S. THOMAS.

Separating Refuse from Coal.

No. 161,840. Patented April 6, 1875.

FIG. 1.

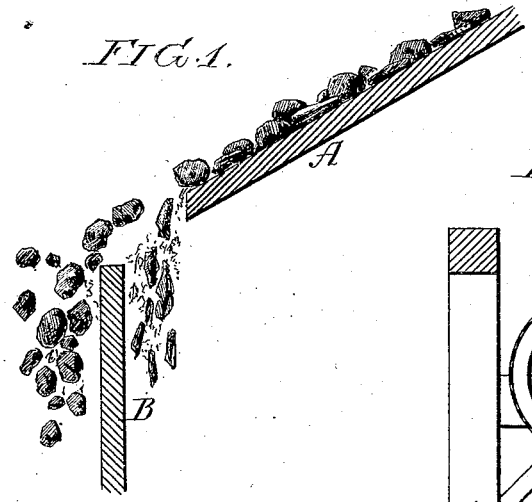

FIG. 2.

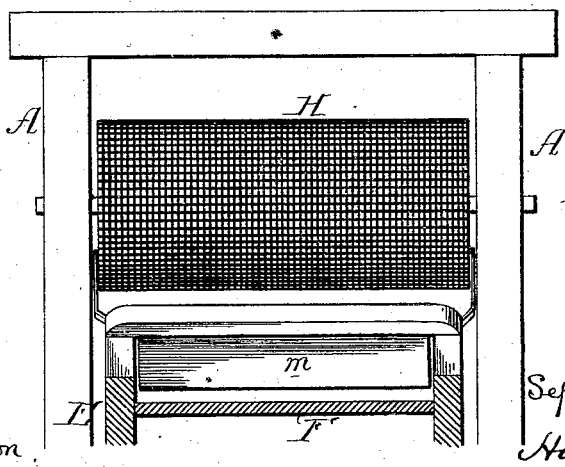

FIG. 3.

Witnesses,
Hubert Howson
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Septimus Thomas
by his Attys.
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UNITED STATES PATENT OFFICE.

SEPTIMUS THOMAS, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN SEPARATING REFUSE FROM COAL.

Specification forming part of Letters Patent No. **161,840**, dated April 6, 1875; application filed January 23, 1875.

To all whom it may concern:

Be it known that I, SEPTIMUS THOMAS, of Philadelphia, Pennsylvania, have invented Improvement in, and Apparatus for, Separating Slate and other Refuse from Anthracite Coal, of which the following is a specification:

The object of my invention is to cause the separation of slaty and other refuse particles from granular masses of anthracite coal, and this object I attain in the manner I will now proceed to describe.

I have ascertained that if A in the diagram, Figure 1 of the accompanying drawing, be an inclined plane of slate or marble, and that if broken anthracite coal mixed with fragments of slate be permitted to slide down the said plane, the surface of the latter has a much more retarding influence on the fragments of slate than on the coal; hence the latter acquires such a velocity that on escaping from the end of the plane it will pass over a partition, B, into one compartment, while the fragments of slate, acquiring less velocity and momentum than the coal, will fall abruptly from the end of the plane into another compartment on the opposite side of the partition.

In carrying out this mode of separation, I have adopted the mechanism illustrated in the vertical section, Fig. 2, of the accompanying drawing, Fig. 3 being a transverse section on the line 1 2.

Between two substantial frames, A, is hinged at *x* a frame, E, which, by means of a suitable capstan, *a*, can be adjusted to such inclination as circumstances may demand. To this frame E is secured an inclined slab, F, of slate, marble, or such other stone as may possess the desired retarding influence on the particles of slate or other refuse mixed with the coal. G is an inclined plane, of any suitable material, and is separated from the plane F by an opening, *c*, the width of which can be adjusted at pleasure by the adjustment of either of the said planes F and G in the frame E. H represents the rotating screen of a coal-breaker, from which screen the broken coal, with more or less slaty refuse, falls onto the curved platform I, and passes thence onto the inclined plane F of slate or marble.

It is essential, in carrying out my invention, that the granular mass should slide and not roll down the inclined plane in a comparatively thin layer, so that each fragment may be in contact with the surface of said plane. The curved form of the platform I prevents that abrupt discharge of the mass onto the inclined plane which would result in the rolling of the fragments down the same; but this tendency to roll is most effectually prevented by the apron *m*, beneath which the fragments must pass, and by which they must, in a measure, be dispersed and pressed tightly against the inclined plane, the most important effect of the apron, however, being to prevent the tendency of the fragments to roll down the planes. This apron may consist of a strip or strips of any flexible material—leather, for instance—or it may consist of a series of flexible strips or slats. In practice, I have found an apron of canvas to be suitable for the purpose.

After passing from beneath the apron the fragments will pursue their sliding course down the plane F, and the broken coal, which has no such affinity for the surface of the slate or marble as to be materially retarded thereby, will acquire such a velocity as to pass across the opening *c*, onto and down the plane G, whence it may be conducted to a neighboring car or vessel, while the fragments of slate will simply fall abruptly over the end of the plane and through the opening *c*. In the present instance, the adjustable frame E is furnished with a second inclined plane, F′, of marble or slate, onto which the fragments passing through the opening *c* may fall, and down which they may slide, so that if any fragments of coal pass through the opening *c* with the particles of slate they may be separated from the latter by passing across the opening *c′*, between the planes F′ and G′, while the slate falls through the said opening.

It is important that the inclined planes should be adjustable, for different inclinations are required for different conditions of the fragments to be separated. Even a change of the weather may demand an adjustment of the inclined planes.

I claim as my invention—

1. The mode herein described of separating particles of slate and other refuse from a granular mass of anthracite coal—that is to say, by causing the mass to slide down an inclined

plane of slate, marble, or other equivalent stone having a surface which has more of a retarding effect on the slaty and other refuse particles than on the coal, so that on leaving the said inclined plane the retarded particles will fall abruptly, while the coal, whose velocity has not been materially retarded, will be projected beyond the retarded refuse, all as set forth.

2. The within-described separating apparatus consisting of the adjustable frame E, with inclined planes F and G, separated from each other by an opening, *c*, the width of which can be altered by the adjustment of one or both of the planes, as specified.

3. The combination of the inclined plane F with the flexible apron *m*.

4. The combination of the inclined plane F with the curved platform I, which receives the mass to be separated before it reaches the said planes.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

SEPTIMUS THOMAS.

Witnesses:
A. P. RUTHERFORD,
HARRY SMITH.