E. H. MOYLE.

ORE FEEDER FOR STAMP MILLS AND THE LIKE.

APPLICATION FILED JAN. 18, 1909.

1,124,503. Patented Jan. 12, 1915

3 SHEETS—SHEET 1.

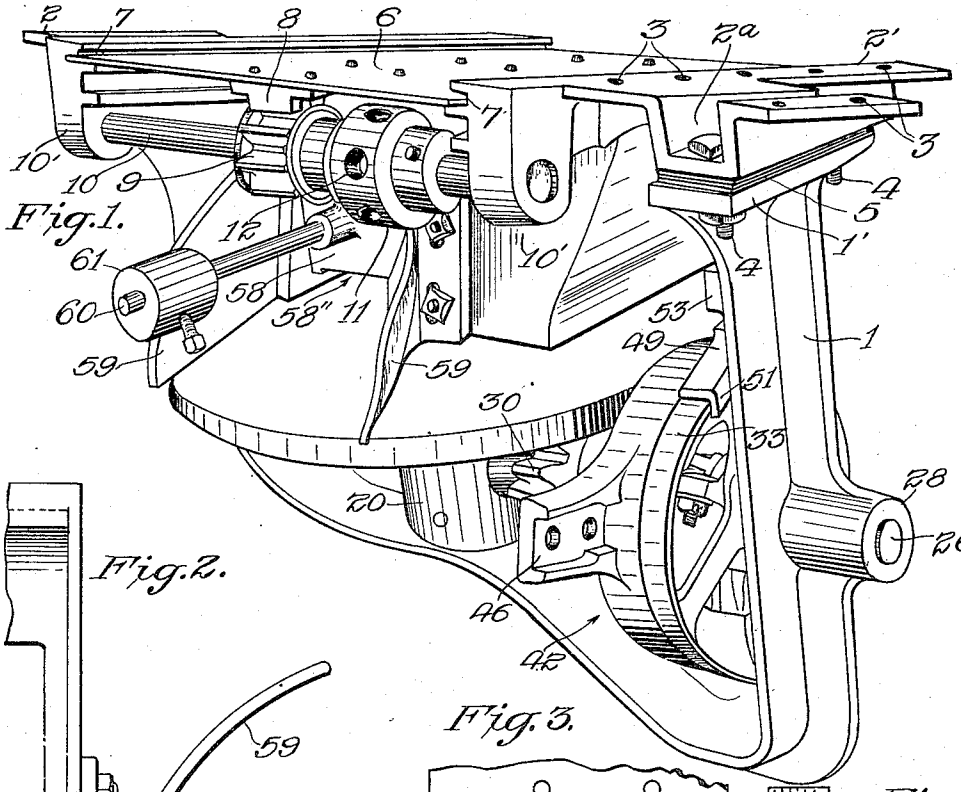


Fig. 1.

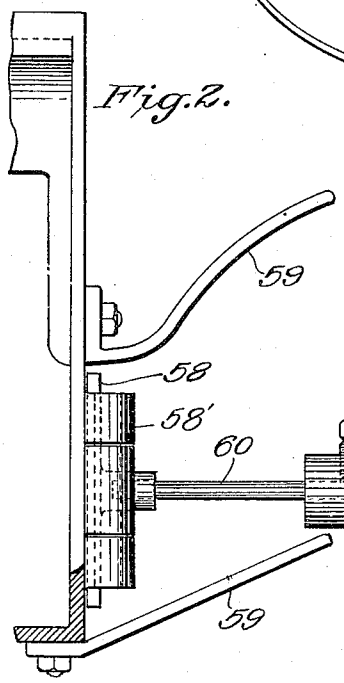


Fig. 2.

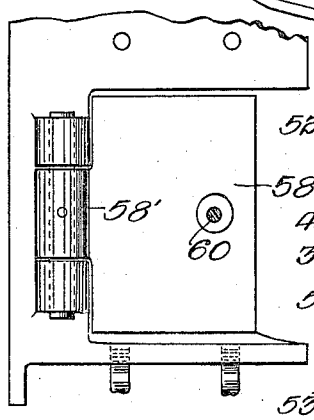


Fig. 3.

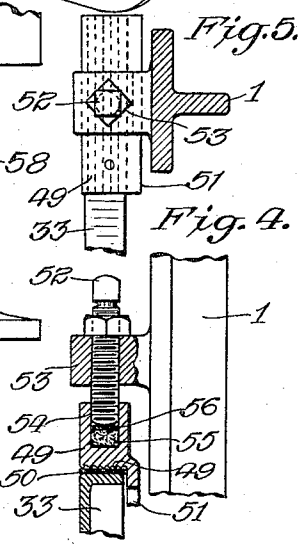


Fig. 5.

Fig. 4.

WITNESSES

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3 SHEETS—SHEET 2.

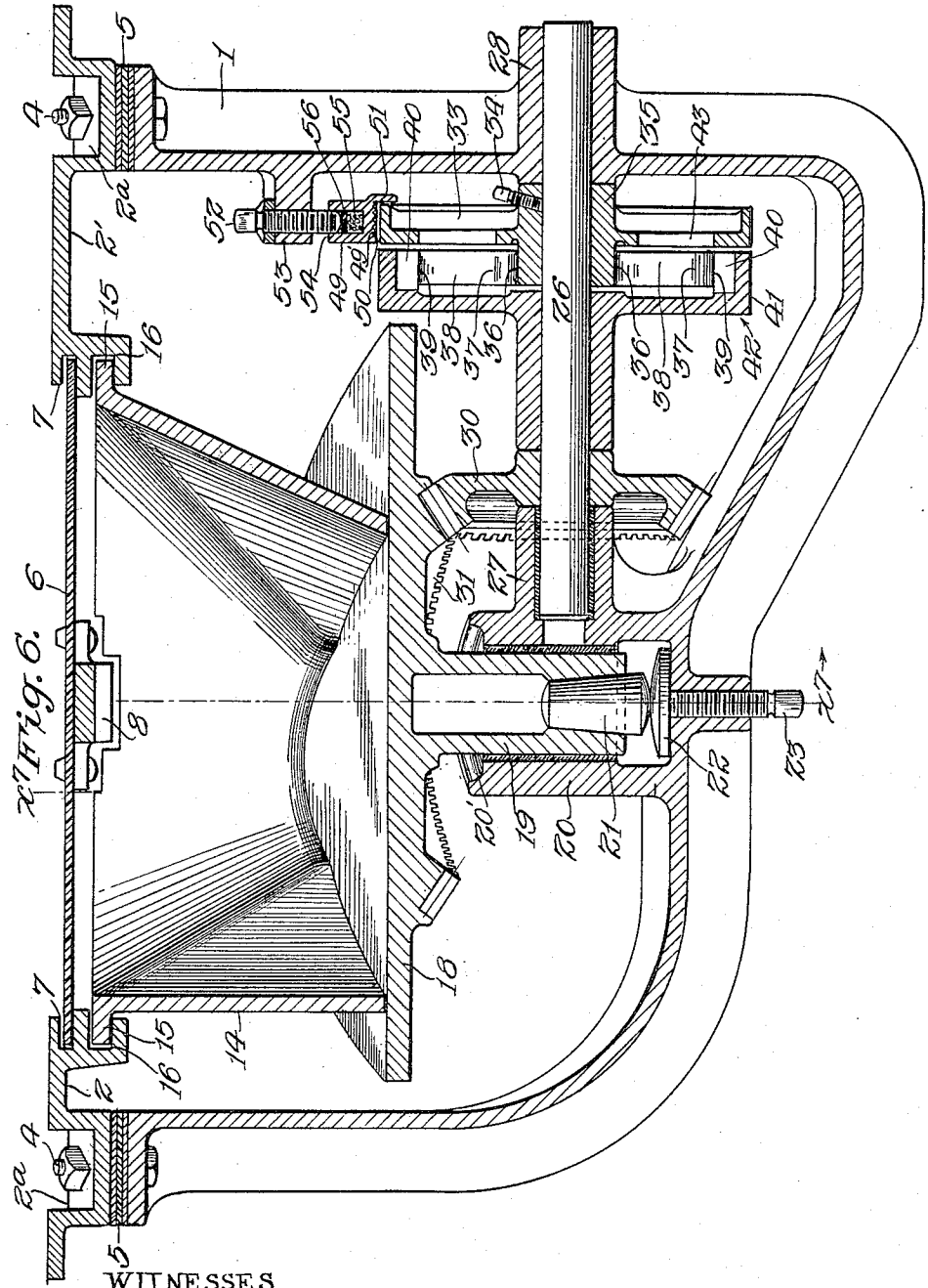


Fig. 6.

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3 SHEETS—SHEET 3.

Fig. 7.

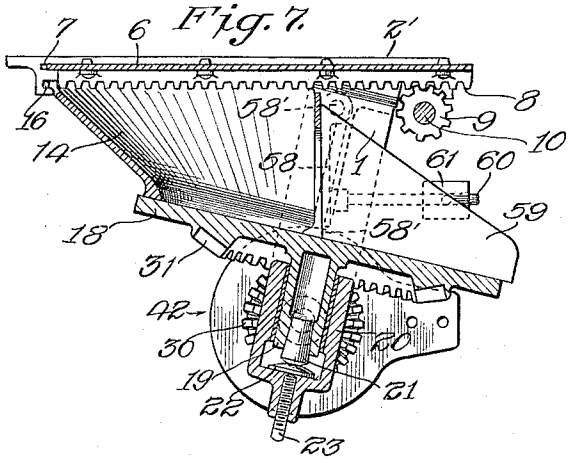


Fig. 8.

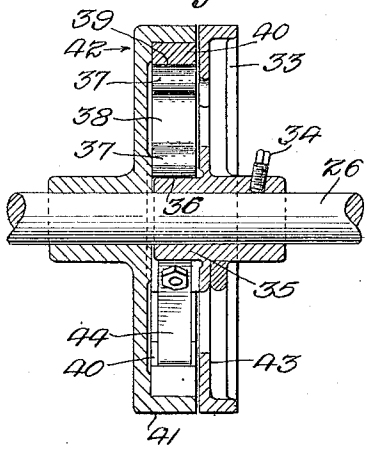
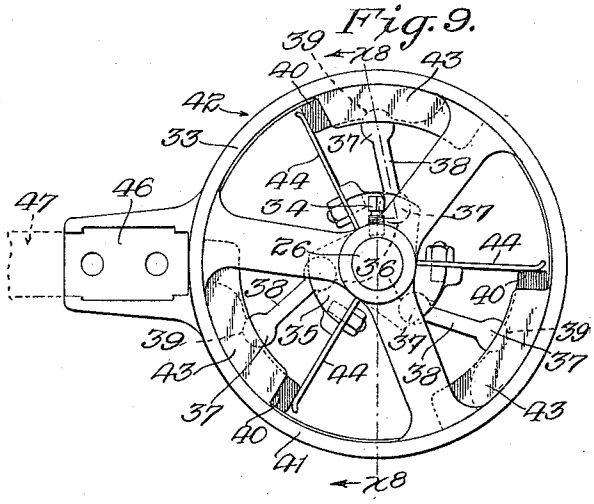


Fig. 9.



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UNITED STATES PATENT OFFICE.

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ORE-FEEDER FOR STAMP-MILLS AND THE LIKE.

1,124,503. Specification of Letters Patent. Patented Jan. 12, 1915.

Application filed January 18, 1909. Serial No. 473,019.

To all whom it may concern:

Be it known that I, EDWARD HENRY MOYLE, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Improvement in Ore-Feeders for Stamp-Mills and the like, of which the following is a specification.

The main object of the present invention is to provide an ore feeder wherein the ore passes directly from the main bin to the hopper and table of the ore feeder, whereby the table of the ore feeder is used as a distributing bottom for the ore bin when the ore bin gate is drawn fully out.

Another object of this invention is to support the hopper of the ore feeder separately from the body of said feeder so that the feeder can be removed independently of the hopper.

A further object of the invention is to obviate the liability of the ore clogging in the gate. Under the usual system of ore feeding the ore bin gate is vertical and separate from the ore feeder and discharges by a chute to the ore feeder and the gate often becomes clogged, thereby allowing the feeder to run empty and the stamps of the mill to "pound" or strike the iron die, thus causing crystallization and breaking of stamps and lessening the capacity for milling.

Another object of the invention is to so support the feeder table that it will take the thrust with less friction and can be adjusted to the hopper.

Another object of the invention is to provide an ore feeder and ore bin gate which will form a self-contained structure, but which can be separated from each other.

Other objects of the invention will appear hereinafter.

The accompanying drawings illustrate the invention.

Figure 1 is a perspective of the feeder and ore bin gate assembled and ready to be bolted to the bottom part of the ore bin. Fig. 2 is a plan of the throttling gate. Fig. 3 is a front view of the throttling gate. Fig. 4 is a vertical section of the brake block device for preventing back movement of the ore feed table. Fig. 5 is a plan view thereof showing the supporting frame in section. Fig. 6 is a vertical section on an enlarged scale taken through the center of the frame and feeder table. Fig. 7 is a transverse section on line x^7—x^7 of Fig. 6. Fig. 8 is a longitudinal section of the clutch for driving the ore feeder. Fig. 9 is an end elevation of the clutch.

1 designates the frame of the ore feeder and 2 and 2′ the top plates or members thereof which are adapted to be fastened to the bottom of an ore bin at the discharge opening thereof as by suitable bolts or other fastening means, the said top plates 2 being provided, for example, with holes 3 to receive such fastening means.

It is preferred to make the frame 1 separable from the top members 2, 2′, which are attached to the bin, the member 1 being fastened to the members 2, 2′ by means of bolts 4 engaging under a flange 1′ at each end of member 1, and seated in channels 2^a in the top members. Shims 5 may be provided between the said member 1 and the members 2, 2′ to adjust the relative height of the member 1 and the parts supported thereby, and to adjust the face of ore feed table to bottom face of hopper, these shims providing for angular adjustment of the table, by placing more shims on one side or the other, so as to bring the ore feed table into adjustment with the bottom of the hopper.

The gate consists of a horizontal plate 6 sliding in ways 7 on the two top members 2, 2′, said gate having on its under face a rack 8 engaged by a pinion 9 on a shaft 10 which is journaled in brackets 10′ on the top members 2, 2′, said shaft 10 having a capstan collar 11 provided with holes 12 for the reception of suitable operating means such as a capstan bar.

A hopper 14 is supported on the top members 2, 2′ by means of flanges 15 on said hopper, said flanges being seated and engaging in ways 16 on said top members. The bottom of the hopper is inclined to correspond with the surface of the inclined ore feed table 18. Said ore feed table is mounted to rotate on an axis perpendicular to its own plane, the table having a central stud 19 journaled in a vertical bearing 20 on the frame 1. To reduce the friction to a minimum, said stud 19 has at its lower end a removable plug or frusto-conical pin 21 seated in a corresponding recess in the bottom of the stud 19 and having a rounded lower end resting on a convex plate or disk 22 adjustably supported by a screw 23 screwing in the frame 1 and enabling the

height of the table to be adjusted. Parts 21, 22 may be of hardened steel. Bearing 20 is recessed at 20′ to form an oil chamber, the bearing being flooded with oil.

Suitable driving means are provided for the ore feed table consisting, for example, of a shaft 26 journaled in bearings 27, 28, on the frame 1 and carrying a gear 30 engaging a bevel gear 31 on the bottom of the ore feed table. Said shaft also carries a wheel 33 fastened thereto by screw 34, said wheel having a hub 35 provided with recesses 36 in which rest cylindrical enlargements 37 on the inner ends of bars 38, said bars having similar enlargements 37 at their outer ends resting in recesses 39 in friction blocks 40, said blocks fitting within the cylindrical rim 41 of a wheel 42 which is loosely mounted on shaft 26. Springs 44 secured to the hub 35 engage at their outer ends with the friction blocks 40 tending to move the same in the position in which the bars 38 would be straightened or moved more radially with reference to the wheel 42. Keeper plates 43 are provided on wheel 33 to retain blocks 40 in place and to hold the inner ends of bars 38 in place. The wheel 42 is provided with a socket 46 for reception of suitable operating means, for example, a bar or lever, indicated in dotted lines in Fig. 9, connected in the usual manner to the stem of a stamp mill to operate the wheel 42 by the vertical reciprocation of the stamp stem so that a definite charge of ore is fed for each drop of the stamp. Referring to Fig. 9 in the downward movement of this operating part 47, the tendency of the motion of wheel 42 is to tip the bars 38 at a greater inclination to the radial direction, thereby loosening the clutch and causing the parts to move freely, whereas in the upward movement of member 47 the bars 38 are tipped into a more radial direction or "straightened" so that they press outwardly on the friction blocks 40 and cause said blocks to grip the rim of wheel 42 and to transmit the motion from said wheel to the hub 35 and to the shaft 26 connected thereto. In order to prevent the shaft from taking up, in part, the motion of part 47 in its downward stroke brake means is provided consisting, for example, of a shoe 49 embracing the part of the rim of wheel 33, said shoe having a roughened lower face 49′, and a leather facing 50 being secured by means of rivets or otherwise to this face to give a frictional surface for engagement with the said rim. Said shoe is further provided with a flange 51 extending over the side of the wheel 33 to hold the shoe from twisting, and is adjustably supported by means of a screw 52 working in a bracket 53 on frame 1 and bearing in a socket 54 in the shoe, a rubber pad 55 being provided in the socket with a follower plate 56 between the pad and the screw, whereby the pressure of the shoe on the wheel 33 may be adjusted.

Hopper 14 is provided with a throttling gate 58 and with deflector wings or walls 59, extending from said gate to the delivery edge of the table. Gate 58 is hinged to the hopper at 58′, so as to swing in a vertical plane, and has an arm 60 provided with an adjustable weight 61 to hold the gate yieldingly to closed position.

The feeder is attached to the bottom of the bin, as indicated in Fig. 7, by means of bolts or other fastening devices passed through the holes 3 in the top members 2, 2′. Gate 6 and hopper 14 are slid into position the shaft 10 then inserted and on making the proper operating connections to the stamp the device is ready for operation. It will be understood that the hopper 14 is slid back until its bottom just clears the table, the horizontal movability of the hopper in its guides 16 serving for adjustment of the clearance.

The operation is as follows: At each movement of the stamp mill the shaft 26 is given a partial rotation through the clutch means 33, 42, above described, such partial rotation being communicated to the feed table 18 by the gearing 30, 31. The center of the hopper is located to one side of the axis of rotation of the feed table and the direction of rotation is such that the portion of the table under the hopper moves as a whole in a forward and downward direction with the result that the ore resting thereon is carried forward toward the throttling gate 58. Said throttling gate does not quite reach to the table, leaving a feed slot 58 between the bottom of the gate and the table, and the material carried forward by the motion of the table passes through this feed slot and downward between the guide wings 59 into a suitable chute or other delivery means for conveying it to the stamp mill. It will be seen that when the sliding gate 6 is fully opened the ore feed table forms practically a moving bottom for a portion of the bin and that there is no possibility of clogging, as the material falls by gravity directly onto this moving bottom and is carried forward positively. In case any unusually or unduly large material reaches the throttling gate, the material will back up until released by the operator lifting said gate whereupon the motion of the table will close the gate. If a hammer or other object liable to injure the stamps accidentally passes onto the ore, it will be caught by this means and may be removed by the operator. When it is desired to clear the feeder for inspection or repairs the sliding gate 6 may be closed by means of the pinion 9 operated by the capstan device 11 and the machine operated until the hopper is clear. The hopper 14 may then be slid out of its

supporting grooves 16, leaving the whole table and the hopper separate for inspection and repair. The entire ore feeder is self-contained, that is, it can be removed bodily from the bin with all its appurtenant parts, or, if desired, the frame 1 with the ore feed table and other parts directly connected therewith may be removed by unfastening bolts 4, leaving gate 6 and its supporting means in position.

What I claim is:—

1. The combination of an inclined rotatably mounted ore feeder table, of a hopper having its lower edge inclined correspondingly with the table, and supporting means provided with horizontal ways in which the hopper is slidable horizontally to enable it to be adjusted with its lower edge close to the table.

2. The combination with supporting means, of a hopper mounted to slide horizontally on said supporting means and having an inclined bottom, an inclined feed table, a frame on which said inclined feed table is rotatably mounted, and means at each side of the hopper for adjustably supporting said frame on said supporting means to adjust the rotary table to the inclined bottom of the hopper.

3. A self-contained ore feeder comprising a frame, an ore feeding table mounted on said frame, upper members to which said frame is detachably connected, said upper members provided with means for attachment to the bottom of a bin so as to suspend the frame and one feeding table from the bin; a hopper mounted on said upper members, and a gate mounted on said upper members above said hopper, said ore feeding table constituting a bottom for said hopper.

4. A self-contained ore feeder comprising top members provided with upper and lower horizontal ways and with means for attachment to a bin, a gate slidably mounted in said upper ways, a hopper slidably and detachably supported in said lower ways on the top members beneath the gate, a frame detachably secured to said top member and an ore feed table rotatably mounted on said frame and extending beneath said hopper, and means for vertical adjustment of the frame on the top member at each side of the ore-table, whereby the ore-table may be adjusted to the hopper.

5. In an ore-feeder, the combination with the frame, the ore feed table journaled therein and a shaft connected to operate the table, of a brake wheel on said shaft, a brake shoe concentric with said wheel, and bearing thereon, said shoe being provided with a flange engaging over the side of the wheel and with a socket, and a spring member in said socket, and a screw mounted in the aforesaid frame and engaging said spring to adjust the pressure of the brake shoe.

6. In an ore feeder, the combination with an ore feed table, of means for rotating the same comprising an operating shaft and a clutch for said shaft consisting of two wheel members, bars extending between said members obliquely to a radial direction and having a pivotal connection at one end with one of said members, friction blocks having a clutching engagement with the end of said members and having a pivotal connection with the other ends of said bars, springs for moving said friction blocks to clutching position, and keeper plates on the first named of said members for retaining said friction blocks in position.

7. In an ore feeder, the combination of an ore feed table, a gate for controlling supply of material to said ore feed table and located approximately horizontally with the ore feed table, and supporting means for fastening the ore feed table and gate together, said supporting means being provided with means for attachment to the bottom of an ore bin.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 9th day of January 1909.

EDWARD HENRY MOYLE.

In presence of—

ARTHUR P. KNIGHT,
FRANK L. A. GRAHAM.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."

Corrections in Letters Patent No. 1,124,503.

It is hereby certified that in Letters Patent No. 1,124,503, granted January 12, 1915, upon the application of Edward Henry Moyle, of Los Angeles, California, for an improvement in "Ore-Feeders for Stamp-Mills and the Like," errors appear in the printed specification requiring correction as follows: Page 2, line 104, for the reference-numeral "58" read *58"*; page 3, line 36, for the word "one" read *ore;* and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 9th day of March, A. D. 1915.

[SEAL.]

J. T. NEWTON,

Acting Commissioner of Patents.