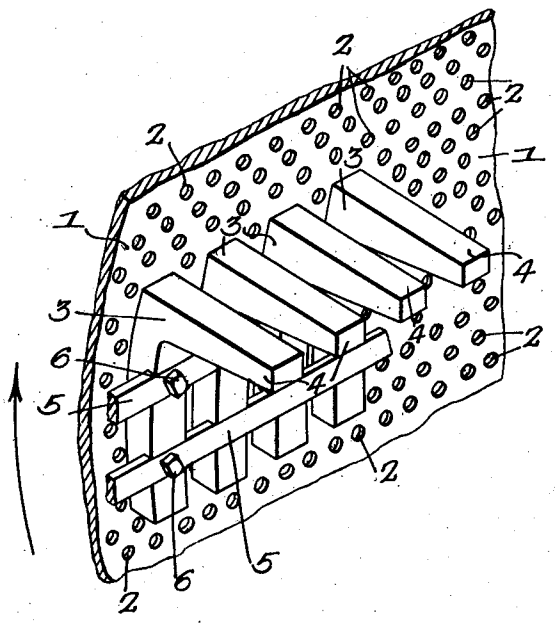
J. L. HILLER.

LIFTING AND SCREENING SHELF FOR COAL BREAKERS.

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1,259,983.

Patented Mar. 19, 1918.



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UNITED STATES PATENT OFFICE.

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LIFTING AND SCREENING SHELF FOR COAL-BREAKERS.

1,259,983. Specification of Letters Patent. Patented Mar. 19, 1918.

Original application filed May 1, 1911, Serial No. 624,291. Divided and this application filed April 9, 1915. Serial No. 20,274.

To all whom it may concern:

Be it known that I, JOSEPH L. HILLER, a citizen of the United States, and a resident of Mattapoisett, Plymouth county, Massachusetts, have invented certain Improvements in Lifting and Screening Shelves for Coal-Breakers, (being a division of my application for patent filed May 1, 1911, Serial No. 624,291,) of which the following is a specification.

The object of this invention is to provide a novel form of shelf, particularly designed for use in rotary coal breakers, for separating the larger pieces of coal from those which are smaller and raising the former to a height in the machine preparatory to dropping them with a view to causing their breakage.

This object and other advantageous ends I secure as hereinafter set forth, reference being had to the accompanying drawing, in which,

The figure is a fragmentary perspective view of a portion of the screening drum and a rotary coal breaker showing my invention as applied thereto.

In the above drawing 1 represents a cylindrically curved surface of a rotary drum or coal breaker which is provided with perforations 2 designed to permit of the escape of material after it has been reduced to a predetermined size or fineness. At definite intervals around the inner surface of said drum are mounted lifting and screening shelves which extend in lines substantially parallel with its axis and are each formed of a series of relatively narrow angle irons 3 spaced apart and each having one arm in engagement with the inner surface of the drum and the second arm extending radially inward. The outer surfaces of all of the inwardly extending arms 4 belonging to one shelf lie in the same plane, and the angle irons are held in place by parallel bars 5 preferably extending in recesses in those arms which engage the drum 1, while the bars are retained in their clamping positions by bolts 6 placed at suitable intervals and passing through the angles into the drum structure.

Under conditions of operation the drum is rotated in the direction of the arrow and the lump coal or other material therein is engaged by the shelf provided by one of the series of angle irons 3 so that more or less of it is carried up as one side of the drum is raised. During this upward movement any fine material engaged by the angle irons passes between them and in rolling or sliding down the inner inclined surface of the drum, passes out of the same through the openings 2.

The coarser material and large lumps are carried up by the angle irons until these latter reach such a height and inclination adjacent the top of the drum that said material is permitted to slide off of them, whereupon it falls to the bottom of the drum and is broken or crushed. By having the shelves formed of teeth such as are provided by angle irons, the fine material quickly passes through the same, making it necessary for the machine to raise only the coarser pieces and so require less operating power than would be the case if each shell were forced to lift the large and small material together. Moreover since the angle irons in rising with the ascending side of the drum, disturb and to a greater or less extent carry the fine material with the coarse, said fine material is caused to more quickly pass through the perforations 2 than would otherwise be the case, so that my machine will reduce and discharge a given mass of material in a fine form in considerably less time than has ordinarily been possible.

I claim:—

1. A coal breaker including a drum; a series of narrow substantially parallel angle irons, having inwardly projecting arms all lying in one plane and forming a shelf; with means independently engaging the second arms of said angle irons for holding them in place.

2. A coal breaker including a drum; a series of narrow substantially parallel angle irons, having radially projecting arms forming a shelf; with means for holding said angle irons in place consisting of at least one member extending longitudinally of the drum and independently clamping the angle irons thereto.

3. A coal breaker including a drum and a raising shelf therefor consisting of a series of parallel angle irons spaced apart, each of said angle irons having a portion extending inwardly from the inner surface of the drum and a portion substantially parallel

with said surface; with a structure independently engaging all of said latter portions of the angle iron for clamping them to the drum.

4. A breaker including a perforated drum; a series of angle irons spaced apart and arranged, each with one arm projecting inwardly from the drum surface and all in the same plane, the other arm of each of said angle irons being extended substantially parallel with the adjacent portion of said drum surface; with means common to all of the angle irons for removably holding them to the drum.

5. A breaker including a perforated drum; a series of angle irons constituting a shelf and each having a portion projecting inwardly within the drum and a second portion in engagement with the inner surface thereof; a bar engaging the latter portion of all of said angle irons; and means for holding said bar to the drum.

6. A coal breaker including a perforated drum; a series of angle irons mounted on the inside surface of the drum and spaced apart, one arm of each angle iron projecting inwardly and coöperating with the arms of the other angle irons to provide a raising shelf having radial slots; with means common to all the angle irons and independently engaging each of them for removably holding them to the drum.

7. A coal breaker including a perforated drum; a series of angle irons mounted on the inside surface thereof and spaced apart, one arm of each angle iron projecting inwardly and coöperating with the arms of the other angle irons to define a raising shelf; with means for removably holding said angle irons to the drum; the same consisting of two substantially parallel bars engaging the second arm of each of the angle irons and clamping the same to the drum.

JOSEPH L. HILLER.