

Fig. 2.

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UNITED STATES PATENT OFFICE.

H. B. BECKMAN, OF NEWBURYPORT, MASSACHUSETTS.

IMPROVED AUTOMATIC STOP-MOTION FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. 51,412, dated December 12, 1865.

To all whom it may concern:

Be it known that I, H. B. BECKMAN, of Newburyport, in the county of Essex and State of Massachusetts, have invented a new and Improved Stop-Motion for Steam-Engines, &c.; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a front elevation of this invention. Fig. 2 is a similar view of a portion of the same in a larger scale than the previous figure.

Similar letters of reference indicate corresponding parts.

This invention consists in the employment or use of a novel arrangement of devices in connection with a ball attached to a hinged arm and connected with the valve or gate of a steam-engine or other motor in such a manner that when said arm is turned up in a vertical position, or nearly so, the valve or gate is open and the supply of the driving-fluid is not interrupted, but when the speed of the engine or other motor exceeds a certain limit the ball tilts over and the valve or gate is closed automatically. A set-screw passing through the arm to which the ball is secured serves to adjust the position of the arm when the same is turned up, and by these means the velocity at which the ball tilts over can be regulated.

A represents an eccentric, which is secured to the crank-shaft of a steam-engine, or to the axle of a water-wheel or other motor, and this eccentric connects, by a strap and rod, B, with a slide, C, which moves in suitable guide-pieces secured to the side of the valve-chest D. This slide is provided with two vertical mortises to receive the shanks of toes *a*, and springs *b*, pressing on the lower end of the shanks of said toes, raise the same up, and keep them in such a position that by their action the valves are raised as the slide C reciprocates. The valves are secured to spindles *c*, which connect with arms *d* extending from small rock-shafts *e*, to which tappets *f* are secured in such a position that when the slide moves in one direction one of said valves will be opened, and when the slide moves in the opposite direction the other valve will be opened by the action of the toes *a* on the tappets *f*.

The springs *b*, which support the shanks of the toes, are connected to a lever, *g*, which has its fulcrum on a pivot, *h*, secured in the slide C, and the slotted end of which catches over a stud, *i*, extending from an arm, *j*, that is pivoted to the slide C, and to the loose end of which a ball, *k*, is firmly secured. If the arm is turned up to the position shown in the drawing, it is held in a slightly-inclined position by a stud, *l*, secured in the slide C, and the angle of this inclination can be regulated by a set-screw, *m*, in the arm *j*. If the arm is turned down, the stud *i*, describing a circle round the pivot of said arm, depresses the loose end of the lever *g*, and with it the springs *b*, and the toes *a* are allowed to drop to such a position that they do not come in contact with the tappets *f*, and the valves remain closed. If the arm is adjusted at a certain inclination and the motion of the slide C exceeds a certain speed, the inertia of the ball causes the arm to tilt over, and the valves are closed automatically.

I have described one method of connecting the weighted arm *j* with the valves of a steam-engine; but it is obvious that the same can be connected therewith in many different ways, and it can also be applied to the gate of a water-wheel or other motor, or to the brake of a horse-power; and I do not wish to confine myself in the application of my invention to any particular mechanism or to any one kind of motors, but I reserve the right to use the same wherever and in whatever manner I may choose. By its application the motion of any motor will be stopped automatically at any desirable speed for which the weighted arm may be adjusted, and danger to the machinery or to the operatives from too high a speed of the motor is avoided.

I claim as new and desire to secure by Letters Patent—

The arrangement of the lever *g*, springs *b*, toes *a*, and tappets *f*, in connection with the ball *k*, for the purpose herein described and represented.

H. B. BECKMAN.

Witnesses:

WM. E. CURRIER,
SAML. A. SMITH.