

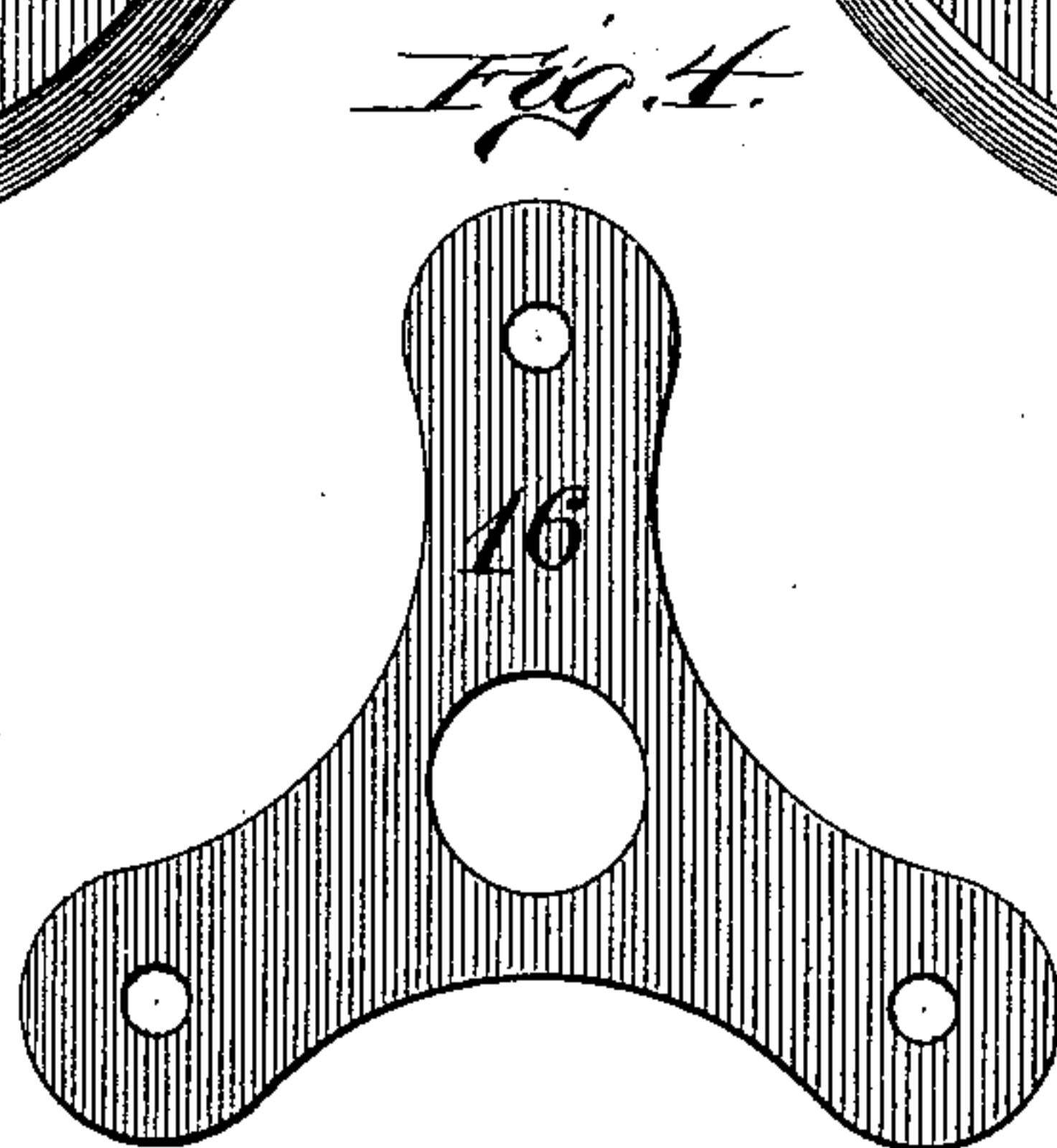
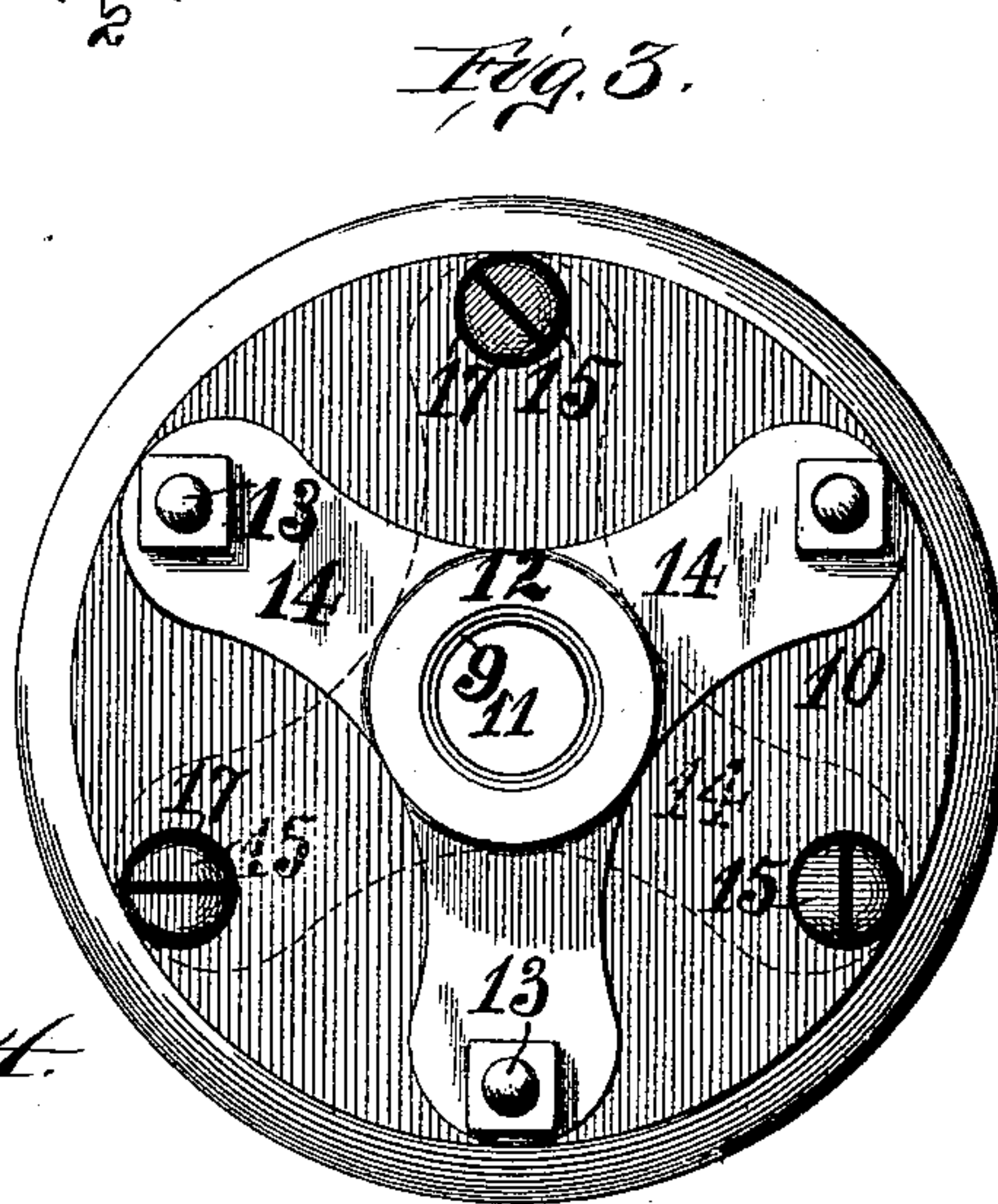
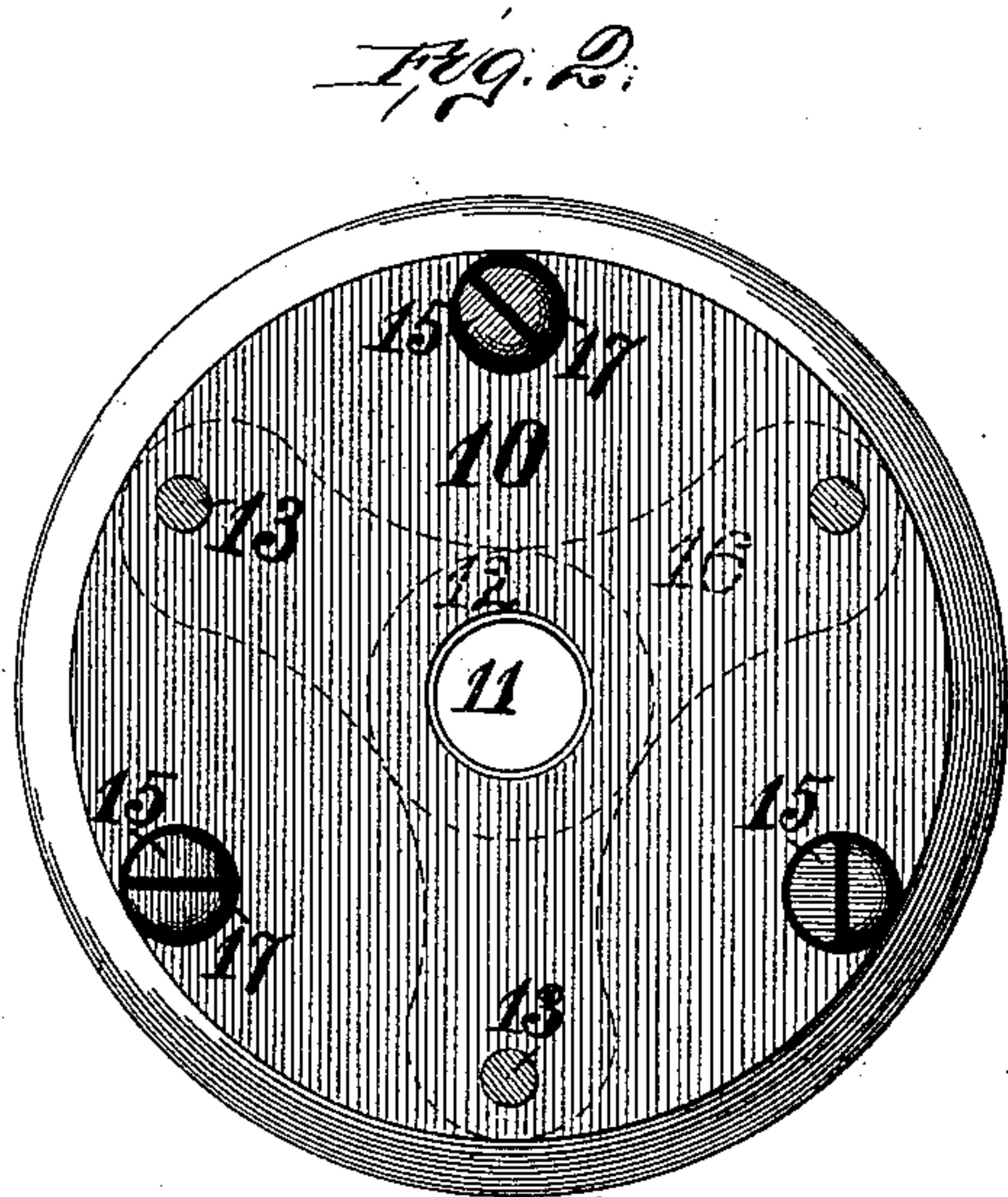
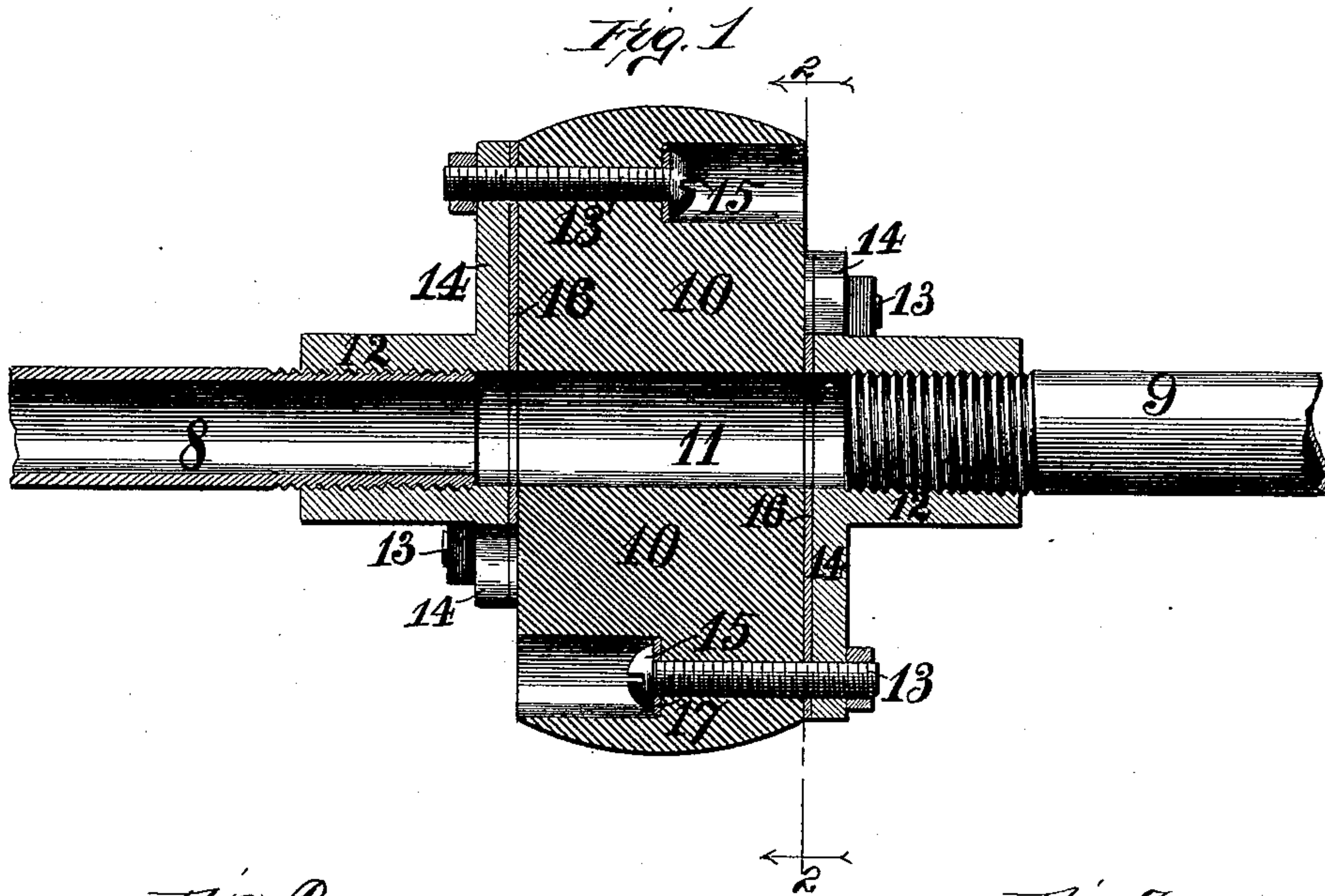
(No Model.)

S. D. GRATIAA.

INSULATING DEVICE FOR PREVENTING ELECTRIC CURRENTS IN PIPES.

No. 500,488.

Patented June 27, 1893.



Witnesses:
J. H. Pott
Geo. L. Neuhoff

Inventor:
S. D. Gratiaa,

By Fowler & Fowler Attys.

UNITED STATES PATENT OFFICE.

SIMEON D. GRATIAA, OF ST. LOUIS, MISSOURI, ASSIGNOR TO THE FAY GAS
FIXTURE COMPANY, OF SAME PLACE.

INSULATING DEVICE FOR PREVENTING ELECTRIC CURRENTS IN PIPES.

SPECIFICATION forming part of Letters Patent No. 500,488, dated June 27, 1893.

Application filed September 1, 1892. Serial No. 444,819. (No model.)

To all whom it may concern:

Be it known that I, SIMEON D. GRATIAA, a citizen of the United States, residing at St. Louis, State of Missouri, have invented a certain new and useful Insulating Device for Preventing Electric Currents in Pipes, of which the following is such a full, clear, and exact description as will enable any one skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

The object of my invention is to prevent electric currents in gas pipes and other pipes. For this purpose I interpose between two pieces or sections of such pipe, an insulating or non-conducting body having a perforation through which the gas or other substance conveyed by the pipe may pass from one of said pieces of pipe to the other, and I provide also certain novel means for fastening these parts together in a simple and effective manner, without destroying or impairing the insulation, as hereinafter explained.

The invention will be best understood by referring to the accompanying drawings illustrating a device made in accordance with one form of my invention, and specially adapted for preventing electric currents in ordinary gas pipes.

Figure 1 is a longitudinal central sectional view of the pipe and insulating device. Fig. 2 is a sectional view on the plane of line 2—2 of Fig. 1, looking from the right-hand side of said Fig. 1. Fig. 3 is an end elevation of the insulating device shown in Fig. 1. Fig. 4 is a detail view.

The same marks of reference indicate the same parts throughout the several views.

8 and 9 (Fig. 1) are two sections or pieces of suitable pipe, and 10 is an insulating or non-conducting substance. I prefer to use an incombustible and durable insulating substance, and one which does not readily absorb moisture (for example, glass, porcelain, lava, &c.) as it may be necessary to put the device underground, in which event any moisture absorbed by the body 10 would impair its insulating properties; and again, if the body were combustible a strong current of electricity might ignite it. The insulating substance 10

is pierced by a perforation 11, and the sections of pipe to be connected are put one on either side of the insulating substance, each section having its mouth or opening in communication with said perforation 11, so that gas or other substance conveyed by the pipes may flow from one of said sections to the other through the perforation 11, the nonconductor 10 cutting off, however, electric communication between the two sections of pipe. Of course the pipes must make a close joint with the conductor so as to prevent leakage, and this may be done by any suitable means that will not destroy or materially interfere with the function of the insulator 10. The pipe and insulating substance may, for example, be joined together as shown in the drawings, in which a suitable socket 12 is secured at each side of the insulating material, the sections of pipe 8 and 9 being screwed or otherwise suitably secured to the respective sockets. These sockets may be secured to the insulating substance, for example, by means of bolts 13 passing through arms 14 which project from each of the sockets 12, and form a spider on either side of the insulating substance. As the bolts and also the sockets 12 and spiders 14 are almost necessarily made of metal (which, of course, is a conductor of electricity), the heads 15 of the bolts should preferably be countersunk a considerable distance in the insulating substance, as clearly shown in Fig. 1. The spiders by preference, have only three arms each, and are so arranged that the depressions wherein are countersunk the heads of the bolts which fasten one spider to the insulating substance, fall midway between two arms of the other spider. A washer 16 of rubber or other suitable material, preferably of the same shape as the spider 14 (Fig. 4) may be inserted between such spider and the nonconductor 10, (Fig. 1) and serves as a packing to make a hermetically sealed joint between sockets 12 and the nonconductor 10. In Fig. 2 (a sectional view) the surface which the washer 16 would cover in the plane of line 2—2 on which said sectional view is taken, is indicated by a dotted line. I prefer also to put washers 17 under the heads 15 of the bolts 13 (Fig. 1). Suppose that the degree of insulation desired is that given by a two-inch

space. If it were not for the bolts 13, clearly no two metallic or conducting parts connected respectively with opposite sections of pipe 8 and 9 would be separated by anything less than a space of equal thickness with the insulator 10, and hence the desired degree of insulation would be obtained by simply making the insulator two inches thick. When bolts are used to fasten the parts together, the proper degree of insulation between the section of pipe on one side of the insulator and the bolts which secure the other pipe and its connections to the insulator, may be obtained, for example, either by extending the bolts only part of the way into the insulator (preferably by countersinking them, as shown in Fig. 1), or by inserting the bolts which secure one pipe to the insulator into different portions of the insulator from those penetrated by the bolts from the other side, so as to obtain the proper degree of separation between the bolts and fastenings of the one pipe and the bolts and fastenings of the other pipe.

In the form of device shown in the drawings, both these expedients are combined, to wit: The heads of the bolts are countersunk, preferably to about one-half the thickness of the insulator, and the spiders are so arranged that the depressions wherein are countersunk the bolts which secure one spider to the insulator, fall midway between two arms of the other spider, the minimum distance from the rims of these depressions to the spider and other conducting parts being preferably also equal to one-half the thickness of the insulating substance, so that with this construction the bolts securing one pipe to the insulator are likewise insulated from the opposite pipe and its connections by a surface distance equal in length to the thickness of the insulator. This is the sum of the distance from the head 15 of a bolt 13 to the rim of the depression wherein said bolt is countersunk, plus the minimum distance from said rim to the spider 14 or socket 12, each of which distances is, as aforesaid, preferably equal to one-half the thickness of the insulator. It is evident, therefore, that the insulation between the pipes 8 and 9 is the same with these fastenings as it would be if the pipes were simply glued or soldered to opposite sides of the insulator, but fastenings by bolts and the like are much cheaper, stronger, and more effective for this purpose than any kind of glue or solder, so far as I am aware.

I am aware that the mere countersinking of bolts, screws or other fastenings is an expedient often resorted to by mechanics when it is designed to hold together two parts of a structure, and at the same time remove the head of the bolt or other fastening out of the way of other parts, or where it is designed to use a bolt or fastening of small length to hold together two parts of considerable thickness, and for other purposes of mechanical convenience. I do not, therefore, wish to be understood as claiming broadly as my inven-

tion, the idea of countersinking connecting bolts or fastenings.

I am not, however, aware that the countersinking of the bolts or other fastenings by which pipes or conducting bodies are secured to an insulating substance inserted between them, has ever been resorted to as an expedient for effecting within small compass, a wide separation of the conducting parts, and thereby securing the desired degree of insulation of the pipes or conducting parts.

My invention may be used generally to cut off electrical communication between two sections of pipe, irrespective, of course, of the special reasons which make it desirable to cut off such communication.

The invention is specially adapted to be applied to gas pipes in houses provided with electric fixtures, particularly where these are attached to or connected with the gas fixtures. It is well known that in such cases there is almost always more or less leakage of the electric current from the electrical fixtures to the ground *via* the gas fixtures and gas pipes. Evidently, however, if the gas pipes be suitably cut off from electrical communication with the ground, for example, by applying one of my insulating devices to the riser, such leakage will be practically stopped.

I do not wish to limit myself to the kind of means employed for securing the pipes to the insulator, as the same may be varied without departing from my invention.

Having fully described my invention, what I desire to claim and secure by Letters Patent, of the United States is—

1. The combination of two pipes, a perforated insulating or nonconducting substance inserted between them, and having depressions therein fastenings for securing the pipes to the nonconductor, the said fastenings penetrating the nonconductor but extending only a portion of the distance between the sides of the nonconductor to which said pipes are attached and resting in the depressions in said non-conductor, whereby a considerable separation of the conducting parts in electrical communication with said pipes is effected.

2. The combination of two pipes, a perforated insulating or nonconducting substance inserted between them, a spider on either side of the nonconductor, and each suitably connected to one of the pipes, bolts fastening the spiders to the insulating substance, and depressions in the insulating substance arranged intermediate the arms of each spider and wherein are countersunk the bolts which secure the opposite spider to the insulating substance.

3. The combination of two pipes, a perforated insulating or nonconducting substance inserted between them, a spider on either side of the nonconductor, and each suitably connected to one of the pipes, bolts fastening the spiders to the insulating substance, and depressions in the insulating substance arranged intermediate the arms of each spider

and wherein are countersunk the bolts which
secure the opposite spider to the insulating
substance, the sum of the minimum distance
from a spider (or other conducting part in
5 electric communication therewith) to the rim
of such depression, plus the depth of such de-
pression being not less than the thickness of
the insulating substance.

In testimony whereof I have hereunto set
my hand and affixed my seal, this 30th day of 10
August, 1892, in the presence of the two sub-
scribing witnesses.

SIMEON D. GRATIAA. [L. S.]

Witnesses:

CHAS. M. WEMPNER,
GEORGE L. NEUHOFF.