

(No Model.)

T. D. MCKINNEY & W. A. SOPER.

CLAY CRUSHING MACHINE.

No. 311,081.

Patented Jan. 20, 1885.

Fig. 1

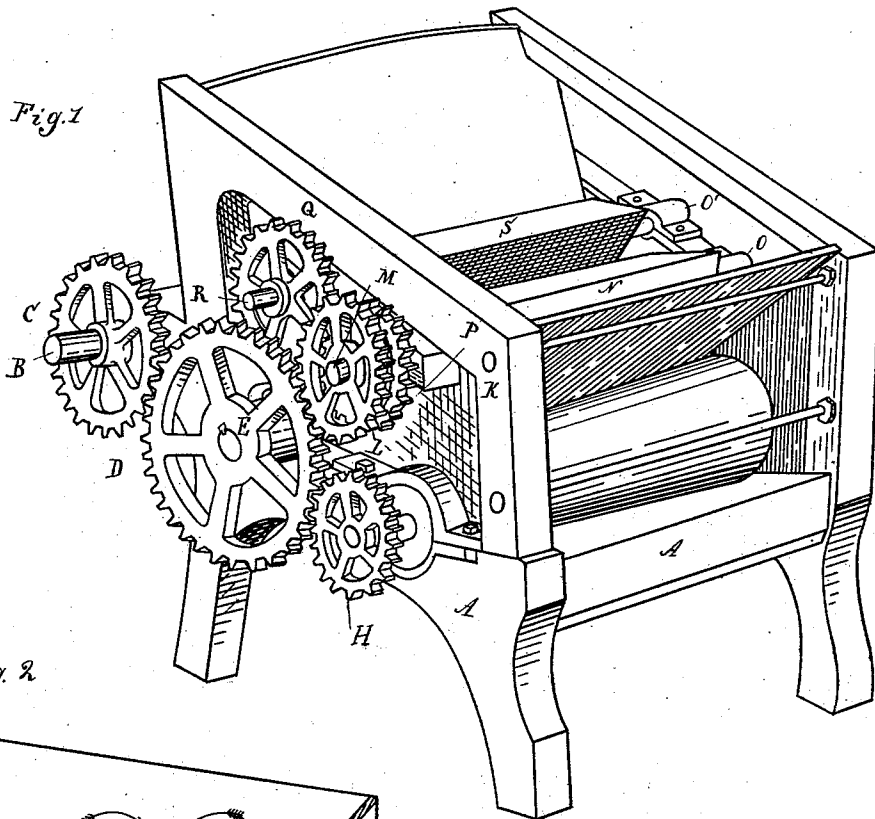


Fig. 2

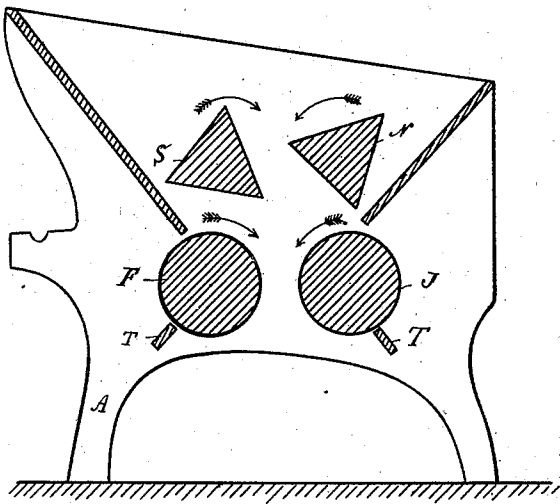
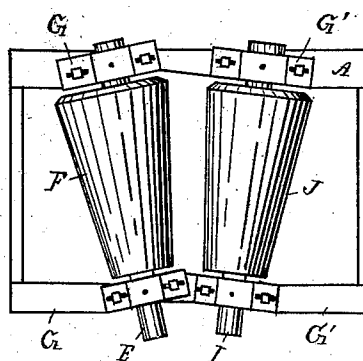


Fig. 3



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UNITED STATES PATENT OFFICE.

TRUMAN D. MCKINNEY AND WALTER A. SOPER, OF TECUMSEH, MICHIGAN.

CLAY-CRUSHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 311,081, dated January 20, 1885.

Application filed November 5, 1884. (No model.)

To all whom it may concern:

Be it known that we, TRUMAN D. MCKINNEY and WALTER A. SOPER, of Tecumseh, in the county of Lenawee and State of Michigan, have invented new and useful Improvements in Clay-Crushing Machines; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to certain new and useful improvements in the construction and operation of crushers especially designed for breaking up lumps of clay as they come from the bank, preparatory to delivering such clay to the crushing-rollers, by means of which it is prepared for delivery to the tile or brick machines, to be fashioned into tile or brick.

Clay suitable for the manufacture of brick and tile is ordinarily taken out of the bank in lumps, in which there is moisture sufficient to make them slippery, so that there is a difficulty in crushing them in the ordinary crushing-rolls; and the object of the present invention is to so construct a device that will, as the lumps of clay are thrown into the hopper, bite off portions of such lumps into fragments sufficiently small to be successfully acted upon by the crushing-rolls, to which the clay is delivered after being thus treated.

The invention consists in combining with a crushing-machine a pair of revolving jaws, which, in their rotation, alternately bite off the side of the lump of clay and deliver the same to the crushing-rolls; also, in the peculiar construction, combination, and operation of the various parts, as more fully hereinafter described.

Figure 1 is a perspective view of our improved machine. Fig. 2 is a central vertical horizontal section of the same. Fig. 3 is a plan of the rolls detached.

In the accompanying drawings, which form a part of this specification, A represents the base-frame, supported upon suitable legs, and carrying the crushing-rolls and the appliances by which they are driven. Upon a projection of this frame there is suitably journaled the main driving-shaft B, to which motion is given from any suitable source of power. This shaft carries a toothed pinion, C, which engages with the toothed wheel D, which is se-

cured upon the overhanging end of the shaft E, which carries the conically-shaped crushing-roll F, and is journaled in boxes G, adjustably secured upon the top of the bed-frame. This adjustability, which allows the distance between the crushing-rolls to be varied as circumstances require, is obtained by the holding-down bolts passing through suitable slots in the boxes, in the ordinary and well-known way of obtaining such end. The wheel D engages with and gives motion to the toothed wheel H, which is secured to the shaft I, which carries the other conically-shaped crushing-roll, J, and is journaled in boxes G', similar to those already described, care being taken that in adjusting these rolls they run with parallel faces, as shown in Fig. 3. K is another frame, resting upon and secured to the base-frame A, and carries the biting-jaws and the appliances for giving them motion, and the hopper. The wheel D engages with and gives motion to the similar wheel, L, which is secured upon the shaft M, which carries the triangular or polygonal shaped jaw N, and is journaled in suitable boxes, O, which are secured to the frame K in any of the known ways. This shaft M also carries the toothed wheel P, which engages with and gives motion to the similar wheel, Q, secured upon the shaft R, which carries the other jaw, S, which is similar to the jaw N, and is supported by similar boxes, O'.

To enable the machine to discharge stones which will not pass between the crushing-rolls, and which it is not desirable to have so pass, the rear side of the frame opposite the driving-gears is left unclosed.

There are cleaners or scrapers adapted to clean the face of the crushing-rolls of clay at the lower point of their rotation.

The frame K is inclosed at the gearing side to prevent the clay under treatment from interfering with the driving mechanism, and this inclosed end forms one of the sides of a three-sided hopper into which the clay is thrown as it comes from the bank, to be acted upon, first, by the jaws, and, secondly, by the crushing-rolls.

In practice the corners of the jaws, in their rotation, will break up the lumps of clay by biting off first on one side and then on the other, and delivering the clay thus broken up

to the crushing-rolls, the action of which will prepare the clay for the tile or brick machine.

We are aware that machines of this class have been provided with devices arranged within a hopper for the purpose of breaking up the lumps of clay before they are delivered to the crushing-rolls; but, so far as we are aware, such devices have consisted of a shaft or shafts provided with fingers or teeth; but we make no claim to such constructions as forming part of our invention. Such constructions have been found objectionable for the reason that the teeth or fingers are liable to be broken either by being clogged up by the moist clay or by the stones therein. We avoid these difficulties by the use of our jaws S N, which consist of shafts of polygonal shape, preferably triangular, the corners of which break off portions of the lumps as they come in contact therewith. It will thus be seen that we employ no teeth or fingers. It will also be noticed that these jaws are so set in relation to each other that as they revolve the corner or point of one is opposite one of the faces of the other, as plainly shown in Fig. 2. We attach importance to this arrangement, by means of which the lumps are much more effectively broken up than they would be if the jaws were set face to face.

What we claim as our invention is—

1. In a clay-crusher, a pair of polygonally-shaped jaws adapted to rotate within a hopper to break up lumps of clay and deliver the same to a pair of crushing-rolls, substantially as and for the purposes described.

2. In a clay-crusher, a pair of polygonal jaws adapted to break up the lumps of clay with their corners, substantially as and for the purpose specified.

3. In a clay-crusher, a pair of triangular-shaped jaws constructed and arranged to rotate within a hopper to break up lumps of clay before delivering the same to the crushing-rolls, substantially as and for the purposes described.

4. In a clay-crusher, a pair of polygonal jaws arranged to revolve with the corner of one jaw opposite the face of the other jaw, whereby the lumps of clay are broken up by said corners before being delivered to the crushing-rolls, substantially as described.

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Witnesses:

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