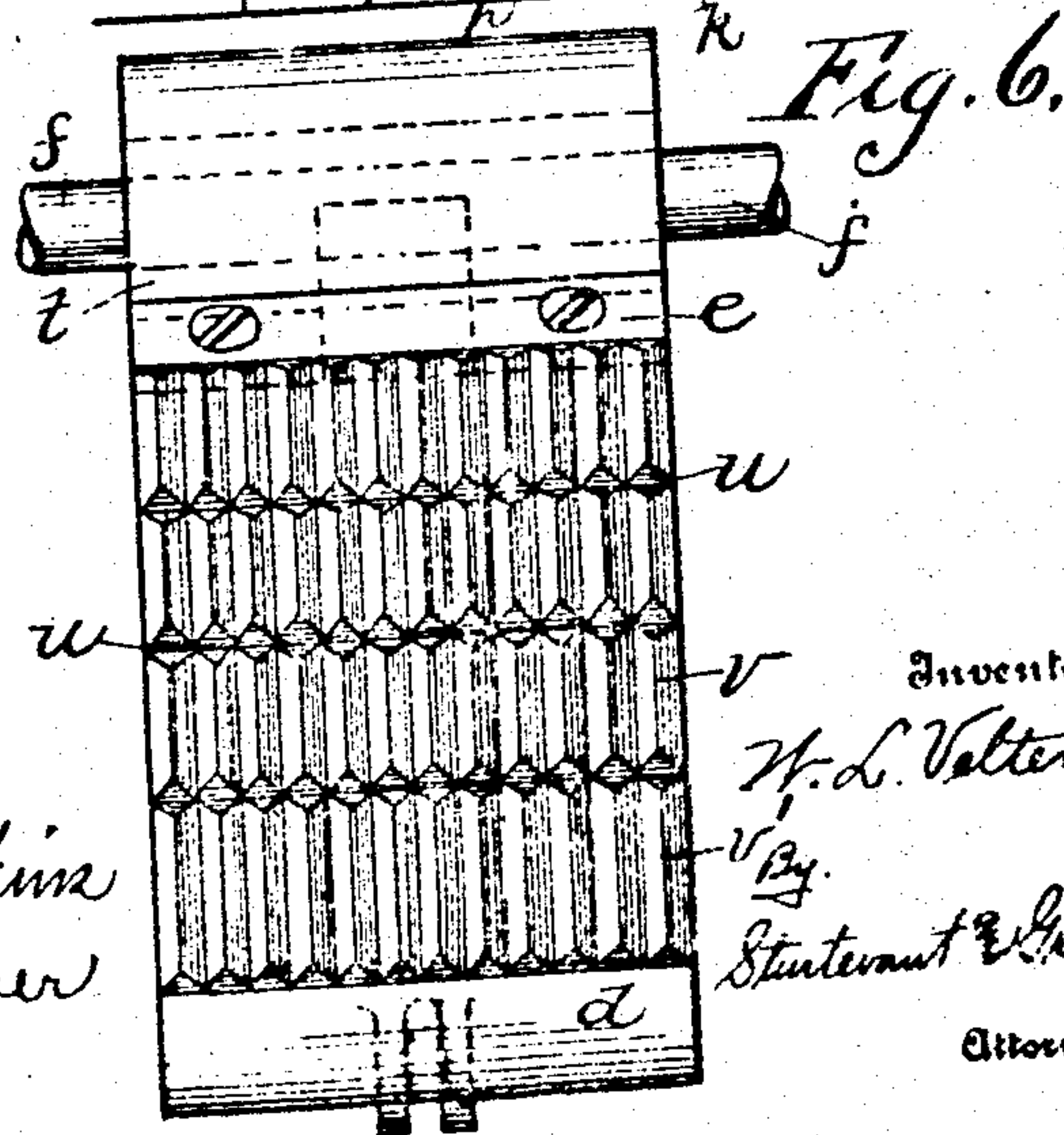
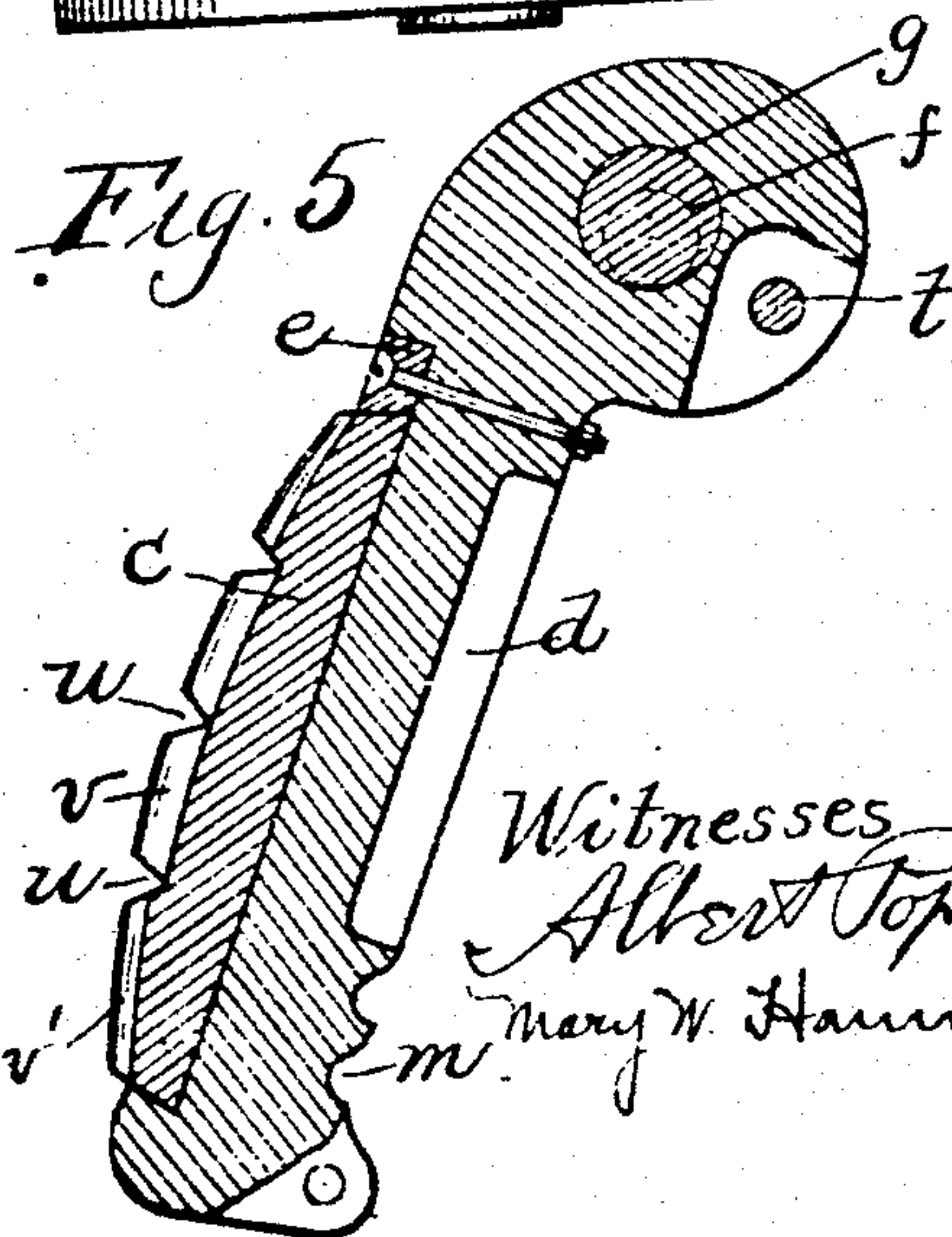
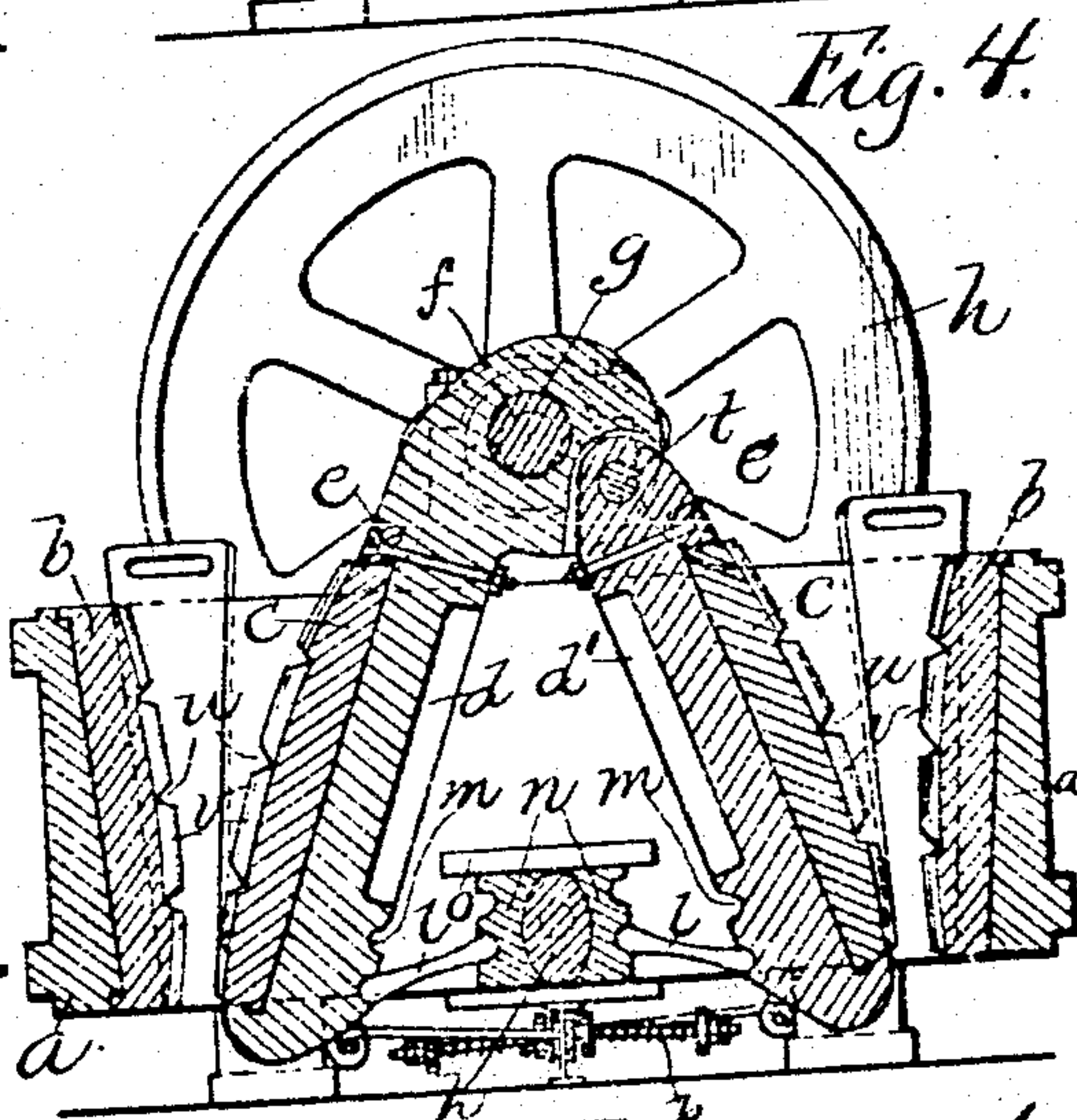
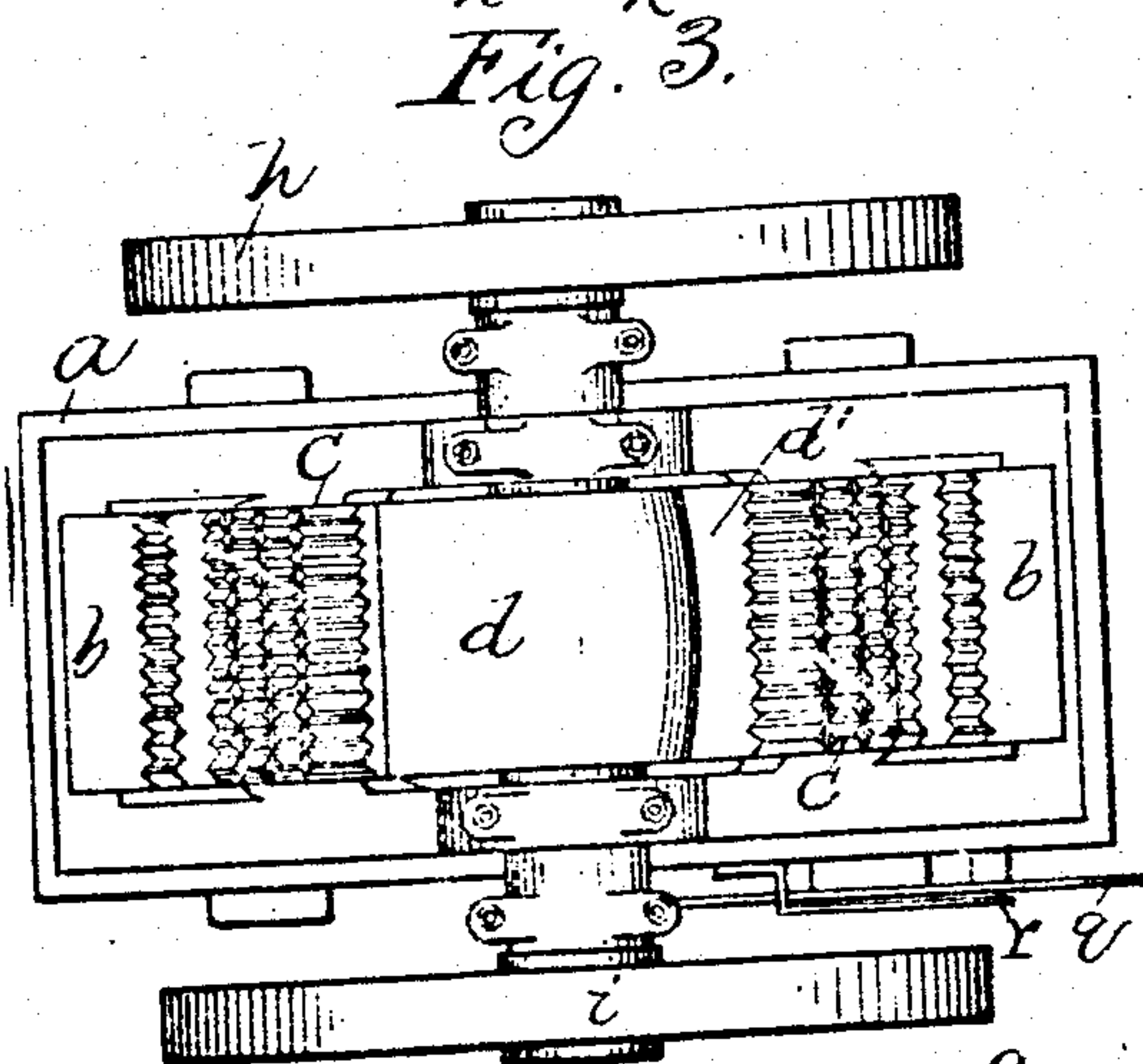
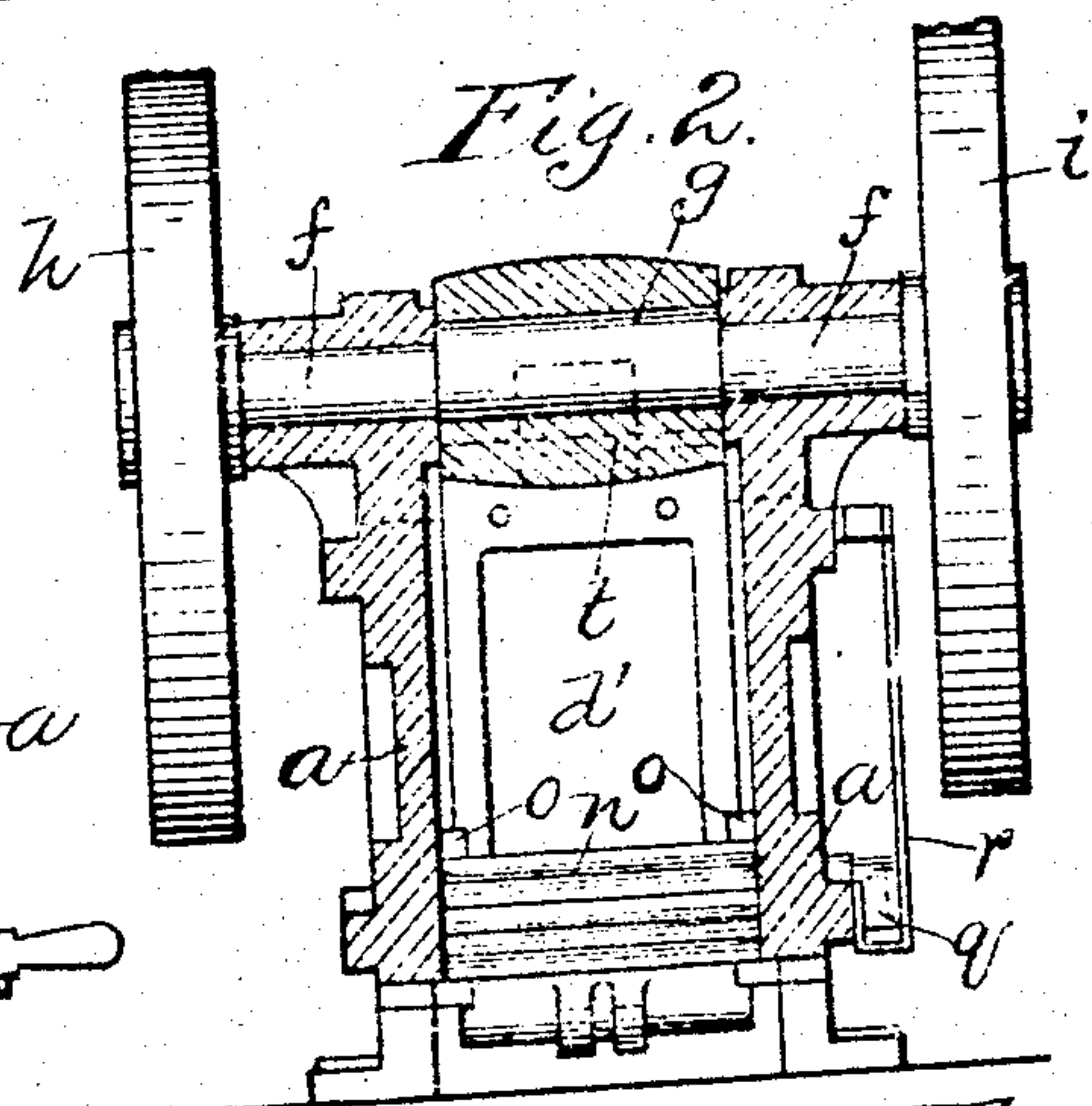
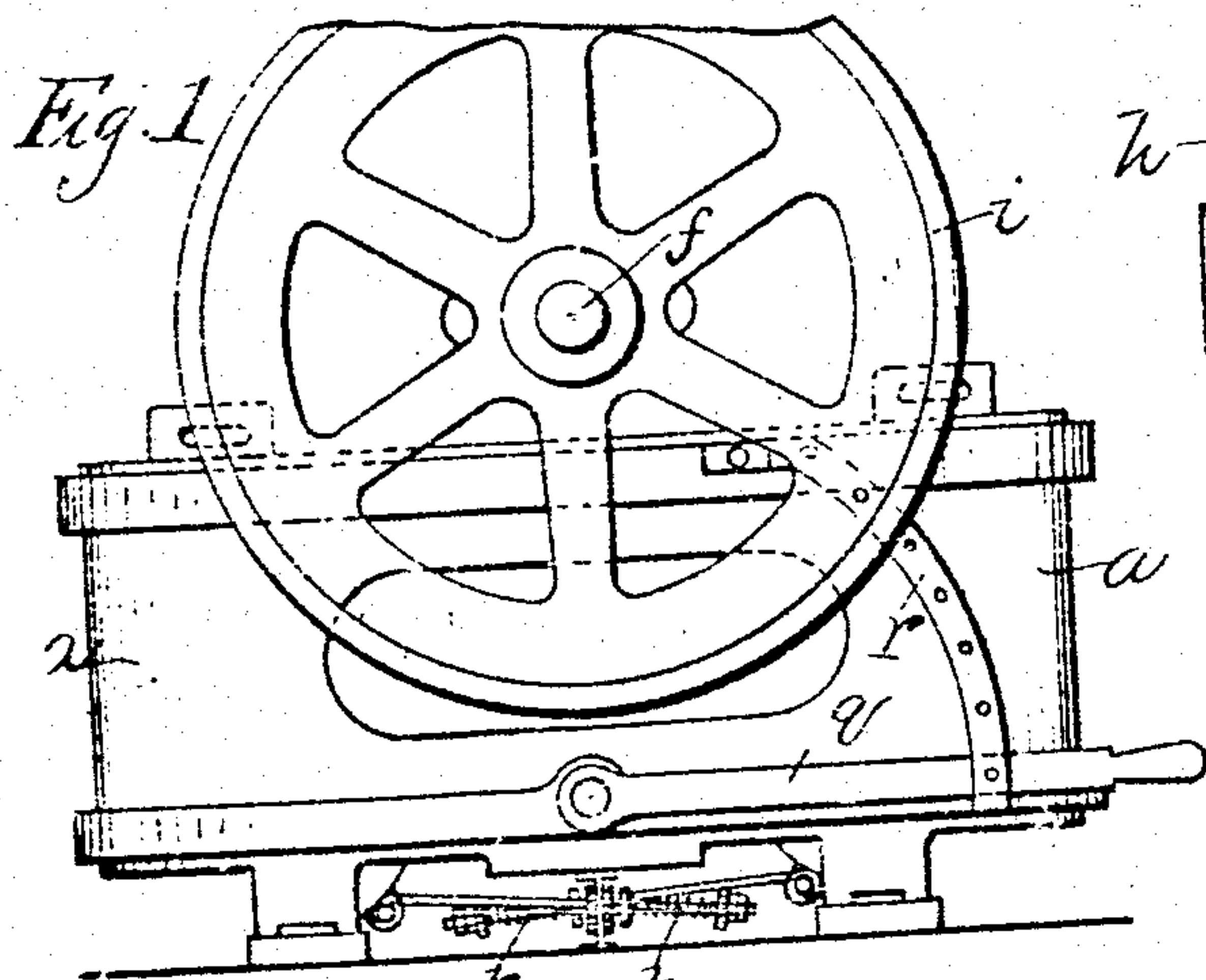


No. 838,921.

PATENTED DEC. 18, 1906.

W. L. VELTEN.  
STONE CRUSHER.  
APPLICATION FILED JULY 26, 1905.



Witnesses  
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# UNITED STATES PATENT OFFICE.

WILHELM LOTHAR VELTEN, OF KORNTAL, GERMANY.

## STONE-CRUSHER.

No. 838,921.

Specification of Letters Patent.

Patented Dec. 18, 1906.

Application filed July 26, 1905. Serial No. 271,356.

*To all whom it may concern:*

Be it known that I, WILHELM LOTHAR VELTEN, a citizen of the German Empire, residing at Kornthal, in the Kingdom of Württemberg, Germany, have invented certain new and useful Improvements in Stone-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.

This invention relates to ore and stone crushers, and has for its principal object to provide a crusher of simple and economical construction and which may be readily adjusted to vary the size of the product.

A further object of the invention is to provide the breaking-jaws with interchangeable and reversible face-plates having teeth so arranged as to effectively crush the material without permitting large stones or lumps to be forced upward as the jaws move toward each other.

A still further object of the invention is to so mount and arrange the movable jaws that each may move downward during the crushing movement and upward as the jaws separate.

With these and other objects in view the invention consists in the novel construction and arrangement of parts hereinafter described, illustrated in the drawings, and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a side elevation of a stone-crusher constructed in accordance with the invention. Fig. 2 is a transverse sectional view of the same in the plane of the main shaft. Fig. 3 is a plan view. Fig. 4 is a longitudinal sectional elevation of the crusher. Fig. 5 is a detail sectional view of one of the movable jaws on an enlarged scale, and Fig. 6 is a face view of the same.

Similar reference characters denote corresponding parts throughout the several figures of the drawings.

The working parts of the crusher are supported in a suitable frame *a* of generally rectangular contour and provided at the upper central portions of its side members with bearings for the support of a shaft *f*, which is provided at one end with a belt-wheel *i* and at the opposite end with a balance-wheel *h*. At the center of the shaft is an eccentric *g*, through which movement is imparted to the movable jaws of the crusher.

At the inner walls of the end portions of the frame are arranged detachable and interchangeable face-plates *b*, having convex operating-faces which are provided with horizontal rows of teeth. All of the teeth are vertical, and those at the center are larger or of greater height than those at the end. In the present instance the two central rows of teeth *v* are made higher than the end rows, the smaller teeth *v'* at the bottom effecting the finer crushing, and when necessary the plates may be reversed in order to bring the small teeth of the top row lowermost.

The upper portions of the two movable jaws *d d'* are pivotally connected by a pin *t*, and the top of jaw *d* is enlarged and provided with an opening for the reception of the eccentric *g*.

The jaws *d d'* are provided with convex face-plates *c*, having teeth corresponding to those of the plates *b*—that is to say, the central rows of teeth being of greater height than the end rows. The face-plates are held in position by wedge-shaped bars *e* and are also reversible and interchangeable.

The lower portions of the inner side walls of the frame are provided with spaced guide-ribs *o*, arranged to receive transversely-disposed bars *n*, and between these bars is an eccentric or cam *p*, carried by a shaft that extends through bearing-openings in the frame and carries at one end a lever *q*, which may be moved over a locking-quadrant *r* for the purpose of turning the cam *p*, and thus adjusting the distance between the bars *n*.

The lower portions of the inner faces of jaws *d d'* are provided with parallel recesses *m*, and a plurality of similar recesses is formed in each of the bars *n*. These recesses receive the ends of link-plates *l*, that form, in connection with the bars *n*, a species of toggle-joint, acting to move said jaws inward and outward as they are raised and lowered by the eccentric *g*. The jaws *d d'* are held in engagement with the link-plates by spring-actuated rods *k*, as clearly shown in Figs. 1 and 4.

What I claim, and desire to secure by Letters Patent, is—

1. In a stone-crusher, fixed and movable crushing-jaws having reversible face-plates of convex form, each plate being provided with a number of horizontal rows of teeth, the teeth of the central rows being larger than those of the end rows.

2. In a crushing-mill, the combination with a frame, of a pair of fixed jaws, a pair of mov-



able jaws having their upper ends pivotally connected, an eccentric engaging the upper portion of one of the movable jaws, and means arranged between the lower ends of the movable jaws for simultaneously adjusting the same.

3. In a crushing-mill, the combination with a frame, of a pair of jaws, one of which is fixed and the other movable, an eccentric engaging the upper portion of the movable jaw and imparting both lateral and vertical movement thereto, a support, both the support and the movable jaw being provided with a series of transversely-extending recesses, a link adjustable to any of said recesses to connect the movable jaw and the support, and means for adjusting said support to alter the distance between the two jaws.

4. In a crushing-mill, the combination with a frame, of a pair of fixed jaws, a pair of movable jaws, having their upper ends pivotally connected to each other, one of said jaws having a transversely-extending circular opening, an eccentric arranged in said opening, an eccentric-carrying shaft, a pair of bars guided in the lower portion of the frame, links connecting the bars to the lower portions of the

rear faces of the movable jaws, and means for spreading said bars to alter the distance between the jaws of each pair.

5. In a crushing-mill, the combination with a frame, of a shaft supported at the upper portion of the frame, an eccentric on said shaft, a pair of fixed jaws at the ends of the frame, a pair of movable jaws pivoted together at their upper ends, one of said jaws having an opening for the reception of the eccentric, a pair of slidably-mounted bars in the lower portion of the frame, the outer face of each bar being provided with a plurality of transverse recesses, a cam arranged between the two bars, a shaft carrying the cam, a lever for operating said shaft, link-plates extending between the bars and the lower portions of the movable jaws, said jaws having recesses for the reception of said link-plates, and spring-pressed rods tending to hold the movable jaws in engagement with said links.

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

WILHELM LOTHAR VELTEN

Witnesses:

A. B. DOHERTY,

WALTER SCHWAEBSCH.