

No. 741,458.

PATENTED OCT. 13, 1903

W. W. CASE.  
CRUSHER.

APPLICATION FILED JUNE 19, 1903.

NO MODEL.

Fig. 1.

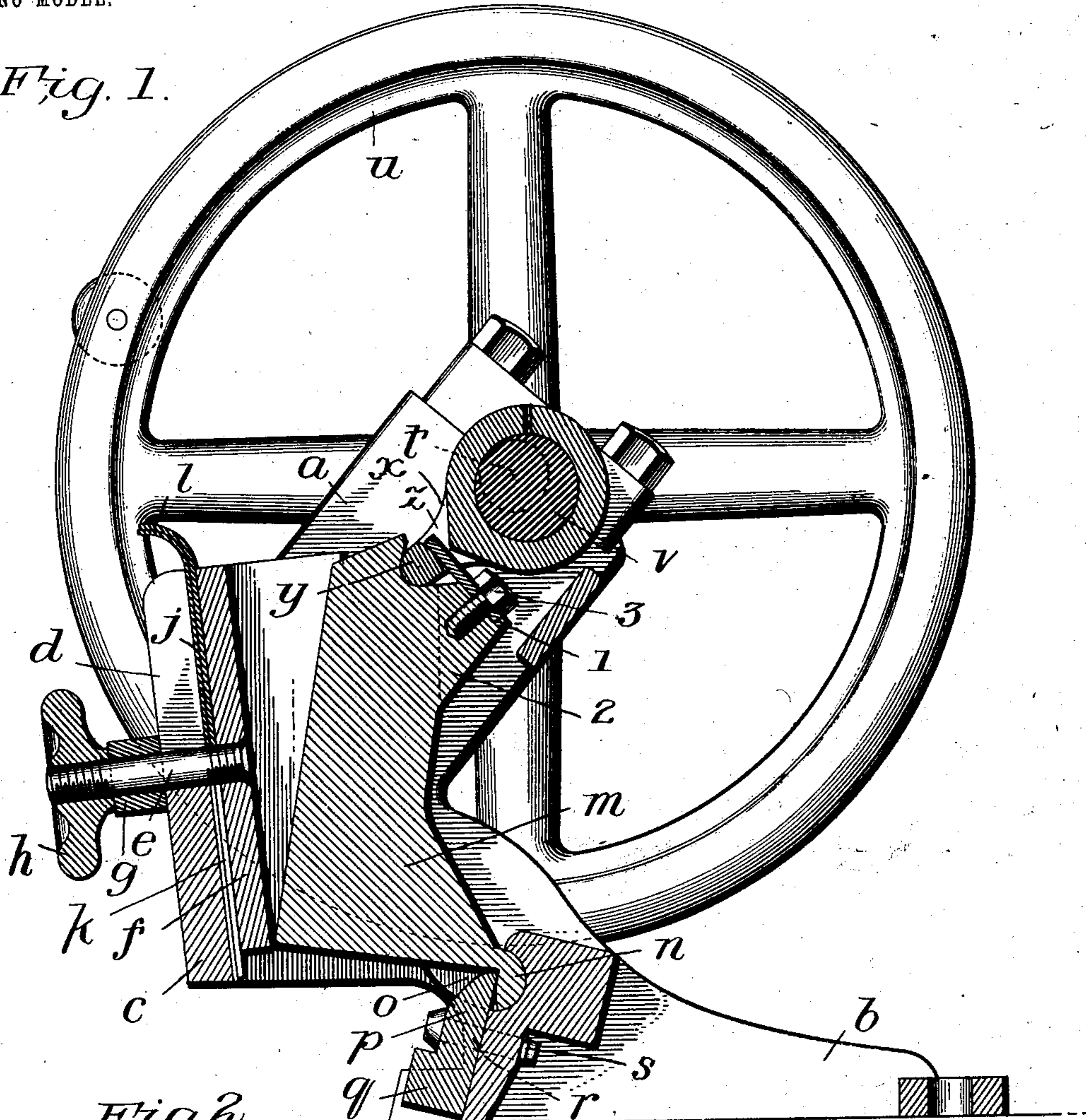


Fig. 2.

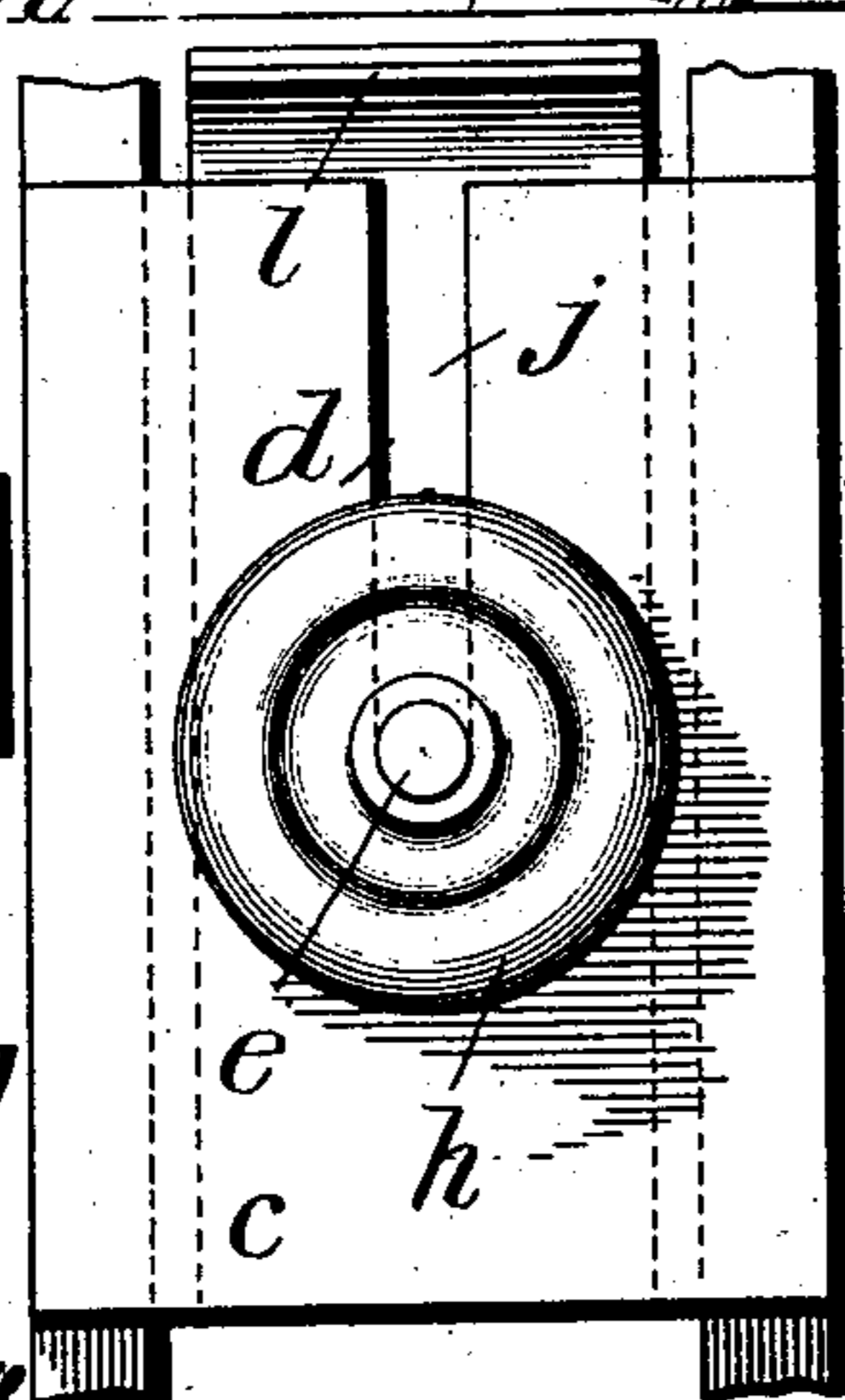


Fig. 4.

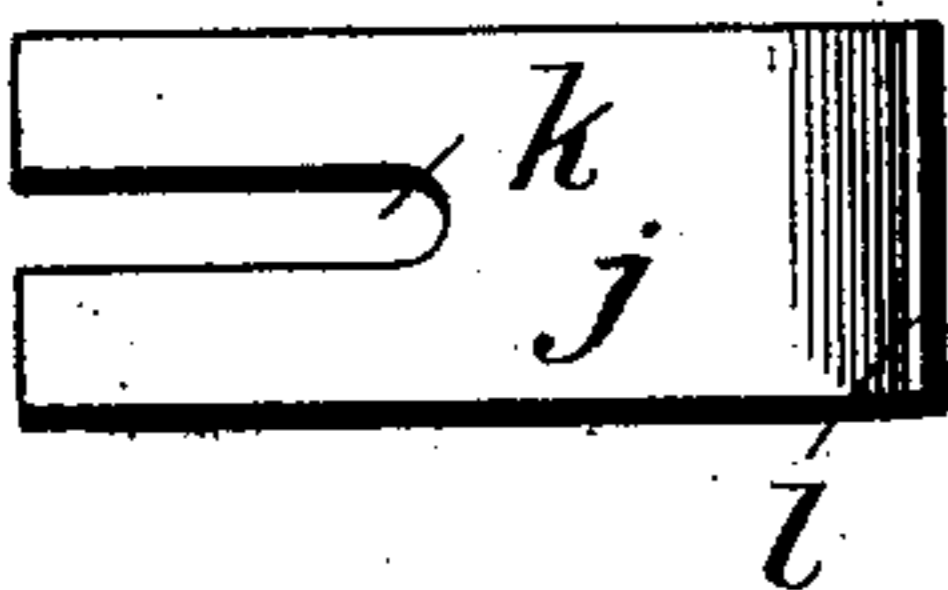
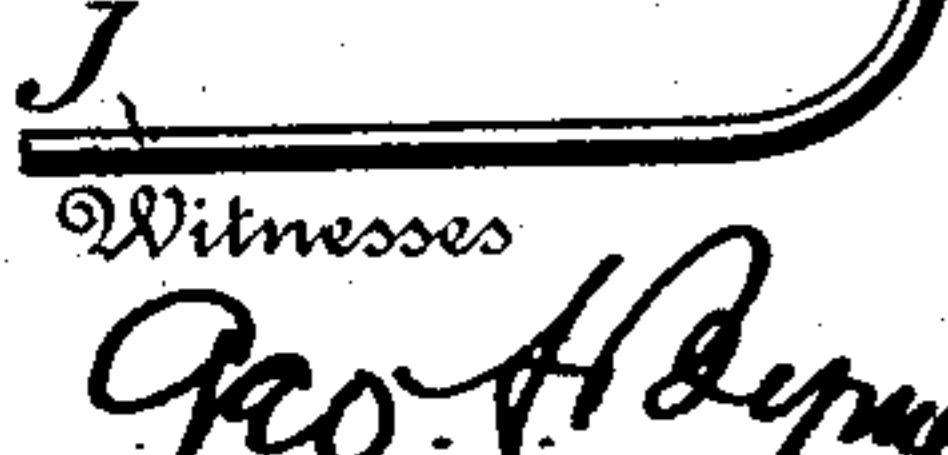


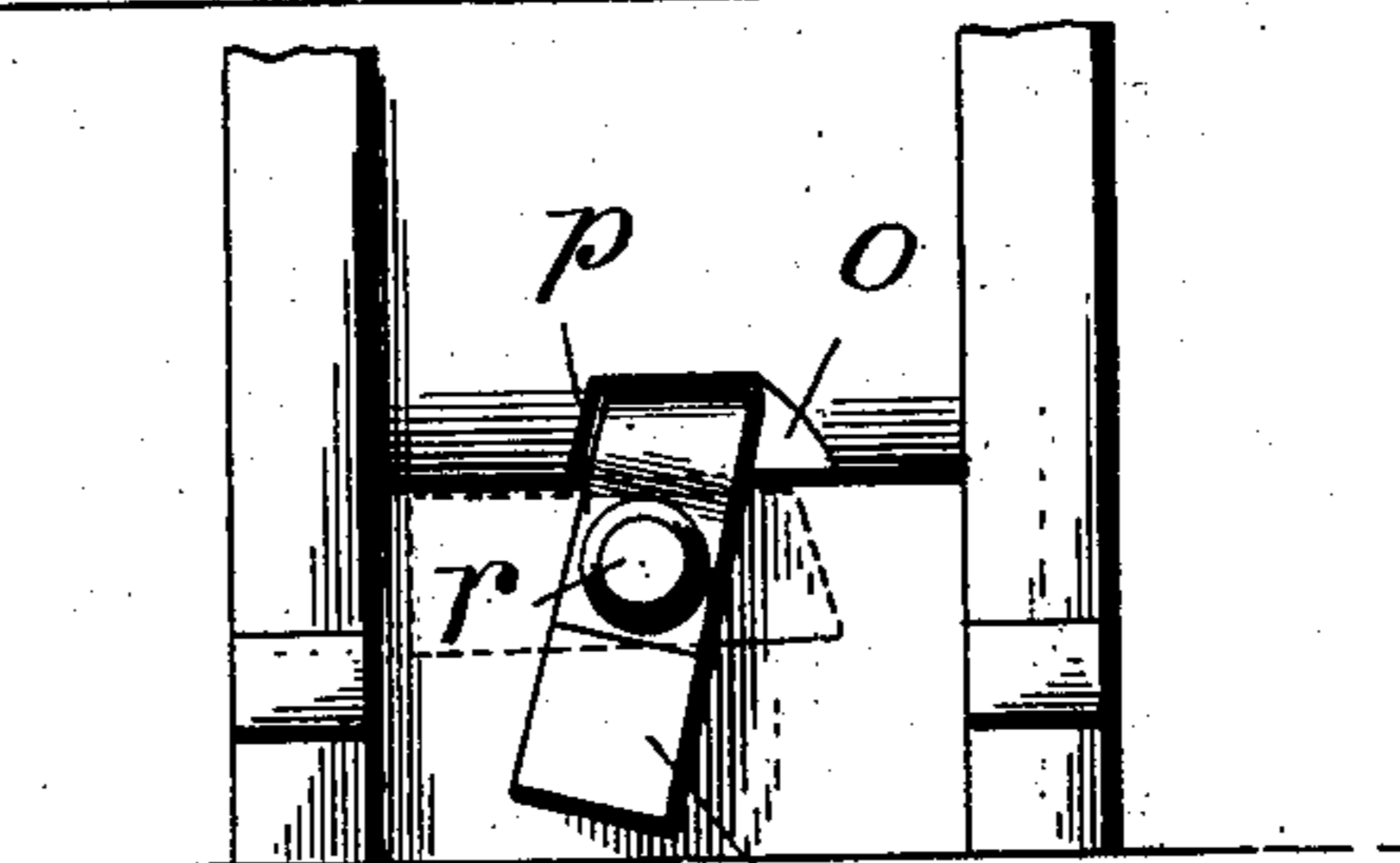
Fig. 5.



Witnesses

Geo. H. Deane  
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Fig. 3.



Inventor

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# UNITED STATES PATENT OFFICE.

WILLIS W. CASE, OF DENVER, COLORADO.

## CRUSHER.

SPECIFICATION forming part of Letters Patent No. 741,458, dated October 13, 1903.

Application filed June 19, 1903. Serial No. 162,261. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIS W. CASE, 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 Crushers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in crushers, and especially to that class used in assay-laboratories and which may be run by hand, if necessary.

The object of my invention is to produce a strong and cheap laboratory crusher, and more especially one that may be easily taken apart and cleaned and reassembled. In making assays it is of course of the highest importance that the work should be accurately done and that the sample being crushed should not be contaminated or "salted" by the ore previously crushed, as this would destroy the accuracy of the assay and render it worthless.

With these objects in view my invention consists in the construction and combinations of parts, as hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a longitudinal vertical section of my invention. Fig. 2 is an end view of the casing, showing the means for holding in position the stationary jaw-plate, which jaw-plate, however, is readily removable from the crusher. Fig. 3 is a view of the means for securing the lower end of the movable jaw in its socket. Fig. 4 is a view of one of the removable adjusting-shims, and Fig. 5 is an edge view of the same.

*a* represents the frame carrying the jaws. This frame is of the peculiar form shown in Fig. 1 and terminates in the lower extended portion *b*, which is provided with bolt-holes to secure the same to a bench or support. The left-hand side of this frame, as shown in Fig. 1, terminates in a portion *c*, against which the stationary jaw-plate rests. The portion *c* is provided with a vertical slot *d*, within which the bolt *e* is adapted to slide for the purpose of easily and quickly removing the jaw-plate *f*. This bolt *e* passes through the jaw-plate *f* and is firmly screwed into the same, the inner end thereof being upset or riveted, so that

the jaw-plate *f* shall have a flat face. Any other means for securing these parts together may be used, if desired. The bolt *e* passes through a washer *g* and is provided with a threaded hand-wheel *h* for firmly securing the jaw-plate *f* to the part *c* of the main frame.

*j* represents removable shims, which are slotted, as shown at *k* in Fig. 4. These shims are adapted to be slipped down between the jaw-plate *f* and the portion *c* of the frame in order to vary the degree of fineness to which the material is to be crushed.

It often happens that when hard ore is to be crushed it is best to run it through the crusher coarse the first time and then put in additional shims and crush it finer afterward. Any desired number of these shims may be used, though only two are shown in Fig. 1.

The shims *j* are at their upper end bent over, as shown at *l*, for two reasons—first, to afford a handle whereby to remove them, and also for the further purpose of preventing any particles of ore or rock from falling down into the slot *d*, thereby clogging the same.

Experience has shown that laboratory attendants will not take apart a crusher and thoroughly clean it unless this can be very readily and easily done. It is of the highest importance, therefore, that the crusher be so arranged that no trouble will be experienced in taking it apart for the purpose of cleaning. Should particles of rock lodge in the slot *d*, it would be difficult to remove the jaw-plate and in many instances the attendant would fail to clean the crusher.

*m* represents the movable jaw provided with a long heel, which terminates in the rounded portion *n*, which portion fits in a socket in the frame *a*. The lower part of this heel is cut away, as shown at *o*, Fig. 3, to permit the use of the latch *p*, which holds the lower end of the movable jaw in position. The jaw is held in position by said latch, the lower part of which is weighted, as shown at *q*, and which is mounted on a pin *r*, passing through a hole in the frame *a* and held in position by the cotter-pin *s*. It will be obvious that by turning the latch *p* to a horizontal position the movable jaw *m* may be disengaged from the frame to permit of cleaning.

*t* represents the driving-shaft provided with a fly-wheel *u*, which shaft may either be driven

by hand or power. This shaft has an eccentric portion *v*, on which is sleeved a pitman *x*, which terminates in the rounded extension *y* and is provided with an opening *z*. The extension *y* fits in a socket in the movable jaw *m*.

1 represents a spring-plate which is attached to a projection 2 on the movable jaw by means of the screw 3. This spring-plate passes into the opening *z* and holds the movable jaw *m* in contact with the projection *y* of the pitman *x*.

It should be noted that the driving-shaft and the eccentric are located above the point where the pitman joins with the movable jaw *m* and that said movable jaw is provided with a long heel. These are especially important features of construction. By locating the eccentric and driving-shaft in this position the force exerted on said jaw is practically in line with the greatest resistance, as by reason of the long heel an upward and downward grinding movement is exerted, as well as a motion toward the jaw *f*. Applying the power at this point makes the crusher run more smoothly and easily.

While I have thus described my invention, I wish it to be distinctly understood that I do not limit myself to the exact details shown and described, as many changes might be made by those skilled in the art without departing from the spirit of my invention. For instance, an eccentric might be used for securing the stationary jaw-plate *f* in position and the means for holding the latch *p* and the form of the latch itself might be varied. Furthermore, the means for holding the pitman in engagement with the upper end of the movable jaw might also be varied.

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

1. In a crusher, the combination of a frame provided with a slot, a removable jaw-plate, a bolt secured thereto and adapted to pass through said slot, a washer and threaded hand-wheel for securing said bolt and jaw-plate in position in the machine, and a removable shim provided with a slot and having one of its ends curved over, substantially as described.

2. In a crusher, the combination of a movable jaw, a pitman for operating said jaw, and a spring-plate fastened to said jaw and in engagement with said pitman, substantially as described.

3. In a crusher, the combination of a movable jaw, a driving-shaft provided with an eccentric portion, a pitman connecting said shaft and said jaw and a spring-plate fas-

tened to said jaw and in engagement with said pitman, said shaft being located above said jaw, whereby a downward as well as a forward thrust is given to said jaw by the movement of the pitman, substantially as described.

4. In a crusher, the combination of a movable jaw, provided with a rounded portion at one end, a frame provided with a socket receiving said rounded portion, and a swinging latch adapted to hold said jaw against said frame, substantially as described.

5. In a crusher, the combination of a frame provided with a socket, a movable jaw provided with a long heel terminating in a rounded portion adapted to engage said socket, and a weighted pivoted latch to hold said jaw against said frame, substantially as described.

6. In a crusher, the combination of a shaft provided with an eccentric portion, a pitman having a rounded end, a movable jaw provided with a socket in which the rounded end of said pitman is adapted to bear and with a long heel terminating in a rounded portion, a spring-plate holding said jaw and said pitman against each other, a supporting-frame provided with a socket with which the rounded portion of said movable jaw is adapted to engage, and a weighted pivoted latch for holding said rounded portion in said socket, said shaft being located above said jaw, substantially as described.

7. In a crusher, the combination of a frame provided with a slot and with a socket, a removable jaw-plate provided with a bolt adapted to engage said slot, a washer and threaded hand-wheel on said bolt, a slotted shim having its upper end curved over, a driving-shaft located above the movable jaw and provided with an eccentric portion, a perforated pitman mounted on said eccentric portion and terminating in a rounded end, a movable jaw provided with a socket adapted to receive the rounded end of said pitman and also provided with a long heel terminating in a rounded portion, a spring-plate fastened to said movable jaw and entering an opening in said pitman, and a weighted pivoted latch secured to said frame and adapted to hold the lower end of said movable jaw in the socket in the frame, substantially as described.

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

WILLIS W. CASE.

Witnesses:

FRANK D. BLACKISTONE,  
FRED W. ENGLERT.