No. 762,874. PATENTED JUNE 21, 1904.

T. B. BLACK.

ROCK BREAKING MACHINE.

APPLICATION FILED OCT. 8, 1903.

NO MODEL.

Fig. 1.

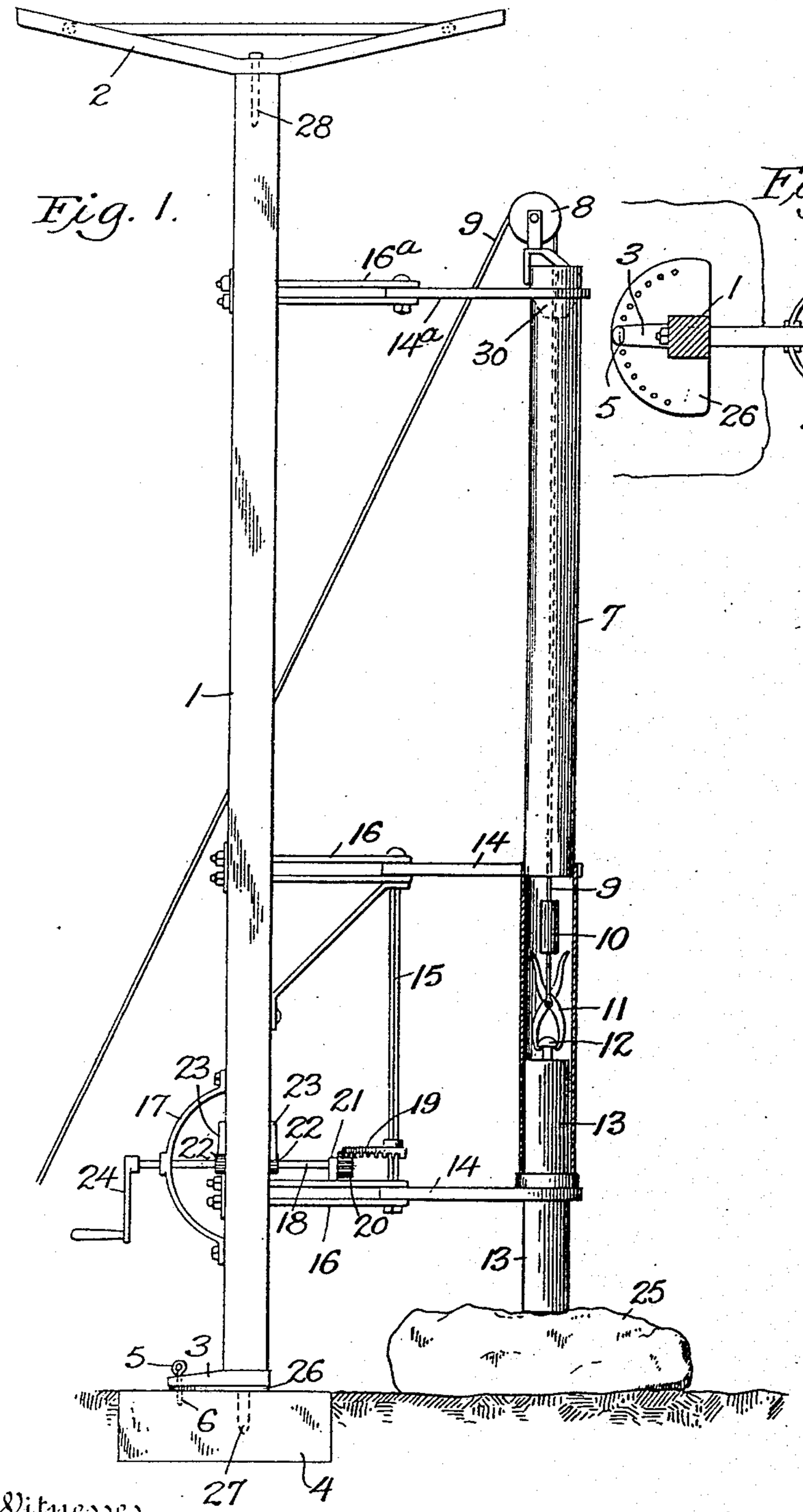
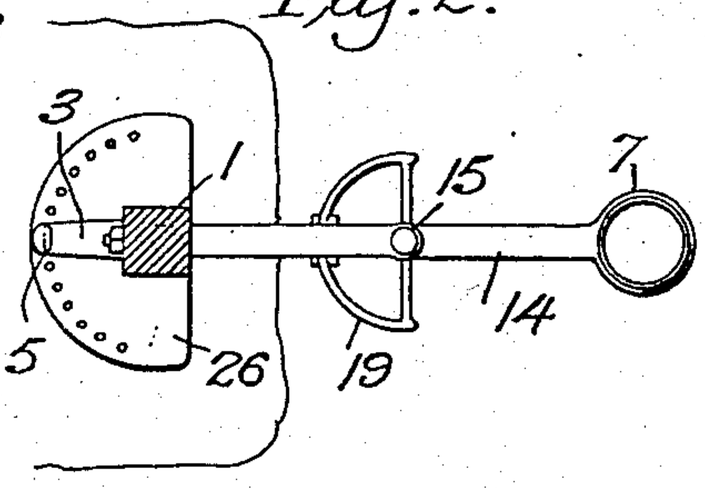


Fig. 2.



Witnesses
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No. 762,874. Patented June 21, 1904.

UNITED STATES PATENT OFFICE.

THOMAS BOICE BLACK, OF NEW YORK, N. Y.

ROCK-BREAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 762,874, dated June 21, 1904.

Application filed October 8, 1903. Serial No. 176,183. (No model.)

To all whom it may concern.

Be it known that I, THOMAS BOICE BLACK, a citizen of the United States of America, and a resident of the city, county, and State of New York, have invented certain new and useful Improvements in Rock-Breaking Machines, of which the following is a specification.

This invention relates to certain new and useful improvements in stone-breaking machinery, the object being to provide means for facilitating the adjustment of the stone-breaking mechanism so that it may be easily applied for work at the desired point; and the invention consists, essentially, in the construction and combination of parts, substantially as hereinafter described and claimed.

In the annexed drawings, Figure 1 is a side elevation of my improved rock-breaker. Fig. 2 is a sectional plan view of a part of the same.

1 denotes a vertical mast or support for the mechanical parts of my invention, the same being one leg of a derrick or other suitable framework or structure and the upper stationary part of which is indicated at 2. This vertical frame 1 is axially rotatable to a greater or less extent for purposes of adjustment on an upper pivot 28 and a lower pivot 27, the upper pivot 28 being held by the stationary part 2, while the lower pivot 27 is carried in a solid base 4, of wood or stone, on which is a fixed plate 26, that holds the lower end of the post 1. This lower end of post 1 is provided with a horizontal arm 3, which is adjusted over the face of the plate 26 when the post 1 is axially rotated, and a pin 5 passes through the end of arm 3 and a perforation in the plate 26 and enters the base 4, said pin serving to hold the arm 3, and consequently post 1, in any position where it may be adjusted, it being noted that the plate 26 is provided with a semicircular series of holes arranged as shown or in any other suitable manner to receive the pin 5.

25 denotes, for example, a piece of stone or rock that is to be broken. Above it is an elongated vertical pipe 7, constructed in any desired manner, within which reciprocates a heavy hammer or pounder 15, which is preferably of cylindrical form and of proper size to slide nicely within pipe 7. On the upper end of the hammer 13 is a button 12, having a rounded head.

11 denotes a pair of tongs having teeth to engage the button 12. A cable 9 is attached to the tongs and passes upwardly through the pipe 7 and over the sheave or pulley 8 to the engine which actuates it. Said cable is provided with a weight 10 to enable the tongs to drop back easily to the bottom of the pipe 7 when the pounder is to be regripped. Within the pipe 7, near the upper end thereof, is a contracted inclined hollow projection 30, against which the arms of the tongs strike in the upper movement of the latter, the effect being to open the tongs and disengage them from the button on the pounder, allowing the latter to drop. Thus it will be understood that the operation will cause the tongs to engage the pounder or hammer, which under the actuation of the cable 9 will be lifted to the top of pipe 7 until the tongs strike the projection 30 and let go the pounder, allowing it to drop by gravity upon the stone 25. The tongs will follow it down, catch it, and lift it again to the top of the pipe, and it will drop a second time, and this operation will be continued.

The post 1 and the pipe 7 are parallel to each other and are connected together by jointed links, of which there may be many forms. In the example shown in the drawings the post 1 is provided near the top with a horizontal arm 16^a and near the bottom with parallel arms 16 16 a suitable distance apart. Said arms 16 16 and 16^a each consist of two parallel pieces that receive between them at the end the corresponding end of the arms 14 14 and 14^a, which are rigidly secured to the pipe 7, said arms 14 14 and 14^a being pivoted to the arms 16 16 and 16^a, the pivoting being accomplished in any desired manner. The parallel arms 14 14 are rigidly fastened to a rod 15, which is preferably square in cross-section, and said rod forms the pivotal connection between the arms 14 and 16. Secured to the rod 15 is a cogged segment 19, that is engaged by a pinion 20 on a rotary shaft 18, having a crank-handle 24. Shaft 18 is supported in a bearing 21 on the lower arm 16 and an extension-bearing 17, fastened to the

post 1. Further, shaft 18 is provided with ratchet-wheels 22, (two of them, preferably reverse ratchets,) which are engaged by pawls 23, pivoted to post 1. By laying hold of the crank 24 and rotating shaft 18 the rod 15 will be rotated and the pipe 7 swung around in an arc of a circle.

Thus it will be observed that I am able to make the adjustment of the position of the hammer the same as if it were hung on a universal joint, because the post 1 is axially rotatable, and the pipe 7 is also adjustable through an arc, and I am therefore able to apply the machine for operation at any desired point within a reasonable area without moving the derrick or framework that supports the mechanical parts.

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

1. In a machine for breaking or disintegrating, the combination with a vertical support that is axially adjustable, of a hammer-carrier that is bodily adjustable, and a jointed arm between the hammer-carrier and the support.

2. In machinery for hammering or pounding, the combination with a swiveled post, of a hammer-carrier, jointed arms between said carrier and the post, and means for moving the carrier, consisting of suitable gearing.

3. The combination with the supporting-post, of a parallel pipe, a hammer reciprocating therein, jointed arms between the pipe and the post, means for moving the pipe through an arc, consisting of suitable gearing, and means for adjusting the supporting-post axially.

4. The combination with a supporting-mast, of a parallel guide, a hammer reciprocating therein, jointed arms between the guide and the post, means for moving the guide through an arc, consisting of suitable gearing, and means for adjusting the supporting-mast axially.

Signed at New York city this 26th day of September, 1903.

THOMAS BOICE BLACK.

Witnesses:
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