

No. 674,889.

Patented May 28, 1901.

I. H. VENN.

SPEED CONTROLLER FOR VERTICAL HYDRAULIC MACHINES.

(Application filed Feb. 10, 1898.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

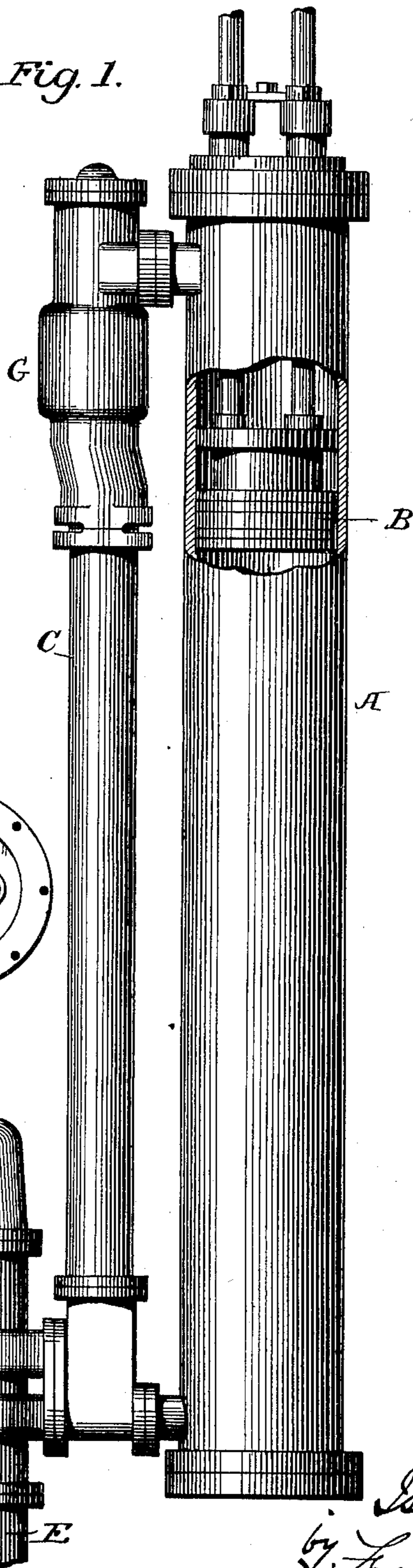
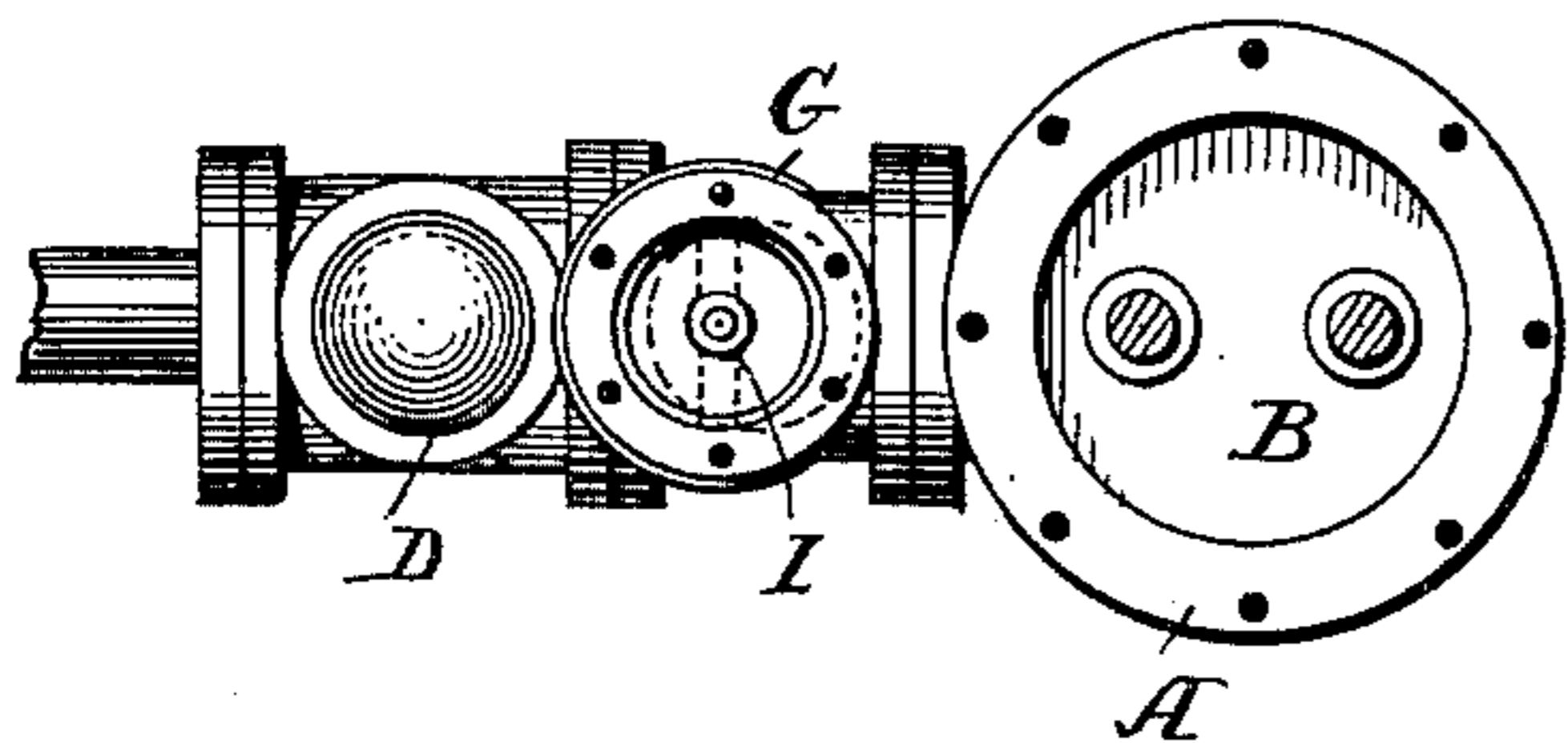


Fig. 2.



Witnesses

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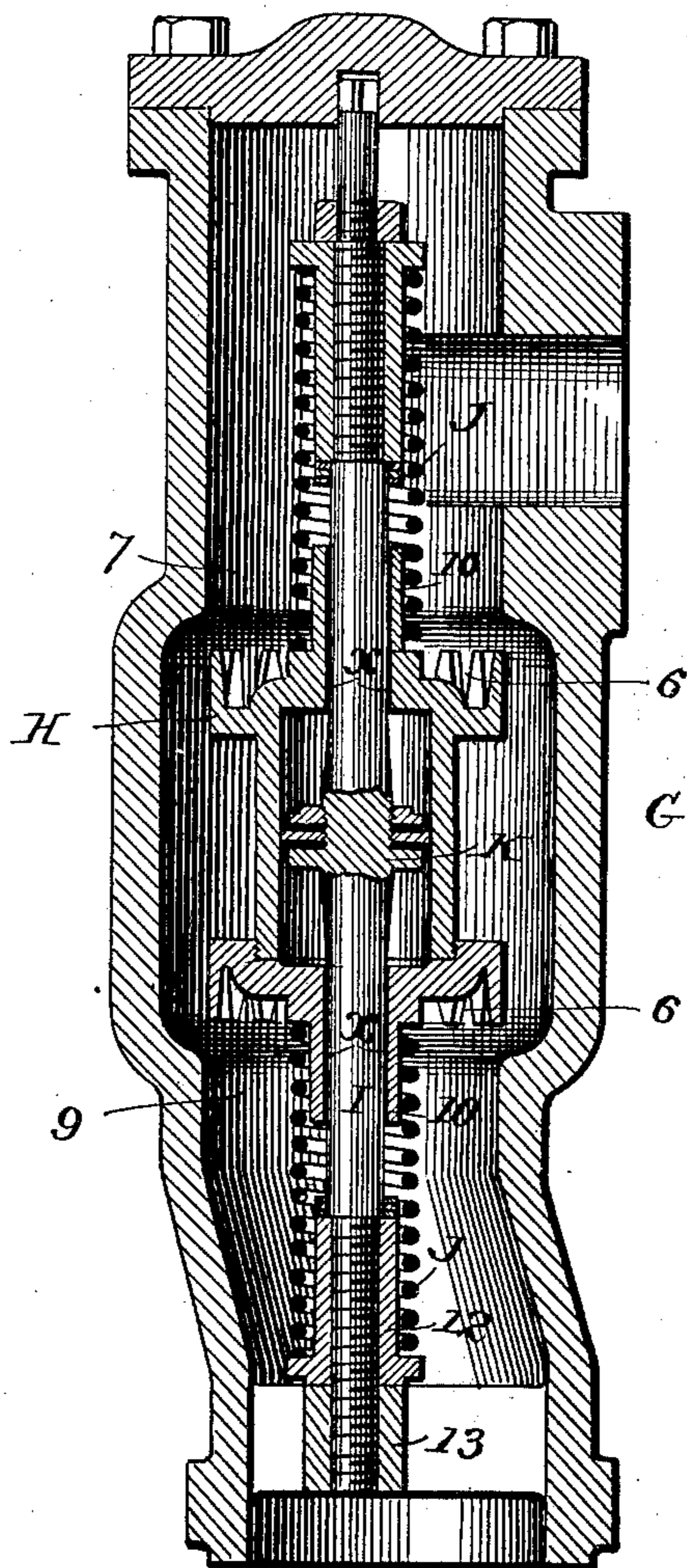
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2 Sheets—Sheet 2.

Fig. 3.



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UNITED STATES PATENT OFFICE.

ISAAC H. VENN, OF YONKERS, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE OTIS ELEVATOR COMPANY, OF EAST ORANGE, NEW JERSEY.

SPEED-CONTROLLER FOR VERTICAL HYDRAULIC MACHINES.

SPECIFICATION forming part of Letters Patent No. 674,889, dated May 28, 1901.

Application filed February 10, 1898. Serial No. 669,829. (No model.)

To all whom it may concern:

Be it known that I, ISAAC H. VENN, a citizen of the United States, residing at Yonkers, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Speed-Controllers for Vertical Hydraulic Machines, of which the following is a specification.

My invention has for its object to prevent the piston of a hydraulic motor of any kind from obtaining an undue speed; and to this end my invention consists in providing a self-acting valve arranged in the line of flow of the fluid to or from or to and from the cylinder and so constructed as to maintain its normal position, permitting a free flow of the liquid so long as the latter moves at its normal speed, but so as to gradually close and throttle the flow when the movement of the latter becomes excessive, as fully set forth hereinafter and as illustrated in the accompanying drawings, in which—

Figure 1 illustrates my invention in connection with a hydraulic elevator apparatus. Fig. 2 is a plan view of the parts shown in Fig. 1; and Fig. 3 is an enlarged longitudinal section of the valve-casing, valve, and appurtenances.

A indicates the cylinder of a hydraulic elevator, press, or other like apparatus to be controlled, provided with the usual piston B, connected with the cage or platform through any suitable connections, and C indicates the supply and circulating pipe, communicating at the upper end with the usual supply-inlet of the cylinder and at the lower end with the discharge port or outlet. In the case of an elevator apparatus of ordinary construction the said supply-pipe extends to a control-valve casing D, which also communicates with the bottom of the cylinder A and with a discharge-pipe E, so that water entering through a pipe F under pressure may pass to the pipe C and to the cylinder to depress the piston and lift the cage, or the water may circulate from the top of the piston, as the latter rises, downward through the pipe C to the bottom of the cylinder. The con-

trol-valve is of the usual construction to open or cut off the flow from the pipe F upward through the pipe C or permit the water to circulate from the top to the bottom of the cylinder through the pipe C or arrest all flow.

In order that the apparatus may be self-regulating, so that the piston may not acquire an undue speed moving in either direction, I make use of a self-acting valve of such character as to be controlled by the stream of water, so that in case the water is entering directly to depress the piston and lift the load or circulating to allow the load to descend it will be prevented from moving with undue rapidity, and consequently will prevent undue speed in the movement of the parts connected with the piston. The valve for this purpose may be differently constructed and arranged; but as shown it is within a casing G, which is enlarged at the center to receive the regulating-valve H, which, as shown, is in the form of a hollow cylinder, having notched, channeled, or otherwise constructed flanges 6 6, adapted to enter the contracted parts 7 9 of the casing, constituting ports at the opposite sides of the central enlargement. Thus if the valve rises it will gradually and partially, but not totally, close the port 7 to reduce the flow of water to the top of the cylinder, while if the valve descends it will gradually and partially, but not totally, close the port 9 to reduce the flow of water to the bottom of the cylinder. The valve should be provided with means whereby it may be automatically returned to a central position, which it occupies so long as the water flows in one direction or the other at its normal rate of speed; but it will permit the valve to move under the action of the current if the latter becomes excessive. As shown, the valve is mounted upon a guide-rod I to slide thereon, and against each end bears a spring J, which is coiled around a hollow sleeve 10 on the valve and also around a hollow sleeve 12, which incloses the rod I and acts as a stop to limit the movement of the valve. The spring may be compressed to any desired tension by

adjusting the sleeve upon the rod I, which may be done by means of a nut 13, which is threaded to turn upon the thread of the rod I.

5 The springs J are of such a character and so adjusted as to normally hold the valve in the position shown; but either spring will yield sufficiently to allow the valve to move in the direction of the current and gradually throttle without altogether closing the port
10 when the speed of the current becomes excessive.

It is desirable to prevent the valve from moving with undue rapidity, which would cause shocks, and I therefore provide a double dash-pot by fitting to the inside of the
15 hollow cylinder of the valve a stationary packed piston K, which is secured to the rod I, and providing contracted openings or channels for the escape of water in either direction. As shown, these channels are secured
20 by flattening the opposite faces of the rod I, as shown.

A valve operating as described not only serves to automatically regulate the rapidity
25 of the discharge, but it also is a most effective safety device in case of the overloading of the car, as in such case the passage of the

water from one side of the piston to the other is automatically so throttled that the car cannot attain an undue speed.

Without limiting myself to the precise construction and arrangement of parts shown, I claim—

1. The combination of a valve-casing having opposite ports 7, 9, an intermediate valve with ends adapted to said ports, and with an intermediate cylinder to which is fitted a stationary piston and openings restricting the flow of water to and from the cylinder on opposite sides of the piston, substantially as set forth.

2. The combination of a double valve, ports, springs, and a stationary piston upon which the valve moves, and contracted openings permitting the flow of water from either side of the piston, substantially as set forth.

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

ISAAC H. VENN.

Witnesses:

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JOHN J. SPEIGHT.