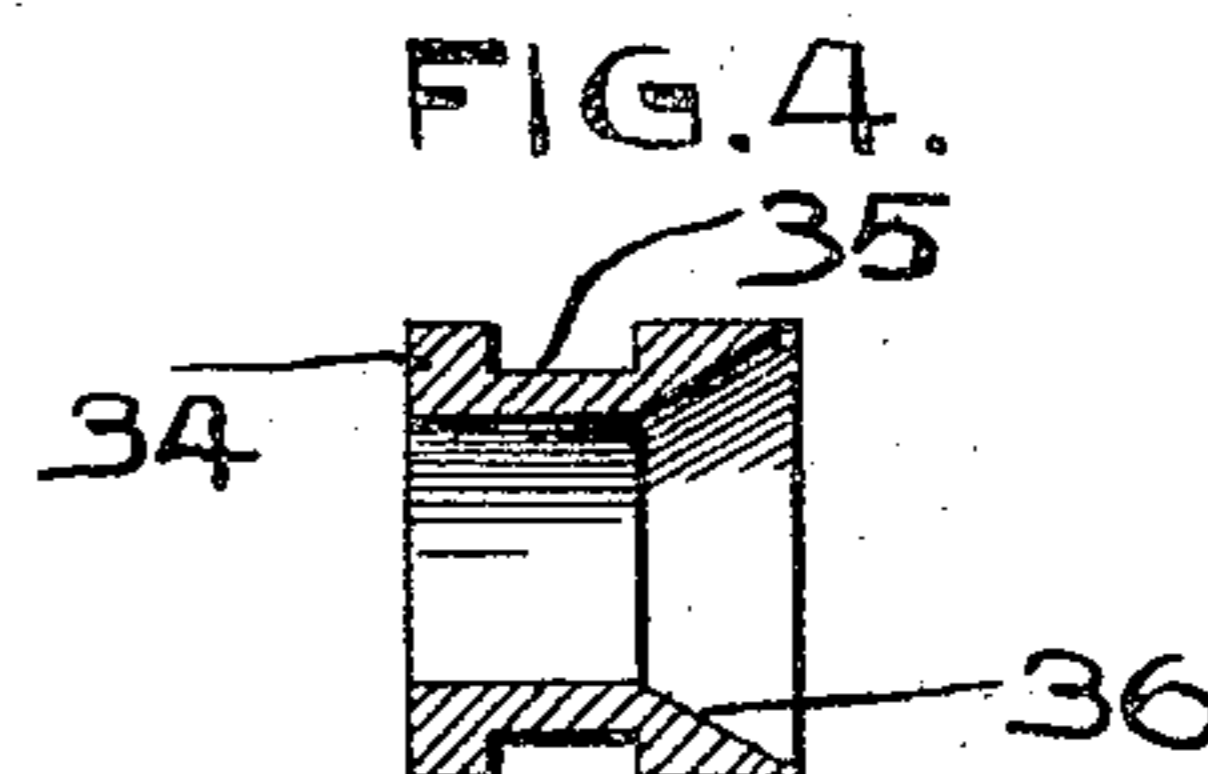
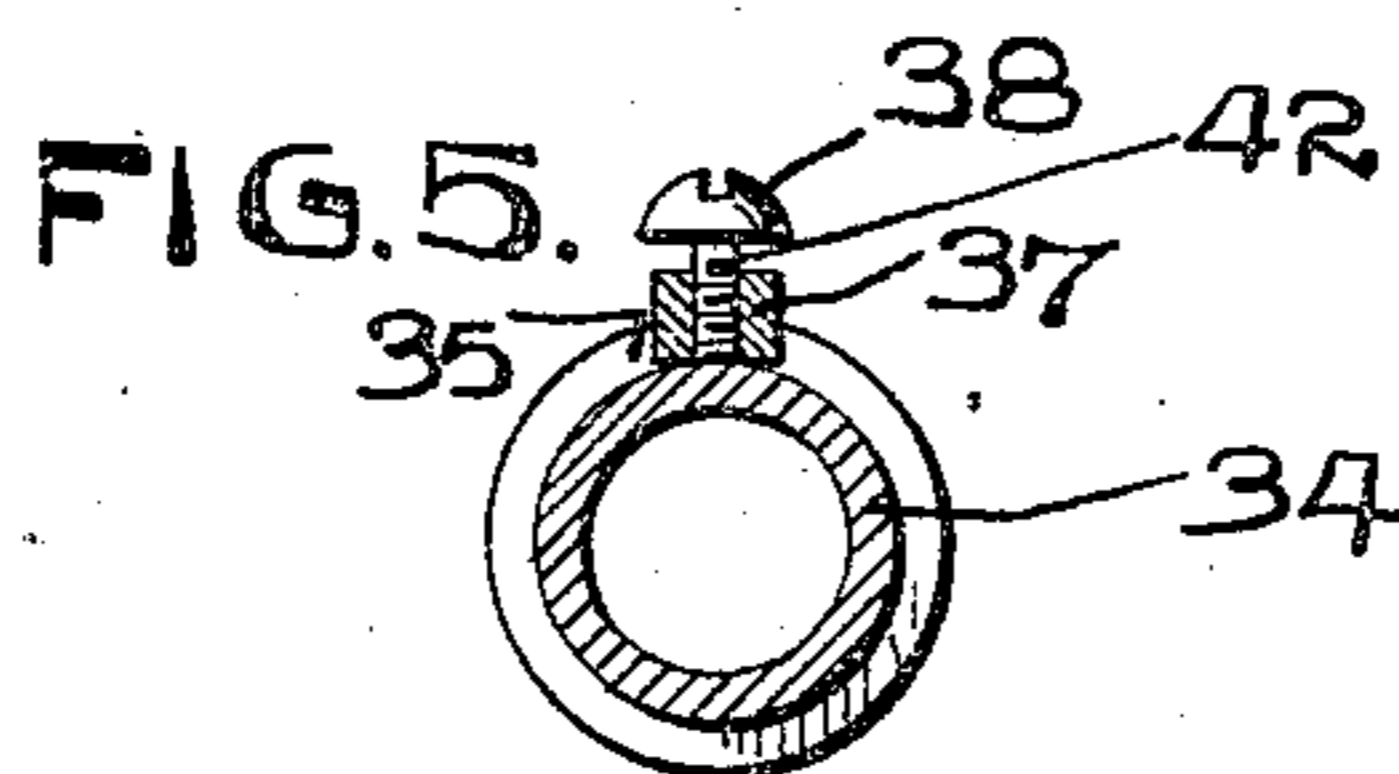
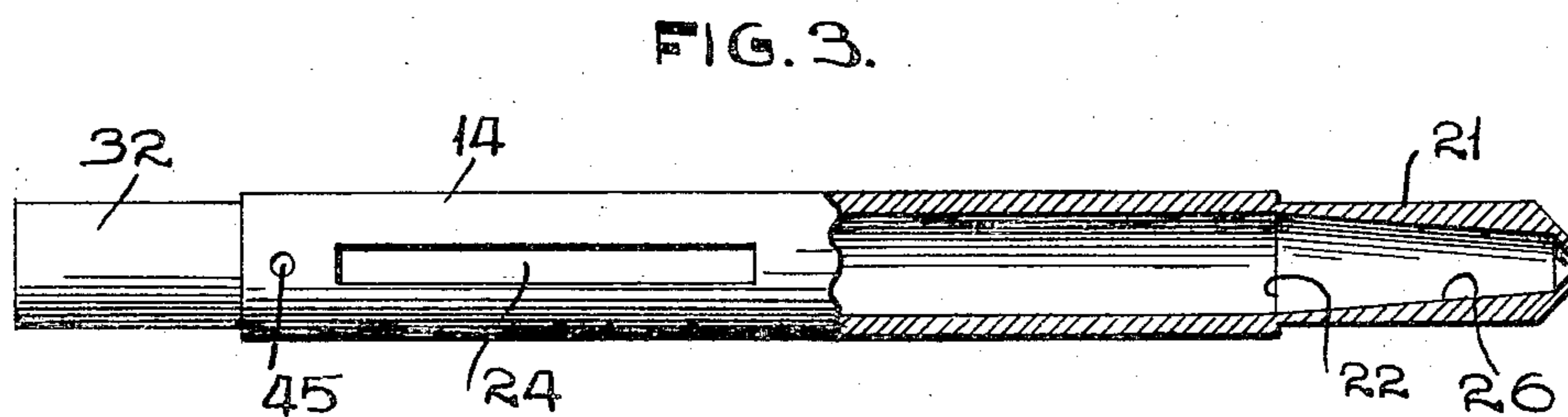
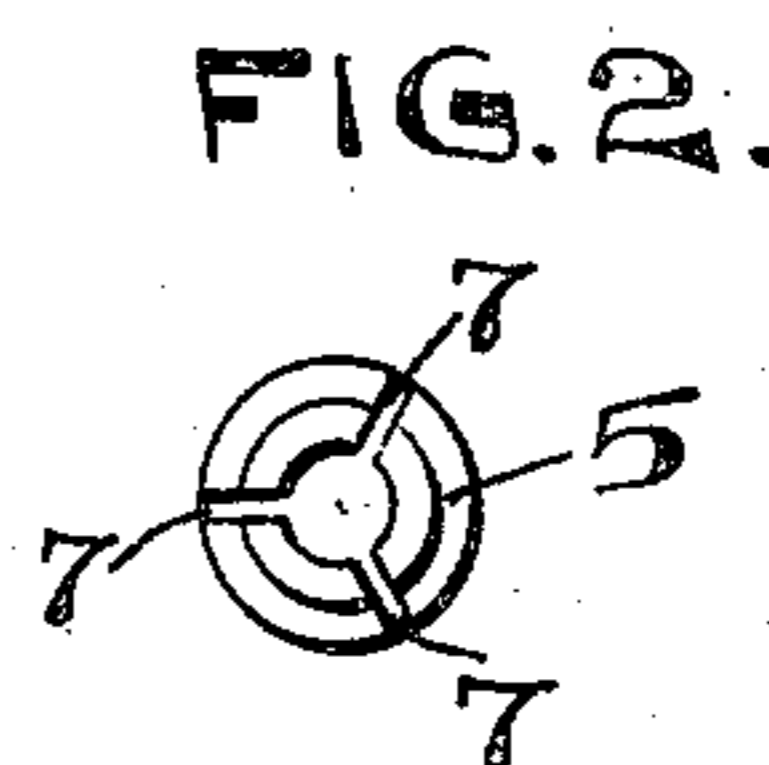
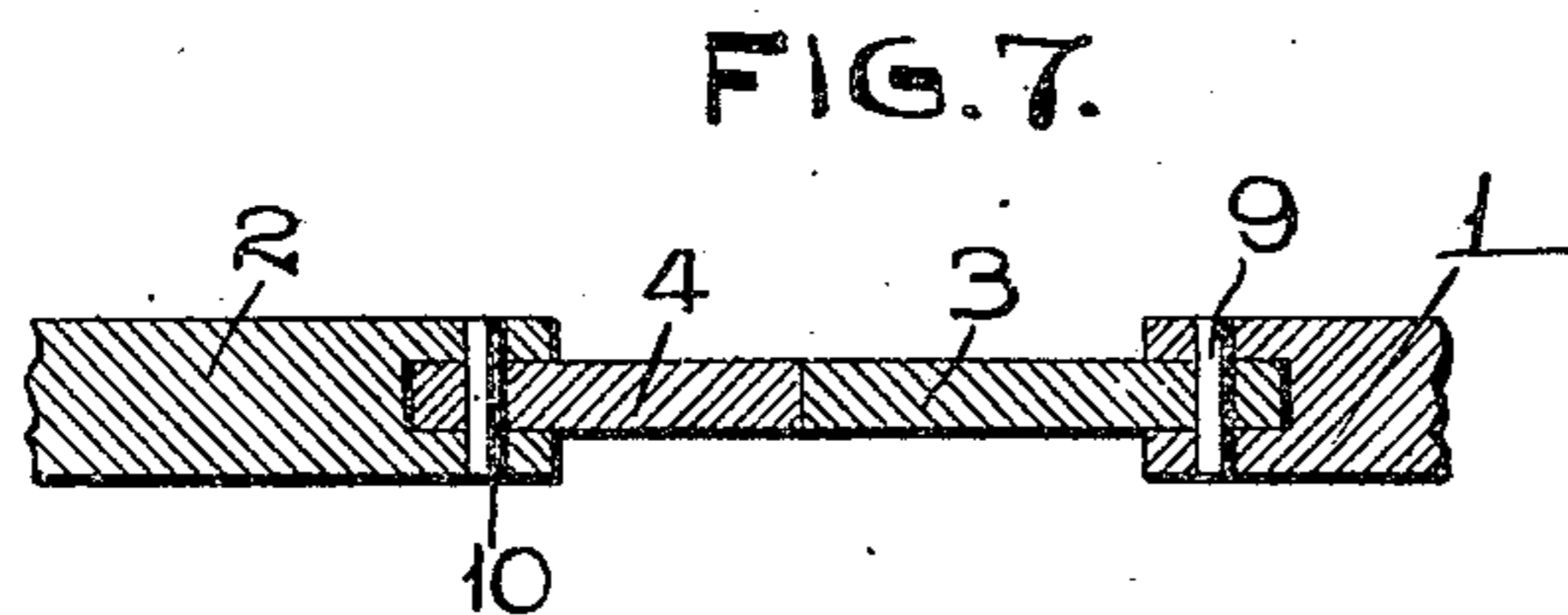
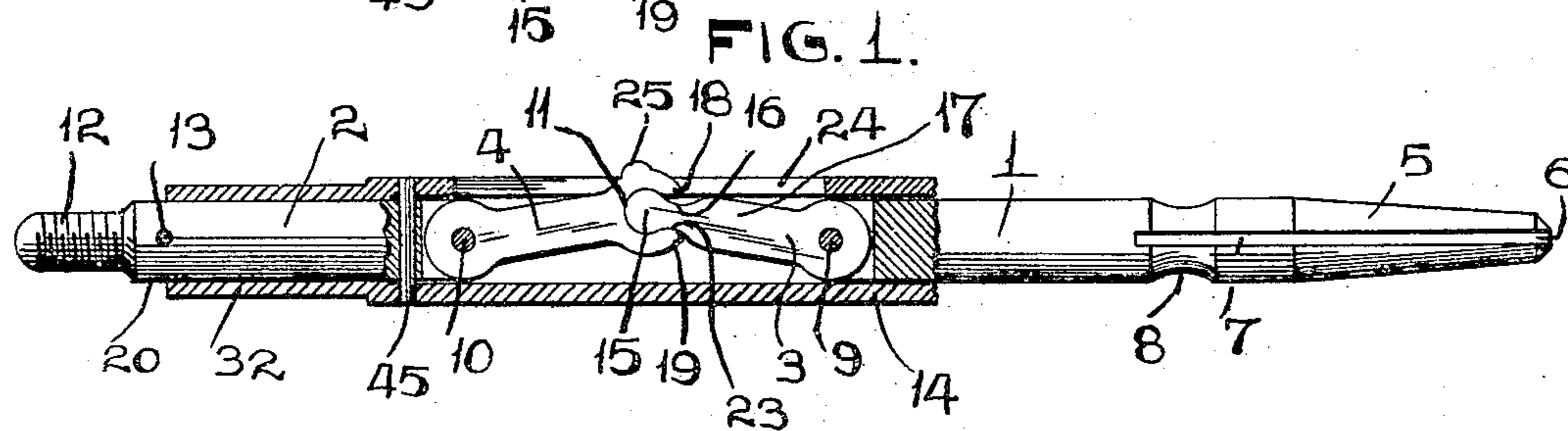
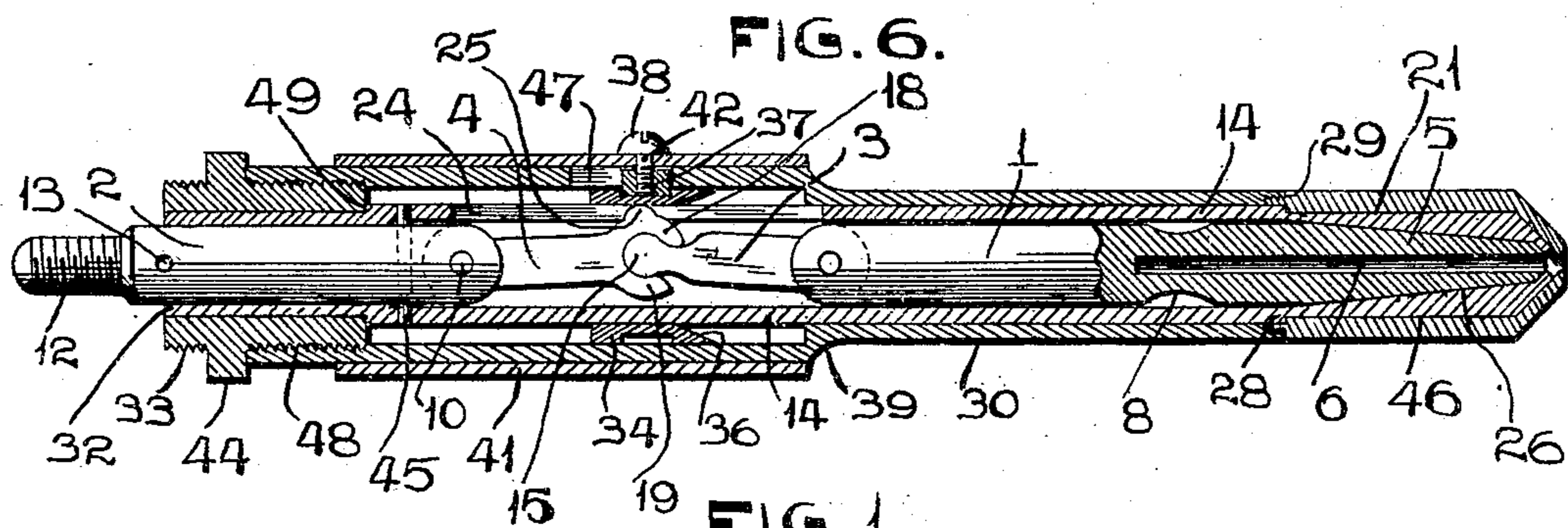


No. 855,288.

PATENTED MAY 28, 1907.

F. W. DEAN.  
HANDPIECE FOR DENTAL ENGINES.  
APPLICATION FILED AUG. 16, 1906.



ATTEST.

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# UNITED STATES PATENT OFFICE.

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## HANDPIECE FOR DENTAL ENGINES.

No. 855,288.

Specification of Letters Patent.

Patented May 28, 1907.

Application filed August 16, 1906. Serial No. 330,876.

*To all whom it may concern:*

Be it known that I, FREDERICK W. DEAN, a citizen of the United States, residing at Des Moines, county of Polk, and State of Iowa, have invented certain new and useful Improvements in Handpieces for Dental Engines.

The object of my invention is to produce a hand piece superior to those now in use, less complicated, at less cost, of which the following is a full, clear and exact description, reference being had to the accompanying drawings and numerals marked thereon which are a part of this specification.

Figure 1 is a view of a clutch and of a tubular shaft partly in section and a hinge joint. Fig. 2 is a cross section of said clutch near its front end. Fig. 3 is a view of a tubular shaft partly in section. Fig. 4 is a sectional view of a band provided with an annular channel. Fig. 5 is a cross section of said band and of a shoe and a screw. Fig. 6 is a longitudinal sectional view of all of the parts assembled; the clutch, the hinge joint, the tubular shaft, the band, the shoe, the screw, the casing 30, a sliding sleeve 41 and a bearing 33. Fig. 7 is a view showing the manner in which the joint parts are hinged to their supports.

Referring to the drawings 1—2—3—4, Fig. 1, 1 is a rod fitted to slide to and fro in the front portion 22 of the tubular shaft 14, its front end 5 is cone-shaped and bored longitudinally at 6 for the reception of tools, is split lengthwise to form a single set of long spring jaws 7 and is provided with an annular valley or recess 8 cut in its body near the base of said jaws. Said valley 8 in combination with the spring jaws 7 constitute the clutch proper continuous with rod 1. The valley 8 permits the jaws 7 to spring more freely at that point and the jaws to have a bearing their entire length on a tool therein, and to hold it firmly. To the rear end of said rod 1 is hinged at 9 directly and centrally with its median or middle line part 3 of said hinge joint. The part 4 of the said joint is hinged at 10 in the same manner to the front end of plug 2. The said joint is composed of one male member 3, and one female member 4 having a crown 25, Fig. 1 and 6. The part 3 is provided with a head 15 so set on the neck 16 that when its body 17 is in line with the points 9 and 10 its center will be above said line. Part 4 is so adapted to the head 15 that its upper lip 18

strikes the neck 16 to stop the spreading of the parts at the desired point as shown in Fig. 6. The under lip 19 strikes the neck on the opposite side 23, Fig. 1, to stop flexure of the joint at the desired point. The lips 18—19 encircling the head 15 as shown, form a hinge joint without a supporting pin that will not part by end-wise pull or push, whereby and in conjunction with the adaptation of the parts the one to the other, when in line it may be flexed by direct push and when flexed, extended by a pull, is neat, durable, inexpensive, quick and sure in action. It is evident that two or more of such joints composed of male and female members, may be hinged together in series. By the direct and central coupling of the parts 1, 2, 3 and 4 as specified, force exerted on the joint 11 to bear down, spread its parts and so slide the rod, acts in a more direct line with the movement of the rod than if hinged away from the center at the periphery, consequently less friction, less resistance in joint to yield.

The plug 2 is fixed as to end-wise movement, being pinned at 45 to the tubular shaft 14, and it terminates rearward in a threaded shank 12 which connects with a motor whereby it is made to rotate. It is provided with a hole 13 near the base of shank 12 for the insertion of a lever to turn the shank into said connection. The tubular shaft is fitted to and incloses the clutch rod 1, the plug 2 and the joint parts 3 and 4, except a short part 20 of plug 2; it has a bearing 21, Fig. 3, counter to the cone 5, Fig. 1, of the clutch, is provided with a longitudinal slot 24 barely permitting the crown 25 of the joint to work through and beyond its margin; its rear end is fitted and pinned at 45 Figs. 1—3, to plug 2, and rotates with it. It is provided with a straight journal 21 on its front end that works in the bearing 46 of the casing, Fig. 6, and its rear end has a straight journal 32 that works in the bearing 33, Fig. 6, and is fixed as to lengthwise movement by the counter shoulders 28—29 and 49 at its forward and rear ends respectively, Fig. 6. Cone journals may be substituted. The channeled band 34 is fitted to and encircles the tubular shaft 14 and slides thereon over the slot 24. One of its ends is flared at 36 to facilitate its sliding onto the crown 25 when projecting through slot 24. It is provided with the annular channel 35 cut in its body. A shoe or block 37 is seated in the annular

channel 35 of the band 34 and projects therefrom one-half its thickness and is held therein by means disclosed in Fig. 6 as hereinafter explained.

41 indicates a sleeve encircling the casing 30 and adapted to slide thereon. Its ends are slightly enlarged inside as far as it slides, to avoid wear of nickeling and it is provided with a hole 42 near one end and opposite the hole in the shoe, through which a screw 38 enters the shoe 37, its head resting in the hole.

33 indicates a bearing having a midrib 44 and is threaded on each end; one of said ends turns into the rear end of casing 30, locking all parts in working order; the other connects with the sleeve of a driving shaft.

To operate the mechanism: The parts being relatively disposed as follows: The clutch 5, rod 1, joint 3—4 and plug 2 inclosed in the shaft 14 which is pinned to the plug and rotates with it, the crown 25 projecting through the slot 24 in said shaft, the band 34 encircling the shaft 14 at either end of slot 24 its flared end toward the middle of said slot, the shoe in the channel of the band 34 the casing 30 inclosing all with the shoe projecting into slot 47, the sleeve encircling the casing 30 with its hole opposite the hole 42 in the shoe, the screw 38 through the hole in the sleeve into the shoe, its head seated in the hole in the sleeve, now sliding the sleeve carries the band with it through the medium of the screw and shoe, if toward and onto the crown, press it down, spread the arms 3 and 4 of the joint and force the rod forward and clutch into the counter cone in the shaft,—close its jaws on a tool therein and hold it firmly. Reversing the movement of the sleeve will release the crown and joint, when from the simple construction, light friction and resistance, resilience of the parts will promptly throw the rod rearward, release the clutch and tool,—amply demonstrated in actual use.

What I claim is:

1. In a hand piece for dental engines the combination of a casing having a longitudinal slot, its front end provided with an interior journal bearing, its rear end enlarged and threaded interiorly; of a rotatable tubular shaft mounted therein fixed as to endwise movement and provided with a longitudinal slot and having a journal on each end, its front end having an interior cone

journal, a band encircling said tubular shaft and fitted to slide thereon and provided with an exterior annular channel and having one of its ends flared, a shoe seated in said channel and provided with a threaded hole, a sleeve encircling the said casing and fitted to slide thereon and provided with a hole near one end, its ends slightly enlarged, a screw seated in said hole to engage said shoe; a rod fitted to slide in the front part of said tubular shaft, having its front end cone shaped and provided with a clutch composed of spring jaws formed on the end thereof and having a valley near the base of said jaws; a rotatable plug fixed as to endwise movement, its rear end provided with a threaded shank and a hole near the base of said shank; a joint composed of one male member, and one female member bearing a crown, together forming a flexible joint without a supporting pin and located between the approximate ends of the said rod and plug and hinged thereto, and a bearing having a midrib and threaded on each end; substantially as specified.

2. A chuck device for dental hand pieces comprising in its construction a rod provided with a single set of long spring jaws formed on its end and having an annular valley or recess near the base of said jaws, substantially as specified.

3. In a dental hand piece the combination of a rotatable plug fixed as to endwise movement, of a sliding rod having formed on its end a single set of long spring jaws and having an annular valley near the base of said jaws, of a flexible joint composed of one male, and one female member bearing a crown and located between the approximate ends of the said plug and rod and hinged to them and of a bearing counter to the cone of the chuck, substantially as specified.

4. In a dental hand piece a joint or hinge comprising in its construction a male and a female member the latter bearing a crown, said members being so formed and fitted one to the other, not to part by endwise push or pull, in combination with a fixed casing and a relative fixed plug and a sliding rod located in said casing.

FREDERICK W. DEAN.

Witnesses:

M. F. DEAN,  
B. H. TAYLOR.