J. S. BARTLEY.

ROCK CRUSHER.

APPLICATION FILED JAN. 29, 1917.

1,254,192. Patented Jan. 22, 1918.

FIG. 1

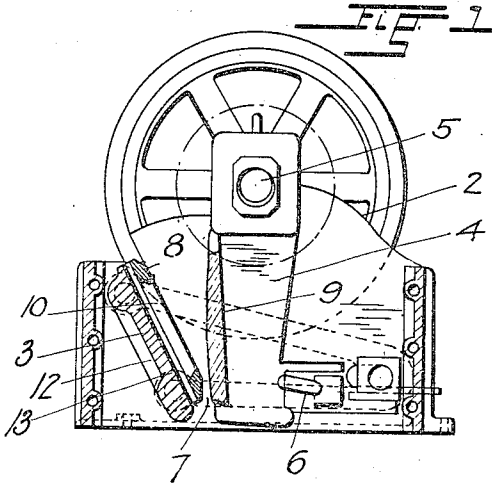
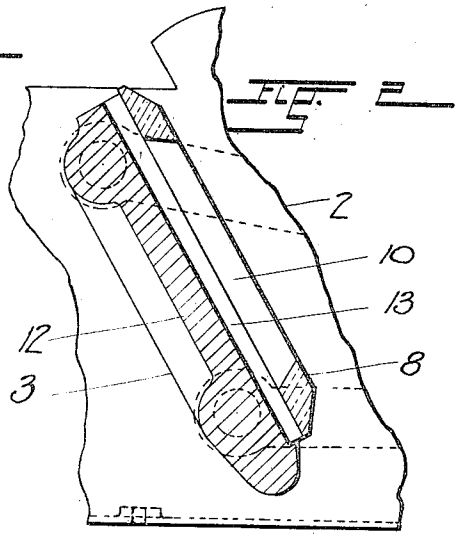


FIG. 2



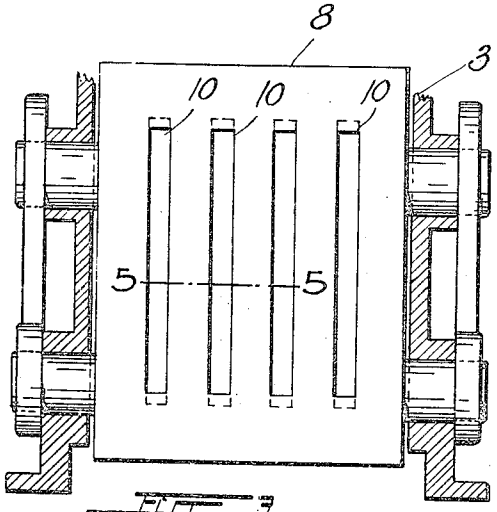


FIG. 3.

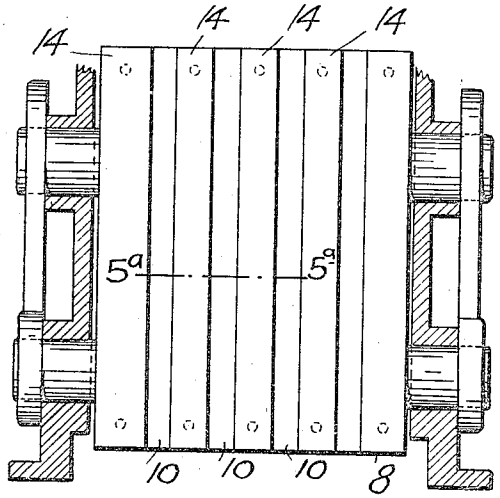


FIG. 4

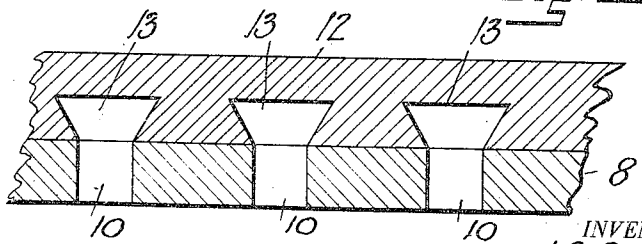


FIG. 5.

WITNESS:

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JOSEPH S. BARTLEY, OF DENVER, COLORADO.

ROCK-CRUSHER.

1,254,192. Specification of Letters Patent. Patented Jan. 22, 1918.

Application filed January 29, 1917. Serial No. 145,201.

To all whom it may concern:

Be it known that I, JOSEPH S. BARTLEY, a citizen of the United States, residing at Denver, in the county of Denver and State of Colorado, have invented certain new and useful Improvements in Rock-Crushers, of which the following is a specification.

This invention relates to rock crushers and more particularly to improvements in the plates or liners whose opposed faces are in direct contact with the material during the crushing action.

It is the primary object of my invention to prevent choking of the discharge opening of a crusher by small pieces of rock, and to thereby increase the capacity of the machine, reduce the energy required in its effective operation and insure the uniformity of its product.

With the above object in view, I provide the crusher plates with one or more openings, preferably in the form of up and downwardly extending slots, which connect with the discharge opening of the machine and serve as passages for the immediate discharge of small pieces of rock produced by the crushing action, before the mass reaches the opening through which the reduced product is ordinarily delivered.

An embodiment of my invention as applied to a so-called jaw crusher, has been shown in the accompanying drawings in the various views of which like parts are similarly designated and in which,

Figure 1 is a vertical section through a jaw crusher of standard construction, to which my invention has been applied,

Fig. 2, an enlarged vertical section through the stationary jaw of the crusher shown in Fig. 1,

Fig. 3, a face view of said stationary jaw in connection with adjacent parts of the machine upon which it is mounted,

Fig. 4, a view similar to that of Fig. 3, showing a modification of my invention, and

Fig. 5, an enlarged transverse section of the jaw taken either along the line 5—5, Fig. 3, or the line 5^a—5^a, Fig. 4.

Referring more specifically to the drawings, the reference numeral 2 designates a jaw-crusher of standard construction, including a stationary jaw 3 and a movable jaw 4 which as usual has a crank connection with a driving shaft 5.

In the operation of the crusher, the jaw 4 which at its lower end engages a toggle 6, moves in a substantially elliptical path to and from the face of the stationary jaw; the material to be crushed is fed between the jaws at their upper ends at which they are widest apart, and the reduced product is discharged from the machine through the narrow passage 7 between the lower ends of the jaws which remain at a substantially uniform distance apart during the crushing action.

The jaws of the crusher carry upon their opposed faces, removably secured plates or liners 8 and 9 which directly engage the rock to be crushed and are usually made of chilled iron or other wear-resisting material.

In accordance with my invention as illustrated in the drawings, the plate 8 connected with a stationary jaw of the crusher has a plurality of parallel slots 10 which extend up and downwardly between lines adjacent the upper and lower edges of the plate.

The bed plate 12 of the jaw upon which the crusher plate is secured, is provided with grooves 13 which register with the slots 10 and which extend through the lower edge of the bed plate to connect with the space into which the product of the machine is discharged through the openings 7 between the lower ends of the jaws.

The grooves in the bed plate are preferably widened toward their bottom surfaces to insure the unobstructed downward passage of material which enters the grooves through the respective slots in the liner.

It will be seen that during the crushing action produced by movement of the movable jaw toward the relatively immovable jaw, the particles of rock reduced to a size less than the widths of the slots, will immediately pass through the slots into the grooves of the bed plate, which conduct them to a point of discharge adjacent that at which the product of the crushing action is ordinarily delivered.

Choking of the narrow space at the lower ends of the jaws, which is a common occurrence in crushing machines of this type, is effectively prevented inasmuch as only the larger pieces of rock remain in the crushing space while the parts reduced to the desired fineness pass immediately through the slots in the crusher-plate of the stationary jaw, it being understood that to obtain the most satisfactory results, the slots should

equal in width the space between the lower ends of the jaws which constitutes the discharge opening of the machine.

An additional advantage of my invention resides in the fact that the edges of the slots present teeth which bite into the material and in consequence aid in the process of reduction and oppose upward slipping of the larger pieces of rock, which is a common occurrence in the operation of crushers of this type.

It will be readily understood that many modifications of the construction shown in Figs. 1 and 2 of the drawings are possible within the spirit of my invention.

The slots in the crusher plate may, for example, be produced by forming the plate of a number of parallelly spaced members 14 which are separately secured upon the bed-plate of the jaw as illustrated in Fig. 4.

It will furthermore be observed that my invention is not limited for use on the stationary jaw of the crusher but that if so desired both jaws of the machine may be provided with slots and passages as hereinbefore described.

Moreover my invention is applicable to crushing machines of different types, it being obvious without further illustration, that the concave or both the head and the concave of a rotary or gyratory crusher may be equipped with slots and discharge passages of the character of those shown in the drawing in connection with a jaw crusher.

Having thus described my invention what I claim and desire to secure by Letters-Patent is:

1. A jaw for rock crushers comprising a bed-plate having in its face, a groove which is open at the lower end thereof, and a face-plate removably secured upon the face of the bed plate and having an up and downwardly extending slot in register with said groove.

2. A jaw for rock crushers comprising a bed-plate having in its face, a plurality of grooves which are open at the lower end thereof, and a face-plate removably secured upon the face of the bed-plate and having up and downwardly extending slots which register with said grooves.

3. A jaw for rock crushers comprising a bed-plate having in its face, a groove which is open at the lower end thereof, and a face-plate removably secured upon the face of the bed plate and having a slot in register with said groove, said groove being wider than said slot to facilitate the downward passage of material entering through the slot.

4. A rock crusher comprising a pair of jaws spaced at their lower ends to provide a passage of restricted width for the discharge of crushed material, one of said jaws having an up and downwardly extending slot of a width substantially equal to that of said passage, and in connection therewith, a channel to conduct material passing through the slot, to a point of discharge at the lower end of the jaw.

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

JOSEPH S. BARTLEY.

Witnesses:
G. J. ROLLANDET,
L. RHOADES.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."