J. B. WILFORD.

COAL AND ORE SEPARATOR

No. 170,142. Patented Nov. 16, 1875.

Fig. 3.

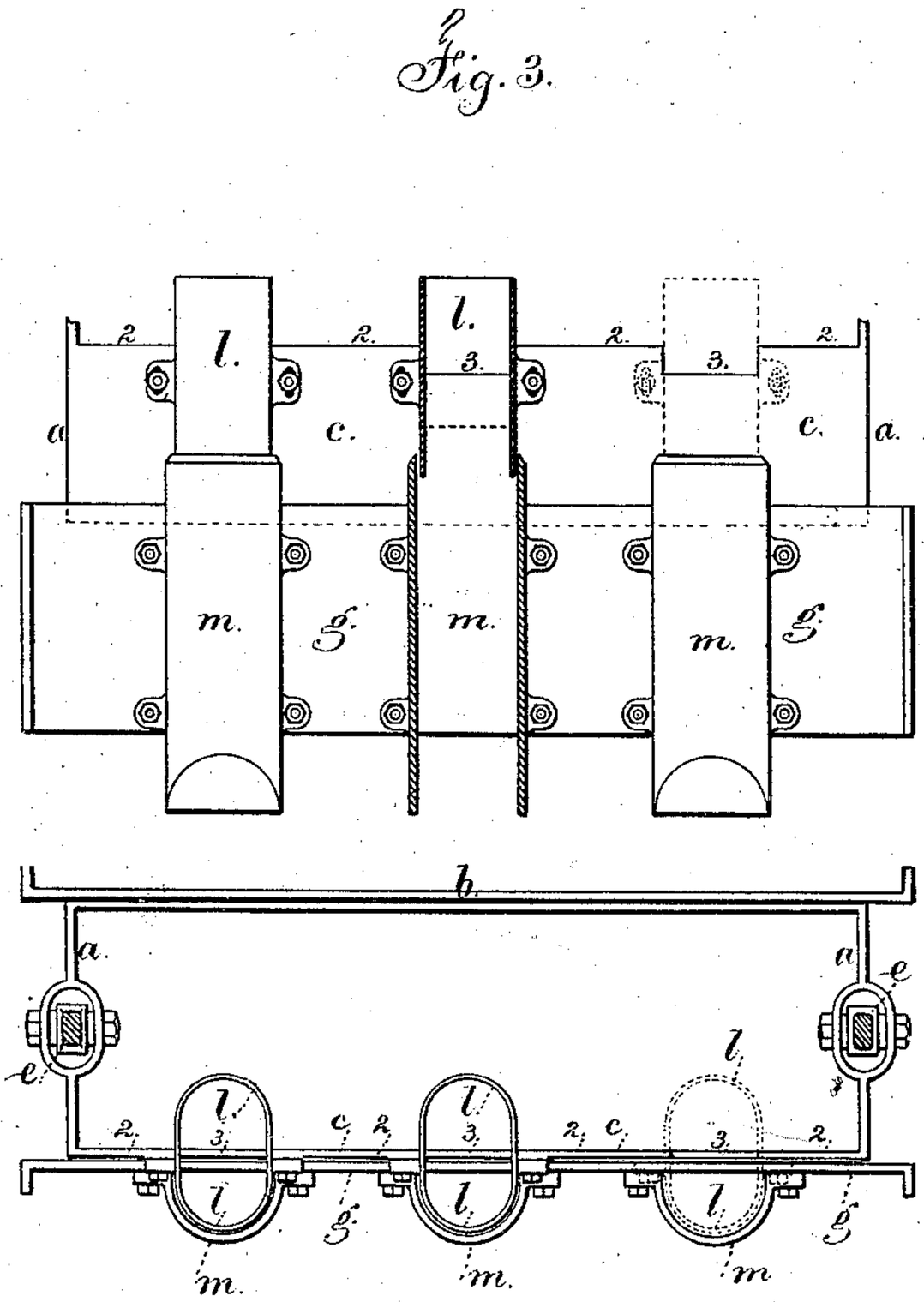

Fig. 1.

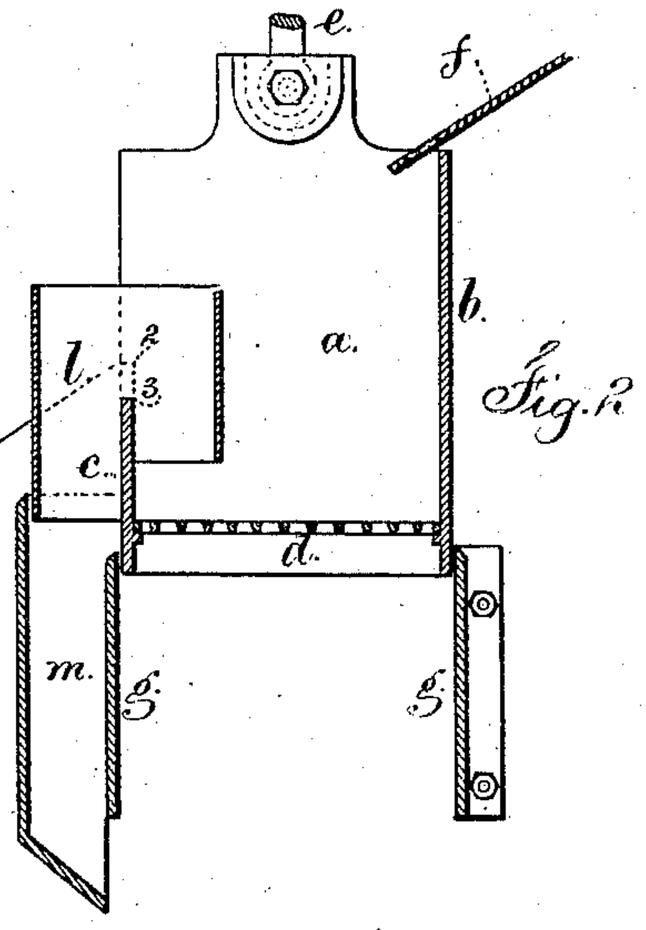

Fig. 2.

Fig. 4.

Witnesses

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UNITED STATES PATENT OFFICE.

JOHN B. WILFORD, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO HEZEKIAH BRADFORD, OF SAME PLACE.

IMPROVEMENT IN COAL AND ORE SEPARATORS.

Specification forming part of Letters Patent No. **170,142**, dated November 16, 1875; application filed March 13, 1875.

To all whom it may concern:

Be it known that I, JOHN B. WILFORD, of Philadelphia, in the State of Pennsylvania, have invented an Improvement in Separators for Coal, Ores, &c., of which the following is a specification:

In Letters Patent No. 143,219, granted to H. Bradford, a jig-box is represented as moved up and down in a tank of water, and coal or ore is gradually supplied into it, and the jigging motion causes the mass to be separated according to gravity, and the heavier portions pass through the screen or perforated jig-bottom, and the lighter portions pass away over the edge of the jig-box. In Letters Patent No. 143,492 an opening is shown at the side of the jig for the lateral delivery of the heavier pieces, and in an application of said Bradford, dated September 19, 1874, there is described a balanced delivery, the heavier portions going over a lower edge, and the lighter material passing over a higher edge upon the jig-box.

My present invention is an improvement upon and modification of the last-named device.

I make use of a jig with a perforated bottom, reciprocated in the water substantially similar to that in aforesaid patents; but at the delivery side of the jig-box there are separate delivery-levels, the side of the box being notched at one or more places, and a hood being provided at such places, that extends down in the jig sufficiently far that only the heavy pieces can pass below its lower edge, and work up within the hood, and over the lower level at the delivery-edge, into a chute or trough that is separate from that into which the lighter materials are delivered from the adjacent higher edge.

In the drawing, Figure 1 is a plan of the apparatus. Fig. 2 is a vertical cross-section, and Fig. 3 is a front view.

The jig-box is made with ends *a*, side *b*, delivery-side *c*, and perforated bottom *d;* and at *e* there are links or connecting-rods, passing to cranks on a revolving shaft, whereby the entire jig and contents receive a rapid vibratory or reciprocating motion in the water, to assort and separate the lumps or pieces of coal or other material according to gravity. A reference is hereby made to the said patents for the means for operating the jig, and the proportions of speed and extent of motion according to the size of the pieces, the principles of operation, and the manner of separating according to gravity being the same; but the delivery devices are different in the particulars herein named.

The coal or other material is supplied gradually by the inclined chute *f*, and the sides of the jig-box are either extended down to inclose a sufficient body of water to insure a proper upward action in consequence of the inertia of the water, or else the stationary box *g* is employed for the same purpose, as in patents heretofore granted to said Bradford, and in his specification before named.

The delivery-side of the jig is made with the delivery-edges 2 2 higher than the delivery-edges 3 3; and at the delivery-edges 3 3 there are hoods *l*, attached to and extending both above and below the edges 3, so as to form a separation of the material within these vertical hoods from that outside of them; and as these hoods do not extend to the bottom of the jig, the operation, therefore, will be as follows: Coal and slate, or other materials of varying specific gravities, but of nearly uniform size, being supplied into the jig, and the jig vibrated, the heavier portions, such as slate, gradually pass to the bottom, and the coal is at the top, and is delivered over the edge 2 into a suitable receptacle or chute. The smaller pieces of slate and bone-coal may pass through the perforated bottom of the jig. The pieces that are too large to pass through accumulate upon the bottom of the jig and form a layer of valves, and the surplus valves rise within the hood *l* to the delivery-edge 3, and pass over into the chutes or receptacles *m*, that preferably convey them to the vat below the jig, so as to be delivered with the smaller pieces passing through the jig-grate.

The relative heights of the delivery-edges 2 and 3 are such that the column of slate in the hood *l* will be about equal in gravity to the higher column of slate and coal outside of the hood, so that the delivery of the two will be

in proportion to the supply, the jig always remaining full, or nearly so. The edge 2 or 3 may be made adjustable, so as to suit the varying conditions of material, and check the delivery of either the coal or the slate that may be passing away too rapidly in proportion. I have shown the hood *l* adjustable for the same purpose, because when it is lowered the quantity of heavier material passing into the hood will be lessened, and vice versa.

If desired, the delivery-edge 3 may be within the jig-box, as seen in plan, Fig. 4, a pipe or trunk, *m*, being introduced at that point to form the delivery-chute; but I prefer the construction before described.

I do not claim a stationary screen, through which water is forced by a pump, in combination with trunks that are stationary and placed above such screens, as these operate in a different manner to my device, in which the jig-box is reciprocated, and the lower edge for the heavier material to pass over and the higher edge for the lighter materials alternate.

I claim as my invention—

The reciprocating jig-box having delivery-edges 2 and 3 at different heights, and alternating along the side or sides of the jig-box, in combination with a hood contiguous to each of the lower delivery-edges 3, substantially as and for the purposes set forth.

Signed by me this 27th day of February, A. D. 1875.

JNO. B. WILFORD.

Witnesses:

WM. C. STRAWBRIDGE,

J. QUINN.