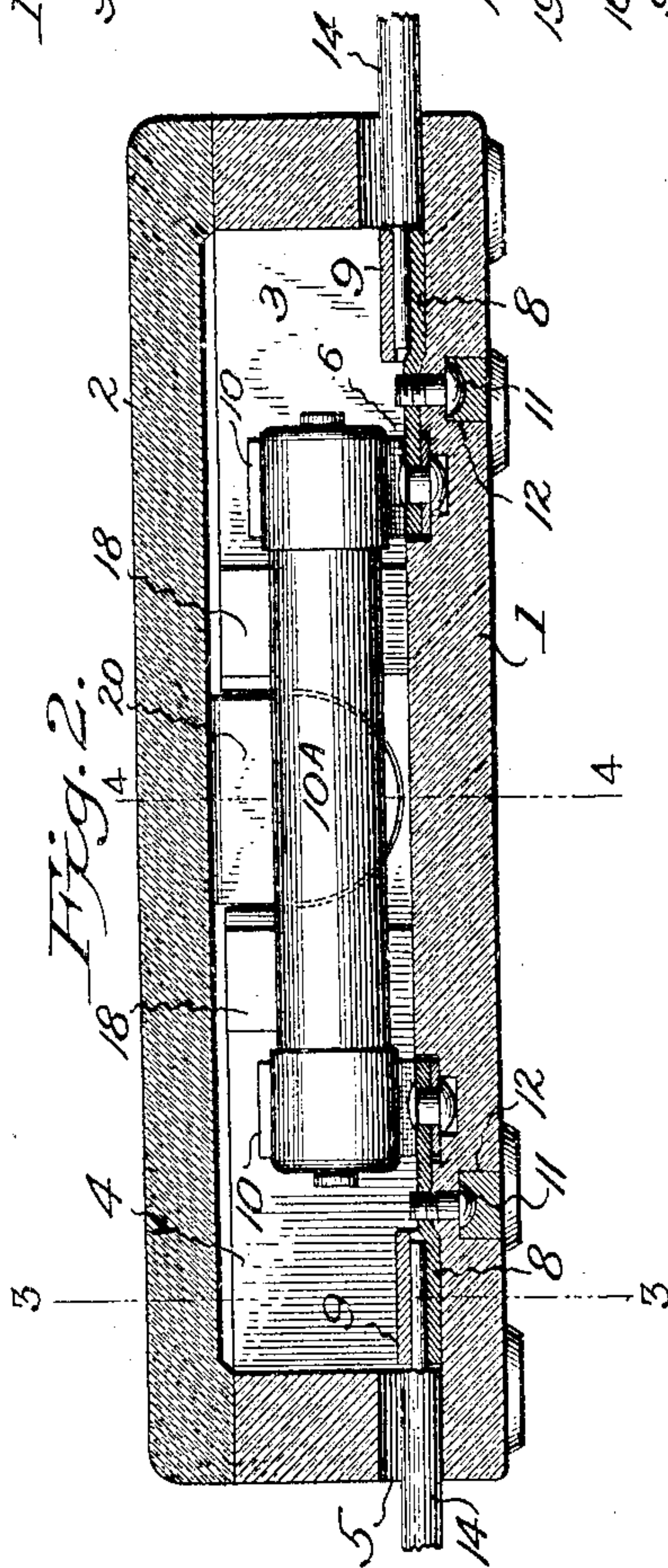
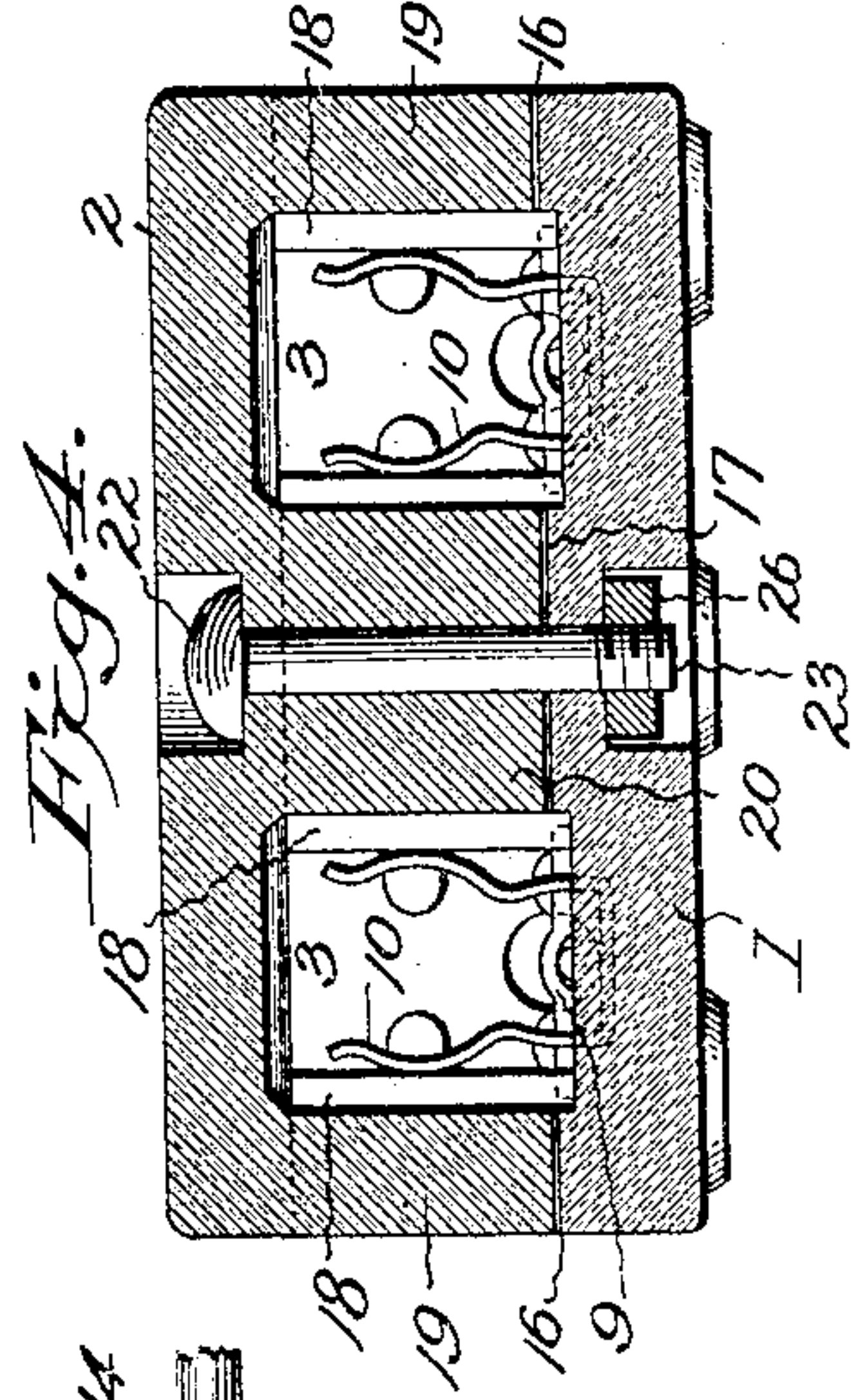
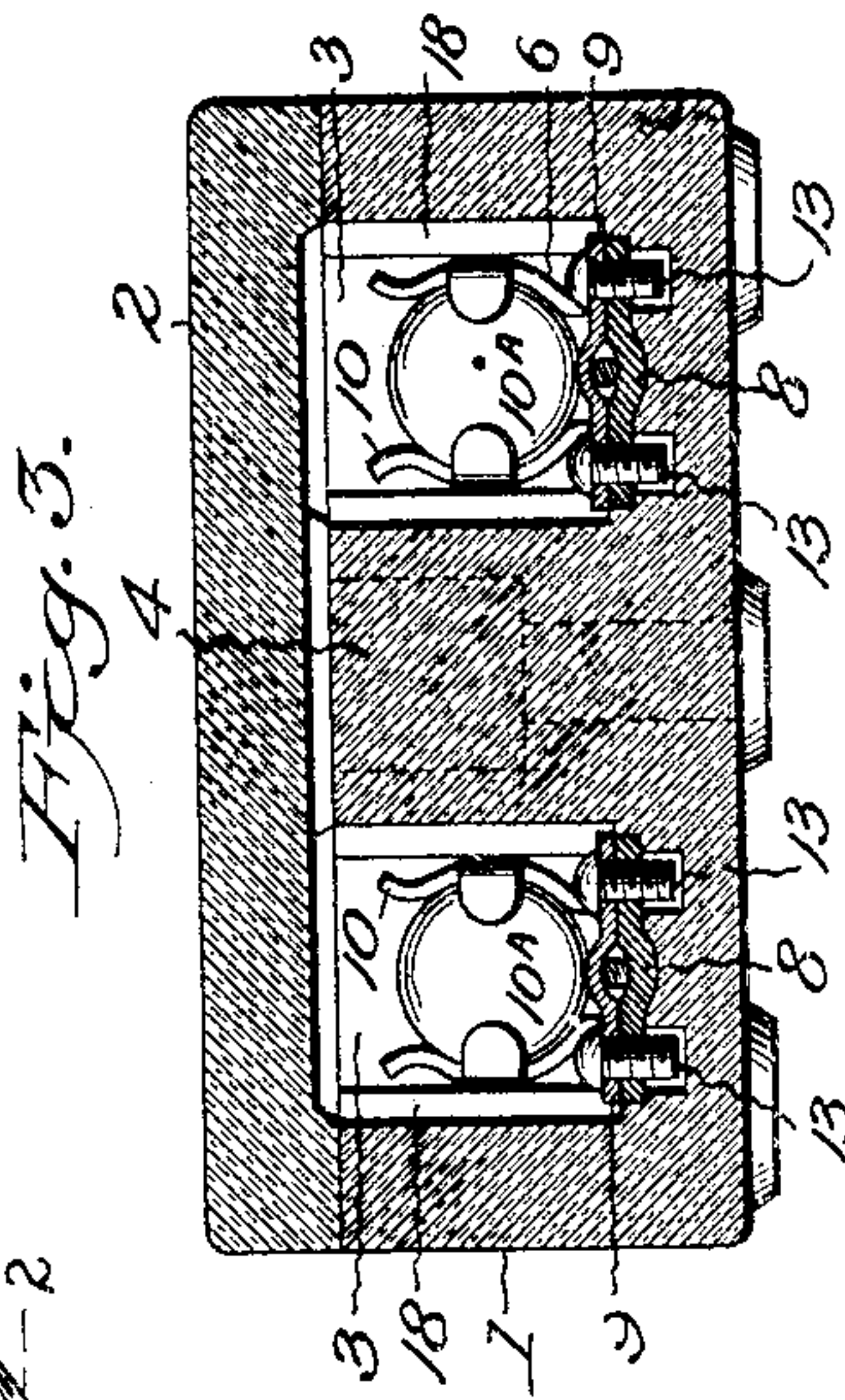
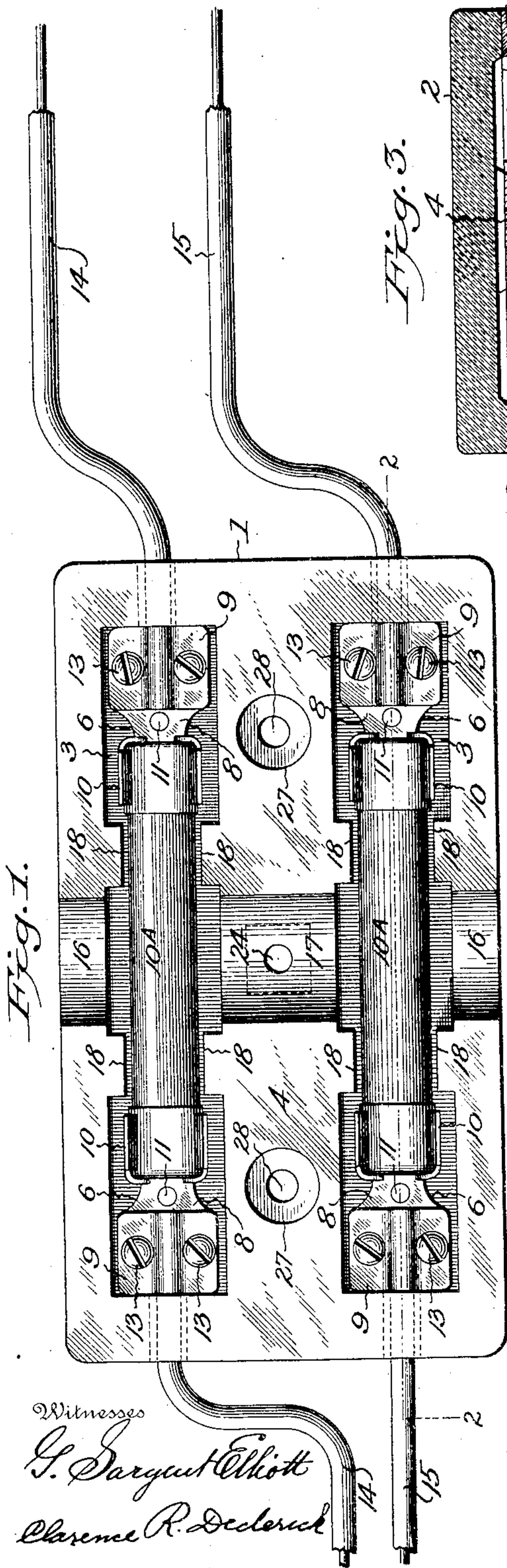


H. W. LAWRENCE.
FUSE BLOCK OR CUT-OUT.
APPLICATION FILED APR. 30, 1904.

2 SHEETS—SHEET 1.



Inventor

By *Harry W. Lawrence.*
H. S. Bailey. Attorney

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2 SHEETS—SHEET 2.

Fig. 5.

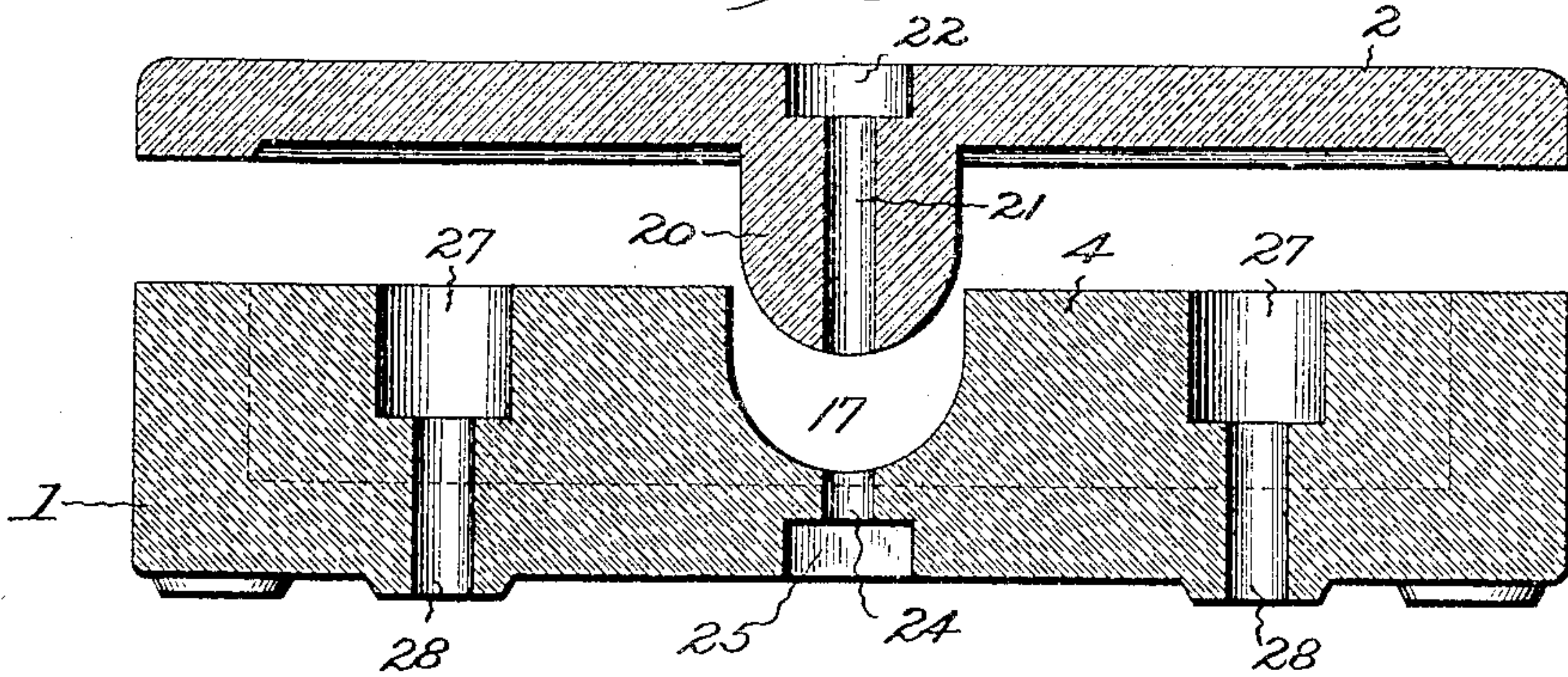


Fig. 6.

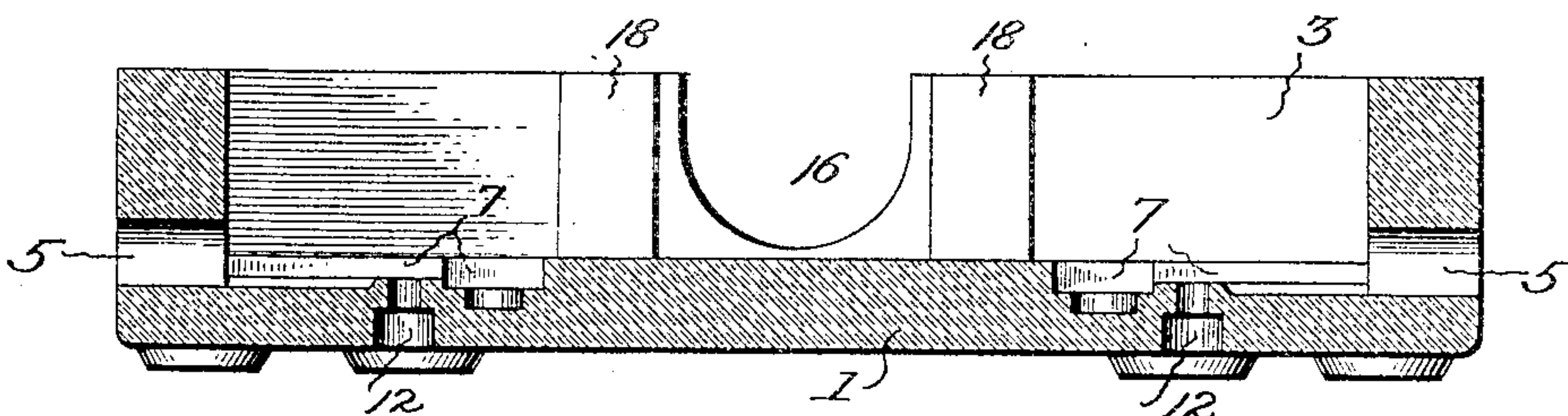
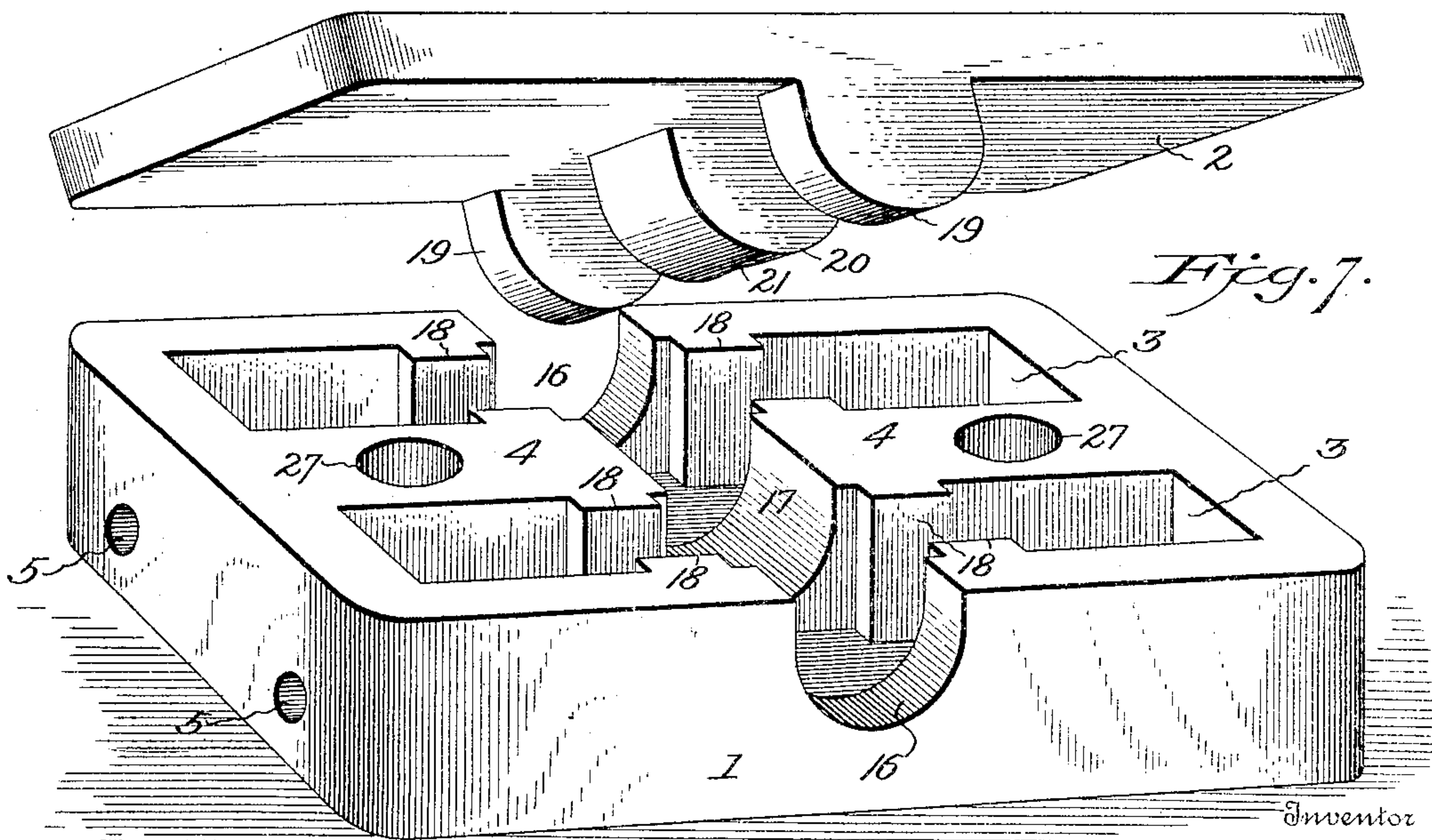


Fig. 7.



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UNITED STATES PATENT OFFICE.

HARRY W. LAWRENCE, OF DENVER, COLORADO, ASSIGNOR TO THE NEW ENGLAND ELECTRIC COMPANY, OF DENVER, COLORADO, A CORPORATION OF COLORADO.

FUSE-BLOCK OR CUT-OUT.

No. 802,999.

Specification of Letters Patent.

Patented Oct. 31, 1905.

Application filed April 30, 1904. Serial No. 205,754.

To all whom it may concern:

Be it known that I, HARRY W. LAWRENCE, a citizen of the United States of America, residing in the city and county of Denver, State of Colorado, have invented certain new and useful Improvements in Fuse-Blocks or Cut-Outs; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same; reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in fuse-blocks or cut-outs employed in the electric wiring of private houses, office-buildings, &c.; and the objects of my invention are, first, to provide a fuse-block adapted to receive the ordinary inclosed cartridge-fuse and also to completely incase the same and which is so constructed as to facilitate the removal or replacement of the fuse or fuses; second, to provide a fuse-block to which the circuit-wires are connected in such a manner that accidental short-circuiting, due to the contact of any conducting material with the uninsulated ends of the live wires, is positively prevented; third, to provide a fuse-block and cover so constructed that should the cover thereof be left off for any purpose nothing could be laid against or hung across or dropped into the block or accidentally work into the block in such a manner as to short-circuit the poles or arrange itself parallel with the inclosed fuses, so as to conduct the current independent of the fuse from one terminal to the other; fourth, to provide a fuse-block that is adapted to operatively receive any of the inclosed fuses in use—such as the knife-blade or screw-clamp or spring-clip inclosed fuses—and, fifth, to provide a fuse-block that is constructed to prevent the spring-clamps that hold the inclosed fuses from being sprung back far enough to prevent their resilient return to operative position. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of my improved fuse or cut-out block supplied with the fuses, clamps, and terminals to which the circuit-wires are secured, the cover of the block be-

ing removed. Fig. 2 is a longitudinal vertical sectional view on the line 2 2 of Fig. 1, the cover being shown thereon. Fig. 3 is a transverse sectional view on the line 3 3 of Fig. 2. Fig. 4 is a transverse sectional view on the line 4 4 of Fig. 2. Fig. 5 is a central longitudinal vertical sectional view through the block and cover. Fig. 6 is a vertical longitudinal sectional view similar to Fig. 2, but omitting the cover, fuse, and clamp; and Fig. 7 is a perspective view of the block, the cover being shown raised above the block.

Referring to the drawings, the numeral 1 indicates the block, which is preferably constructed of vitrified porcelain, this material being capable of withstanding a very high degree of heat, and 2 the cover, which is of the same or of other suitable material. The block is provided with two longitudinal chambers 3, which are closed at each end by walls of suitable thickness and separated by a partition 4, which with the sides of the box form the side walls of the chambers 3. Apertures 5 extend through the end walls of each chamber on a level with the floor of the chambers, and terminals 6 are secured in suitable recesses 7 in the floor of the chambers and at the ends thereof. These terminals are such as are in general use and comprise plates 8 and 9 and fuse-clamps 10. The plates 8 are secured within the recesses 7 by screws 11, which extend up through the bottom of the block, the heads of which lie in recesses 12 in the bottom of the block, which recesses are filled with a suitable cement to prevent the screws coming in contact with any conducting material. Upon the ends of the plates 8, adjacent to the ends of the chambers, are secured the plates 9 by screws 13, and between these plates, which are slightly recessed for the purpose, are clamped the ends of the circuit-wires 14 and 15, as will be seen by reference to Fig. 3. To the opposite ends of the plate 8 are riveted the spring-clamps 10, which hold the ends of the cartridge-fuses 10^A, and the terminals in each chamber are in alinement with each other and with the apertures 5 in the ends of the chambers. The width of each chamber is such as to prevent the members of the fuse-clamps from being sprung apart more than is necessary in removing and replacing the fuses, thus obviating the possibility of accidentally springing the clamps

beyond the limit of their normal resilient tension, which, if it could be done, would ruin the contact of the clips around the terminals of the cartridge-fuse and perhaps
 5 cause an arc, which might ruin the cut-out or at least would permit the fuse to drop out, and thereby break the circuit. These fuses are of the type in general use, and therefore require no description. In order that the
 10 fuses may be easily and conveniently removed or replaced, I form semicircular recesses 16 in the sides of the block and centrally of the length thereof, which extend from the top of the block to the floor of the chambers, and a
 15 corresponding recess 17 is also formed in the partition 4. These recesses 16 and 17 permit the thumb and forefinger to be passed around the fuse, so that it may be easily grasped and withdrawn. The depth of the chambers 3 is
 20 such that when the fuses are clamped in position therein they and the cut-out terminals will be a sufficient distance below the top of the block to prevent their contact with any article that might inadvertently be placed
 25 across the face of the block and which otherwise would short-circuit the current. As before stated, the chambers are only a little wider than the width of the fuse-clamps in order that the clamps may be sprung apart
 30 sufficiently to insert or withdraw the fuses, and in order to obviate the possibility of articles, such as screws or nails or pieces of wire, from being accidentally dropped into the block in such a manner as to connect with
 35 the two terminals of each fuse, which would shunt a portion of the current from the fuse and would prevent the fuse from blowing in case an excess of current should pass over the circuit-wires and also to prevent any possibility
 40 of such articles being laid or falling across the terminal ends of the two inclosed fuses, and thus short-circuiting their poles. The side walls of the chambers 3 are formed with projections 18, arranged in oppositely-positioned
 45 pairs on each side of the central portion of the fuses or of the finger-recesses 16 and 17. These projections extend from the bottom to the top of the chambers and to within a very slight distance of each fuse, making it practically impossible for anything to drop into the block in such a way as to make a circuit
 50 with the terminals of each individual fuse. In clamping the circuit-wires to the terminals the insulating material is first cut away from the end of the wire in such a manner as to
 55 form a shoulder which when the wire is clamped will rest squarely against the end of the terminal, as shown in Fig. 2. It will then be seen that the bare portion of the wire or
 60 that from which the insulation has been removed is entirely inclosed by the terminal; but if the wire should be clamped in such a way as to leave an uninsulated portion between the end of the terminal and the point
 65 where the insulation was cut away to form

the shoulder the thickness of the wall of the block through which the wires pass to the terminal would effectually prevent any article from contacting with the wire or wires from the outside and producing a short circuit. 70

It will thus be seen from the construction herein shown that both the wires and terminals are so protected as to render accidental short-circuiting and shunting around the fuses between the terminals practically impossible. 75 The construction and arrangement are also such as to prevent persons coming in contact with the terminals, which sometimes happens with dangerous results, particularly when the circuit-wires have become grounded. 80

The cover 2 of the block is intended to securely close the chambers 3, and in order to accomplish this the under side of the cover is provided with downwardly-projecting ears 19, which are designed to fit snugly in the 85 finger-recesses 16, formed in the sides of the block, and with a central depending ear or lug 20, which fits into the finger-recess 17 of the partition 4. The lug 20 is provided with a screw-hole 21, which opens into a circular 90 recess 22 in the face of the cover of sufficient depth to entirely inclose the head of a screw 23, by which the cover is fastened to the block. This screw passes through a hole 24 in the bottom of the block, which opens into a 95 square recess 25, capable of receiving a nut 26, which receives the end of the screw. The partition 4 is provided with circular recesses 27 of considerable depth, and from the bottoms of these recesses screw-holes 28 extend 100 through the block. Screws are pressed through these holes into any suitable support to which the block may be secured, and the recesses 27 will entirely inclose the heads of the screws.

It sometimes happens that when a fuse is 105 blown the inconvenience occasioned thereby is temporarily remedied by connecting the terminals with a piece of fuse-wire. With the uncovered blocks which are at present employed such an expedient frequently re- 110 sults in a fire by reason of sparking or a flash from the blowing of the fuse-wire, and if the fuse-wire is not carefully secured to the terminals sparking is an almost inevitable result; but with a block constructed as herein 115 shown the temporary use of a fuse-wire could not possibly cause a fire, owing to the secure manner in which the terminals are inclosed, and, while my improved cut-out is designed to prevent the use of the common fuse-wire 120 as far as possible, should, however, it be employed the cut-out is so designed that the danger of fire is reduced to a minimum.

The fuse-block or cut-out herein described is thoroughly practical, and its construction 125 by which the wires and terminals are protected obviates short-circuiting and the danger of fire from the temporary use of fuse-wire.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a cut-out, a block having chambers separated by a partition, which has a central recess forming communication between the chambers; similar recesses in the outer sides of the chambers, in line with the recess in the partition, and apertures through the ends of the chambers; a cover for said block having depending ears upon its underside, which fit into the recesses of the sides and partition of the block, a hole in said cover which extends through the central ear, a corresponding hole through the bottom of the block, forming a continuation of the aforesaid hole, and means for securing said block and cover together.

2. In a cut-out, a block having chambers which are separated by a central partition, said chambers having apertures extending through their ends, a recess in each side of the block communicating with a chamber and a similar recess in the partition communicating with both chambers, said recesses extending from the top of the block to the bottom of the chambers; oppositely-arranged projections on the sides of the chambers, and adjacent to the recesses, which serve to contract the width of the chambers at that point, and holes through the partition for the passage of securing means.

3. In a cut-out, a block having chambers which are separated by a central partition, the sides of said chambers and said partition being formed centrally with recesses which extend from their top edges to the bottoms of the chambers; projections on the sides of said chambers adjacent to the recesses, which serve to contract the width of the

chambers at this point; apertures through the ends of the chambers and a cover for said block having projecting ears which fit into the recesses in the sides and partition of the block, and means for securing said cover upon said block; in combination with terminals at the ends of said chambers adjacent to and in alinement with the apertures; the fuses connecting said terminals, and the circuit-wires extending through said apertures and secured to said terminals; the extreme height of said terminals, being less than the depth of the chambers.

4. In a cut-out, the combination of a block having chambers which are reduced in width for a part of their length at their central portions and recesses in the sides of said chambers extending from the top of the sides to the bottom of the chambers; a thick wall at the ends of said chambers having apertures therein which open into the chambers; terminals in the widened ends of said chambers adjacent to and on a line with the apertures; the fuses connecting the terminals and which lie in the narrow portion of the chambers, the said fuses and terminals lying below the plane of the top of the block; the cover having depending ears which fit into the recesses of the block, and means for securing said cover upon said block.

In testimony whereof I affix my signature in presence of two witnesses.

HARRY W. LAWRENCE

Witnesses:

G. SARGENT ELLIOTT,
CLARENCE R. DEDERICK.