

No. 817,435.

PATENTED APR. 10, 1906.

H. MEYNNERS.
MACHINE FOR GRINDING VALVE SEATS.

APPLICATION FILED JULY 28, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

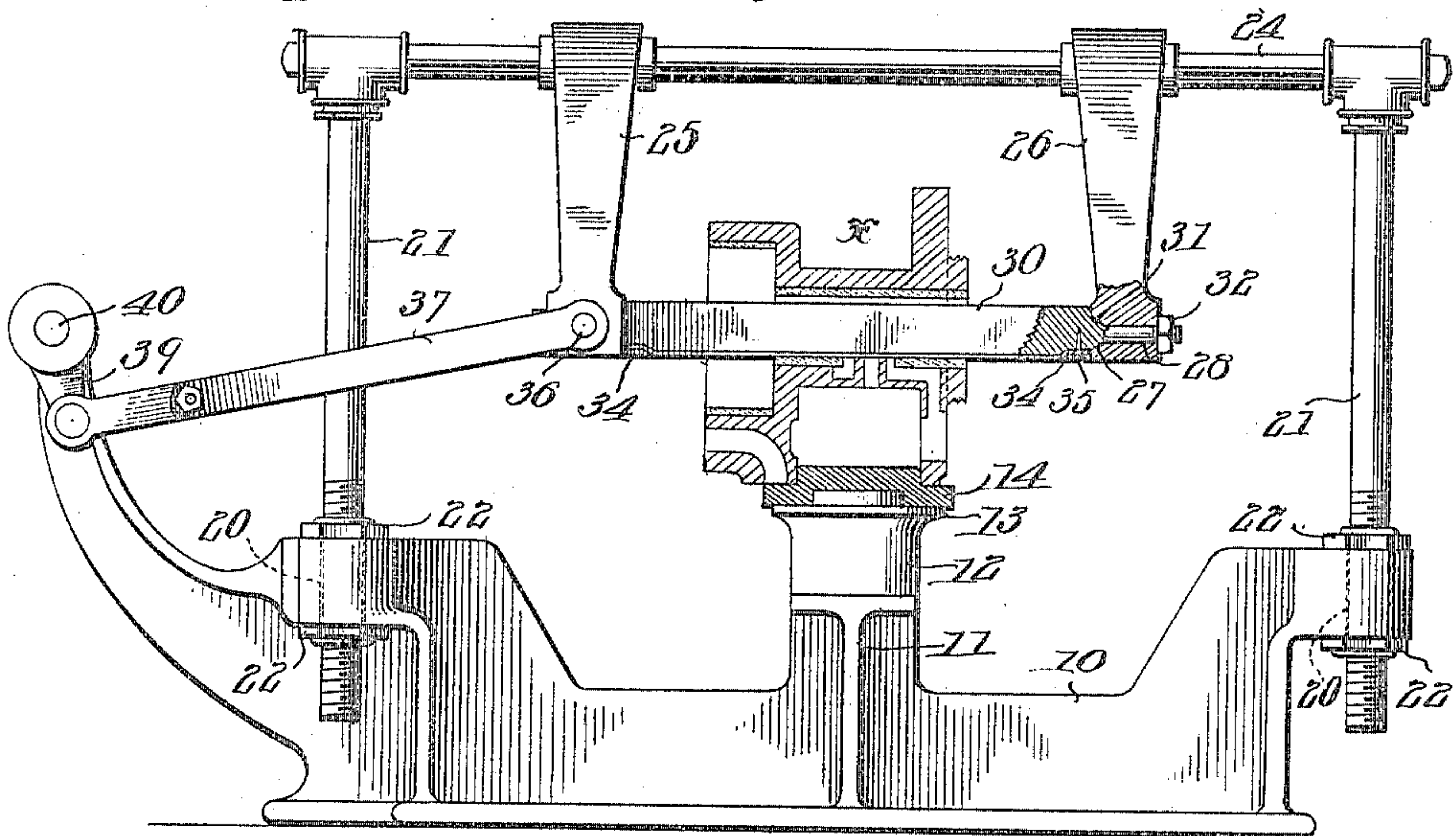


Fig. 3.

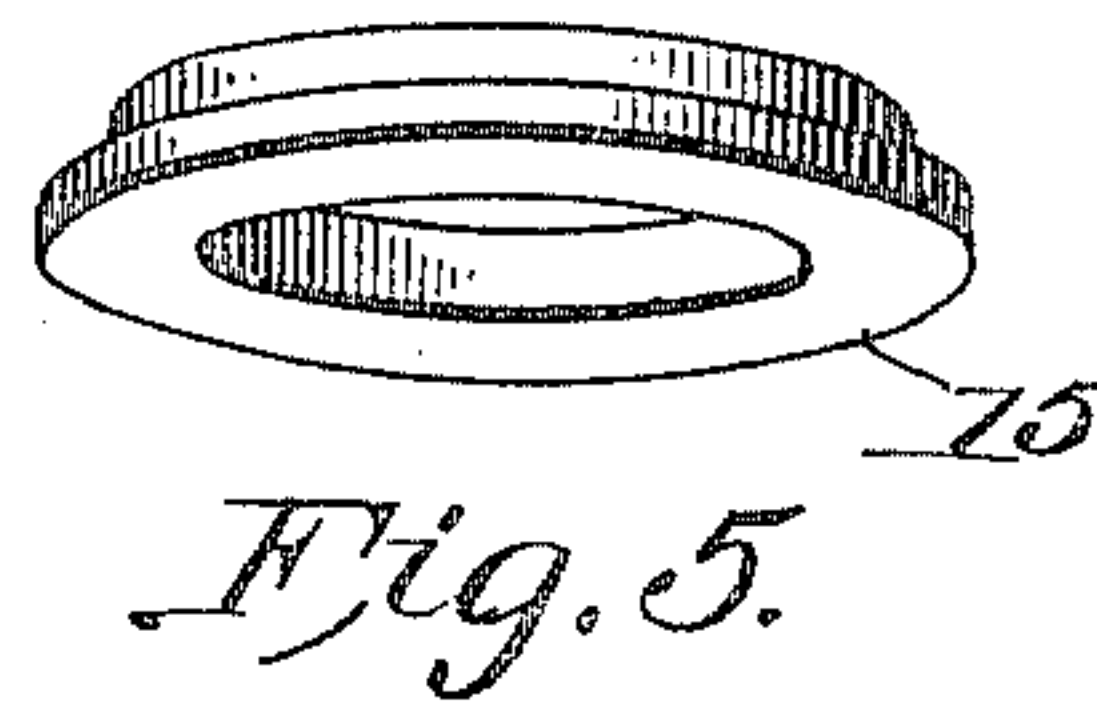
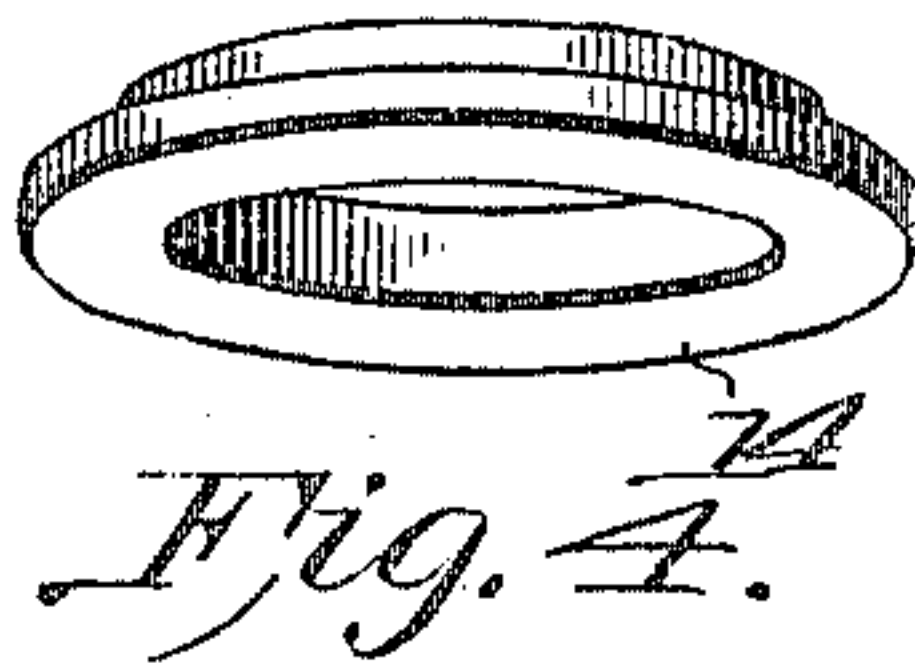
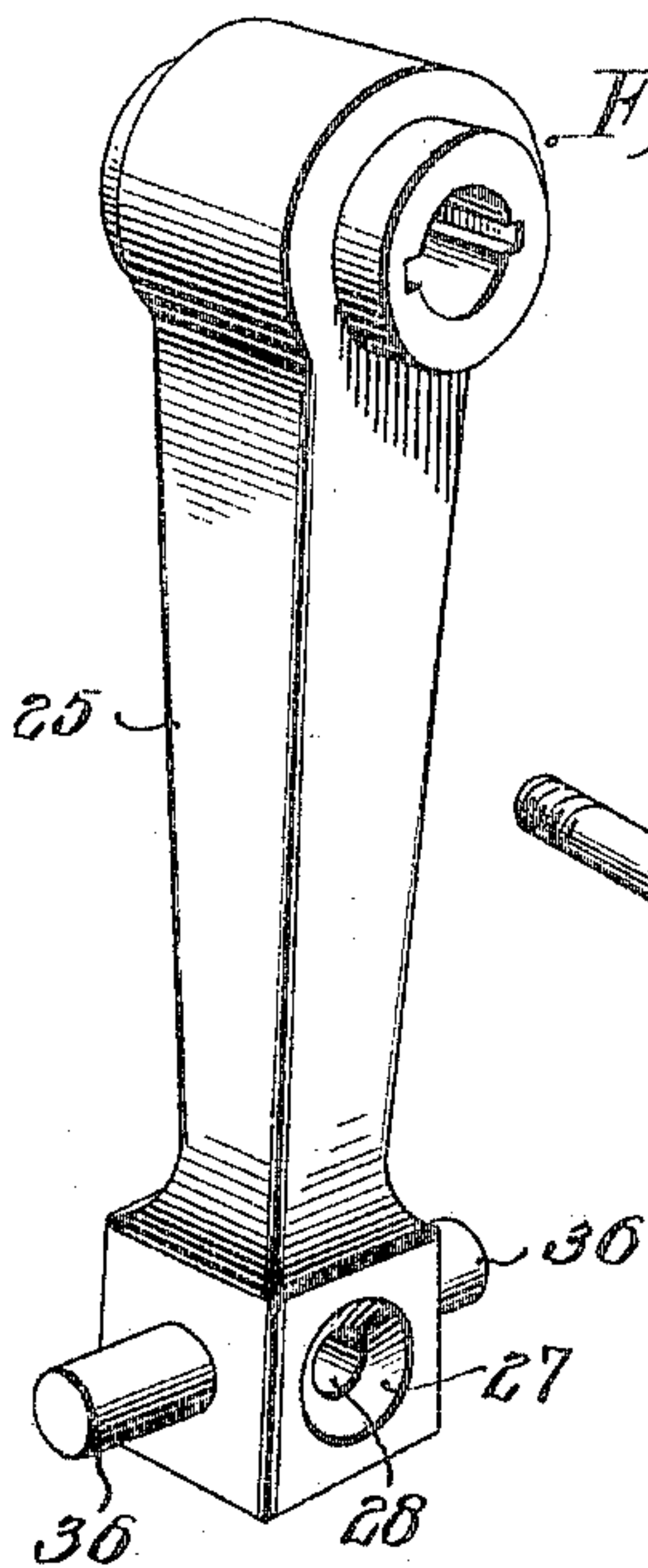
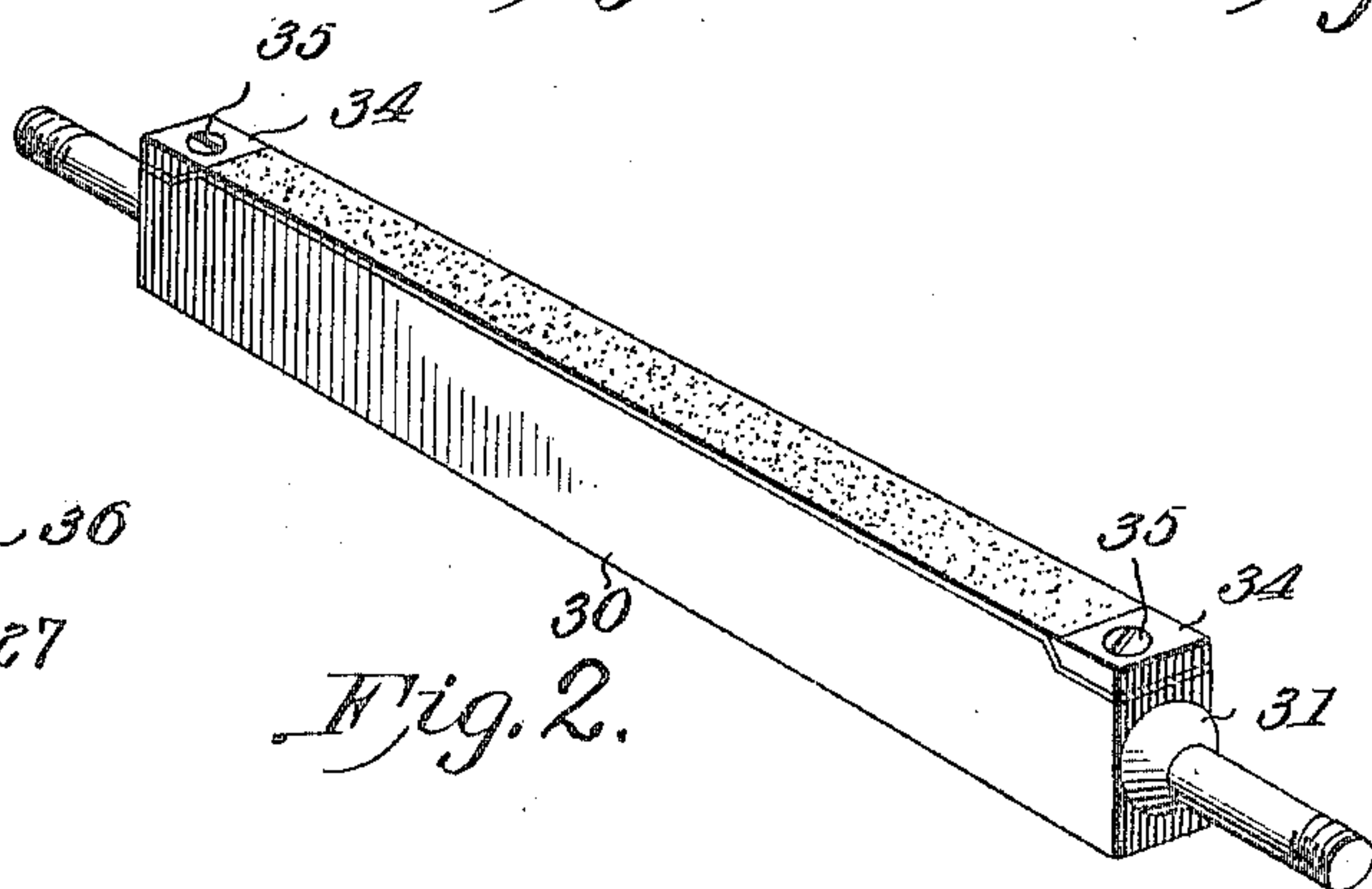


Fig. 2.



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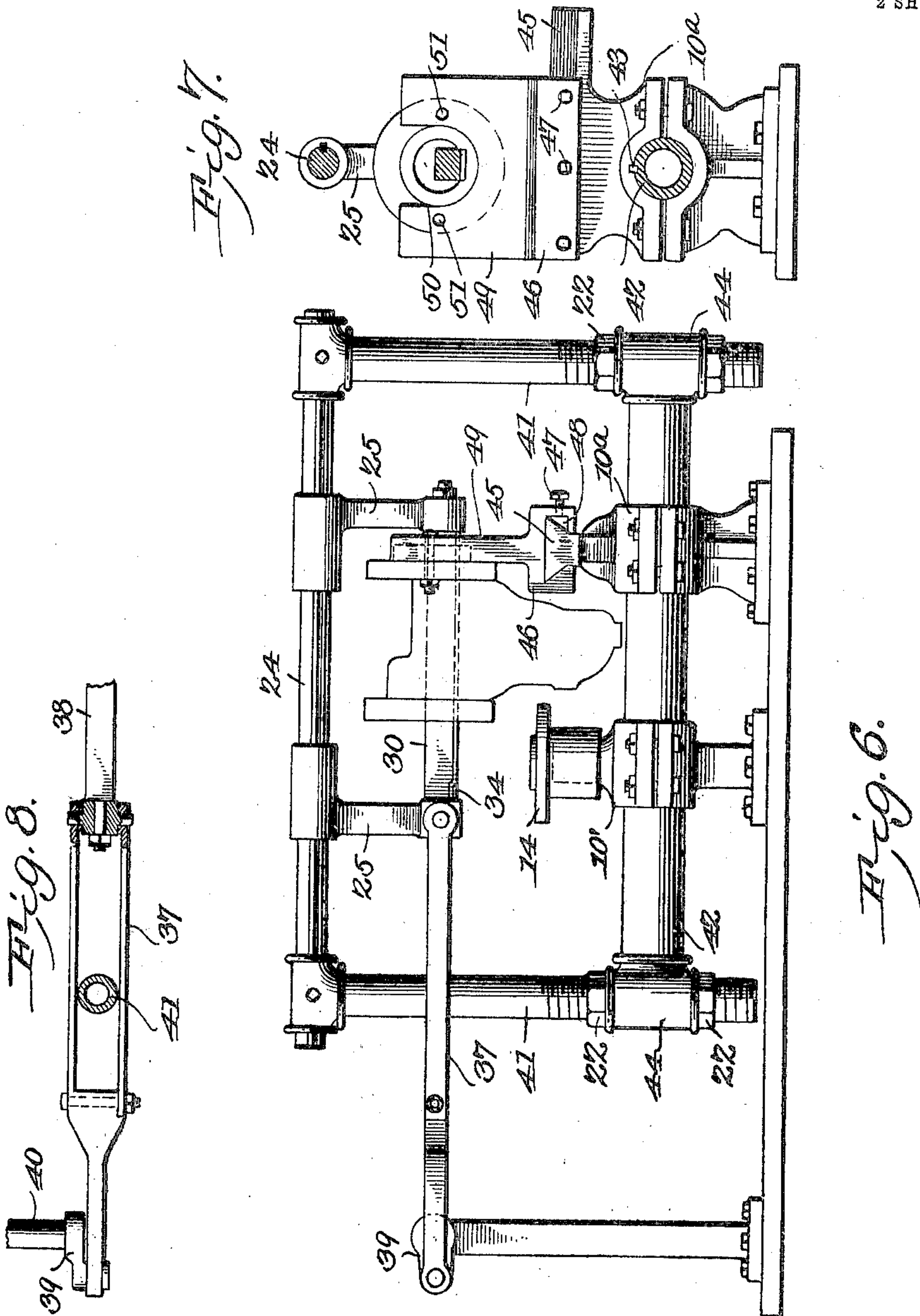
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

HENRY MEYNERS, OF PALESTINE, TEXAS.

MACHINE FOR GRINDING VALVE-SEATS.

No. 817,435.

Specification of Letters Patent.

Patented April 10, 1906.

Application filed July 28, 1905. Serial No. 271,676.

To all whom it may concern:

Be it known that I, HENRY MEYNERS, a citizen of the United States, residing at Palestine, in the county of Anderson and State of Texas, have invented a new and useful Machine for Grinding Valve-Seats, of which the following is a specification.

This invention relates to apparatus employed for the grinding or finishing of valve-seats, and has for its principal object to provide a mechanism of simple construction for grinding or facing flat seats for slide-valves—such, for instance, as the main valve of a triple-valve mechanism.

A further object of the invention is to provide a device of this character which may be readily adjusted to accommodate triple-valve casings or other work of different size.

A still further object of the invention is to provide a novel form of grinding or facing machine of that type in which a strip of emery paper or cloth is employed as an abrading element and to provide means for insuring true movement of the strip-carrying block during the grinding operation.

With these and other objects in view, as will more fully hereinafter appear, the invention consists in certain novel features of construction and arrangement of parts herein-after fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportions, size, and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, Figure 1 is an elevation, partly in section, of a grinding-machine constructed in accordance with the invention. Fig. 2 is a detail perspective view of the abrading-bar. Fig. 3 is a similar view of one of the abrading-bar carriers. Figs. 4 and 5 are detail perspective views of different forms of caps or disks arranged to fit triple-valve bodies of different type. Fig. 6 is an elevation of a slightly-modified construction of machine. Fig. 7 is a transverse section of a portion of the machine shown in Fig. 6. Fig. 8 is a plan view, partly in section, of the connecting-rod.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

The working parts of the apparatus are

supported by a suitable frame 10, at the central portion of which is a vertically-disposed standard 11, having an enlarged head 12 and an annular flange 13, the head 12 being circular and being designed in the present instance to receive the lower open end of that portion of a triple-valve body x which usually contains the emergency-valve and emergency seat and piston of a quick-acting passenger triple-valve of the Westinghouse type, although the construction and the shape of the head may be altered to accommodate work of any type. The present machine, however, is designed more especially for the grinding of slide-valve seats, and in order to accommodate triple-valve bodies of special make two or more disks 14 and 15 of different size are employed, either of said disks being placed on the head 12 and serving to receive the lower portion of the valve-body. This head is so constructed as to fit snugly within the valve-body and permit turning of the latter to any angular position with respect to the standard without allowing side play during the grinding operation.

The opposite ends of the frame are provided with vertically-disposed sockets 20 for the reception of the lower ends of bars 21, said bars being threaded and provided with nuts 22, which permit adjustment of the bar and serving also to lock the same in adjusted position. The upper ends of the bars 21 serve as supports for a guide-bar 24, and slidably mounted on the guide-bar are two hangers 25 and 26, which preferably are feathered to the bar in order to prevent independent rotative movement. The adjacent face of the lower ends of the hangers are provided with recesses 27, formed at the ends of openings 28, which extend through the hangers. The openings receive the reduced end portions of a block 30, while the recesses receive fillets or enlargements 31 at the ends of the block. The reduced end portions of the block are threaded for the reception of locking-nuts 32, by means of which the fillets may be drawn within the recessed portions of the hanger and the block firmly locked in place.

The block 30 is preferably of rectangular form in cross-section and is provided at its opposite ends with clamps 34, held in place by screws 35, and the emery-cloth or other abrading material is stretched over one face of the block, and its opposite ends confined in place by means of the clamps. The hanger

25 is provided with a pair of projecting studs 36, on which are pivoted the arms of a bifurcated link 37, the opposite end of said link being connected to the pin by a crank 39, 5 carried by a shaft 40. This shaft is revolved from any suitable source of power and effects reciprocatory movement of the block 30.

In operation the triple-valve body or other piece of work is first placed on the head 12 10 and is turned in a horizontal plane until properly adjusted. The block which carries the abrading-strip is then passed through the valve-body, and its opposite heads connected to the hangers 25 and 26. The nuts 22 may 15 then be turned in order to adjust the abrading-strip to proper position, the nuts then serving as a locking means for holding the strip in contact with the work. The shaft 40 is then revolved, and the strip of abrading 20 material is moved back and forth over the work until the valve-seat is properly ground. After the completion of the grinding operation the nuts which hold the block 30 in 25 place may be loosened, and the position of the block is reversed until its opposite faces rest against the ground-surface, the smooth face of the block serving to "finish" the valve-seat.

In Figs. 6 and 7 is illustrated a modified 30 construction of machine, this machine being arranged for the reception of valve-bodies of different type—such, for instance, as the triple bodies of both Westinghouse and New York air-brakes or the main valve-seats of 35 the pumps or other portions of air-brake apparatus. In this case the base is in the form of a pair of standards 10' and 10^a, each provided with an opening for the passage of a horizontally-disposed tube or bar 42, which 40 may be rigidly clamped in position by tightening the bolts which unite the sections of said standards. Independent rotative movement of this tube or bar is prevented by a suitable key or keys 43. At the opposite 45 ends of the tube 42 are arranged T's 44, carrying the vertical tubes 41, and the latter may be adjusted and locked in place by the nuts 22, previously described. The upper ends of the tubes 21 carry a tube 24, on which 50 are mounted the abrading-block-carrying arms. In this construction the shaft 40 is supported in a frame separate from the main frame in order that the latter may be adjusted longitudinally with respect to the two sup- 55 porting-standards, such adjustment being necessary at times in order to accommodate valve-bodies or other articles of different size. The standard 10' is provided with a head member which may be of the construction previously described, while the standard 60 10^a carries a horizontally-disposed bar 45, extending transversely of the frame and receiving a slide 46, which may be locked in position by means of suitable screws 47, that bear 65 against wedge-shaped blocks 48, arranged be-

tween the slide and the guide-bar 45. The slide 46 is provided with a standard 49, that is provided with a central recess 50 for the passage of the threaded extension of the valve-body (shown in Fig. 6) and is further 70 provided with openings 51 for the passage of securing-bolts which extend also through the rear bolting-flange of the triple-valve body, these bolts being preferably rigidly secured to the standard 49. This construction per- 75 mits of lateral adjustment of the work with respect to the abrading-block and also permits longitudinal adjustment of the frame in order to accommodate articles of different size. 80

With a device constructed in accordance with this invention it is possible to grind and finish a valve-seat more quickly than the same work can be accomplished by hand or 85 by the tools usually employed for the purpose.

Having thus described the invention, what is claimed is—

1. The combination with a frame, of a work-support, a guide-bar, hangers depend- 90 ing from said guide-bar at points beyond the opposite sides of said work-support, a block carried by the hangers and provided with clamping members for the reception of an abrading member, and means for effect- 95 ing reciprocatory movement of the hangers and block.

2. In apparatus of the class described, the combination with a frame, of a guide-bar, a pair of hangers mounted for sliding move- 100 ment on said guide-bar, and a reversible block supported by the hangers and having on one side a pair of clamping members for the reception of an abrading-strip.

3. In apparatus of the class described, the 105 combination with a frame, of a guide-bar supported by the frame, a pair of hangers slidably mounted on the guide-bar and provided with openings, the adjacent faces of the hangers being recessed at the inner ends of 110 the openings, a block having reduced end portions arranged to extend through said openings and threaded for the reception of the nuts, there being fillets or enlargements at the bases of the reduced end portions, and 115 arranged to enter the recesses of the hangers, and an abrading-strip-clamping means supported by the block.

4. In apparatus of the class described, the combination with a frame having a pair of 120 vertically-disposed sockets, vertical bars passing through said sockets and provided with threaded peripheries, adjusting and locking nuts on the threaded portions of the bars, a guide-bar carried by the upper ends 125 of said vertical bars, hangers slidably mounted on said guide-bar, a block secured to the hangers, a bifurcated link embracing one of the vertical bars, and pivotally connected to one of the hangers, a crank to which the op- 130

posite end of the link is secured, and an abrading-strip-clamping means carried by the block.

5 5. In an apparatus of the class described, the combination with a pair of standards, of a longitudinally-adjustable base bar or tube carried thereby, means for clamping the bar in position, an upper frame carried by the base-bar, an abrading block or strip support-
10 ed by the frame, and work-carriers supported by said standards.

6. In a device of the class specified, the combination with a pair of spaced standards, of a frame supported thereby and adjustable

with respect to the standards, an abrading 15 member guided by the frame, a guide-bar carried by one of the standards and extending transversely of the frame, a slide mounted on said guide-bar, and a work-supporting standard carried by said slide. 20

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

HENRY MEYNERS.

Witnesses:

T. T. SNOW,
S. T. HOWARD.