

No. 750,359.

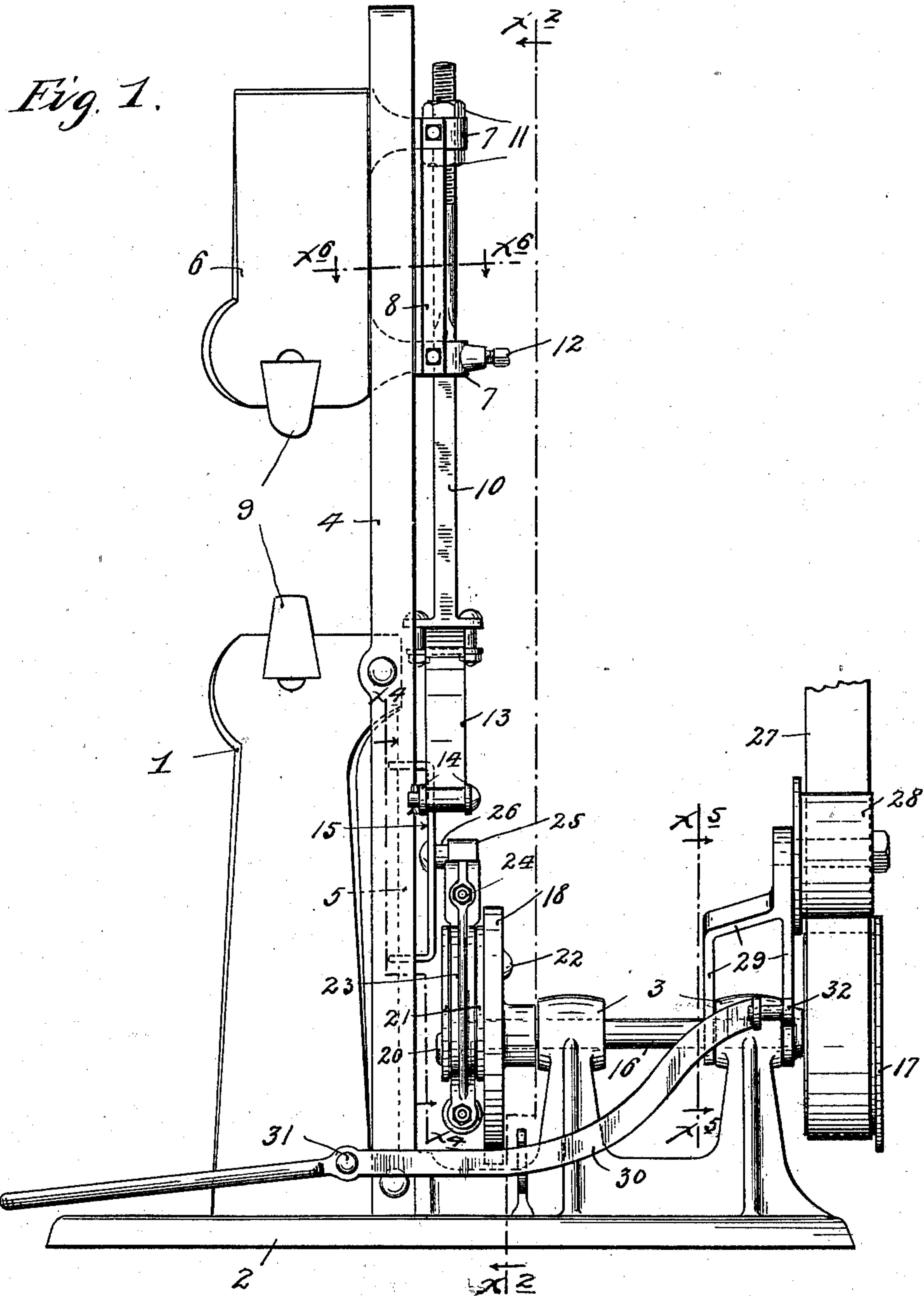
PATENTED JAN. 26, 1904.

A. GROENIG.  
POWER HAMMER.

APPLICATION FILED FEB. 24, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



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Inventor,  
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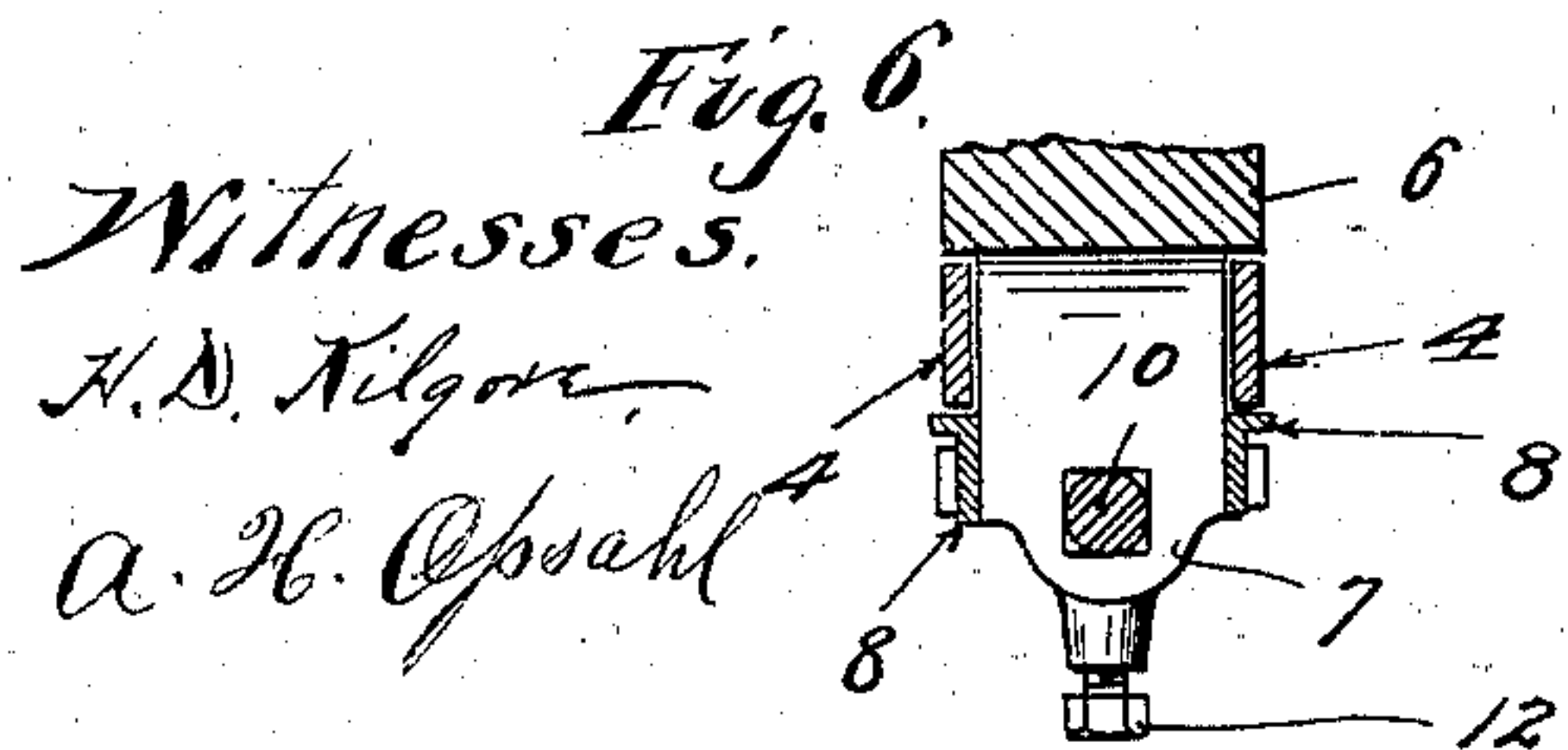
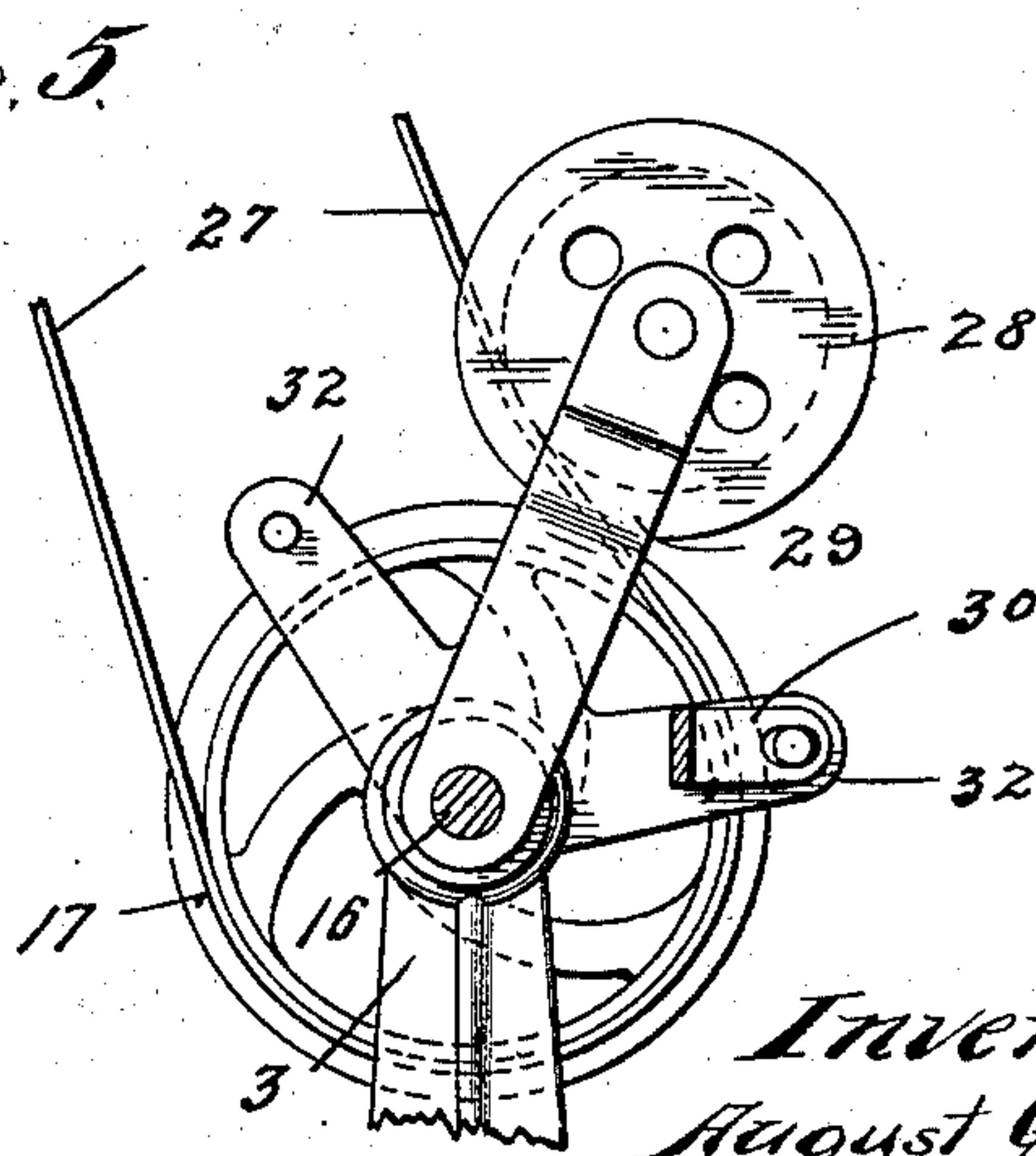
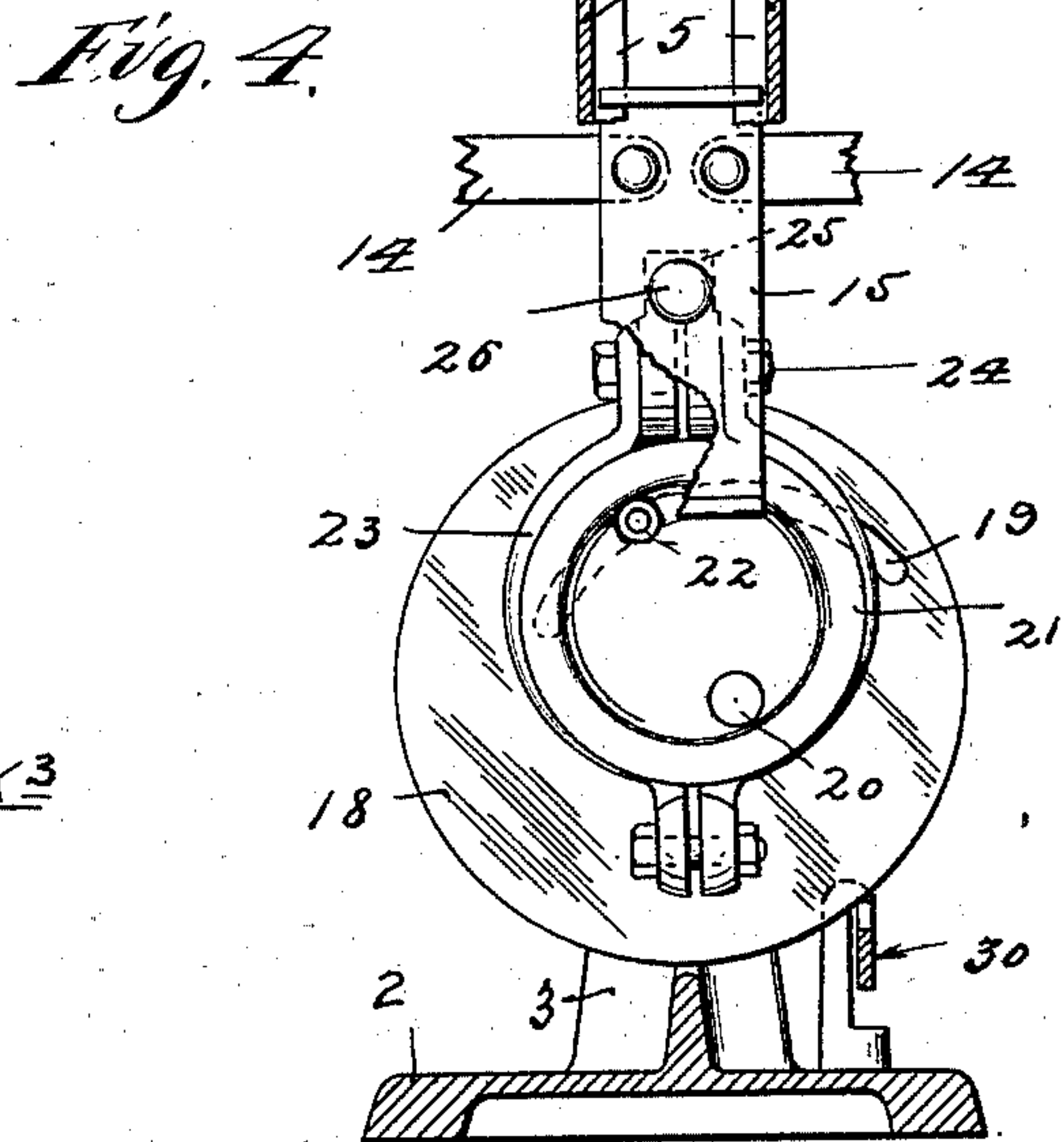
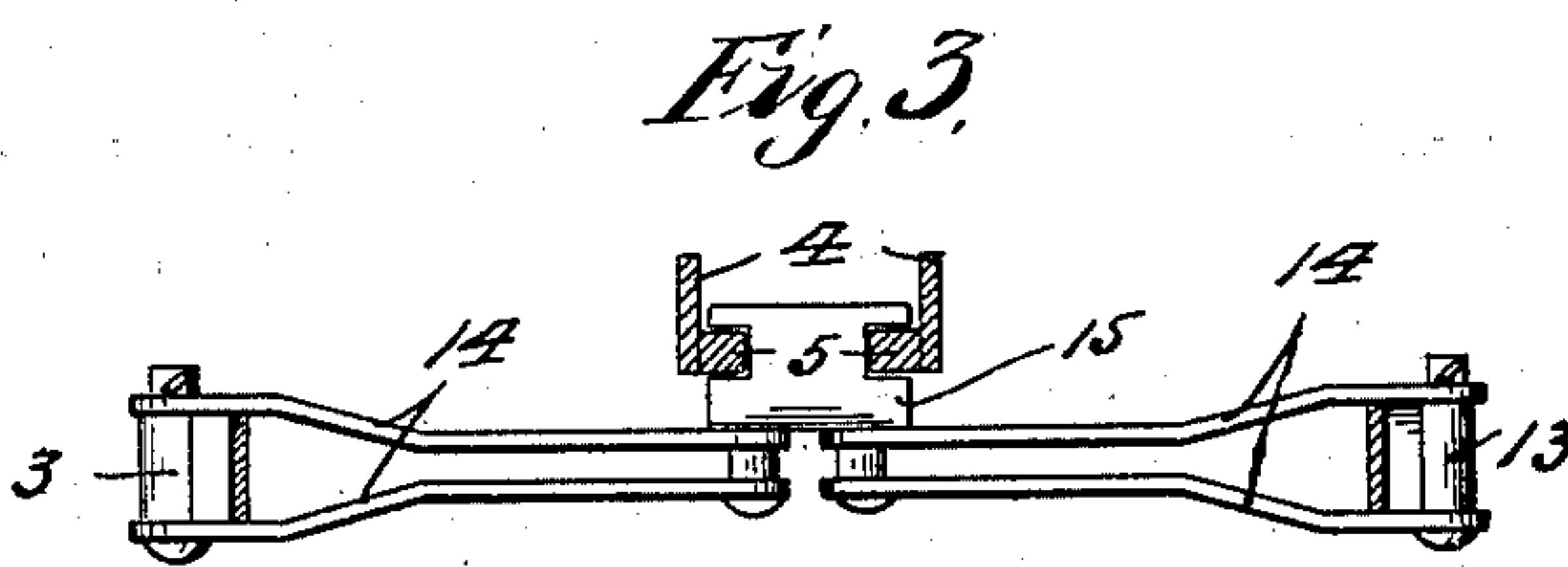
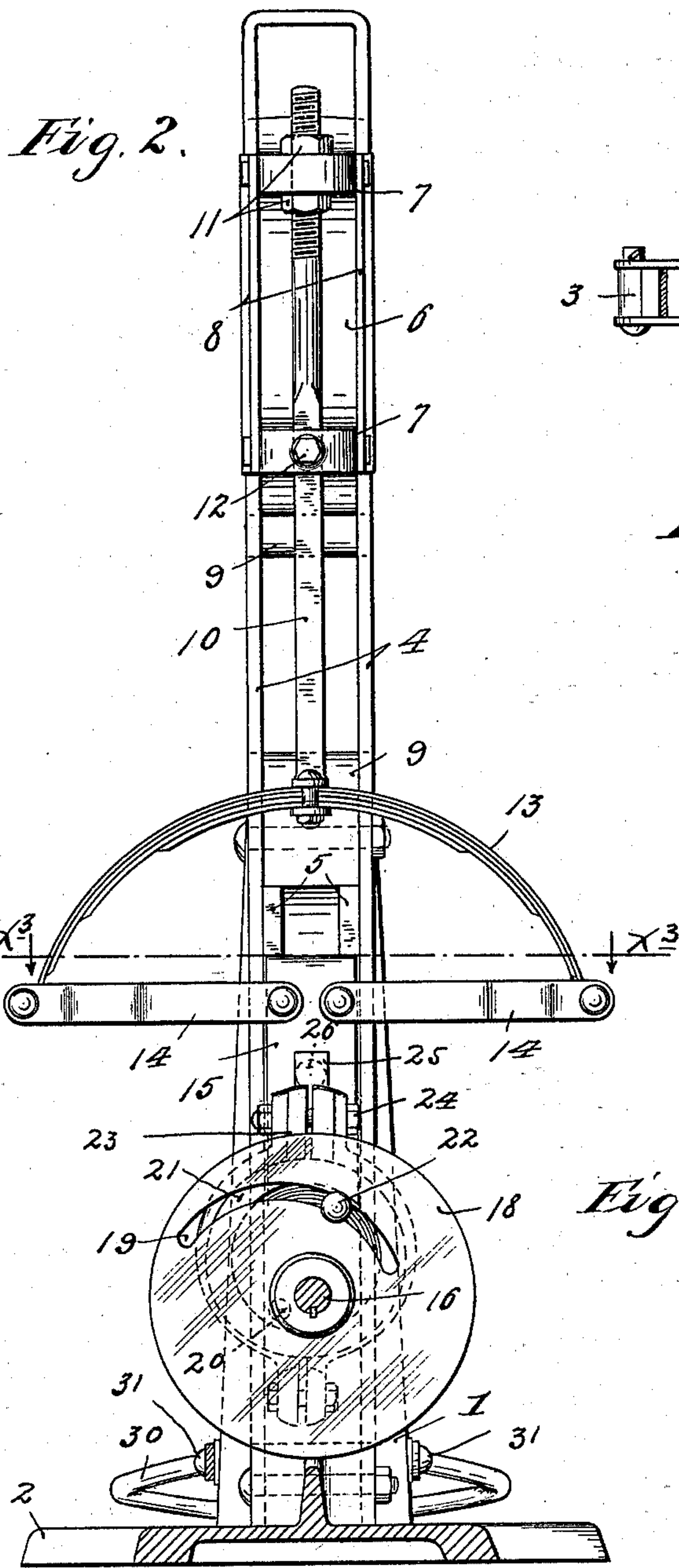
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NO MODEL.

2 SHEETS—SHEET 2.



Witnesses.

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# UNITED STATES PATENT OFFICE.

AUGUST GROENIG, OF HOLLOWAY, MINNESOTA.

## POWER-HAMMER.

SPECIFICATION forming part of Letters Patent No. 750,359, dated January 26, 1904.

Application filed February 24, 1903. Serial No. 144,579. (No model.)

*To all whom it may concern:*

Be it known that I, AUGUST GROENIG, a citizen of the United States, residing at Holloway, in the county of Swift and State of Minnesota, have invented certain new and useful Improvements in Power-Hammers; and I do hereby 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 has for its object to provide an improved power-hammer of simple construction and small cost especially adapted for use where comparatively light power-hammers are required; and to the above ends the invention consists of the novel devices and combinations of devices hereinafter described, and defined in the claim.

The invention is illustrated in the accompanying drawings, wherein like characters indicate like parts throughout the several views.

Figure 1 shows the power-hammer in side elevation. Fig. 2 is a transverse vertical section on the line  $x^2 x^2$  of Fig. 1. Fig. 3 is a detail in horizontal section on the line  $x^3 x^3$  of Fig. 2, some parts being removed. Fig. 4 is a transverse vertical section on the irregular line  $x^4 x^4$  of Fig. 1, some parts being broken away. Fig. 5 is a transverse vertical section on the line  $x^5 x^5$  of Fig. 1, some parts being broken away; and Fig. 6 is a detail in horizontal section on the line  $x^6 x^6$  of Fig. 1, some parts being broken away.

The numeral 1 indicates the anvil, the base 2 of which rests upon the floor or other suitable support and is provided with bearings 3.

Rigidly secured to the anvil 1 and to the base 2 is a pair of parallel laterally-spaced upright guide-bars 4, provided, as shown, with inturnd guide-flanges 5.

The hammer 6 is mounted for vertical reciprocating movements and is provided with a pair of radially-projecting bearing-lugs 7, that work between the guide-bars 4. To the bearing-lugs 7 are rigidly secured metallic guide-straps 8, that engage the rear edges of the guide-bars 4 and hold the said hammer for true vertical movements on the said guide-bars, as best shown in Figs. 1 and 6.

The anvil 1 and the hammer 6 are provided with hardened dies or hammering-blocks 9.

The vertically-disposed operating-plunger 10 is passed through the rearwardly-projected portions of the hammer-bearing lugs 7. The upper end of said plunger 10 is screw-threaded and provided with nuts 11, that clamp the upper lug 7, while a set-screw 12, screwed through the lower lug 7, impinges on the said plunger. In this way the hammer 6 is rigidly but adjustably secured to the upper end of the plunger 10. The lower end of said plunger 10 is rigidly secured to the intermediate portion of an inverted bow-spring 13. The downturned free ends of the bow-spring 13 are pivotally connected to links 14, the inner ends of which are in turn pivotally connected to a cross-head 15, which is guided for free vertical movements by the inturnd flanges 5 of the guide-bars 4, as best shown in Figs. 2 and 3.

Journalled in the bearings 3 of the anvil-base 2 is a counter-shaft 16, provided at its outer end with a pulley 17 and at its inner end with a crank-disk 18. The crank-disk 18 is provided with an eccentric segmental slot 19.

Pivoted at 20 to the inner or forward face of the crank-disk 18 at a point concentric to the eccentric slot 19 is an eccentric 21. A short nutted bolt 22, passed through the eccentric 21 and through the slot 19, rigidly but adjustably secures the eccentric 21 to the crank-disk 18. An eccentric-strap 23 works on the eccentric 21 and at its upper portion is connected, as shown, by a short nutted bolt 24 to a block or bracket 25, which in turn is pivotally connected at 26 to the intermediate portion of the cross-head 15 and serves the function of a short pitman.

Motion is imparted to the shaft 16 and from thence to the parts driven thereby through a power-driven belt 27, that runs over the pulley 17. The machine is thrown into and out of action by tightening and loosening the belt 27, and, as shown, this is accomplished by means of an idle pulley 28, carried by a bracket 29, pivoted on the shaft 16 and subject to a foot-operated lever 30, which in turn is shown as pivoted at 31 to the anvil 1. As shown, the pivoted bracket 29 is provided with op-



positely-projected arms 32, to either of which the foot-actuated lever may be pivotally connected, according to which way the belt 27 is inclined.

5 The operation of the device is probably obvious from the foregoing description. It is of course evident that when the shaft 16, crank-disk 18, and eccentric 21 are rotated the hammer 6 will be reciprocated vertically and its  
10 movements will be cushioned at the extremes of its throw by the bow-spring 13. By adjusting the eccentric 21 on the crank-disk 18 the length of stroke or throw imparted to the hammer may be increased or decreased at will  
15 within, of course, certain limits. Different work will of course require different movements or lengths of stroke of the hammer to impart the proper blow. Different work will also require that the hammer be adjusted in-  
20 dependently of its length of throw or stroke, so that it will be brought downward nearer to or farther from the anvil. This latter adjustment is of course provided for by the connections between the hammer and the plunger  
25 10. For instance, by adjusting the nuts 11 when the set-screw 12 is loosened the hammer may be raised or lowered on the plunger 10.

The links 14, which connect the bow-spring 13 to the cross-head 15, will not, of course,  
30 stretch, as would be the case if a strap of leather or similar material would be employed. Furthermore, the connection of the bow-

spring directly to the cross-head places the spring where it will cushion the movements of all of the reciprocating parts of the device. 35 This reduces the jarring or pounding action of the machine when running idle to a minimum.

It will of course be understood that the device described is capable of modification with- 40 in the scope of my invention as herein set forth and claimed.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

In a power-hammer, the combination with 45 an anvil and vertical guides, of a hammer mounted for straight-line reciprocating movements on said guides, a plunger adjustably connected to said hammer, a bow-spring rigidly connected to the lower end of said plun- 50 ger, a cross-head also mounted for straight-line reciprocations on said guides, an eccentric below said bow-spring, an eccentric-strap working on said eccentric and connected to said cross-head, and links pivotally connect- 55 ing the ends of said bow-spring to said cross-head, substantially as described.

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

AUGUST GROENIG.

Witnesses:

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