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ORE TREATING MACHINE

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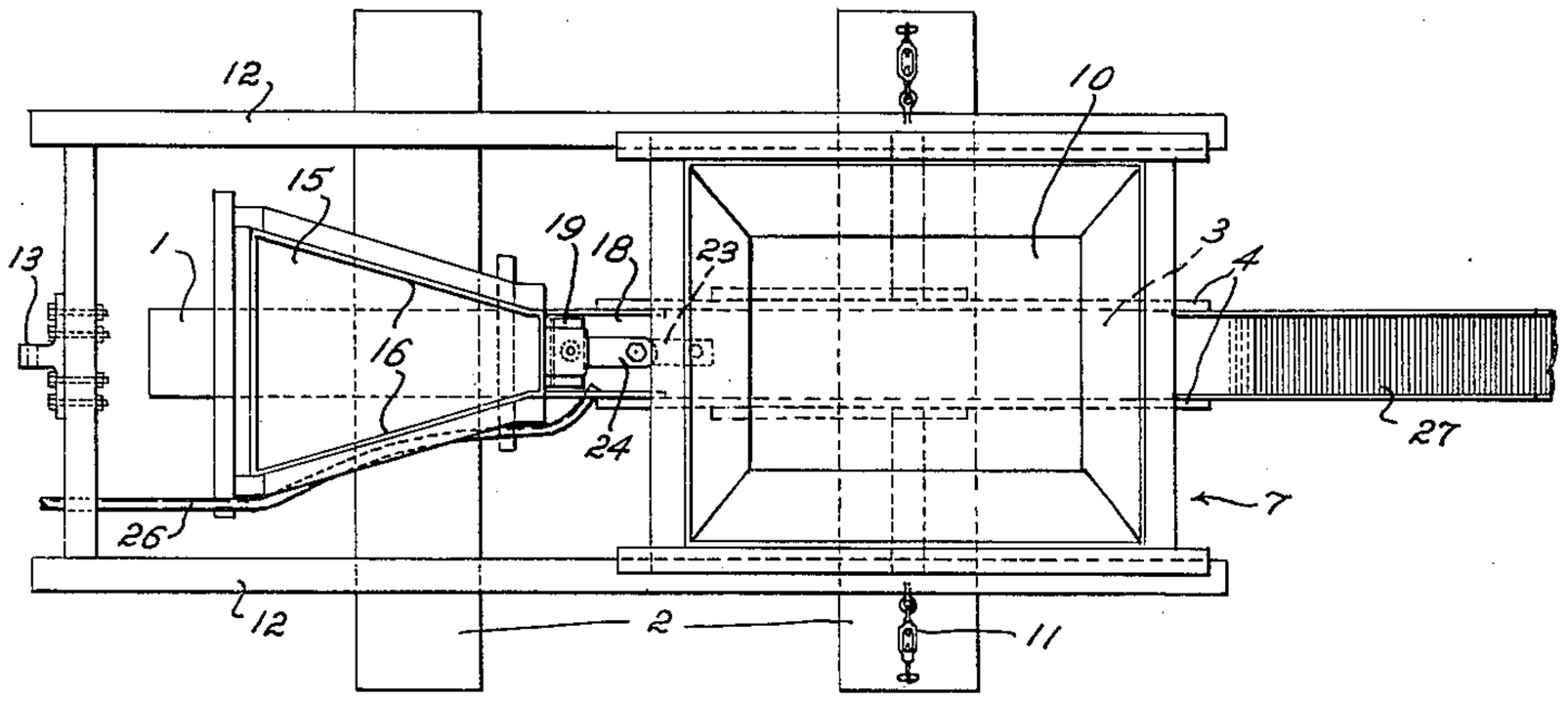

Fig. 1

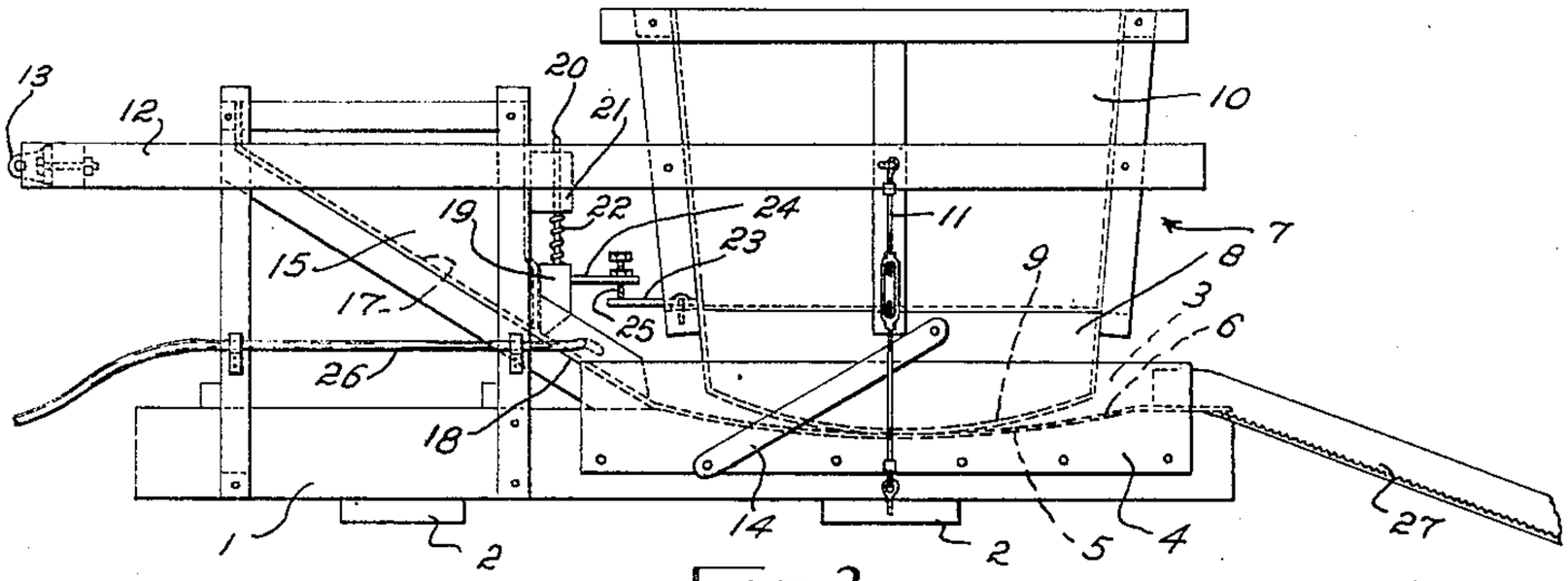

Fig. 2

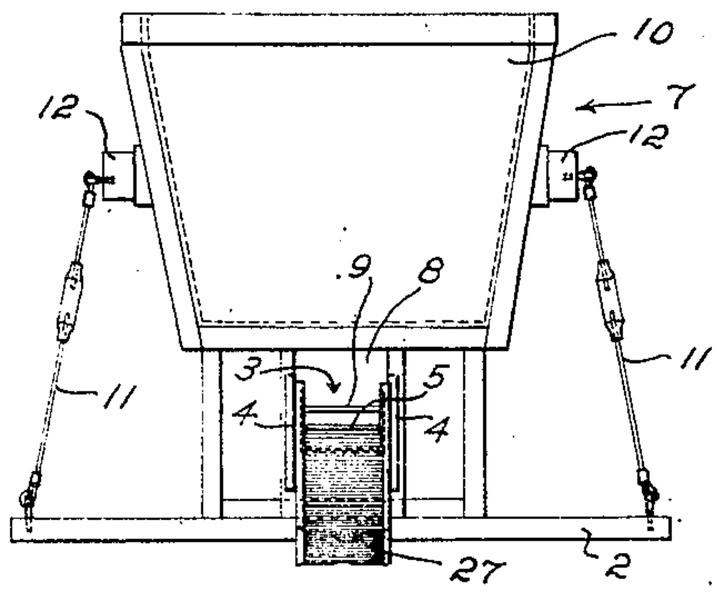

Fig. 3

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ORE TREATING MACHINE

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1 Claim. (Cl. 241—201)

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This invention relates to apparatus for crushing or pulverizing ore and the like.

It is a general object of this invention to provide a simple, inexpensive and efficient machine for extracting gold and other metals from ores. A more specific object is to provide a machine for treating ores having an ore-receiving trough, means for feeding ore to one end of the trough, means for crushing ore in an intermediate portion of the trough, means for recovering metals from the crushed ore, and means for discharging crushed ore from the other end of the trough. Another object is to provide an ore-crushing machine which is capable of convenient assembly and disassembly for ease of portability from one location to another.

Other objects, details, and advantages will become apparent from the following description, with particular reference to the accompanying drawing, in which

Figure 1 is a plan view of a machine in accordance with the invention,

Figure 2 is a side elevation, and

Figure 3 is an end elevation.

Referring to the drawing, the machine comprises an elongated base member 1, which may be supported on a pair of transversely extending frame members 2. A trough 3 is formed on the forward portion of the base 1 by means of a pair of plates 4, preferably metal, which are bolted to the sides of the base and extend upwardly therefrom. The bottom of the trough is preferably covered with a metal plate 5 having a longitudinally concave crushing surface portion 6. Seated upon the portion 6 is a crushing member 7 comprising a base 8 substantially coextensive in width with the trough and having a lower convex crushing surface covered with a metal crushing plate 9. The radius of curvature of the top plate 9 is somewhate less than that of the bottom plate 5 to permit rocking movement of the plate 9 thereon. Mounted on base 8 is a hopper-shaped bin 10 adapted to receive weighting materials such as rocks and the like. The bin may be provided with adjustable cable braces 11 mounted on a frame member 2.

Means for rocking the crushing member 7 comprises a pair of rearwardly extending arms 12 mounted on bin 10. Such arms may be actuated manually to rock the member 7 or they may be connected through fitting 13 to a suitable power means, such as a pump jack unit, which will impart a vertical swinging movement thereto. Means for stabilizing the rocking movement of member 7 comprises a metal bar 14 pivoted to

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base 8 of the crushing member and to the main base member 1.

Means for feeding ore to the rearward end of the trough 3 comprises an ore bin 15 mounted on base 1 rearwardly of the crushing member. Preferably, the bin 15 has sides 16 converging inwardly towards the trough and a bottom 17 downwardly inclined towards the trough for automatic feeding of the material. A downwardly inclined feed chute 18 delivers material from the bin 15 into the trough 3. The chute 18 is provided with a feed-interrupting gate or door 19 carried by a rod 20 reciprocally mounted for vertical movement in a frame bracket 21. A spring 22 normally holds the gate 19 in closed position.

Means for intermittently opening the feed gate in response to each alternate rocking stroke of the crushing member 7 comprises a plate 23 fixed to base 8 and extending rearwardly therefrom, a second plate 24 fixed to gate 19 and having a portion overlying and spaced above plate 23, and a pin 23 extending through the overlying portion of plate 24 and having its lower end arranged above plate 23 for engagement thereby on upwardly movement thereof. It will be observed that, as member 7 is rocked forwardly, plate 23 will engage the pin 25 and open the gate 19 to permit material to slide down the chute 18 and between the crushing plates 5 and 9. When, however, member 7 is rocked rearwardly, plate 23 will disengage pin 25 to permit closing of gate 19. Pin 25 is preferably mounted in screw-threaded engagement with plate 24 whereby the length of its downwardly projecting portion below the plate may be varied to adjust the opening movement of and consequent feed through gate 19.

A water line 26 provides a supply of water to the chute 18 to provide a steady flow of water through the crushing trough 3. The crushed ore and water is discharged from the forward end of trough 3, preferably into an inclined riffle box or trough 27, where gold or other metals may settle and be recovered from the riffles therein.

It will be observed that, in operation, a quantity of ore is deposited between the spaced rearward portions of the crushing plates 5 and 9 during the forward rocking stroke of the member 7. Thereafter, as the member 7 begins its rearward rocking stroke, the supply of ore is interrupted and the deposited ore is dealt a heavy blow by the member 7. Thereafter, the ore is further crushed and pulverized as it is flushed through the trough by the water stream.

The entire machine, with the exception of the

crusher plates, fittings, bolts, and the like, may be constructed of timbers bolted together as shown. Thus, the machine may be readily dismantled for transportation to a desired location and reassembled for use. It is particularly adaptable to the recovery of gold from small high grade bodies of ore where the size of the ore body does not warrant large tonnage mining operations. Since the crushing weight may be supplied from materials obtainable on the location of use, weight of the machine proper is reduced and transportation charges are lessened.

It will also be appreciated that the machine is susceptible to many variations in structure to meet varying conditions and is adaptable to a wide range of uses.

I claim:

A portable ore treating machine comprising an elongated base member having a longitudinally concave upper surface adjacent one end thereof, supporting members fixed to the base and extending transversely thereof, a plate fixed to each side of said base member laterally opposite said surface, said plates extending upwardly from said surface to form therewith a trough, a weight-receiving bin having a convex bottom surface rockably seated upon said concave surface, said bin having an open top to permit addition thereto and removal therefrom of weights, means for rocking the bin including an arm fixed to each side of the bin and extending towards the other end of the base member, a link pivotally connecting the bin and base member for stabilizing the rocking movement of the bin, a flexible brace on each side of the bin and connecting the latter with one of said supporting members, and an ore supply hopper mounted on said other end of the base member between said arms, said hopper having an inclined ore chute communicating with one end of the trough, the other end of the trough being open.

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