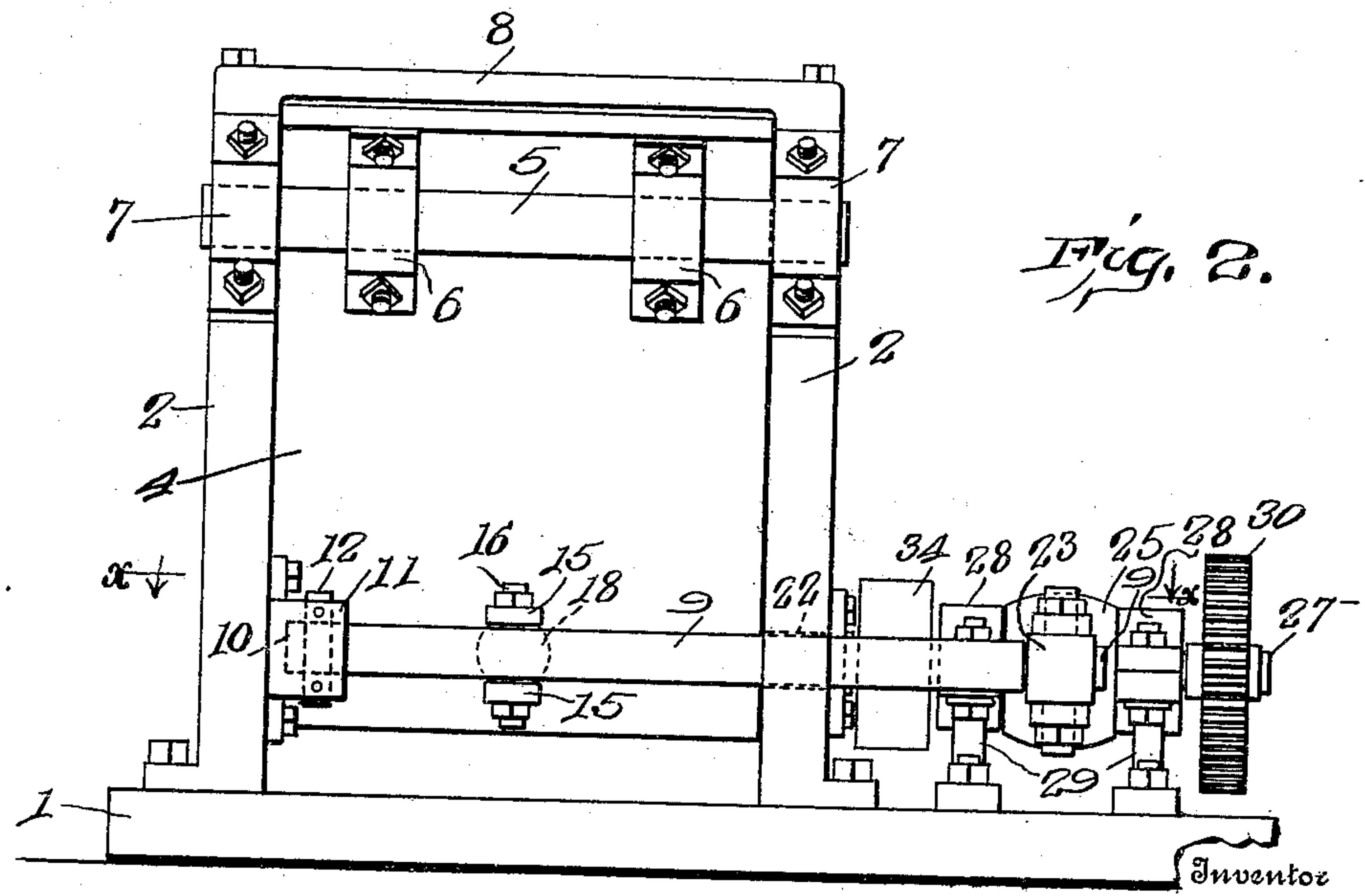
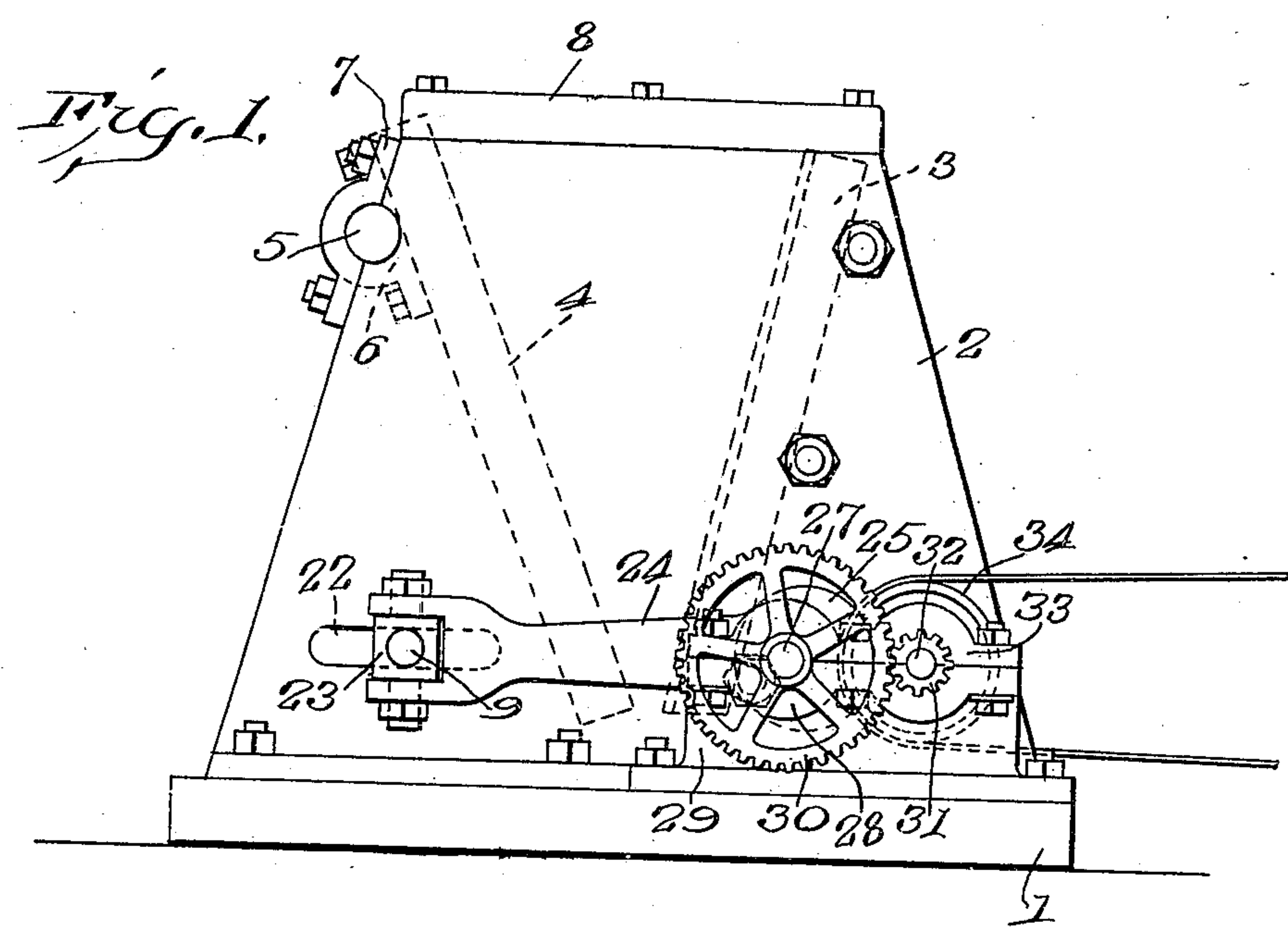


921,749.

J. M. STONE.  
STONE CRUSHER.  
APPLICATION FILED JUNE 20, 1908.

Patented May 18, 1909.  
2 SHEETS—SHEET 1.



Witnesses

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Attorney

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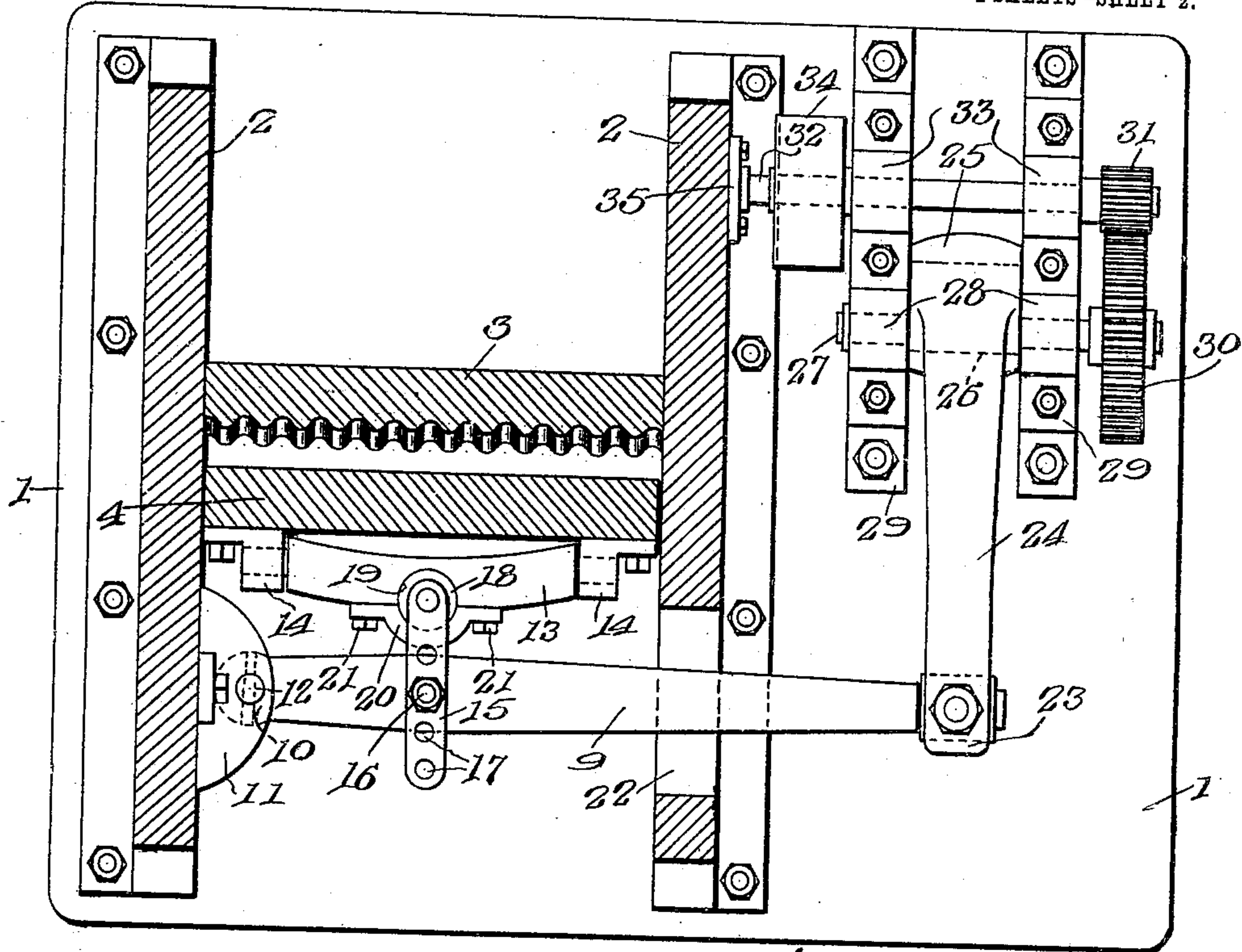


Fig. 3.

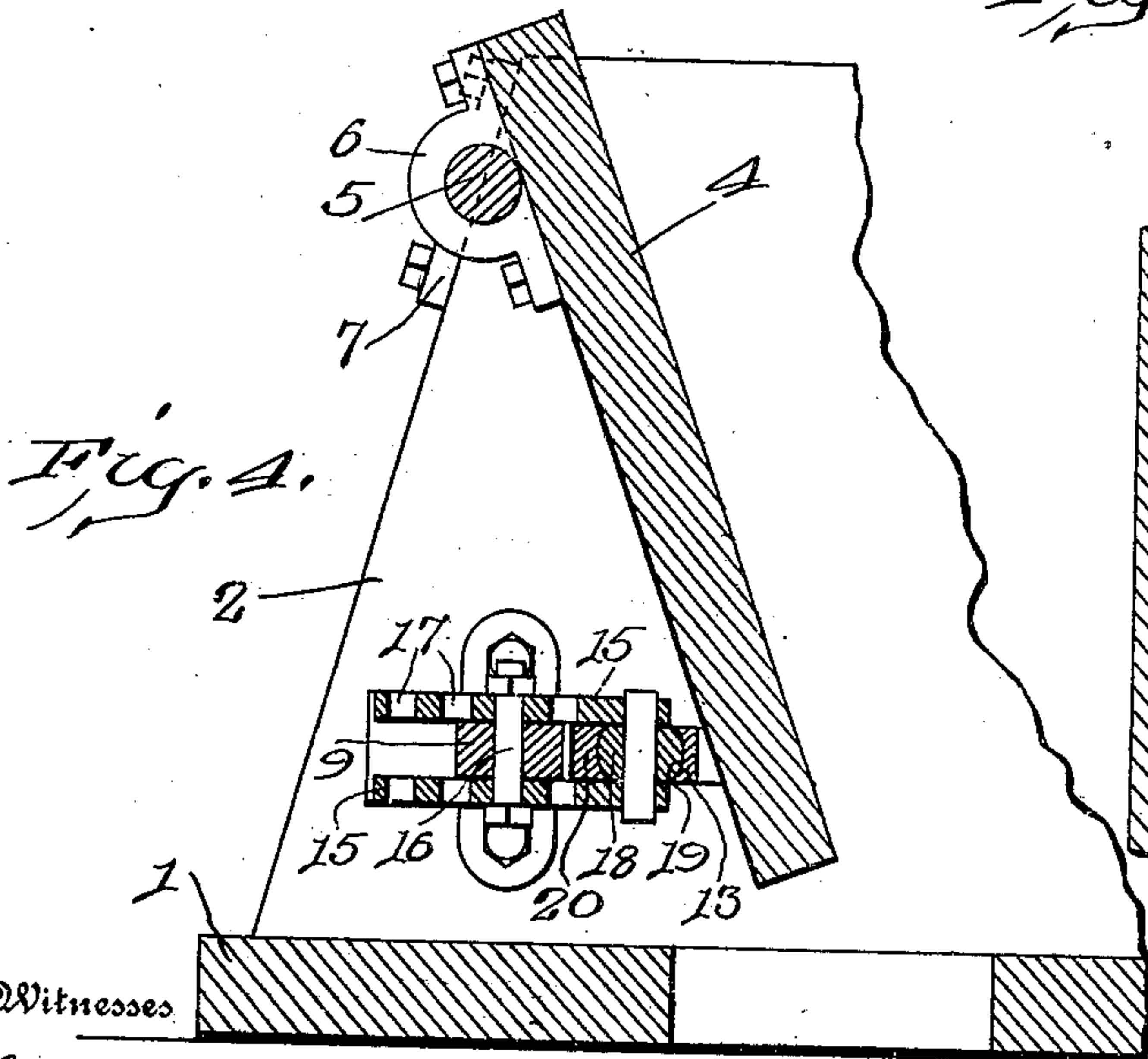


Fig. 4.

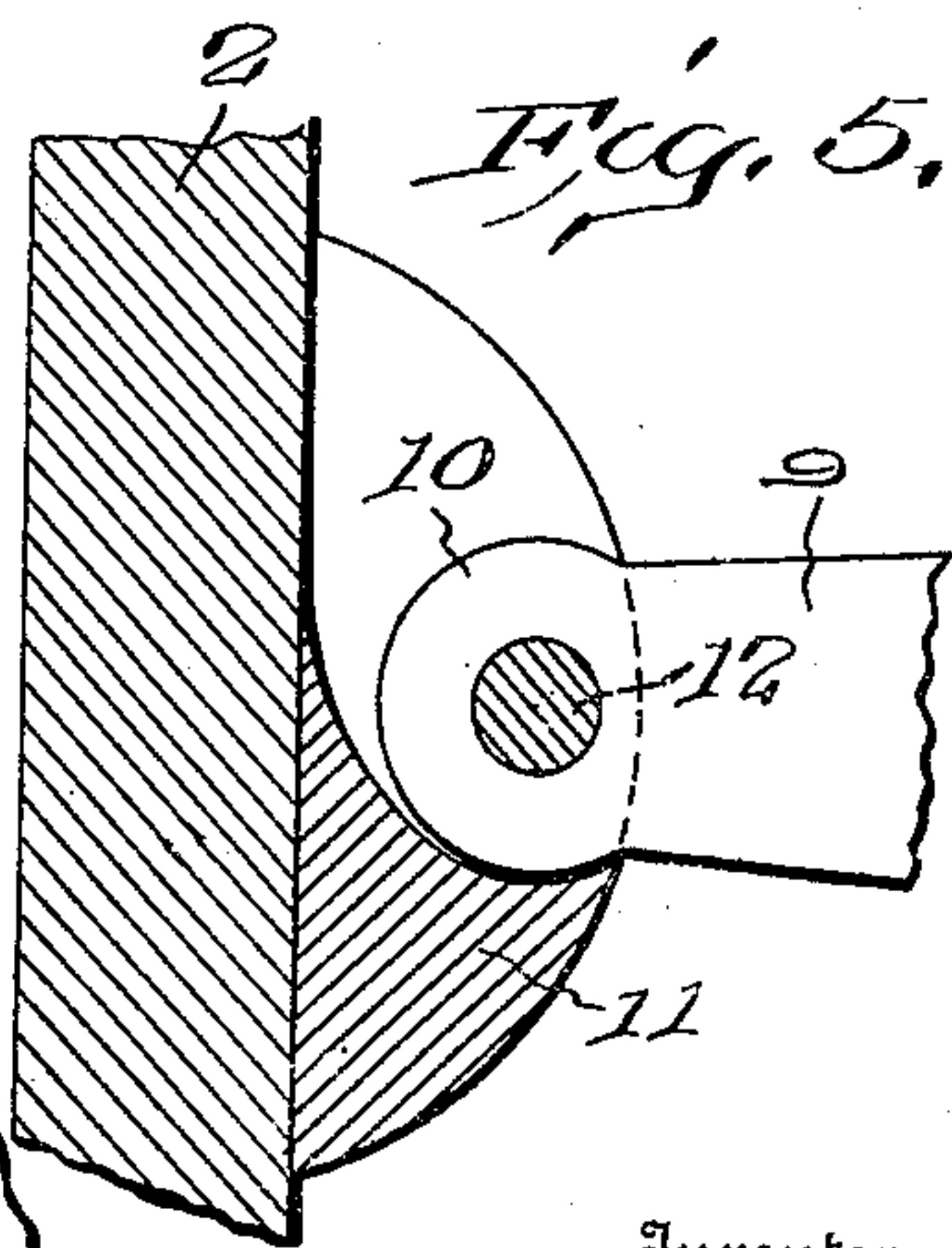


Fig. 5.

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# UNITED STATES PATENT OFFICE.

JOHN M. STONE, OF MARION, OHIO, ASSIGNOR OF ONE-HALF TO GEORGE B. CHRISTIAN, OF MARION, OHIO.

## STONE-CRUSHER.

No. 921,749.

Specification of Letters Patent.

Patented May 18, 1909.

Application filed June 20, 1908. Serial No. 439,515.

*To all whom it may concern:*

Be it known that I, JOHN M. STONE, a citizen of the United States, residing at Marion, in the county of Marion and State of Ohio, have invented certain new and useful Improvements in Stone-Crushers, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to stone crushers, and more particularly to that type of stone crushers known as the "jaw" crusher.

The object of the invention is to provide a crusher of this character with operating mechanism which will utilize to the greatest possible extent the power applied thereto; which will exert a maximum amount of power upon the crusher and will transmit a minimum amount of the jar or vibration, incident to the operation of the crusher, to the engine; and further, to so construct and arrange the operating mechanism relatively to the crusher as to form a compact arrangement and one which will be very strong and durable.

With these objects in view my invention consists in certain combinations and arrangements of parts and in certain novel features of construction to be hereinafter described, and then more particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of a stone crusher embodying my invention; Fig. 2 is an end elevation of the same; Fig. 3 is a transverse, sectional view on the line *xx* of Fig. 2, showing the operating mechanism in plan view; Fig. 4 is a detail sectional view of one of the jaws, showing the manner of connecting the operating lever thereto; and Fig. 5 is a detail view of the bearing for one end of the operating lever.

In these drawings I have illustrated the preferred form of my invention and have shown the same as comprising a base 1, upon which is mounted a frame comprising two upright and substantially parallel members 2 which are rigidly secured at their lower ends to the base 1. A fixed jaw 3 is arranged between the side members 2 of the frame, in which it is secured with its inner face inclined inwardly and downwardly. A second jaw 4 is mounted between the side members 2 of the frame in such a manner that its lower end is movable toward and away from the lower end of the fixed jaw 2.

To accomplish this I preferably provide the movable jaw 4 near its upper end with a shaft 5 secured thereto by bearings or clips 6, which shaft projects beyond the opposite edges of the movable jaw 4 and is journaled in bearings 7 on the edges of the side members 2 of the frame. A collar 8, preferably of cast iron, fits around the opening between the upper ends of the jaws 3 and 4 and is rigidly secured to the upper edges of the frame members and to the fixed jaw 3, thus firmly bracing these members.

In order to utilize to the greatest possible extent the power applied to the operating mechanism, I prefer to construct this operating mechanism in the form of a lever which is so connected to the movable jaw as to afford a long and powerful leverage. To this end, I have provided an operating lever 9 which is pivotally secured at one end to one of the side walls 2 of the frame. In the present instance, I have shown the inner end of the lever 9 as rounded, as shown at 10, and adapted to fit within a suitable socket bearing 11 having one side cut away to permit of the free insertion of the rounded end 10 of the lever and provided with a pin or shaft 12 for retaining the end of the lever within the same. The socket bearing is preferably cut away in the side next to the jaw to permit the insertion of the end of the lever, thus leaving the outer side of the socket intact and forming a bearing surface upon which the strain of the inward stroke of the lever will be exerted, thereby relieving the pin 12 of a greater part of the strain incident to the operation of the machine. This bearing is preferably located near the lower end of the movable jaw and the lever 9 extends transversely to that jaw and is secured thereto in any suitable manner which will permit of the free operation thereof. The preferred form of connecting the lever to the jaw consists in providing the movable jaw with a transverse bar 13 which is journaled at its opposite ends in suitable bearings 14, thus enabling the same to be moved about its longitudinal axis. This transverse bar 13 is secured to the lever 9 by means of one or more links 15 which are connected to the lever 9 by means of a pin 16 extending through one of the apertures 17 in each of the links and through a corresponding aperture in the lever 9. The inner ends of the links 15 are preferably secured to a circular block 18 which is mounted



in a recess 19 in the transverse bar 13 and is secured therein by means of a suitable strap or bearing plate 20 secured to the bar by means of bolts 21. Thus, the movable jaw  
5 may be adjusted to regulate the distance between the jaws, and, consequently, the size to which the stone will be crushed, in either one of two manners. The pin 16 may be shifted from one to another of the sets of  
10 apertures 17, or the block 18 may be removed and a block of different size substituted therefor, thus moving the movable jaw toward or away from the fixed jaw.

The lever 9 extends beyond one side of the  
15 frame 2, preferably by extending the same through a horizontal slot 22 formed in that side member of the frame. The outer end of the lever 9 is connected by means of a universal joint 23 to an eccentric rod 24, which  
20 is provided at its inner end with an eccentric strap 25 mounted on the eccentric 26 carried by the shaft 27, which shaft is journaled in suitable bearings 28 formed in the supporting frame or base, which comprises two up-  
25 right members 29 between which the eccentric strap 25 is mounted. The shaft 27 projects beyond one of the side members 29 and is provided with a gear wheel 30 adapted to mesh with a pinion 31 carried by a shaft 32  
30 which is journaled in bearings 33 formed in the side walls 29 of the supporting frame. The opposite end of the shaft 32 extends beyond the inner wall 29 of the supporting frame and is preferably journaled in a bearing  
35 35 mounted on the adjacent wall 2 of the crusher and is provided between the wall 29 and the wall 2 with suitable means for rotating the same, such as the belt pulley 34.

The operation of the machine will be readily understood and it will be apparent that,  
40 when power is applied to the belt pulley 34, the eccentric rod 24 and the lever 29 will be actuated, and, consequently, the movable jaw of the crusher will be operated, and that  
45 this construction is such as to exert a maximum amount of power upon the movable jaw of the crusher; and that the connection between the lever and the engine is such that none of the vibration or jar caused by the op-  
50 eration of the crusher will be transmitted to the engine or other source of power. Further, it will be apparent that the bearings and supports for the several moving parts are so constructed and arranged as to render the  
55 machine of a very strong, durable nature.

I wish it to be understood that I do not desire to be limited to the exact details of construction shown and described, for obvious modifications will occur to a person skilled in  
60 the art.

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

1. In a stone crusher of the character de-  
65 scribed, the combination, with side walls, a

bearing carried by one of said side walls, a pair of jaws supported between said side walls with their edges adjacent thereto, one of said jaws being movable, of a substantially horizontal lever extending transversely to  
70 said jaws, having one end mounted in said bearing and having its other end extending beyond the side wall opposite said bearing, means for connecting said lever to said movable jaw at a point between said bearing and  
75 the opposite side wall, and operating mechanism arranged alongside of one of said side walls and connected to the outer end of said lever.

2. In a stone crusher, the combination, 80 with side walls, a pair of jaws supported between said side walls, one of said jaws being movable, and a lever extending transversely to said movable jaw and connected thereto, of a supporting frame mounted alongside of  
85 one of said side walls, an eccentric shaft journaled in said supporting frame, a rod connecting said eccentric shaft, to said lever, a gear mounted on said eccentric shaft, a second shaft mounted in said supporting frame  
90 and having a pinion adapted to mesh with said gear, and means for rotating said second shaft.

3. In a stone crusher, the combination, 95 with side walls, and a pair of jaws supported between said side walls, one of said jaws being movable, of a bearing block carried by one of said side walls and having a socket formed therein, a lever extending trans-  
100 versely to said movable jaw and having one end mounted in said socket, means for connecting said lever to said movable jaw at a point between said bearing block and the opposite side wall, and means for actuating said  
105 lever.

4. In a stone crusher of the character described, the combination, with side walls, a pair of jaws supported between said side walls, one of said jaws being movable, of a lever pivotally supported on one of said side  
110 walls and extending transversely to said jaw, a transverse bar mounted on said movable jaw and adapted to move about its longitudinal axis, means for connecting said bar to said lever, and means for actuating said lever. 115

5. In a stone crusher of the character described, the combination, with side walls, and a pair of jaws supported between said side walls, one of said jaws being movable, of a lever pivotally supported on one of said  
120 side walls and extending transversely to said movable jaw, a transverse bar pivotally mounted on said movable jaw, a bearing block mounted on said transverse bar, a link connecting said bearing block to said lever, 125  
and means for actuating said lever.

6. In a stone crusher of the character described, the combination, with side walls, and a pair of jaws supported between said side walls, one of said jaws being movable, of 130



a bearing carried by one of said side walls, a lever having one end pivotally mounted on said bearing and its opposite end extending beyond the other of said side walls, a trans-  
5 verse bar mounted on said movable jaw and adapted to be moved about its longitudinal axis, a link connecting said bar and said lever, an eccentric shaft mounted at one side of one of said side walls, an eccentric rod con-

nected at one end to said eccentric shaft and 10 connected at its other end to said lever, and means for rotating said eccentric shaft.

In testimony whereof, I affix my signature in presence of two witnesses.

JOHN M. STONE.

Witnesses:

NORA B. MARSH,  
JOHN H. BARTRAM.