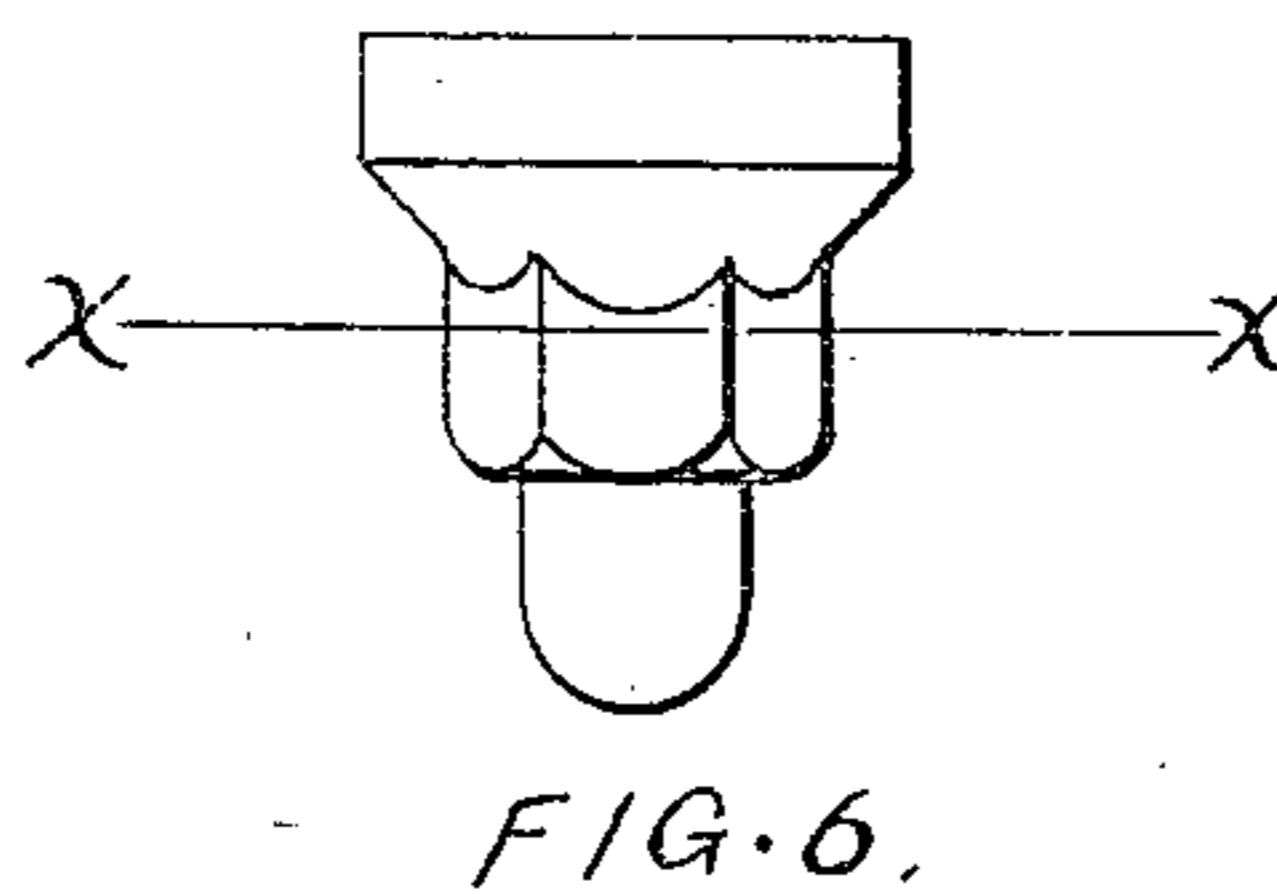
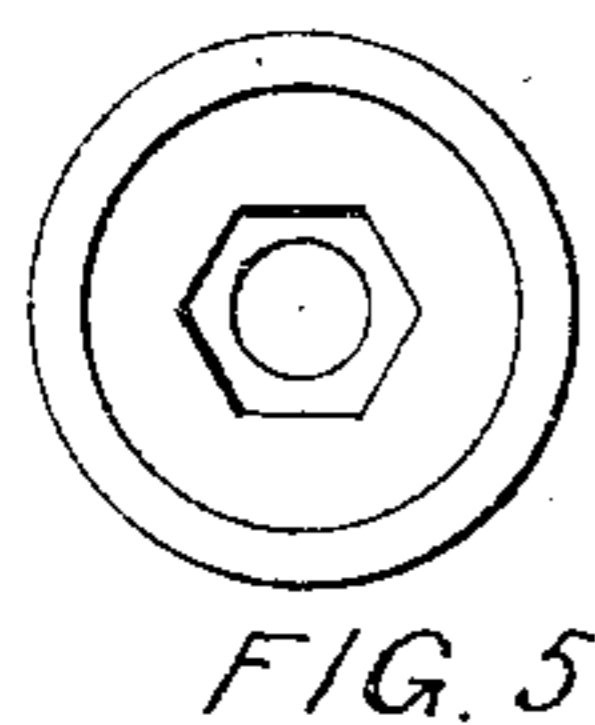
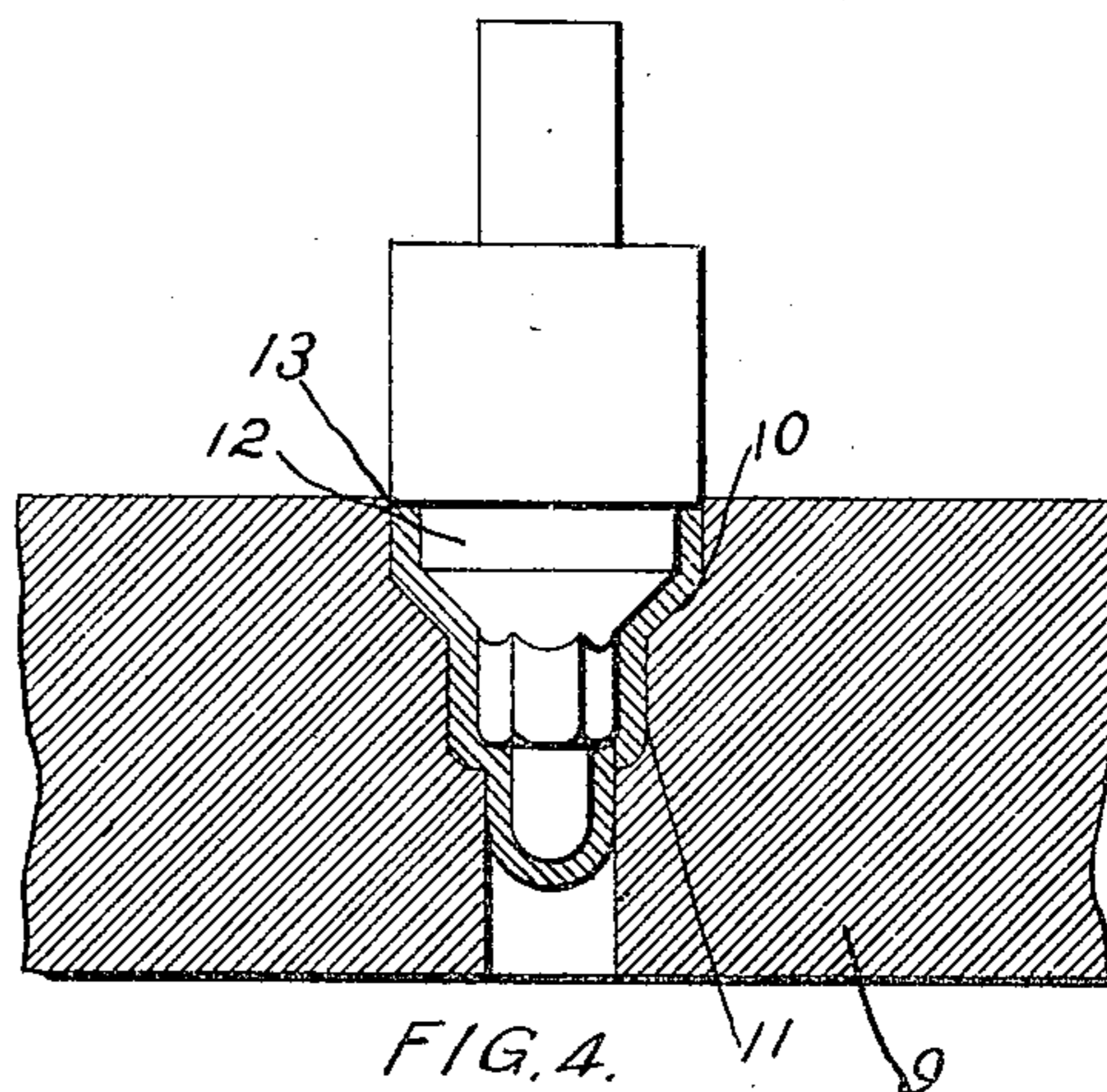
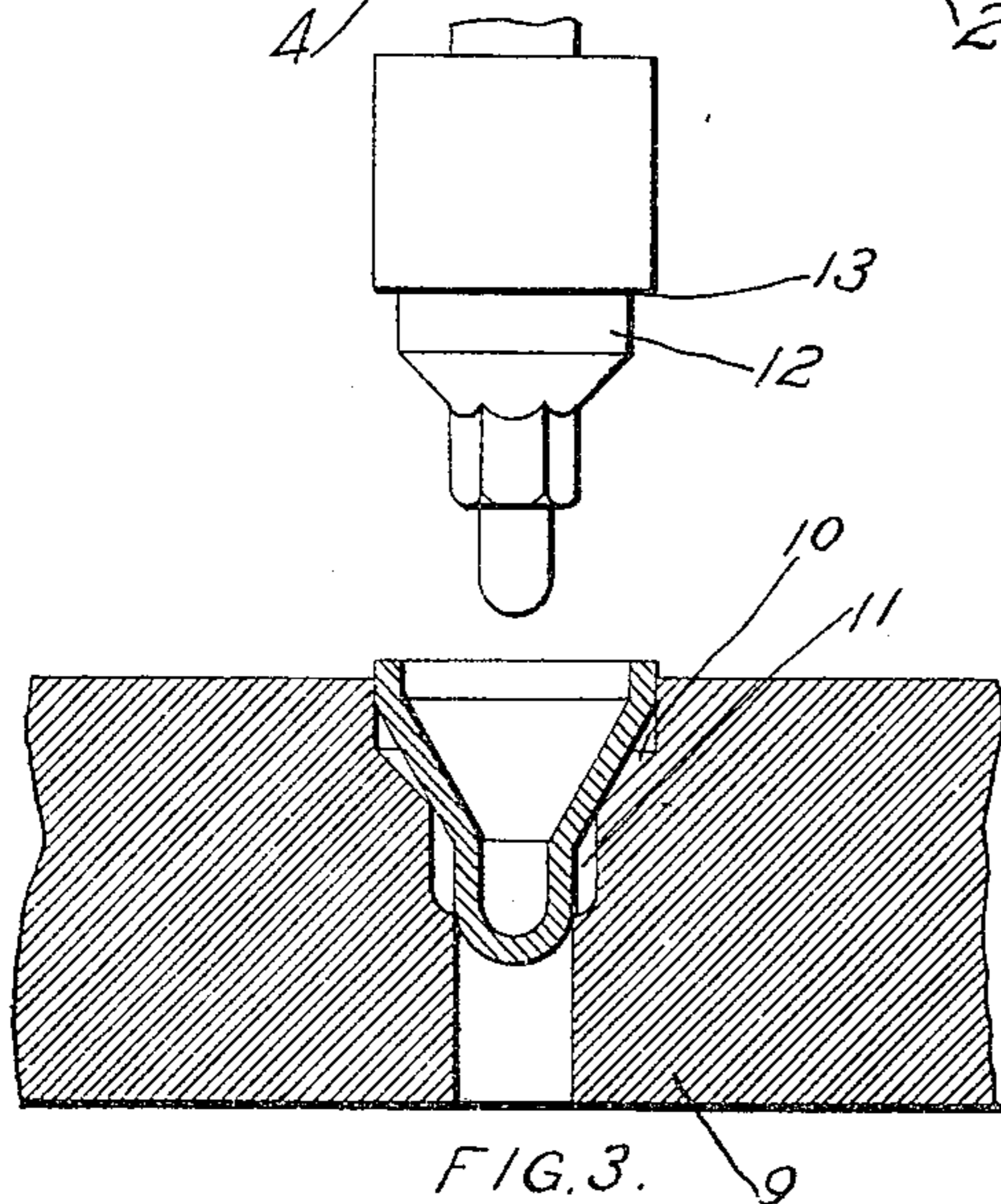
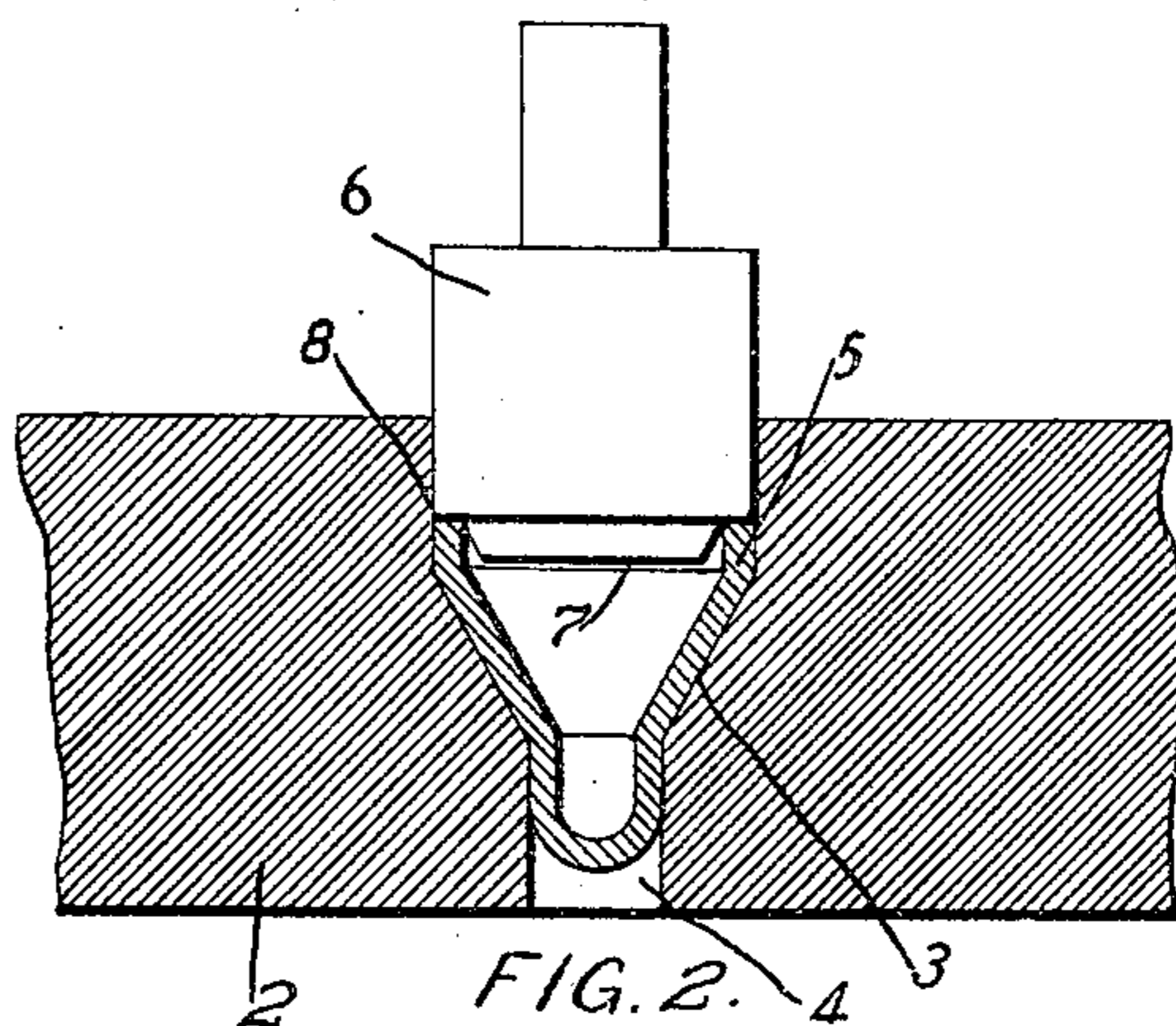
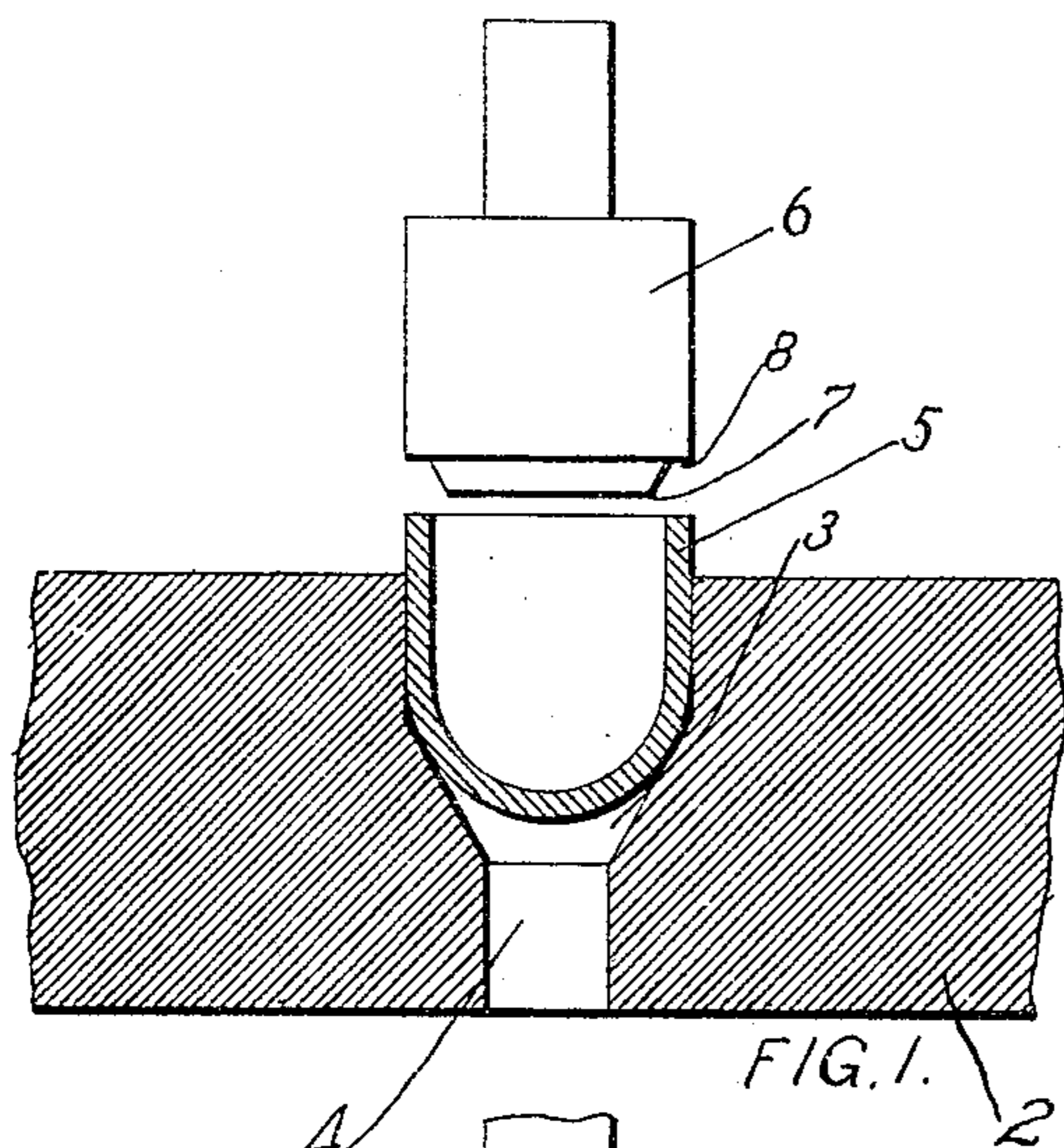


No. 808,177.

PATENTED DEC. 26, 1905.

E. A. THIEM.
PROCESS FOR MAKING GREASE CUPS.

APPLICATION FILED MAY 14, 1904.



WITNESSES

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UNITED STATES PATENT OFFICE.

EDWARD A. THIEM, OF ST. PAUL, MINNESOTA.

PROCESS FOR MAKING GREASE-CUPS.

No. 808,177.

Specification of Letters Patent.

Patented Dec. 26, 1905.

Application filed May 14, 1904. Serial No. 207,917.

To all whom it may concern:

Be it known that I, EDWARD A. THIEM, of St. Paul, Ramsey county, Minnesota, have invented certain new and useful Improvements in Processes for Making Grease-Cups, of which the following is a specification.

In the formation of articles by press-work from sheet metal it has been customary to have the punch follow the blank into the die and press out or expand the metal until it conformed to the shape of the die. This method has been found satisfactory in most cases and is the one generally employed by manufacturers of sheet-metal articles; but in forming articles such as grease or oil cups, which are usually cast metal, I have found it wholly impracticable, for the reason that the stretching or expanding of the metal in the die under the pressure of the punch will make the walls of the blank thinner and weaker, especially at the bottom, where, in grease-cups particularly, the walls should be even thicker than anywhere else to provide sufficient stock for the formation of a thread and to resist the strain of a wrench. I have found by actual experience that where these cups are pressed out of sheet metal in the usual way the metal will either separate or break open at the bottom during the pressing operation or when an attempt is made to cut a thread, leaving a hole in the cup, or will be drawn out so thin that the upper part of the cup will break off entirely from the lower threaded end when subjected to the twisting action of a wrench.

The object, therefore, of my invention is to provide a process of forming a sheet-metal grease-cup which will be cheap and expeditious and at the same time will insure the formation of a wall of sufficient thickness at the bottom of the cup to allow for the cutting of a thread and the successful use of a wrench thereon.

My invention consists generally in first applying pressure to the end only of a cup-shaped blank to force it into a die and then applying pressure to the end and interior of the blank simultaneously to force it into another or finishing die.

In the accompanying drawings, forming part of this specification, Figure 1 is a sectional view of a die, showing a cup-shaped blank fitting therein, and a punch in position to engage the end of the blank. Fig. 2 is a similar view showing the position of the blank and punch after the latter has de-

scended. Fig. 3 is a sectional view showing another die and a punch that conforms substantially to the shape of the die. Fig. 4 is a similar view showing the punch in its lowest position and the blank pressed into the die and conforming to the shape thereof. Fig. 5 is a plan view of the cup-blank. Fig. 6 is a side view thereof. Fig. 7 is a section on the line *xx* of Fig. 6.

In carrying out my process I provide a die 2, having a hole or socket 3 therein, substantially in the form of an inverted cone, with the lower end contracted to a neck 4.

5 is a blank, cup-shaped in form, pressed or punched out of sheet metal in the usual way.

I make no claim in this application to the preliminary step of the process for forming the cup-shaped blank and have not, therefore, thought it necessary to illustrate or describe such step, it being the one usually used in the formation of sheet-metal articles.

6 is a press-punch having a part 7 at its lower end adapted to enter the open end of the blank and a square shoulder 8, that engages the upper end of the blank when the punch descends and presses it down into the die.

The application of power to the top of the blank instead of to the interior surface thereof and the bottom alone will cause a contraction or squeezing together of the particles of metal and will produce a thicker, more substantial wall at the bottom of the cup when the lower end of the blank is forced into the conical end of the die and provide sufficient stock at that point for the cutting of a thread and for the use of a wrench. After the blank has been forced into the bottom of the die, as shown in Fig. 2, it will conform substantially to the shape of the completed cup except for the hexagonal surface to be engaged by the wrench.

In Fig. 3 I have shown a finishing-die 9, having a socket 10 therein, provided with a wall 11, which when the blank is pressed therein will cause it to assume a hexagonal form just above the rounded lower end. The punch 12 used in the second step of the process is a facsimile of the die and is adapted to enter the blank and bear on the inner surface thereof and is provided with a shoulder 13, that simultaneously engages the top of the blank and presses thereon to force the particles of metal together at the same time that the expansive force is exerted laterally by the

punch upon the interior of the blank. This simultaneous pressure on the end and inner surface of the blank will result in forcing it down into the die and cause it to assume the form shown in Fig. 4, constituting the last step of the process, without stretching out or weakening the lower walls. In the second step of the process it is not necessary that the punch engage the upper end of the blank as well as its inner surface. It is sufficient to insure the thickening of the lower walls of the cup to have the punch bear only on the end of the blank during the first step and during the second step bear only on the inner surface of the blank. The blank is then removed from the die, tapped, and threaded, and a suitable cap or cover having been provided the cup is ready for use.

I claim as my invention—

20 1. A process of forming sheet-metal grease-cups which consists in, first, applying pressure to the edge only at the open upper end of a cup-shaped blank to force its lower

closed end into a die and compress and strengthen the walls of the blank near said lower end, then removing the blank and applying pressure to said edge and the interior surface of the blank simultaneously to force it into a finishing-die, substantially as described. 25

2. A process of forming sheet-metal grease-cups which consists in, first, applying pressure to the edge only at the open upper end of a cup-shaped blank to force its lower closed end into a die and compress and strengthen the walls of the blank near said lower end, then removing the blank and applying pressure to its interior surface to force it into a finishing-die, substantially as described and for the purpose specified. 30 35 40

In witness whereof I have hereunto set my hand this 22d day of April, 1904.

EDWARD A. THIEM.

In presence of—

RICHARD PAUL,
M. HAGERTY.