May 8, 1945. G. E. KRIDER 2,375,370

CRUSHER PLATE SUPPORT

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Fig. 1.

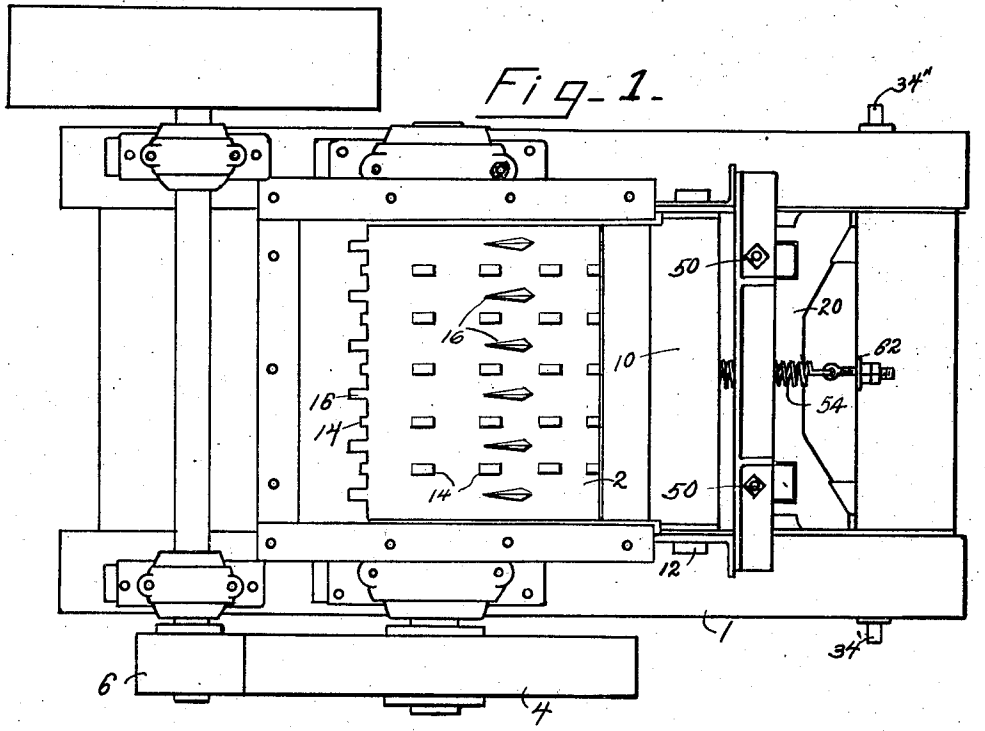
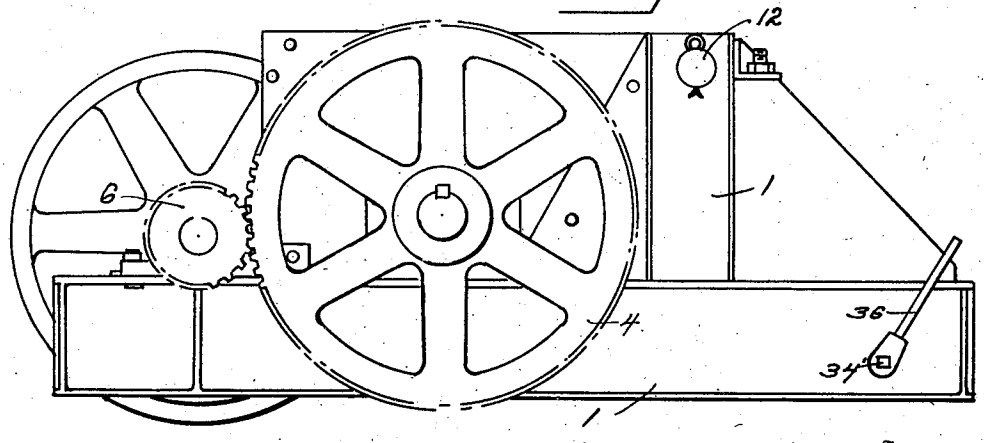


Fig. 2.



Inventor

George E. Krider

By J. Wesley Everett. Attorney

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Fig. 3.

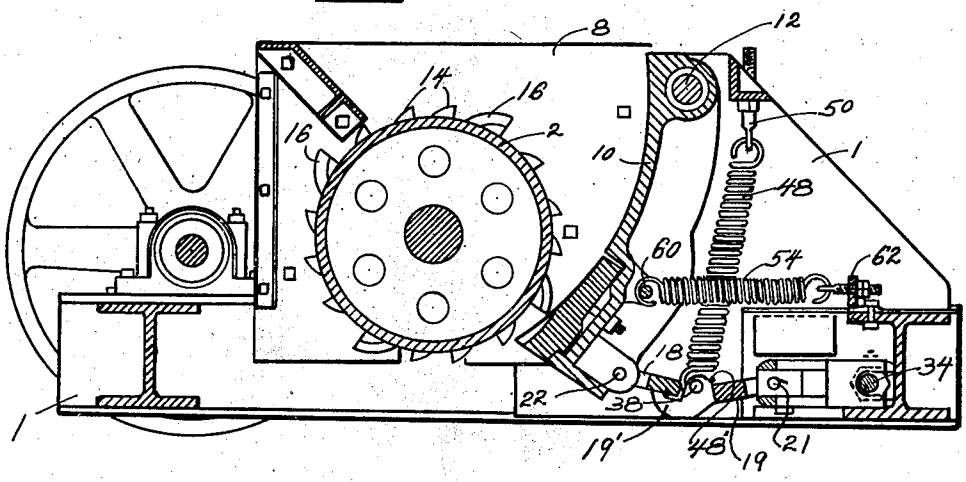


Fig. 4.

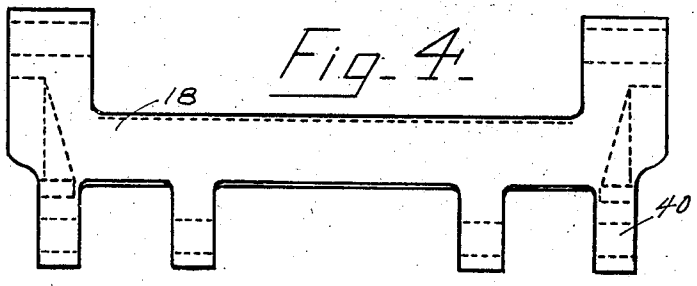


Fig. 6.



Fig. 5.

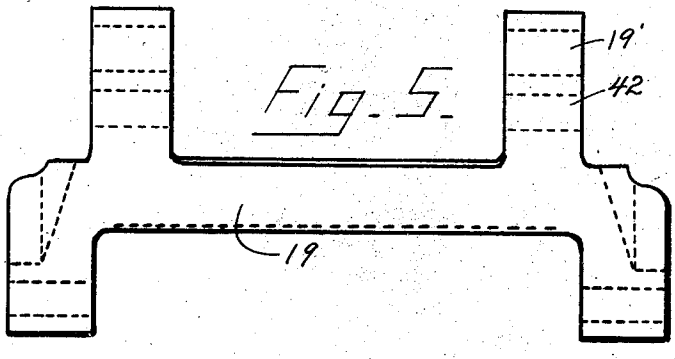
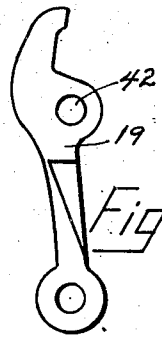


Fig. 7.



Inventor

George E. Krider

By J. Wesley Everett

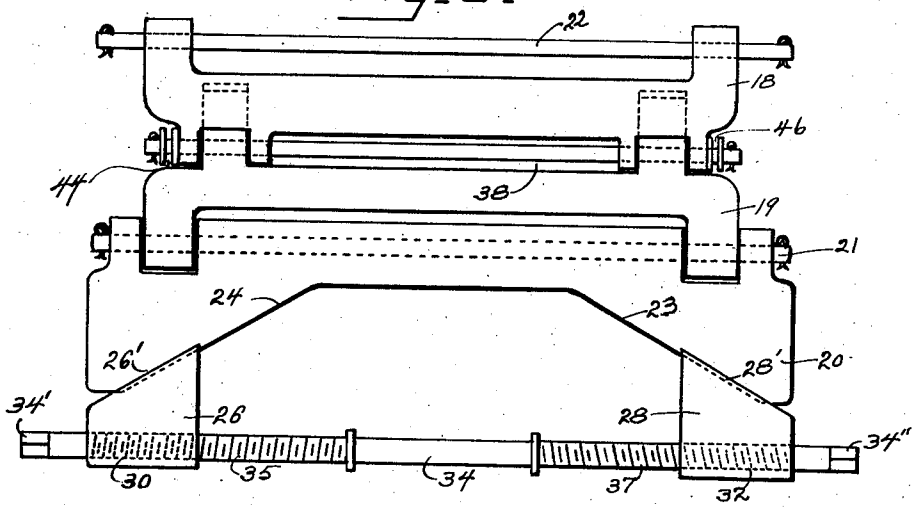
Attorney

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Fig. 8.



George E. Krider
INVENTOR.

BY J. Wesley Everett.

Patented May 8, 1945 2,375,370

UNITED STATES PATENT OFFICE

2,375,370

CRUSHER PLATE SUPPORT

George E. Krider, Duncansville, Pa., assignor to Pennsylvania Crusher Company, Philadelphia, Pa.

Application August 3, 1943, Serial No. 497,151

3 Claims. (Cl. 241—289)

The present invention relates to an improved mechanism for supporting a stationary crusher plate in relationship to the roll in a roll type crushing machine.

The principal object of the invention is to provide a mechanism which will normally hold the stationary plate in a fixed location, but will allow the plate to move away from the roll when the machine encounters objects which are extremely difficult to crush.

Another object is to provide a mechanism which will be of rigid construction and at the same time be easy to adjust in its relationship to the roll.

While several of the specific objects have been pointed out, other objects will be apparent from the specification when taken in connection with the accompanying drawings in which:

Fig. I is a top plan view of a roll type crushing machine.

Fig. II is a side elevation of the same.

Fig. III is a vertical longitudinal sectional view centrally through the machine.

Figs. IV and V are plan views of the separate link members.

Figs. VI and VII are the end views of the respective link members shown in Figs. IV and V.

Fig. VIII is a plan view of the assembled link members together with the adjusting mechanism.

Referring to the detail construction of the machine, numeral 1 designates the frame of the machine. Supported on the frame is a crushing roll 2. The roll is driven by the gear 4, which is in turn driven by a smaller gear 6. Located above the roll is a hopper 8 into which the material is deposited to be crushed. At one side of the crushing roll is a crusher plate 10. One edge of the plate 10 is rotatably supported adjacent the top of the frame by the shaft 12. The plate extends downwardly along the outer perimeter surface of the roll forming a pocket between the roll and the plate. Located about the outer surface of the roll are a number of teeth 14 and 16. The opposite end of the plate is supported by the toggle members 18 and 19. The toggle member 19 is hingedly attached to the adjusting plate 20 by the rod 21, and the member 18 is hingedly attached to the plate 10 by the rod 22. One edge of the plate 20 is inclined inwardly toward the center from each end at 23 and 24. Adapted to slide along the inclined portions of the plate 20 are movable members 26 and 28. One edge of the movable members 26' and 28' have the same taper as the inclined edge of the member 20. The members 26 and 28 have opposite their tapered edges threaded apertures 30 and 32 through which a threaded rotatable shaft 34 is receivable. This shaft is supported at its ends upon the frame 1. The ends of the rods 34' and 34'' are formed to receive a handle 36 with which the rod may be rotated.

The link members 18 and 19 are held together by a rod 38, which extends through the apertures 40 and 42. At each end of the rod 38 is a space 44 and 46. These spaces are provided to receive the ends 48' of the springs 48 for holding the toggle upwardly in normal working position. One end of the springs 48 is held upwardly by the members 50 which are adjustably secured to the frame 1.

The shaft 34 is provided with right and left hand threads 35 and 37 for moving the members 26 and 28 longitudinally of the shaft. It will be seen that by rotating the shaft 34 the members 26 and 28 will be moved either toward the center of the shaft, or outwardly toward the ends of the shaft when the shaft is rotated.

In order to take up the slack of the toggle joint, a spring 54 is provided having one end attached at 60 to the crusher plate 10, the other end attached to a bracket 62 located on the frame 1. The springs 48 are of such tension as to prevent the toggle from moving downwardly under normal crushing conditions. The amount of pressure against the plate 10 to operate the toggle can be regulated by increasing the tension of the springs 48. This is done by adjusting the member 50 on the frame.

It will be noted in Fig. III that a line drawn through the axes of the rods 21 and 22 will lay above the rod 38. The springs 48, exerting their tension upwardly against the toggles, will cause the toggle to break downwardly and against the tension of the spring 54 when an undue stress is exerted against the pressure plate 10. The location of the rod 38 is governed by the extension 19' of the link member 19.

The normal relative location of the plate 10 to the roll 2 is regulated by rotating the shaft 34 which moves the tapered members 26 and 28 against the inclined surfaces of the member 20.

While the invention has been described in detail, it is not intended that it be limited to this specific structure as the scope of the invention is best defined in the following claims.

I claim:

1. The combination with the free end of a downwardly extending hinged crusher plate having its free end terminating adjacent the periphery of a crusher roll and disposed within a frame,

of means for yieldably forcing the free end of the plate towards the roll, said means comprising hingedly connected link plates adjacent the free end of the crusher plate, the outer end of one of said link plates being hingedly connected to the crushed plate, the outer end of the other link plate being hingedly connected to an adjusting plate, said adjusting plate having inwardly converging cam surfaces, cam blocks cooperating with said cam surfaces of the adjusting plate, a rotatable shaft carried by the frame, said rotatable shaft having right and left handed connections to the cam blocks for moving them inwardly and outwardly transversely of the roller, tension springs connected to the hinged point between the hinged plates and normally urging said hinged point of the plates towards a plane passing through the outer ends of said links.

2. A device as set forth in claim 1 including limiting lugs carried by one of the hinged plates and cooperating with the other plate and forming means for preventing said plates from assuming positions in the aforesaid plane.

3. A device as set forth in claim 1, including means carried by the hinged plates for preventing the same from assuming positions in the same plane under the influence of the tension springs, and a spring connected to the crusher plate and anchored to the frame and forming means for urging said plate away from the crusher roll periphery against the action of the first mentioned springs, said last mentioned spring being in crossed relation to the first mentioned springs, and of less tension than the combined tension of the first mentioned springs.

GEORGE E. KRIDER.