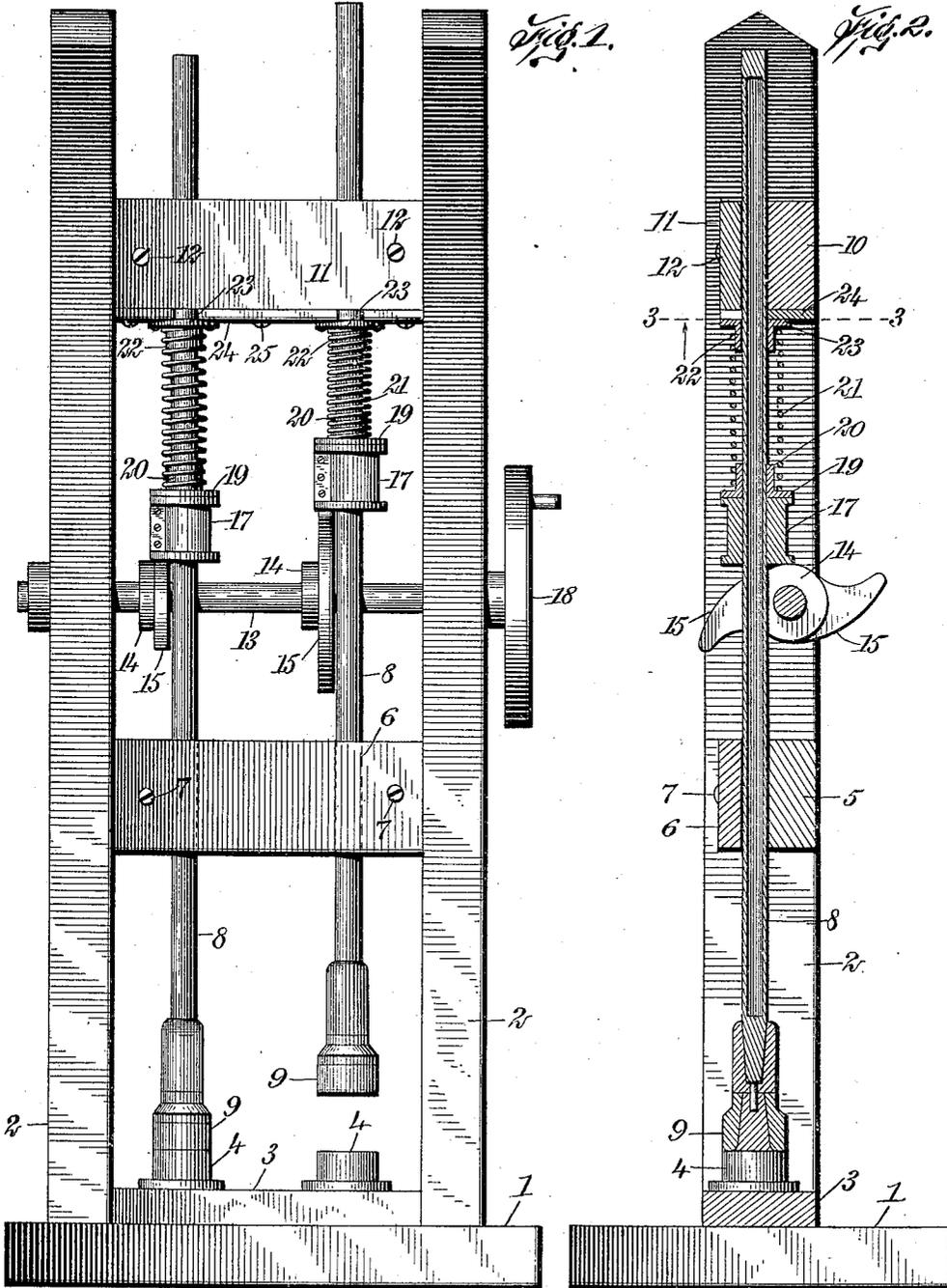


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T. E. LAMBERT.
ORE STAMP MILL.
APPLICATION FILED OCT. 26, 1905.



WITNESSES:

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UNITED STATES PATENT OFFICE.

THOMAS EDWARD LAMBERT, OF BUTTE, MONTANA.

ORE STAMP-MILL.

No. 828,126.

Specification of Letters Patent.

Patented Aug. 7, 1906.

Application filed October 26, 1905. Serial No. 284,448.

To all whom it may concern:

Be it known that I, THOMAS EDWARD LAMBERT, a citizen of the United States, and a resident of Butte city, in the county of Silverbow and State of Montana, have invented a new and Improved Ore Stamp-Mill, of which the following is a full, clear, and exact description.

This invention relates to stamp-mills; and it consists substantially in the details of construction and combinations of parts hereinafter more particularly described, and pointed out in the claims.

One of the principal objects of the invention is to provide a stamp-mill of an embodiment to overcome numerous disadvantages and objections encountered in the use of many other structures of the kind hitherto devised.

A further object is to provide a stamp-mill which is simple in construction and comparatively inexpensive to manufacture or install, besides being thoroughly effective and reliable for its purposes and possessing the capacity for hard continuous service.

The above and additional objects are attained by means substantially such as are illustrated in the accompanying drawings, in which—

Figure 1 is an elevational view of a stamp-mill embodying my improvements. Fig. 2 is a transverse sectional view thereof, and Fig. 3 is a sectional view on the line 3 3 of Fig. 2.

Before proceeding with a more detailed description it may be stated that in the form of my improvements herein shown I employ a stamp-mill comprising a suitable supporting-frame for the operative parts of the mill, together with a battery of specially-constructed stems, carrying at the lower ends thereof specially-constructed shoes which cooperate with the usual dies in the crushing of ores and the like.

Special means are employed for preventing friction between the stamp-stems and the usual actuating-springs therefor; the construction and organization of the said operative parts of the mill being such that a greater number of drops or descending movements of the stem may be had per minute than hitherto, while the parts are considerably lighter in weight, thereby enabling the shoes to be carried down upon the dies more forcibly, with the result that a greater quantity of ore may be crushed in a given time than is possible with many stamp-mills at present in use.

While I have herein represented my improvements in a certain preferred embodiment, it will be understood, of course, that I do not limit myself thereto in precise detail, since immaterial changes therein may be made coming within the scope of my invention.

Reference being had to the drawings by the designating characters thereon, 1 represents the base of the supporting-frame of my improved stamp-mill, mounted upon which are suitable uprights 2, connected together at their lower ends by means of a sill or platform 3, upon which are located any desired number of crushing-dies 4, employed in the battery of the mill, the said uprights 2 being also connected together by means of a beam 5, provided with a detachable face-plate 6, secured thereto by means of screws 7 or in any other suitable way, as shown, the adjacent surfaces of said beam and said face-plate 6 being correspondingly notched at suitable intervals, by which to form vertical openings through which extend the stamp-stems 8, the beam 5 and face-plate 6 thereby constituting a guide for said stamp-stems. The stems are provided at the lower ends thereof with suitable shoes 9, preferably formed of "chrome-steel," as light as possible commensurate with the amount of work the same have to perform. The uprights 2 of my improved structure are further connected together a suitable distance from the upper ends thereof by means of another beam 10, having a face-plate 11, secured thereto in any suitable manner, as by means of screws 12, said beam and face-plate being correspondingly notched on their adjacent surfaces in alinement with the notches in the beam 5 and face-plate 6, so as to also form vertical openings through which work the stamp-stems 8, the beam 10 and face-plate 11 thereby also forming a guide for said stamp-stems. It will thus be seen that by detaching the face-plates 6 and 11 from the beams referred to any particular one or number of the stamp-stems may be removed from the mill for any purpose desired, it being understood that as many of the stamp-stems may be employed in the battery as may be required in use, although but two of the same have been herein shown.

Supported by suitable bearings therefor in the uprights 2 is a shaft 13, on which are mounted the hubs 14 of the reversely-disposed curved cams 15 for engaging the tap-

pets 17, applied to the stems 8 to move there-
 with, one end of the shaft 13 being provided
 with a suitable crank 18, by which the shaft
 may be rotated from a source of power (not
 5 shown) in the usual way. Seated upon each
 of the tappets 17 is the flange 19 of a collar
 20, while seated upon said flange and inclos-
 ing said collar is a coiled spring 21, the coils
 10 of which are of greater internal diameter
 than the external diameter of the stamp-
 stem with which the said spring is associated,
 it being shown more clearly in Fig. 2 that a
 similar collar 22 is fitted within the upper
 coils of the spring and has a flange 23 corre-
 15 sponding to the flange 19 of the collar 20, it
 being mentioned that the compression of the
 spring takes place between said flanges, as
 will be apparent. The flange 23 of the collar
 20 22 may be supported by the upper coils of
 the spring without other support, and the in-
 tended operation of the several sets of de-
 vices referred to will take place in the manner
 desired. However, it is preferable in some
 25 instances to secure the flange 23 of each col-
 lar 22 rigidly in place, and therefore I have
 herein included a plate 24, secured to the
 under side of the beam 10 in any suitable
 way, as by means of screws or bolts 25, said
 plate having in the inner edge thereof a notch
 30 26 (see Fig. 3) for each stamp-stem 8, and to
 said plate 24 the flange 23 of each collar 22 is
 secured in any suitable manner, as by means
 of bolts or screws 27. The notches in the
 plate 24 correspond with the openings in the
 35 guides for the stamp-stems, and it is appar-
 ent that as the shaft is rotated the tappets 17
 will be engaged by the two sets of the herein-
 before-mentioned reversely-disposed curved
 cams 15, it being mentioned that the cams of
 40 the two said sets thereof occupy different po-
 sitions on the shaft 13, by which to cause one
 stamp-stem and its shoe to be forced down-
 wardly on its corresponding die by means of
 the appropriate actuating-spring 21, while
 45 the other stamp-stem and its shoe will be
 forced upwardly by the appropriate actuat-
 ing-cam therefor, and so on repeatedly dur-
 ing the operation of the mill, thus to carry
 out the usual ore stamping or crushing oper-
 50 ations. It should be mentioned that each of
 the stamp-stems 8 is hollow, and conse-
 quently lighter in weight and more easily
 handled, besides enabling the same to be
 more forcibly actuated or driven by its
 55 spring with a considerable saving of power.
 From the foregoing description it will be
 seen that the collars at the ends of the
 springs 21 constitute guides for said springs
 in the compression and expansion thereof,

which takes place during the operation of the 60
 mill, and also that they prevent contact be-
 tween the springs and the stamp-stems 8,
 thereby reducing friction to the minimum, as
 well as preventing any wear of either the
 springs or the stems, all of which is a desir- 65
 atum in this class of inventions. Moreover,
 in virtue of the relation between the stamp-
 stems and springs therefor the former are
 permitted to slightly rotate with each revo- 70
 lution of the associated cams, thereby caus-
 ing the shoes to strike at different places on
 the dies and resulting in even wear of both
 the shoes and dies.

Having thus described my invention, I
 claim as new and desire to secure by Letters 75
 Patent—

1. A stamp-mill, comprising one or more
 vertical stems, having shoes at the lower ends
 thereof, dies cooperating with the shoes, tap-
 pets on the stems, a shaft, and cams thereon 80
 for engaging with the tappets, coiled springs
 on the stems, upper and lower guides for the
 stems, and means for preventing contact of
 the coils of the springs with said stems, em-
 bodying collars extending within the upper 85
 and lower coils of the springs.

2. A stamp-mill, comprising one or more
 vertical stems, having shoes at the lower ends
 thereof, dies cooperating with the shoes, tap-
 pets on the stems, a shaft, and cams thereon 90
 for engaging with the tappets, coiled springs
 on the stems, upper and lower guides for the
 stems, and means for preventing contact of
 the coils of the springs with said stems, em-
 bodying flanged collars upon the tappets, 95
 and similar flanged collars at the upper ends
 of the springs, the said collars extending
 within upper and lower coils of the springs.

3. A stamp-mill, comprising a plurality of 100
 hollow stems, shoes mounted thereupon, dies
 disposed in alinement with said stems, tap-
 pets mounted upon said stems, a revoluble
 shaft, cams mounted thereupon for engaging
 with said tappets, coiled springs encircling
 said hollow stems, a frame provided with 105
 means for guiding said stems and for sup-
 porting said revoluble shaft, and mechanism
 embodying collars extending within the up-
 per and lower coils of the springs for prevent-
 ing contact between said hollow stems and 110
 the coils of said springs.

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

THOMAS EDWARD LAMBERT.

Witnesses:

JOHN W. KIRK,
 F. GOGGIN.