

2 Sheets—Sheet 1.

C. W. DWELLE.
ELEVATOR.

No. 360,800.

Patented Apr. 5, 1887.



Attest:
W. H. Knight
Wm. J. Harries.

IN-VENTOR:
Charles W. Duvall
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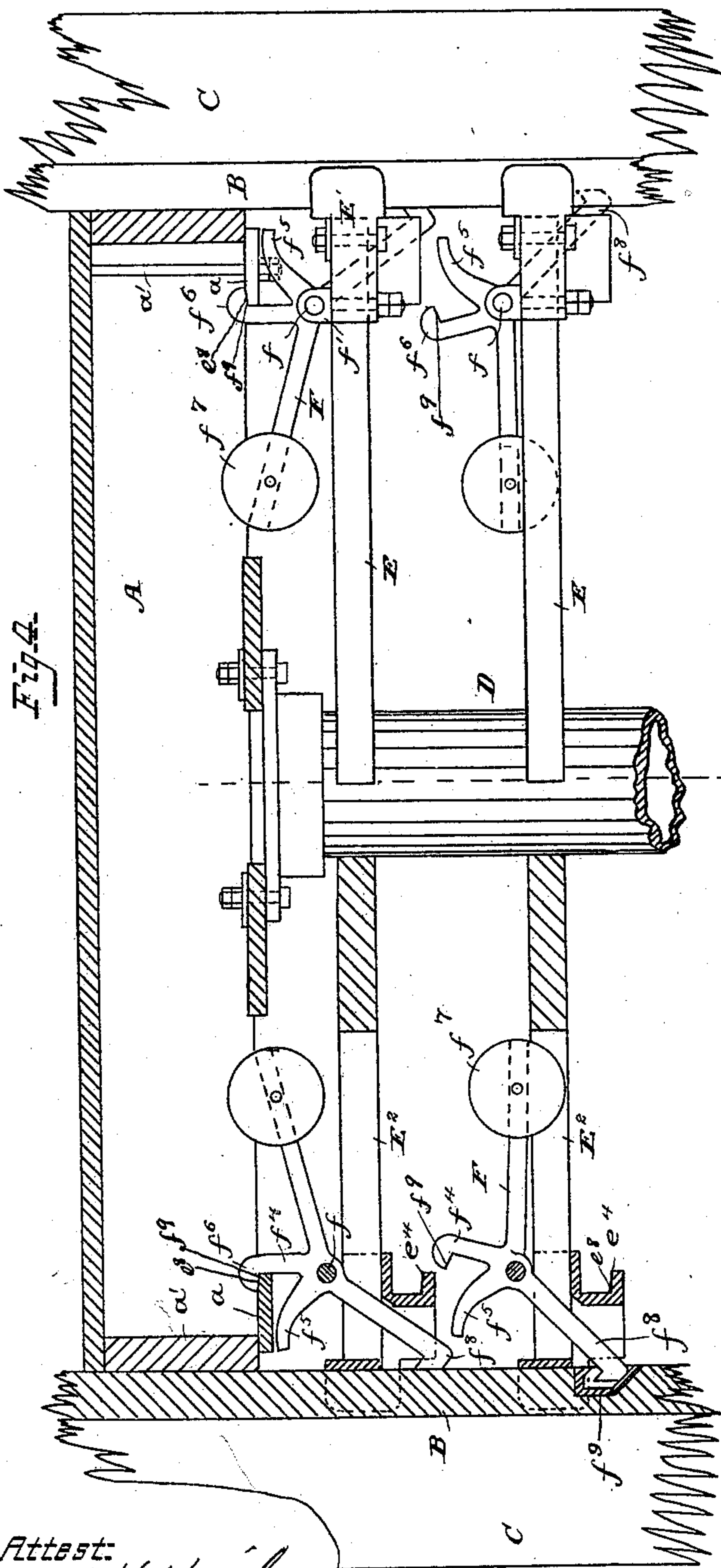
(No Model.)

2 Sheets—Sheet 2.

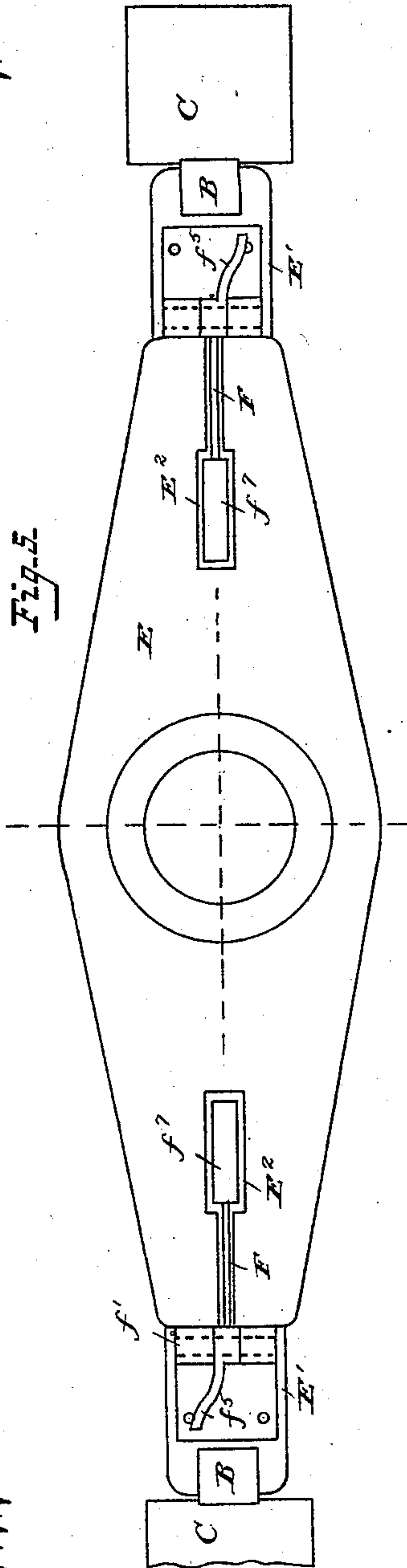
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Attest:

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Inventor:

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UNITED STATES PATENT OFFICE.

CHARLES W. DWELLE, OF DENVER, COLORADO.

ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 360,800, dated April 5, 1887.

Application filed July 23, 1886. Serial No. 208,015. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. DWELLE, of the city of Denver, in the county of Arapahoe and State of Colorado, have made certain new and useful Improvements in Hydrostatic Elevators; and I hereby declare the following to be a full and clear specification thereof, sufficient to enable others to make and use the same.

My invention relates to improvements in hydrostatic elevators of that particular class wherein vertically-moving pistons or plungers are employed to elevate the cage or platform, and has for its object the provision of means for bracing said piston or plunger against lateral buckling or bending under the weight of said cage or platform and its contents when said piston is withdrawn from its cylinder.

To the accomplishment of this end the invention consists in a series of braces that extend from said piston to the elevator-guides, and in means for causing said braces to be raised by the upward movement of the elevator to predetermined distances from the cylinder-head, in means for causing said braces to be automatically secured to the guides at such predetermined distances from the cylinder, and in means for releasing said braces from said guides, all substantially as herein-after described.

Referring to the accompanying drawings, wherein similar letters of reference denote similar parts, Figure 1 represents a side elevation, partly in section, of an elevator-hoist provided with my improvement. Fig. 2 is a plan view of one of the braces in position for use. Fig. 3 represents a front elevation of one of the elevator-guides. Figs. 4 and 5 represent, respectively, an elevation and plan view of parts of an elevator similar to those shown in Figs. 1 and 2, having modified forms of the fastening device.

In the drawings, A designates the elevator-platform, which is operated up and down upon guides B, secured to upright posts C, by a piston, D, that operates at its lower end within a cylinder (not shown) in the usual manner.

E designates braces, which in the present instance are shown as made of wood, but which may be, if desired, made of metal, that extend between the guides B, and are provided at their middles with apertures e , through which the

piston D is passed, and which, when the brace is of wood, is provided with bushings e' , as shown.

E' designates castings, that are secured upon the opposite ends of the braces, and are provided with bifurcated outer ends, the arms e^2 of which bear upon the opposite side edges of the guides B. The castings E' are each provided with a bar, e^3 , that extends from side to side of the casting, at the bottom thereof, to support the ends of the brace, and is provided upon its inner edge, near the bottom thereof, with a flange, e^4 , having its upper edge beveled, as shown at e^8 , for a purpose hereinafter to be explained.

F designates weighted levers, that are pivoted at f to lugs f' , that project upwardly from the brace E' , near the ends thereof, and at each side of slots E^2 , formed therethrough. The levers F are each provided with a downwardly-projecting arm, f^2 , that passes through the slot E^2 and engages a sliding bolt, G, that operates upon the lower surface of the brace E upon the bar e^3 , and through an aperture formed in the end of the casting E' .

f^3 designates clips that hold the inner ends of the bolts in position.

I provide each of the levers F, upon its upper edge, with upwardly-projecting arms $f^4 f^5$, the former of which is provided at its upper end with a hook-shaped projection, f^6 , while the latter arm, f^5 , extends in curved direction, as shown. The purpose and operation of the arms $f^4 f^5$ will be presently explained.

It will be observed that the lower edge of hook or projection f^6 is beveled, as shown at f^9 , for a reason presently to be explained.

I provide the guides B, upon their inner surfaces and at predetermined distances apart, with bolt-receiving recesses b , preferably providing said recesses with bushings b' . (See Fig. 3.) I provide the platform A, upon its lower surface, with plates a , preferably holding said plates in position by straining-rods a' . The plates a are for a purpose similar to that served by the flanges e^4 of the castings E' .

By reference to Fig. 3 it will be observed that the apertures b at the upper end of the guides B have greater width than those at the bottom thereof, such construction to serve a purpose presently to be explained.

The operation of my invention is as follows:

The desired number of braces E being in proper position upon the piston D below the platform A, and said platform at the bottom of the elevator-shaft, at which time the outer ends of all the bolts G of the braces E will bear against the inner surfaces of the guides B, thereby being retracted, as shown by the upper of the braces E in Fig. 1, and their operating-levers F in the position shown in said figure—that is to say, having their weighted arms elevated—the hooks f^6 upon their arms f^4 bearing upon the upper surface of the plates a and flanges e^4 , and their curved arms f^5 below said plates and flanges, as the platform A is raised the braces thus attached thereto will be raised until the bolts G upon the lower of said braces reach the lower of the recesses b in the guides, (said bolts having a width corresponding with that of said recesses,) at which time the weights f^7 of the levers F will, through the arms f^2 , force said bolts forward into said recesses, and at the same time withdraw the hook f^6 from engagement with the plate a and flange e^4 , which operation is facilitated by the bevels e^8 and f^9 , hereinbefore referred to, whereby said brace will be locked to and held stationary with the guides B, the piston will continue to move upward through the aperture in said brace, carrying up the remaining braces, each of which being in turn locked to the guides B, in manner above described. The operation described is illustrated in Fig. 1, wherein the lower of the braces E is shown as having just been locked to the guides.

In descending, the plates a or flanges e^4 come into contact with the arms f^3 of the levers F, depressing said arms, thereby withdrawing the bolts G from engagement with the recesses b of the guides and causing the hooked arms f^4 of said levers to engage said plates a or flanges e^4 , which is facilitated by the bevels e^8 and f^9 , before named, thus locking each of said braces into engagement with the platform or with the brace next above.

In Figs. 4 and 5 I have shown the levers F provided with propping-arms f^8 , adapted to enter sockets f^9 , having inclined lower ends, in lieu of the bolts G, such arms being engaged with and disengaged from the sockets f^9 in manner similar to that described in connection with the bolt.

From the foregoing it will be apparent that the piston D will be held from buckling or bending by the braces E; further, that said piston may be provided with any desired number of braces to attain this end.

Any desired style of locking device may be employed in connection with the braces E and fall within the spirit of my invention, such contemplating the provision of a brace separate from the platform of the elevator and adapted to be connected with and disconnected from said platform for the purpose described.

Without limiting myself to the exact construction of parts herein described, I claim—

1. The combination, in a hydrostatic eleva-

tor, of a piston or plunger, a platform connected thereto and supported thereby, piston or plunger braces separated from said platform and detachably connected thereto, and means, substantially as described, whereby said braces are raised by the platform to predetermined distances from the bottom of the elevator-shaft.

2. The combination, in a hydrostatic elevator, of platform-supporting guides, a platform guided thereby, a piston to raise said platform, braces, separate from said platform, that extend between said guides, and means, substantially as described, whereby said braces are carried by said platform to predetermined distances from the bottom of the elevator-shaft and detached from said platform, as and for the purpose specified.

3. In combination, an elevator-platform, a supporting piston or plunger therefor, braces separate from said platform and adapted to brace said piston, and levers for securing said braces to said platform, substantially as described.

4. In combination, elevator-guides, a platform in connection therewith, a piston or plunger to support said platform, braces separate from said platform and adapted to be raised and to be maintained at predetermined distances from the bottom of the elevator-shaft, and levers to secure said braces to said platform or said guides, substantially as described.

5. In a hydrostatic press, a piston-brace, as E, in combination with a lever, as F, having arms, as $f^2 f^4 f^5$, substantially as described.

6. A piston-brace, as E, having a lever, as F, provided with arms, as $f^2 f^4 f^5$, in combination with a piston, as D, and elevator-guides, as B, substantially as described.

7. In a hydrostatic elevator, platform-guides having recesses therein, in combination with a piston-brace having a lever provided with an arm to engage said recess, substantially as described.

8. In a hydrostatic press, platform-guides, as B, having recesses, as b , in combination with a platform, as A, a supporting-piston therefor, and piston-braces, as E, having levers, as F, provided with arms, as $f^2 f^4 f^5$, to engage said platform or the platform-guides, substantially as described.

9. In a hydrostatic elevator, and in combination with a platform, its guides, and operating-piston, a brace to support said piston, provided with a bolt, as G, and lever, as F, to operate said bolt, substantially as described.

10. In a hydrostatic elevator, a piston-supporting brace, as E, having its ends provided with slots, as E^2 , and castings, as E' , in combination with a lever, as F, having arms, as $f^2 f^4 f^5$, the platform, and its guides, substantially as described.

11. In a hydrostatic elevator, a casting, as E' , having bifurcated outer ends, arms e^2 , and transverse bar, as e^3 , having flange, as e^4 , in combination with a piston-brace, as E, having apertures to receive the piston, and weighted

lever, as F, having hooked arm, as f^4 , and bolt, as G, substantially as described.

12. In a hydrostatic elevator, guides, as B, having a series of recesses of different widths, 5 in combination with a platform-supporting piston, as D, and a series of piston-supporting braces, as E, having bolts, as G, of different widths, and bolt-operating levers F, having arms $f^2 f^4 f^5$, substantially as described.

10 13. In a hydrostatic elevator, a platform, as A, having a plate, as a , and its supporting-bolt, as a' , in combination with the piston-supporting brace E, having apertured middle and

ends, levers F, having downwardly-projecting arm f^2 and upwardly-projecting hooked and 15 curved arms $f^4 f^5$, sliding bolt, as G, and the platform-guides, as B, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two sub- 20 scribing witnesses.

CHAS. W. DWELLE.

Witnesses:

R. E. WATSON,
R. B. STAPP.