

H. BURSON.
STAMP MILL.

No. 532,023.

Patented Jan. 8, 1895.

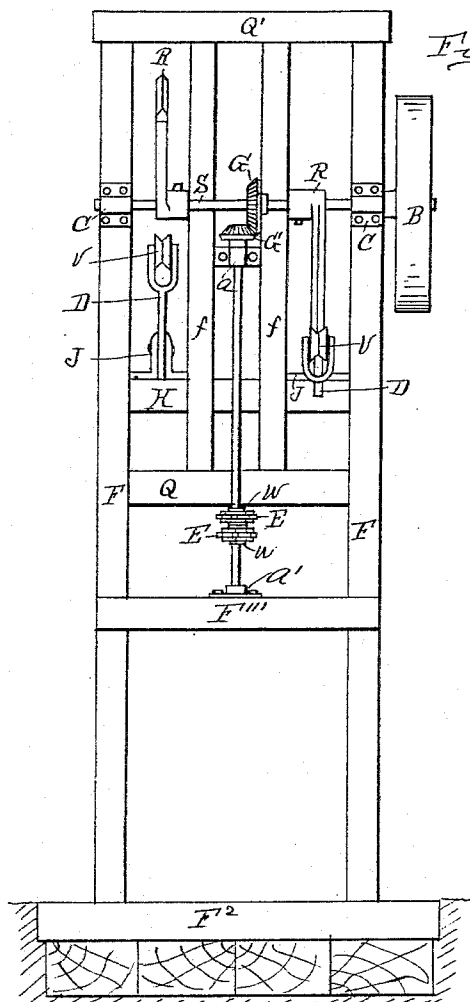


Fig. 4.

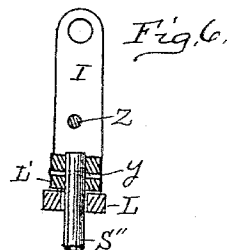


Fig. 6.

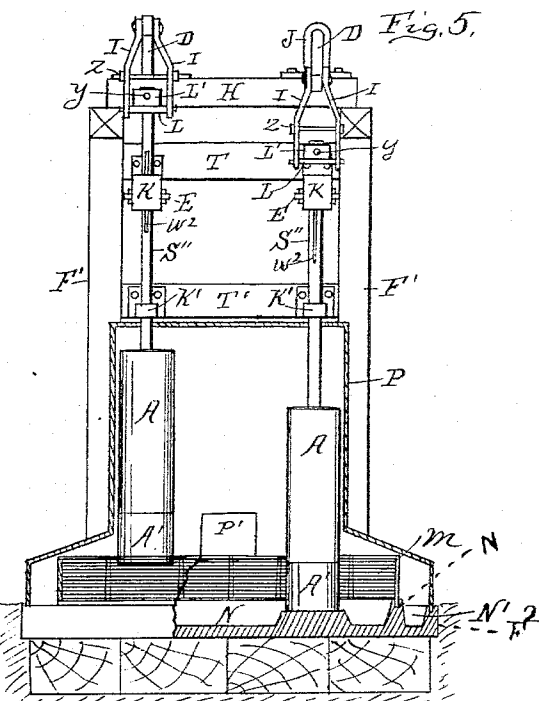


Fig. 5.

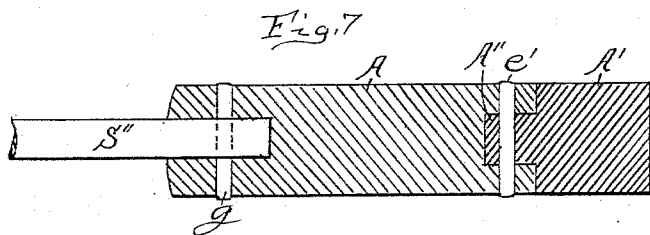


Fig. 7.

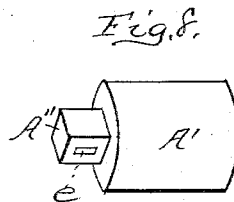


Fig. 8.

Witnesses,
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Att.

UNITED STATES PATENT OFFICE.

HARVEY BURSON, OF WICHITA, ASSIGNOR OF ONE-THIRD TO JOHN M. WARE, OF ARKANSAS CITY, KANSAS.

STAMP-MILL.

SPECIFICATION forming part of Letters Patent No. 532,023, dated January 8, 1895.

Application filed July 31, 1894. Serial No. 519,124. (No model.)

To all whom it may concern:

Be it known that I, HARVEY BURSON, a citizen of the United States of America, residing at Wichita, in the county of Sedgwick and State of Kansas, have invented certain new and useful Improvements in Stamp-Mills, of which the following is a specification, reference being had therein to the accompanying drawings and the letters of reference thereon, forming a part of this specification, in which—

Figure 1 is a side elevation of the mill; Fig. 2, a horizontal-section of Fig. 1, on line 1—1; Fig. 3, a detailed view of one of the sprocket wheels, and a portion of the drive chain-belt thereof, for rotating the mill stamp, and a cross-section of the shaft upon which said wheel is placed. Fig. 4, is a rear elevation of the mill; Fig. 5, a front elevation of the same; Fig. 6, a detailed sectional view of one of the stirrups of the mill for lifting the stamps; Fig. 7, a central longitudinal section of one of the stamps of the mill, and Fig. 8, a detailed perspective of the detachable foot, or end section, of one of said stamps.

This invention relates to certain improvements in stamp mills, of that class adapted for crushing and pulverizing ores, and consists in certain novel construction and arrangement of the parts for lifting the mill stamps, and for rotating the said stamps; which improvements are fully set forth and explained in the following specification, and pointed out in the claims.

The object of this invention is, to provide mechanism whereby heavy stamps may be alternately lifted and permitted to drop, by means of a comparatively light continuously applied rotary power, and whereby, through the agency of the same applied power, the stamps are continuously rotated; thereby crushing the ore by causing the stamps to drop upon it, and pulverizing the ore by means of rotating the stamps as they rest upon its crushed particles.

Referring to the drawings, the frame of the mill, which is preferably of wood, comprises the sills F^2 , the corner posts F and F' , the plate beams F'' framed into posts F and upon posts F' , the front cross-beams T and T' , the rear cross-beam F''' and the top cross-beam H ; the corner posts F being extended above

the plate beams F' , and braced as shown at F^3 in Fig. 1. Also between posts F is a cross-beam Q , and resting upon and fixed to said posts is a plate beam Q' , and in the space between said posts is a pair of vertical posts f and f framed at each end, respectively, into beams Q and Q' .

S is a cross-shaft boxed at C and C to posts F , a distance above the plane of beams F'' , and fixed thereon respectively between posts F and f the cams R and R , and between posts f , f , a bevel gear wheel G , and is further provided with a belt pulley B , fixed on one end thereof, which is adapted to have a belt passed about it to drive shaft S ; but however said pulley may be substituted by a crank wheel, for driving said shaft by hand power.

S' is a vertical shaft boxed to the frame at its upper end, as shown at a , and stepped in a box a' at its lower end; which box is supported by means of beam F''' , and is provided with a bevel gear wheel G' fixed on its upper end and arranged in mesh with said gear G . Said shaft also has fixed on it, a little distance above its lower end, a pair of sprocket wheels W and W .

J and J are a pair of housings fixed upon beam H , and fulcrumed in each said housing by means of a cross-bolt, or pin, d is a lever D , which levers, each, terminate at their rear end, under cams R , with forks, in which is journaled a friction sheave wheel V , and pivotally connected with the forward end portion, of each said lever, is a stirrup I comprising two side parts held from spreading apart, beyond a given distance, by means of a cross-bolt Z , and carrying at its lower portion a plate L made with a central opening. (See Fig. 6.)

A and A are the stamps of the mill, each being made with a socket in the lower end, and each being provided with a bottom end section A' made with an extension A'' fitted into said socket (see Fig. 7) where it is held by means of a cross-key e' placed through a cross-hole of the stamp portion A and a hole e of said section A' , which end sections A' are intended to be made of, what is termed, white iron, to thereby increase their wearing qualities. Fixed in the upper end of each said stamp, by means of a cross-key g , is an up-

right shaft S'' each said shaft being placed up-
through bracket boxes or bearings K and K',
which are respectively fixed to cross-beams T
and T', and placed with the upper end through
5 stirrup plate L and immediately above said
plate has fixed thereon, by means of a cross-pin
y a collar L'. (See Fig. 6.) Said bearings K are
made with an extending, down reaching, and
returned portion, as shown in Fig. 1, thereby
10 forming a recess between the two portions
through which the shafts S'' are placed, and
feathered on said shafts, respectively, in said
bearing recesses, are sprocket wheels W' W';
the said shafts S'' being grooved longitudi-
15 nally as represented at W² to accommodate
a spline of wheels W', W', respectively. (See
Fig. 5.)

E and E are sprocket chains, or chain belts,
placed one about each wheel W of shaft S'
20 and from thence respectively about wheels
W', W', of shafts S'' S'', as shown in Fig. 2.

N is the stamp box of the mill into which
the stamps drop, and operate, and into which
the ore, to be operated upon, is placed, and
25 M is a screen railing erected about the sides
of said box. It being customary to place water
with the ore being crushed and pulverized in
order that it may be pulped and removed by
the overflow of water when reduced to a pulp
30 and mingled with the water, and as the de-
scending, or dropping of the stamp causes the
water to splash, the said screen becomes nec-
essary to prevent coarse particles of ore from
being ejected from the said stamp box, but per-
35 mits the water charged with the pulped ore, to
pass off through the screen meshes, and when
such overflow, or discharge, takes place it is
caught in a surrounding trough N' of box N
which conducts it to a general discharge there-
40 from, and about the said surrounding trough
is erected a sheet iron inclosing case P which
converges above the screen railing M and
extends up and incloses stamps A so that the
splash caused by the drop of said stamps will
45 not reach beyond said trough, which inclos-
ing case is made in separable parts suitably
held together and suitably fastened down
upon the margin of said trough, and is also
provided at one side with a chute P', leading
50 to within the case, through which the ore to
be crushed and pulverized is entered.

In operation ore and water are continuously
supplied to within the stamp box, and the shaft
S is driven which likewise operates cams R
55 and R, and through the agency of gears G and
G' drives shaft S' with its sprocket wheels
W, W, which through the agency of the chain
belts E and E and the feathered wheels W',
W', drives the stamp shafts S''—S''— and
60 thereby rotates the stamps of the mill. Also
as the cams R and R rotate they alternately
engage the friction sheave wheels V, V, of le-
vers D, D, and force down that end of said
levers thereby raising the mill stamps, and at
65 such time as the said levers are forced down
the full limit of their engaging cam the cam's

terminal rides off said friction wheels, thus re-
leasing the levers which permits the mill
stamps to drop, thereby reversing the levers
to their former normal position, and as said 70
stamps drop they come upon the ore in box
N and crush it by the force of the drop, and
while the stamps rest upon the ore, prior to
being again raised, their rotary movement
upon the ore pulverizes it, and that which be- 75
comes pulverized and pulped passes off with
the discharge of water and other ore and wa-
ter takes its place.

Having thus described my invention, what
I claim as new and useful, and desire to se- 80
cure by Letters Patent, is as follows:

1. The combination with the frame of the
shaft S and its bearings; the shaft S' and its
bearings; the gears G and G' of said shafts;
the cams R and R fixed upon said former 85
shaft; the sprocket wheels W, W, fixed upon
said latter shaft, the levers D and D ful-
crumed in housings of the frame; the stamps
connected with, and adapted to be raised by,
said levers, by the action of said cams upon 90
said levers, and to drop when said levers are
disengaged from said cams; the sprocket
wheels feathered upon the shafts of said
stamps; the chain belts E and E placed about
said former and latter sprocket wheels; the 95
stamp box N provided with the surrounding
trough and with the screen-railing; and the
inclosing case P provided with the chute P',
substantially as and for the purpose set forth.

2. The combination with the supporting 100
frame and bearings thereof, the horizontal
rotary shaft S, the cams R and R fixed on said
shaft; the vertical rotary shaft S'; the chain
wheels W, W, fixed on said shaft; the levers
D, D fulcrumed in housings of said frame, and 105
provided with friction wheels adapted to be
engaged by said cams; the stamps A, A, pro-
vided with the upright shafts S'', S'', con-
nected with said levers; the chain wheels
feathered on said shafts; the bracket arms, or 110
bearings, K for preventing vertical movement
of said chain wheels, the chain belts E and E
placed about said chain wheels for imparting
a rotary movement to said stamps; and the
means for driving said shafts, substantially 115
as and for the purpose specified.

3. In the stamp mill described, the combina-
tion of the levers D, D; the cams R, R, for
actuating said levers and the shaft for sup-
porting and operating said cams; the stamps 120
A—A and shafts C''—C'' thereof; the stirrup
links I jointed to and depending from the
ends of said levers; the perforated plates L
sleeved on the upper end portion of said
stamp shafts, and jointed to said stirrup links; 125
and the collars L' fixed on the ends of said
stamp shafts above said plates, substantially
as and for the purpose specified.

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Witnesses:

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