

S. BROWN.  
GATE AND REGISTERING MECHANISM.

No. 522,191.

Patented July 3, 1894.

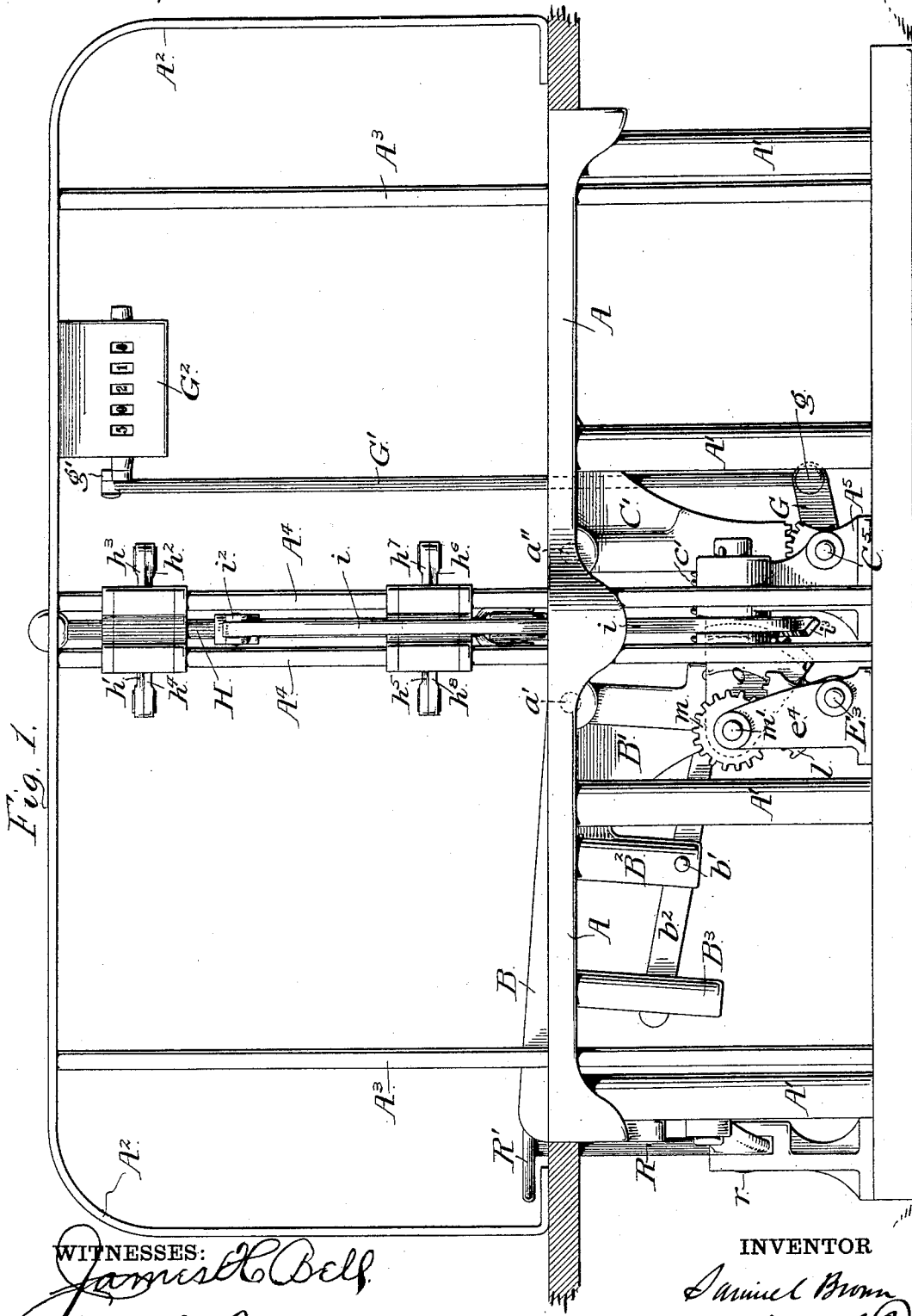


Fig. 1.

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INVENTOR

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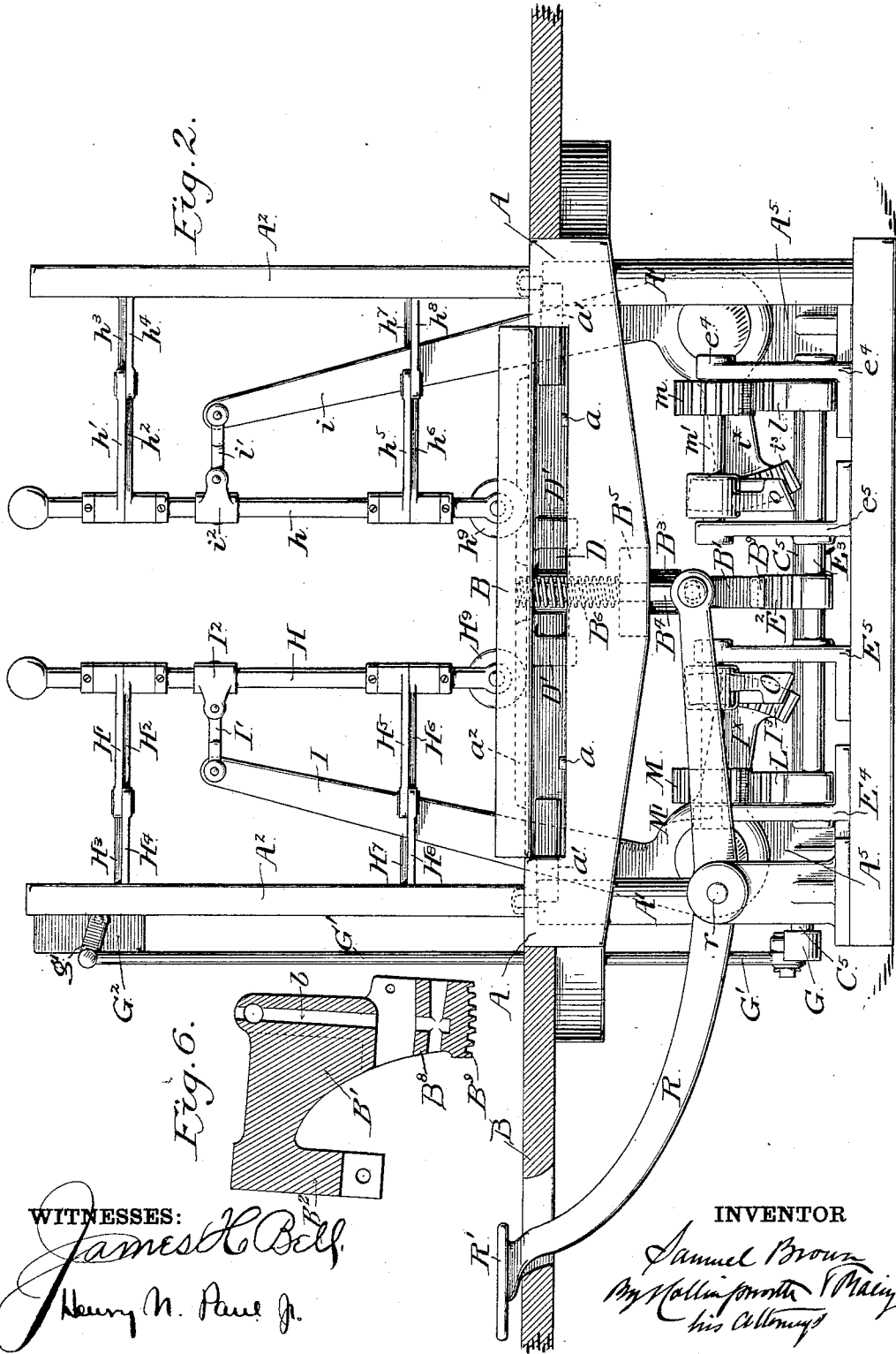


Fig. 2.

Fig. 6.

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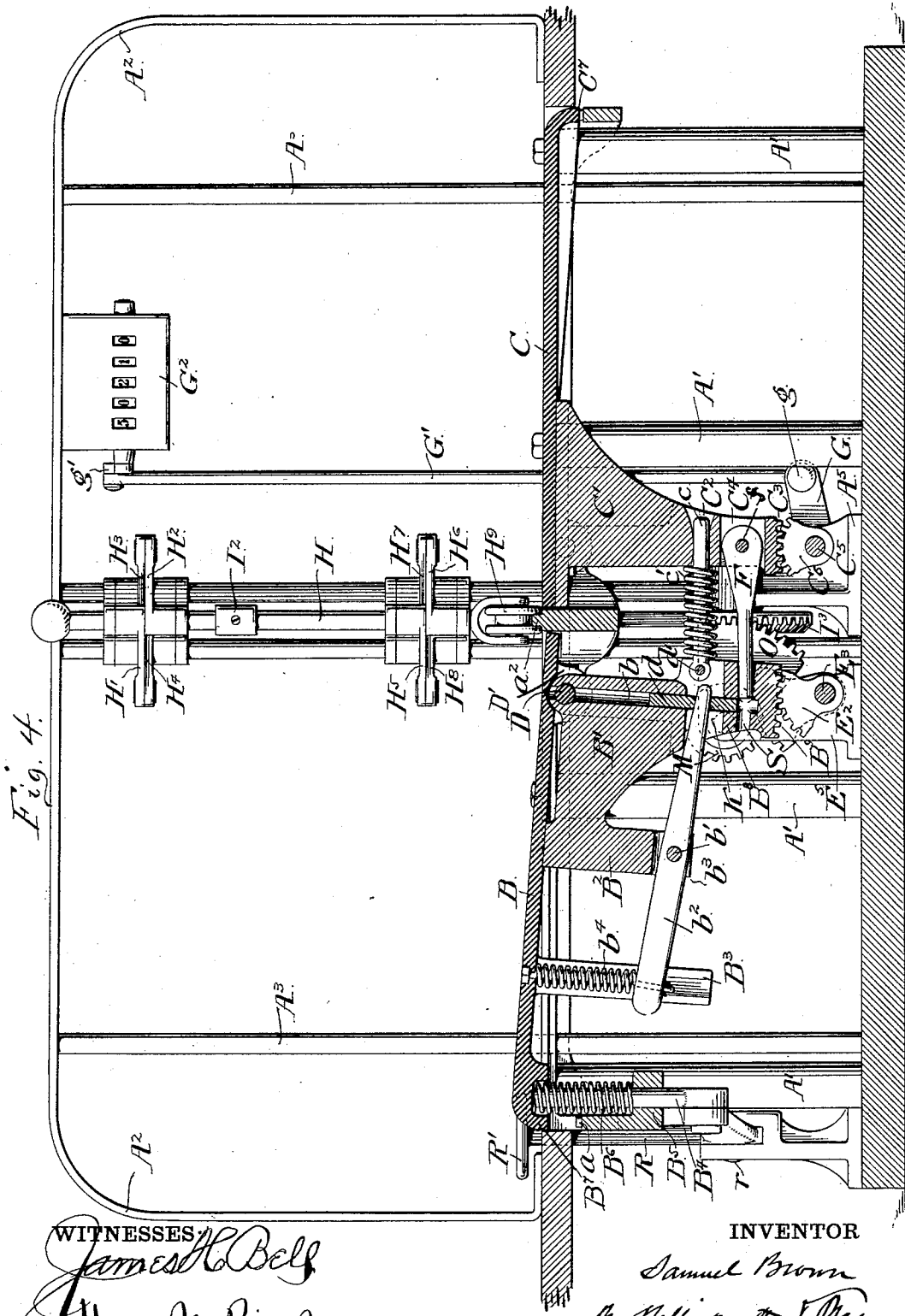


Fig. 4.

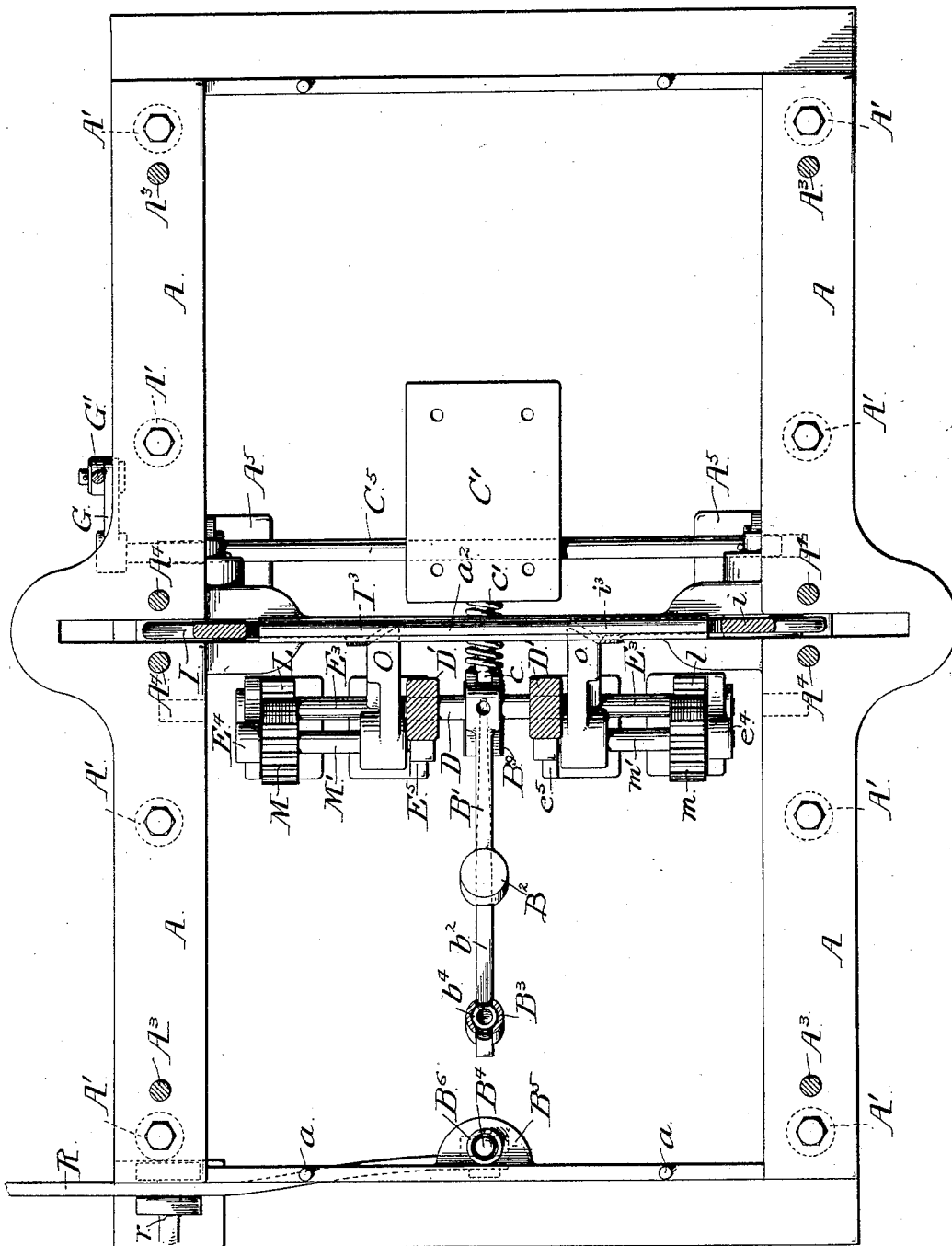
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 FIG. 5.

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# UNITED STATES PATENT OFFICE.

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## GATE AND REGISTERING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 522,191, dated July 3, 1894.

Application filed August 7, 1891. Serial No. 401,984. (No model.)

*To all whom it may concern:*

Be it known that I, SAMUEL BROWN, of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Automatic Gate and Registering Apparatus, whereof the following is a specification, reference being had to the accompanying drawings.

In said drawings, Figure 1 represents a side view of an apparatus embodying a preferred form of my invention. Fig. 2 is an end view thereof, as seen from the left hand end of Fig. 1. Fig. 3 is a top or plan view thereof. Fig. 4 is a central longitudinal section on a vertical plane, on line 4—4 of Fig. 3. Fig. 5 is a top or plan view of the apparatus, with the platforms and gate removed parts being in section, so as to show the details of the actuating mechanism. Fig. 6 represents a detail view, in vertical section, of the bracket and adjacent parts indicated in the other figures by the letters B', B<sup>o</sup>, &c.

My invention belongs to that class of devices which embody a passage way provided with movable platforms, a gate controlling the passage and adapted to be opened by one of said platforms and closed by the other thereof, and a registering device combined therewith, the necessary movements of the platforms being obtained from the weight of a person traversing said passage way.

Among the objects of my invention are to so control the gate closing mechanism as to suspend its operation under certain conditions, without however effecting the action of the registering device; and, further, to so combine the gate opening mechanism with its actuating platform as to permit, under certain circumstances, the movement of the platform without action upon the gate.

Minor features of improvement relate to strength and facility of operation of the actuating devices and gate.

Referring to the drawings, A represents a rectangular frame supported upon posts A', and inclosed on either side by a railing A<sup>2</sup>, suitably mounted by means of rods A<sup>3</sup>, to form a laterally inclosed passage way of sufficient width to readily admit one person at a time. Within said frame are two platforms B and C the latter shown in Figs. 3 and 4, respectively, each of which is independently

pivoted at a point near the longitudinal center of the frame.

The platform B, constitutes the floor of the entrance portion of the passage, and hence will be hereinafter referred to as the entrance platform. The platform C constitutes the floor of the exit portion of the passage, and hence will be hereinafter referred to as the exit platform. The entrance platform is intended to have a somewhat greater range of motion than the exit platform, but each of them is provided with an outwardly curved flange B', C' respectively at its outer end, which flange by contact with the projecting portions a, a, respectively, of the frame, limits the downward range of motion positively.

Intermediate between the proximate ends of the platforms B and C is the gate, adapted to be actuated thereby in a manner which will be hereinafter described, said gate, in the present instance, being a two-part structure whose respective portions are alternately protruded into and withdrawn from the passage. As the two parts which constitute the gate are precisely similar in construction, only one of them will be described, it being understood that in the case of the other a small letter of reference corresponding to the large one mentioned represents the corresponding part.

Referring to Fig. 2, the part at the left-hand side will now be described in detail. A vertical rod H, is provided at its bifurcated lower end with a grooved roller H<sup>o</sup>, adapted to run upon the transverse guide pieces a<sup>2</sup>, of the framing intermediate between the proximate ends of the platform. Near the top and the bottom of this rod two pairs of double toggle arms are pivotally secured thereto, the other ends of said arms being journaled upon supporting rods A<sup>4</sup>, of the railing A<sup>2</sup>. The members of the upper pair of double toggle arms are indicated by H<sup>1</sup>, H<sup>2</sup>, H<sup>3</sup> and H<sup>4</sup>, and the corresponding members of the lower pair of double toggle arms are indicated by H<sup>5</sup>, H<sup>6</sup>, H<sup>7</sup>, and H<sup>8</sup>. Said arms secure a parallel movement of the rod H, as it is shifted inward or outward in the passage, and also form therewith a barrier which closes that part of the passage which is intermediate between the said railing and the rod in any position of

the latter. Preferably, the rod *H*, when in its most extended position, does not come in contact with the corresponding rod *h*, upon the other side, a narrow opening being left 5 between, too small to permit the passage of a person, but sufficient to prevent the accidental squeezing of a person or entanglement of clothing, &c., should the gate be closed upon him before he has quite passed by. The 10 shifting movement of the rods *H* and *h*, is produced by means of bell-crank levers, whose upwardly projecting long arms *I*, *i*, respectively, are connected by means of links *I'*, *i'*, to the pieces *I*<sup>2</sup>, *i*<sup>2</sup>, secured upon the rods 15 *H* and *h*, respectively, these several parts being best illustrated in Fig. 2. Obviously the throwing of the long arms of the bell-cranks *I*, *i*, inward or outward, will close or open the two-part gate, and the manner in which these 20 movements of the levers are obtained will now be described.

The entrance platform *B*, is pivoted to the frame *A* by means of lateral pins *a'*, *a'*, (see dotted lines of Fig. 3,) which have their bearings in the downwardly depending sides of 25 the frame *A*. Beneath the platform *B*, and pivoted thereto upon a rod *D*, which is supported in the lugs *D'*, *D'*, cast on the under side of the platform is a bracket-shaped piece 30 *B'*, which I term the shifting-piece. Said shifting-piece is thus capable of movement independently of the platform *B*, but can be moved bodily therewith when the platform descends. As shown in Fig. 6, the lower end 35 *B*<sup>8</sup> of the shifting-piece *B'*, is provided with a slightly curved rack *B*<sup>9</sup>, which engages with a gear-segment *E*<sup>2</sup>, rigidly mounted upon a horizontal rock-shaft *E*<sup>3</sup>, mounted in the vertical standards *E*<sup>4</sup>, *E*<sup>5</sup>, *e*<sup>4</sup>, *e*<sup>5</sup>. Referring more 40 particularly to Figs. 2 and 5 said shaft is provided near each end with segment-gears *L*, *l*, which engage respectively with the pinions *M*, *m*, mounted upon shafts *M'*, *m'*, whose bearings are respectively in the upper portions of the standards *E*<sup>4</sup>, *E*<sup>5</sup>, and *e*<sup>4</sup>, *e*<sup>5</sup>. Near 45 the inner ends of the shafts *M'*, *m'*, are mounted segmental bevel-gears *O*, *o*, respectively, which engage with correspondingly beveled segmental racks *I*<sup>3</sup>, *i*<sup>3</sup>, respectively, formed upon the faces of the lower arms *I*<sup>x</sup>, *i*<sup>x</sup>, of the bell-cranks, whose upper arms *I*, *i*, respectively actuate the two-part gate. 50

Oscillation of the shaft *E*<sup>3</sup>, in one direction or the other will, through the train of gearing which has just been described, throw the lever arms *I*, *i*, inward or outward, thus positively closing or opening the gate. This oscillation of the shaft *E*<sup>3</sup>, is effected by the movement of the shifting-piece *B'*, upon the 60 pivot *D*, which in turn is effected by devices which will now be described.

The outer or free end of the shifting-piece *B'*, is provided with a downwardly depending piece *B*<sup>3</sup>, the lower end of which is slotted, 65 as indicated at *b*<sup>3</sup>, to receive a lever *b*<sup>2</sup>, mounted upon a pivot *b'*. The outer end of said lever moves between guide pieces *B*<sup>3</sup>, which depend

from the lower side of the platform *B*, and is connected with the platform by means of a stout spring *b*<sup>4</sup>, whose upper end is attached 70 to the platform. The other end of said lever *b*<sup>2</sup>, enters a slot *K*, which extends entirely through the lower portion *B*<sup>8</sup>, of the shifting-piece *B'*, and said end of the lever *b*<sup>2</sup> there engages with a bolt *d*, which slides vertically 75 in a vertical socket *b*, formed within the inner edge of the shifting-piece *B'*. Said bolt is long enough to project downward entirely across the slot *K*, and also to extend, when in its lowermost position, entirely across a second 80 slot *S*, which runs in a substantially horizontal direction through the lower part *B*<sup>8</sup>, of the shifting-piece and a short distance above the rack *B*<sup>9</sup>. When in the position shown in Fig. 2, said bolt is clear of the slot *S*, but 85 when protruded into its lowest position said bolt intercepts the slot *S*, and is firmly supported in its protruded position by means of the downwardly prolonged end portion of the socket *b*, which, as will be seen from Fig. 4, 90 extends below the point where the slot *S* is formed.

The exit platform *C*, is pivoted to the frame *A*, by means of the lateral pins *a''*, *a''*, and is provided with a bracket-shaped piece *C'*, 95 rigidly attached to said platform. Near the lower end of said bracket *C'*, is a vertical slot *C*<sup>4</sup>, within which a rod *F*, is mounted upon a pivot *f*. The end of said rod *F* extends across into the slot *S*, which, as before stated, is 100 formed in the lower end *B*<sup>8</sup> of the shifting-piece *B'*. Immediately above said slot *C*<sup>4</sup> in piece *C'*, a second slot *C*<sup>2</sup>, is formed horizontally through the bracket *C'*, which slot *C*<sup>2</sup> receives the free end of a rod *c*, pivoted to the 105 shifting piece *B'*, at *d'*. A stout spring *c'*, coiled around the rod *c*, bears against the proximate faces of the shifting-piece *B'* and the bracket *C'*, and tends to thrust them away from each other. 110

The extreme lower end of the bracket *C'*, is provided with a rack *C*<sup>3</sup>, which engages with a segmental gear *C*<sup>6</sup>, rigidly mounted upon a rock-shaft *C*<sup>5</sup>. Said rock-shaft has its bearings in standards *A*<sup>5</sup>, mounted upon the 115 base of the frame, and it carries at one end a rigidly attached lever-arm *G*, which is connected by the vertical connecting rod *G'*, with the actuating lever *g'*, of an ordinary registering device *G*<sup>2</sup>, which may be of any of the 120 well known types of apparatus used for registration of passengers, &c.

The outer end of the entrance platform *B*, rests upon a stout spring *B*<sup>6</sup>, whose lower end is supported upon a bracket *B*<sup>5</sup>, suspended 125 from the frame *A*, said spring normally tending to throw the platform into its raised position. Within said spring *B*<sup>6</sup>, is a rod *B*<sup>4</sup>, pivoted to one end of the long lever *R*, which has a fulcrum at *r*, in one side of the frame, 130 the other end of said lever extending out some distance at one side of the platform and terminating in a foot-piece or treadle *R'*.

The operation of the device is as follows:

In the normal position of the mechanism (see Fig. 4) the platform B is upheld by the spring B<sup>6</sup>, and the platform C is down, the spring c' being so proportioned as to lift the platform C, when the shifting-piece B' is depressed, provided platform C is unoccupied. This position of the platform corresponds with such a position of the train of gearing as that the upper arms I, i, of the bell-cranks are in their innermost position, as indicated in said Fig. 4, and the two-part gate is therefore closed, except as to the small space which, as before stated, is left between the rods H and h. If now a person enters the passage way and steps upon the platform B, it will descend and in so doing will rotate the shifting-piece B' downward. This motion of the shifting-piece will, by means of the rack B<sup>9</sup>, actuate the segment E<sup>2</sup>, and rock the shaft E<sup>3</sup>, so as to actuate the pinions M and m. This movement of the pinions will rotate the bevel segments O and o, upwardly and will thus raise the lower lever arms I<sup>x</sup>, i<sup>x</sup>, of the two bell-cranks, throwing their upper ends outward and retracting the two parts of the gate so as to open the passage way. As the shifting-piece B' descends with the platform B, the lever b<sup>2</sup>, will not change its position relatively to either thereof, and the bolt d will consequently remain stationary. If, however, the person now steps from the platform B, said platform will immediately rise by reason of the pressure of the spring B<sup>6</sup>, but the shifting-piece B' will remain down, since it is entirely independent of the platform. Consequently the raising of the platform will not actuate the gate shifting mechanism so as to close the gate, but, as the shifting-piece B' remains down while the platform rises, the outer end of the lever b<sup>2</sup> will be raised by reason of the forcing down of its inner end while the fulcrum b' remains stationary, and the inner end of said lever (which is connected with the bolt d) will be thrown down, carrying with it the bolt and throwing it entirely across the slot S, so as to obstruct the opening thereof. If the person in stepping off from the platform B, passes through the gate and steps on to the platform C, his weight will cause it to descend, and to thrust the rod F toward the bolt d. The end of the rod F has then almost immediately come into contact with the bolt, and as its motion continues it will come against the bolt d and will thrust the end B<sup>3</sup> of the shifting piece B' away from the bracket C'. This movement will of course throw the rack B<sup>9</sup> in the opposite direction to that in which it has been previously moved and will actuate the train of gearing so as to throw the inner ends of the bell-crank levers I and i inwards, thus closing the gate behind the person. Upon the completion of the movement the shifting-piece B' will have been turned upon its pivot D, so as to again bring its outer end into contact with the under side of the platform B, and thus resume its original position; at the same time the lever b<sup>2</sup> will

be again shifted back into its original position as shown in Fig. 4 and will withdraw the bolt d, so as to clear the slot S. It will thus be observed that the slot S will be clear whenever the outer end of the shifting-piece B' is in contact with the platform B, whether both of them be in the raised or depressed position, but that whenever they separate, the lever b<sup>2</sup> will shift the bolt d so as to obstruct the slot. If therefore a second person steps upon the platform B, before the first person has left the platform C, the descent of the platform B and shifting-piece B' will not cause the bolt d to strike the rod F, but the rod F can play freely back and forth in the slot S. In such case the gate will of course remain open. The depression of the platform C, will also actuate (by means of the rack C<sup>3</sup> and gear C<sup>4</sup>) the rod G' of the registering apparatus, and will register the passage of one person through the gate. As this registering movement is not dependent upon the gate-shifting mechanism, the registration will occur even though a continuous stream of persons pass through in such quick succession that the gate is not permitted to close.

The purpose of the lever R is to prevent the descent of the entrance platform B, in case for any reason the attendant desires to keep the gate closed. This operation is effected by depressing the outer end of the lever R, as for instance, by means of pressure upon the foot-piece R' as shown in Fig. 2. The rod B<sup>4</sup> will then be thrust up against the under side of the platform B, and will hold it positively in a raised position, so that the gate actuating mechanism cannot be operated.

Having thus described my invention, I claim—

1. The combination of an inclosed frame forming a passage way, a depressible entrance platform mounted therein and forming a portion of the floor of said passage way, an extensible gate adapted in one position to close said passage way and in the other to free the same, a lever connected with said gate, a shifting-piece moving in one direction with said entrance platform, but independently pivoted to permit motion relatively thereto, gearing substantially as set forth whereby said shifting-piece is operatively connected with said lever, a bolt mounted in said shifting-piece, a lever also mounted in said shifting-piece and connected with said bolt and with said entrance platform, substantially in the manner set forth, a depressible exit platform arranged upon the opposite side of said gate, and a rod connected with said exit platform and adapted to engage with said bolt in one position of the latter but to clear it in the other position, substantially as set forth.

2. The combination of the frame, the railings inclosing the same to form a passage way, the independently pivoted entrance and exit platforms B and C, constituting the floor of said passage way, the two-part extensible gate mounted between the proximate ends of the

platforms, the bell-cranks connected with the  
respective portions of said gate and provided  
at their lower ends with segmental bevel-gears,  
the shifting-piece B', pivoted to the entrance  
5 platform and provided at its lower end with  
a slot S, and a rack B<sup>2</sup>, the lever b<sup>2</sup> mounted  
in said shifting-piece and connected at one  
end to the entrance platform, the bolt con-  
10 nected with the other end of said lever and  
adapted to open or close said slot S, the rock-  
shaft E<sup>3</sup>, the segmental-gear mounted there-  
on and engaging with said rack B<sup>2</sup>, the train  
of gearing operatively connecting said rock-  
15 shaft with the segmental bevel-gears upon  
the bell-cranks, the bracket connected with  
the exit platform C, the rod F pivoted to said  
bracket and extending into said slot S in the  
shifting-piece, the spring C' interposed be-  
20 tween said shifting-piece and said bracket,  
and registering mechanism, substantially as  
set forth, operatively connected with said  
bracket.

3. The combination of a pair of independ-  
ently depressible platforms, a gate interme- 25  
diately mounted between said platforms, actu-  
ating mechanism substantially as described  
for opening said gate operatively connected  
with the first of said platforms, actuating  
mechanism substantially as described for  
30 closing said gate operatively connected with  
the second of said platforms, and control-  
ling mechanism substantially as set forth in-  
termediate between said closing mechanism  
and said gate, said mechanism being opera-  
35 tively connected with the first of said plat-  
forms to disengage the closing mechanism  
from the gate during the period of depression  
of the first platform, but permitting engage-  
ment when said first platform is in its raised  
or normal position.

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