W. E. Brown,

Coal Screen.

No. 46,070. Patented Jan. 31, 1865.

Fig. 3

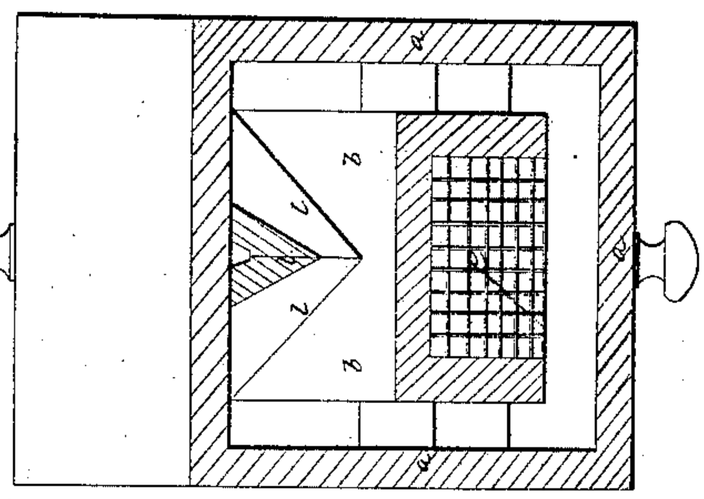


Fig. 2.

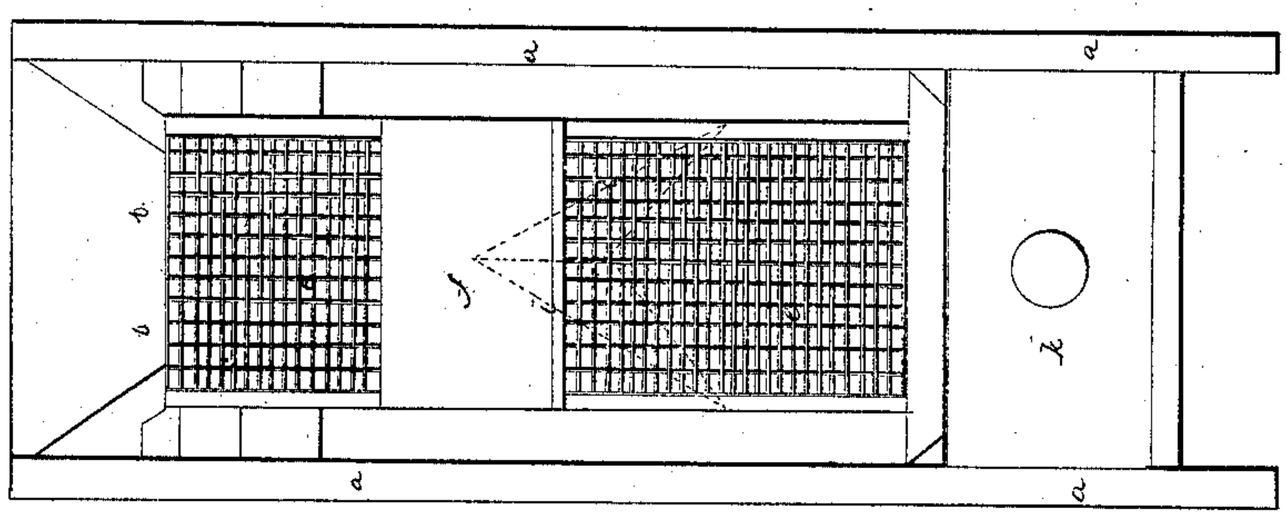
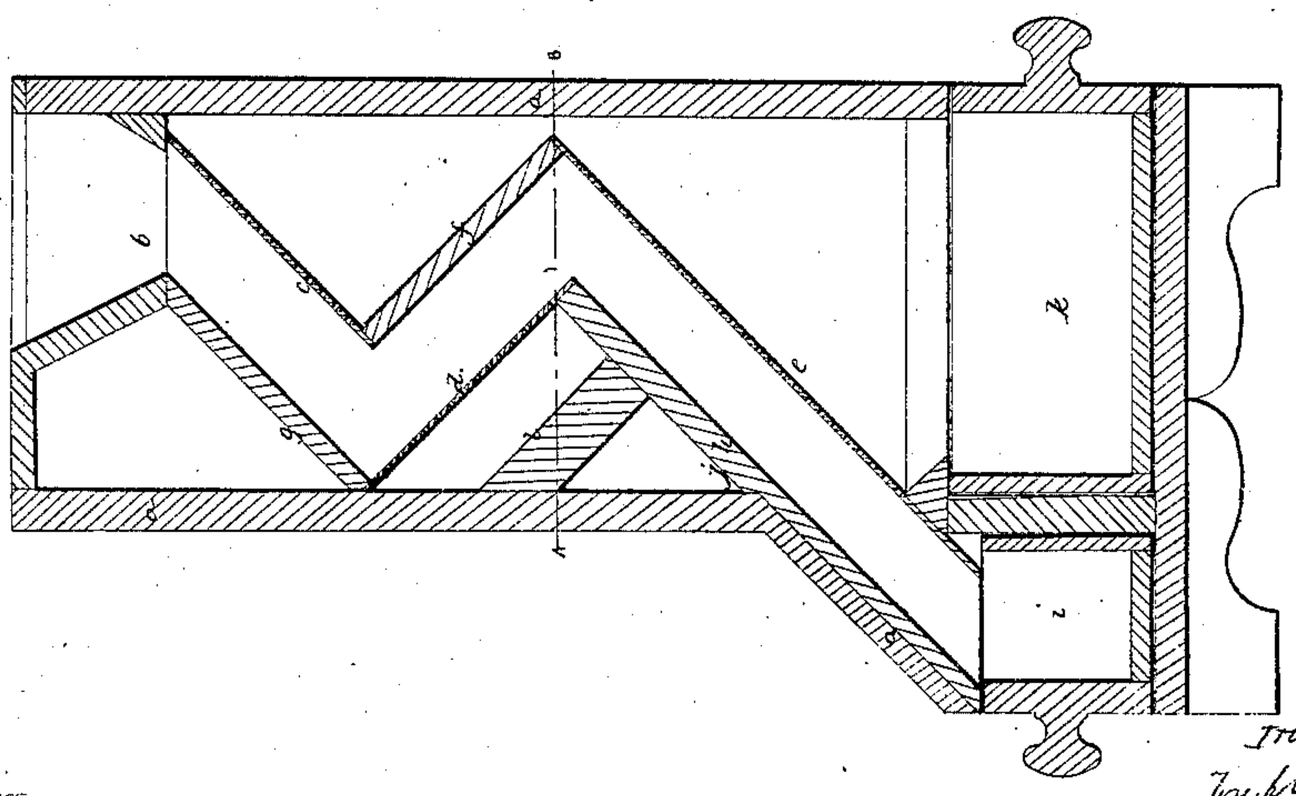


Fig. 7.



Witnesses

Frederic A. Sayer
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UNITED STATES PATENT OFFICE.

WILLIAM E. BROWN, OF BOSTON, MASSACHUSETTS.

IMPROVED PORTABLE GRAVITATING COAL-SIFTER.

Specification forming part of Letters Patent No. **46,070**, dated January 31, 1865.

To all whom it may concern:

Be it known that I, WILLIAM E. BROWN, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Apparatus for Sifting and Screening Coal, &c.; and I do hereby declare that the following description, taken in connection with the accompanying drawings, hereinafter referred to, forms a full and exact specification of the same, wherein I have set forth the nature and principles of my said improvements, whereby my invention may be distinguished from all others of a similar class, together with such parts as I claim and desire to have secured to me by Letters Patent.

The object of the present invention is to so construct an apparatus for sifting and screening coal, grain, &c., or other substances in which the coarse and fine particles are to be separated from each other, as to perform the work without the aid of mechanical agitation—that is, so that the operation will be effected simply by the downward momentum of the material to be screened or sifted.

Many arrangements of devices have heretofore been contrived for the sifting of coal, more particularly, but they have all been liable to several objections, the principal one of which is the great labor necessary to produce the mechanical agitation of the particles, so as to effect their separation into coarse and fine material. Some of these devices have depended upon vibratory motions, others upon rotary or intermittent rotary movements for effecting the desired purpose; but previous to my invention no organized apparatus has been produced in which the operation of screening or sifting coal could be accomplished without imparting to the sieve or screen some kind of movement to agitate the material placed upon it.

My new apparatus consists of a series of inclined sieves or screens placed within a proper box or casing, and so arranged and combined with each other and with a series of deflectors or inclined planes as to cause the separation of the coarse and fine particles of the materials to be acted upon, simply by feeding or dumping the said material into the top of the apparatus, when its downward momentum will cause it to pass from one inclined sieve or screen to another, parting with its fine particles in its passage over them until it reaches the bottom, when the operation is completed.

Having thus stated the general features and object of my new apparatus, I will now proceed to describe its operation and construction in detail.

a a a a in the drawings represent the outer casing of the apparatus, the figures of which drawings are as follows, viz:

Figure 1 is a central vertical section; Fig. 2, a side view, and Fig. 3 a horizontal section in plane of the line A B, Fig. 1.

b is a hopper.

c d e are inclined sieves, the meshes of which can be made of any desired fineness, and they may be of the same size in all the sieves or they may vary in the different sieves.

f, *g*, and *h* are blank inclined planes without interstices, but having a plain blank surface.

i and *k* are receptacles to receive the coarse and fine particles, respectively.

The operation of the apparatus is as follows: Coal and ashes, for instance, being dumped into the hopper, strike first upon the inclined sieve *c* and pass downward over the same, parting with a portion of the fine particles, which drop through the meshes of the sieve upon the blank inclined plane *f*, and thence into the receptacle *k*. The remaining portion of the coal and ashes that have passed over the screen *c* then impinges upon the second sieve, *d*, placed at right angles, or nearly so, to the first one, *c*, when more of the ashes is separated from the coal by dropping through the meshes of the screen *d* and received upon a deflector *l*, Figs. 1 and 3, which conveys it to the receptacle *k*. The deflector *l* keeps the ashes from collecting in the corner *j*. What now remains of the partially-sifted coal and ashes then impinges upon the third sieve, *e*, the residue of the ashes dropping through the same into the receptacle *k*, and the coal, now thoroughly cleansed, into a receptacle, *i*.

It will be seen that, by the above-described arrangement of devices, a zigzag channel is formed by the inclined sieves and blank surfaces, through which the material to be acted upon is made to pass by its own momentum, separating it into its coarse and fine particles simply by its downward passage through the apparatus.

It will be evident that in lieu of the inclined

screens and inclined blanks to form a zigzag channel, a continuous tube or screen can be arranged in a zigzag or spiral form; but the arrangement above described I consider the best and cheapest.

Having thus described my improvements, what I claim as my invention, and desire to have secured to me by Letters Patent, is—

The combination, with a series of inclined sieves or screens, of one or more deflectors composed of inclined surfaces, throwing the ashes out of the path of the sifted coal into the ash-box, substantially as herein described.

WM. E. BROWN.

Witnesses:

FREDERICK LAYER,

ALBERT W. BROWN.