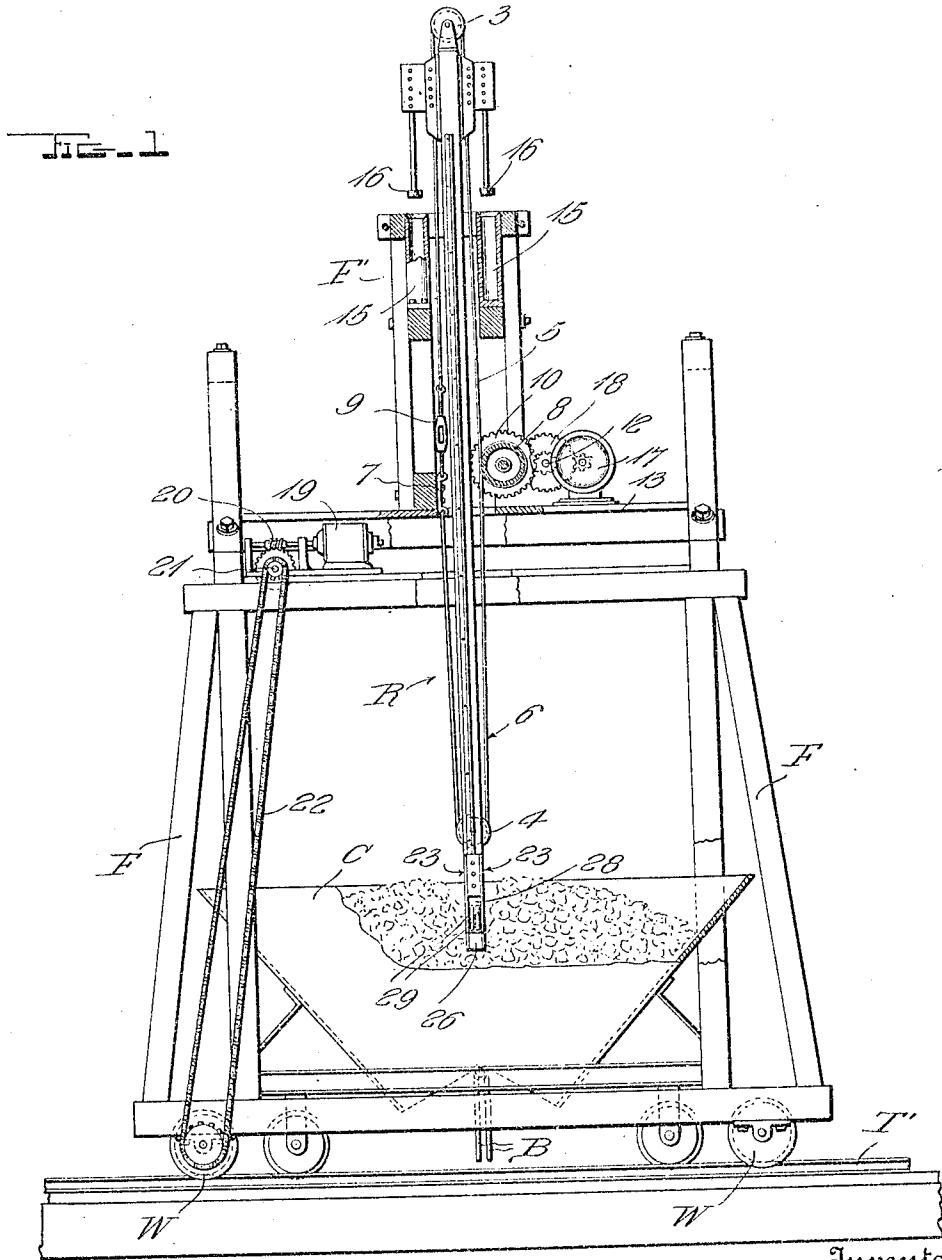


W. E. HOWLETT.  
 LOAD BREAKER.  
 APPLICATION FILED MAY 23, 1918.

Patented Jan. 21, 1919.  
 4 SHEETS—SHEET 1.

1,291,895.



Inventor

W. E. Howlett

Witness

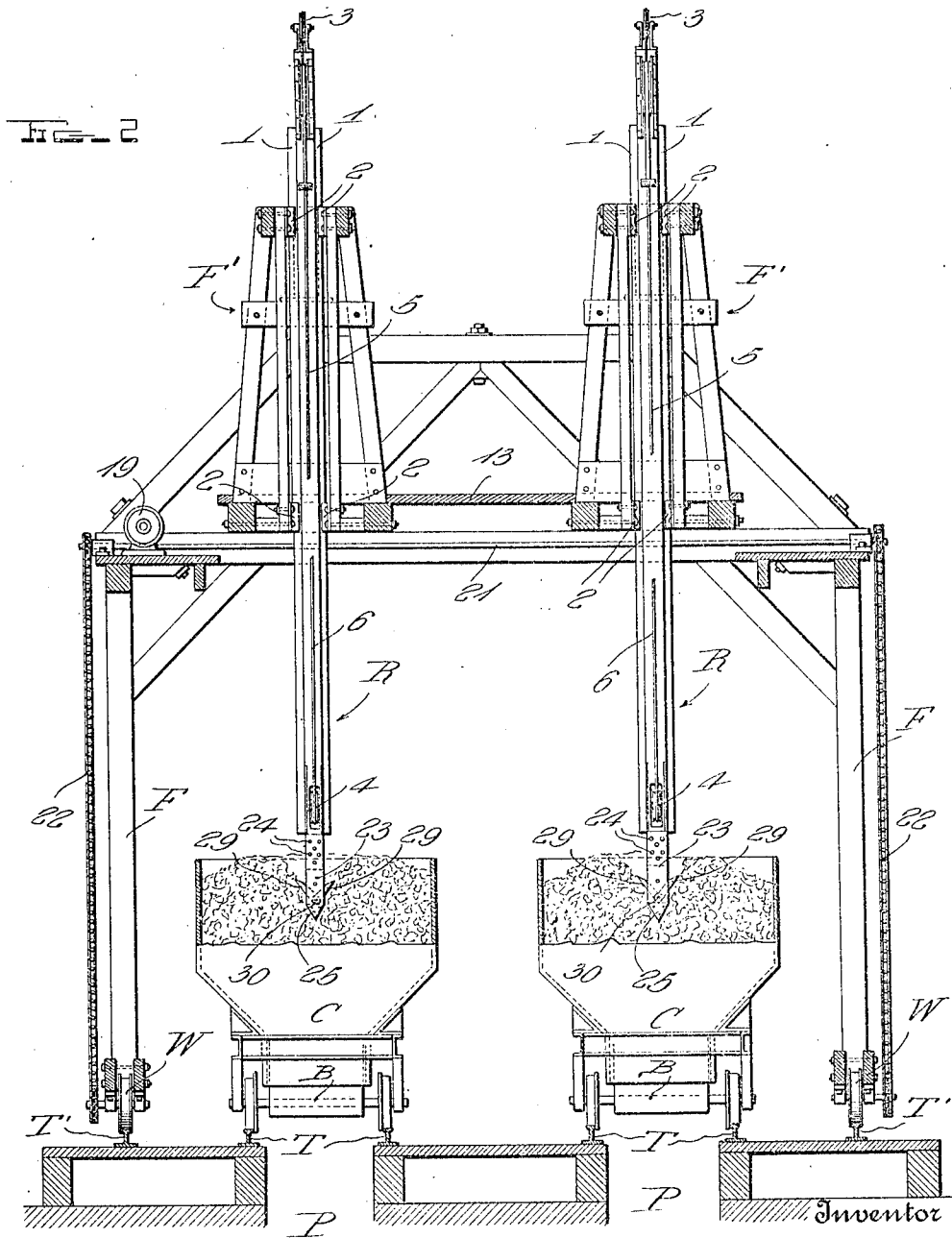
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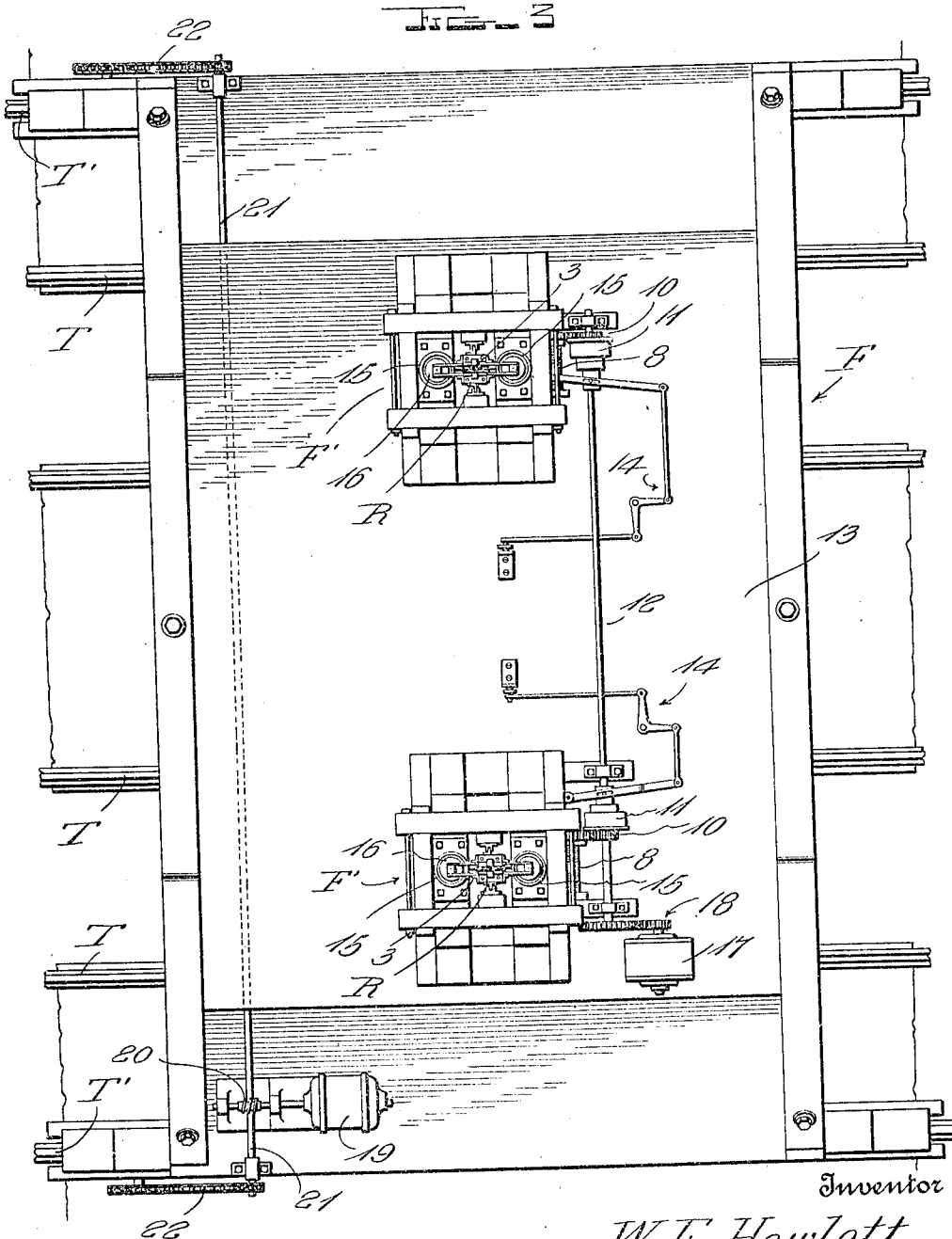
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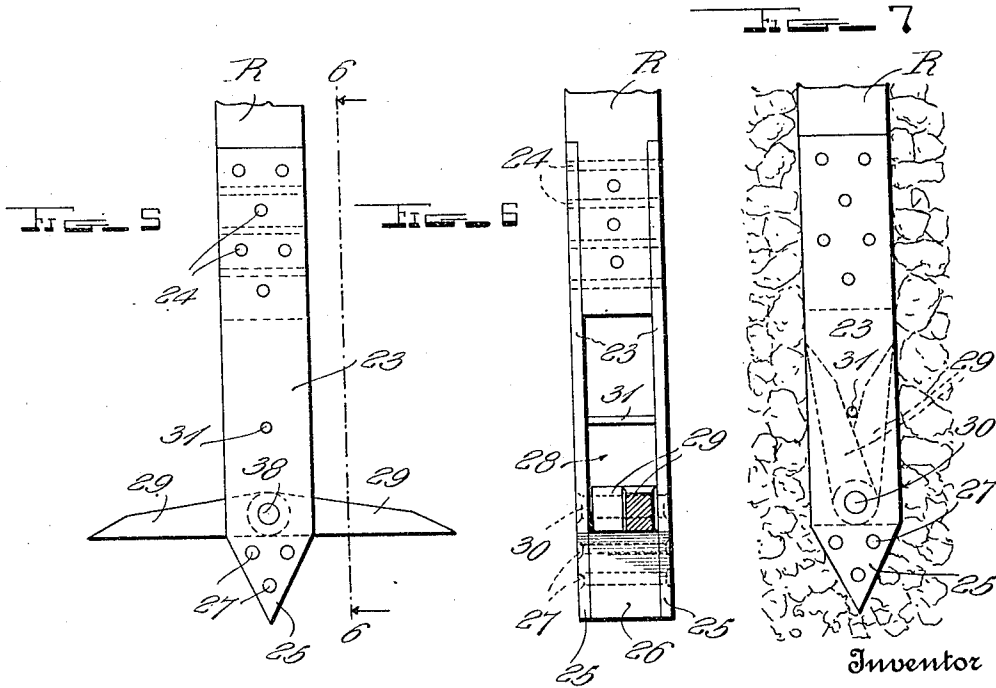
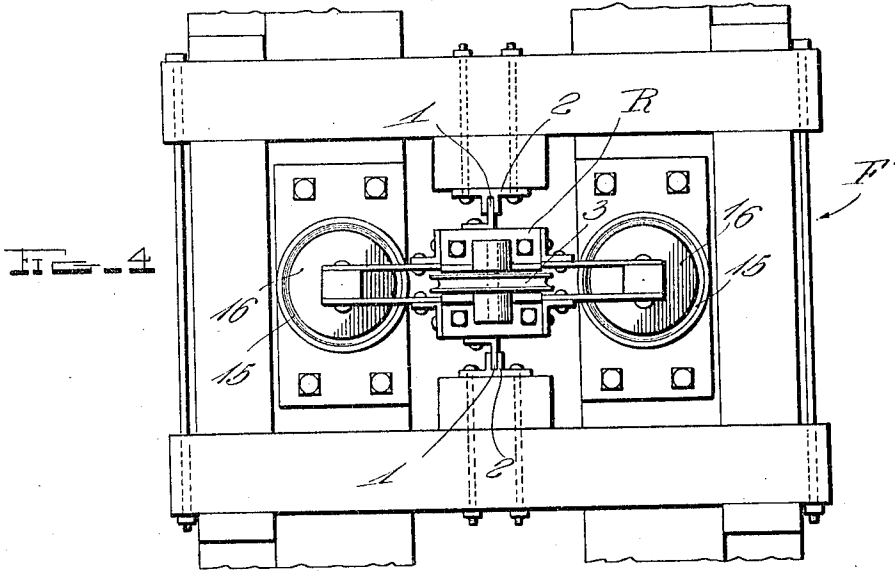
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# UNITED STATES PATENT OFFICE.

WILLIAM E. HOWLETT, OF MOLINE, ILLINOIS.

## LOAD-BREAKER.

1,291,895.

Specification of Letters Patent.

Patented Jan. 21, 1919.

Application filed May 23, 1918. Serial No. 236,146.

To all whom it may concern:

Be it known that I, WILLIAM E. HOWLETT, a citizen of the United States, residing at Moline, in the county of Rock Island and State of Illinois, have invented certain new and useful Improvements in Load-Breakers; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in load breakers and more particularly to a device of this class adapted to insure easy dumping of ore and the like from cars having downwardly swinging bottoms. It often happens that after lowering of the bottom, the ore or other material has a tendency to arch and will not fall freely from the car; and the present invention has for its principal object to provide a vertically moving ram for loosening the material to insure quick and easy discharge thereof.

In carrying out the above end, a further object is to provide a cable and drum for raising the ram, and to make provision whereby the momentum of the drum, when the ram is dropping by gravity, will assist in further driving the latter into the load.

A still further object is to provide the lower end of the ram with one or more spurs which move to inoperative position as the ram penetrates the material, and then are self-projected from the ram to more thoroughly disintegrate the load as said ram is again raised.

With the foregoing objects in view, the invention resides in the novel features of construction and unique combinations of parts to be hereinafter fully described and claimed, the descriptive matter being supplemented by the accompanying drawings which form a part of this application and in which:

Figure 1 is a side elevation of the improved load breaker with parts broken away and in section;

Fig. 2 is a vertical transverse section taken at right angles to Fig. 1;

Fig. 3 is a top plan view;

Fig. 4 is an enlarged upper end view of one of the towers and the ram operating therein;

Fig. 5 is a side elevation of the lower end of the ram;

Fig. 6 is an edge view of the parts shown

in Fig. 5, with one of the spurs in vertical section on the plane of the line 6-6; and

Fig. 7 is a side elevation similar to Fig. 5 but illustrating the manner in which the two spurs move into the recess of the ram when the latter penetrates the material.

In the drawings above briefly described, the characters T designate a pair of tracks upon which dumping cars C travel, it being intended that these cars shall discharge their loads into the pits or the like P when their bottoms B are lowered. I have shown my invention in connection with two tracks, but it is to be understood that it could well be employed with one track only or in fact with any required number. In the present showing, auxiliary tracks T' are spaced outwardly from the tracks T and receive thereon the double flanged wheels W of an arched frame F. Rising from the frame F are two towers or supplemental frames F' within which the two rams R are mounted.

Each ram R is in the form of a vertically disposed bar of wood or metal having longitudinal tracks 1 of angle iron or other suitable construction along opposite sides, said tracks being receivable between guide flanges 2 carried by the towers F'. Adjacent their upper and lower ends respectively, the rams R are provided with cable guiding sheaves 3 and 4 around which cables 5 and 6 are trained, one end of said cables being anchored at 7, while the other ends thereof are oppositely wound upon a pair of drums 8, one drum being provided for each ram. A turn buckle 9 is preferably employed for the purpose of taking up any slack in the cables 5 and 6. By the provision of suitable gearing 10 and clutches 11, either drum 8 may be rotated from a drive shaft 12 mounted suitably upon a platform 13 at the upper end of frame F, and any preferred mechanism such as the links and levers designated at 14, may be employed for shifting the clutches into and out of operative relation as occasion may demand. When either drum 8 is rotated in the proper direction, the ram R will be raised, but when the clutch 11 of said drum is released, the ram will descend by gravity. During this downward movement, the cable 6 rotates the drum in a direction to wind the cable 5 thereon, and when the ram strikes the load, the momentum of the drum tends to further wind cable 5, so that such momentum is utilized to further force the ram into the load. To limit the

downward movement of the ram and thus prevent possible injury to the cars C, a pair of dash pots 15 are mounted on each tower F' and plungers 16 are carried by the upper ends of the rams R, said plungers being received in said dash pots when the rams have neared the completion of their downward travel.

For the purpose of driving the shaft 12, I have illustrated an electric motor 17 and gearing 18, and for driving the wheels W of the frame F, a second motor 19 is shown connected by a worm and worm gear 20 with a transverse shaft 21 whose ends are connected to certain of said wheels by sprocket chains or the like 22. Although these features have been shown for illustrative purposes, I wish it clearly understood that they are rather unimportant details and that any adequate means could be provided for obtaining the same results.

To insure thorough breaking up of the load, the lower ends of the rams R are constructed as shown most clearly in Figs. 5, 6 and 7. In these figures, the numerals designate a pair of vertical plates riveted or otherwise secured at 24 to the lower end of the ram and depending therefrom, said plates having pointed lower ends 25 between which a pointed filler block 26 is secured by rivets or the like 27, the space between the lower end of the ram and the filler block forming a recess 28 within whose lower end a pair of spurs 29 are pivoted at 30 downwardly swinging to the horizontal position shown in Fig. 5, or for upward swinging completely within the recess, the inward movement of the spurs being preferably limited by a pin or the like 31.

In operation, the frame F straddles the cars to be unloaded, and by operating the motor 19, the entire machine may be shifted from end to end of each car and from one car to another. By properly operating the clutches 11, the drums 8 are made to successively raise the rams R and then permit descent thereof by gravity. The ram, in striking the load of material, penetrates the same to quite an extent, during which operation the spurs 29 fold into the recess 28 as shown most clearly in Figs. 2 and 7. When the ram is again raised however, the spurs are self-projected to extended position and thus it will be seen that they serve to effectively disintegrate the load, insuring easy discharge thereof from the car.

From the foregoing, taken in connection with the accompanying drawings, it will be obvious that although my invention is of comparatively simple nature, it will be highly efficient and in every way desirable for insuring the easy dumping of ore and other loads from cars in which the material tends to arch over the bottom of the car when the latter is lowered, instead of falling freely from the car. Since probably the best results are obtained from the several features shown and described, they are preferably followed, but within the scope of the invention as claimed, numerous minor changes may well be made. Furthermore, although I have shown no such means, I wish it understood that any suitable brakes may be used to hold the rams in raised position and possibly to lower them slowly when desirable.

I claim:

1. A load breaker comprising a frame, a vertically moving ram mounted on said frame, cable guides on the upper and lower ends of said ram, a pair of cables trained respectively around said cable guides and anchored at one end to said frame, winding means on the frame around which the other ends of said cables are oppositely wound, and driving means for said winding means including a clutch, whereby the ram may be released after raising thereof, to permit descent of said ram by gravity.
2. A load breaker comprising a frame, a ram mounted vertically on said frame, means for operating said ram, a pair of vertical plates secured to and depending from the lower end of said ram, said plates having pointed lower ends, a pointed filler block secured between said pointed ends of said plates, and a spur pivoted between said plates and located between said ram and block, said spur being movable to retracted position as the ram penetrates the load and being self-projecting upon ascent of said ram, whereby to disintegrate the material.
3. A load breaker comprising a frame, a ram mounted vertically on said frame and means for operating said ram, a dash-pot carried by the upper end of said frame and having an open upper end, and a plunger carried by the upper end of said ram for reception in said dash pot when said ram nears the limit of its downward movement.

In testimony whereof I have hereunto set my hand.

WILLIAM E. HOWLETT.