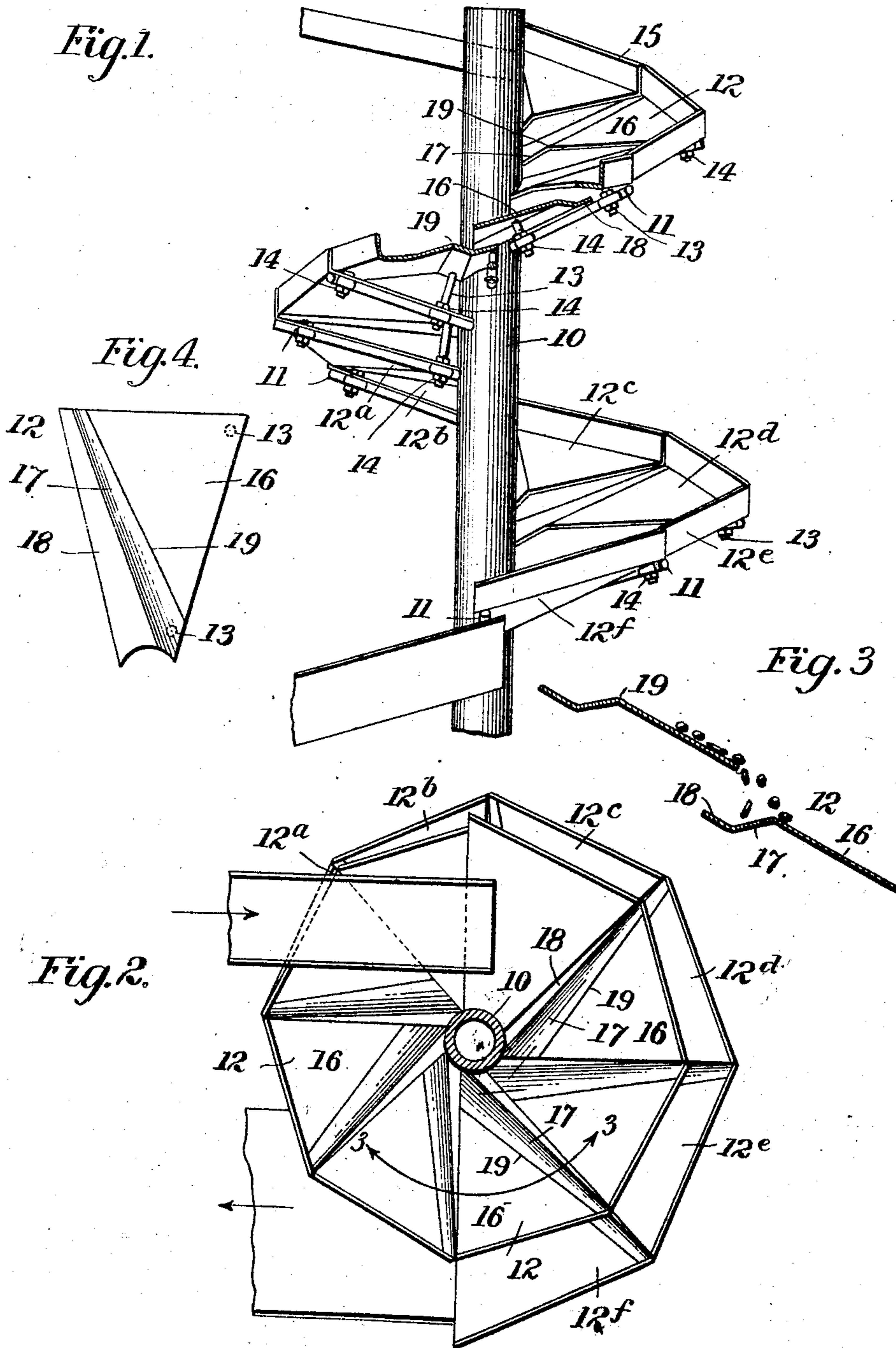


No. 819,252.

PATENTED MAY 1, 1906.

J. POLLOCK.  
COAL SEPARATOR.  
APPLICATION FILED NOV. 9, 1905.

Fig. 1.



Witnesses  
J. C. Rust  
B. C. Rust

Inventor  
James Pollock  
By Foster Freeman Weston  
Attorneys

# UNITED STATES PATENT OFFICE.

JAMES POLLOCK, OF WILKES-BARRE, PENNSYLVANIA.

## COAL-SEPARATOR.

No. 819,252.

Specification of Letters Patent.

Patented May 1, 1906.

Application filed November 9, 1905. Serial No. 286,545.

*To all whom it may concern:*

Be it known that I, JAMES POLLOCK, a citizen of the United States, and a resident of Wilkes-Barre, Luzerne county, State of Pennsylvania, have invented certain new and useful Improvements in Coal-Separators, of which the following is a specification.

This invention relates to machines for separating substances which have different physical properties, such as differences of shape, elasticity, roughness of surface, &c.

Apparatus embodying the invention is particularly applicable to the separation of coal from slate and bone.

The present improvements are particularly applicable to the apparatus patented to me September 5, 1905, under No. 798,622, although they are not restricted to the particular apparatus shown in the said patent, as they may be used in other machines of a similar character.

The improvements will be described in detail in connection with the accompanying drawings, in which—

Figure 1 is an elevation of a separating apparatus embodying the invention, parts being broken away. Fig. 2 is a plan view of the same. Fig. 3 is a section on the line 3 3 of Fig. 2, showing the action of the apparatus. Fig. 4 is a plan view of one of the triangular plates of the separator.

Referring to the drawings, 10 indicates a central column or support from which a series of radial upwardly-inclined arms 11 project. Connected with these arms are a series of plates 12, the upper edges of the plates being supported on the arms. The lower edge of each of the plates is adjustably supported by means of threaded bolts 13, which extend through eyes in the supporting-arm 11 and are sustained in any desired adjustment by nuts 14. The outer edge of each plate is provided with an upturned flange 15, which prevents the material under treatment from running off the plates tangentially.

One of the improvements of the present invention consists in reversely bending each of the plates 12, as indicated in section in Fig. 3. Thus each plate has a main portion 16 inclining downward and forward, a reversely-inclined portion 17, and a third portion 18 inclining rearward and upward. Each plate is therefore angular in cross-section, as indicated in Fig. 3. The plates are

so arranged with relation to one another that the coal from each plate will strike on or near the angle 19 between the reverse inclines 16 and 17, and being elastic the coal will travel on down the incline 16. The slate being more sluggish will strike the incline 17 and travel radially inward along said incline, the portions 17 and 18 forming a trough for the slate and bone which discharges onto the next lower plate near the central support, as indicated by the dotted arrows, Fig. 2. It will be noted that the lines of the angles 19 are not parallel with the upper edges of the plates, but are so located that the reverse inclines 17 are wider at their lower ends, and this is preferably the case with the incline 18. The line 19 must bear a certain relation to the lower edge of the next plate above. The adjacent edges of the plates are relatively close together at their outer ends; but at their inner ends the adjacent edges of the plates are separated vertically to a considerable extent and the materials leap a gap between them, as indicated in Fig. 3, throughout their length. This gap gradually increases in depth from the periphery of the apparatus to the central support, and where the gap is deeper the coal and slate necessarily jump through in a greater horizontal distance before striking the next lower plate. It is for this reason that the line 19 is made to gradually recede from the lower edge of the next plate above, and said line is so arranged that the coal from all parts of the plate above will strike on or near it. Another improvement consists in increasing the radius of the lowermost plates of the apparatus. As shown, the plates are of the same size from the top downward until the sixth plate from the bottom is reached. This plate is of slightly-greater radial length at its lower edge. The succeeding plate is still larger, and so on to the bottom plate, which extends outward fifty per cent. more or less beyond the upper plates of the apparatus. The lowermost six plates referred to are indicated by the reference-signs 12<sup>a</sup> to 12<sup>f</sup>, inclusive. I have found that by enlarging the lowermost plates radially the different grades of material—such as coal, bone, and slate—are permitted to become more widely separated before leaving the apparatus, and they can be more readily directed into separate chutes or receptacles. In other words, the apparatus operates much more effectively at a slight in-

crease of cost than a separator of uniform radius throughout its height, such as that shown in my previous patent.

It will be noted that the plates of the separator are substantially triangular in outline, as shown in Fig. 4, one of the angles being cut away to conform to the central post. While the proportion of the plates need not be strictly as shown in the accompanying drawings, the plates must be substantially triangular, and they will be so referred to in the claims.

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

1. A separating apparatus for coal, ore, &c., comprising a plurality of substantially triangular plates arranged about a common vertical axis and collectively constituting an inclined separating-chute, the upper portion of each plate being reversely inclined and arranged with respect to the next higher plate so that the livelier material will pass over the reverse incline, while the more sluggish material will fall upon it.

2. A separating apparatus for coal, ore, &c., comprising a plurality of substantially triangular plates arranged about a common vertical axis and collectively constituting an inclined separating-chute, the said plates being inclined toward the vertical axis and also inclined laterally, and the upper portion of each plate having a reverse incline arranged to receive a part of the material from the lower edge of the next plate above.

3. A separating apparatus for coal, ore, &c., comprising a plurality of substantially triangular plates arranged about a common vertical axis and collectively constituting an inclined separating-chute, each of said plates having reversely-arranged inclines 16, 17, 18, the incline 17 gradually increasing in width toward the inner end of the plate, substantially as and for the purpose set forth.

4. A separating apparatus for coal, ore,

&c., comprising a plurality of substantially triangular plates arranged about a common vertical axis and collectively constituting an inclined separating-chute, the lower plates being of greater radial length than the upper plates.

5. A separating apparatus for coal, ore, &c., comprising a plurality of substantially triangular plates arranged about a common vertical axis and collectively constituting an inclined separating-chute, a part of said plates at the lower end of said apparatus gradually increasing in radial length toward the bottom of the apparatus.

6. A separating apparatus for coal, ore, &c., comprising a series of plates arranged about a common axis and collectively constituting an inclined separating-chute, a plurality of successive plates at the upper part of the apparatus being of the same radial dimensions, and a plurality of the plates at the lower part of the apparatus gradually increasing in radial length, for the purpose set forth.

7. A separating apparatus for coal, ore, &c., comprising an inclined separating-chute arranged spirally about a vertical axis, the upper part of the chute being of uniform radial dimensions and the lower part of the chute gradually increasing in its radial dimension, for the purpose set forth.

8. A separating apparatus for coal, ore, &c., comprising a plurality of substantially triangular plates arranged about a common vertical axis the upper edge of each plate resting upon a fixed arm or support, and adjustable supports for the lower edge of each plate whereby the incline of each plate may be adjusted.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES POLLOCK.

Witnesses:

P. F. O'NEILL,  
JOSEPH PHILLIPS.