

No. 637,282.

Patented Nov. 21, 1899.

J. A. POCHE
ELECTRIC INSULATOR.

(Application filed Apr. 17, 1899.)

(No Model.)

2 Sheets—Sheet 1.

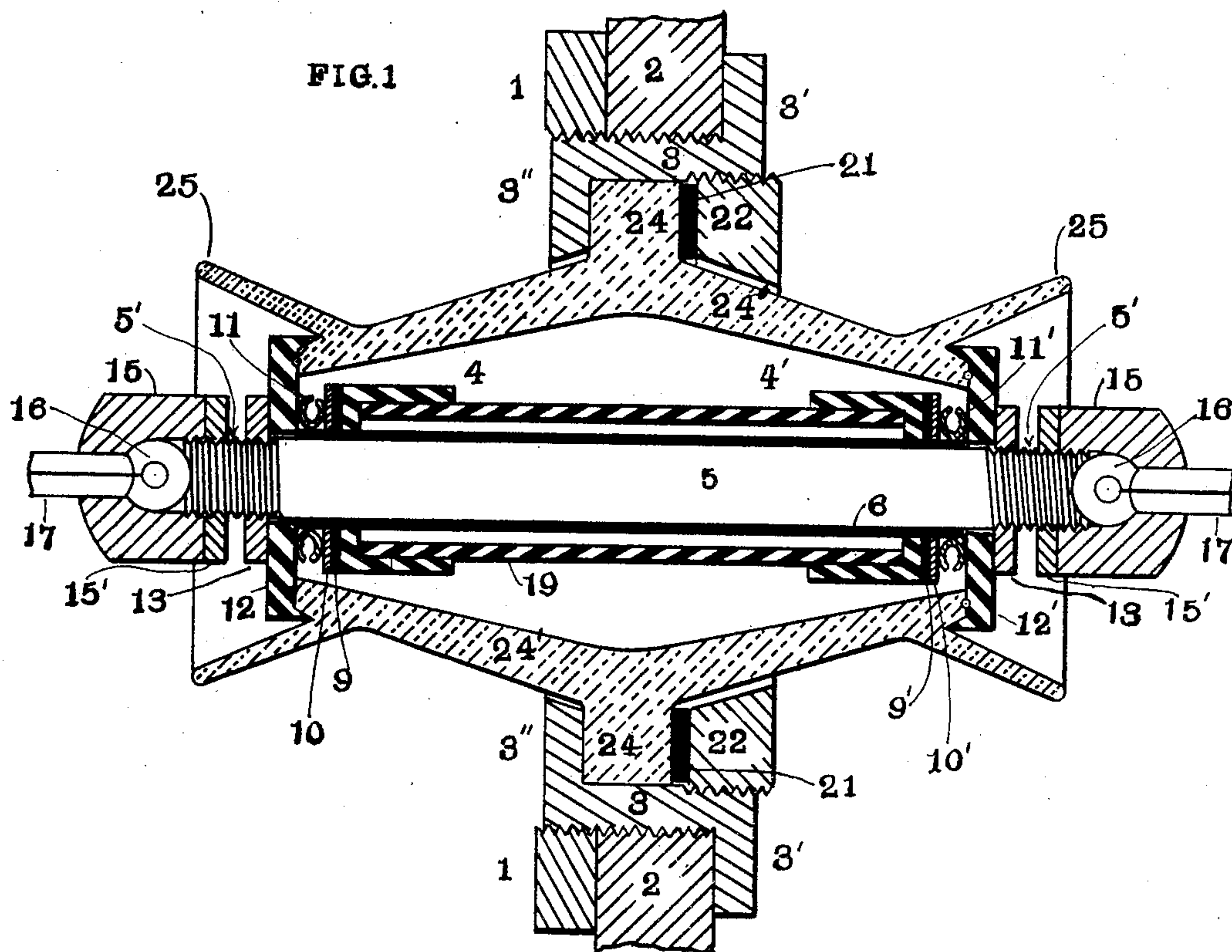


FIG 2a

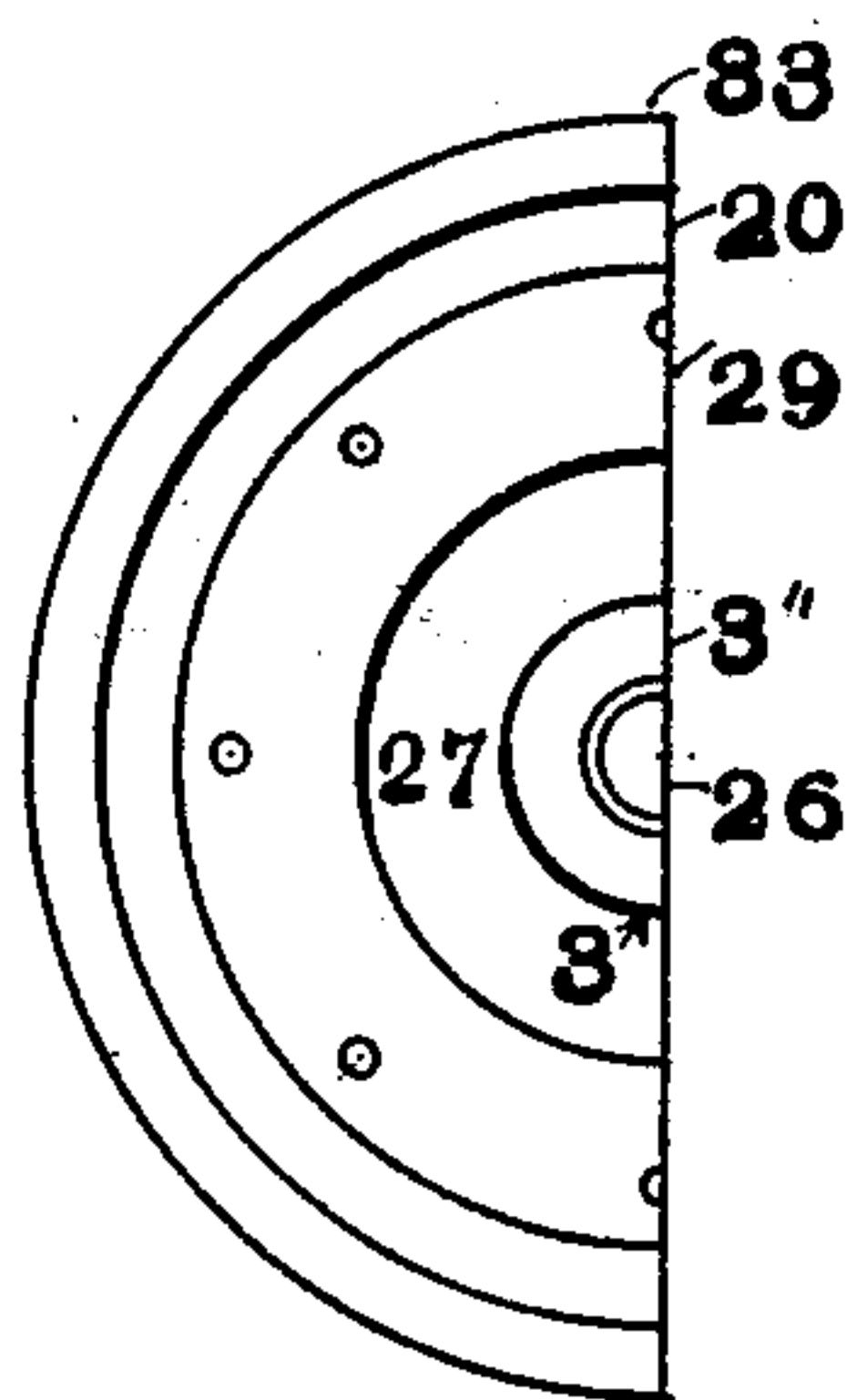
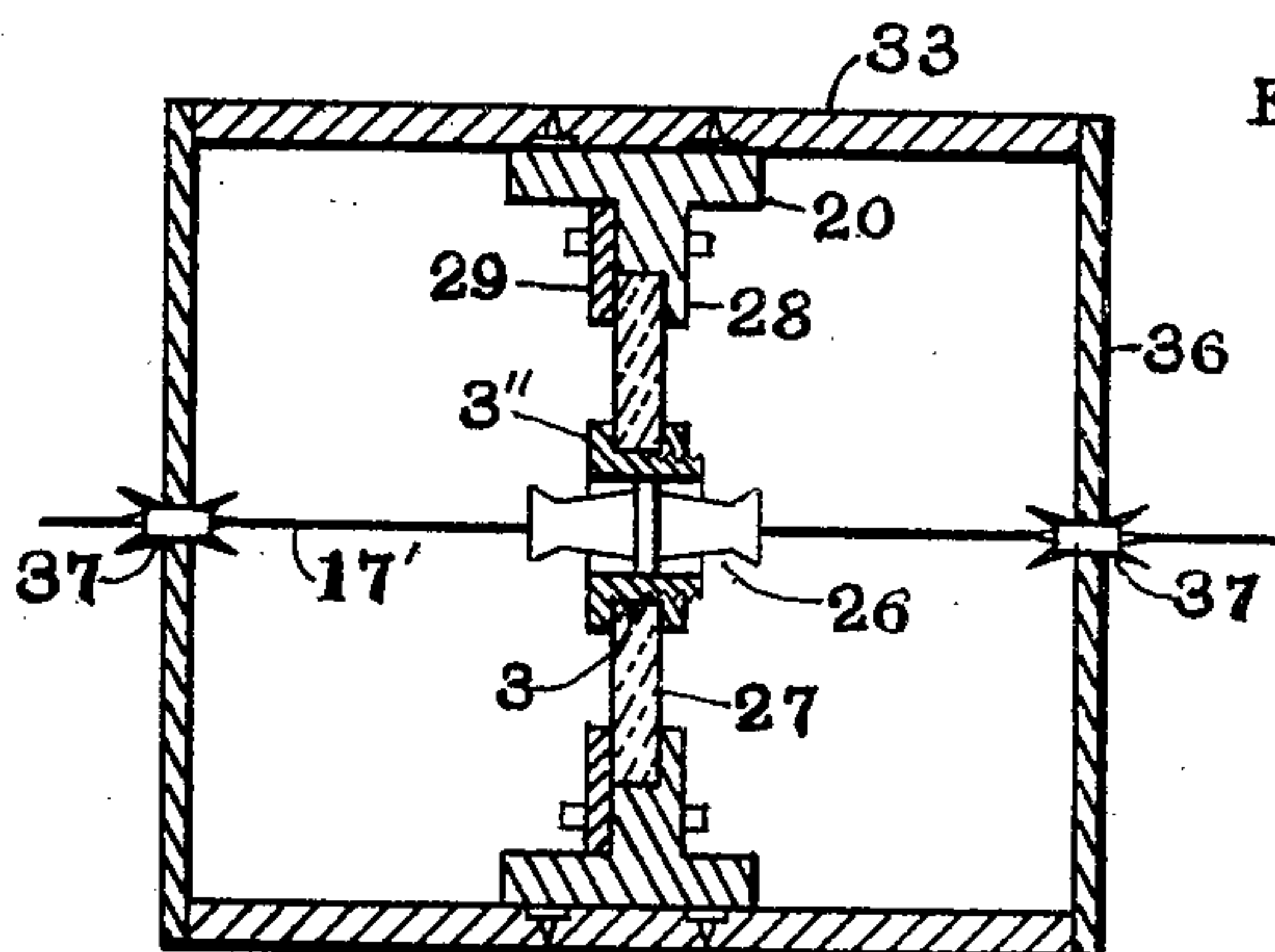


FIG. 2



WITNESSES:

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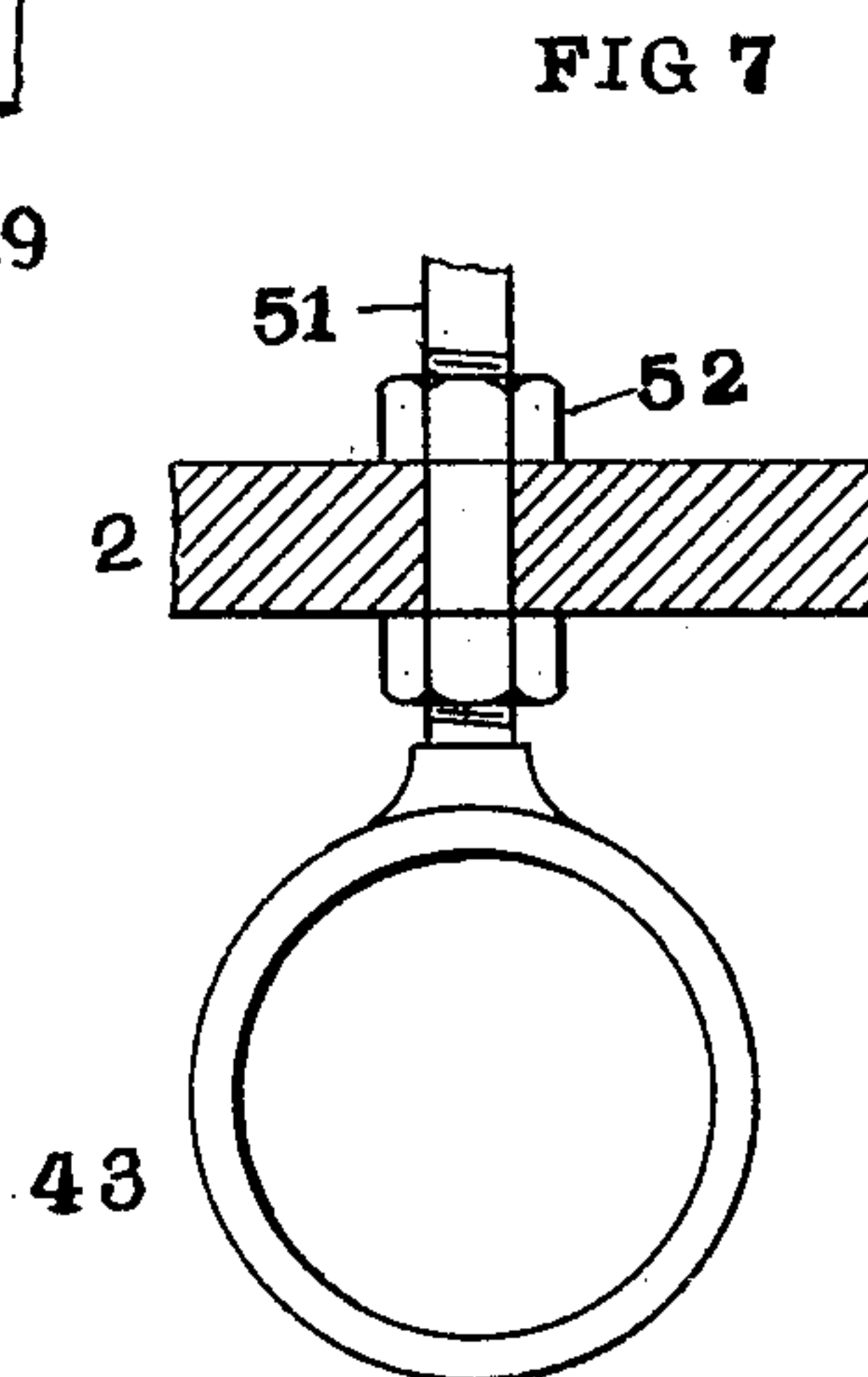
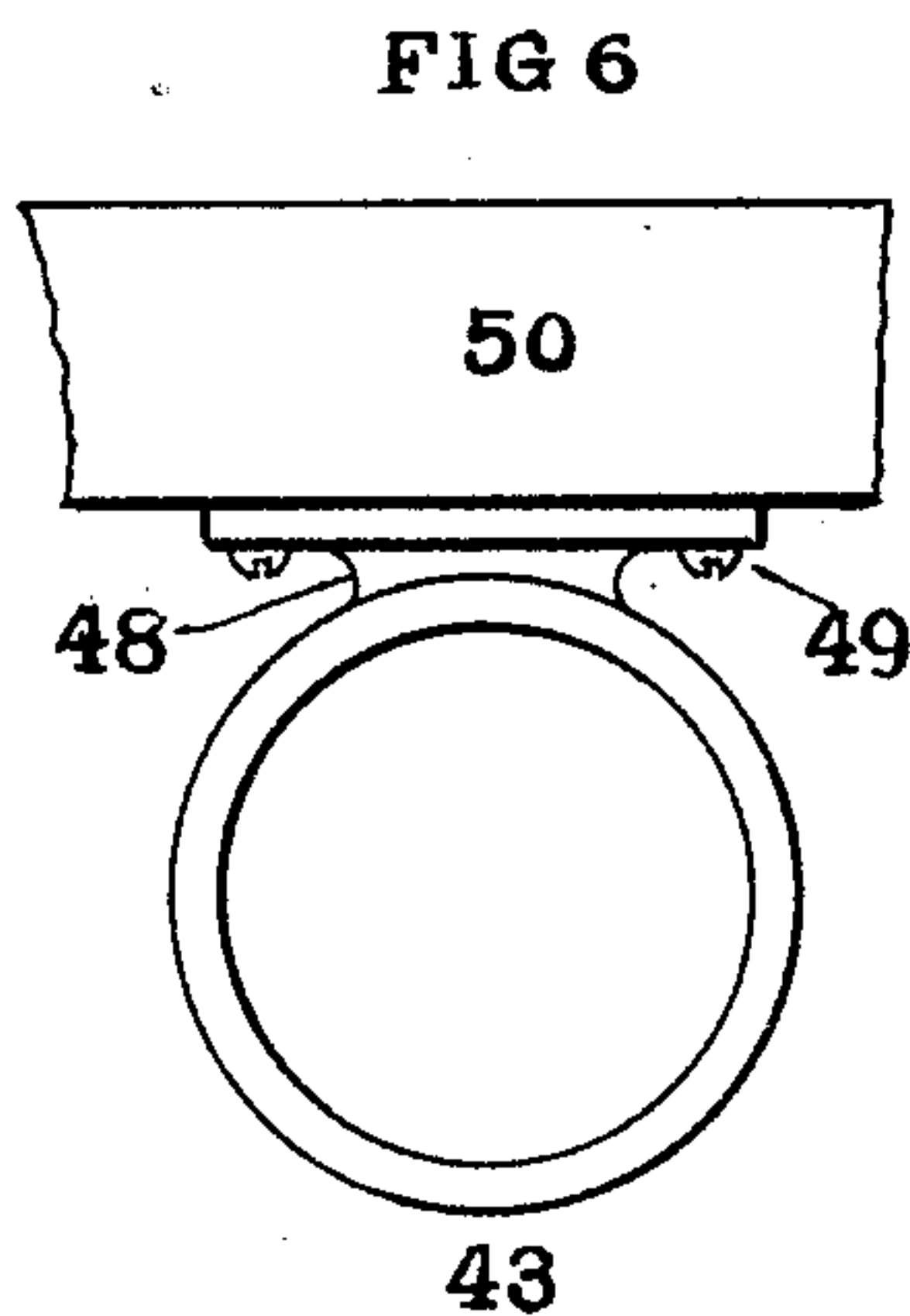
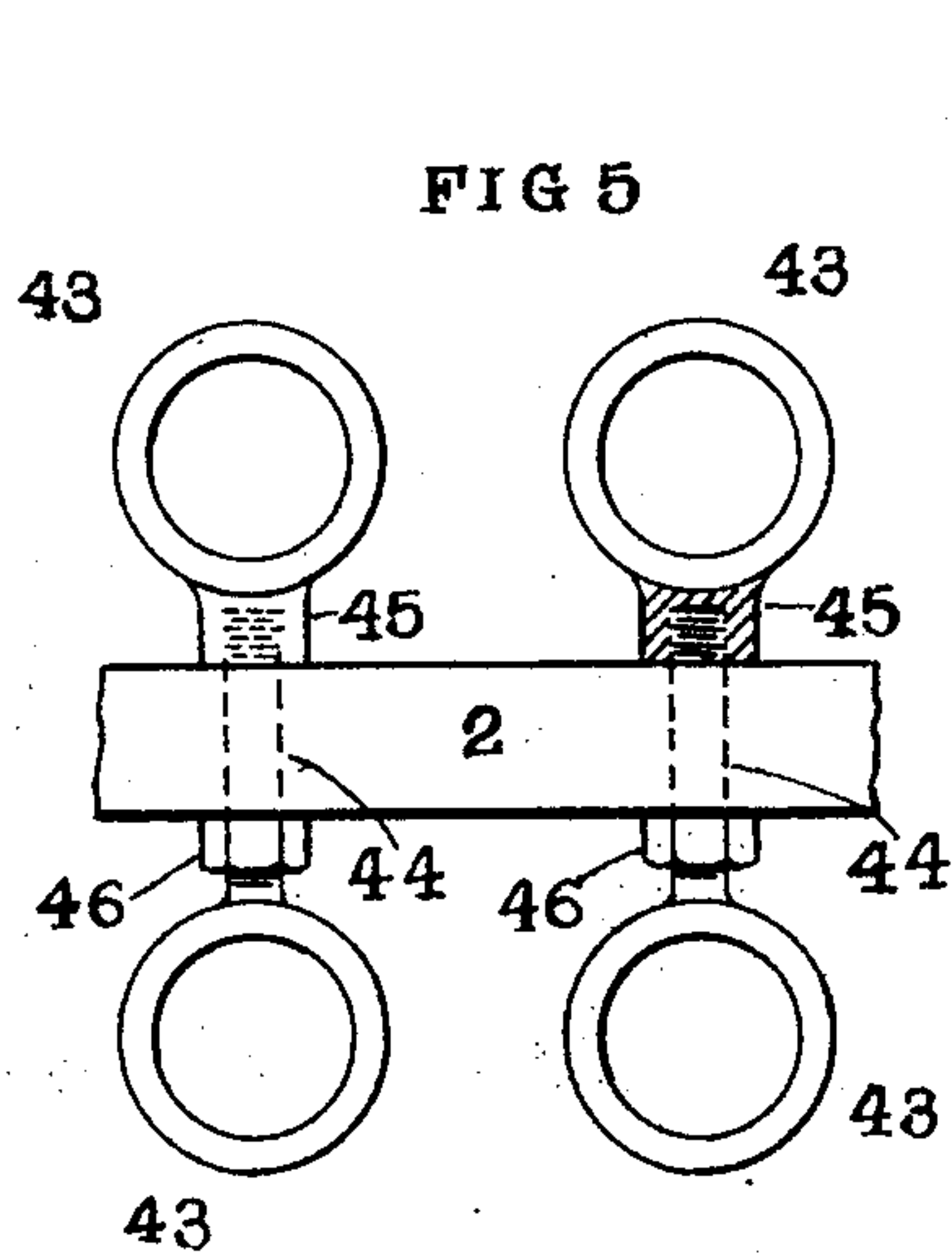
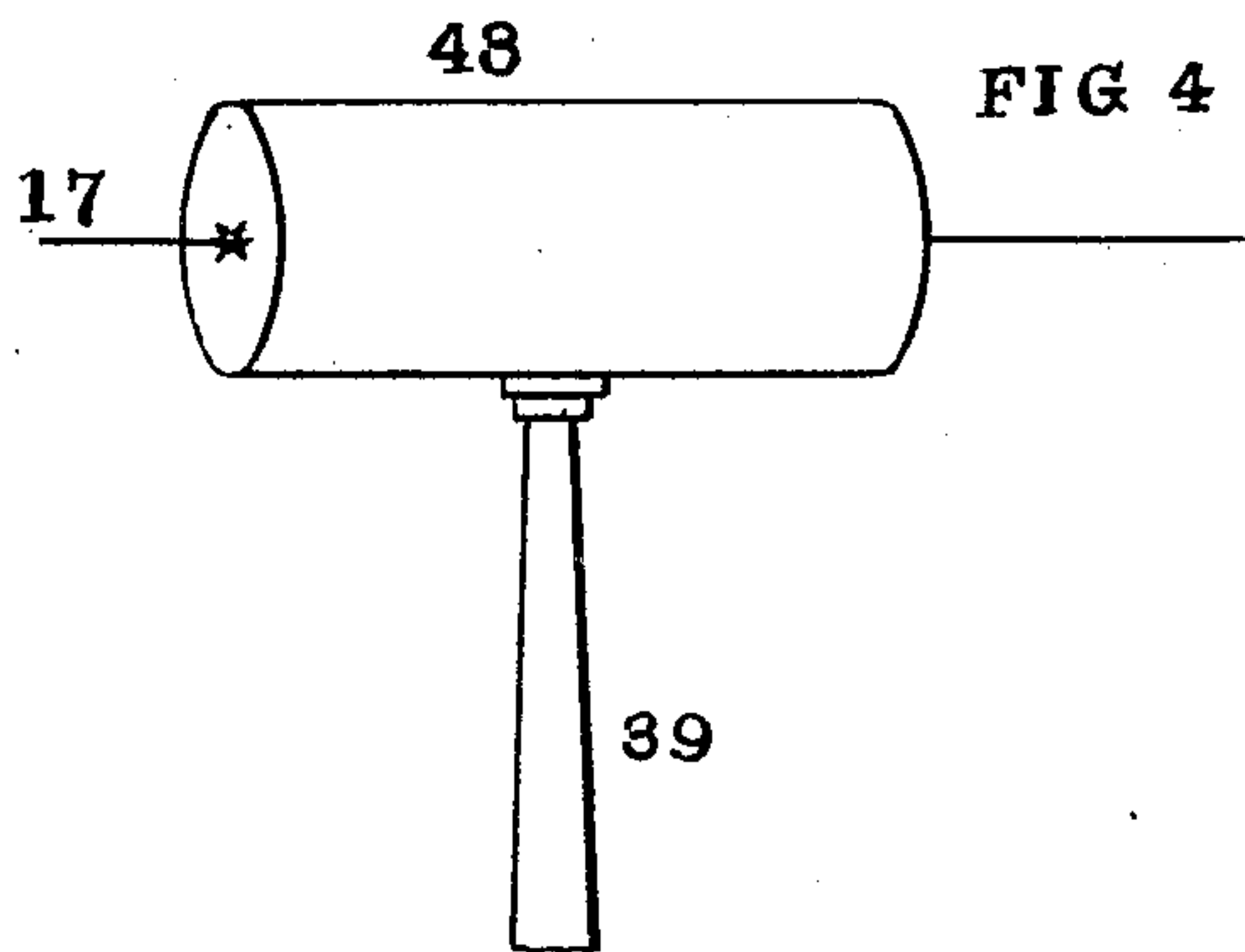
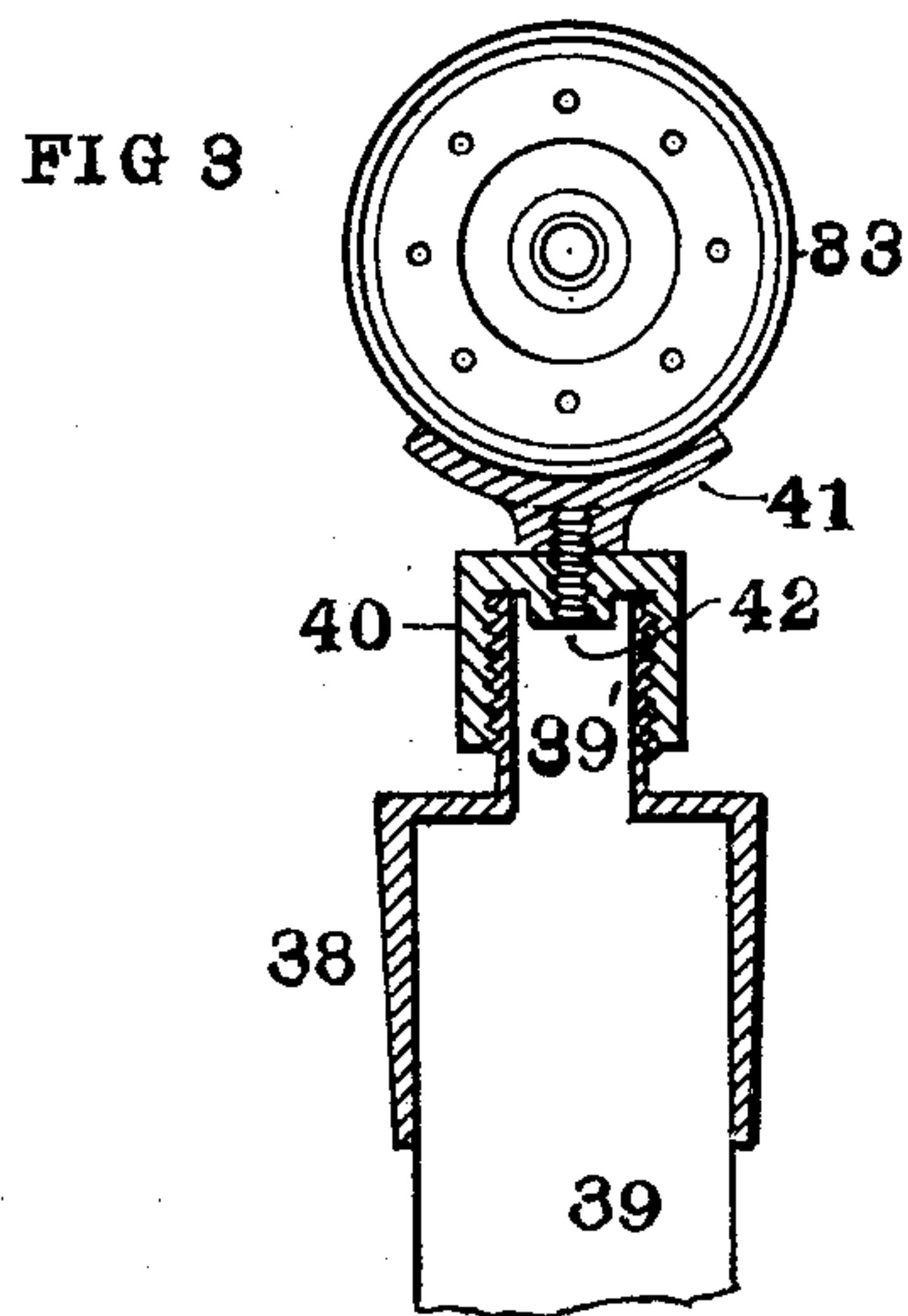
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UNITED STATES PATENT OFFICE.

JOSEPH ARTHUR POCHÉ, OF NEW ORLEANS, LOUISIANA.

ELECTRIC INSULATOR.

SPECIFICATION forming part of Letters Patent No. 637,282, dated November 21, 1899.

Application filed April 17, 1899. Serial No. 713,342. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH ARTHUR POCHÉ, a citizen of the United States of America, and a resident of New Orleans, in the parish of Orleans and State of Louisiana, have invented a new and useful Improvement in Electric Insulators, of which the following is a specification.

Heretofore Letters Patent were granted to me on August 9, 1898, No. 608,906, and also on December 13, 1898, No. 615,896, upon means for leading electric conductors through the walls of buildings or the partitions or walls of any inclosures in such a manner as to be practically perfectly insulated and at the same time so designed as to prevent any risk or danger to property or life.

My present invention relates to another combination of elements for carrying out the same broad invention, and at the same time said present invention contains alleged improvements over the present state of the art. As an illustration of one of the improvements may be mentioned the circumstance that in former patents the inclosing chamber, forming a water and air tight inclosure, consists of two parts, thereby necessitating more joints for possible electrical and atmospheric leakages. By my present mechanical construction the invention is constructed in such a manner that the air and water tight inclosure is constructed of a single piece, which extends without interruption or joints from a certain distance on one side of the wall to a certain distance on the other side. The other features which are in the nature of improvements will appear in the specification hereinafter and also in the claims attached to the specification.

Figure 1 is a longitudinal sectional elevation showing the mechanical construction when applied to any given partition. Fig. 2 is a similar view of the construction shown in Fig. 1 applied to a glass plate supported in a peculiar manner within a tube, the whole combination being suitable especially for use as a complete insulating-support, whether on poles above ground or under ground or for any other imaginable use. Fig. 2^a is a partial end view of Fig. 2. Fig. 3 is a cross-sectional view shown in outline as to the improved features only, illustrating a particular

manner of supporting the device shown in Fig. 2 upon a pole. Fig. 4 is simply a vertical elevation of a pole, showing the insulator in Fig. 2 supported on top thereof. Fig. 5 shows four such insulators supported upon what may be considered either as a pole or a wall, and may be considered either as a plan or as an elevation, the insulators being shown merely in outline. Fig. 6 shows the manner of suspending such an insulator from a ceiling. Fig. 7 shows one of the insulators secured to a partition or ceiling which is approachable on the opposite side.

More particularly, the elements comprising the complete organization are as follows:

1 represents a ring with an internal thread or nut, which is the locking-piece for securing the insulator to a partition 2 by means of a doubly-flanged ring 3, one of whose flanges is 3', bearing against the opposite side of the wall 2, the other flange being 3'', bearing against an annular projection 24, formed upon the outside of the inclosing chamber or air-tight inclosure 24', which passes through the aperture in the wall 2. On the opposite side of the annular projection 24 are the washer 21 and an externally-threaded nut 22, screwing into the inner portion of the ring 3. Red lead or similar mixtures of the nature of putty may be employed at the screw-joints. It will be noticed that the inclosure 24' is larger at the central portion than near the ends and that it flares outward at the ends, forming conical rings 25, which extend beyond the ends 24'' of the barrel-shaped inclosure. Centrally through this inclosure, which by itself is open at both ends, passes an electric conducting bar or rod 5, threaded on both ends, as indicated at 5'. There is a coating of mica 6 upon this rod 5 and extending throughout its whole length between the threaded portions which stop at about the ends of the barrel-shaped inclosure 24'. Washers 12 and 12' bear against the ends of the inclosure 24', being slipped over the ends of the conducting-rod or conductor 5.

19 is a tube of insulating material, preferably asbestos, sufficiently large to inclose a layer of air between itself and the conductor 5, which it surrounds. This tube 19 is held in a concentric position about the conductor 5 by means of cups having holes, through

which passes the conductor 5, while the sides of the cups retain the asbestos tube 19 in the proper position relatively to the center or axis of the conductor. The holes in the cups are large enough to pass over the mica covering 6. The cups are 4 and 4' and are preferably made of asbestos, and both these and the tube 19 have their pores filled with an air-drying material, like lime or calcic chlorid, so as to act as driers for the air contained within the tube 19 and the inclosure 24'. On the backs of the bottoms of the cups 4 and 4' are mica rings 9 and 9', slipped over the conductors, and back of said rings are metal washers 10 and 10', against which bear star-springs 11 and 11', which in turn are pressed inwardly by the aforementioned washers 12 and 12'. These washers 12 and 12' are caused to press centrally of the inclosure 24' by means of nuts 13.

The conductors 17, which are to be connected with each other through the insulator, are doubled up on their ends into spring-eyellets 16, which fit in sockets 15, which in turn are screwed upon the threaded ends of the conductor 5, whose ends are concave, a nut-lock 15' being also upon the threaded portion of the conductor 5, so that the conductor 17 may be strongly and intimately connected with the conductor 5.

It is preferable that all the parts located between the conductor 5 and the wall 2 be constructed of insulating material, and it is essential that the barrel-shaped inclosure 24' be made of glass and of large enough diameter to provide a definitely-sized mass of air inside of said inclosure. Any leakage it permits to take place between the wall 2 and the conductor 5 must occur through the thick glass walls of the inclosure 24', through the air between the tube 19 and the inside walls of the inclosure 24', through the asbestos tube 19, and through the dry air inside of said tube, as well as, finally, through the mica covering on the conductor 5, or else the current must jump to the wall 2 through the outside air from the conductors 17, which are at too great a distance for any appreciable leakage to occur, or else the current must travel over all the surface on the outside of the barrel 24', over the flaring extensions 25, down on their inner sides, and over intermediate parts to the conductors 17. The insulators are easily installed, for having given the opening in the wall 2 no tools are necessary, more than one or two simple tools, possibly, to assist in adjusting and screwing the different parts together, and when once equipped no attention by workmen becomes necessary, because the amount of air-drying material within the inclosure will serve to keep the air dry, even in the case of any exchange by leakage, for an indefinite number of years.

Referring particularly to Fig. 2, 26 represents in mere outline the insulator represented in Fig. 1. The ring 3 is modified into one annular flange 3'', so that the same acts as a collar for a short threaded pipe. The

flange 3'' is turned outward instead of inward and bears against a large thick glass disk 27, which is clamped inside of a ring 20, having a flange 28, against which said glass plate 27 presses, while the ring 29, by being fastened to the ring 20 and overlapping the circumference of the glass disk 27, holds the latter securely in an insulated manner, because the parts 29, 28, and 20 are of suitable insulating material, the latter being secured within a tube 33, which is sufficiently long laterally to protect the whole insulator internally from rain, especially as it may be closed at the ends by end pieces 36, having apertures containing small glass insulators 37. The conductor 17', which passes through the whole insulator, may be covered in the usual way by any of the well-known insulating-coverings and with any kind of ordinary protecting-coverings for any purpose.

My invention is useful, as already stated in general, for passing conductors effectively through partitions, especially when the voltage is high, and, more particularly, I intend to use it for carrying a current through the shells of steam-boilers, so that electricity may be used within said boiler for the purpose of removing scaly deposits therein in a novel manner invented by myself. The electricity at the same time may be used for illuminating the interior of the boiler or when used for certain purposes in connection with vacuum-pans, so that the operator can see the condition of the interior. Consequently all the details of the construction become useful in connection with my invention. It will be seen that the air and water tight precautions in behalf of preventing leakage of current also serve to form an air and water tight passage for a conductor through a vacuum-pan or boiler or other partitions—as, for example, in the bulkhead of sailing vessels and steamers.

Of course my invention is broad enough to include all kinds of well-known mechanical expedients, such as additional packing-boxes, to prevent further leakage. Other mechanical changes may be made without in any way influencing my invention. Instead of wall 2 being considered as being a side wall it may be considered as any wall—for example, a floor of a building, or in certain portions of an underground conduit, or on shipboard, or in anything in the nature of a partition having an aperture through which a conductor is to be passed.

More particularly concerning the tubes 19 and the cups 4 and 4' the same may be conveniently made by means of a chemical like calcic chlorid or lime or chemicals having similar properties, preferably of such a form as to be either in solution or mixed up with water, so that the whole may completely saturate a porous body, like asbestos or similar material, or in place of the above construction the tubes and inclosures may contain pieces of pumice-stone saturated with such a solution or mixture. Caution should be taken

before placing these drying materials in the tube to treat same in such a way as to thoroughly drive off all water, so as to leave the driers in a thoroughly deliquescent condition.

5 In Fig. 3, 38 represents the top cap-piece of a pole 39, having a similar upward extension 39', to which is threaded a cap 40, which in turn is fastened in any convenient way to the insulating device shown in Fig. 2 and repeated as to outline in Fig. 3. The said insulating device is connected rigidly to the cap 40, the tube 33 being soldered or bolted to the connecting-support 41, which in turn may be fastened by the screw 42 to the cap 40.

15 In Fig. 4 the conductor 17 is seen passing through the insulator shown in Fig. 2 merely in outline at 43, the pole being lettered 39.

In Fig. 5 the insulators at 43 are outlines of those shown in Fig. 2, and they are connected together on opposite sides of a partition 2 by means of bolts 44, passing through the partition and screwing into the insulators on one side at 45 and having retaining-nuts 46 on the other side, where the insulators 43 are secured to the poles 44, while on the other side similar insulators are secured to nuts 45, which screw upon the poles 44.

25 In Fig. 6 the insulator at 43 has an extension 48, which is screwed by screws 49 to the ceiling 50.

30 The insulator at 43 in Fig. 7 has a bolt 51 extending therefrom through a partition 2, while retaining-nuts 52 upon opposite sides of the partition 2 strongly support the insulator at 43.

I claim as my invention—

1. The combination with a partition having an aperture, of a conductor passing centrally through said aperture, an insulating inclosure formed in a single piece surrounding said conductor, extending through the aperture to predetermined distances on both sides thereof, and provided with openings at the ends for the passage of said conductor, which are plugged up around the conductor in an air and water tight and electrically-insulated condition.

2. The combination with a partition having an aperture, of a conductor passing centrally through said aperture, an insulating inclosure formed in a single piece surrounding said conductor, extending through the aperture to predetermined distances on both sides thereof, and provided with a central external annular projection, and provided with outwardly-flaring, conical extensions, and also provided with openings at the ends for the passage of said conductor, which are plugged up around the conductor in an air and water tight and electrically-insulated condition, and means for clamping centrally said annular projection to the said wall at the said aperture.

3. The combination with a partition having an aperture, of a conductor passing centrally through said aperture, a glass inclosure formed in a single piece, surrounding said

conductor, extending through the aperture to predetermined distances on both sides thereof, and provided with a central external annular projection, and provided with outwardly-flaring, conical extensions, and also provided with openings at the ends for the passage of said conductor, which are plugged up around the conductor in an air and water tight and electrically-insulated condition, and means for clamping centrally said annular projection to the said wall at the said aperture, said means consisting of a doubly-flanged ring, one flange bearing on one side of said annular projection, and the other flange upon the said partition, and nuts screwed to said doubly-flanged ring respectively against the other side of said partition and the other side of said annular projection, and said flaring ends extending beyond said openings in said glass inclosure.

4. The combination with a partition having an aperture, of a conductor passing centrally through said aperture, an insulating inclosure formed in a single piece surrounding said conductor, extending through the aperture to predetermined distances on both sides thereof, and provided with a central external annular projection, and provided with outwardly-flaring, conical extensions, and also provided with openings at the ends for the passage of said conductor, which are plugged up around the conductor in an air and water tight and electrically-insulated condition, and means for clamping centrally said annular projection to the said wall at the said aperture, said partition consisting of a glass disk, and a tube surrounding the hereinbefore-described combination, a clamp for securing said glass disk centrally within said tube, which is closed at the ends, and through which passes the conductor to be insulated by this combination.

5. The combination with a partition having an aperture, of a conductor passing centrally through said aperture, a glass inclosure formed in a single piece surrounding said conductor, extending through the aperture to predetermined distances on both sides thereof, and provided with a central external annular projection, and provided with outwardly-flaring, conical extensions, and also provided with openings at the ends for the passage of said conductor, which are plugged up around the conductor in an air and water tight and electrically-insulated condition, and means for clamping centrally said annular projection to the said wall at the said aperture, said means consisting of a doubly-flanged ring, one flange bearing on one side of said annular projection, and the other flange upon the said partition, and nuts screwed to said doubly-flanged ring respectively against the other side of said partition and the other side of said annular projection, and said flaring ends extending beyond said openings in said glass inclosure, the plugging device consisting of washers screwed upon

said conductor and locked by means of nuts against the open ends of said inclosure, an insulating-tube containing an air-drying substance located within the inclosure, and forming a second internal inclosure about said conductor, caps into which said tube fits, slipped over said conductor, and backed by insulating-washers, and metallic washers thereon, and springs inserted between said metallic washers and those washers which bear against and close the ends of said glass inclosure.

6. The combination with a partition having an aperture, of a conductor passing centrally through said aperture, a glass inclosure formed in a single piece, surrounding said conductor, extending through the aperture to predetermined distances on both sides thereof, and provided with a central external annular projection, and provided with outwardly-flaring, conical extensions, and also provided with openings at the ends for the passage of said conductor, which are plugged up around the conductor in an air and water tight and electrically-insulated condition,

and means for clamping centrally said annular projection to the said wall at the said aperture, said means consisting of a doubly-flanged ring, one flange bearing on one side of said annular projection, and the other flange upon the said partition, and nuts screwed to said doubly-flanged ring respectively against the other side of said partition and the other side of said annular projection, and said flaring ends extending beyond said openings in said glass inclosure, the said conductor being hollow at the ends, and provided with sockets which are screwed upon said ends, and contain ball terminals of external conductors, suitable lock-nuts being screwed against said sockets upon the conductor, which passes through said aperture.

In testimony whereof I have hereunto subscribed my name this 11th day of April, A. D. 1899.

JOSEPH ARTHUR POCHÉ. [L. S.]

Witnesses:

J. P. BLANCO,
PIERRE OLIVIER.