

O. C. PURKEYPILE.

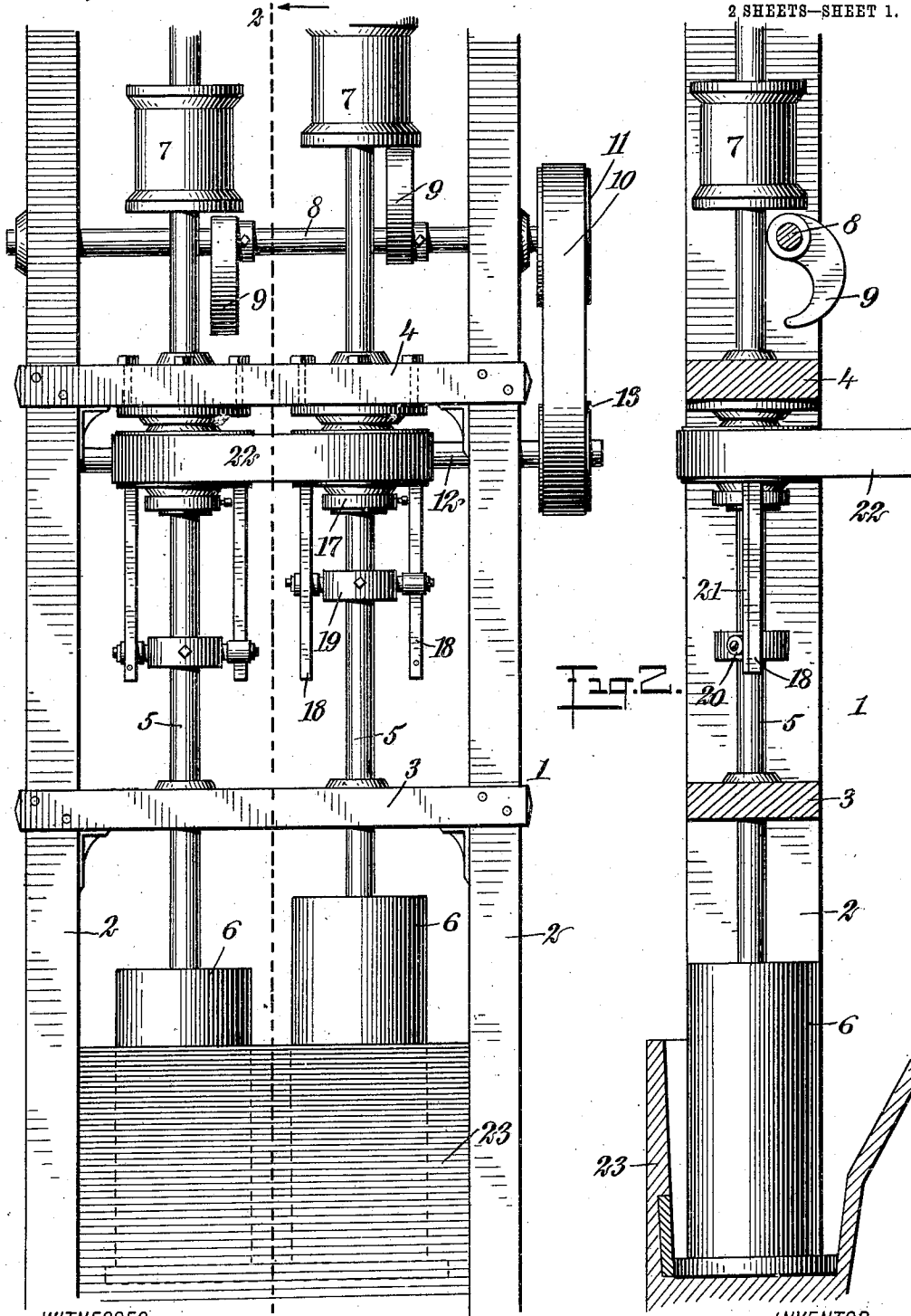
STAMP MILL.

APPLICATION FILED NOV. 9, 1908.

934,354.

Patented Sept. 14, 1909.

2 SHEETS—SHEET 1.



WITNESSES

W. C. Purkeypile
J. D. Munn

Fig. 1.

Fig. 2.

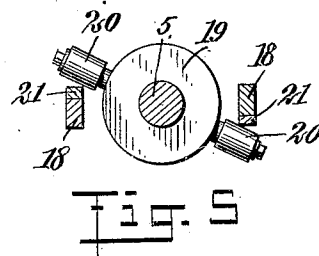
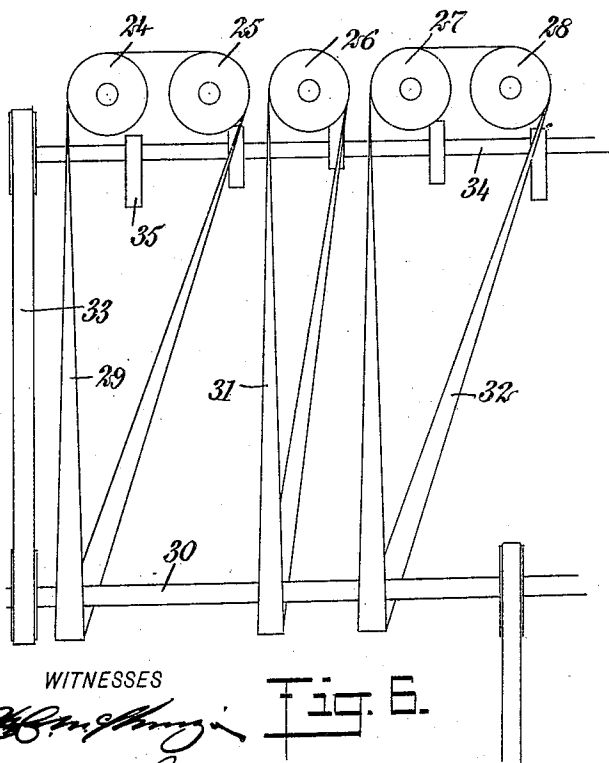
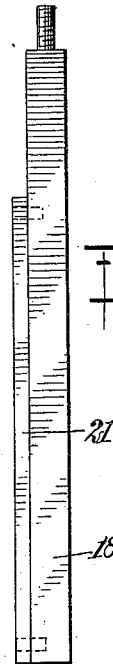
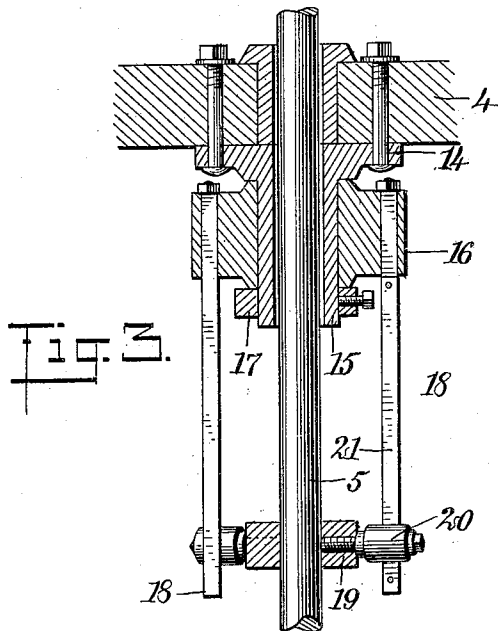
INVENTOR

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WITNESSES
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Fig. 6.

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UNITED STATES PATENT OFFICE.

OLIVER COURTLAND PURKEYPILE, OF ASHLAND, OREGON.

STAMP-MILL.

934,354.

Specification of Letters Patent. Patented Sept. 14, 1909.

Application filed November 9, 1908. Serial No. 461,678.

To all whom it may concern:

Be it known that I, OLIVER COURTLAND PURKEYPILE, a citizen of the United States, and a resident of Ashland, in the county of Jackson and State of Oregon, have invented a new and Improved Stamp-Mill, of which the following is a full, clear, and exact description.

This invention relates to stamp mills such as used for reducing ores, as quartz ores bearing gold, silver, or other metals.

The object of the invention is to provide improved means for driving the stamps or hammers in such a way that they will rotate as they strike, in this way producing a desirable grinding action which brings about a very fine reduction and uniform grinding of the ore treated.

The invention consists in the construction and combination of parts to be more fully described hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a front elevation of a stamp mill constructed according to my invention, the upper portion of the mill being omitted; Fig. 2 is a vertical section through the mill taken on the line 2—2 of Fig. 1; Fig. 3 is a vertical section taken on the axis of one of the stems of the hammers or plungers, and illustrating especially the means for rotating the hammers as they reciprocate; Fig. 4 is a side elevation of a driving bar or dog by means of which the hammers are rotated; Fig. 5 is a cross section taken through the stem of one of the hammers and illustrating the manner in which the dogs rotate the hammers; and Fig. 6 is a diagrammatic view illustrating the arrangement of belting which I adopt for driving the hammers of the stamp mill.

Referring more particularly to the parts, and especially to Figs. 1 and 2, 1 represents the frame of the mill, which comprises a pair of standards 2, 2, arranged opposite to each other and connected by cross bars 3 and 4, as shown. The stems 5 of the hammers 6 are guided vertically through the cross bars 3 and 4, and the upper ends of the stems are provided with tappets or heads 7 which are rigidly attached to the stems, as shown. In the standards 2, 2, above the

cross bar 4, I provide a cam shaft 8 having cams 9 mounted thereupon, which are adapted to engage the lower faces of the tappets 7 so as to raise the plungers alternately, as will be readily understood. As the shaft 8 rotates, the cams pass from under the tappets so as to permit the plungers or hammers to fall in the usual manner. The cam shaft 8 is driven continuously by means of a belt 10, which passes around a belt pulley 11 on the shaft 8, said belt being driven from a shaft 12 having a belt pulley 13.

Referring now especially to Figs. 3 and 5, on the under side of the cross bar 4, I attach thimbles 14 which have tubular necks through which the stems 5 pass downwardly, as shown. On these tubular necks, dog wheels 16 are rotatably mounted, said dog wheels being held in position by keepers or keeper rings 17 attached on the lower ends of the necks. These dog wheels are provided with driving bars or dogs 18, which consist of bars which extend longitudinally downward from the wheels parallel with the stems 5. The stems 5 are provided with rigid collars 19 respectively, and these collars are provided with radially projecting rollers 20, as indicated. The dogs 18 are adapted to rotate the rollers 20 through the medium of the stems, as indicated in Figs. 3 and 5, and the forward or driving edges of the dogs are provided with wear strips 21 attached as indicated in Fig. 4.

The dog wheels 16 are driven by a belt 22 which passes around them, as shown. From this arrangement it will be understood that when the mill is in operation, the plungers or hammers 6 may be raised alternately by the cams 9, and when the cams release the dogs, the plungers fall by gravity. As the dog wheels 16 rotate, they rotate the stems 5 so that the striking faces of the hammers are constantly rotating. This insures that the striking faces will remain flat or plain as they come against the bottom of the trough or reducing chamber 23 of the mill.

In Fig. 6, I illustrate the arrangement of belting which I adopt for driving a mill having five stems or plungers. These plungers are preferably arranged equidistant, as shown. The dog wheels 24, 25, 26, 27 and 28, are driven in groups, that is, they are combined in two pairs and a single. The two dog wheels 24 and 25 are driven by a belt 29 from a countershaft 30, while the dog wheel 26 is driven from a belt 31; the

belt 32 which is similar to the belt 29, drives the two dogs 27 and 28 from the shaft 30. A belt 33 drives the cam shaft 34 from the shaft 30 so that the cams 35 will operate to raise the plungers and let them fall in the usual manner.

If the mill has only a single stamp or plunger, I provide the arrangement of belting shown at 31. If the mill has two stamps, I adopt the arrangement of belting having a single pair. If the mill has three stamps I combine a pair with a single belt arrangement. If the mill is to have four stamps, I simply combine the two pairs. In this way with this arrangement of belting I can readily drive a mill of any number of stamps or plungers.

The rollers 20 operate beneficially to reduce the friction on the driving sides of the dogs so that the friction does not reduce the velocity of the plungers in falling.

Having thus described my invention, I claim as new and desire to secure by Letters Patent,—

1. In a stamp mill, in combination, a frame, a plunger having a stem guided vertically therein, a rotatable member mounted on said frame and having driving members extending therefrom longitudinally of said stem, a collar attached to said stem and having means for engaging said driving members whereby said driving members may rotate said stem, and means for raising and releasing said plunger.

2. In a stamp mill, in combination, a frame, a plunger having a stem guided vertically in said frame, a wheel rotatably mounted on said frame, dogs carried by said wheel projecting longitudinally of said stem,

a collar attached to said stem engaging said dogs, means for rotating said wheel, and means for raising and releasing said plunger, driven in unison with said wheel.

3. In a stamp mill, in combination, a frame, a pair of plungers having stems guided vertically in said frame, a pair of wheels rotatably mounted co-axially with said stems, a belt passing around said wheels and adapted to rotate the same continuously, dogs extending downwardly from said wheels, collars attached to said stems and engaged by said dogs in rotating, tappets attached to said stems, a cam shaft extending transversely to said stems, cams carried by said cam shaft engaging said tappets, and means for driving said cam shaft in unison with said wheels.

4. In a stamp mill, in combination, a frame bar, a plunger having a stem guided through said frame bar, a thimble having a tubular neck through which said stem passes, a dog wheel rotatably mounted on said neck, dogs carried by said dog wheel extending downwardly therefrom, a collar carried by said stem having means for engaging said dogs whereby said dogs may rotate said stem, means for driving said dog wheel, a tappet on said stem above said frame bar, and a cam for engaging said tappet and raising said stem.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

OLIVER COURTLAND PURKEYPILE.

Witnesses:

F. D. EDGINGTON,
R. L. HUGHES.