Dec. 5, 1950 H. J. SHELTON 2,532,678

TOGGLE BLOCK ADJUSTING DEVICE FOR JAW CRUSHERS

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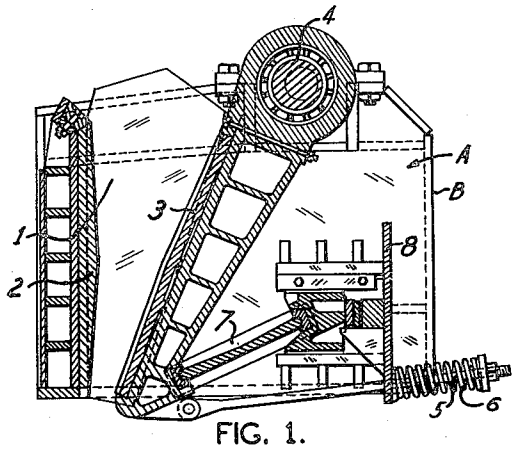


FIG. 1.

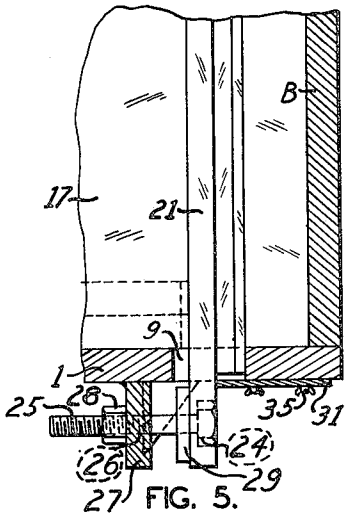


FIG. 5.

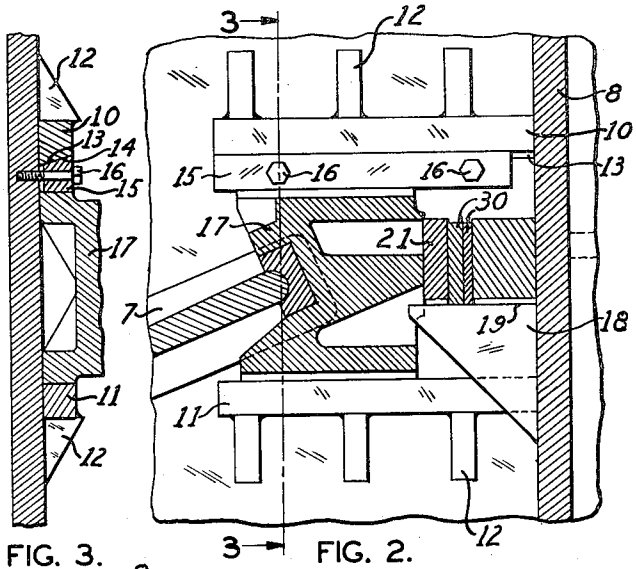


FIG. 3.

FIG. 2.

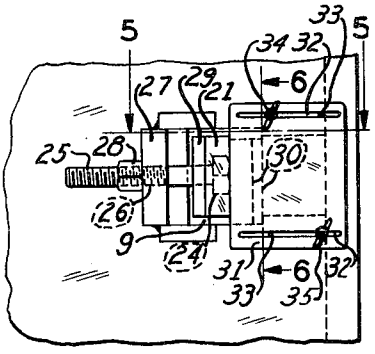
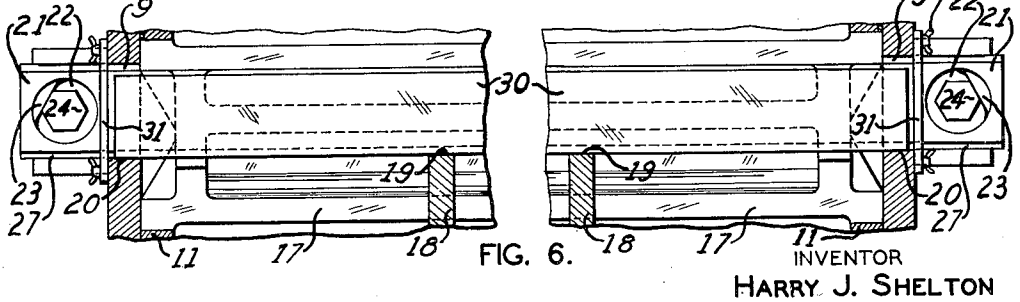


FIG. 4.



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TOGGLE BLOCK ADJUSTING DEVICE FOR JAW CRUSHERS

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1 Claim. (Cl. 241—217)

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This invention relates in general to certain new and useful improvements in toggle-block adjusting devices for jaw crushers.

At the present time, most jaw crushers are constructed to more or less standard specifications and, as originally designed and constructed, will reduce rock and other crushable material to a predetermined average size, depending upon the distance between the jaws at their point of closest proximity. In order to change the size of the finished product, it is, of course, necessary to change the distance between the jaws at such point of closest proximity and this change has heretofore been usually accomplished either by the laborious process of shimming out the back bearing or pivot block in which the toggle link is mounted or by complete removal of the toggle link and substitution of a toggle link of different size. Either of these expedients requires rather extensive dismantling of the machine and has always been considered a matter of laborious inconvenience to be avoided wherever possible. In addition, such procedure, because of the cumbersome weight and size of Toggle Block Adjusting Devices for jaw crusher parts and the inaccessibility thereof, is actually hazardous to the workmen required to make the adjustments and changes.

It is the principal object of the present invention to provide a jaw crusher having means associated with the toggle block thereof, for facilitating insertion and removal of shims.

It is a further object of the present invention to provide a jaw crusher having a toggle block slidably mounted on ways provided with means for releasably securing the toggle block in any desired position.

It is a further object of the present invention to provide means of the type stated which is safe, sturdy, and reliable in operation.

With the above and other objects in view, my invention resides in the novel features of form, construction, arrangement, and combination of parts presently described and pointed out in the claim.

In the accompanying drawing—

Figure 1 is a vertical sectional view of a jaw crusher incorporating the present invention;

Figure 2 is an enlarged detail sectional view of a toggle-block adjusting mechanism constructed in accordance with and embodying the present invention;

Figure 3 is a fragmentary sectional view taken along line 3—3 of Figure 2;

Figure 4 is a fragmentary side elevational view

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of a crusher showing in detail the outer end of the adjusting mechanism;

Figure 5 is a fragmentary transverse sectional view taken along line 5—5 of Figure 4; and

Figure 6 is a fragmentary transverse sectional view taken along line 6—6 of Figure 4.

Referring now in more detail and by reference characters to the drawing, which illustrates an improved embodiment of the present invention, A designates a jaw crusher including a frame or housing B having spaced parallel side walls 1, a stationary front jaw 2, a movable rear jaw 3, an eccentric 4, a spring rod 5, a spring 6, toggle plate 7, and a brace wall 8. The side walls 1 are provided, in the region of the brace wall 8, with aligned rectangular apertures 9, as best seen in Figure 5.

Welded or otherwise rigidly secured upon the inner faces of the side walls 1 are pairs of spaced parallel mounting ribs 10, 11, reinforced against vertical deflection by a plurality of spaced triangular bracket blocks 12. The ribs 10 are beveled upwardly and inwardly upon their under faces 13 for wedgewise co-operation with a complementarily beveled face 14 of a locking bar 15, which is held upon the side wall 1 beneath the rib 10 by means of a plurality of stud bolts 16. It will, of course, be obvious that the ribs 10, 11, on the inner face of the one side wall 1 are respectively located in precise horizontal alignment with the corresponding ribs 10, 11, on the inner face of the opposite side wall 1 for receiving the ends of, and supporting in horizontal position therebetween, a toggle-block 17.

Welded upon the forwardly presented face of the brace wall 8, in more or less equally spaced relationship to each other and to the side walls 1, are two triangular bracket plates 18 having upwardly presented horizontal faces 19 located substantially in the same horizontal plane as the lower horizontal marginal faces 20 of the side wall apertures 9.

Extending horizontally across the housing B and projecting at its ends through the apertures 9 is a cross-bar 21 resting along its lower edge upon the bracket-plate faces 19 and abutting along its forwardly presented face against the rear face of the toggle-block 17. The outwardly extending ends of the cross-bar 21 are provided with shallow counterbored apertures 22 having welded segmental inserts 23 for seating the hexagonal heads 24 of draw-bolts 25 which extend forwardly through suitable apertures 26 formed in outwardly projecting ears 27 welded or otherwise secured upon the outer faces of the side walls

1 in forwardly spaced horizontal alignment with the side-wall apertures 9. At their forward ends, the draw-bolts 25 are provided with conventional nuts 28 and it will, of course, be evident that the segmental inserts 23 will prevent rotation of the draw-bolts 25 as the nuts 28 are tightened, thereby obviating the necessity for the use of more than one wrench in the tightening operation. Metal washers 29 are preferably welded upon the forward faces of the cross-bar 21 in concentric relation to the apertures 22 for reinforcement and increased strength.

Removably disposed upon the bracket plates 18 between the cross-bar 21 and the brace-wall 8 is a plurality of metal shim-bars 30 which may be of varying thickness as required to provide any desired spacial relationship between the toggle block 17 and the brace-wall 8. The shim-bars 30 are approximately equal in length to the distance between the outer faces of the side walls 1 and are in part held against lengthwise shifting movement by endwise abutment against slide panels 31 having slots 32, embracing pins 33, and threaded studs 34 mounted in and projecting from the exterior faces of the side walls 1, the studs being provided with wing nuts 35 for holding the panels 31 tightly in place closurewise across the apertures 9 in edgewise abutment against the cross-bar 21.

In adjusting the jaw crusher for production of more finely crushed material, the spring rod 5 is temporarily loosened and the toggle-block 17 moved forwardly by drawing up on the draw-bolts 25 and thereby shifting the cross-bar 21 forwardly. Thereupon, one of the slide panels 31 is pushed back, opening the adjacent aperture 9, and additional shim-bars 30 of desired thickness are inserted. Tension on the draw-bolts 25 is then released, so that the cross-bar 21 and toggle-block 17 will be held in spaced relation to the brace-wall 8 by the shim-bars 30. Finally, the spring rod 5 is tightened again and the toggle-plate 7 will hold the jaw casting 3 into closer relationship with the front jaw casting 2. In moving forward, the toggle-block 17 slides between the guideways formed by the ribs 11 and bars 15 and, in this connection, it may be noted that any wear between the guide-supported ends of the toggle-block 17 and the guideways may be taken up by tightening of the bolts 16, and, furthermore, if desired, the bolts 16 may be drawn up very tightly to clamp the toggle-block

17 in adjusted position, thereby augmenting the position-holding function of the shim-bars 30.

It should be understood that changes and modifications in the form, construction, arrangement, and combination of the several parts of the jaw crusher may be made and substituted for those herein shown and described without departing from the nature and principle of my invention.

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

A jaw crusher having a housing, a movable jaw, a toggle plate for rockably supporting the lower end of said jaw, a toggle block for rockably supporting the toggle plate, a back-support in said housing, a plurality of removable shims disposed between the toggle block and back-support for adjusting the position of the toggle block in relation to the back-support, bracket means within the housing for supporting the shims, openings in the housing adjacent the ends of the shims for permitting ready insertion and removal thereof, a cross-bar interposed between the block and the shims and projecting at its ends outwardly through the openings, and means engaging the projecting ends of the cross-bar for optionally shifting the cross-bar and its associated toggle block away from the back-support for relieving pressure against the shims to facilitate removal thereof.

HARRY J. SHELTON.

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