

L. B. LOVE.
INDICATOR.

APPLICATION FILED JUNE 10, 1912.

1,057,970.

Patented Apr. 1, 1913.

4 SHEETS—SHEET 1.

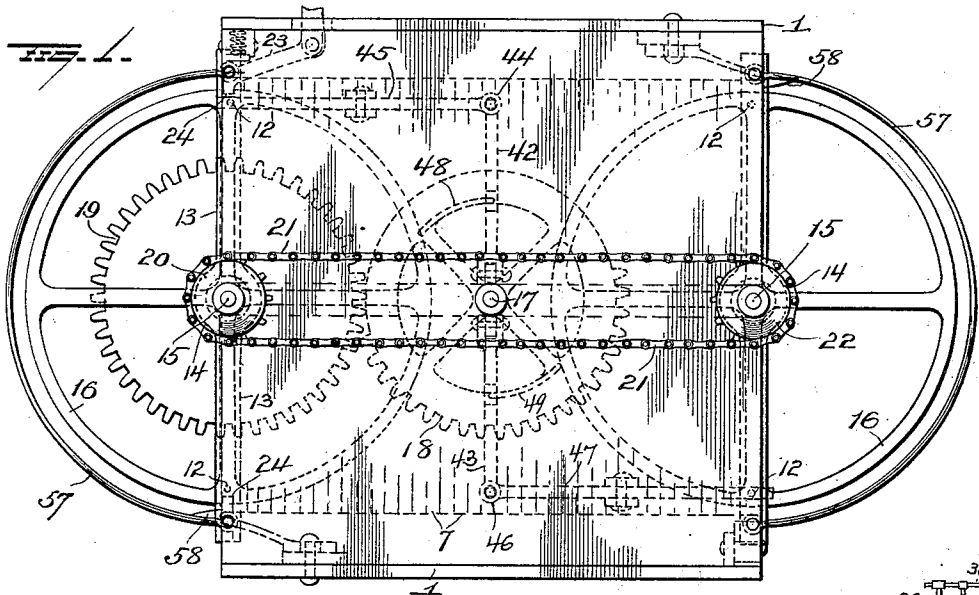
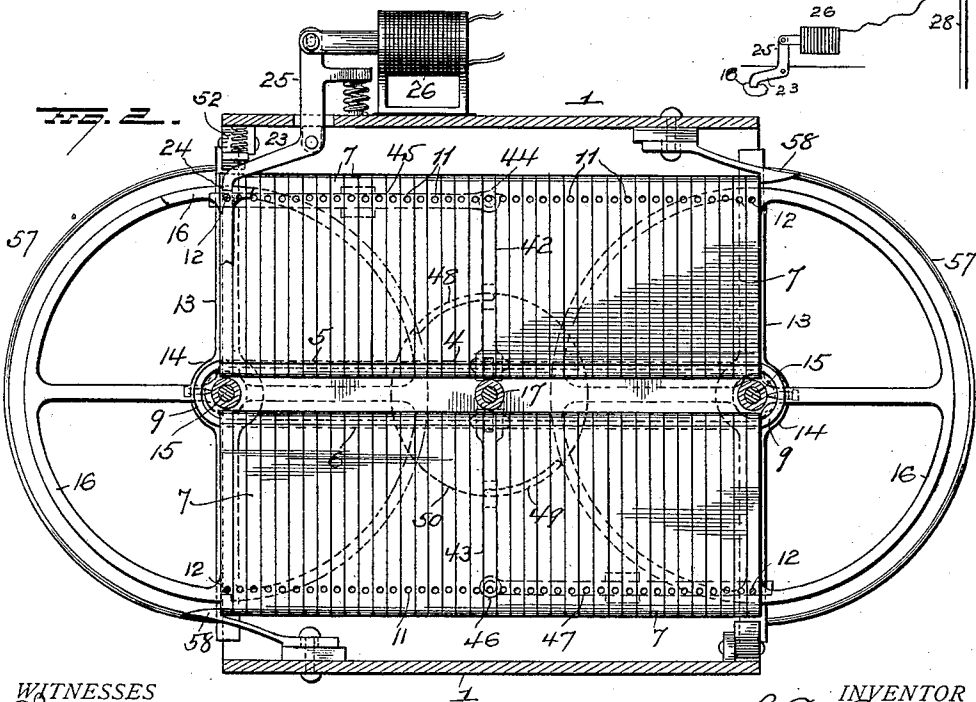
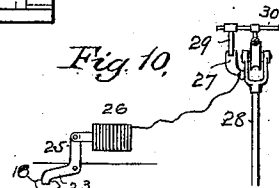


Fig. 10.



WITNESSES

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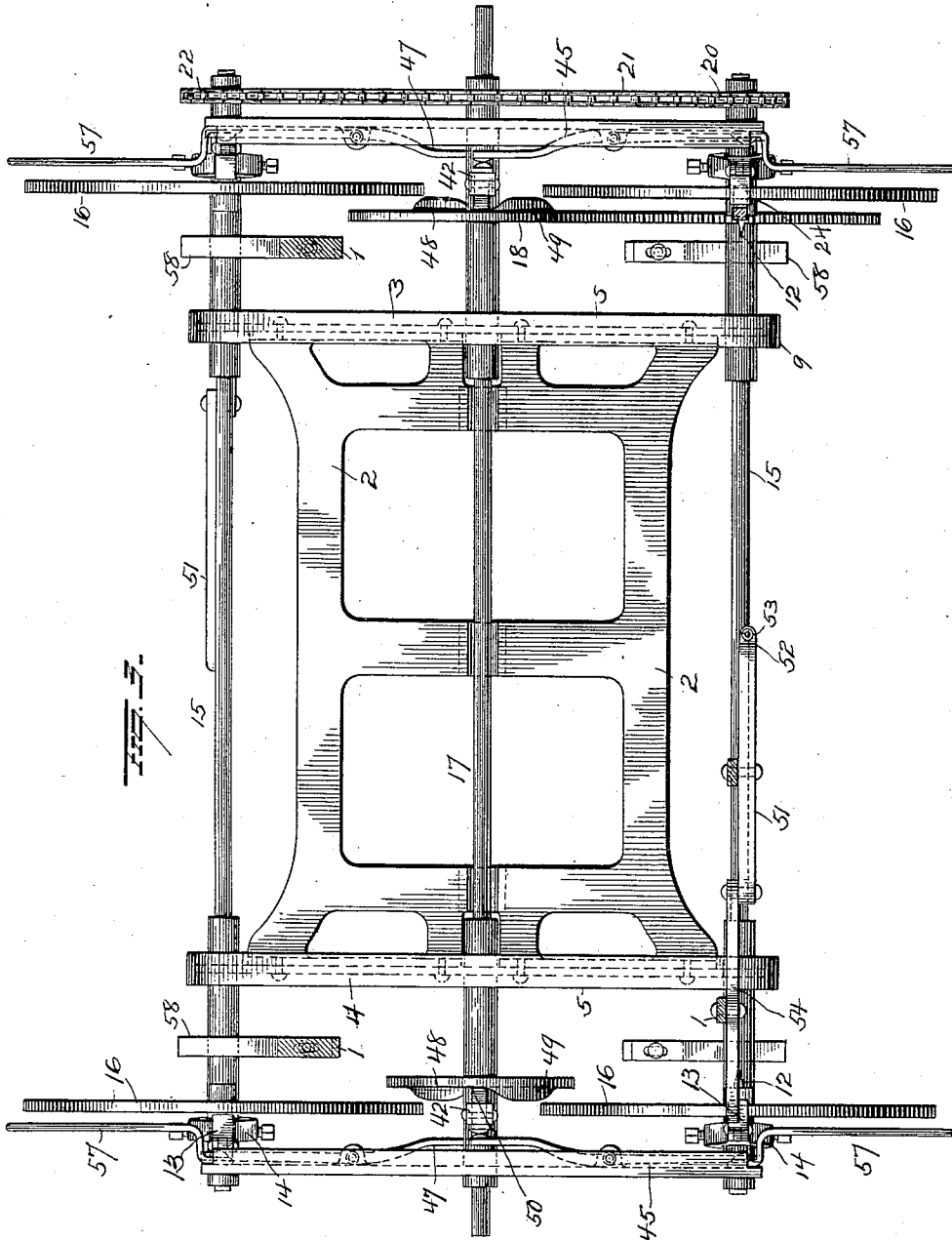
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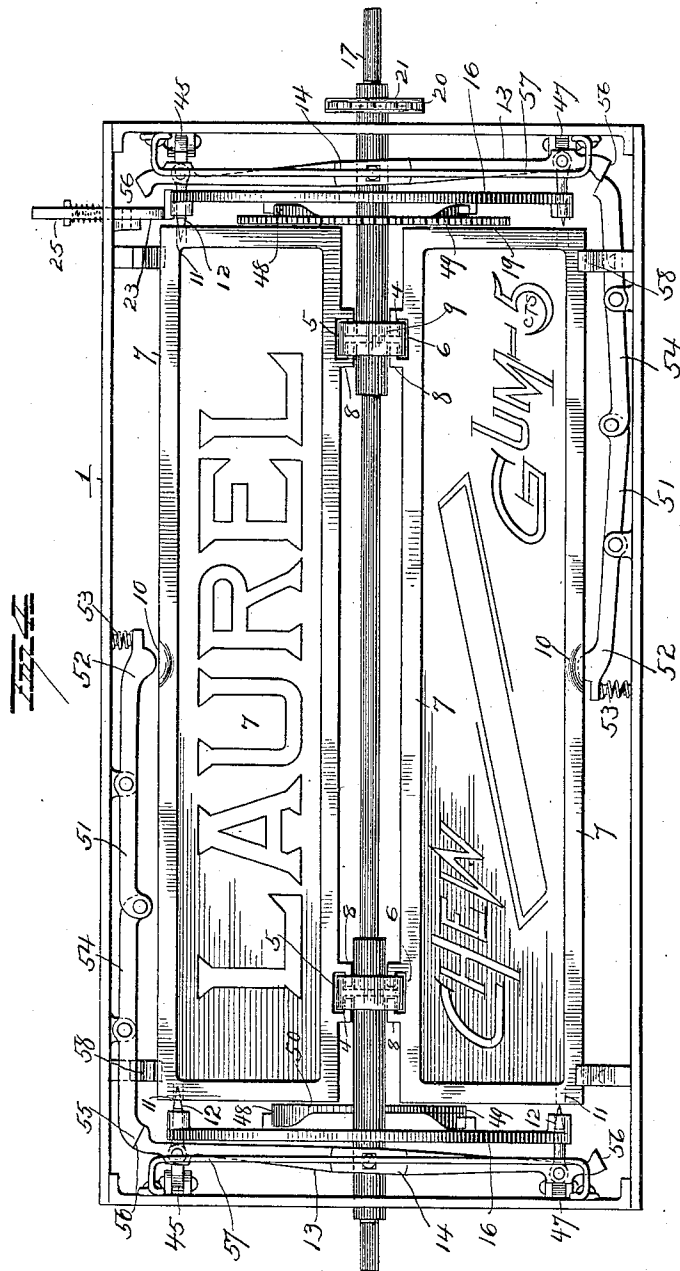
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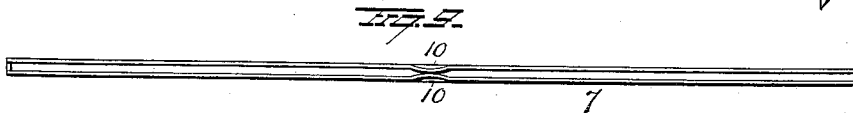
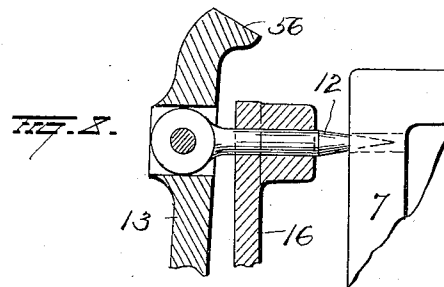
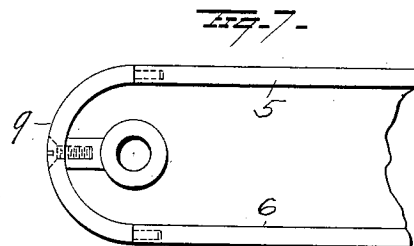
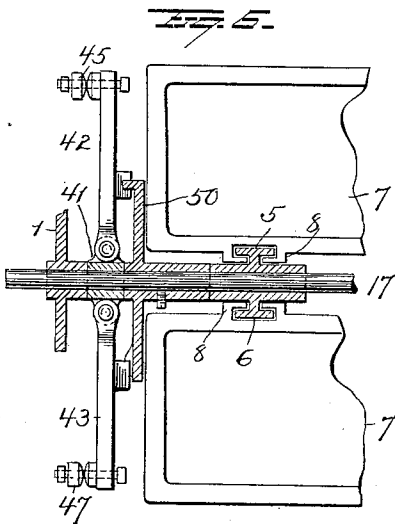
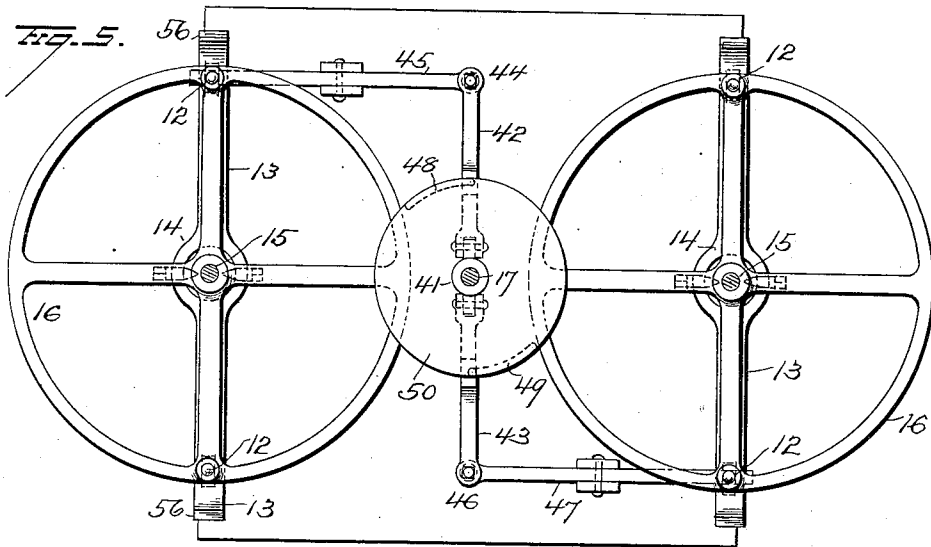
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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

LELAND B. LOVE, OF MEMPHIS, TENNESSEE.

INDICATOR.

1,057,970.

Specification of Letters Patent.

Patented Apr. 1, 1913.

Application filed June 10, 1912. Serial No. 702,824.

To all whom it may concern:

Be it known that I, LELAND B. LOVE, a resident of Memphis, in the county of Shelby and State of Tennessee, have invented certain new and useful Improvements in Indicators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in street or station indicators,—the object of the invention being to provide a construction which shall be mechanically operated and controlled by means of electro-magnetic devices associated with a trolley pole and wire, to automatically shift a plurality of cards in regular order.

With this and other objects in view the invention consists in certain novel features of construction and combinations of parts as hereinafter set forth and pointed out in the claims.

In the accompanying drawings, Figure 1 is a side view. Fig. 2 is a side view with the casing shown in section. Fig. 3 is a plan view with the casing omitted. Fig. 4 is a front elevation. Fig. 5 is a view showing the mechanism for moving the card frames at the end of the device. Figs. 6, 7, 8 and 9 are detail views illustrating parts of the shifting mechanism, and Fig. 10 is a diagrammatical view.

1 represents a suitable box or casing in which framework is located,—said framework comprising a rectangular intermediate portion 2 and end frames 3 and 4. The frames consist of I-beams at respective ends of the intermediate portion 2 of the framework and constitute upper and lower guides 5—6 for a plurality of frames 7 in which cards are located, said cards being intended to receive the names of streets on one side and advertising matter on the other side. Each card frame 7 is provided on one edge with lugs 8 which embrace the guides 5—6 and slide along the latter. The respective ends of the guide rails 5—6 are connected by removable curved portions 9, each of which may be provided with dowel pins to enter sockets in the guides 5—6 and may be secured in place by screws. Each card frame 7 is made near its open edge with depressions 10 adapted to receive a holding device as hereinafter explained and said depressions also form inward projections which

serve to hold the cards in the frame. Each card frame is also provided at its respective ends near its free edge with sockets 11 to receive pins 12 mounted at respective ends of arms 13. Each arm 13 is provided centrally with a collar 14 pivotally supported on a shaft 15,—two such shafts 15 being provided and each provided at its respective ends with arms 13. To each shaft 15 and in proximity to the arms 13 thereon, wheels 16 are secured,—the pins 12 being caused to project through suitable holes in said wheels and to enter the sockets 11, in the card frames so that when said wheels 16 and arms 13 are turned with the shafts 15, the card frames will be moved from one guideway to the other,—a card frame being moved from the upper to the lower guideway at one end of the device and at the same time, a card frame being moved from the lower to the upper guideway at the other end of the device. At the front end of the indicator the exposed face of each card may have the name of a street thereon and the opposite or rear face of the same card may have advertising matter thereon, so that when a card is moved from the upper to the lower guideway the name of the street on the next card on the upper guideway will be exposed and the advertising matter on the rear face of the first card will be exposed when said first card reaches the lower guideway and depends therefrom.

A shaft 17 is centrally mounted in the framework and provided near one end with a mutilated gear 18, the teeth on said gear extending throughout one half the circumference thereof. The half gear 18 is intended to impart motion to a gear 19 on one of the shafts 15 and the latter has secured thereto a sprocket wheel 20, over which a sprocket chain 21 passes and communicates motion to the other shaft 15 through the medium of a sprocket wheel 22 secured to the latter. Motion may be imparted to the central shaft 17 by means of any preferred construction of motor which may be geared to said shaft in any suitable manner, but the mechanism is maintained normally at rest by the engagement of a latch 23 with a notch 24 in one of the wheels 16—said wheel being provided with two such notches arranged diametrically opposite each other so that said wheel (and in fact all of the wheels 16) will be prevented from making more than one-half revolution at each opera-

tion of the device. The latch 23 is provided with a suitable pivotal mounting and provided with an arm 25 with which the armature or core of an electro-magnet or solenoid 26 is connected. The coil of the magnet or solenoid is connected (as shown diagrammatically in Fig. 9) in a normally open circuit with a suitable contact device 27 on the trolley pole 28, a suitable contact device 29 being electrically connected with the feed wire 30 at each street crossing, for cooperation with the contact device on the trolley pole to close the circuit of the magnet or solenoid 26. From this construction it will be seen that when one of the contact devices 27 on the trolley pole engages the contact device on the feed wire, thus energizing the magnet or solenoid 26, the latch 23 will be raised out of the notch 24 of the adjacent wheel 16,—thereby releasing the latter and permitting motion to be transmitted to the mechanism by the operation of the motor which is connected with the main driving shaft 17.

Near each end of the shaft 17, a hub 41 is loosely mounted thereon and to each of said hubs, two arms 42 and 43 are pivotally connected diametrically opposite each other. The upper end of each arm 42 is connected by a ball-joint 44 with one arm of a lever 45,—said lever being pivotally supported between its ends and having its other arm disposed behind the pin 12 which happens to be at the upper ends of the arms 13. The lower end of each pivoted arm 43 is connected by a ball-joint 46 with one arm of a lever 47, said lever being pivotally supported between its ends and having its other arm projecting behind the pin 12 which happens to be at the lower end of an arm 13 at the rear end of the device. The levers 45 and 47 at each end of the device are actuated by cams 48—49 which engage the arms 42—43 and move the latter on their pivotal connections with the hubs 41,—the cams 48—49 at one end of the device being located on the half-gear 18 and at the other end of the device said cams project from a disk 50 secured to the shaft 17. From this construction it will be understood that when the shaft 17 is permitted to make a half revolution, the cooperation of the cams 48—49 with the arms 42—43, will cause the levers 45 to move pins 12 into engagement with respective ends of a card frame on the upper guideway, and the lever 47 to move pins 12 into engagement with the respective ends of a card frame depending from the lower guideway at the rear end of the device. In this way a card frame at the front end of the device is locked to the front wheels 16 and a card on the lower guideway at the rear end of the device is locked to the rear wheels 16 so that when said wheels are caused to make a half revolution as

hereinbefore explained, a card frame will be moved from the upper to the lower guideway at the front end of the device and at the same time a card frame will be moved from the lower guideway to the upper guideway at the rear end of the device.

While the wheels 16 are prevented from making more than a half revolution at each operation of the device, still the shaft 17 and the gear 18 are permitted to make a complete revolution by reason of the fact that only one-half of the periphery of said gear is provided with teeth. During the second half of the revolution of gear 18 and shaft 17, the cams 48—49 will operate to move the levers 45—47 and cause the engagement of pins 12 with the next card frames. When this action takes place, the arms 13 in which the pins 12 are mounted will be shifted on their pivotal supports thus causing the withdrawal of pins 12 from the card frame which has been shifted and permitting the engagement of the pins 12 at the opposite ends of said arms to be engaged in the sockets of the frames 7 to be shifted.

In order that the card frames shall be retained in proper position to insure the engagement of the pins 12 in the sockets in the ends of said card frames, the devices now to be described are employed.

In the upper portion of the framework over the upper tier of card frames, a lever 51 is pivotally supported between its ends and provided at one end with a knob 52 to enter a recess 10 in the adjacent card frame,—said knob being pressed in position to effect such engagement with the card frame by the action of a spring 53. The other end of the lever 51 is pivotally connected with one arm of a lever 54, the latter being pivotally supported between its ends in the framework and the other arm of said lever 54 is provided at its ends with a beveled face 55 to be engaged by a beveled face 56 at one or the other end of arm 13. The devices above described are duplicated under the card frames depending from the lower guideways and cooperate with the arms 13 at the diametrically opposite side of the device. It will be apparent that when the arms 13 are moved toward the card frames (as when the pins 12 are moved into engagement with said card frames) the beveled face 56 at one end of said arms will cooperate with the beveled face 55 of the adjacent lever 54 and cause motion to be imparted to the lever 51 for withdrawing the knob 52 from the recess 10 of the adjacent card frame 7 and permit the latter to be shifted in the manner hereinbefore explained.

In order that the pivoted arms 13 shall be maintained in proper position during the shifting of the card frames, I provide

guides 57 suitably secured at their ends to the framework.

When the card frames are shifted from one guideway to the other, they will be retained in such shifted position and prevented from displacement therefrom by means of spring latches 58, as clearly shown in Fig. 2.

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

1. In an indicator, the combination with framework and superimposed guideways therein, of card frames movable on said guideways and from one guideway to the other, shafts at respective ends of said guideways and at right angles thereto, pivoted arms mounted on said shafts, pins carried by said arms, means for moving said arms to engage said pins with the card frames, means for rotating said shafts to shift the card frames from one guideway to the other, and means for controlling the rotation of said shafts.

2. In an indicator, the combination with framework and superimposed guideways therein, of a plurality of card frames movable on said guideways and from one guideway to the other, shafts at respective ends of said guideways and disposed at right angles thereto, wheels secured to said shafts, arms pivotally connected with the shafts and rotatable therewith, pins carried by said arms and passing through said wheels for engagement with the card frames, means for imparting motion to said shafts, a trip device engaging one of said wheels, and means for operating said trip device periodically.

3. In an indicator, the combination with framework and superimposed guideways, of a card frame movable on said guideways and from one guideway to the other, shafts at respective ends of said guideways and at right angles thereto, arms pivotally connected with said shafts and rotatable therewith, pins carried by said arms for engagement with the card frames, a driving shaft, gearing for transmitting motion from said driving shaft to the first mentioned shaft, a hub on the driving shaft, arms pivotally connected with said hub, pivoted levers pivotally connected with said arms, each of said pivoted levers adapted to move one of the pivoted arms of the first mentioned shafts in one direction whereby the pins at one end of the device will be engaged with a card frame on the upper guideway and the pins at the lower ends of the pivoted arms at the other end of the device will be caused to en-

gage the card frame on the lower guideway, cams on the driving shaft cooperating with the arms pivotally connected therewith for operating said levers, and means for controlling and limiting the rotation of the first mentioned shafts.

4. In an indicator, the combination with framework and superimposed guideways therein, of a plurality of card frames movable on said guideways and from one guideway to the other, said card frames having sockets in their ends, shafts at respective ends of the guideways and at right angles thereto, arms having pivotal connection with said shafts and rotatable therewith, pins mounted in said arms, means for moving a pin at one end of each arm into engagement with the sockets of the card frames, each card frame also having a recess, levers having knobs to engage said recess, means operable by said pivoted arms for actuating said levers to move a knob of one lever out of engagement with a card frame on one guideway and permit engagement of a knob on another of said levers with a card frame on the other guideway, and means for controlling and limiting the rotation of said shafts and the pivoted arms connected therewith.

5. In an indicator, the combination with framework and superimposed guideways, of a plurality of card frames movable on said guideways, shafts mounted in said framework, arms pivoted on said shafts; pins carried by said arms in position to engage the card frames and moving the same from one guideway to the other when said shafts are turned, wheels on said shafts, one of said wheels having notches, means for turning the shafts, a trip to engage the notched wheel, and means for automatically operating said trip.

6. In an indicator, the combination with framework and superimposed guideways, of a plurality of card frames movable on said guideways, moving means for transferring the card frames from one guideway to the other, a trip device for said moving means, electro-magnetically controlled means for periodically operating said trip device to release the moving means, and means for actuating the moving means.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

LELAND B. LOVE.

Witnesses:

EDW. DENTON,
EARLE L. BAILEY.