

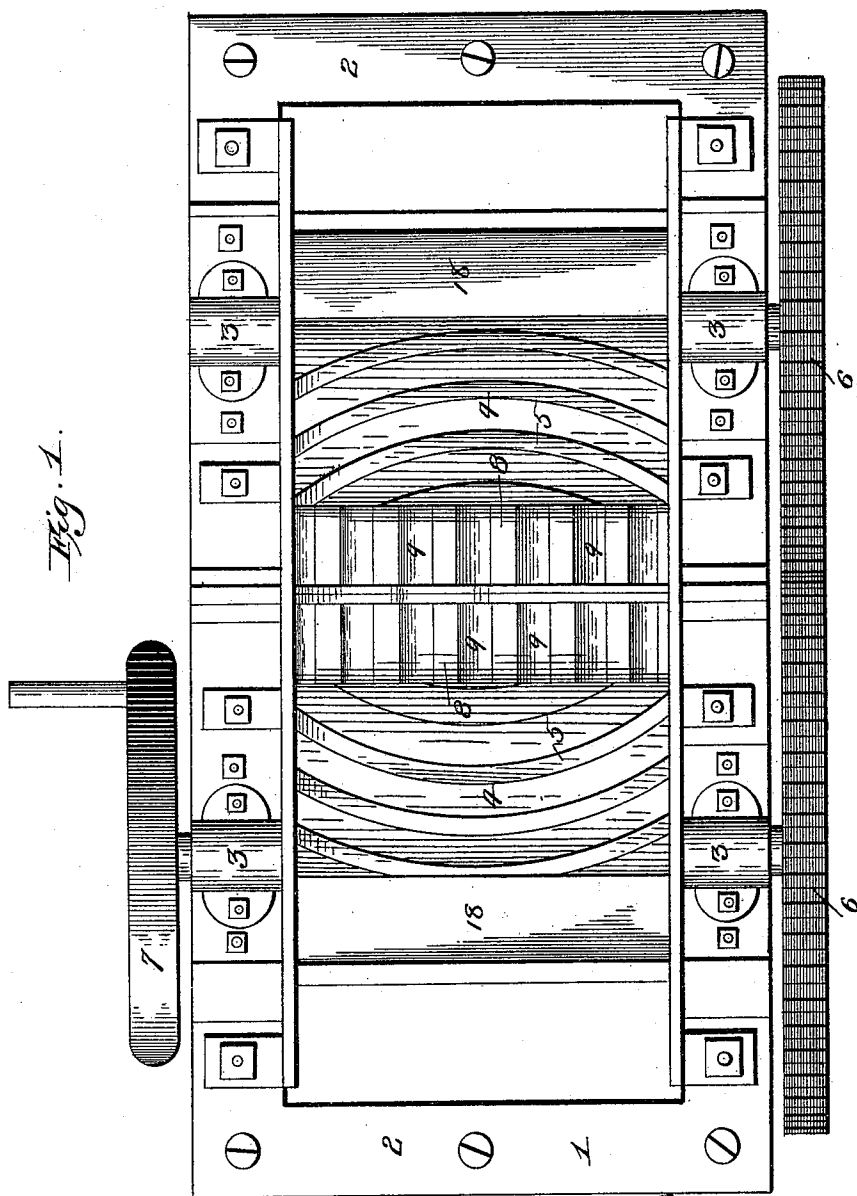
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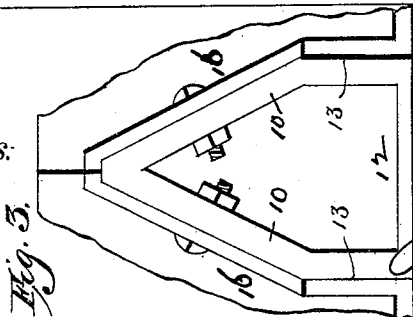
P. RICHARDS.
COAL CRUSHING MACHINE.

No. 466,185.

Patented Dec. 29, 1891.



WITNESSES:
F. L. Curand
H. H. Brown



INVENTOR:
Philip Richards
By Davis & Rogers
Attorneys.

(No Model.)

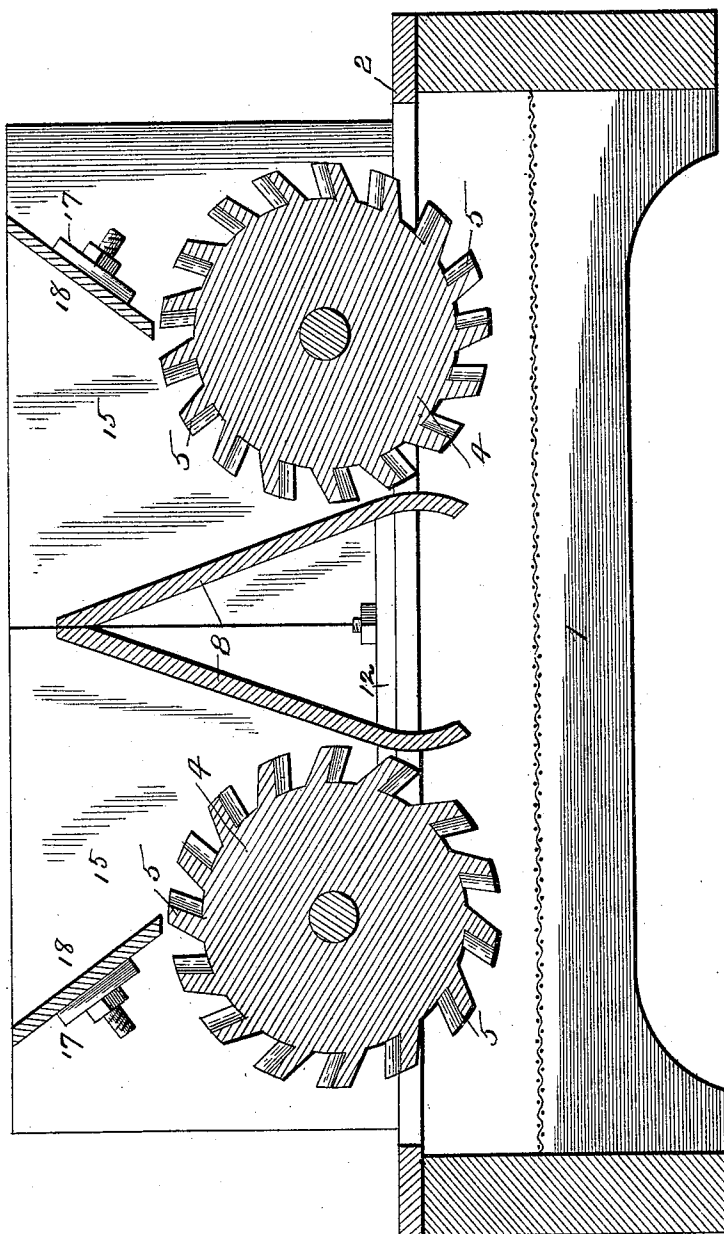
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Fig. 2.



WITNESSES:

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INVENTOR:

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UNITED STATES PATENT OFFICE.

PHILIP RICHARDS, OF PLYMOUTH, PENNSYLVANIA.

COAL-CRUSHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 466,185, dated December 29, 1891.

Application filed September 6, 1890. Renewed September 26, 1891. Serial No. 406,913. (No model.)

To all whom it may concern:

Be it known that I, PHILIP RICHARDS, a citizen of the United States, and a resident of Plymouth, in the county of Luzerne and State of Pennsylvania, have invented certain new and useful Improvements in Coal-Crushing Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to improvements in coal, ore, and stone breaking or crushing machines.

The invention consists in the novel construction and combination of parts herein-after fully described, and specifically pointed out in the claim.

In the accompanying drawings, Figure 1 is a plan view of a coal-breaking machine constructed in accordance with my invention. Fig. 2 is a central longitudinal section of the same. Fig. 3 is a detail side elevation of a portion of the apparatus.

In the said drawings, the reference-numeral 1 designates the bed of the machine, made of any suitable material and provided on its upper side with a rectangular frame 2, bolted thereto. This frame is provided with journal-boxes 3, which form the bearings for the journals of the fluted breaking or crushing rollers 4. These rollers are formed with curved or concavo-convex transverse ribs 5. These rollers are connected together by means of the cog-wheels 6, secured to one of the journals of each roller, and mesh with each other. One of these rollers is also provided with a driving-pulley 7. Intermediate of these rollers are the crushing-jaws 8. These jaws consist of two inclined metal plates united at the apex and inclining downwardly in opposite directions. The lower ends of these jaws are curved outwardly, and they are provided with a series of vertical V-shaped grooves 9. The sides of these jaws are recessed or cut away, leaving two inclined flanges 10, united at their lower ends by means of a cross bar or plate 12, which rests upon the frame 1, being confined be-

tween the upwardly-projecting lugs 13, formed with or secured to said frame.

The numerals 15 15 designate four upright metallic plates secured at their lower ends to the frame 1 and provided with inclined flanges 16, which are bolted or otherwise secured to the flanges 10. Secured to lugs 17, projecting inwardly from these plates, are transverse inclined plates 18, which in connection with the said plates 15 form the hoppers by which the material is fed to the rollers.

The operation will be readily understood. The material to be broken is fed to the rollers, which are revolved toward each other by means of the pulley 7 and cog-wheel 6. The curved ribs on the rollers will catch the material thus fed and bring it in contact with the inclined jaws, when it will be broken into proper sizes.

The object of curving the lower portions of the jaws is to give more strength thereto.

It will be seen that each roller and its hopper is entirely independent of the other in its operation, so that if the one should become inoperative from any cause it would not require the cessation of work by the other.

Having thus described my invention, what I claim is—

The combination, with the bed and its frame, the rollers provided with curved transverse ribs, said rollers journaled in said frame, and the cog-wheels geared with each other, of the inclined plates with inwardly-curved lower ends, provided with a series of vertical grooves, the inclined flanges on the sides of the said plates united by a horizontal bar or plate adapted to rest upon the frame, the lugs secured to said frame and embracing said flanges, the upright plates secured to the frame and provided with flanges secured to the flanges of the jaws, and the transverse plates secured to the upright plates, substantially as described.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

PHILIP RICHARDS.

Witnesses:

AUGUST PETERSON,
BENNETT S. JONES.