

(No Model.)

W. W. DOOLITTLE.
ELEVATOR CONTROLLING VALVE.

No. 563,266.

Patented July 7, 1896.

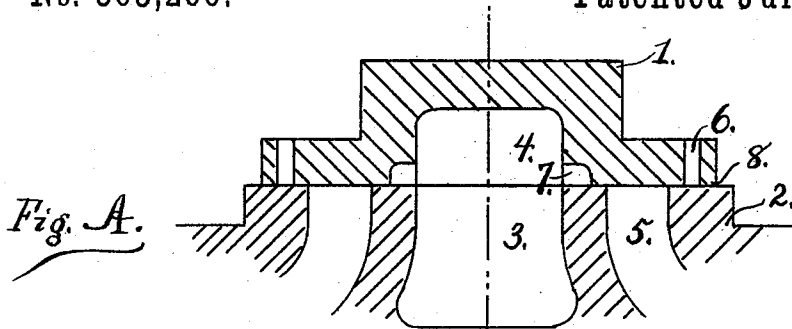


Fig. A.

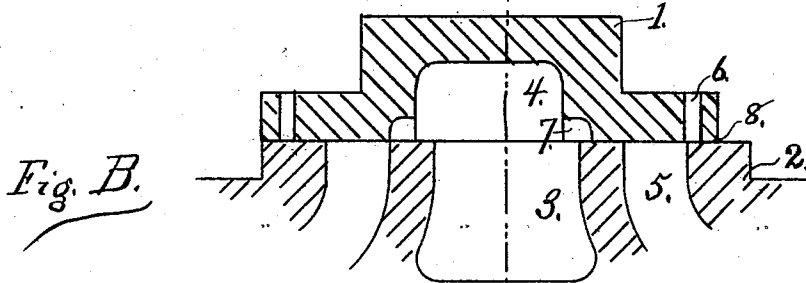


Fig. B.

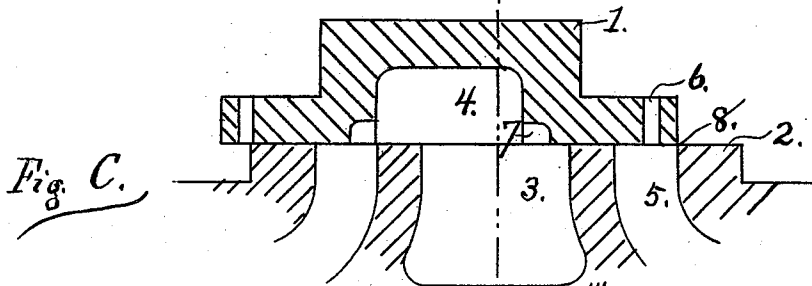


Fig. C.

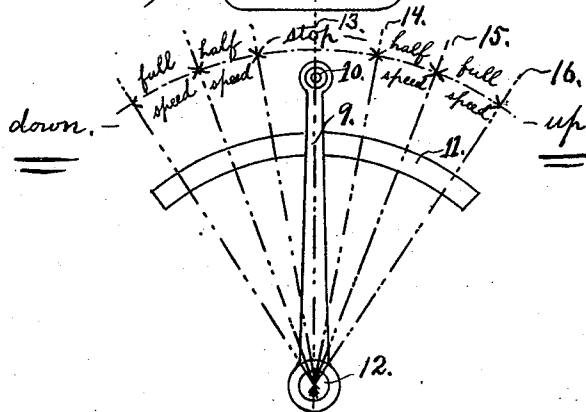


Fig. D.

Witnesses

W. W. Garrard
F. L. Bridgman.

William W. Loomittle Inventor

By his Attorney *Paul Synnestvedt.*

UNITED STATES PATENT OFFICE.

WILLIAM W. DOOLITTLE, OF CHICAGO, ILLINOIS, ASSIGNOR TO RICHARD T. CRANE, OF SAME PLACE.

ELEVATOR-CONTROLLING VALVE.

SPECIFICATION forming part of Letters Patent No. 583,266, dated July 7, 1896.

Application filed August 5, 1895. Serial No. 558,263. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM W. DOOLITTLE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Elevator-Controlling Valves, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates, in general, to the mechanism used in connection with elevators for the purpose of regulating the flow of motive fluid to the operating-cylinders.

More specifically my invention has reference to certain improvements in the controlling-valve used on the engine of a steam-elevator, and in the annexed drawings I have shown it as applied to what is known as an ordinary "slide-valve," used in combination with a lever in the elevator-car.

Heretofore, because of the large size of the admission-port to the steam-cylinder, great difficulty has been experienced in so controlling the movement of the valve as to stop the car just at the level of the various floors, a very slight movement of the controlling-lever serving to make a great variation in the size of port-opening and resultant speed or movement of the car. Various schemes have been proposed to overcome this difficulty, among which might be mentioned the variation of the shape of the admission-port, or edge of the valve itself, but these have been only partially satisfactory.

In the practice of my invention I construct the controlling-valve with ports, so arranged that considerable of a movement of the controlling-lever can be made without any material variation in the speed of the machine. In this manner I secure what might be called a "variable-speed" mechanism, as will appear more clearly, however, after an examination of the annexed drawings, in which—

Figure A represents in section the controlling-valve of my invention in the middle position on its seat. Fig. B represents the valve moved sufficiently far to the left to just open the half-speed port, which will be more particularly described hereinafter. Fig. C represents the valve moved to the position where

the full-speed port is beginning to open, and Fig. D represents an operating-lever and quadrant with the various positions marked and named.

It is to be understood, of course, that any common form of connection between the lever and valve may be used, but such construction, forming no part of my present invention, I have purposely omitted.

Referring particularly to Figs. A, B, and C, 1 is the slide or controlling valve. 2 is the valve-seat. 3 is the exhaust-port in the seat. 4 is the exhaust-cavity in the valve. 5 is the admission-port. 6 is the reduced-speed port. 7 is an extension of the exhaust-cavity 4, provided to make a partial opening of the exhaust-port at the same time that the reduced-speed port is opened; and 8 is the outer edge of the slide-valve, which after it begins to uncover the port 5 for its whole width brings the engine to what I shall here call "full-speed" position.

In Fig. D, 9 is the lever or controlling mechanism; 10, the handle of the same; 11, the quadrant, and 12 the pivot-pin. The numbers 13, 14, 15, and 16 designate the limits or dividing-lines of the various positions. Now, supposing the elevator-car to be traveling upward, with the lever in the position marked 16, the slide-valve 1 will be in its extreme left-hand position, with the port 5 wide open. As the car approaches a floor at which it is desired to stop the lever is brought to the position marked 15, or somewhere between that point and the position marked 14, and the speed thereby reduced to what I have termed "half-speed," although it is to be noted that this may be more, or it may be less, than half-speed, depending upon whether the port 6 is made large or small relatively to the full opening of the port 5. The speed of the car having thus been checked it is now comparatively easy to make the stop at the floor just at the point desired and without shock or recoil. In starting again the lever is thrown over anywhere between 14 and 15 and the engine gently put in motion before the large admission-port is opened, and thus all damage in the nature of strains, either in starting or stopping, is avoided.

It is obvious that by a greater or less opening of the port 5 directly by the edge 8 a certain kind of graduation might be secured, but on a moment's thought it will be seen 5 that it would be a very difficult thing to so nicely adjust or govern the movement of the lever 9, with the slack there must be in the connections which transfer its motion to the engine-valve, as to get just such movement 10 of the valve as may be desired, whereas in the use of my invention any position of the lever between 14 and 15 will give the required speed.

When the car is descending, the movement 15 of the lever or controlling mechanism is of course just the reverse of that above described, and is too obvious to need further explication.

While in the drawings I have shown a lever 20 as the controlling mechanism in the car, I desire to be understood as regarding a rope

or any other controlling means commonly used as equivalent constructions.

Having thus described my invention, what I claim as new, and desire to secure by Letters 25 Patent, is—

1. The combination with an elevator-controlling mechanism, an elevator-controlling valve, and ports in the seat of said valve; of ports in said valve of less size than the ports 30 in the valve-seat, and adapted to register with the latter prior to the full opening of the same, substantially as described.

2. The combination with an elevator-controlling mechanism, an elevator-controlling 35 valve, and ports in the seat of said valve; of ports in said valve of less size than the ports in the valve-seat, substantially as described.

WILLIAM W. DOOLITTLE.

Witnesses:

F. N. WINNE,

C. A. G. WAYMAN.