

No. 626,955.

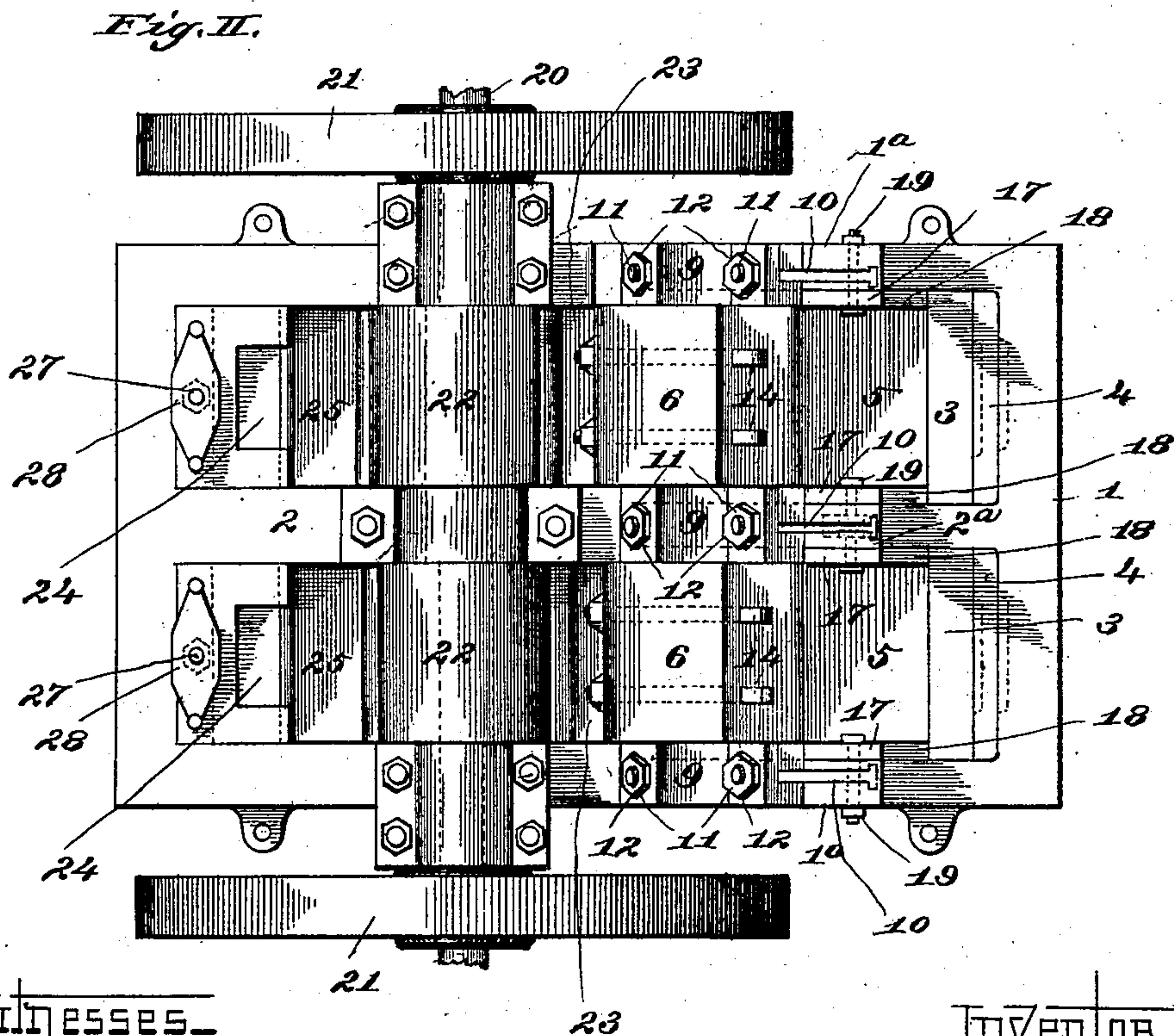
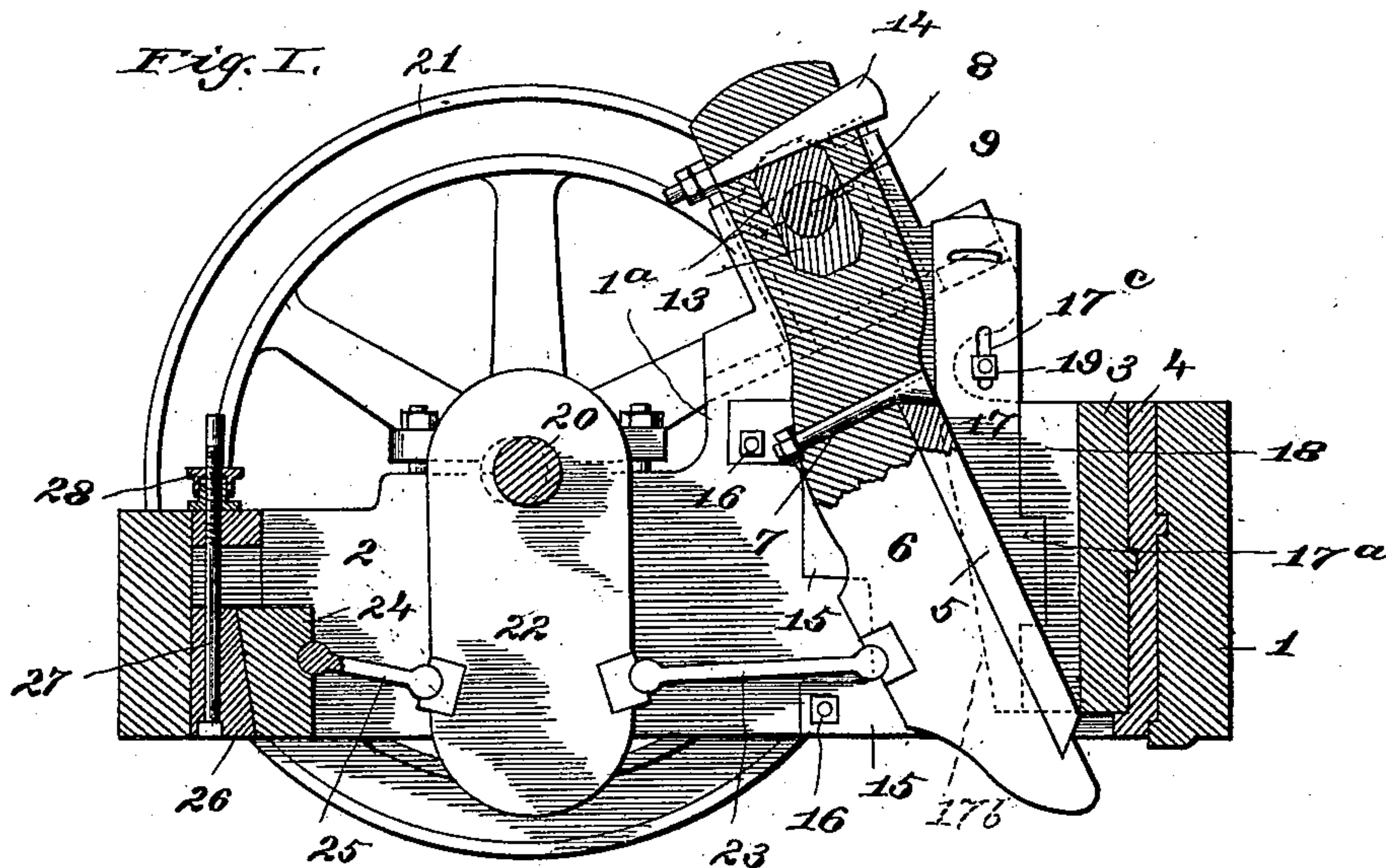
Patented June 13, 1899.

G. W. WRIGHT.  
ROCK OR ORE CRUSHER.

(Application filed Dec. 27, 1898.)

(No Model.)

2 Sheets—Sheet I.



WITNESSES—

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# UNITED STATES PATENT OFFICE.

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## ROCK OR ORE CRUSHER.

SPECIFICATION forming part of Letters Patent No. 626,955, dated June 13, 1899.

Application filed December 27, 1898. Serial No. 700,355. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE W. WRIGHT, a citizen of the United States, residing at Webb City, in the county of Jasper and State of Missouri, have invented certain new and useful Improvements in Rock or Ore Crushers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to an improvement in that type of rock or ore crushers known as the "Blake" type; and my invention has for its object the construction of a crusher of double form containing novel features, which will hereinafter be fully described and claimed.

Figure I is a longitudinal sectional view through one side of my improved crusher with portions shown in elevation. Fig. II is a top or plan view. Fig. III is a front elevation. Fig. IV is a perspective view of the wear-plates. Fig. V is an enlarged detail sectional view of the extension on the central partition and the wear-plates attached thereto. Fig. VI is an enlarged detail top view of one of the forward corners of the crusher. Fig. VII is an enlarged detail elevation of one of the jaw-bumper-box receiving extensions and the box thereon.

1 designates the crusher-bed, having a central longitudinal partition 2, dividing the crusher-bed into two corresponding compartments. The parts operating in each compartment are similar.

3 designates the stationary jaws, seated against back plates 4 in each compartment.

5 designates the movable jaws, mounted in jaw-bumpers 6 and held by stay-bolts 7. The jaw-bumpers are hung on a shaft 8, mounted in movable boxes 9, seated on inclined extensions 1<sup>a</sup> and 2<sup>a</sup>, projecting above the side walls of the crusher-bed and the central partition, respectively. The extensions are provided with grooves 10, that receive the heads of bolts 11, by which the boxes are held to the extensions on the tightening of their nuts 12. When the nuts 12 are loosened, the boxes may be slid on the extensions and their positions be altered to change the axes of the movable jaw-bumpers according to the requirements in crushing different kinds of rocks or ores. This adjustment of the jaw-bumpers is material, in that different rocks

or ores require diversity of crushing action between the stationary jaw and the movable jaw and different clearance at the discharge.

The jaw-bumpers 6 contain bearings 13, that are held in place by keys 14, extending through the bumpers.

15 are detachable side plates secured to the walls of the crusher-bed and central partition by bolts 16. (See Fig. I.) The forward edges of these side plates extend forwardly and downwardly, as shown in dotted lines, Fig. I.

17 and 18 are wear-plates that are removably seated against the walls of the crusher-bed and central partition in the crushing-chamber to take the wear occasioned in the crushing of material, which would otherwise be borne by the walls of the crusher-bed or central partition. These wear-plates are shown in detail in Fig. IV.

The plates 17 and 18 are each connected by a dovetail joint composed of a tenon 17<sup>a</sup> on the plate 17, that fits into a mortise 18<sup>a</sup> in the abutting edge of the plate 18. The tenon 17<sup>a</sup> is beveled on one side only, while the mortise 18<sup>a</sup> is beveled on both sides, so that the plate 18 may be reversed or inverted in order to expose both of its sides and ends to wear. The rear edges 17<sup>b</sup> of the wear-plates 17 are inclined to fit the inclined forward edges of the side plates 15. By providing these inclined edges to the plates 17 the said plates are caused to fit snugly in their seats against the crusher-bed walls and partition and the plates 18 are forced forwardly against the stationary jaws 3 to assist in sustaining the said jaws in position. Each of the plates 17 is provided with a slot 17<sup>c</sup> in its upper portion, that receives a bolt 19, by which the plates are supported against the extensions 1<sup>a</sup> and 2<sup>a</sup> above the crusher-bed and central partition, respectively. The bolts 19, that connect the plates 17 to the crusher-walls, extend through such walls, while those that connect the plates to the central partition extend from opposite sides of said partition into pockets 2<sup>b</sup> in said partition. (See Fig. V.)

20 designates an eccentric shaft which forms the drive-shaft of the crusher and on which fly-wheels 21 are mounted.

22 are eccentric bumpers swung on the eccentric shaft 20 within the crusher and adapted to oscillate on the rotation of said shaft.



Between said eccentric bumpers and the jaw-bumpers 6 are toggles 23, through which the motion of the eccentric bumpers is imparted to said jaw-bumpers.

24 designates wedge-blocks movably mounted in the rear of the eccentric bumpers and provided with connection to said bumpers by toggles 25. The wedge-blocks 24 are backed by movable wedges 26, containing draw-bolts 27, by which they may be raised or lowered to alter the position of the wedge-blocks 24 forwardly or rearwardly. The draw-bolts 27 are provided at their upper ends with adjustment-nuts 28.

Heretofore the movable boxes of jaw-bumpers have been arranged in horizontal planes, and the result in actual operation is that when the bumper is shifted the axis of the bumper is moved in the same plane, and by reason of the bumper being carried to or away from the stationary jaw the relative positions of the stationary jaw and the lower portion of the movable jaw carried by the bumper are altered, so that the movable jaw does not approach the stationary jaw in the same position as before the alteration was effected, with the obvious result that instead of the parts meeting at their edges, as shown in Fig. 1 of the drawings in this case, the movable jaw is caused to strike the stationary jaw at a point above its lower edge, resulting in a recess soon being cut therein to the detriment of the proper crushing action, or, on the other hand, where the forward movement of the jaw-bumper throws the previously contacting edge of the movable jaw below the lower edge of the stationary jaw the stationary jaw is caused to cut into the movable jaw.

By mounting the bumper-boxes on inclined seats the difficulty pointed out is somewhat overcome by this arrangement, and adjustment of the boxes does not cause a variance in the relative positions of the axis of the bumper and the contacting edges of the stationary and movable jaws, but instead the parts are kept in the same coincident relation throughout the adjustment of the movable boxes.

Wear-plates have been composed of a single piece, and heretofore a great loss has resulted in the use of such plates after a short period of usefulness, owing to the fact that the wear upon them is very rapid at their forward and lower corners, whereas the wear throughout the rest of the plate is very gradual in comparison with the wear at the lower corners. The result is that as soon as the lower forward corners of such plates become worn an opening is produced at the lower ends of the plates, through which the material being crushed escapes without being acted upon. Where this condition occurs, it is obvious that the serviceability of the wear-plates is destroyed and they must be discarded and replaced by new plates in order to achieve the satisfactory crushing operation of the machine. The plate 17, as herein shown, is of

long life, as comparatively little wear is effected against it, and its period of usefulness is far greater than that of the plate 18, upon which the preponderance of wear occurs. The major portion of wear upon the plate 18 is, as stated, at its lower and forward corners, and therefore when such corners become worn so as to be in an unsatisfactory condition the plates 17 and 18 are lifted from the machine and the plate 18 is turned end for end and fitted by the dovetail joint again to the plate 17 and reinserted into the machine, where it serves a period of usefulness until the previously upper end of the plate 18, which has not been worn, has become ground off at the point of crushing operation and the plate 18 is rendered of no further utility. The plate 17 at this time will still be serviceable and will serve to receive several plates 18, and it is therefore evident that the only part necessary to discard is the plate 18 when the two forward corners of the plate 18 have become worn away, instead of it being necessary to discard both plates 17 and 18, which correspond to a plate made of a single piece, as heretofore used in machines of the character to which this invention relates.

I claim as my invention—

1. A rock or ore crusher comprising a crusher-bed having a longitudinal compartment and inclined extensions, the adjustable boxes shiftable on the inclined extensions, the shaft mounted in the movable boxes, a bearing surrounding the shaft, a jaw-bumper, keys extending through the bumper whereby the bearing is held in place on the shaft, an eccentric drive-shaft, an eccentric bumper depending from the eccentric drive-shaft, a toggle connecting the jaw-bumper with the eccentric bumper, a wedge-block, a toggle connecting the wedge-block with the eccentric bumper, and means for adjusting the wedge-block; substantially as described.

2. A rock or ore crusher comprising a crusher-bed having a longitudinal compartment and inclined extensions, the adjustable boxes shiftable on the inclined extensions, the shaft mounted in the movable boxes, a bearing surrounding the shaft, a jaw-bumper, keys extending through the bumper whereby the bearing is held in place on the shaft, an eccentric drive-shaft, an eccentric bumper depending from the eccentric drive-shaft, a toggle connecting the jaw-bumper with the eccentric bumper, a wedge-block, a toggle connecting the wedge-block with the eccentric bumper, means for adjusting the wedge-block, the side plates having forwardly and downwardly extending edges, and the outer reversible wear-plates, and the adjustable intermediate wear-plates having tenon-and-mortise connection; substantially as described.

GEO. W. WRIGHT.

In presence of—

GEORGE KESLER,  
ALBA T. FOUNTAIN.