

(No Model.)

E. J. MILDREN.
SCOOP FOR CLAY OR ORE MILLS.

No. 411,463.

Patented Sept. 24, 1889.

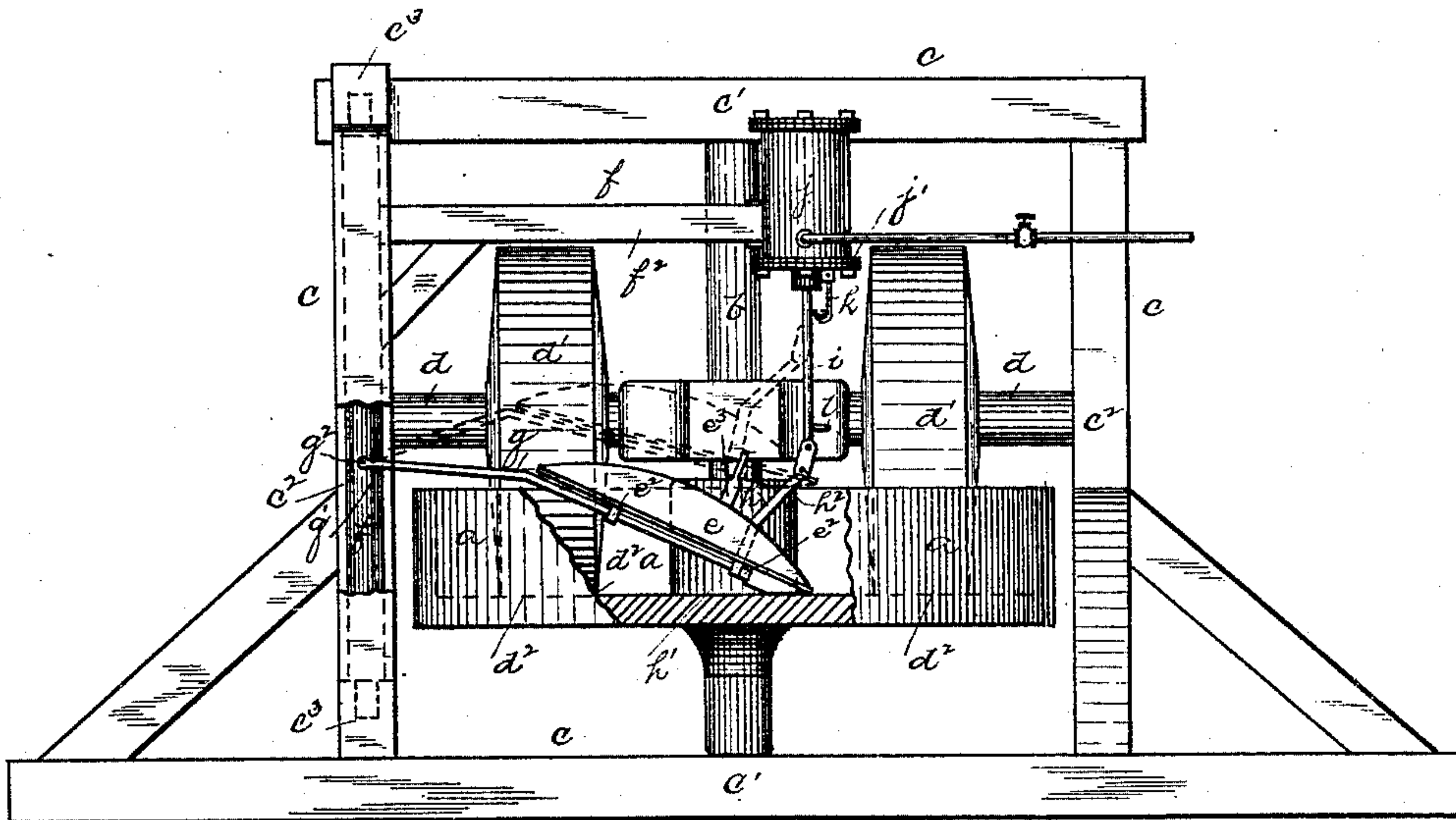


Fig. 1.

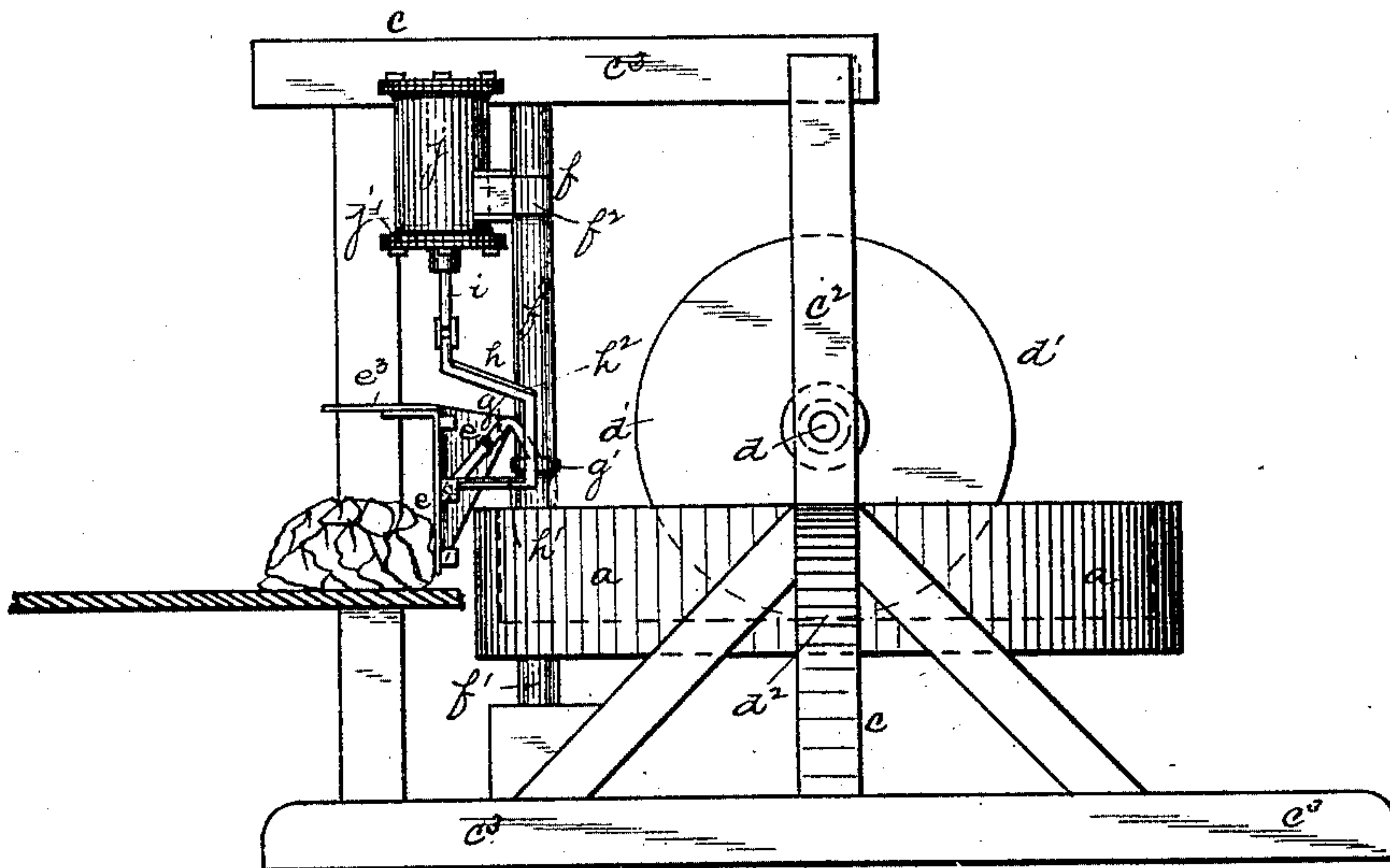


Fig. 2.

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SCOOP FOR CLAY OR ORE MILLS.

SPECIFICATION forming part of Letters Patent No. 411,463, dated September 24, 1889.

Application filed January 30, 1889. Serial No. 298,069. (No model.)

To all whom it may concern:

Be it known that I, EDWARD J. MILDREN, a resident of Black Lick, in the county of Indiana and State of Pennsylvania, have invented a new and useful Improvement in Scoops for Clay or Ore Mills; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to clay or ore mills, and has reference more particularly to a scoop to be used in connection therewith, by means of which the clay or ore when crushed may be removed. These mills, commonly known to the trade as "pug-mills," consist, usually, in a circular pan or receptacle supported by any suitable frame-work and made to rotate therein, while two crushing-rollers are mounted loosely on a horizontal shaft above said circular pan and rest with their crushing or working faces on the bottom of the pan, so that when power is applied to rotate the circular pan the said crushing or working rollers are revolved by the friction generated by the rotation of the circular pan. Any clay or ore therefore deposited within the pan will be acted upon by the crushing or working rollers, and will be consequently crushed or worked. When the clay or ore deposited within the pan has been sufficiently crushed or worked, it has been customary to remove the treated material by means of shovels, men being employed for this special purpose, and the operation of emptying one of these pans of the ordinary size requiring from seven to eight minutes. This method of removing the material has not only the disadvantage of requiring a great deal of time, and consequently more expense, but the material removed in this manner is not uniformly worked, that which is removed first not being so finely crushed, or in the case of clay not properly intermingled, as that which is removed last, for the reason that when the pan has been filled and the wheels have crushed or worked the material to the desired degree the workman, while the pan is still rotating, begins to empty the pan; but as the operation is necessarily very slow the first shovelful will not be as finely crushed or worked as the second, and so on successively until all the material

has been removed, so that any uniformity as to degree of crushing or working is impossible.

The object of my invention therefore is to provide a scoop for emptying the pan which will be filled automatically, and by which the crushed or worked material can be removed in much less time than by the means formerly employed, and be substantially uniformly crushed or worked.

To these ends my invention consists, generally stated, in a clay or ore mill having a scoop supported on a movable frame and arranged to be lowered into the pan, and a power-operated piston or other lifting device for lowering the scoop into the pan and raising it therefrom, and lowering said piston-rod.

My invention further consists in certain means of drawing said scoop when raised from over the pan and unloading the same.

My invention also consists in certain improvements and combination of parts, all of which will be more fully hereinafter set forth.

To enable others skilled in the art to make and use my invention I will describe the same more fully, referring to the accompanying drawings, in which—

Figure 1 is a front view, partly broken away, of a mill with my improved scoop attached thereto. Fig. 2 is a side view showing the scoop in the unloading position.

In illustrating the operation of my improved scoop I will do so with reference to the ordinary clay or pug mill to which it may be readily applied.

The circular pan *a* is journaled on the central vertical shaft *b*, said shaft having bearings in the cross-beams *c'* of the frame-work *c*, said pan *a* being driven by any suitable means. Secured to the upright beams *c* of the frame *c* is the horizontal shaft *d*, and mounted loosely on said shaft are the crushing-rollers *d'*, made of suitable material and so arranged as to have their crushing-faces *d''* in contact with the bottom of the circular pan *a*, the friction caused by the rotation of the pan *a* tending to revolve the crushing-rollers *d'*. Instead, however, of the pan being rotated by means of power applied thereto, the power may be applied to the rollers *d'* and the pan rotated by friction. The scoop

e is supported in a movable frame, by which it may be swung or carried over the pan and then brought to such position that it may be dumped or emptied over the edge of the pan.

5 The preferable construction of frame, as shown in the drawings, consists of a crane *f*, with its vertical beam or movable frame *f'* journaled in the cross-beam *c*³ of the frame *c* and having the projecting arm *f*²,
10 which is adapted to be swung to and from the pan *a*. Pivoted to the vertical beam *f'* of the crane *f* is the rod *g*, said rod having the bifurcated end *g'*, and being pivoted to the said beam *f'* by means of the pin *g*². The
15 rod *g* inclines downward slightly from its point of connection with the vertical beam *f'*, and to said inclined portion is secured the scoop *e* of any suitable size and shape, so that when said scoop is lowered into the pan *a* it
20 will rest in an inclined position on the bottom thereof. To support and journal the scoop *e* on the rod *g* loops or rings *e*² are attached to the bottom of the scoop, through which said rod *g* passes. For the purpose of
25 turning the scoop *e* it is supplied with any suitable handle *e*³. A bent lever *h* is secured by its lower arm *h'* to the rod *g*, said lower arm *h'* serving as a support for the scoop *e* when in its normal position and preventing its turn-
30 ing in the direction of the pan, it being apparent that by such construction the scoop when loaded will have a firm support, the weight of the load acting to hold down the scoop in position on the arm *h'*, while at the same time
35 the lever *h* also prevents the scoop turning toward the pan. The upper arm *h*² of the lever *h* is pivoted to the piston-rod *i*, secured to a piston within the cylinder *j*, which is attached to the projecting arm *f*² of the crane *f*.
40 In order that the scoop when not in use may not interfere with the operation of the mill or be in the way, I attach to the lower cylinder-head *j'* of the cylinder *j* any suitable hook *k*, while to the piston-rod *i*, at its point of con-
45 nection with the upper arm *h*² of the lever *h*, I provide a loop or pin *l*, so that the scoop *g*, being raised by means of the piston-rod *i*, may be held in such position by the loop or pin *l* being hung from the hook *k*.

50 I find that the piston and cylinder are well adapted for lifting the scoop and its heavy load, and therefore prefer to employ the same. Any suitable lift may, however, be employed, such as lever, screw, ratchet, or chain-lifting
55 mechanisms.

The operation of my improved scoop is as follows: The pan *a* having been filled with the material to be crushed or worked and power applied to rotate the same, the material is
60 crushed or worked to the desired degree, water being added in the mixing of clay for brick-making. The scoop *e*, which has been suspended above the pan, is then unhooked from the hook *k* and allowed to descend and
65 rest upon the crushed material in the pan *a*, and, being in an inclined position, as the pan *a*

rotates in the direction of the arrow the crushed or worked material will be forced into the scoop *e*, filling the same. When the scoop
70 is full, steam is admitted to the cylinder *j* to raise the piston and the piston-rod *i*, connected thereto, whereby the scoop *e* is raised with its contents, and when raised to the required de-
75 gree the crane *f* is swung from its position over the pan *a*, carrying the scoop *e* with it, until it arrives at a distance beyond the edge of the pan, when by means of the handle *e*³ the scoop *e* is turned upon the rod *g* and the
80 contents of the scoop so unloaded being emptied onto a suitable table or carrier. The scoop being thus discharged is turned back to its normal position by the handle *e*³ and the crane *f* swung in the direction of the pan and
85 over the same, from which position the scoop may again be lowered into the pan to be again loaded, or it may be suspended from the hook *k* until needed.

By this arrangement I am enabled to remove the crushed or worked material from a pan of the ordinary size by filling the scoop
90 twice, and in about thirty seconds, the customary manner of removing by means of shovels in the hands of workmen requiring, as stated, from seven to eight minutes. The
95 clay or ore will also be uniformly crushed or worked, as it can be removed so rapidly by my improved scoop that all the material will be acted upon by the crushing-rollers in sub-
100 stantially the same length of time, the difference in time between that removed first and that removed last not being sufficient to make
105 any substantial difference in uniformity of the material crushed.

I find by practical use that by the employment of my invention in connection with mills
105 for working brick-clay, as the mill can be so quickly emptied, practically twice the amount of clay can be worked in the pan, as the old method of employing the pan occupied about
110 as much time as the working of the clay.

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

1. In combination with a clay or ore mill having a rotating pan, a scoop supported on
115 a movable frame in position to be carried over and withdrawn from the frame and to permit the scoop to be lowered into the pan, and a power-operated piston or other lifting device for lowering the scoop into the pan
120 and raising it therefrom, substantially as and for the purposes set forth.

2. In combination with a clay or ore mill having a rotating pan, a crane swinging over the pan and carrying a scoop and a power-operating piston or other lifting device sup-
125 ported on the crane for lowering the scoop into and raising it from the pan, substantially as and for the purposes set forth.

3. In combination with a clay or ore mill having a rotating pan, a scoop supported on
130 a movable frame in position to be carried over and withdrawn from the pan, said scoop

being journaled on the frame so as to be swung thereon for unloading, substantially as and for the purposes set forth.

4. In combination with the clay or ore mill
5 having a rotating pan, the crane or movable frame *f*, carrying the cylinder or lift at its end, the rod *g*, pivoted to the crane, the scoop *e*, and the bent arm *h*, connected to the lifting device, substantially as and for the
10 purposes set forth.

5. In combination with the clay or ore mill having a rotating pan, the crane or movable frame *f*, carrying the cylinder or lift at its end, the rod *g*, the scoop *e*, journaled thereon,
15 and the bent arm *h*, connected to the lifting

device and having the lower arm *h'* supporting the scoop, substantially as and for the purposes set forth.

6. The combination, with the clay or ore mill, of the scoop, the power-operated piston 20 or other lifting device, and the hook *k* and pin *l*, for supporting the scoop when not in use, substantially as and for the purposes set forth.

In testimony whereof I, the said EDWARD 25 J. MILDREN, have hereunto set my hand.

EDWARD J. MILDREN.

Witnesses:

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