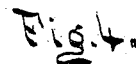
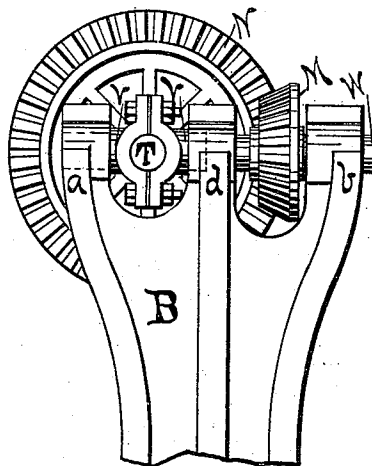
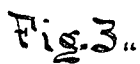
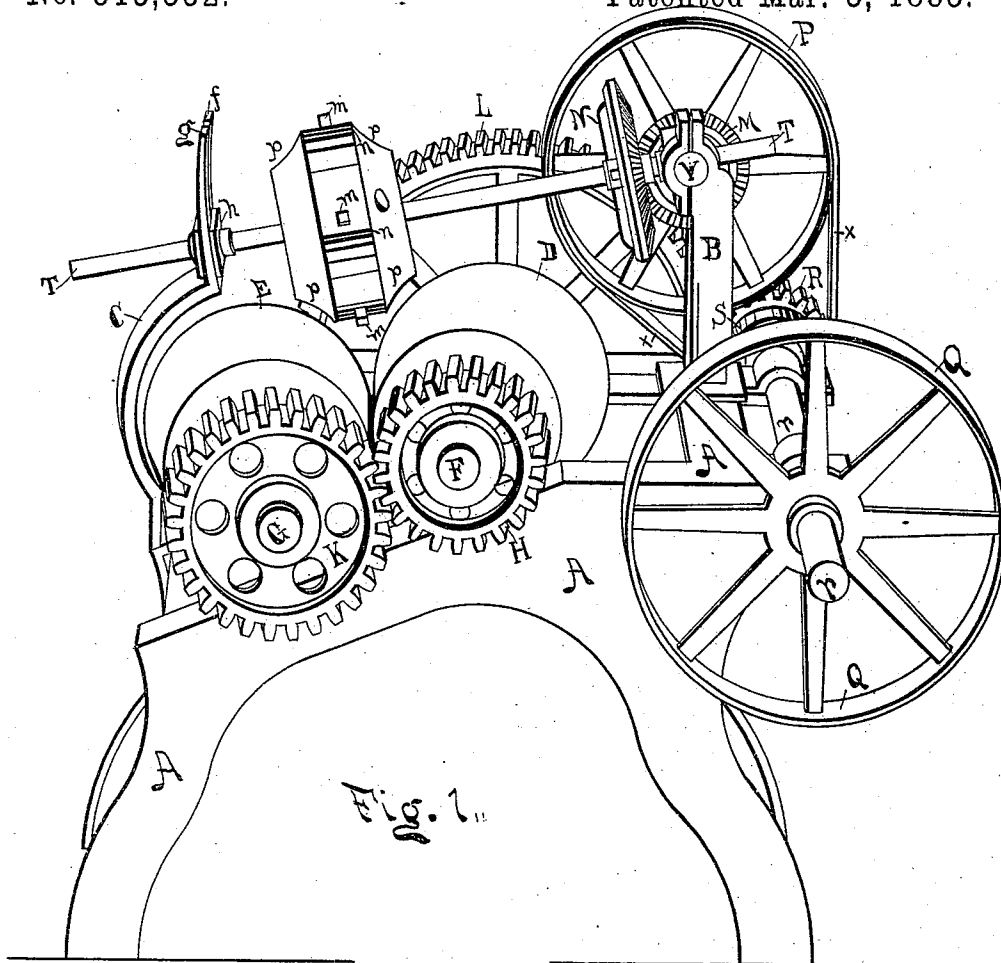


(No Model.)

H. HEESSEN.
CLAY CRUSHER.

No. 313,332.

Patented Mar. 3, 1885.



Witnesses:

Summer Collins
Charles B. Lothrop

Inventor:

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Atty.

UNITED STATES PATENT OFFICE.

HENDRICK HEESSEN, OF TECUMSEH, MICHIGAN, ASSIGNOR TO HIMSELF, ALBERT L. BREWER, HUDSON W. CONKLIN, CHARLES J. BREWER, AND HERBERT STOUT, ALL OF SAME PLACE.

CLAY-CRUSHER.

SPECIFICATION forming part of Letters Patent No. 313,332, dated March 3, 1885.

Application filed December 11, 1884. (No model.)

To all whom it may concern:

Be it known that I, HENDRICK HEESSEN, of Tecumseh, in the county of Lenawee and State of Michigan, have invented a new and useful Improvement in Clay-Crushers, of which the

Figure 1 is a perspective of the machine. Fig. 2 is an elevation of the standard B and driving mechanism carried thereby, and Figs. 3 and 4 are elevations of different modes of constructing the transverse roll.

My invention consists in the combination, with the rolls of a clay-crusher, of a transverse roll at the end, where stones are passed out of the machine, lying in the plane of the opening between the main rolls, and adjustable, whereby lumps of clay which are too large and hard to be drawn between the main rolls are broken up and forced down, while stones

are allowed to pass freely out of the machine. As clay-crushers are now constructed they consist, essentially, of two or more main or crushing rolls turning toward each other, upon which the clay is fed and between which it is drawn. These rolls are so made, either by being tapered or corrugated or by having screw-threads or grooves cut thereon, that stones and hard substances which are too large to pass between the rolls are carried along and discharged at one or both ends of the rolls. The same process which discharges stones also discharges lumps of clay which are too large and hard to be drawn between the crushing-rolls, and it is to prevent this that my invention is made.

A represents the frame of the machine, and D E represent the crushing-rolls. (Shown in the drawings as tapering, though their precise form has nothing to do with my invention.) The crushing-rolls are hung on shafts F G, which are journaled in the frame, and these shafts each carry at one end a gear-wheel, H K, which mesh into each other, and which are usually made of different size, so that the rolls will revolve at different speeds. One of the crushing-rolls, D in the drawings, is driven from a shaft, r, on which is a belt-pulley, Q, driven from any suitable source of power, and which carries a pinion, R, which meshes into a gear-wheel, L, secured to shaft F.

The frame of the machine is usually made

higher at one side than at the other, to give space for an elevator to take away the crushed clay; but none of the machine so far described is of my invention, and I do not think that any more detailed description thereof is

necessary. B represents a standard secured to the frame of the machine, and at its upper end it is divided by two slots into three parts, a d b. In the bearings b d is journaled a shaft, W, which carries a belt-pulley, P, outside of the standard, and also carries a bevel gear-wheel, M, between b and d.

T represents a shaft at right angles with the shaft W, and is journaled in a box, V, which is hung either on a single trunnion, Y, in bearing a, or may have two trunnions, one of which is hung in bearing d. This arrangement keeps the centers of these two shafts in line, so that the other end of shaft T may rise and fall freely without throwing the gear-wheel N, which is a bevel-gear secured to shaft T, out of gear with wheel M. The other end of shaft T is journaled in a box, h, which is notched at its sides to receive two curved guides, g f, which are supported by an arm, C, secured to the frame A. The curvature of the guides g f is that of a circle whose radius is the length of shaft T from the center of trunnion Y to box h.

S represents a belt-pulley on shaft r, and x represents a belt by which pulley S drives pulley P.

O represents a roll fastened to shaft T in such position that its center is directly over the opening between the crushing-rolls.

To enable roll O to be set close to the crushing-rolls, I prefer to bevel its side faces on the same line as the curvature of said crushing-rolls, as shown at p p; but this construction may be used or not.

Instead of leaving the circumference of roll O plain, I prefer to form teeth thereon, n n, something like the teeth of a circular saw, as shown in Fig. 3, or to insert therein projecting spurs m m, as shown in Fig. 4, or to use both teeth and spurs, as shown in Fig. 1. The circumference may be left plain, if desired; but the machine operates better when the roll O is constructed as shown in any of the figures.

The operation of my invention is as fol-

lows: When the machine is set in motion and clay fed to the crushing-rolls, the clay is crushed in a well-known manner. The shaft W, which carries the bevel gear-wheel M, is driven by belt *x*, and gear-wheel M drives gear-wheel N, thus causing shaft T to revolve and carry with it roll O, and said roll revolves so that its upper surface advances toward the center of the machine. As stones are fed by the action of the crushing-rolls toward the end of the machine, where roll O is hung, said roll meets the stones and rises to permit them to pass under it and out of the machine, this operation being facilitated by the teeth *n* or the spurs *m*, which rest upon the top of the stones and force roll O to rise; but when lumps of clay too large to be grasped by the crushing-rolls are fed toward roll O, they are broken by said roll, in which case the teeth *n* or spurs *m*, or both, aid in the operation, and forced downward between the crushing-rolls, thus avoiding entirely the labor of rehandling such lumps, which is now necessary with all crushers made.

It is evident that the roll O may be made of any size, and that the spurs *m* may be of any desired length.

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

1. In combination with the crushing-rolls of a clay-crusher, a transverse roll situated over the delivery end of the crushing-rolls, adjustable and driven with its upper surface moving toward the center of the machine, substantially as and for the purposes set forth.

2. The combination, with the crushing-rolls of a clay-crusher, of a transverse roll situated over the ends of the crushing-rolls at which stones are delivered from the crusher, having its center over the opening between the crushing-rolls, and hung on a shaft which is at one end journaled in a swinging box and at the other end is hung in a sliding box, substantially as and for the purposes set forth.

3. The combination of the rolls D E with the roll O, secured on shaft T, swinging box V, and sliding box *h*, held by the guides *g f*, substantially as shown and described.

4. The combination of the standard B, having bearings *a d b* thereon, with the shaft W, carrying belt-pulley P and bevel gear-wheel M, and shaft T, hung in box V, adapted to swing on trunnion Y, substantially as shown and described.

5. The combination, with the rolls D E, of the roll O, having thereon the teeth *n*, substantially as shown and described.

6. The combination, with the rolls D E, of the roll O, having thereon the spurs *m*, substantially as shown and described.

7. The combination, with the rolls D E, of the transverse roll O, substantially as and for the purposes described.

HENDRICK HESEN.

Witnesses:

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