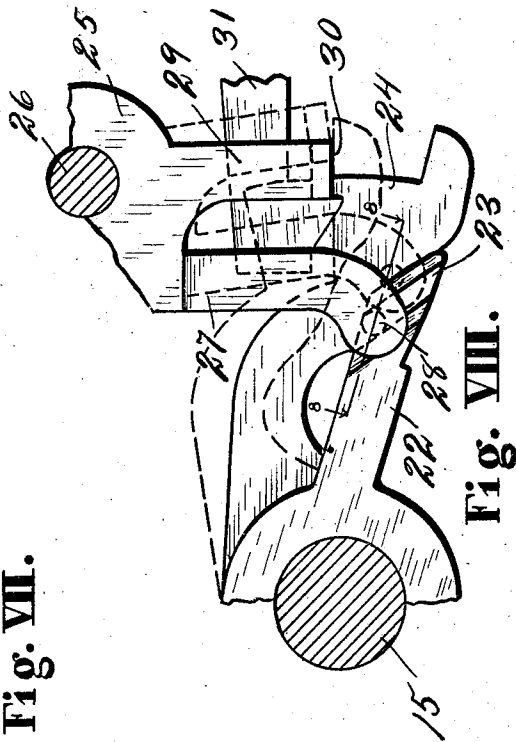


Fig. VIII.

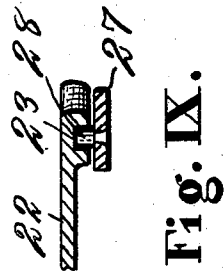


Fig. IX.

Witnesses
L. G. Greenfield
M. L. Kline

Inventor
G. J. Barrett
Chapman & Seal
Attorney

UNITED STATES PATENT OFFICE.

GLENN J. BARRETT, OF GRAND RAPIDS, MICHIGAN, ASSIGNOR TO BARRETT ADDING MACHINE COMPANY, OF GRAND RAPIDS, MICHIGAN.

TRANSFER MECHANISM FOR CALCULATING-MACHINES.

1,017,843.

Specification of Letters Patent.

Patented Feb. 20, 1912.

Application filed May 29, 1911. Serial No. 630,111.

To all whom it may concern:

Be it known that I, GLENN J. BARRETT, a citizen of the United States, residing at Grand Rapids, Michigan, have invented certain new and useful Improvements in Transfer Mechanism for Calculating-Machines, of which the following is a specification.

This invention relates to improvements in transfer mechanisms for adding devices, and more particularly to improvements in the transfer mechanism illustrated in my U. S. Patent No. 976,336, issued November 22nd, 1910, although the improvements are also adapted to other designs.

The objects of my invention are, first, to provide such a transfer device with coacting parts which interlock and coact to eliminate the possibility of overthrow or carrying, prematurely. Second, to provide in such a transfer mechanism an adjustment means for the utilization of the transfer movement of any dial section, for the further purpose of counting the items.

Further objects relating to details and operation will hereinafter appear.

I accomplish the objects of my invention by the devices and means described in the following specification.

The invention is clearly defined and pointed out in the claims.

A structure which is sufficiently illustrative of the preferred embodiment of my invention is shown in the accompanying drawing, forming a part of this invention in which:

Figure I is a detail longitudinal sectional view through an adding machine embodying the features of my invention. Fig. II is a detail side elevation view of the dial and transfer mechanism, taken from the right on a line corresponding to line 1—1 of Figs. III and VI. Fig. III is a detail front view of two dial sections, the carrying and other parts being broken away. Fig. IV is a view similar to Fig. II except that it is taken from the left-hand instead of from the right-hand side, on a line corresponding to line 1—1 of Fig. III. Fig. V is a partial detail sectional view looking in the direction of the little arrows, taken on a line

corresponding to line 5—5 of Figs. II and IV. Fig. VI is a detail plan view of a fragment of the key board showing my counting switch means, the switch lever and adjacent parts. Fig. VII is a rear view of the pivoted transfer or carrying stop 4. Fig. VIII is a partial detail enlarged view of the transfer and carrying-stop mechanisms showing the relation of the parts. Fig. IX is an enlarged detail sectional view, taken on a line corresponding to line 8—8 of Fig. VIII, of the cam grooved end of the transfer trip, showing the pin 43 on the swinging transfer stop 4.

In the drawings, similar numerals of reference refer to similar parts throughout the several views and the sectional views are taken looking in the direction of the little arrows at the ends of the section lines.

Referring to the numbered parts of the drawing, the casing 1 is of the same form as that appearing in my former Patent No. 976,336, of November 22, 1910, and is provided with a set of keys 2 suitably disposed within the casing, with projecting buttons, and provided with stop means 3 on their lower ends to engage and control the digit slides 4 by engaging the stops 5 thereon, the same being connected by suitable extension 6 to a rack 7 for actuating the dial gears when operated by suitable connection. A compensating spring 8 is provided, and a slide 9 having a spring 10 for storing of power for effecting the transfer is also disposed to cooperate with said slide. A pick-up bail 12 is also incorporated in the mechanism. Push bars 11 are associated with the slide 9 and spring 10, as in my former patent. A dial gear 13 is provided and associated with a sector 14 with which the rack 7 meshes, the same being supported on a suitable cross rod 15. The dial gear 13 meshes with the pinion 16, disposed and connected to the side of the dial wheel 17, the pinion 16 and dials 17 being carried on the rod or shaft 18. A lock 19 is provided for these parts, and an engaging pawl 20 is carried by the sector for coupling the same to the dial gear 13. This pawl 20 is controlled by a spring 21. An actuating transfer cam 22 consisting of three radial

arms, supported on the shaft 15, is provided with a cam groove 23, forming an inclosed cam for controlling the transfer parts. A digit stop 24 normally abuts the swinging transfer stop 25 at 30 on the arm 29, these parts being supported on the shaft or rod 26. A downwardly-depending finger 27 projects from transfer stop 25, and has a laterally-extending pin 28 which coöperates in the cam slot or groove 23, and is actuated thereby. A catch 31 is pivoted on the rod 32, and a spring 33 puts tension thereon and also on the arm 25, by connecting to the upwardly-projecting portion 25' thereof. This completes the enumeration of the parts of the transfer mechanism, and it is believed that the parts to which my improvements relate are adequately described. A complete understanding of the entire machine can be readily had by a review of my said former patent, which, it is believed, would unnecessarily burden the present description.

The switch mechanism for disengaging the transfer means at a given point and making use of the same as a counter will now be pointed out.

A switch lever 35 is pivoted at 36, and an arm 37 is disposed underneath the same and coupled to the arm 35 by the upwardly-extending lug 38 extending through a slot in the top of the case. The arm 39 extends downwardly and forwardly, and is formed into a cam 40 having a depression 41 for engaging and acting upon the upper end 25' of the swinging stop 25, as clearly appears in Figs. I, II and VII. It will be seen, therefore, that when the switch is turned to one side or the other, owing to the fact that the cam is a double cam, it will act upon this swinging transfer stop 25 and permit the operation of the transfer mechanism at this point whenever an item is put into the machine. Therefore, the dial space to the left of the particular switch will become a counter for the operations or items which are put into the right-hand portion of the machine. A pawl 42 is pivoted on the rod 26 and coöperates with the pin 43 on each dial, in conjunction with the reset mechanism. I deem it unnecessary to describe these parts further, as my invention has nothing to do with these details.

That the advantages of my invention may appear, I desire to remark that in an adding machine such as is covered in my Patent 976,336, it is quite essential that the transfer parts, especially the dial gears and drivers, shall fit perfectly, otherwise, in rapid work, the cam member will swing a little farther than it should by reason of the lost motion, and the actuating part thereof will strike the swinging transfer stop a hammer blow with sufficient force to drive it back

independently of the movement of the cam, far enough to allow the digit stop an unnecessary additional movement, which will be imparted to the dial of the next higher denomination. A common expedient to overcome this difficulty is the use of a speed governing means to regulate and retard the speed of a dial part. This is objectionable, as it means a slower machine and one requiring an extraordinary amount of power to operate. My invention overcomes this difficulty by the use of the grooved cam engaging a pin, which prevents the overthrow in the manner that I have indicated. A single cam might be supported on the transfer mechanism, but I prefer to divide the dial into three parts, and in place of numbering 1 to 10 to complete the circumference, have three number groups of 1 to 10, or thirty numerals in all on my dial.

This particular construction of transfer mechanism lends itself especially well to the dividing of the machine when utilizing a portion at the left-hand side as a counter for the items. It is thus seen how the same parts, by their structure, accomplish the quite different objects of my invention, viz., the effective avoidance of overthrow and a counter means for the items introduced.

With regard to the cam structure of the transfer mechanism, I desire to state that the same might be reversed and a pin be put upon the cam arm and the groove at a suitable angle be formed in the swinging transfer stop. As long as the parts are coupled together by cam or grooved action, that is all that is required with the cam closed, so that lost motion cannot occur from the blow.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a calculating machine having a key board and accumulating dials, a transfer mechanism for carrying over the tens from one dial to another, comprising a reciprocating digit stop, a swinging transfer stop normally adapted to arrest the movement of said reciprocating digit stop in one direction, means for moving said swinging transfer stop out of normal engagement with said reciprocating digit stop comprising a rotary cam with an engaging groove in the side thereof, a pin extending from said swinging transfer stop adapted to coöperate with said cam groove, and adjustable means for holding said swinging stop out of normal engagement with said reciprocating digit stop and out of contact with said cam, comprising a cam lever having a finger piece disposed on the key board, a double cam carried by said lever normally out of engagement with said swinging stop, but adapted to move said swinging transfer stop when

said cam lever swings in either direction away from normal, substantially as described and for the purpose specified.

2. In a calculating machine having accumulating dials, a transfer mechanism for carrying over the tens from one dial to another, comprising a reciprocating digit stop, a swinging transfer stop normally adapted to arrest the movement of said reciprocating digit stop in one direction, means for moving said swinging transfer stop out of normal engagement with said reciprocating digit stop comprising a rotary cam, a pin extending from said swinging transfer stop adapted to cooperate with said cam, and adjustable means for holding said swinging stop out of normal engagement with said reciprocating digit stop and out of contact with said cam, comprising a cam lever having a finger piece disposed on the key board, a cam carried by said lever normally out of engagement with said swinging stop, but adapted to move said swinging transfer stop away from normal, substantially as described and for the purpose specified.

3. In a calculating machine having accumulating dials, a transfer mechanism for carrying over the tens from one dial to another, comprising a reciprocating digit stop, a swinging transfer stop normally adapted to arrest the movement of said reciprocating digit stop in one direction, means for moving said swinging transfer stop out of normal engagement with said reciprocating digit stop comprising a rotary cam with an engaging groove in the side thereof, and a pin extending from said swinging transfer stop adapted to cooperate with said cam groove, substantially as described and for the purpose specified.

4. In a carrying transfer mechanism for a calculating machine, the combination of a digit stop, a movable transfer stop to normally engage and arrest the movement of said reciprocating digit stop in one direction, and transfer means for moving said movable transfer stop out of normal engaging relation, comprising a grooved cam, and a projection from said transfer stop adapted to cooperate with said cam groove, substantially as described.

5. In a carrying transfer mechanism for a calculating machine, the combination of a reciprocating digit stop, a movable transfer stop normally adapted to arrest the movement of said reciprocating digit stop in one direction, and means for moving said movable transfer stop from arresting relation with said reciprocating member, comprising a rotary member and a projection and slot connection between said rotary member and said movable stop, substantially as described.

6. In a carrying transfer mechanism for

a calculating machine, the combination of a digit stop, a movable transfer stop normally adapted to arrest the movement of said reciprocating member, a rotary member carrying a cam adapted to contact and cooperate with said movable transfer stop, and an internal cam means carried by said rotary member for preventing any further movement to said movable stop beyond that imparted by a rotation of said rotary member.

7. In a carrying transfer mechanism for a calculating machine, the combination of a reciprocating digit stop, a movable transfer stop normally adapted to arrest the movement of said reciprocating member, a rotary member, contact actuating connection between said rotary member and said movable stop, and an internal cam means for preventing any excess movement of said movable stop beyond that imparted by said contact actuating connection, substantially as described.

8. In a carrying transfer mechanism for a calculating machine, the combination of a reciprocating digit stop, a movable transfer stop normally adapted to arrest the movement of said reciprocating digit stop, a rotary member, contact actuating connection between said rotary member and said movable transfer stop, and means comprising a guiding groove member and a guided member for preventing any excess movement of said movable stop beyond that imparted by said actuating connection between said rotary member and said movable transfer stop, substantially as described.

9. In a calculating machine, the combination of accumulating dials, a reciprocating digit stop, a movable transfer stop for normally arresting said reciprocating digit stop in one direction, means moving in synchrony with said dials for moving said movable transfer stop from normal arresting position when said dials pass the transfer point thereon, and means for holding said movable transfer stop out of arresting position with reference to said reciprocating digit stop, comprising a lever carrying a cam adapted to contact with said movable transfer stop, and a finger piece connection to said lever, substantially as described.

10. The combination with a carrying transfer mechanism for a calculating machine, having a reciprocating digit stop and a movable transfer stop for normally arresting the movement of the same, of means for holding said movable transfer stop out of cooperating relation with said reciprocating digit stop, comprising a lever and cam, and a finger piece connected to said lever, substantially as described.

11. The combination with a carrying transfer mechanism for a calculating ma-

chine, having a reciprocating digit stop and a movable transfer stop for normally arresting the movement of the same, of means for holding said movable transfer stop out of
5 cooperating relation with said reciprocating digit stop, substantially as described.

In witness whereof, I have hereunto set

my hand and seal in the presence of two witnesses.

GLENN J. BARRETT. [L.S.]

Witnesses:

LACY H. SERGENT,
LULU B. VALENTINE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
