

No. 673,228.

Patented Apr. 30, 1901.

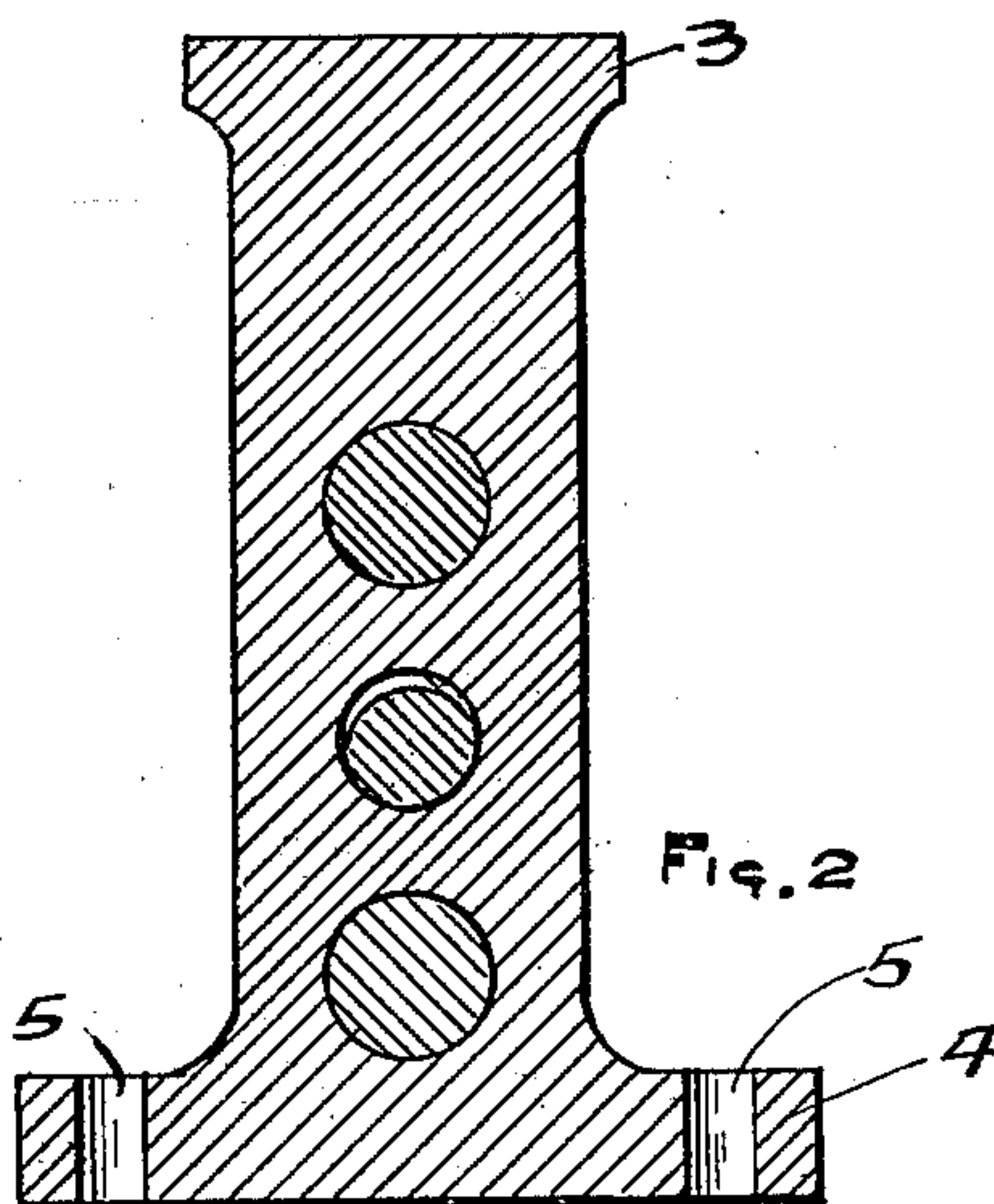
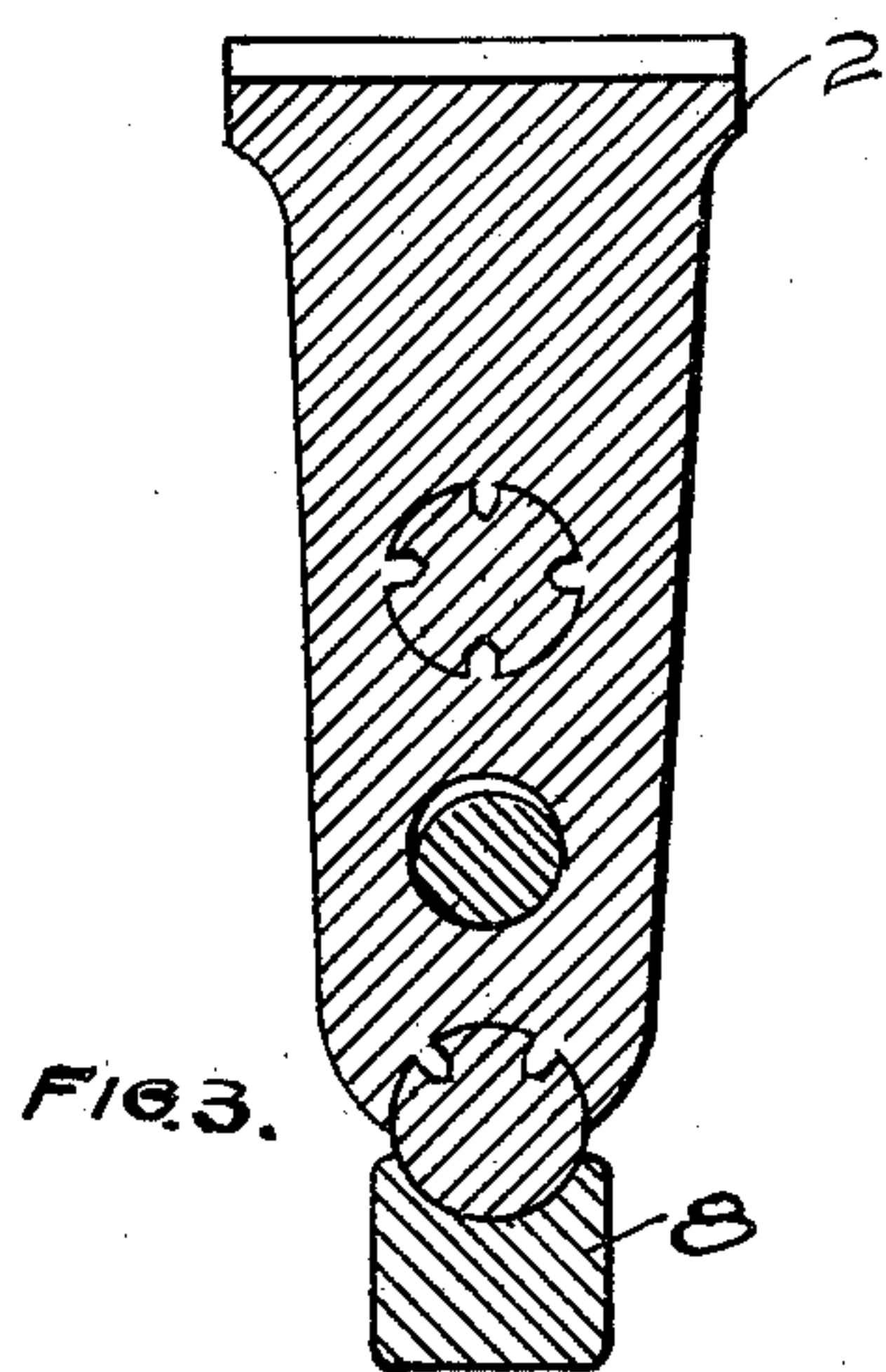
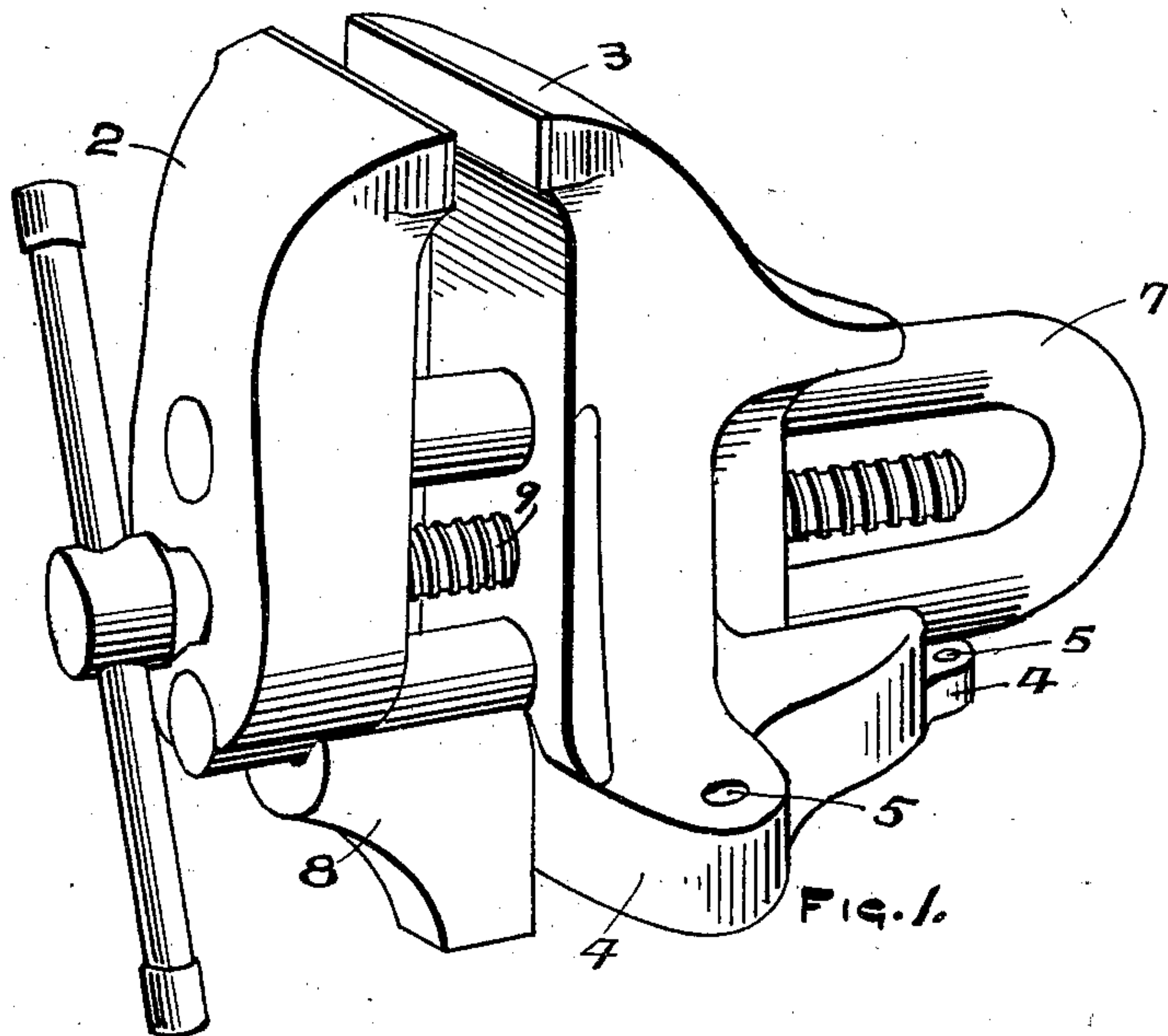
J. L. WARE.

WISE.

(Application filed June 11, 1898.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:

O. E. Slade

W. E. Gaskin

INVENTOR

JOSEPH L. WARE.

BY

Paul Hawley
HIS ATTYS.

No. 673.228.

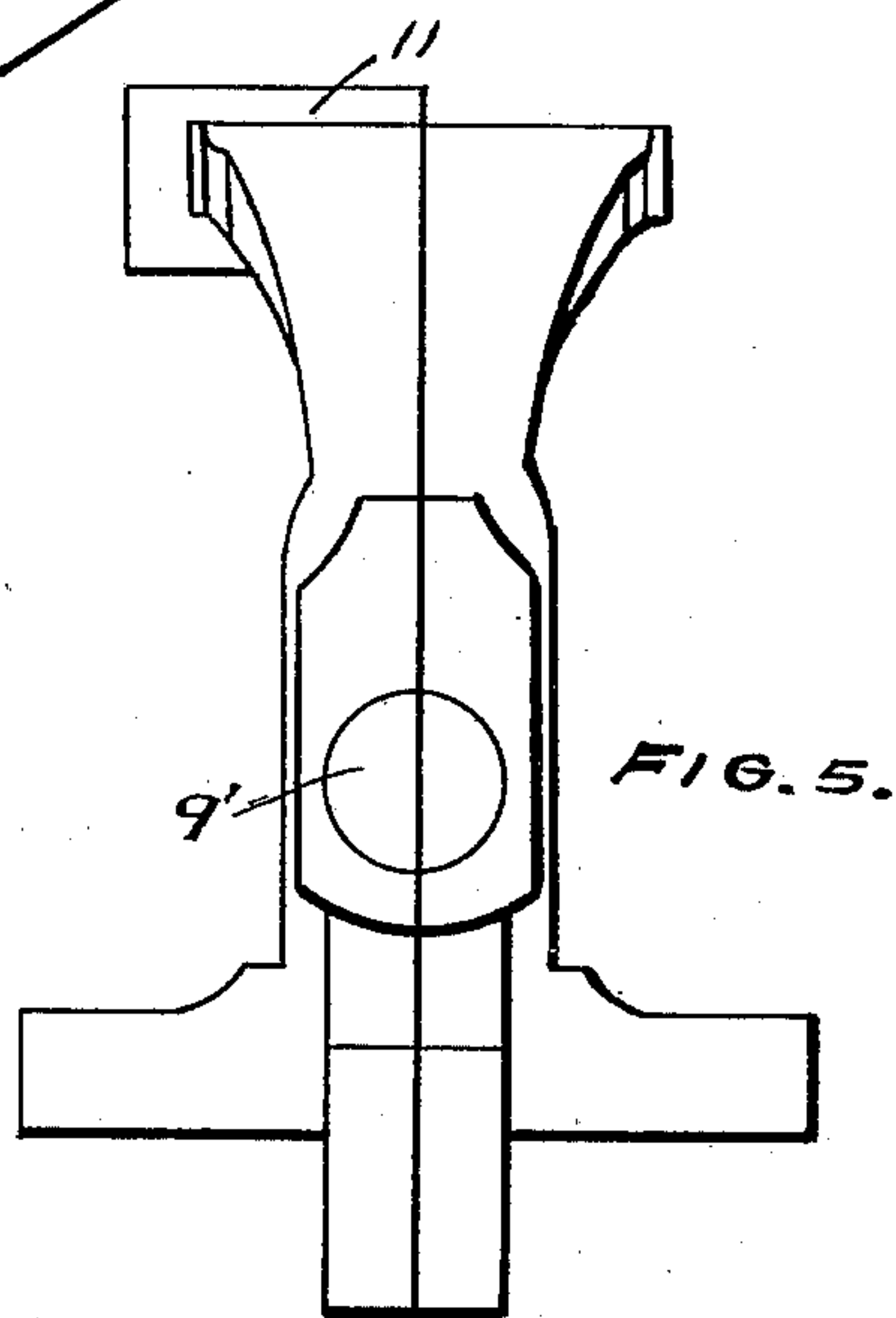
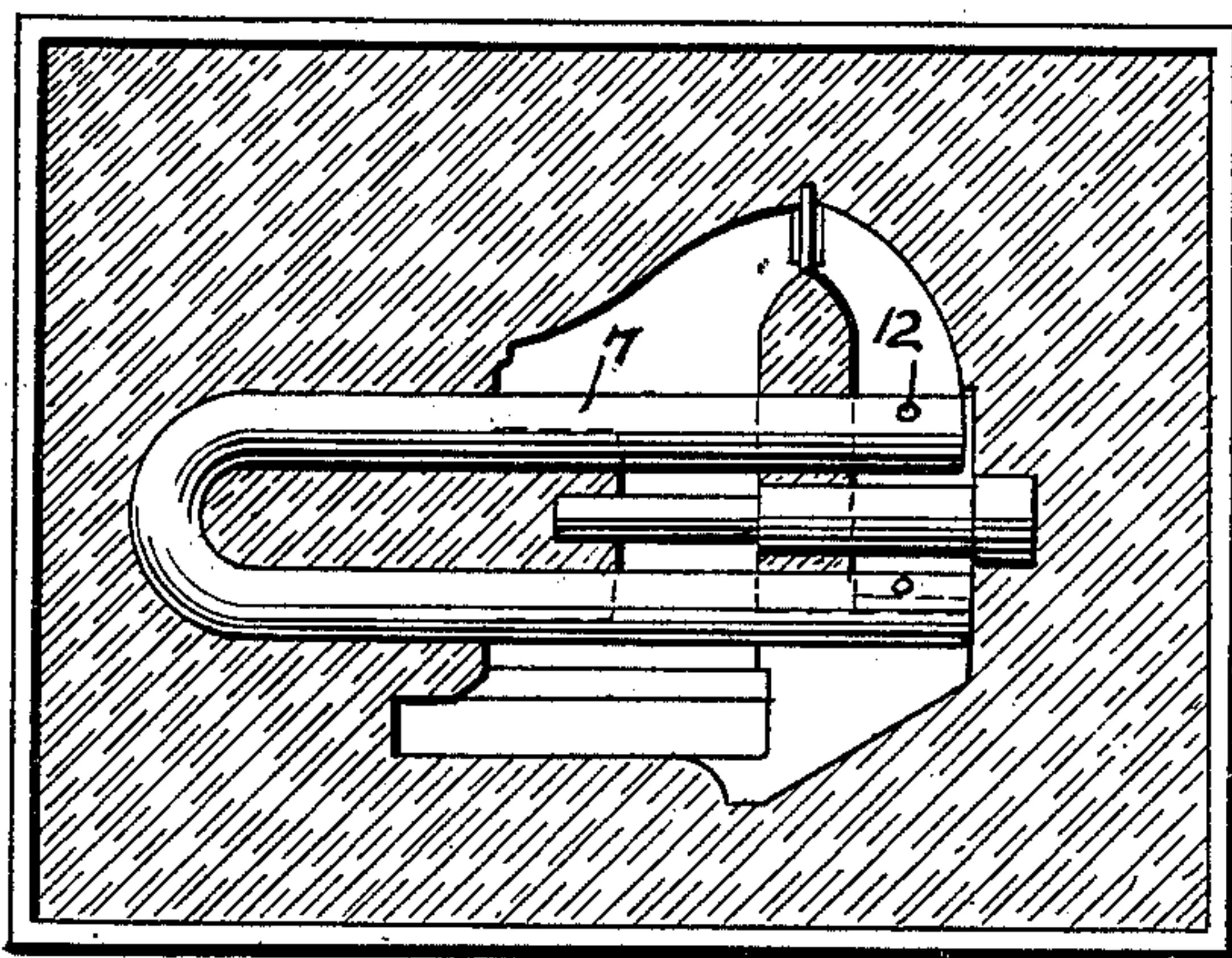
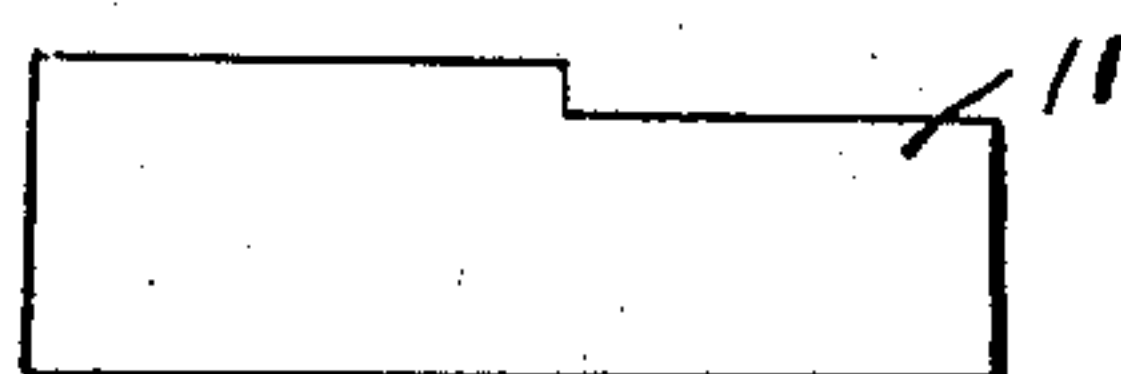
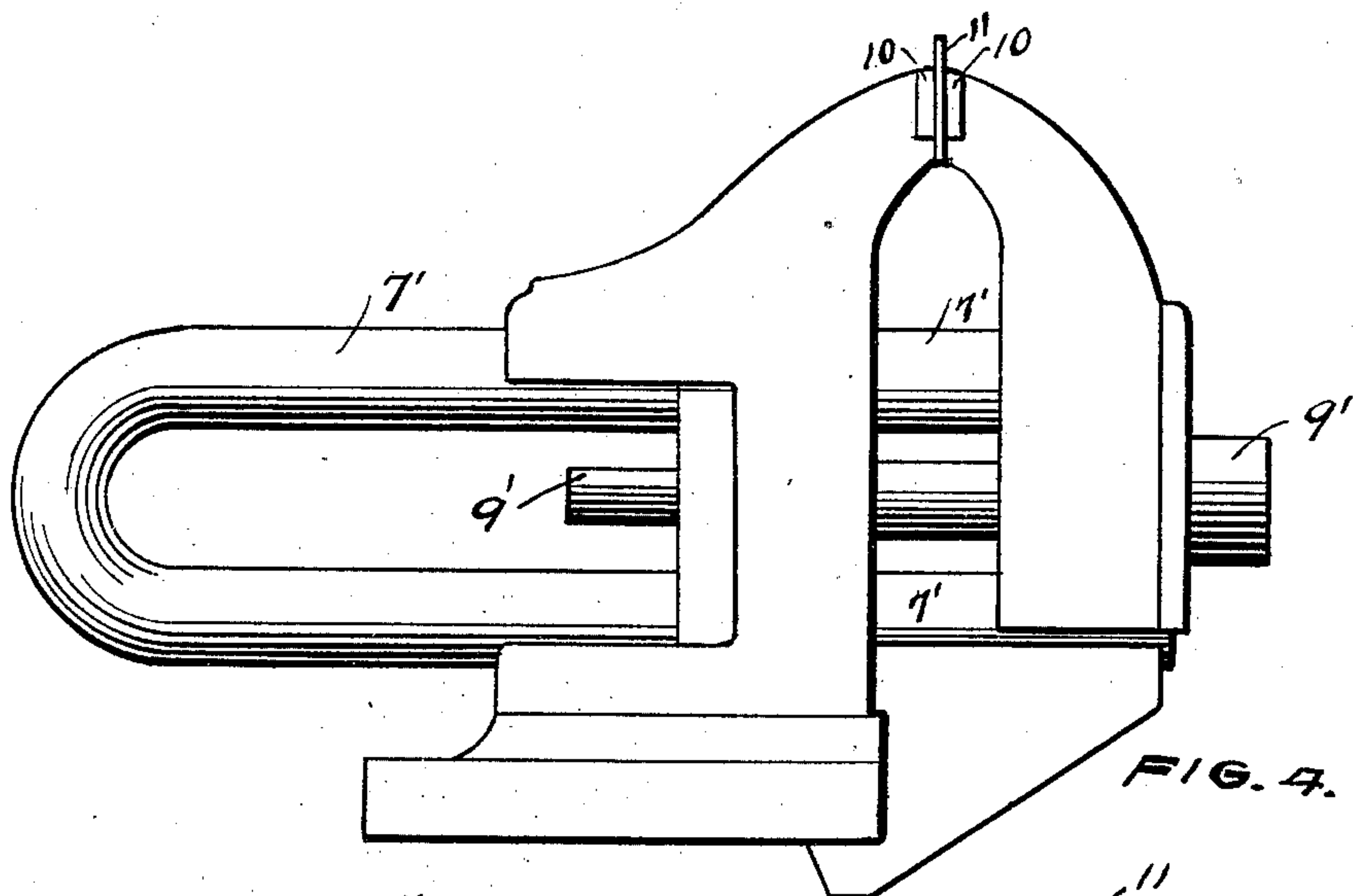
Patented Apr. 30, 1901.

J. L. WARE.
VISE.

(Application filed June 11, 1898.)

(No Model.)

2 Sheets—Sheet 2.



WITNESSES:

E. J. Standa
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UNITED STATES PATENT OFFICE.

JOSEPH L. WARE, OF ST. PAUL, MINNESOTA.

WISE.

SPECIFICATION forming part of Letters Patent No. 673,228, dated April 30, 1901.

Application filed June 11, 1898. Serial No. 682,185. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH L. WARE, of the city of St. Paul, county of Ramsey, State of Minnesota, have invented certain new and
5 useful Improvements in Vises, of which the following is a specification.

This invention relates to machinists' vises; and the object of the invention is to provide a steel-armed vise of cheap construction.

10 The particular object of the invention is to construct a vise of cast iron or steel and provided with a steel arm, whereby the maximum strength is secured, while the cost of the vise is materially reduced as compared with or-
15 dinary vises of machine make.

A further object of the invention is to provide a vise having means to support the movable jaw beyond the usual bearing furnished in the stationary jaw, and, further, to provide
20 a narrow-armed vise whereby articles may be more readily placed and held vertically between the jaws of the vise.

The invention consists generally in the combination, with the stationary and movable
25 jaws, of a U-shaped arm slidable in the stationary jaw and having its ends fastened in a movable jaw; and the invention further consists in a construction of the parts whereby the vise may be completed in the mold where-
30 in the metal is cast.

The invention also consists in various constructions and combinations of parts, all as hereinafter described, and particularly pointed out in the claims.

35 The invention will be more readily understood by reference to the accompanying drawings, forming part of this specification, and in which—

40 Figure 1 is a perspective view of a vise embodying my invention. Fig. 2 is a vertical section of the stationary member or jaw thereof. Fig. 3 is a vertical section of the movable member or jaw. Fig. 4 is a side view of the pattern wherefrom the vise is cast. Fig. 5 is
45 an end view thereof. Fig. 6 is a detail view of the dividing-piece used in the mold. Fig. 7 represents the mold with the steel arm and the core placed therein preparatory to casting the jaws.

50 As shown in the drawings, 2 represents the movable jaw of the vise, and 3 the stationary jaw thereof. The stationary jaw is provided

with a base 4, having holes 5 for the bolts that are used to secure the vise to the bench. Said stationary jaw is also provided with parallel
55 holes extending through it, preferably arranged one above the other in the same vertical plane. A U-shaped arm 7, preferably formed by bending a piece of round steel into U shape, has its bent portion arranged in the
60 rear of the stationary jaw and its parallel parts or bars extending through and slidable in the holes in said stationary jaw. This arm may, if preferred, be rectangular in cross-section; but as it is easier to bend and form the
65 round stock I prefer to use that for the arm. The movable jaw 2 is formed upon and irremovably affixed or welded to the ends of the parallel bars of the U-shaped arm 7.

8 represents a bracket extending from the
70 forward side of the base and conforming to the under side of the lower part of the arm 7 to support the arm and the movable jaw beyond the front of the fixed or stationary jaw. The screw 9 has its shank swiveled in the
75 movable jaw 2 and extends through the jaw 3, being parallel with and between the upper and lower parts of the bent or U-shaped arm of the vise. The lower end of the movable
80 jaw embraces only the upper of the lower part of the arm in order that the jaw may not interfere with the employment of the extension or bracket 8. It would doubtless be impracticable to manufacture this device piece by
85 piece, holes being made in the stationary jaw for the two parts of the arm and the ends of the arm being fastened in the movable jaw, as there are too many points that would require to be in exact line to admit of the cheap
90 manufacture of the vise. I have therefore devised the method of manufacture indicated in Figs. 4 to 7, which illustrate the pattern and the mold wherein the vise is cast. The
95 pattern conforms to the shape of a finished vise, core-prints being provided for the space to be afterward occupied in the mold by the bent steel arm, by the steel jaw-facings, and by a suitable core for the screw-holes. In Fig. 4, 7' represents the core-print for the steel arm, and 9' represents the core-prints for the screw.
100 10 represents the prints for the metal jaw-faces, and 11 represents the print for the separating or dividing iron that is used in the mold to prevent the metal running together

at the jaws and parting. Fig. 7 represents the mold after the pattern has been removed, leaving the cavity for the metal to be poured into and showing the bent steel arm as it
 5 lies in the mold and also showing a screw-core to make the openings in the two jaws. The core-prints for the jaw-facings are also shown in the mold. It is evident that when the metal is poured into the mold the same
 10 will form about the ends of the steel arm 7 and about the intermediate parts thereof. The ends of the steel arm are preferably provided with a series of notches or holes or recesses 12, into which the metal runs and
 15 whereby the ends are securely fastened in the metal cast thereon. In addition I prefer to tin the ends of the steel arm before placing the same in the mold, as a practical weld is obtained when the metal is poured in and
 20 forms around said ends. The parts of the steel arm that are within the stationary jaw of the vise are covered with a coating of thin glue and sand or in like manner protected from direct contact with the molten metal,
 25 whereby after the metal cools and the mold is opened the steel arm may be loosened in the stationary jaw, so that it will slide freely therein. In this manner at a single operation a complete vise is made with the excep-
 30 tion of the screw, which is placed in the vise after the holes are reamed and threaded in the stationary jaw. The construction is such that long guides or grooves are provided for the lower part of the bent arm and a somewhat
 35 shorter groove provided for the upper part thereof, and when the vise is in use the movable jaw will stand a very heavy blow, as it is braced or supported not only by the very strong arm 7, but also by the forwardly-
 40 extending bracket 8. It is impossible for the movable jaw to be moved laterally out of its place, owing to the wide separation of the bearings for the upper and lower parts of the arm and the firm integral connection between
 45 the rear ends of the arm, whereby the arm itself is kept from twisting or rocking. The sides of the groove in the bracket 8 also prevent the lateral play of the arm and the lower part of the movable jaw. The connec-
 50 tion between the upper and lower parts of the arm prevents the rocking thereof in the stationary jaw.

A distinct advantage of my device results from the employment of the round iron or
 55 steel arm, as the movable jaw may be readily secured to the lower part thereof, as shown, and the supporting-bracket 8 may be very narrow, little wider, in fact, than the diameter of the rod from which the arm is formed, so that
 60 an article may be stood up or placed vertically in the vise and gripped between the jaws or faces near the ends thereof.

The vise when completed is remarkably strong and convenient to use, and the low
 65 cost thereof makes the same a readily-marketable article.

It is obvious that modifications of the form and construction of my vise may be made without departing from the spirit of my invention, and I therefore do not confine the
 70 same to the particular constructions herein shown and described.

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

1. The combination, in a vise, with a U-shaped vise-arm, of a stationary jaw formed upon said U-shaped vise-arm and having parallel holes extending through it through
 80 which the parallel bars of said vise-arm are slidable, the bent portion of said arm being arranged in the rear of said stationary jaw, and a movable jaw irremovably cast on the ends of the parallel bars of said vise-arm and arranged in front of said stationary jaw, sub-
 85 stantially as described.

2. The combination, in a vise, with a stationary jaw having parallel holes extending through it, of a U-shaped vise-arm arranged with its bent portion in the rear of said sta-
 90 tionary jaw, and with its parallel bars passing through said holes and slidable therein, and a movable jaw irremovably cast upon the ends of the parallel bars of said vise-arm and partially embracing the lower bar, substan-
 95 tially as described.

3. The combination, in a vise, with a stationary jaw having parallel holes extending through it and having forwardly and rearwardly extending projections from the lower
 100 hole, of a U-shaped vise-arm arranged with its bent portion in the rear of said stationary jaw and with its parallel bars passing through said holes and slidable therein, the lower bar being supported and guided by the projec-
 105 tions on said stationary jaw, and a movable jaw irremovably cast on the ends of the parallel bars of said vise-arm, substantially as described.

4. The combination, in a vise, with a U-
 110 shaped vise-arm, of a stationary jaw having parallel holes extending through it, through which the parallel bars of said vise-arm are slidable, the bent portion of said arm being arranged in the rear of said stationary jaw,
 115 and a movable jaw arranged on the ends of said parallel bars of said vise-arm in front of said stationary jaw, both of said jaws being irremovably secured in the act of casting, sub-
 120 stantially as described.

5. The combination, in a vise, with a stationary jaw having parallel holes extending through it, with rearwardly-extending projections from said stationary jaw, of a U-
 125 shaped vise-arm arranged with its bent portion in the rear of said stationary jaw and with its parallel bars passing through said holes and slidable therein and guided and supported by said projections and a movable jaw irremovably cast on the ends of parallel
 130 bars of said vise-arm, substantially as described.

6. In a vise, the combination, of the fixed
and stationary jaw, of the movable jaw, the
bent U-shaped arm occupying a vertical plane
in said fixed jaw and slidable in said jaw, the
5 ends of said arm being secured in said mov-
able jaw, the lower part of said arm being
partly embraced by said movable jaw, and
the bracket extending from the fixed jaw and
engaging or embracing the under side of the

lower part of said arm as a guide, substan- 10
tially as described.

In testimony whereof I have hereunto set
my hand, this 26th day of May, 1898, at Min-
neapolis, Minnesota.

JOSEPH L. WARE.

In presence of—

RICHARD PAUL,
M. E. GOOLEY.