JOHN EVERDING.

Improvement in Devices for Arresting Motion.

No. 120,730. Patented Nov. 7, 1871.

Fig. 1.

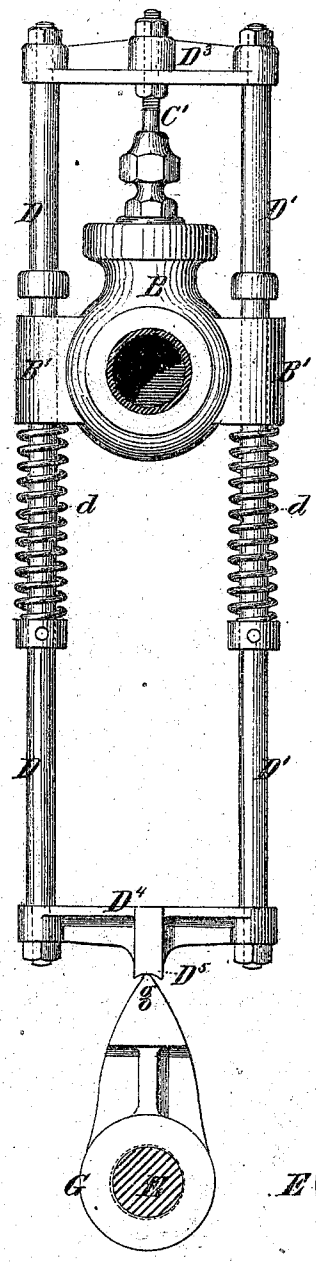
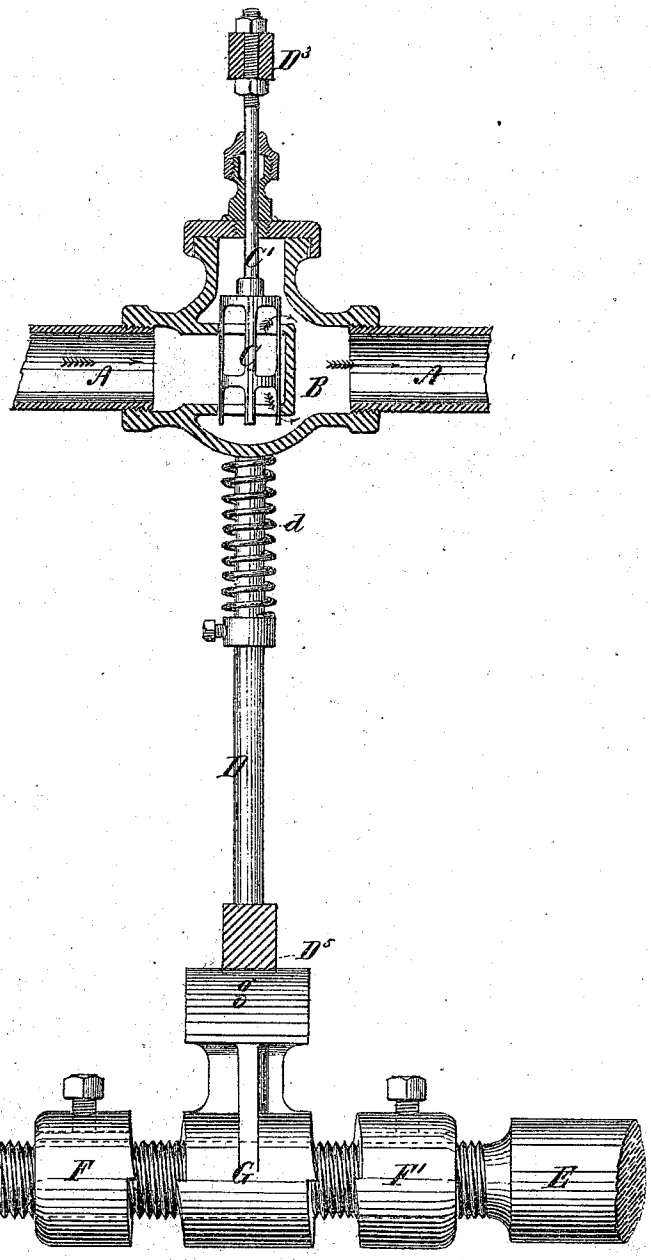
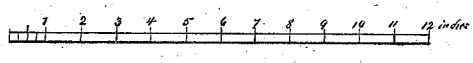


Fig. 2.





Witnesses.

J. Snowden Bell.

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UNITED STATES PATENT OFFICE.

JOHN EVERDING, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN DEVICES FOR ARRESTING MOTION.

Specification forming part of Letters Patent No. 120,730, dated November 7, 1871.

To all whom it may concern:

Be it known that I, JOHN EVERDING, of the city and county of Philadelphia, in the State of Pennsylvania, have invented a certain Improved Device for Arresting Motion, of which the following is a specification:

The object of my invention is to provide a simple and efficient means of arresting the motion of driven machinery at any desired and determined points, and thereby to prevent accidents which might occur from the continuance of such motion, by automatically shutting off the supply of steam or other operating fluid from the prime mover. To which end my invention consists in the combination of a valve in the steam or supply-pipe with tripping mechanism operated by a shaft driven either directly or intermediately by the prime mover, as hereinafter more fully set forth.

My invention is peculiarly applicable to hoisting-machines in which the cage or platform has to travel a certain determined distance, which cannot be exceeded without liability to accidents of a more or less serious nature, as has been frequently exemplified in numerous casualties which have occurred in elevators used in the shafts of mines, in warehouses, &c., occasioned by failing to stop the prime mover when the cage or platform had been elevated to its highest normal position. My improvement fully meets the requirements of this class of machinery, and being automatic and instantaneous in its action affords an effective and reliable safety attachment, which is readily applicable at trifling cost to any of the various arrangements of machinery where it may be required.

In the accompanying drawing, Figure 1 is a front view of a device for arresting motion embodying my invention, and Fig. 2 a side view, partly in section, of the same.

To carry out the object of my invention I place in the main steam or supply-pipe A of the prime mover a valve-chamber, B, in which a valve, C, of any desired construction has its seat. I have shown in the drawing a balanced valve of a form usual for governor-valves; but I do not confine myself to any special construction, and it is to be further understood that this valve is independent of the ordinary throttle-valve by which the movements of the prime mover are governed when in normal operation. The stem C′ of the valve C is suitably secured to the upper cross-head of a frame composed of two rods, D D^1, working in guides B′ B′ upon the valve-chamber, and connected at their ends by the upper and lower cross-heads D^3 D^4. The valve-chamber B is placed with its center perpendicularly above the center of a shaft, E, by means of which shaft the valve is operated, as presently to be described. This shaft E may be either the main shaft of the prime mover or a counter-shaft driven therefrom, as convenience of construction may dictate. A screw-thread is cut upon the shaft E, upon which are placed the collars F F′ and wiper G, all correspondingly threaded. The wiper G moves longitudinally upon the shaft E, and is provided with a long toe, *g*, upon which a shoe, D^5, formed upon the lower cross-head D^4 of the frame, and recessed in the arc of a circle, rests. When in this position the valve is open, and its weight, with that of the frame, resting upon the wiper, prevents the rotation of the latter upon the shaft and causes it to move longitudinally when the same is rotated. The pitch of the screw being known the length of the toe *g* is determined from the relation of the same to the required number of revolutions of the shaft, and is sufficiently great to maintain the toe and shoe in contact during the normal motion of the prime mover. The collars F F′ are adjusted and secured upon the shaft E, by means of set-screws and gibs, in such positions relative to each other and to the wiper G as to allow the wiper an amount of longitudinal travel upon the shaft corresponding with the range of motion of the prime mover and driven machinery; or, in other words, so that upon the instant the motion of the prime mover in one direction is completed one of the faces of the wiper G will bear against the face of the adjacent collar and the frictional contact between the collar and the wiper will cause the latter to rotate with the shaft E, thereby releasing the wiper from the shoe D^5, when the weight of the frame and valve being unsupported the latter will drop into its seat and instantaneously stop the passage of fluid through the supply-pipe A. If deemed necessary to further insure the prompt closing of the valve, spiral springs *d*, bearing upon the ends of the guides B′ B′ and upon collars on the rods D D^1, may be employed; or a weight may be attached to the frame for the same purpose. The adjustability of the collars F F′

upon the shaft enables the devices to be regulated as required for different ranges of motion, and to render this adjustability more perfect, helical inclines may be formed upon the faces of the wiper and collars, the contact of which rotates the wiper at the required points. In cases where the requisitions of the service performed are such that the range of motion of the driven machinery is invariable, the collars may be dispensed with, and the disengagement of the wiper from the shoe, which will occur when the limit of its normal travel is exceeded, will trip the valve.

I am aware that numerous devices have been heretofore employed for regulating the supply of operating fluid to a prime mover by mechanism driven thereby, as is exemplified in the various constructions of governors for steam and other engines and for water-wheels. My device is not designed for regulating, but only for arresting, motion; and I do not broadly claim the connection of a valve designed to perform this function with the prime mover.

What I claim as my invention is—

The combination, with a prime mover for machinery, of a wiper moving longitudinally upon a rotating screw, and a valve placed in the pipe through which the supply of operating fluid passes to the prime mover, the valve being closed by the rotation of the wiper upon the screw at determined points, substantially as and for the purpose set forth.

JOHN EVERDING.

Witnesses:
J. SNOWDEN BELL,
V. EVERDING.

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