S. BROADBENT, C. W. ZIEGLER, & W. B. CULVER.

Apparatus for Separating Slate from Coal.

No. 161,744. Patented April 6, 1875.

Fig: 1

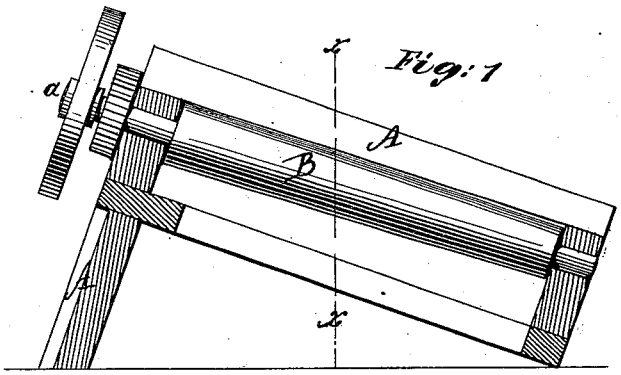


Fig: 2

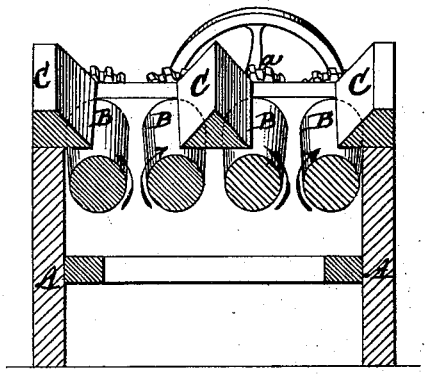


Fig: 3

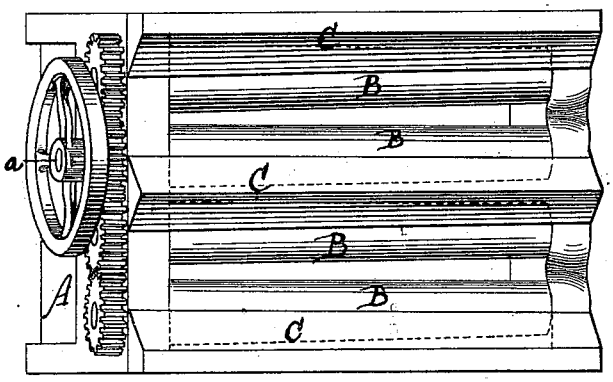
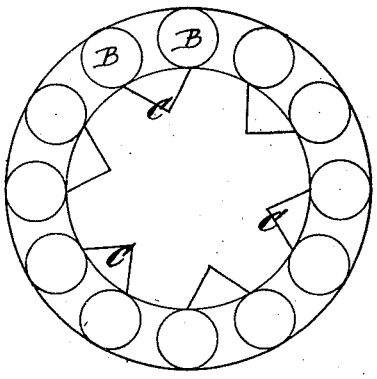


Fig: 4



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UNITED STATES PATENT OFFICE.

SIDNEY BROADBENT, CHARLES W. ZIEGLER, AND WILLARD B. CULVER, OF SCRANTON, PENNSYLVANIA.

IMPROVEMENT IN APPARATUS FOR SEPARATING SLATE FROM COAL.

Specification forming part of Letters Patent No. **161,744**, dated April 6, 1875; application filed March 17, 1875.

To all whom it may concern:

Be it known that we, SIDNEY BROADBENT, CHARLES W. ZIEGLER, and WILLARD B. CULVER, all of Scranton, in the county of Luzerne and State of Pennsylvania, have invented an Improved Slate-Picker, for removing slate from coal; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming part of this specification.

Our invention relates to a means for separating slate from coal; and it consists in a novel system of revolving shafts or rollers, arranged to receive the coal from a screen or chute and separate the slate therefrom; and, further, in a means for preventing the clogging of the rollers.

In the accompanying drawing, Figure 1 is a longitudinal vertical section of a machine constructed according to our invention. Fig. 2 is a transverse vertical section taken in the line *x x* of Fig. 1. Fig. 3 is a top view of our improved machine. Fig. 4 is an end view of a modification.

A represents a frame or bottomless casing, in which are journaled a number of revolving shafts or rollers, B, which are arranged in pairs, and are driven by gearing from the main shaft *a*. They are so geared, with relation to each other and to the driving-power, that the two rollers of each pair revolve upward away from, instead of toward, each other, as indicated by the arrows. One end of the frame A is lower than the other, so as to give a downward inclination to the rollers. The journals of the rollers are placed at such distances from each other as to leave just sufficient space between the rollers for the passage of the pieces of slate. The spaces between the descending sides of the rollers are covered by bars C, lying parallel with the axes of the rollers, and having their ends attached to the end pieces of the frame or casing A. These covering-bars are preferably of triangular form, with one of the sides resting over the space between the rollers and the apex of the bar uppermost. The space between the rising sides of the rollers of each pair is left uncovered.

The apparatus thus constructed is placed so as to receive coal from a screen or chute. As the coal falls upon the obliquely-inclined sides of the bars C, it is guided to the spaces between the rising sides of the rollers of each pair; and as said rollers revolve they stir and loosen the coal, so as to allow the pieces of slate, which are flat and thin, to separate from the coal and pass through the space between the rollers, while the coal, being in pieces which are too large to pass between the rollers, rolls downward over the rollers, and falls into a receptacle at the foot or lower end of the inclined frame or casing.

The coal is deposited on the rising sides of the rollers, in order to prevent clogging of the rollers and crushing of the coal; and the descending sides of the rollers are covered by the bars C for the same purpose.

There may be any desired number of rollers, and of any suitable length. They may be either perfectly cylindrical or slightly tapering. The tapering form is preferable, as it prevents clogging, by allowing the slate to slip farther down to a wider space in the event of its falling into a space not sufficiently wide to allow it to pass through.

Instead of being arranged in a plane, as above described, the rollers B may be arranged in a cylindrical revolving frame, as shown in Fig. 4, in which case the covering-bars C are placed on the inner side. Each roller revolves on its own axis, and the frame and rollers around a common center, and the coal is delivered inside the frame, as in a revolving screen.

What we claim as new, and desire to secure by Letters Patent, is—

1. The series of inclined revolving rollers B, arranged and operating substantially as and for the purpose shown and described.

2. The combination, with the rollers B, of the covering-bars C, arranged over the descending sides of said rollers, substantially as and for the purpose shown and described.

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