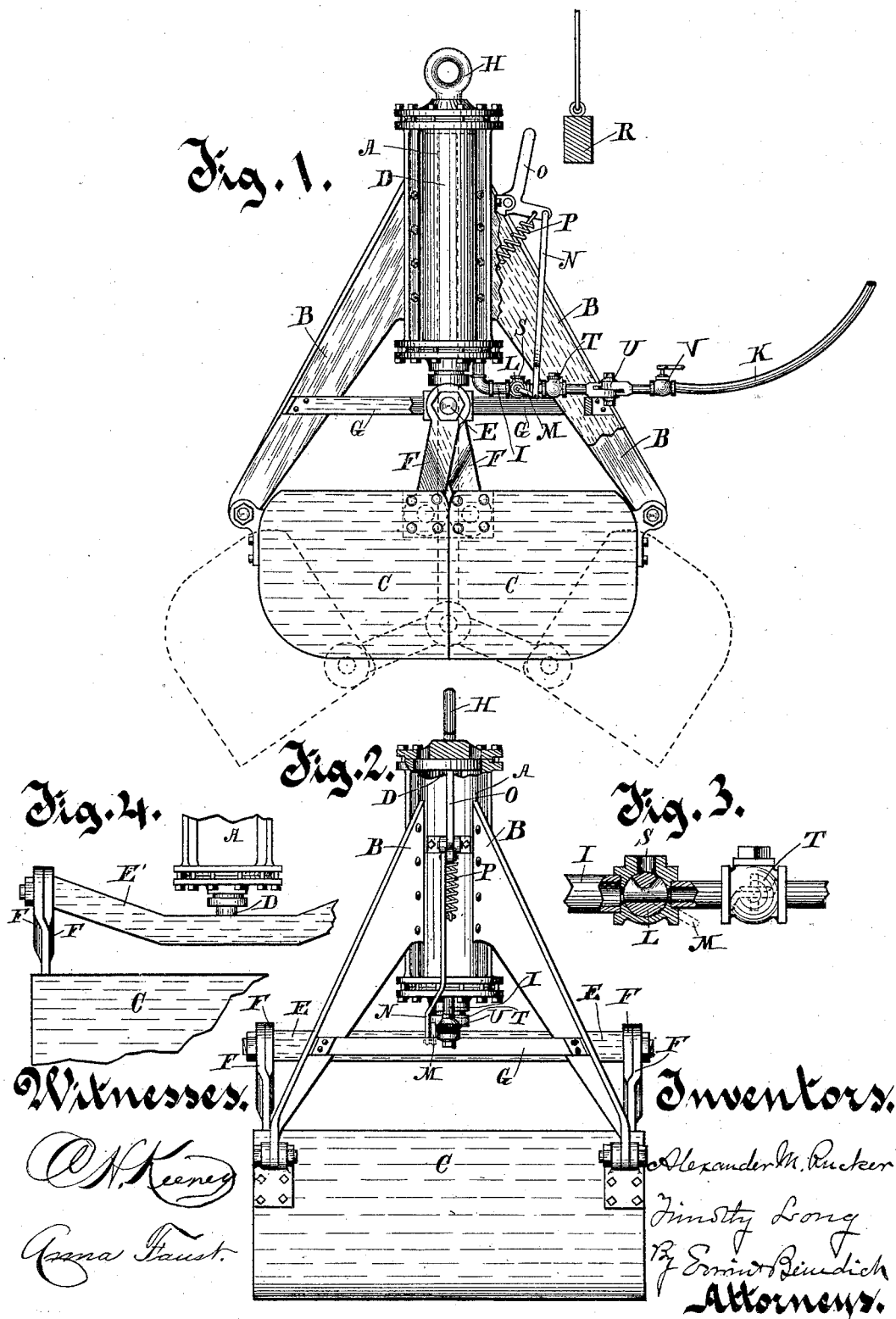


(No Model.)

A. M. RUCKER & T. LONG.
AUTOMATIC COAL BUCKET.

No. 418,231.

Patented Dec. 31, 1889.



UNITED STATES PATENT OFFICE.

ALEXANDER M. RUCKER AND TIMOTHY LONG, OF MILWAUKEE, WISCONSIN.

AUTOMATIC COAL-BUCKET.

SPECIFICATION forming part of Letters Patent No. 418,231, dated December 31, 1889.

Application filed April 27, 1889. Serial No. 308,791. (No model.)

To all whom it may concern:

Be it known that we, ALEXANDER M. RUCKER and TIMOTHY LONG, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Automatic Coal-Buckets; and we do hereby declare the following to be a full, clear, and exact description of said invention, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Our newly-invented device belongs to that class of automatic coal-buckets in which compressed air, steam, or water is used to close the two sections of the bucket.

In the drawings, Figure 1 is a perspective view of our device, parts being broken away to show other parts. Fig. 2 is a perspective view of the same device, taken at right angles to the view shown in Fig. 1. Fig. 3 is a detail of the check-valve and cut-off in the induction-pipe. Fig. 4 is a detail of a modified form of cross-bar.

A cylinder A is provided with downwardly and outwardly extending arms B B, to the lower ends of which the two sections C C of the coal-bucket are hinged, and on which they are thereby supported. The sections C C of the bucket are hinged at their outer upper edges to the arms B B, each section being hinged to two of the arms B. The cylinder A is made steam and air tight and is provided with a piston, the stem D of which at its outer end is connected to a cross-bar E, which cross-bar extends laterally parallel to and above the line of junction of the two sections of the bucket, and at each of its outer ends are two swinging arms F F, hinged thereon, the lower ends of which arms are secured pivotally to the inner upper edges of the sides of the sections C C. Lateral braces G G are secured to the arms B B. The cylinder is provided with a ring H, whereby the cylinder and its supported bucket may be attached to the elevating and carrying mechanism. The cylinder is provided with an induction-pipe I, whereby compressed air, steam, or water may be introduced into the cylinder from the flexible supply-tube K. The induction-pipe I is supplied with a plug-valve L, having a crank-arm M, and a connecting-rod N connects it to one arm of the bell-crank O,

which bell-crank is pivoted on the cylinder A. A spring P, connected at one end to the bell-crank O and at the other end to the cylinder A, is adapted to throw the bell-crank into such position as to open the induction-pipe through the plug-valve L, and a suspended weight R receives the impact of the free arm of the bell-crank O as the cylinder and its load travels forward on its track as a carrier and throws the bell-crank arm backward, turning the plug-valve so as to shut off the inflow of steam or air and allow the steam or air in the cylinder to be discharged there-through and out at the orifice S. As the tube K is a flexible one, it permits the cylinder and its load to be elevated and carried along a track and returned to its work without disconnecting the steam or air supply, if desired; but as it is often desirable to disconnect this supply-pipe a proper air-tight coupling U is constructed for connecting the flexible pipe K with the induction-pipe I, and a check-valve at T prohibits the escape of the steam or compressed air from the cylinder when the pipe K is uncoupled at U. A stop-cock V is put in the pipe K at any place desired to close that pipe and prevent the escape of steam or compressed air therefrom.

The construction of the bucket and the piston is such that by gravity the sections of the bucket are thrown open into the position shown in dotted lines in Fig. 1, and in this condition the device is lowered to the mass of coal to be gathered into the bucket, and steam, air, or water under sufficient pressure is introduced into the cylinder through the induction-pipe, whereby the piston is forced upward in the cylinder, and the inner edges of the sections of the bucket are drawn together upward, scooping up the coal and closing in the form shown in Fig. 1, in which form the device is elevated to a track or to a crane and is carried or swung away to the point of deposit of the coal, where the bell-crank impinges against the weight R or other obstruction provided therefor, whereby the plug-valve L is so turned as to close the induction-port and open the induction-port or orifice S, whereby the steam, air, or water is discharged and the piston falls, opening the bucket and discharging the coal.

The modified form of cross-bar E' (shown

in Fig. 4) is bent downwardly somewhat, whereby the cylinder is brought nearer the bucket, and the perpendicular height of the cylinder and bucket together is somewhat lessened. This form of construction is desirable where the space in which the device operates is limited in its perpendicular height.

What we claim as new, and desire to secure by Letters Patent, is—

10 1. The combination, with a coal-bucket in two sections hinged at its outer edges on arms secured rigidly to a cylinder above the bucket, of a steam-tight cylinder, a movable piston therein provided with a rigid stem, and hinged
15 arms connecting the stem of the piston to the upper inner edges of the sides of the sections of the bucket, substantially as described.

2. The combination of a bucket in two sections C C, each of which sections is hinged at
20 its outer upper edge to arms B B, secured rigidly to a cylinder A, with a piston having a stem D, a cross-bar E, hung on the stem D, and swinging arms F F, hinged on the cross-bar E and pivoted to the inner upper edges
25 of the sides of the sections C C, substantially as described.

3. The combination, with a bucket in two sections C C, hinged on arms attached to a cylinder A, and a piston working in the cylinder, the stem of which is connected by arms
30 to the inner swinging edges of the sections of the bucket, of an induction-pipe I, a plug-valve L therein, a bell-crank O, one arm of

which is connected to the crank of the plug-valve, a retrieving-spring P, and an obstruction R, against which the free arm of the bell-crank is adapted to impinge, substantially as described.

4. The combination, with a cylinder A, provided with a piston adapted to close the sections of a bucket supported on the cylinder, of a plug-valve L, adapted to be operated by means, substantially as described, and a flexible supply-pipe K, leading into the induction-pipe I and provided with a stop-cock V, substantially as described.

5. In a device for automatically closing a coal-bucket, a steam-cylinder A, provided with an induction-pipe I and a plug-valve L therein, the plug-valve being constructed to
50 open a passage from the supply-pipe to the cylinder and a passage from the cylinder to the open air, of a bell-crank O, pivoted on the cylinder and connected to the arm of the plug-valve by connecting-rod N, a retrieving-
55 spring P, an obstacle R, against which the free arm of the bell-crank is adapted to impinge, and a check-valve T, as and for the purpose set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

ALEXANDER M. RUCKER,
TIMOTHY LONG.

Witnesses:

C. T. BENEDICT,
ANNA FAUST.