J. W. DOWLER.

ORE CRUSHER.

No. 183,841. Patented Oct. 31, 1876.

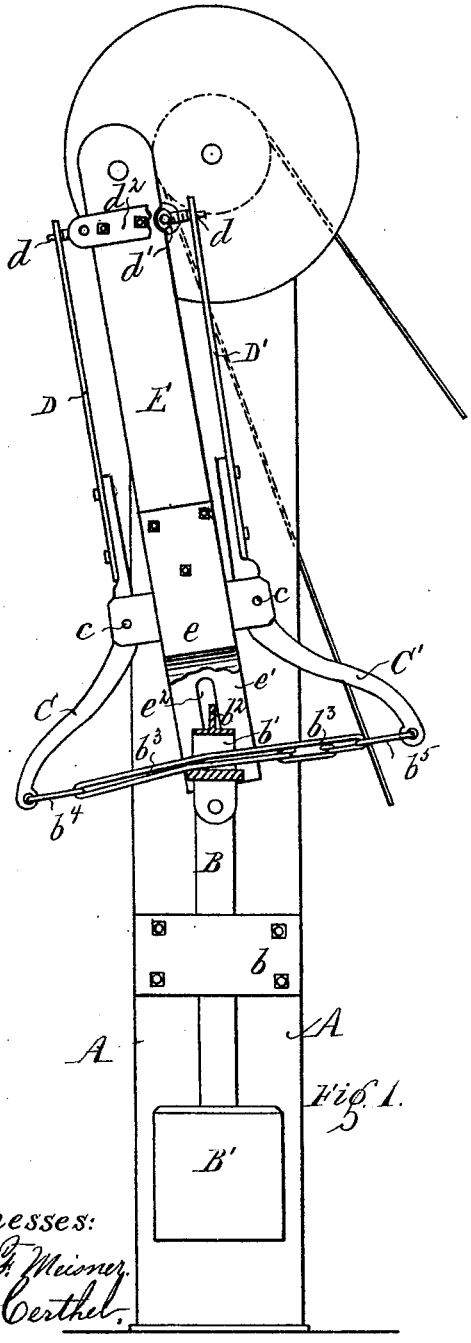

Fig. 1.

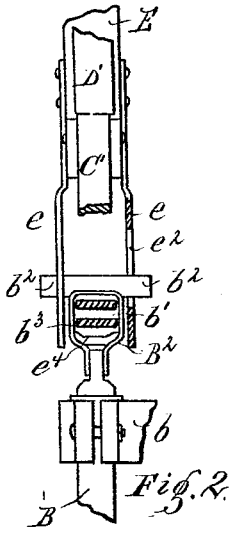

Fig. 2.

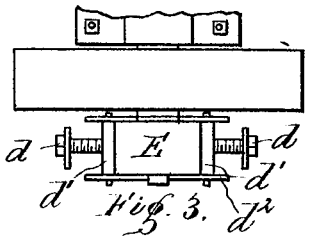

Fig. 3.

Witnesses:
Chas. P. Meisner.
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UNITED STATES PATENT OFFICE.

JOSEPH W. DOWLER, OF ST. LOUIS, MISSOURI.

IMPROVEMENT IN ORE-CRUSHERS.

Specification forming part of Letters Patent No. **183,841**, dated October 31, 1876; application filed August 15, 1876.

To all whom it may concern:

Be it known that I, JOSEPH W. DOWLER, of St. Louis, in the county of St. Louis, and State of Missouri, have invented an Improved Ore-Crusher, of which the following is a specification:

The construction of this ore-crusher, &c., is based upon the principle that sharp, decisive blows, in rapid succession, are productive of far better results than ponderous ones delivered at long intervals.

The nature of my invention consists in the improved features, their combination and operation, substantially as hereinafter fully described, and pointed out in the claims.

Of the drawing, Figure 1 is a side elevation, showing one of my stamps or crushers in operative connection to power source. Fig. 2 is a part sectional elevation to more fully show the T-head, belting, guides, and pitman, and stamper-rod connections, Fig. 3 being a detail top plan of pitman and its parts.

A is a suitable frame to support the machine parts. B is the stamper-rod. This carries the stamper B′, as usual. The stamper-rod is guided in its reciprocation by a sleeve (see dotted lines, Fig. 1) mounted in bearing parts at *b*, and which are secured to the frame. To the upper end of the stamper-rod I secure a T-head, B^2, constructed, as shown in Fig. 2, so as to have an opening, b^1, below its projecting ends b^2. The purpose of the opening b^1 in this device is for the passage of the belting that lifts the stamp, the purpose of the projecting ends b^2 being to guide the action of belting and stamper-rod. b^3 is the belting, and it is arranged in operative condition by passing one end thereof through the T-head and outward to one side to loop over the link b^4 to the left; next brought again through said T-head and outward to loop over the link b^5 to the right; then made to connect by joining its loose ends in any suitable manner, and as shown in Fig. 1. The belting thus connected to stamper-rod, besides serving to carry same in its reciprocation, by its yielding motion, allows a much shorter crank to be used than is customary; consequently a gain in rapidity of action and less expense of power is achieved. Said belting further allows a free recoil of hammer, and otherwise by its nature and the manner it is here attached to stamper peculiarly adapts itself to the operation of the latter. The links b^4 b^5 are pivoted to the lower ends of the curved arms of the levers C C′. These levers are each pivoted at *c* *c* in proper bearings secured to the pitman, and it is to the straight arms of said levers that the springs D D′ are secured. The springs are steel bars, having their lower ends connected to the upper ends of the levers aforesaid, while the upper ends of said springs are connected adjustably to the top of the pitman. This adjustable connection is made by screw-bolts *d* passing through the springs and engaging with corresponding female screws cut in opposite sides d^1 of the brace d^2 that clamps or is secured to pitman. By, therefore, operating the screw-bolts a greater or less tension of the springs is had; also, through the medium of the springs and curved levers the effective operation of the belting is insured, since its slack can be followed up and its action can be regulated. To adapt the springs to the part radial motion from the fulcrum at *c* the end pieces d^1 are pivoted between the two side braces d^2, so as to admit of the up-and-down movement as required. (See Figs. 1 and 3.)

E is the pitman proper. This at its lower end carries extension-guides *e* e^1, each having an elongated slot, e^2. It is through these slots that the projecting ends of the T-head pass, and hence the reciprocation of the stamper-rod is guided, also guiding the action of the belt, and the belting itself is kept durable and effective. A leather cushion, e^4, can be provided under the belting to cushion the action of the rod in its recoil. At top the pitman connects by a short crank to crank-shaft, which is operated from the power source, as usual.

A light, compact, and perfectly portable machine is thus made, which is also simple in construction, durable in all its parts, and efficient in the performance of its work.

What I claim is—

1. The combination of the belting b^3, the T-head B^2, links b^4 b^5, lever C C′, pitman E, stamper-rod B, and crank-shaft, all constructed, as herein shown and described, and by means whereof a short crank motion is obtained, and the rapidity of the stamper-rod is

increased to deliver its blows, as and for the purpose set forth.

2. The combination, with T-head B^2, having opening b^1 and projecting ends b^2 of belting b^3, stamper-rod B, links b^4 b^5, curved levers C C′, pitman E, guides e e^1, having slots e^2, and crank-shaft, all arranged as shown and described, to control the action of the belting and guide the reciprocation of stamper-rod, as and for the purpose set forth.

3. The combination of the springs D D′, curved levers C C′, screw-bolts d, brace d^2, and pitman E, by means whereof the adjustable action is had, as and for the purpose set forth.

4. The combination of the brace d^2, having the pivoted sides d^1 of the screw-bolts d, springs D D′, levers C C′, and pitman E, to allow for the part arc movement of said springs, as and for the purpose set forth.

5. An improved ore-crusher, consisting of the pitman E, springs D D′, screw-bolts d, brace d^1, levers C C′, links b^4 b^5, belting b^3, T-head B^2, guides E′, stamper-rod B, and crank attachment, all said parts being constructed to operate in the manner and for the purpose set forth.

In testimony of said invention I have hereunto set my hand.

JOSEPH W. DOWLER.

In presence of—
WILLIAM W. HERTHEL,
CHAS. H. MEISNER.