

UNITED STATES PATENT OFFICE.

JAMES FATKIN, OF ASPEN, COLORADO, ASSIGNOR OF THREE-FOURTHS TO
JACOB SCHOELKOPF AND HENRY W. STORMER, OF SAME PLACE.

BAILING DEVICE.

SPECIFICATION forming part of Letters Patent No. 528,085, dated October 23, 1894.

Application filed January 31, 1894. Serial No. 498,579. (No model.)

To all whom it may concern:

Be it known that I, JAMES FATKIN, of Aspen, in the county of Pitkin and State of Colorado, have invented a new and Improved Bailing Device, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved bailing device for readily emptying flooded mines of the surplus water, the said device being simple and durable in construction and arranged to automatically fill itself when lowered into the water in the mine shaft, and to automatically discharge into an outlet chute when raised to the mouth of the shaft or any other discharging point.

The invention consists principally of a bucket provided with a valved outlet in its lower portion, an inlet valve for the said bucket, and a tripping device for unseating the valve in the said outlet.

The invention also consists of certain parts and details, and combinations of the same, as will be hereinafter described and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the improvement with parts in section. Fig. 2 is a transverse section of the same on the line 2—2 of Fig. 1; and Fig. 3 is a sectional plan view of the improvement on the line 3—3 of Fig. 1.

The improved bailing device is provided with a bucket A, made of suitable size and adapted to be raised and lowered in the mine shaft, so as to fill itself with water on reaching the water in the bottom of the shaft, and to automatically discharge when raised to the mouth of the shaft or any other intermediate discharging point.

The bucket A is adapted to take, temporarily, the place of the usual cage running in the shaft, and the said bucket is provided on opposite sides with guides B adapted to run on the guiding posts C, arranged in the shaft. The upper end of the bucket A is provided with a bail D, adapted to be engaged by the hoisting rope or cable E, connected at the top

of the shaft with suitable hoisting machinery for raising and lowering the bucket in the shaft.

In the bottom of the bucket A is arranged an inlet valve F having its valve stem F' guided in suitable stirrups G, G', attached to the bottom of the bucket, the uppermost stirrup G also serving to limit the opening of the valve F at the time the bucket A is lowered into the water, and the valve F rises to permit the water to fill the bucket.

In the bottom of the bucket A is arranged a second valve H having its valve stem H' fitted to slide in suitable stirrups I and I', of which the stirrup I also forms a stop for limiting the opening of the valve H. The latter is an outlet valve for the bucket A, and when open, permits the water contained in the bucket A to pass into a chute J fastened to the bottom of the bucket A, the said chute leading to one side and being adapted to discharge the water into a chute arranged at the mouth of the shaft or at any suitable intermediate point in the shaft.

The upper end of the stem H' of the outlet valve H is pivotally connected by a link K with an arm L, secured to a transversely-extending shaft M journaled in suitable bearings on the upper end of the bucket A. On one outer end of this shaft M is secured a curved tripping lever O, adapted to engage with its free end a keeper P secured to one side of the bucket A, so as to properly guide the said lever and to limit the swinging motion thereof, the lever being provided for this purpose at its end with an out-turned flange O' adapted to strike the inner edge of the keeper P. The curved lever O extends somewhat to one side of the bucket A, as plainly shown in Fig. 1, and the said lever is adapted to be engaged by a board Q, secured in the shaft at or near the mouth thereof, or on any other intermediate point, wherever the discharge of the water from the bucket A is to take place.

The operation is as follows:—When the bucket A is lowered into the water contained in the bottom of the shaft, then the valve F opens to permit the water to pass into and fill

the bucket A. When the latter is filled, the hoisting machinery is set in motion so that the hoisting rope E lifts the bucket A, whereby the weight of the water in the bucket causes the seating of the valve F, thus retaining the water in the bucket. When the bucket A reaches its point of discharge, then the curved lever O moves in contact with the board Q, so that an inward swinging motion of the lever O takes place on the further upward movement of the bucket A, the motion of the said lever causing the swinging of the shaft M, whereby the arm L swings upward and exerts a pull on the link K. The upward movement of the arm L and pull on the link K cause an unseating of the valve H, so that the water contained in the bucket A will now pass out through the open valve H into the chute J, and from the latter to a suitable spout, trough or other device, leading to one side of the shaft.

When the water has all been discharged from the bucket, then the latter is again lowered to be refilled, the valve H, meanwhile, seating itself as soon as the lever O passes the lower edge of the board Q on the downward movement of the bucket A. The above described operation is then repeated; that is, the bucket A is lowered, filled with water, raised, and its contents discharged in the manner described.

It is understood that this device can be applied in inclined shafts as well as in vertical ones, it being understood, however, that in such a case the bucket A is mounted on

wheels instead of provided with guides B, as described.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination with the bucket having a valved inlet and a valved outlet in its bottom and a chute leading from said outlet, of a rock shaft journaled in bearings on the upper edge of the bucket and provided with a crank arm between its ends, a rod pivotally connecting said arm and outlet valve, and an operating arm O secured to one outer end of said rock shaft and curved outwardly beyond the side of the bucket and then downwardly and inwardly, substantially as shown and described.

2. In a water elevating apparatus the rectangular bucket provided with a valved inlet and outlet in its bottom, a chute leading from said outlet, guide flanges on opposite sides of the bucket, a rock shaft on the upper edge connected with the outlet valve, and having a depending arm at one outer end curved outwardly beyond the rear side of the bucket and thence inwardly and provided with a stop, and a loop or guide on the side of the bucket and through which the lower end of said curved arms slides, substantially as described.

JAMES FATKIN.

Witnesses:

HENRY W. STORMER,
WALTER S. CLARK.