

According to this invention a double movable jaw is provided, working in conjunction with two rigid crushing-surfaces, the said double jaw being suspended in such a manner that when it is being moved towards one crushing-surface the material is dropping down between the other face of the jaw and the corresponding crushing-surface, whereby a continuous crushing is maintained.

The ends having the rigid crushing-surfaces are preferably formed in a single casting with the sides of the framing, so that the double crushing-jaw swings in a rectangular chamber open at the top and bottom to permit of the introduction of the material to be crushed and of the crushed material dropping out.

Motion is imparted to the double jaw by means of a shaft having an eccentric portion upon it and working within a block located in a recess in the lower part of the pendulous double jaw, the bearings of the shaft in the sides of the framing and the block itself in the said recess being arranged in such a manner that they can be readily removed for repairs or renewal.

The machine may be driven either directly by means of pulleys upon the main shaft or through the medium of gearing.

The crushing-surfaces both of the fixed jaws and the movable double jaw are made detachable, so that they can be readily renewed.

To enable my invention to be fully understood, I will describe the same by reference to the accompanying drawings: in which Fig. 1 is a plan of a machine for breaking or crushing ore, rock, and the like, constructed according to my invention. Fig. 2 is a view half in end elevation and half in transverse section. Fig. 3 is a view half in side elevation and half in longitudinal section. Fig. 4 is a horizontal section on line 4-4 of Fig. 3, showing the eccentric shaft, the block, and the recess in the pendulous double jaw. Fig. 5 is an end elevation of one of the pivot bearings of the pendulous double jaw. Fig. 6 is a similar view of one of the eccentric shaft bearings. Fig. 7 is a similar view of one of the collars used for securing the driving pulleys on the eccentric shaft. Fig. 8 is a horizontal section on the line 8-8 of Fig. 3.

a a indicate the pendulous double movable jaw, and *b b* are the rigid crushing-surfaces or fixed jaws at the ends *c c* of the framing, formed in a single casting with the sides *d d* thereof; *e* is the pivot or fulcrum of the pendulous double jaw *a a*, which swings in the rectangular chamber *f* open at the top and bottom, and formed by the said sides and ends of the framing; *g* is the shaft, and *h* the eccentric thereon for imparting motion to the double jaw *a a*; *i* is the block within which the eccentric *h* works, and *j* is the recess in the lower part *k* of the pendulous double jaw in which the block *i* is located, the said recess being provided with liners *a²*, *a²* to take the wear of the said block; *l l* are the driving-pulleys of the machine mounted on the eccentric shaft *g*.

The rigid crushing-surfaces *b b* are arranged in recesses in the ends *c c* of the framing, as clearly shown in Figures 1, 3, and 8, so that they can be easily lifted out and replaced by new ones when required, and they are secured in position by means of wedges *a¹*, *a¹* dropped into recesses on the sides of the framing.

With a like object the crushing surfaces *b¹ b¹* of the pendulous double jaw are arranged in pairs dowelled together as at *b²* in recesses in the said jaw, as shown in Figure 3, and they are also secured by means of wedges *c¹* and bolts *m*.

The bearings *n n* of the pivot or fulcrum *e* are made removable, as shown in Figures 2 and 5, to allow of repairs or renewal. The bearings *o o* of the eccentric shaft *g* for a like purpose are simply slid into recesses in the framing, as shown in Figure 2, and then secured by studs *o¹*. The driving-pulleys *l l* are in turn secured upon the shaft *g* by means of pins *p p* passing through the bosses *q q* of the pulleys and through collars *r r* formed in halves and keyed to the shaft, and clamped together by means of bolts *s*, as clearly shown in Figures 2 and 7.

From the foregoing description it will be understood that the shaft *g* being revolved by either or both of the pulleys *l* thereon, an oscillating motion will be imparted to the pendulous double jaw *a a*. So that whilst the ore, rock, or the like material, fed between the fixed and movable crushing-surfaces *b b* *b¹ b¹* is being crushed by the swing of the movable jaw to one side of the machine the said material is dropping down at the other side of the machine in position to be crushed, by the following swing of the jaw towards that side, and so on; the crushing of the material being therefore practically continuous instead of intermittent as heretofore.

Having now particularly described and ascertained the nature of my said invention, and in what matter the same is to be performed, I declare that what I claim is,—

1. A machine for breaking or crushing ore, rock, and the like, having a double pendulous movable jaw, working in conjunction with two rigid crushing-surfaces in such a manner that while one face of the jaw is moving towards its corresponding crushing-surface the other face is receding from its crushing-surface so as to allow the material to drop down into position to be crushed at the following swing of the pendulous double jaw, and so on, substantially as hereinbefore described.

2. The machines for breaking or crushing ore, rock, and the like, the combination with a pendulous double movable jaw, of fixed crushing-surfaces, arranged in recesses in the ends of the frame of the machine, and wedges adapted to enter other recesses in the said framing for securing the said crushing-surfaces, substantially as and for the purpose hereinbefore described, and as illustrated in the accompanying drawings.

3. In machines for breaking or crushing ore, rock, and the like, the combination with a pendulous double movable jaw working in conjunction with fixed crushing-surfaces of a driving-shaft, an eccentric thereon, a block in which the said eccentric revolves, and a lined recess in the pendulous double jaw in which the block moves in order to impart motion to the pendulous double jaw, substantially as hereinbefore described, and illustrated in the accompanying drawings.

4. In a machine for breaking or crushing ore, rock, and the like, the combination with a pendulous movable jaw working in conjunction with fixed crushing-surfaces, a driving-shaft, an eccentric thereon, and a block working in a recess in the said pendulous jaw, of bearings for the