S. L. MARSDEN.

Compensating Toggle-Bearing.

No. 227,554. Patented May 11, 1880.

Fig. 1.

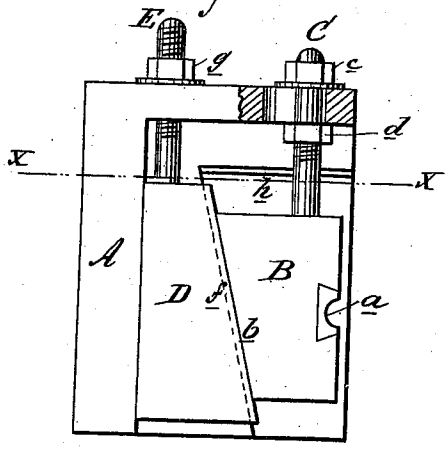


Fig. 2.

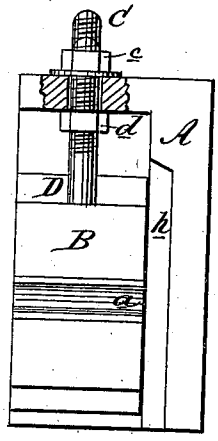


Fig. 3.

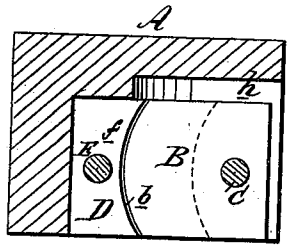


Fig. 5.

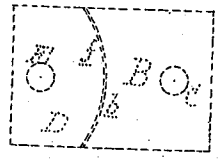
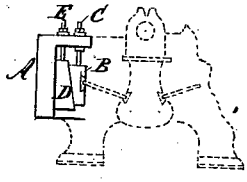


Fig. 4.



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UNITED STATES PATENT OFFICE.

SAMUEL L. MARSDEN, OF NEW HAVEN, CONNECTICUT.

COMPENSATING TOGGLE-BEARING.

SPECIFICATION forming part of Letters Patent No. 227,554, dated May 11, 1880.

Application filed February 24, 1880.

To all whom it may concern:

Be it known that I, SAMUEL L. MARSDEN, of New Haven, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Compensating Toggle-Bearings, of which the following is a specification.

Figure 1 is a side elevation of the device, partly in section. Fig. 2 is a front elevation of the device, partly in section. Fig. 3 is a plan view, partly in section, on line *x x*, Fig. 1. Fig. 4 is a reduced side elevation, showing the improved device in position in a stone-breaker and ore-crusher. Fig. 5 represents a modification of the device, showing a toggle-block having a concave back and a toggle-wedge having a convex face.

Similar letters of reference indicate corresponding parts.

The object of this invention is to provide an adjustable device for correcting and compensating the wear on the pitman-bearings, toggle-bearings, toggles, and movable jaw or jaws of stone breakers and crushers like that of Blake and others.

The invention consists of an adjustable toggle-block provided with a rounded convex or concave back and of a toggle-block wedge provided with a concave or convex face, in which concavity or convexity the back of the toggle-block fits, the said toggle-block being vertically adjustable by means of a screw or screws, and being capable of a laterally-rocking motion because of its articulation with the toggle-block wedge.

In the Blake crusher, and other stone breakers and crushers having movable jaws, continued work wears away the ends of the jaw-plates and the bearings of the pitman and ends of the toggle-levers and toggle-bearings, so that some device is necessary to compensate for this wear and hold the jaw or jaws always in position for most effective work.

In some crushers the most improved compensating device used for this purpose is a straight-faced wedge made adjustable in the rear of the toggle-block, and in some crushers adjustable pitmen are used for this purpose; but these and other equivalent devices serve only to compensate for the wear in the direct longitudinal line of pressure, whereas the wear is frequently angular or on one side of the longitudinal pressure line, which angular wear is not remedied by any of the devices now in use.

My invention is designed to compensate both for the direct and angular wear.

In the drawings, A represents a portion of the frame of a stone-breaker and ore-crusher.

B represents the improved toggle-block, having a toggle socket-block, *a*, inserted in its face and having its back sloping, rounded, and convex, as shown at *b*. A screw-bolt, C, fixed in the top of this toggle-block B, passes up through the top of the frame A, and by means of the nut *c* and jam-nut *d* the said toggle-block B can be raised and lowered and fixed in position at will. In rear of this toggle-block B is the wedge D, whose sloping face *f* is made concave or convex to correspond with the convexity or concavity of the back of the said toggle-block B. This wedge D is also vertically adjustable by means of its screw bolt or bolts E, that pass up through the top of the frame A, and has on it the nut *g*. By the vertical adjustment of the wedge D alone the wear on the pitman-bearings, toggle-bearings, toggle ends, and jaw-plates of a stone-breaker and ore-crusher in the direct line of pressure is compensated by the resulting forward movement of the toggle-block, as in other stone-crushers having smooth-faced toggle-block wedges; but in no instance does this vertical adjustment of a toggle-block wedge correct that angular change of the direction of the toggles which results from the aforesaid wear upon the pitman-bearings, toggle-bearings, and ends of the toggles and jaw-plate. Consequently, because of this angular change of direction of the toggles, power is less effectively applied than it would otherwise be to the movable jaw or jaws of a crusher. To overcome this difficulty I have designed the within-described toggle-block, by whose vertical adjustment, in combination with the adjustment of the wedge, the desired angular direction in a vertical plane of the toggles can be maintained whatever may be the wear upon them. The angular wear upon the moving parts of the crusher or the wear on one side of the longitudinal pressure line, which is not corrected or compensated by any of the devices now in use, is fully corrected and compensated, or indeed obviated, by the

lateral rocking movement of the toggle-block B, which rocking movement is made possible by the articulation of the curved convex or concave back of the said toggle-block B with the concave or convex front of the wedge D; and in order to permit a free lateral rocking movement of the said toggle-block B the crusher-frame A is recessed, as shown at *h*.

I do not confine myself to the use of one bolt for adjusting the wedge D, as the width of the wedge may be such as to require more than one bolt for its proper security and adjustment.

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

1. A vertically-adjustable toggle-block constructed, substantially as herein shown and described, with a sloping convex or concave back, as set forth.

2. As a means for vertically adjusting the toggle-block B, and in combination therewith, the screw bolt or bolts C and nuts *c d*, substantially as herein shown and described.

3. In combination with the frame A, the adjustable concave or convex faced wedge D, substantially as herein shown and described.

4. The combination, with an adjustable toggle-block, B, provided with a sloping convex or concave back, *b*, of a wedge, D, provided with sloping concave or convex face *f*, substantially as herein shown and described, whereby the angular wear and the wear in the direct line of pressure are compensated, as set forth.

SAMUEL LOWE MARSDEN.

Witnesses:
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C. SEDGWICK.