

No. 882,259.

PATENTED MAR. 17, 1908.

H. MEYER.

PNEUMATIC CARVING DRILL.

APPLICATION FILED SEPT. 24, 1907.

2 SHEETS—SHEET 1.

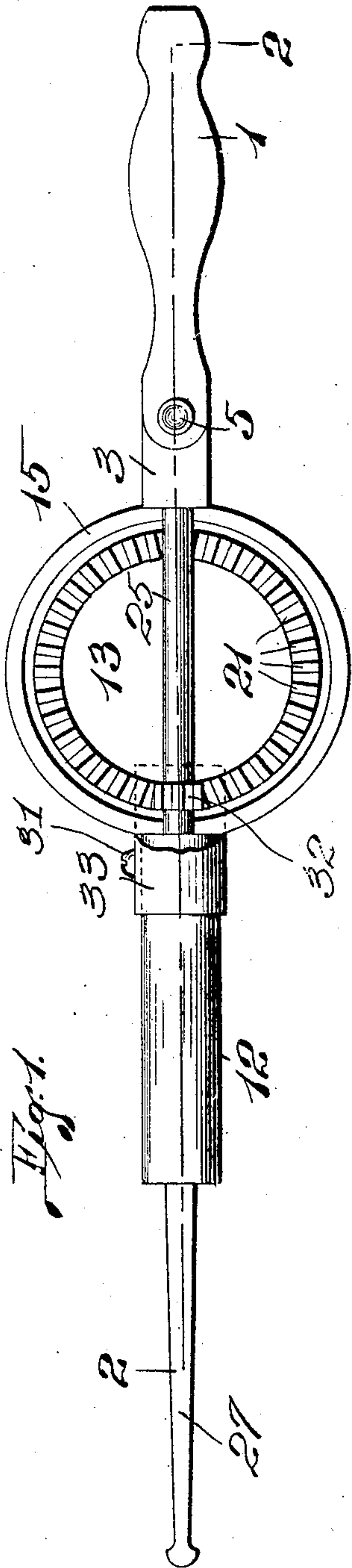


Fig. 1.

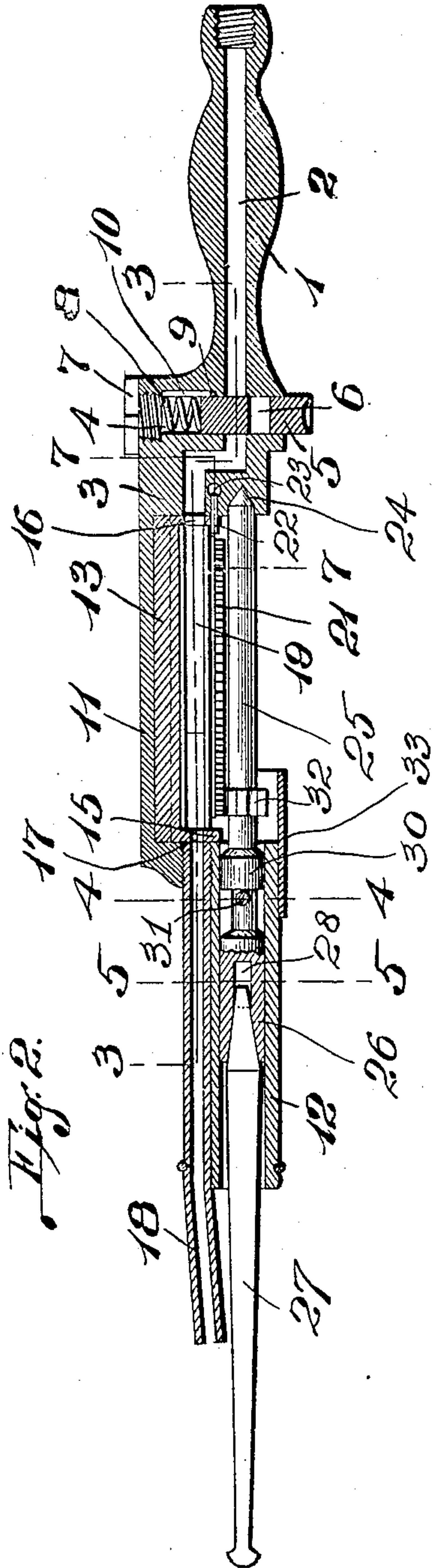


Fig. 2.

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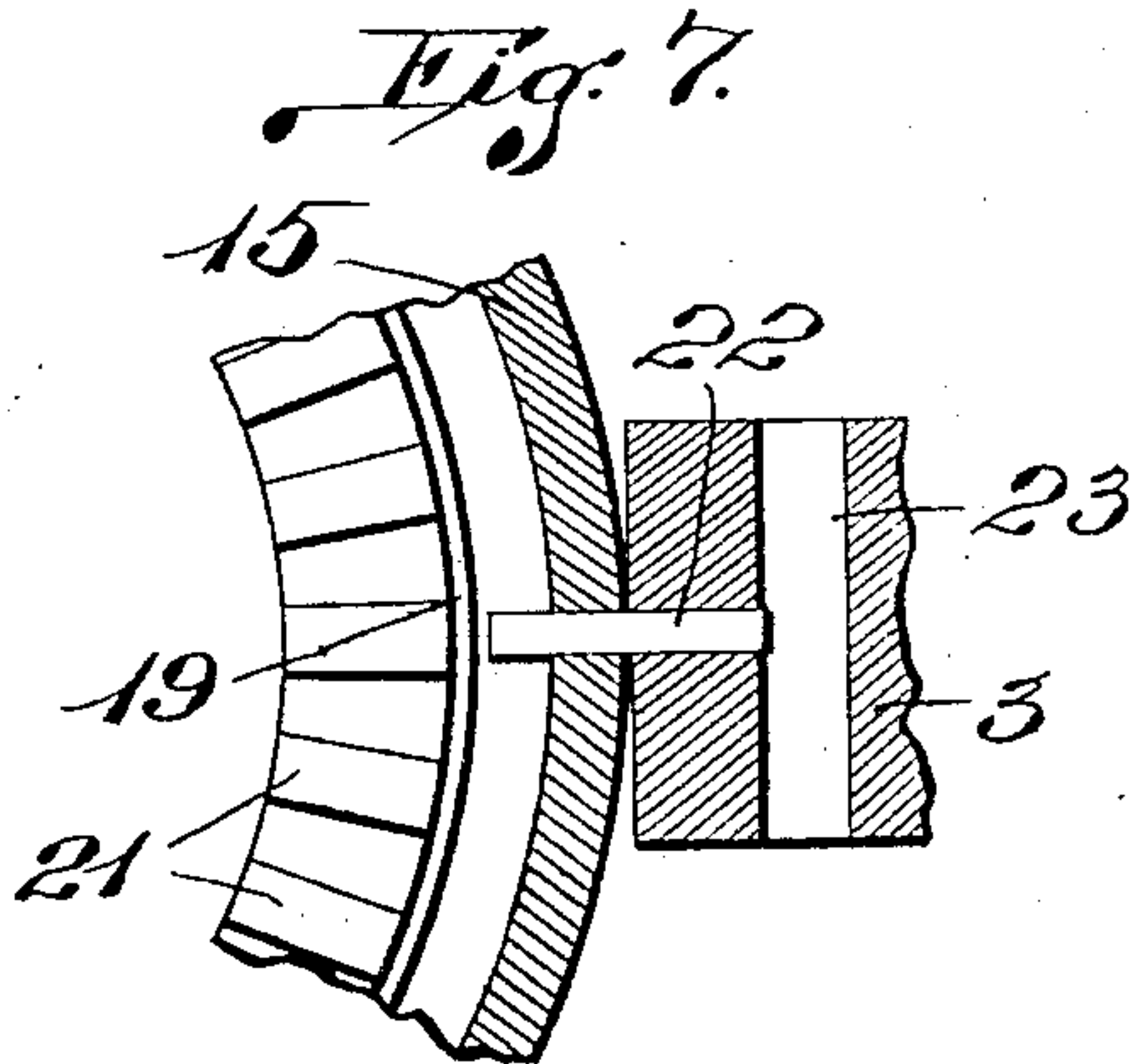
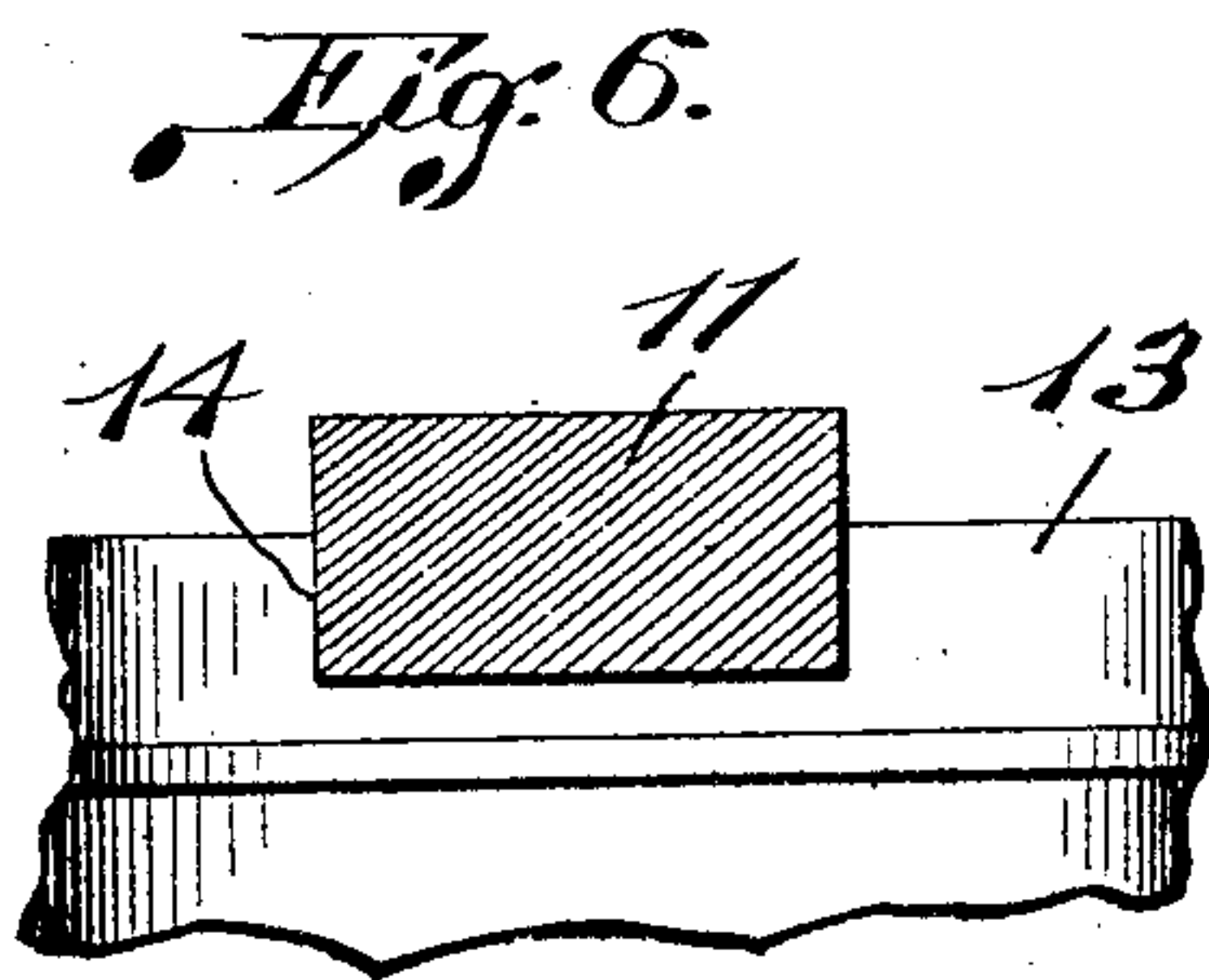
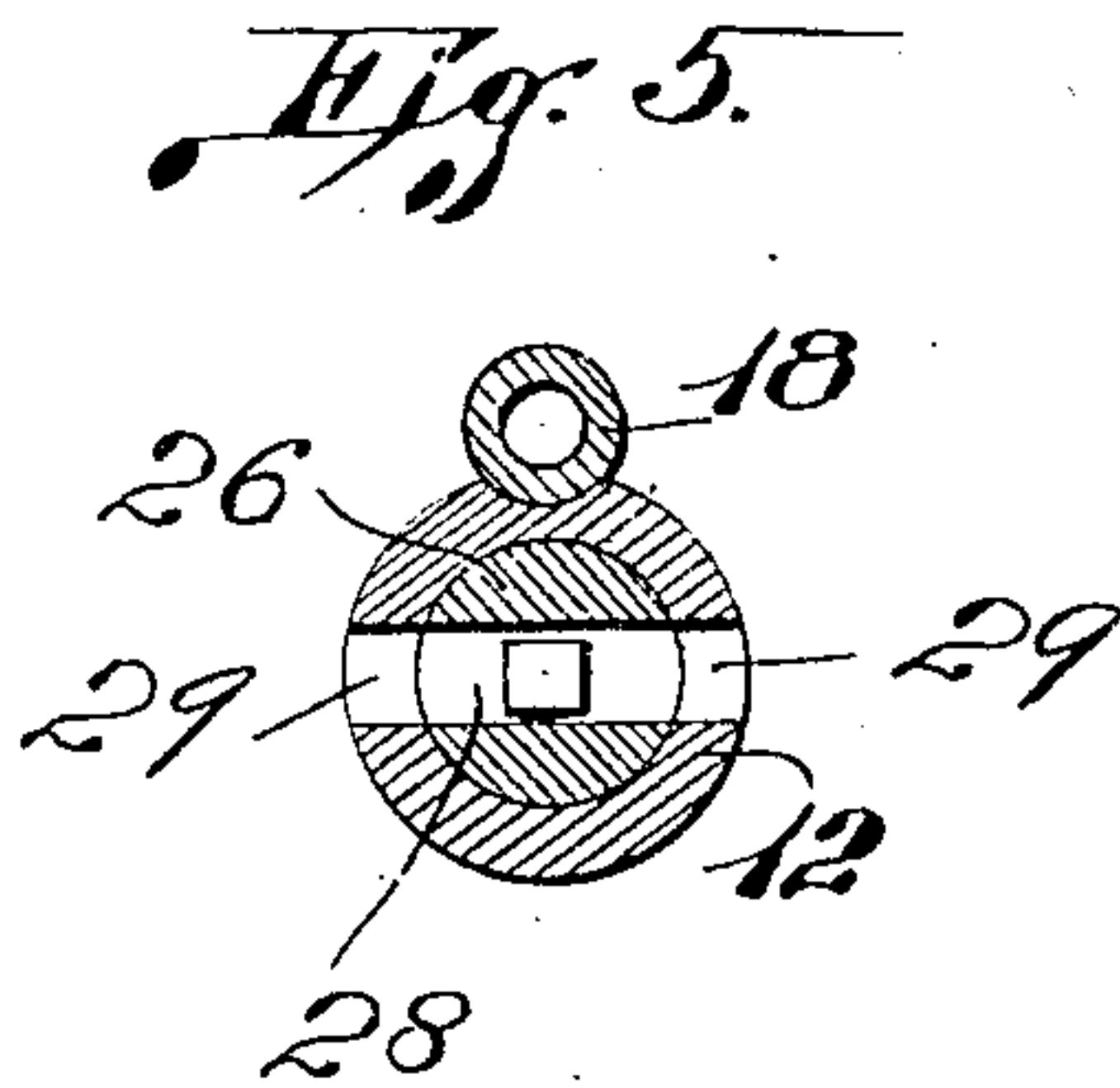
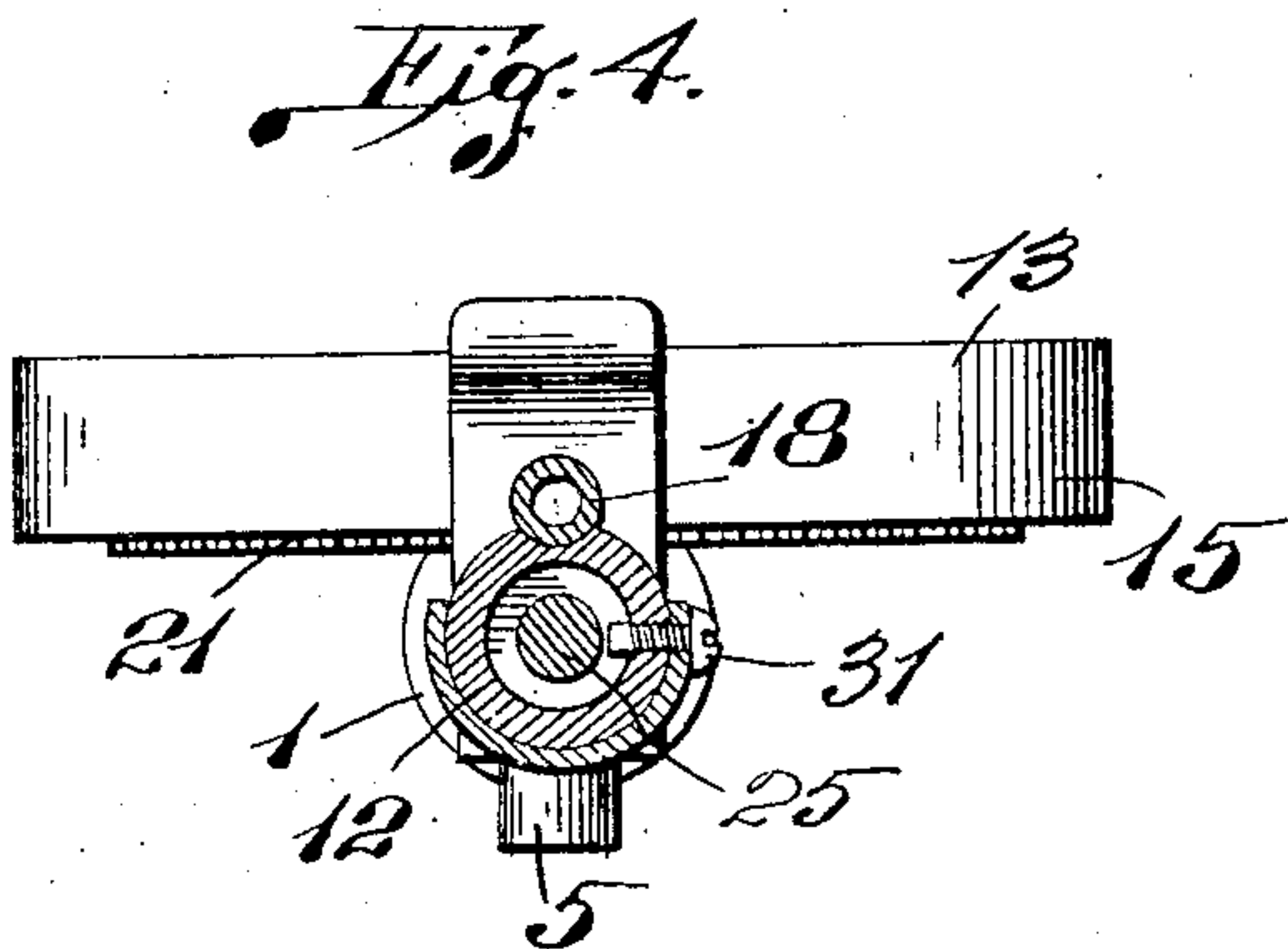
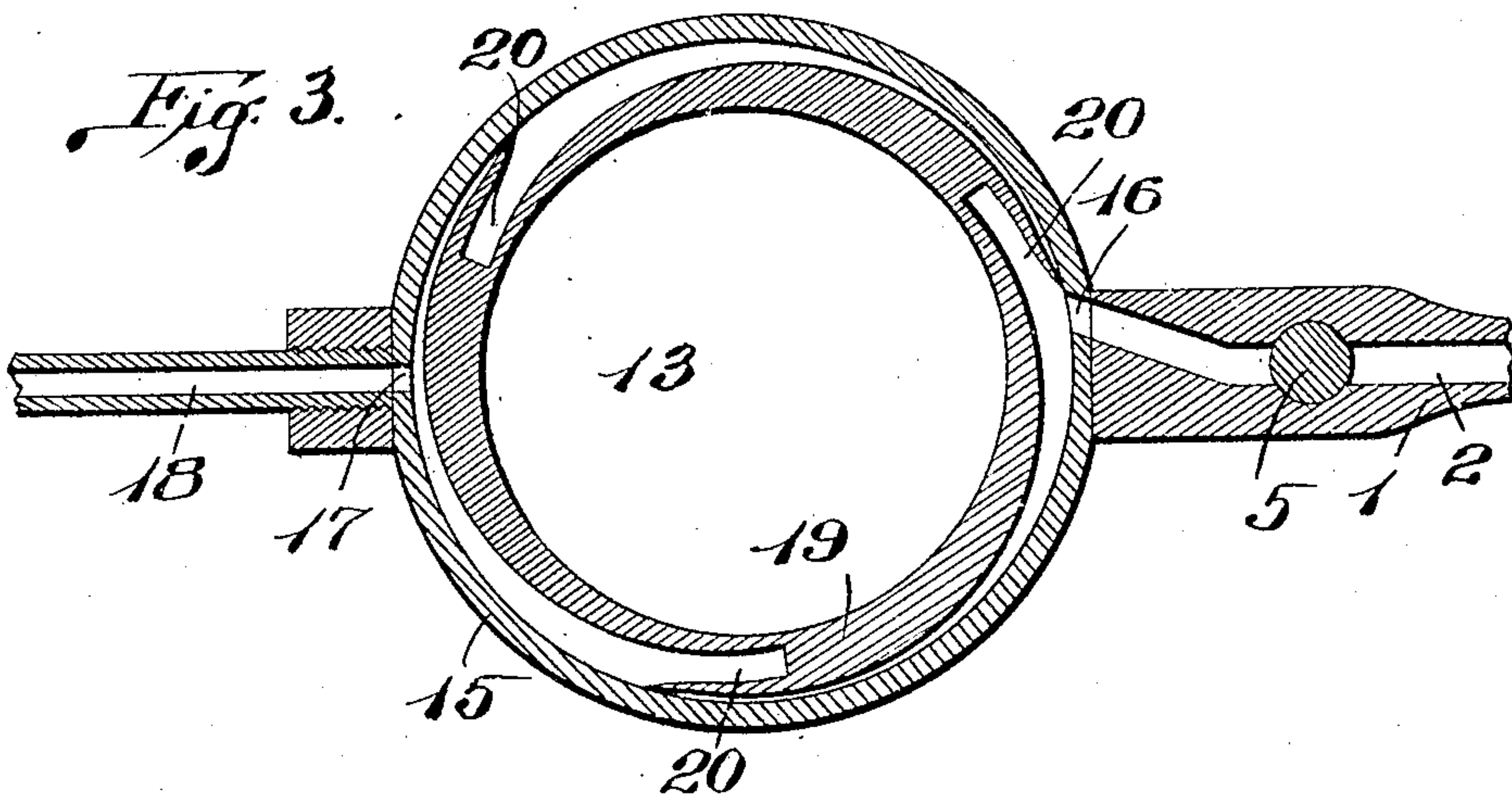
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PNEUMATIC CARVING-DRILL.

No. 882,259.

Specification of Letters Patent.

Patented March 17, 1908.

Application filed September 24, 1907. Serial No. 394,422.

To all whom it may concern:

Be it known that I, HERMAN MEYER, a citizen of the United States, and resident of St. Louis, Missouri, have invented certain new and useful Improvements in Pneumatic Carving-Drills, of which the following is a specification containing a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to a pneumatic carving drill, my object being to construct a simple, inexpensive tool which is operated by compressed air, and which tool is particularly adapted for marble carving, although by the use of different forms of bits or tools, the device may be used for boring in wood, or like material, and for setting screws.

A further object of my invention is to provide a tool of the class described with an exhaust tube, the end of which is adjacent the bit carried by the tool, thus providing means for conveying the exhaust to the point where the bit engages the work, thus blowing away all dust caused by the operation of the bit in the work.

To the above purposes, my invention consists in certain novel features of construction and arrangement of parts, which will be hereinafter more fully set forth, pointed out in the claims, and illustrated in the accompanying drawings, in which:—

Figure 1 is a front elevation of a tool of my improved construction; Fig. 2 is a horizontal section taken on the line 2—2 of Fig. 1; Fig. 3 is an enlarged vertical section taken on the line 3—3 of Fig. 2; Fig. 4 is a cross section taken on the line 4—4 of Fig. 2; Fig. 5 is a cross section taken on the line 5—5 of Fig. 2; Fig. 6 is an enlarged detail section illustrating the manner in which a stationary ring or housing is fitted onto the frame of the tool; Fig. 7 is an enlarged detail section taken approximately on the line 7—7 of Fig. 2.

Referring by numerals to the accompanying drawings:—1 designates the handle of the tool, through which is formed a longitudinal bore or passageway 2, and the rear end of said handle being adapted to receive a hose, or other tubular connection for conveying compressed air to the tool.

Formed integral with the forward end of

the handle is a block 3, through which is formed a transverse aperture 4, the same intersecting the passageway 2; and arranged to slide in this aperture 4 is a valve plug 5, provided with an aperture 6, which is adapted to register with the passageway 4 when the valve plug is pushed inward to its limit of movement.

A screw plug 7 closes the rear end of the aperture 4, and interposed between said screw plug and the valve plug 5 is an expansive coil spring 8, which normally maintains the valve plug at its outer limit of movement. Seated in the valve plug 5 is a small pin 9, which operates in a slot 10, and is for the purpose of limiting the outward movement of said valve plug, and also for preventing the rotation thereof.

Formed integral with the rear portion of the block 3 is a forwardly projecting bar 11, and formed integral with the forward end of said bar, and in approximate alinement with the handle 1, is a tube 12, which serves as a bearing for the rotating shaft of the tool, and also performs the function of a secondary handle which is grasped by the left hand when the tool is manipulated.

13 designates a circular plate, or disk, which fits between the block 3 and the rear end of the tube 12, and formed in the rear side of said disk is a groove 14, which receives the bar 11 when the parts are assembled. Formed integral with the edge of this disk 13, on the front side thereof, is a flange or ring 15; and formed through said flange, immediately in front of the block 3, is an aperture 16, which communicates with the discharge end of the passageway 2, which latter is inclined from the valve plug 5 toward the aperture 16.

Formed through the flange 15, directly opposite the aperture 16, is an exhaust aperture 17, which communicates with the rear end of a tube 18, the same being carried by the tube 12, and terminating at a point somewhat in advance of the forward end of said tube 12.

Arranged for rotation immediately against the front face of the disk 13, and within the ring or flange 15, is a driving ring 19, in the periphery of which is formed a plurality of

pockets 20; and formed integral with the front face of this driving ring is a circular row of gear teeth 21. A pin 22 is arranged to slide through a portion of the block 3, and
 5 through the flange 15; and when said pin is moved outward to its limit of movement, its forward end overlies the edge of the ring 19, thus maintaining the ring in proper position within the flange 15. This pin 22 is forced
 10 outward by means of a suitable tool introduced through an aperture 23 formed in the head 3.

Formed in the face of the block 3, in direct alinement with the center of the tube 12, is a
 15 bearing 24, in which operates the rear end of a shaft 25, the forward portion of which projects into the tube 12; and formed integral with the forward end of this shaft is a socket 26, which receives the rear end of the bit 27
 20 carried by the tool.

Formed through the socket 26 is an aperture 28, and formed through the tube 12 are the transverse apertures 29, which, together with the aperture 28, permits the insertion
 25 of a tool utilized for removing the bit from the socket.

Formed integral with the shaft 25, and operating in the rear end of the tube 12, is a bearing 30, in front of which engages the
 30 inner end of a screw 31, which passes through the tube 12, thus holding the shaft 25 in proper position, and maintaining the rear end of said shaft in the bearing 24.

Formed on or fixed to the shaft 25 is a pin-
 35 ion 32, which meshes with the teeth 21; and, thus when the driving ring is rotated, rotary motion is imparted to the shaft 25.

A sheet metal thumb guard 33 is fixed to the rear end of the tube 12 by means of the
 40 screw 31, which guard projects over the pinion 32, thus preventing the thumb or any portion of the left hand from coming in contact with said pinion when the tool is in use.

When a tool of my improved construction
 45 is in use, the rear end of the bit is inserted in the socket 26, and a tube for conveying compressed air is connected to the rear end of the handle 1.

The tool is engaged with both hands and
 50 the operator, by placing the thumb of the right hand against the projecting end of the valve plug 5 and pressing said plug inward, permits the compressed air to pass through the passageway 2 and aperture 6, and said
 55 compressed air will discharge through the opening 16, and thus be delivered into the pockets 20 of the ring 19. As this inflow or discharge of air is on an angle toward the pockets, the ring 19 will be rotated within
 60 the flange 15; and, in so doing, the teeth 21 mesh with the pinion 32, driving the same and the shaft 25, and in turn rapidly rotating the bit 27 carried by the socket 26 at the forward end of the shaft. The forward end

of the bit is now engaged upon the work, and
 65 as said bit is driven at a very high rate of speed, the work is rapidly cut away, as desired. The air, after passing one-half way around the flange or ring inclosing the driving ring, discharges through the aper-
 70 ture 17, into the tube 18, and said exhaust air finally discharges from the forward end of said tube and is delivered thereby onto that portion of the work engaged by the forward end of the bit; and thus all the dust
 75 arising from the bit while at work is blown away by the continuous blast of exhaust air.

The operation of the tool is stopped by disengaging the thumb from the valve plug
 5, and the expansive coil spring 8 will imme-
 80 diately move said valve plug to its outer limit of movement, thus cutting off the discharge of air through the passageway 2.

A tool of my improved construction is particularly adapted for use in marble carving,
 85 although by the use of bits of different shape and form, the tool is applicable for use on wood, or analogous material.

The tool is composed of a minimum number of parts, which are easily assembled or
 90 taken apart, and by utilizing rotary motion for the driving parts of the tool, much finer work can be produced than where a tool is made use of in which the driving parts reciprocate, as tools of the latter construction
 95 produce excessive vibration.

I claim:—

1. A tool of the class described, comprising a handle, a driving ring arranged for operation therein, in the periphery of which ring
 100 is formed a plurality of pockets, and which driving ring is operated by compressed air carried through a portion of the handle, a shaft arranged for operation in the handle and driven by the driving ring, a bit carried
 105 by the forward end of the shaft, and means whereby the exhaust from the driving ring is discharged onto the forward end of the bit for blowing away the cuttings of the bit.

2. In a tool of the class described, a
 110 handle, portions of which are tubular, a housing arranged between the tubular portions of the handle, a driving ring arranged for operation in the housing, in the periphery of which ring is formed a plurality of
 115 pockets, a controlling valve arranged in one of the tubular portions of the handle to the rear of the driving ring, a shaft arranged for rotation in the handle and operated by the driving ring, and a bit carried by the forward
 120 end of the shaft.

3. In a tool of the class described, a handle, portions of which are tubular, a housing arranged between the tubular portions of the handle, a driving ring arranged
 125 for operation in the housing, in the periphery of which ring is formed a plurality of pockets, a controlling valve arranged in one of the

tubular portions of the handle to the rear of the driving ring, a shaft arranged for rotation in the handle and operated by the driving ring, a bit carried by the forward end of the shaft, and means whereby the exhaust
5 from the driving member is conveyed and discharged onto the forward end of the bit.

In testimony whereof, I have signed my name to this specification, in presence of two subscribing witnesses.

HERMAN MEYER.

Witnesses:

E. M. HARRINGTON,
E. L. WALLACE.