No. 791,221. PATENTED MAY 30, 1905.

E. M. SKINNER.

INDICATOR OR SIGN.

APPLICATION FILED SEPT. 24, 1904.

3 SHEETS—SHEET 1.

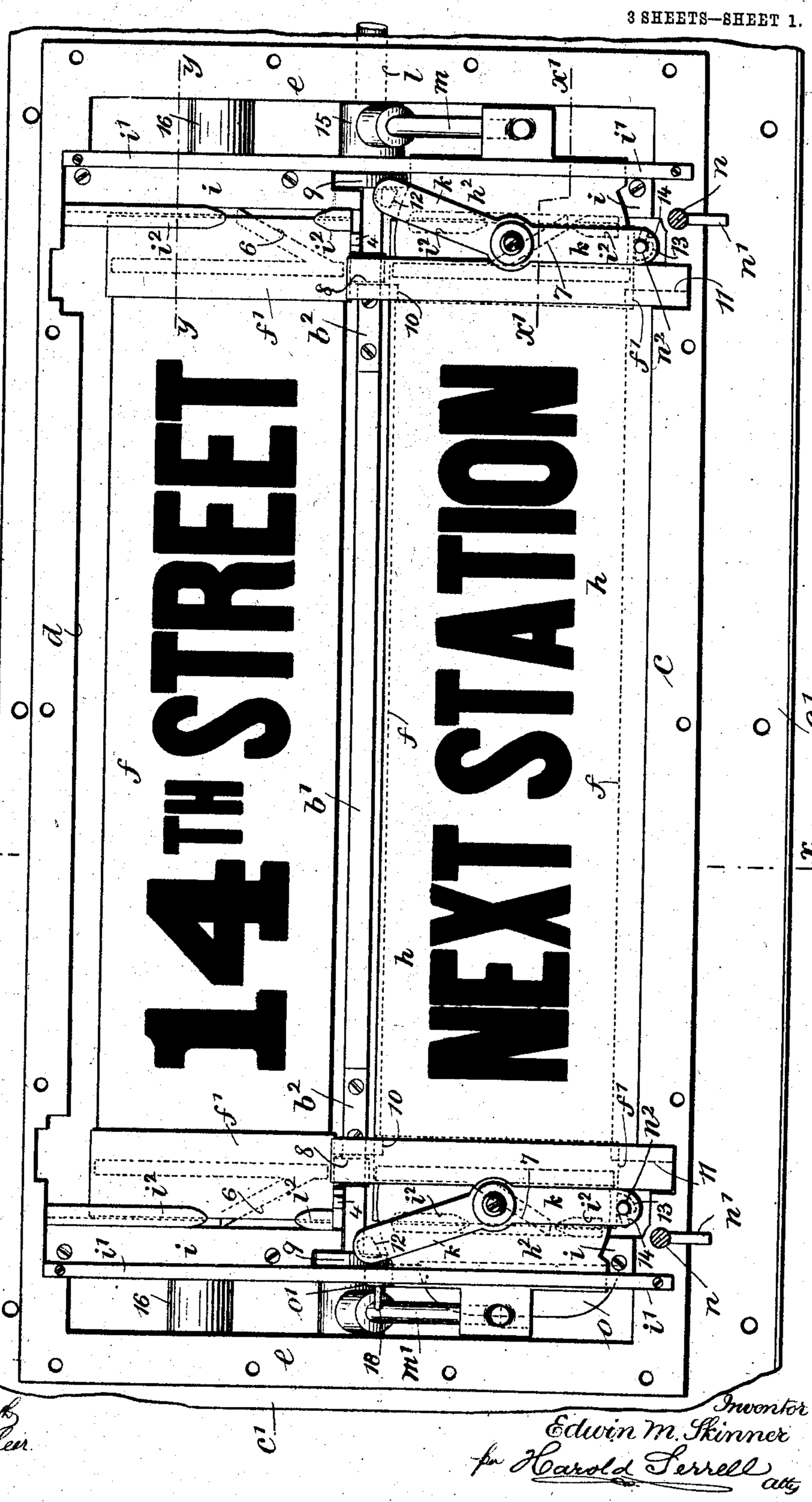

Fig. 1.

Witnesses
Chas. H. Smith
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Edwin M. Skinner
by Harold Serrell Atty

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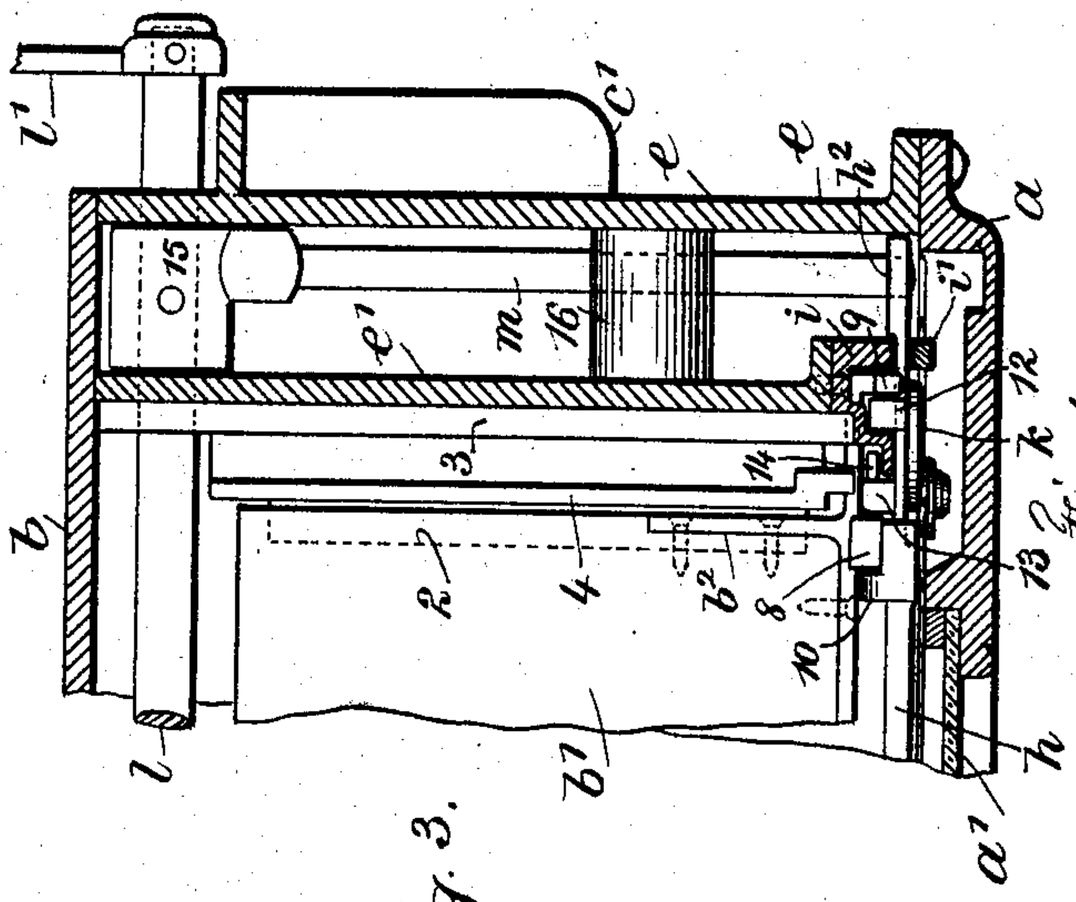

Fig. 3.

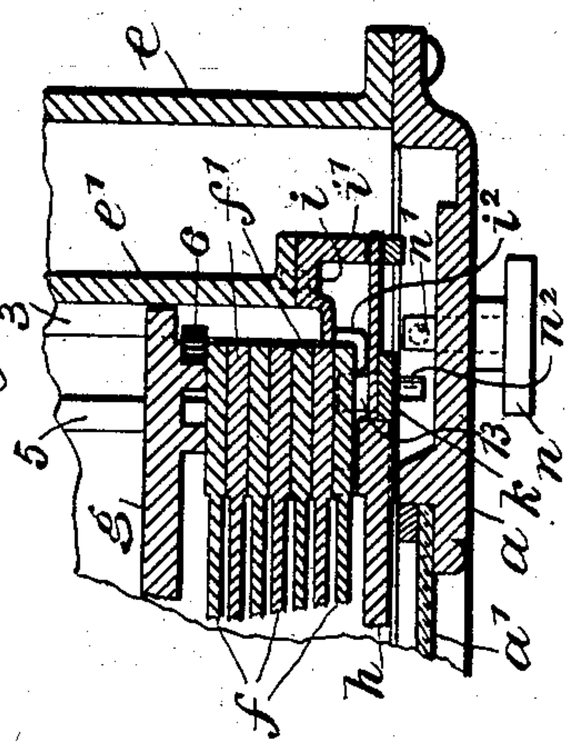

Fig. 4.

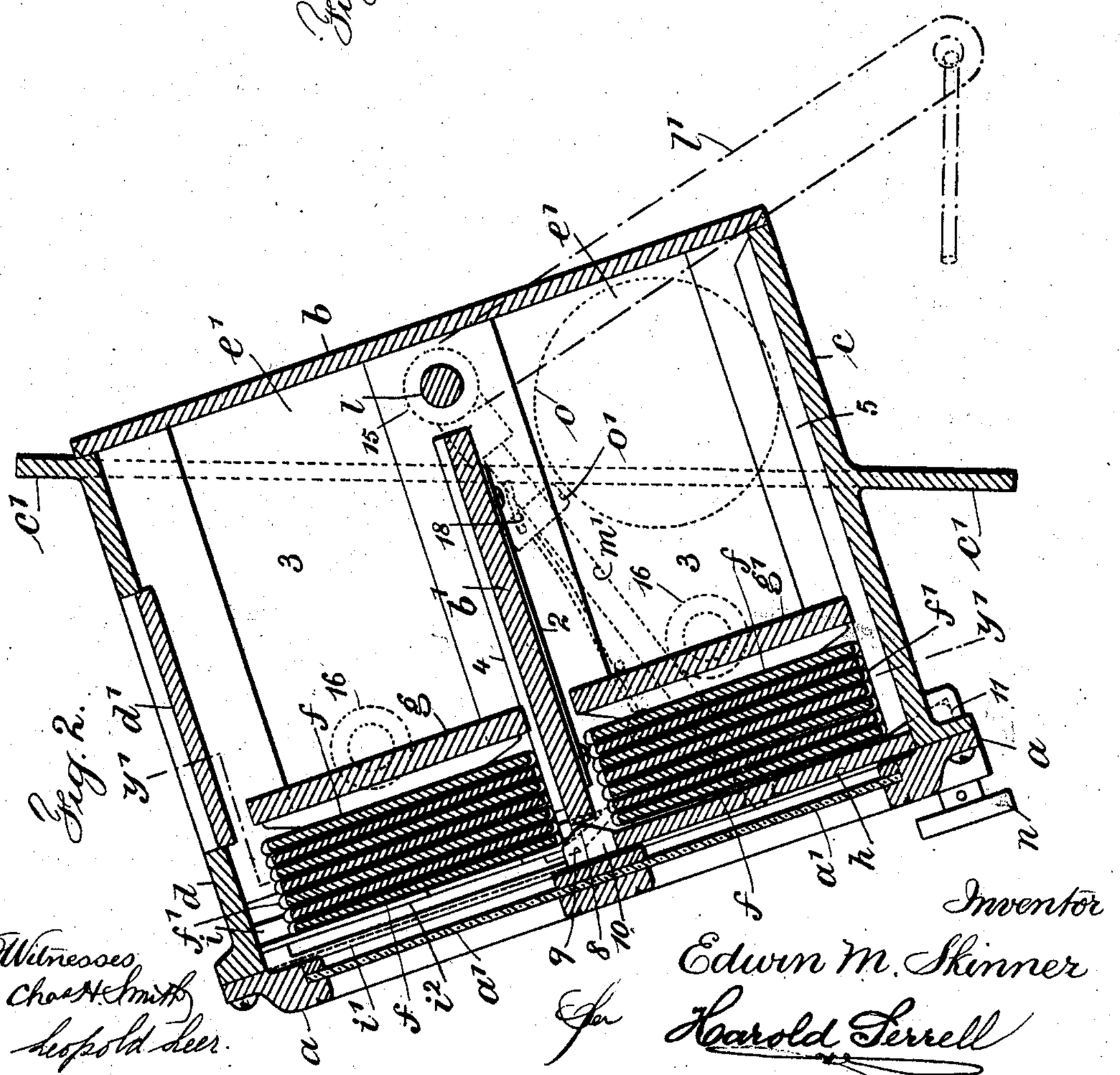

Fig. 2.

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3 SHEETS—SHEET 3.

Fig. 10.

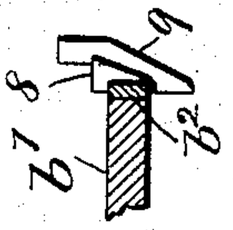


Fig. 9.

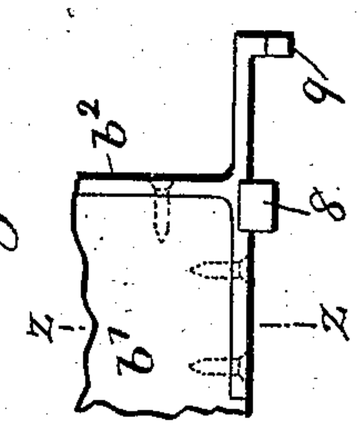


Fig. 8.

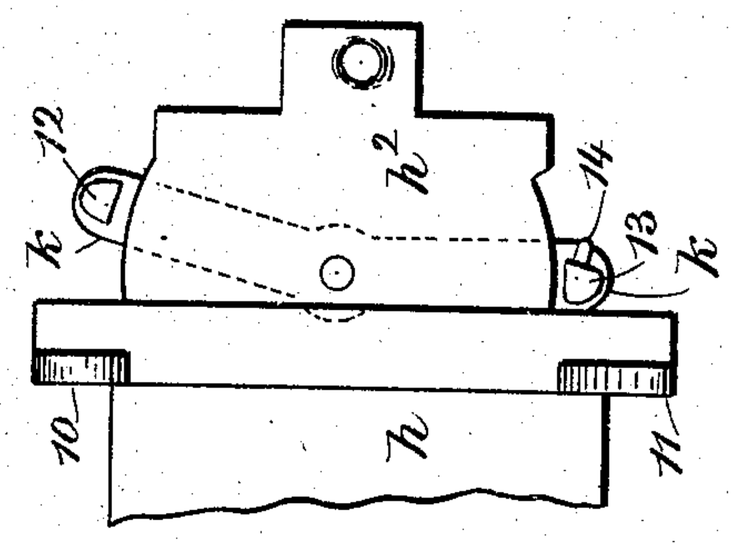


Fig. 6.

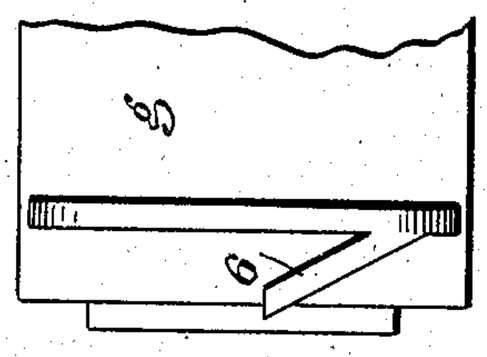


Fig. 7.

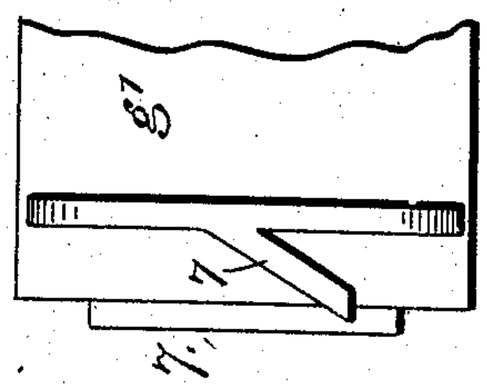
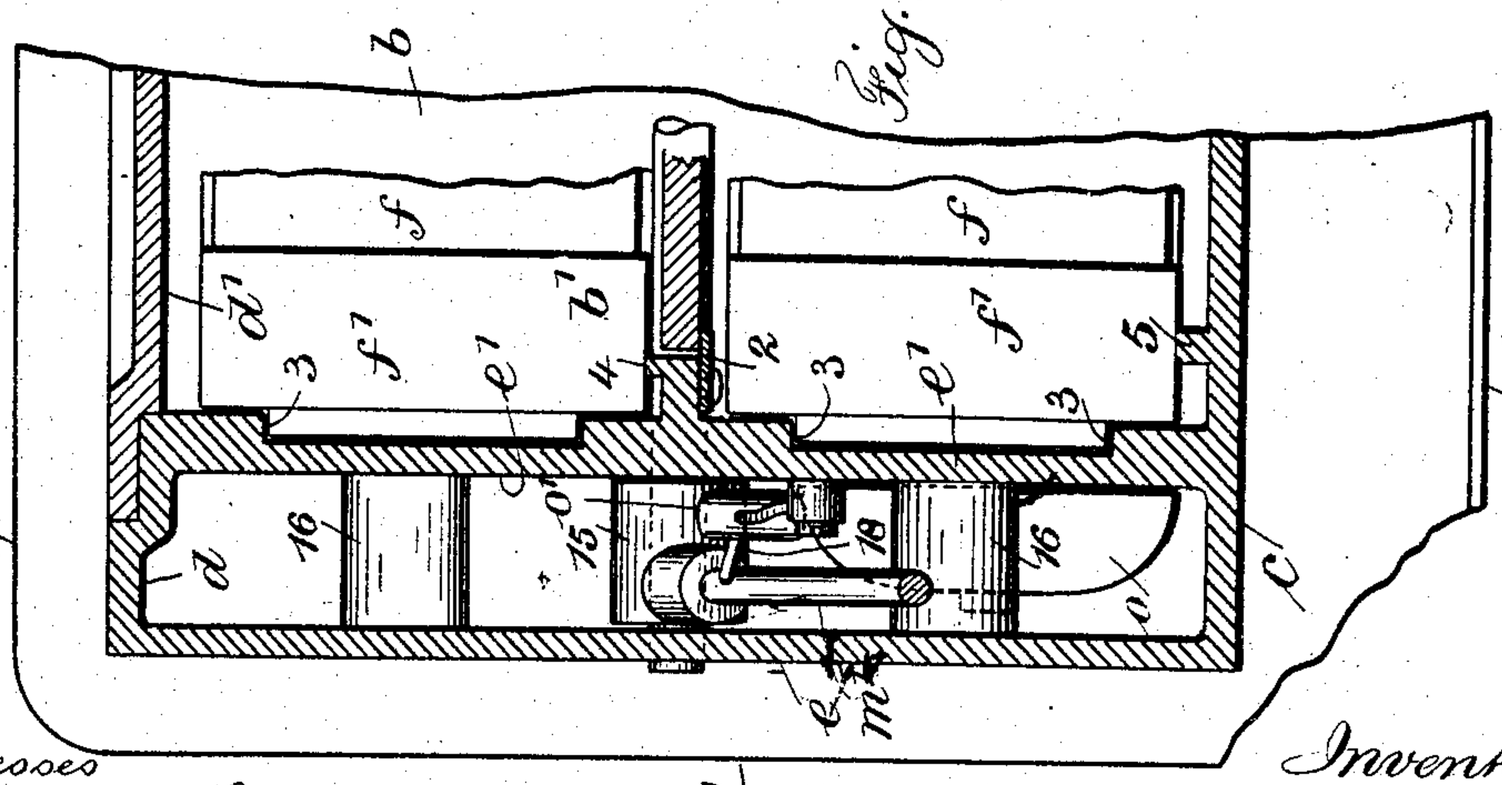


Fig. 5.



Witnesses
Chas. A. Smith
Leopold Lee.

Inventor
Edwin M. Skinner.
per Harold Terrell
Atty.

No. 791,221. Patented May 30, 1905.

UNITED STATES PATENT OFFICE.

EDWIN M. SKINNER, OF NEW YORK, N. Y.

INDICATOR OR SIGN.

SPECIFICATION forming part of Letters Patent No. 791,221, dated May 30, 1905.

Application filed September 24, 1904. Serial No. 225,727.

To all whom it may concern:

Be it known that I, EDWIN M. SKINNER, a citizen of the United States, residing in the borough of Richmond, city and State of New York, have invented an Improvement in Indicators or Signs, of which the following is a specification.

Various mechanisms have heretofore been devised for use in railway and street cars to indicate the names of stations stopped at in succession and in other places to indicate in succession names, numbers, or items of interest to the public. In these devices there have been employed endless bands and bands rolled back and forth or in opposite directions on suitable rollers with the names, numbers, &c., thereon and also name plates or cards received in suitable receptacles, from one of which they were shifted to the other in either direction.

My invention relates to an indicator employing a series of name-plates and suitable receptacles therefor with the object of making more positive and automatic the shifting of the name-plates from one receptacle to the other in either direction. In my improvement rocker-arms on the ends of a shifter-plate are automatically operated by switch-bars on the end faces of the follower-plates to change the feed of the name-plates from one receptacle to the other in either direction as the receptacles containing the name-plates become empty, and in case it is desired to reverse the movement in either direction without going to the end of the series of name-plates I provide manually-actuated devices engaging the rocker-arms for swinging the same to change the direction of movement. The name-plates have thickened ends to separate the same and preserve the surfaces on which the names are placed from abrasion.

In addition to the foregoing there are minor features of improvement going to make up an harmonious and complete structure.

In the drawings, Figure 1 is an elevation of the indicator according to my invention with the front removed. Fig. 2 is a vertical section at the line $x\ x$ of Fig. 1, the indicator being shown in its normal and inclined position. Fig. 3 is a sectional plan at one end on the line $y\ y$ of Fig. 1, the series of name-plates being removed for clearness. Fig. 4 is a sectional plan at the forward right-hand corner and on the line $x'\ x'$ of Fig. 1 with the name-plates in position. Fig. 5 is a vertical section at the left-hand end of the indicator and on the line $y'\ y'$ of Fig. 2. Figs. 6 and 7 are elevations at the left-hand ends of the follower-plates, so as to fully show the switch-bars in position. Fig. 8 is an elevation at the back of the shifter-plate and at one end thereof. Fig. 9 is a plan at the right-hand forward corner of the central partition, so as to show the frame connected thereto; and Fig. 10 is a cross-section and elevation of the parts shown in Fig. 9 at the line $z\ z$.

In constructing the case of my improved station-indicator I prefer to form the bottom c, top d, the ends e, and the partitions e', adjacent to the ends e, integral in one piece of cast metal. The front a, provided with glasses a', through which the letters or numerals on the name-plates and shifter-plate are visible, is preferably secured to a flange of the before-named integral part by screws or otherwise. The back b is fastened to the opposite side of said integral structure in any desired manner, and I prefer in the top d to make a removable portion d' to give access within for the removal of any of the series of name-plates.

The bottom, top, ends, and partitions formed integral are advantageously made with a flange c', extending around the same, as shown in Figs. 1 and 2, by means of which the indicator is fastened up in position to a partition or other support, said flange being so formed with the integral structure as when in position to hold the same at an inclination, as shown in Fig. 2, which inclination performs a twofold function—namely, providing for a gravity action of the series of name-plates and bringing the plane of the name-plates more nearly at right angles to the line of vision, the front being inclined downward.

I provide a central partition b', inclined and in a plane parallel with the planes of the bottom c and top d, said central partition being carried on support-plates 2, secured to the partitions e'. The inner and opposite faces of the partitions e' are provided with recesses 3, which

extend from the front to the back of the case, and said partitions are provided with ledges 4 on about the level of the central partition, which ledges form slideways for the upper series of name-plates, and the bottom of the case is provided with ribs 5, which form slideways for the lower series of name-plates, thus insuring the name-plates in the upper and lower receptacles of the case being always in the same line, whereby their downward movement by gravity is facilitated.

f represents the series of name-plates, and *f'* thickened ends thereto, formed in any desired manner and for the purpose of separating the surfaces thereof, and especially the surface on which the name of the station or other matter is printed or painted, so as to prevent abrasion.

g g' are the follower-plates in the upper and lower receptacles, the same being provided with projecting ends passing into and guided by the respective recesses 3 of the partitions *e'*. The series of name-plates *f* have their thickened ends *f'* preferably provided with rounded top and bottom edges, so as to facilitate the ready movement of the name-plates from one receptacle to the other in either direction.

Upon the respective ends of the follower-plates *g g'* are switch-bars 6 7. (Shown in Figs 1 and 6.) These are substantially alike but reversed in position and actuate devices hereinafter described. Upon the outer faces of the series of name-plates are placed the names of stations to be stopped at in succession or names, numbers, or items of interest to the public, while upon the surface of the shifter-plate *h* is placed a word or words especially intended for repeated use in connection with the names upon the series of name-plates—such, for instance, as the words "Next Station." (Shown in Fig. 1.) This shifter-plate *h* occupies a position in the case of the indicator which is next to the front thereof and forward of the series of name-plates, and it is adapted for vertical movement in front of said name-plates and is provided with means for raising the name-plates of the lower receptacle into the upper receptacle or bringing down the name-plates of the upper receptacle into the lower receptacle, according to the direction of movement that may be desired.

The shifter-plate is provided at its ends with enlarged projecting portions, on the upper ends and inner faces of which are double inclines 10 and on the lower ends and inner faces inclines 11, which pass at the limits of the movement of the said shifter-plate into recesses provided in the case. This shifter-plate at its respective ends is further provided with plate extensions h^2 with end perforations. Pivoted to these plate extensions and located on the outer face thereof at the ends of the shifter-plate are rocker-arms *k*, the pivot thereof being about central and the arms at obtuse angles to one another. These rocker-arms are provided at the upper ends and on the back face with lugs 12, that extend within the case and beyond the back surface of the plate extensions h^2. Said rocker-arms are also provided at their lower ends with lugs 13, somewhat similar to the lugs 12, which also extend within the casing beyond the inner surface of the plate extensions. The lugs 13 are provided with pins 14, (see especially Figs. 1, 3, and 8,) the office of which will be hereinafter described. A holding friction is preferably exerted on the rocker-arms at their pivots.

I provide a cross-shaft *l* centrally through the case of the indicator at the back, an operating-lever *l'* therefor, and suitable means for actuating the same. Upon the ends of the cross-shaft and within the recesses provided in the ends of the case between the ends *e* and partitions *e'* there are hubs 15, from which project arms *m m'*. The free ends of these arms pass through the perforations or openings provided in the ends of the plate extensions h^2. This cross-shaft, lever, and arms are provided as a means for raising and lowering the said shifter-plate for moving the series of name-plates.

The forward edges of the partitions *e'* are each formed with a flange, as shown in Figs. 3 and 4, and I provide angle-plates *i*, which at their outer edges are formed with slotted guide-ribs *i'* and at their inner edges with divided guides i^2. The ends of the plate extensions h^2 of the shifter-plate *h* pass through the slotted portions of the guide-ribs *i'*, so that the shifter-plate is guided by these ribs *i'* of the angle-plates *i*, and a positive line of movement is thus provided for the shifter-plate. The divided guides i^2 come in front or forward of the ends of the series of name-plates in the upper and lower receptacles, so as to limit their movement, and it will be further noticed by special reference to Fig. 2 that the case of the indicator is set at an inclination of about twenty degrees to the horizontal. Therefore the series of name-plates and the follower-plates *g g'* act by the force of gravity to move down through the upper and lower receptacles and to keep in a close relation of contact with one another and in position to be engaged by the lugs of the said rocker-arms *k*.

The central partition *b'* is provided at its forward corners with angle-frames b^2. (See especially Figs. 3, 9, and 10.) Each of these angle-frames has a projecting portion, at the end of which is an incline 9, placed vertical, and at the corner of the angle-frames there is a support-block 8 with an inclined face. It will be further noticed by reference to Figs. 2 and 5 that in the upper receptacle the name-plates rest upon the surfaces of the ledges 4 and that the first of the name-plates in the upper receptacle rests upon the support-blocks

8, the upper surfaces of the support-blocks 8 and the ledges 4 being exactly in the same plane, so that there can be no break in the continuity of movement of the name-plates in the upper receptacle. In the lower receptacle the ends of the name-plates rest upon the ribs 5 in the bottom of the case and slide thereon in their gravity movement.

I provide stops 16, Figs. 1 and 2, in the receptacles at the ends of the case against which the arms *m m'* strike at the ends of their movements, said stops preferably having rubber surfaces as cushions to prevent jar and injury to the moving parts. The case of the indicator is advantageously provided at its lower corners with finger-switches *n*, each of which is provided with a pin *n'*, the office of which switches is to manually shift the rocker-arms *k*—say from the position in full lines. Fig. 1—so as to bring the upper portions of said arms into a vertical position and swing the lower members of said arms out into an inclined position, or vice versa, so as, if desired, to change the direction of movement of the name-plates without being obliged to operate the indicator to the end of the series of name-plates, for, as an illustration, a train carrying these indicators instead of going to the end of its route might stop midway and go back, and in such event it would be necessary to shift the mechanism so that the order of sequence of the name-plates would be perfect. In this movement the pins *n'* engage pins n^2, projecting from the rocker-arms at their lower ends.

The operation of the device is as follows: Bearing in mind that as the parts are shown in the drawings, the progressing movement of the mechanism with the position of the rocker-arms *k* is raising the name-plates from the lower receptacle of the case into the upper receptacle.

Referring to Figs. 1, 3, and 4, it will be noticed that the lower members of the rocker-arms are vertical, with the lugs 13 in line with and beneath the ends of the name-plates, and with the next movement of the cross-shaft and the arms connected therewith the shifter-plate is raised, and with it the name-plate in the lower receptacle directly behind said shifter-plate. As these parts move upward the double inclines 10 push the name-plates and the follower-plate in the upper receptacle farther into the receptacle, so as to provide room for the upwardly-moving name-plate. This name-plate as it rises with the shifter-plate acts upon the inclined faces of the support-blocks 8 to move the central partition *b'* back simultaneously with the movement of the name-plates and follower-plate *g* in the upper receptacle. When the name-plate lifted reaches its highest point, the central partition *b'*, which is free to move and is not in any wise in contact with the name-plates or follower-plate, again moves forward, bringing the upper surfaces of the support-blocks 8 beneath the ends of the name-plate that has just been raised to position in the upper receptacle, and thus holds the same in position. The movement in the opposite direction of the cross-shaft and the arms connected therewith simply moves down the shifter-plate to the initial position shown in Figs. 1 and 2. In the movement just described the inclines 11 press back the name-plates and follower-plate in the lower receptacle and hold the same back, because the inclines 11 do not move off the end faces of the forward name-plate in the lower receptacle, and with the downward movement just described the name-plates and follower-plate in the lower receptacle are kept back, thus providing the necessary space or room for the downward movement of the shifter-plate *h*. With the further upward movements of the shifter-plate the operations just described are repeated until all of the name-plates in the lower receptacle have been raised and transferred into the upper receptacle. With the completion of the transfer of these name-plates from the lower into the upper receptacle the follower-plate *g'* in the lower receptacle comes next to the shifter-plate, and with the downward movement of this shifter-plate the lugs 13 come in contact with the switch-bars 7 on the ends of the follower-plate *g'*, which act to swing the rocker-arms *k* and bring their upper members into a vertical position and throw their lower members out into an inclined position in which the lugs 12, heretofore inactive, are brought in evidence, and the lugs 13, heretofore operative, are made inoperative during the reverse movement of bringing the name-plates from the upper receptacle of the case down into the lower receptacle. For this reverse movement it will be apparent that the action of the name-plates cannot be depended upon to move the central partition *b'* back into the case to provide room for the vertical movement of the name-plate, because in the upper receptacle each name-plate as it comes forward rests upon the upper surfaces of the support-blocks 8. For the performance of this function the pins 14 on the lugs 13 come into evidence with each upward movement of the shifter-plate because they engage the inclines 9 at the ends of the angle-frames b^2 on said central partition and move the same back out of the way at the time that the shifter-plate *h* comes to its highest point and the lugs 12 at the upper ends of the rocker-arms *k* come above the upper edges of the first name-plate in the upper receptacle. With the downward movement of the shifter-plate the first name-plate in the upper receptacle is moved with the shifter-plate into the lower receptacle, the inclines 11 pressing back the name-plates, as heretofore described, and with each successive movement of the name-plate a corresponding action of the parts takes place to

bring down the name-plates in succession from the upper to the lower receptacle. After all of the name-plates in the upper receptacle have been brought down into the lower receptacle it will be noticed that the upper follower-plate *g* comes next to the shifter-plate and with a further upward movement of the shifter-plate the lugs 12 come against the switch-bars 6 of the follower-plate *g* and the rocker-arms *k* are again shifted to bring them into the full-line position, Fig. 1, in which they are so placed as to be prepared to raise the name-plates from the lower into the upper receptacle, thus repeating the movements heretofore described. The guides i^2 on the faces of the angle-plates *i* come forward of the name-plates in the respective receptacles to limit their movement, and these guides are divided, as shown especially in Fig. 1, so that with the respective shifting movements of the rocker-arms *k* by means of the switch-bars 6 7 room will be provided for the passage of the lugs 12 13 from one position to another, it being apparent from Fig. 1 that in the position therein of the rocker-arms the lugs 13 are within the guides i^2 while the lugs 12 are outside of the same and that in the reverse position of the rocker-arms the lugs 12 would be inside of the guides and the lugs 13 outside.

I have shown in Figs. 1, 2, and 5 a bell *o* in the space between the end *e* and partition *e'*. A hammer *o'* is pivoted to the said partition, and a pin 18 extends out from the hammer into a juxtaposed relation with the arm *m'*. When this arm is elevated, it raises the hammer, which gradually moves away, and as the pin 18 slips off the arm *m'* the hammer falls, striking the bell, sounding an alarm. As the arm *m'* descends and contacts with the pin 18 the hammer-wire yields and the arm *m'* passes below the pin 16 to a normal position.

While I have shown and described my improved indicator with special reference to stations upon an elevated or surface road, it is apparent that the indicator is not limited to such uses, as it may be employed to equal advantage for indicating to the public view any matters in succession that may be desired, and as an illustration of such use it might be said that the indicator could be used in places of public amusement to give the numbers and items of a program or in places of public worship to give the numbers of the hymns or in concerts to give the musical numbers or names, and in railroad-depots to indicate the destination of trains and times for starting and stations at which trains will stop.

I claim as my invention—

1. In an indicator, the combination with a case having two receptacles and movable name-plates, of a shifter-plate and means for actuating the same, devices movable with the shifter-plate for engaging the name-plates, and means for automatically changing the position of said movable devices to reverse the direction of movement of the name-plates.

2. In an indicator, the combination with a case having two receptacles and movable name-plates, of a shifter-plate and means for actuating the same, devices movable with the shifter-plate for engaging the name-plates, follower-plates in said receptacles coming back of the name-plates, and means secured to the follower-plates for automatically changing the position of said movable devices to reverse the direction of movement of the name-plates.

3. In an indicator, the combination with an inclined case having two receptacles and name-plates moving by gravity, of a shifter-plate and means for actuating the same, devices movable with the shifter-plate for engaging the name-plates, gravity follower-plates in said receptacles back of the name-plates, and means secured to the follower-plates for automatically changing the position of said movable devices to reverse the direction of movement of the name-plates.

4. In an indicator, the combination with a case having two receptacles and movable name-plates, of a shifter-plate and means for actuating the same, rocker-arms pivotally mounted upon the ends of the shifter-plates, devices at the respective ends of the rocker-arms for engaging the name-plates so as to move the same from one receptacle to another, and means for changing the position of said rocker-arms to reverse the direction of movement of the name-plates.

5. In an indicator, the combination with a case having two receptacles and movable name-plates, of a shifter-plate and means for actuating the same, rocker-arms pivotally mounted upon the ends of the shifter-plate, devices at the respective ends of the rocker-arms for engaging the name-plates so as to move the same from one receptacle to another, and means for automatically changing the position of said rocker-arms to reverse the direction of movement of the name-plates.

6. In an indicator, the combination with a case having two receptacles and movable name-plates, of a shifter-plate and means for actuating the same, rocker-arms pivotally mounted upon the respective ends of the shifter-plate and movable therewith, lugs upon the opposite ends of the rocker-arms adapted to engage the name-plates in the respective positions of the rocker-arms to change the name-plates from one receptacle to the other in either direction, gravity follower-plates in said receptacles coming back of the name-plates, and means secured to the follower-plates for changing the position of the rocker-arms to reverse the direction of movement of the name-plates.

7. In an indicator, the combination with a case having two receptacles and movable name-plates, of a shifter-plate and means for actuat-

ing the same, rocker-arms pivotally mounted upon the respective ends of the shifter-plate and movable therewith, lugs upon the opposite ends of the rocker-arms adapted to engage the name-plates in the respective positions of the rocker-arms to change the name-plates from one receptacle to the other in either direction, gravity follower-plates in said receptacles coming back of the name-plates, and switch-bars secured to the outer faces of said gravity follower-plates at their ends and in reversed positions for contacting with the lugs of the rocker-arms to change the position thereof to reverse the direction of movement of the name-plates.

8. In an indicator, the combination with an inclined case having two downwardly-extending receptacles and name-plates therein moving by gravity, of a shifter-plate in the lower forward portion of the indicator and means for actuating the same, rocker-arms pivotally mounted upon the respective ends of the shifter-plate, lugs upon the ends of the rocker-arms projecting inward of the indicator-case and movable with the shifter-plate for engaging the name-plates, gravity follower-plates in said receptacles coming back of the name-plates and adjacent to the back of the shifter-plate as each receptacle is emptied of name-plates, switch-bars upon the faces of the follower-plates at their respective ends adapted for automatically engaging the lugs of the rocker-arms for changing the position of said rocker-arms to reverse the direction of movement of the name-plates as said follower-plates come respectively into a juxtaposed relation with the shifter-plate.

9. In an indicator, the combination with a case having two receptacles and movable name-plates, of a shifter-plate and means for actuating the same, devices movable with the shifter-plate for engaging the name-plates, slideways in said receptacles upon which the name-plates rest, a central partition and a support therefor independent of the slideways of the name-plates, means connected to said central partition for supporting the forward name-plate in the upper receptacle, and means connected with the shifter-plate for bodily moving the said central partition as the name-plates are progressively transferred from the upper to the lower partition.

10. In an indicator, the combination with a case having two receptacles and movable name-plates, of a shifter-plate and means for actuating the same, devices movable with the shifter-plate for engaging the name-plates, slideways in said receptacles upon which the name-plates rest, a central partition and a support therefor independent of the slideways of the name-plates, support-blocks having inclined faces and adjacent inclines and means for connecting the same to the forward corners of the central partition, and means connected to the shifter-plate for contacting with the inclines at the ends of the central partition to move the central partition back as each name-plate from the upper receptacle is moved down into the lower receptacle.

11. In an indicator, the combination with an inclined case having two receptacles, movable name-plates, and ledges within the upper receptacle forming supports for the name-plates therein and upon which they move, of partitions e' adjacent to the ends of the indicator-case, the forward portions of which are provided with flanges, angle-plates secured to these flanged forward edges and each provided with a guide-rib and with divided guides, the divided guides coming against the outer faces of the name-plates as stops to their downward movement, a shifter-plate and plate extensions thereto passing through the guide-ribs of said angle-plates and beyond the same, and means for actuating said shifter-plate.

12. In an indicator, the combination with a case having two receptacles and movable name-plates therein, of a shifter-plate and means for actuating the same, rocker-arms secured to the ends of said shifter-plate, lugs upon the backs of the rocker-arms at their ends extending toward the interior of the case and adapted to engage the name-plates in shifting the same from one receptacle to the other in either direction, and means for contacting with said lugs to shift the rocker-arms from one position to another.

13. In an indicator, the combination with a case having two receptacles and movable name-plates therein, of a shifter-plate and means for actuating the same, rocker-arms secured to the ends of said shifter-plate, lugs upon the backs of the rocker-arms at their ends extending toward the interior of the case and adapted to engage the name-plates in shifting the same from one receptacle to the other in either direction, means for contacting with said lugs to shift the rocker-arms from one position to another, enlarged ends near the ends of the shifter-plate, double inclines upon the upper ends of these enlarged ends and inclines on their lower ends, which inclines are adapted to act upon the name-plates in the respective receptacles to move and hold the same back and facilitate shifting the first of said name-plates in either direction.

Signed by me this 6th day of September, 1904.

EDWIN M. SKINNER.

Witnesses:
GEO. T. PINCKNEY,
S. T. HAVILAND.