

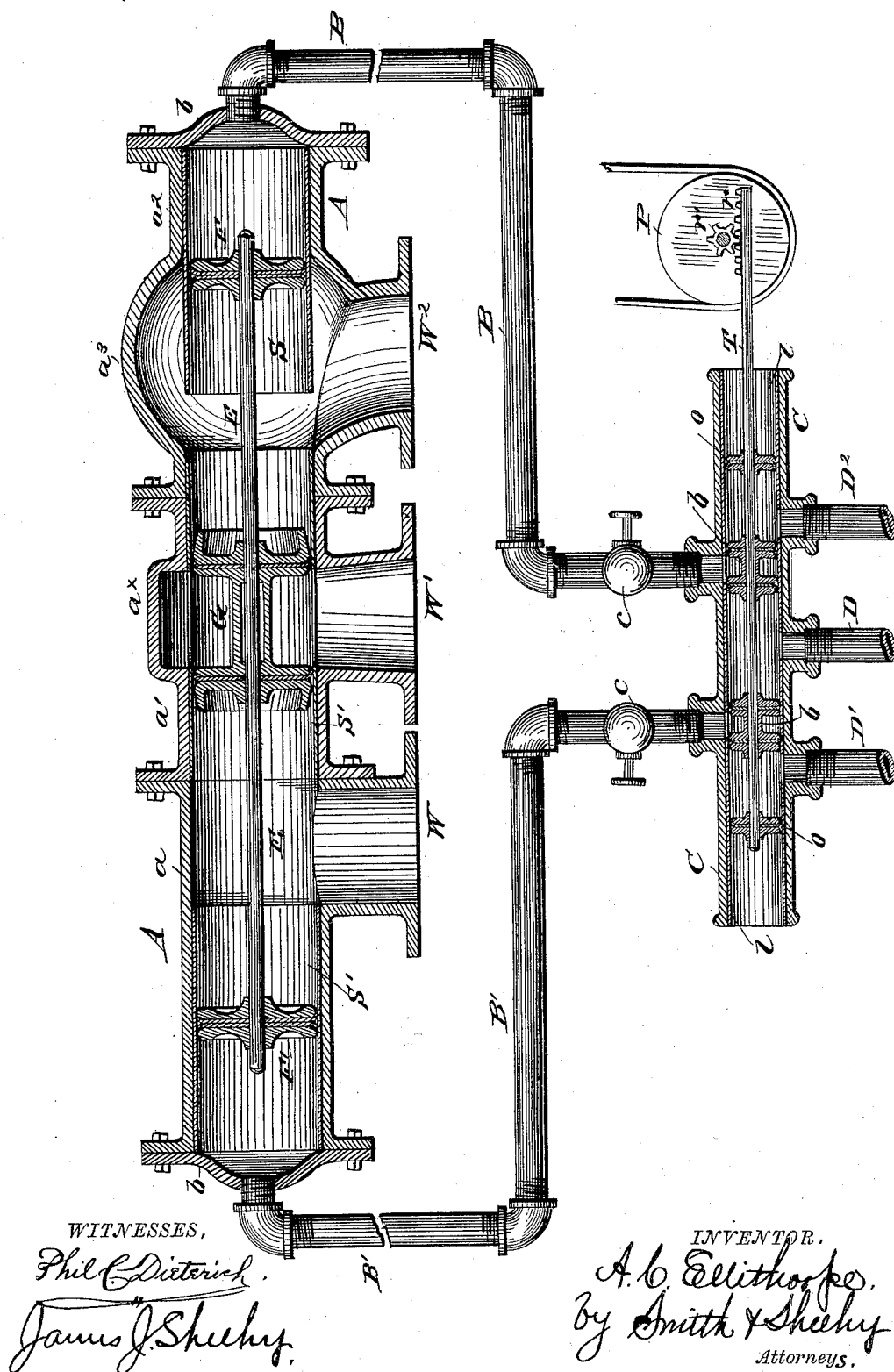
(No Model.)

A. C. ELLITHORPE.

VALVE CONTROLLING DEVICE FOR ELEVATOR MECHANISM.

No. 391,597.

Patented Oct. 23, 1888.



UNITED STATES PATENT OFFICE.

ALBERT C. ELLITHORPE, OF CHICAGO, ILLINOIS.

VALVE-CONTROLLING DEVICE FOR ELEVATOR MECHANISM.

SPECIFICATION forming part of Letters Patent No. 391,597, dated October 23, 1888.

Application filed April 25, 1887. Serial No. 236,078. (No model.)

To all whom it may concern:

Be it known that I, ALBERT C. ELLITHORPE, 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 Valve-Controlling Devices for Elevator Mechanism; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to means for controlling the supply of water, air, or gas in the operation of elevators, so that the fluid is used economically; and my invention relates especially to water-elevators, my object being to provide a compound cut-off device in connection with the operative engine and the pulley-rope, whereby the conductor of the cage can stop and start his cage at any desired level, and simultaneously with the stopping of the cage also cut off the influx and escape of the fluid; or, in other words, stop the waste of the fluid when the cage is at rest, as will be fully understood from the following description and claim, taken in connection with the annexed drawing, which is a diametrical section through my improved regulating device for the driving-power of elevators.

Referring to the annexed drawing by letters, A designates a secondary cylinder, which may be of any desired length and diameter, and which is preferably composed of several sections united by flanges and bolts. In the present instance I have represented the cylinder A composed of three sections, a a' a'' , closed at their ends by heads b b . The cylinder a is constructed with a flanged neck, W, leading to a waste-pipe. The cylinder a' is constructed with a downwardly-flaring flanged neck, W', leading to the cylinder of the engine, and it is also constructed with a bulging portion, a^x , which forms an annular internal enlargement greater than the bore of this section a' , for allowing a free escape of the fluid immediately after its entrance into the section a' . The section a'' of cylinder A is constructed with a globular enlargement, a^3 , and coincident therewith with a curved flanged neck, W², which is the inlet from a tank.

G designates a double valve suitably packed and provided with a separating neck adapted

to span the space formed by the annular enlargement a^x , as shown in the drawing. This double valve is keyed on a stem, E, near the middle of its length, and it is practically a cut-off valve. Inside of the cylindrical section a^2 is a cylindrical lining or sub-cylinder, S, in which reciprocates a piston, F, suitably packed and secured to the stem E.

F' designates another piston, corresponding in all respects to the piston F, and packed within a lining, S', fitted in the sections a and a' .

B designates an angular pipe which communicates with the end of cylinder-section a^2 , and B' is a similar pipe which communicates with the end of the section a of cylinder A. These two pipes communicate with a small cylinder, C, which is in the same horizontal plane as the cylinder A. This smaller or primary cylinder, C, is provided with a fluid-inlet pipe, D, and two waste or outlet pipes, D' D², equidistant from each other, and also equidistant from the open ends of the cylinder C.

It will be observed that the cylinder C is provided with a lining, l , of a suitable metal, which will afford a smooth and durable wearing-surface like the lining S', and the sub-cylinder S, inside of the main cylinder A, above described.

T designates a valve stem, which has keyed on it two double cut-off valves, b b , adapted for the ports D D' D². This valve-stem is also provided with head-valves o o , against which there is no pressure from the atmosphere, for the reason that the ends of their cylinders are open, as above stated. One end of the valve-stem T is provided with a rack, r , which should be properly guided outside of the cylinder C, and which has engaged with it a pinion spur-wheel, r' , on the shaft of which is keyed a grooved pulley or sheave, P, about which passes the pull-cord, which is under the control of the conductor of the cage.

In operating this device it will be seen from what I have above stated that the conductor of a cage by simply pulling on the cord can shift the valve in the lower or smaller cylinder, and thus admit more or less fluid into the upper cylinder, at the same time regulating the pressure of the fluid and allowing the waste fluid to escape in equable proportions to the initial force exerted to lift the cage and any load which may be in it.

I have represented in the drawing valves *c c* applied to the pipes *B B'* for the purpose of regulating the influx and efflux of the fluid through these pipes; but in practice these valves may
5 be omitted.

Having described my invention, I claim—

The combination of the headed cylinders *A*, provided with direct passages *W W' W²*, the enlargements *a× a³*, the valves *F F' G*, of uniform diameter, secured on a valve-stem, the
10 internal cylinder, *S*, the small open cylinder provided with inlets and outlets and pipes

communicating with the ends of the cylinder *A*, the valves in said small cylinder, and the valve-rod thereof connected to the pulley of the pull-rope of an elevator, all substantially
15 as described.

In testimony whereof I affix my signature in presence of two witnesses.

A. C. ELLITHORPE.

Witnesses:

T. EDMUNDS TURPIN,
G. L. MITCHELL.