

E. FRANKE.
HAND PNEUMATIC TOOL.
APPLICATION FILED SEPT. 2, 1905.

Fig. 1.

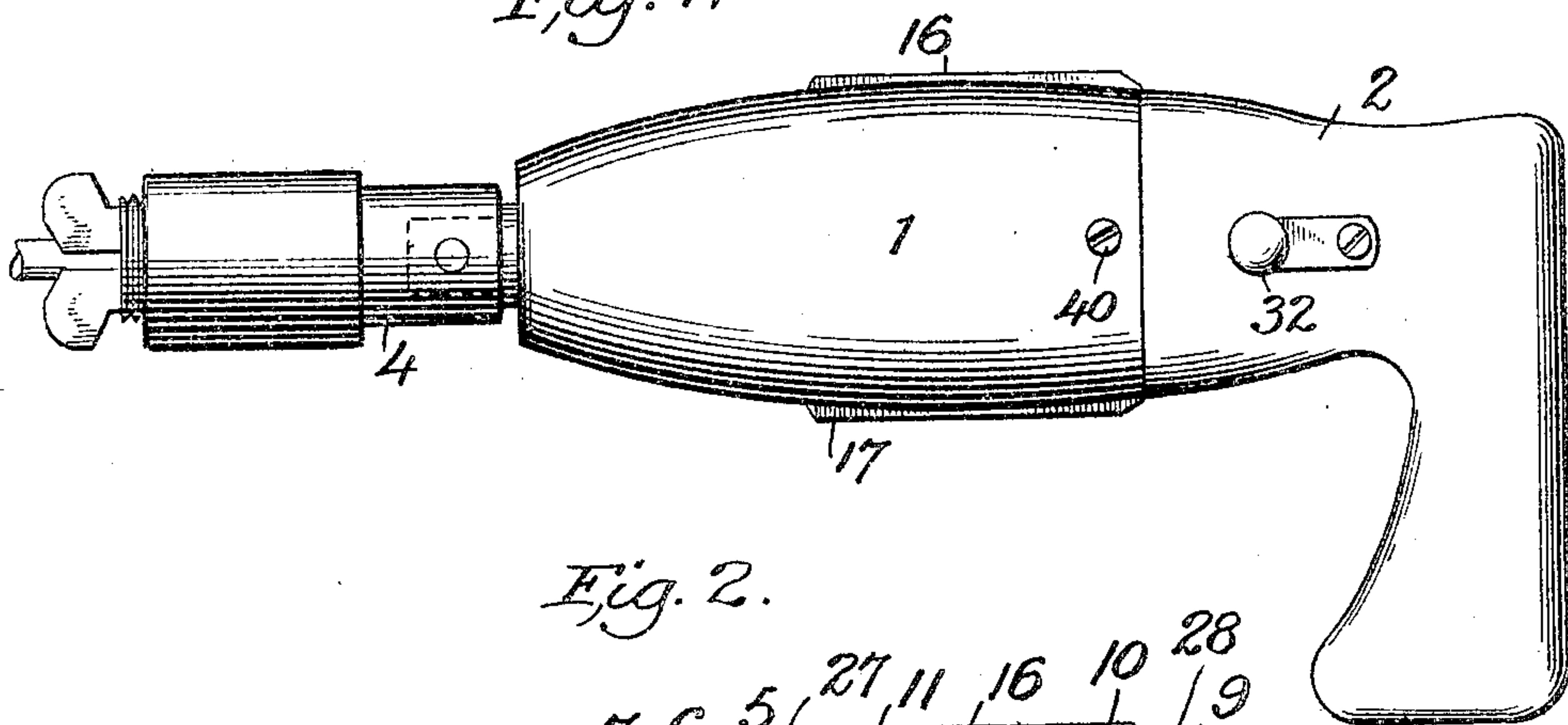


Fig. 2.

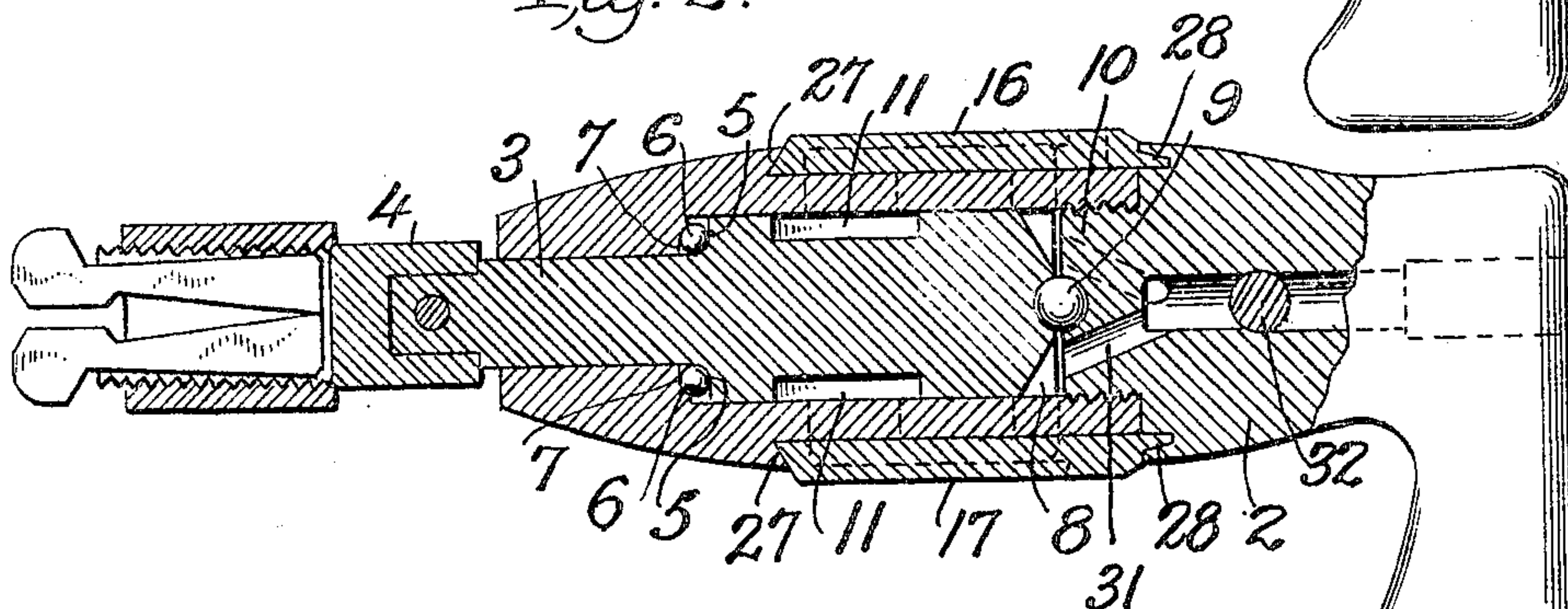


Fig. 3.

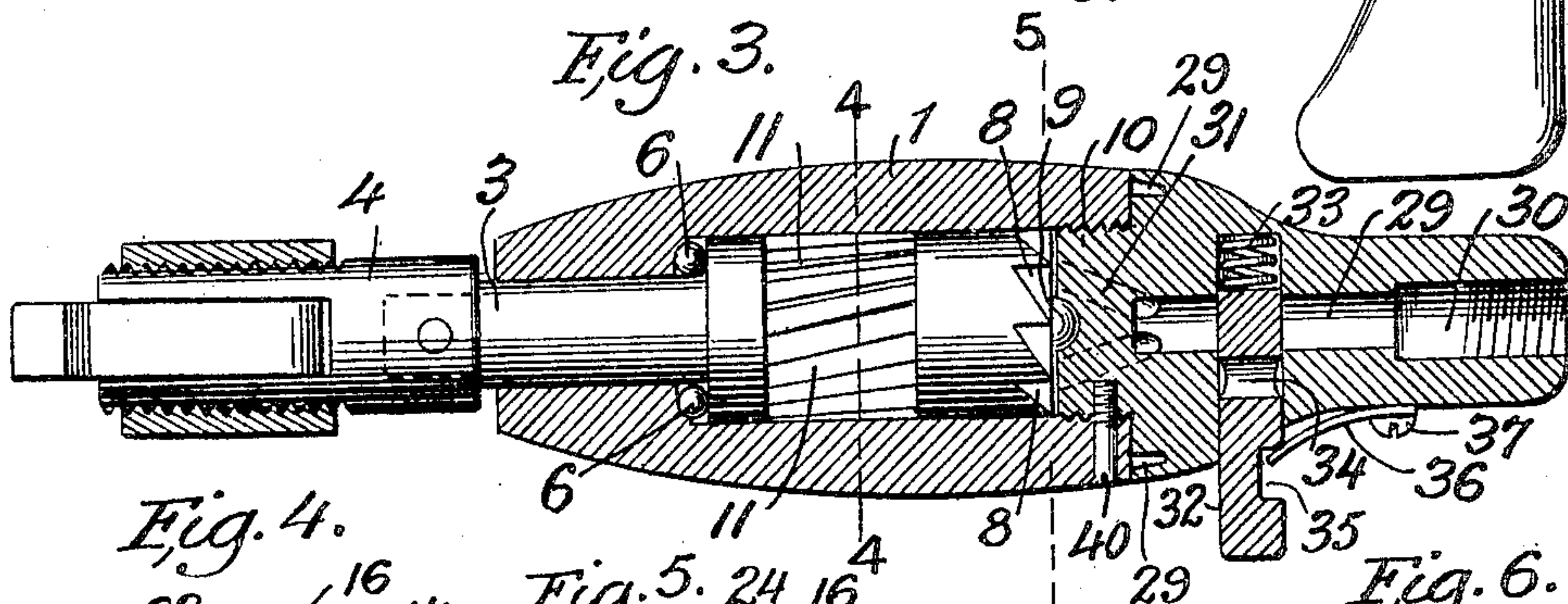


Fig. 4.

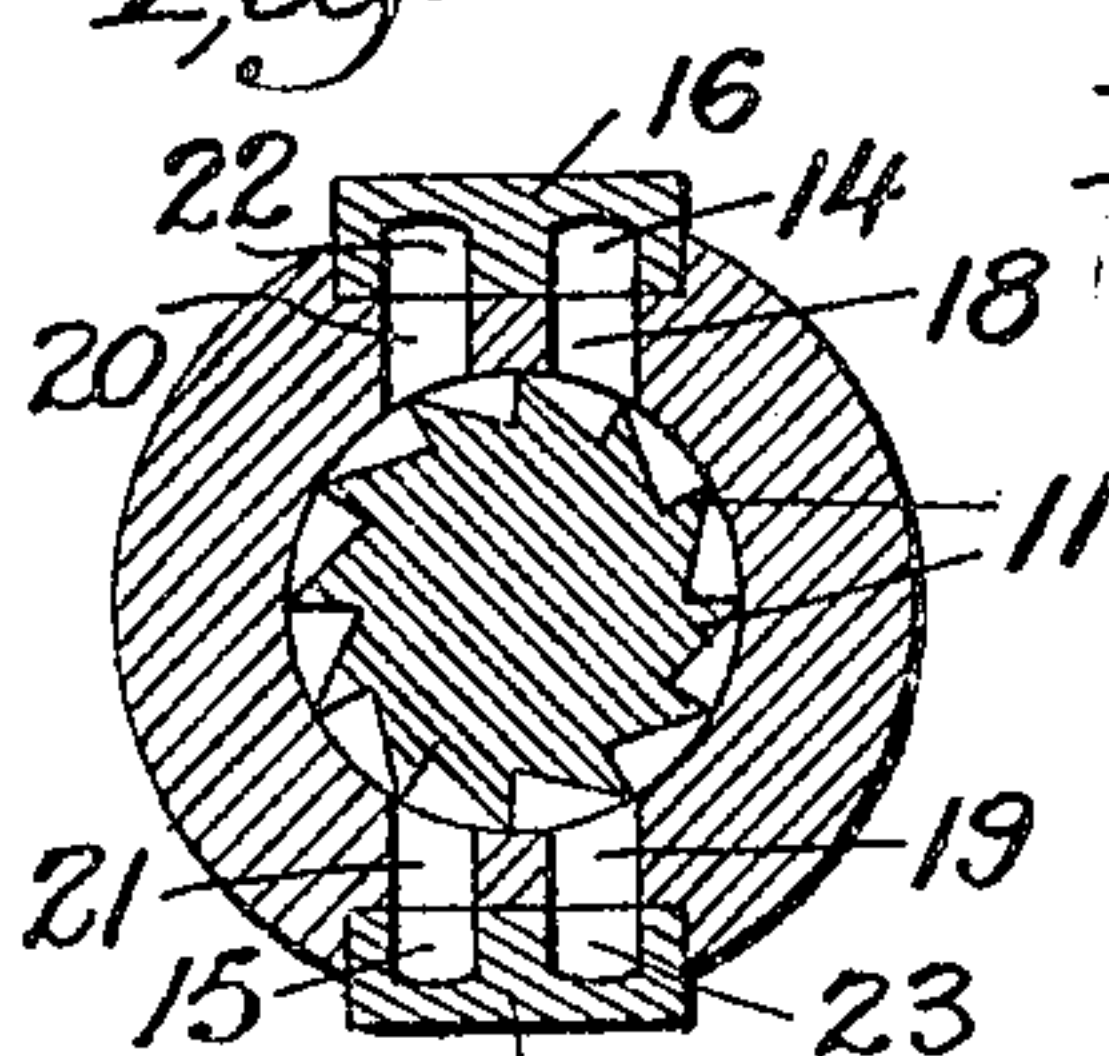


Fig. 5.

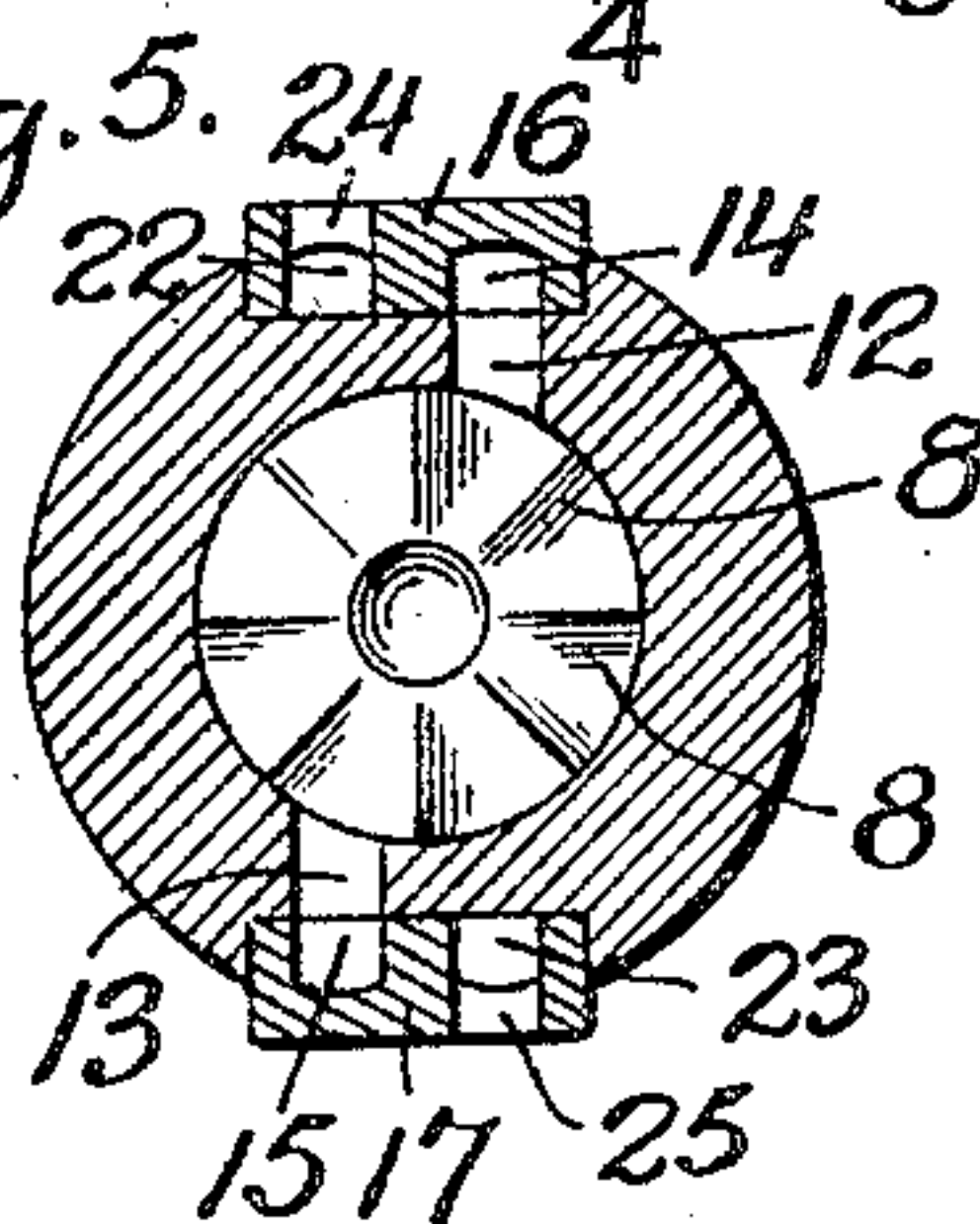
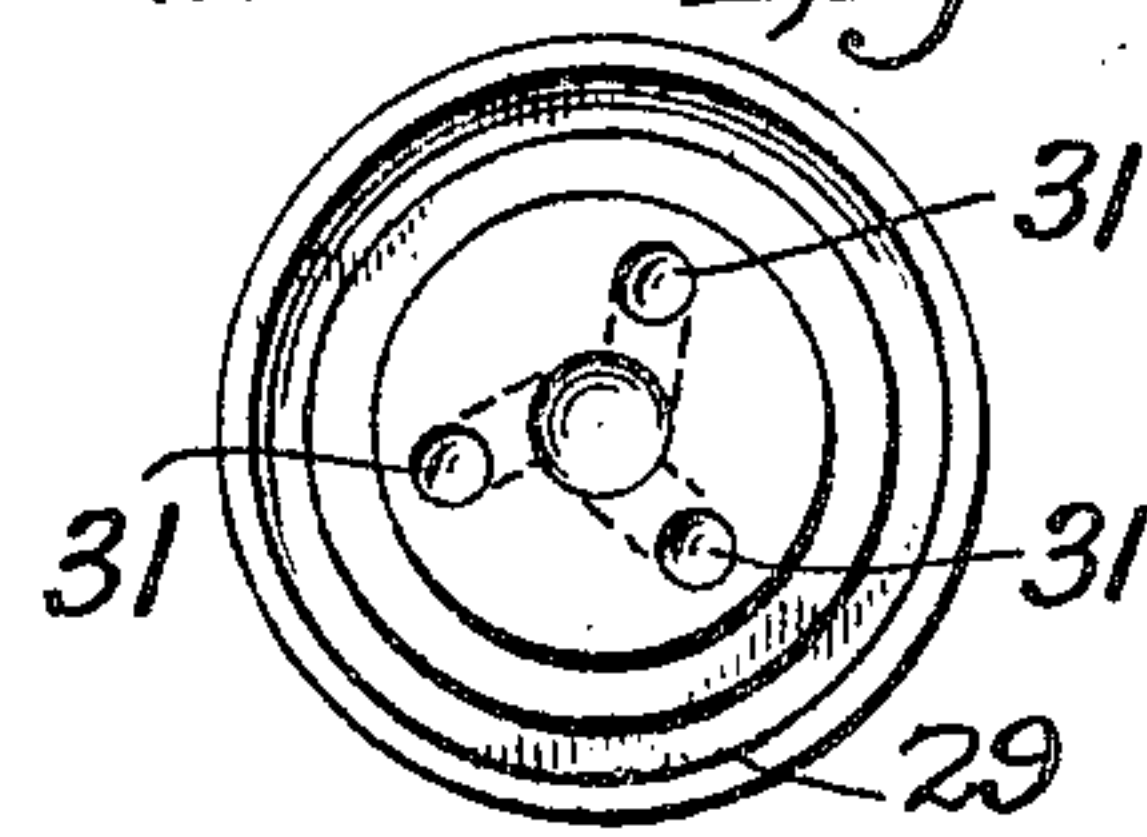


Fig. 6.



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UNITED STATES PATENT OFFICE.

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HAND PNEUMATIC TOOL.

No. 807,452.

Specification of Letters Patent.

Patented Dec. 19, 1905.

Application filed September 2, 1905. Serial No. 276,871.

To all whom it may concern:

Be it known that I, EMIL FRANKE, a citizen of the United States, residing at Hicksville, Long Island, in the county of Queens and State of New York, have invented new and useful Improvements in Hand Pneumatic Tools, of which the following is a specification.

This invention relates to pneumatic tools such as are adapted particularly for boring and similar operations.

The objects of the invention are to improve and simplify the construction of such devices; furthermore, to increase their efficiency in operation and to decrease the expense attending their manufacture.

With the foregoing and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed as a practical embodiment thereof.

In the accompanying drawings, forming part of this specification, Figure 1 is a side elevation of a pneumatic tool constructed in accordance with the invention. Fig. 2 is a similar view, partly in section. Fig. 3 is a longitudinal section taken at a right angle to Fig. 2. Fig. 4 is a transverse section on the line 4 4 of Fig. 3. Fig. 5 is a similar section on the line 5 5 of Fig. 5. Fig. 6 is an under plan view of the head or handle portion of the tool.

Like reference - numerals indicate corresponding parts in the different figures of the drawings.

The improved tool of the present invention comprises a casing 1, having a head or handle portion 2, which may be of any suitable form and construction. Mounted in the casing 1 is a rotary member or shaft 3, to one end of which is secured a tool-holding device, such as 4, which may be of any convenient or well-known form and construction adapted to hold a tool for boring or other purposes. The rotary member or shaft 3 preferably is enlarged within the casing 1 to form an annular shoulder 5, against which bears a plurality of antifriction-balls 6, that rest against an internal shoulder 7 of the casing 1. At the end thereof within the casing 1 the rotary member 3 is formed with a set of turbine-blades 8, said blades radiating from a centrally-located semicircular depression in which is seated an antifriction-ball 9, fitting into a similar depression in a tubular ex-

tension 10, formed on the head or handle portion 2 and projecting into the end of the casing 1. In addition to the turbine-blades 8 the rotary member or shaft 3 is formed with a separate set of turbine-blades 11, which are arranged around the periphery of said rotary member or shaft.

Formed in the casing 1 adjacent to the turbine-blades 8, as shown in Fig. 5, is a pair of oppositely-disposed outlets 12 13, which open at their outer ends into grooves 14 15, formed in the inside faces of plates 16 17, which are removably secured to the casing 1 in any suitable manner, preferably as hereinafter described. The grooves 14 15 at their lower ends open into inlets 18 19, which enter the casing 1 adjacent to the turbine-blades 11. Formed in the casing 1 adjacent to the blades 11 is a pair of oppositely-disposed outlets 20 21, as shown in Fig. 4, which open into grooves 22 23 in the plates 16 and 17, said grooves 22 23 having outlets 24 25 at their upper ends, as shown in Fig. 5.

While the removable plates 16 and 17 may be held in place in any suitable manner, said plates preferably are secured in position by dovetailing or undercutting the lower end of the slots in the casing 1, as indicated at 27 in Fig. 2, and by forming said plates with projecting tongues 28, which fit into slots 29 in the head or handle portion 2.

Extending through the head or handle portion 2 is a bore 29, which is threaded at its upper end, as indicated at 30, to receive a pipe for supplying compressed air or other suitable fluid for operating the device. At its lower end the bore 4 branches into a plurality of radially-disposed passages 31, as indicated in Figs. 2, 3, and 6.

The bore 29 is controlled by means of a valve 32, which is normally pressed outward by means of a coil-spring 33, said valve being formed with an annular groove 34, which permits the passage of compressed air when the valve is forced inward. The valve 32 is formed with a cut-away portion 35, into which fits a limiting member 36, pivotally mounted upon a screw or bolt 37. By swinging the limiting member 36 upon its pivot until said limiting member becomes disengaged from the cut-away portion 35 of the valve 32 said valve can be radially removed from the head 1 whenever desired.

Constructed as above described, the operation of the improved device is as follows: When the valve 32 is pushed inward, the

compressed air or other fluid element passes along the bore 29 and through the radiating passages 31. Upon leaving the passages 31 the motive fluid impinges against the first set of turbine-blades 8 and imparts a rotary motion to the shaft 3. After striking the blades 8 the compressed air passes through the outlets 12 13, grooves 14 15, and inlets 18 19, so that it is caused to impinge against the second set of turbine-blades 11, thus serving a second time to aid in the operation of rotating the shaft 3. After impinging against the turbine-blades 11 the motive fluid passes through the outlets 19 20, grooves 22 23, and outlets 25.

While the head 2 may be held upon the casing 1 in any suitable manner, said head preferably is secured in position by means of a screw or bolt 40, which extends through the casing 1 and engages the tubular extension 10, as shown in Figs. 1 and 3.

The pneumatic tool of this invention is strong, simple, durable, and inexpensive in construction, as well as thoroughly efficient in operation.

Changes in the precise embodiment of invention illustrated and described may be made within the scope of the following claims without departing from the spirit of the invention or sacrificing any of its advantages.

Having thus described the invention, what is claimed as new is—

1. A hand-tool comprising a casing, a ro-

tary member therein having a set of turbine-blades on one end thereof and a second set of turbine-blades intermediate the ends thereof, said second set of turbine-blades being adapted to be impinged upon by motive fluid directed tangentially against the periphery of the rotary member, means for securing an implement to said rotary member, and means for directing motive fluid slantingly against the first set of turbine-blades and tangentially against the second set of turbine-blades.

2. A hand pneumatic tool comprising a casing, a rotary member in said casing, having one set of turbine-blades upon the end thereof and a second set of turbine-blades intermediate the ends thereof, a head secured to the casing and having a bore extending therethrough and separating into a plurality of discharge-passages, a valve in said head, a pair of oppositely-disposed outlets in said casing adjacent to each set of turbine-blades, a pair of inlets in said casing adjacent to one set of turbine-blades, a pair of removable slotted plates for conducting motive fluid from one pair of outlets to one pair of inlets, and from the other pair of outlets to the atmosphere, and means for securing an implement to said revolving member.

In testimony whereof I have affixed my signature in the presence of two witnesses.

EMIL FRANKE.

Witnesses:

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EDWARD SCHEIBER.