

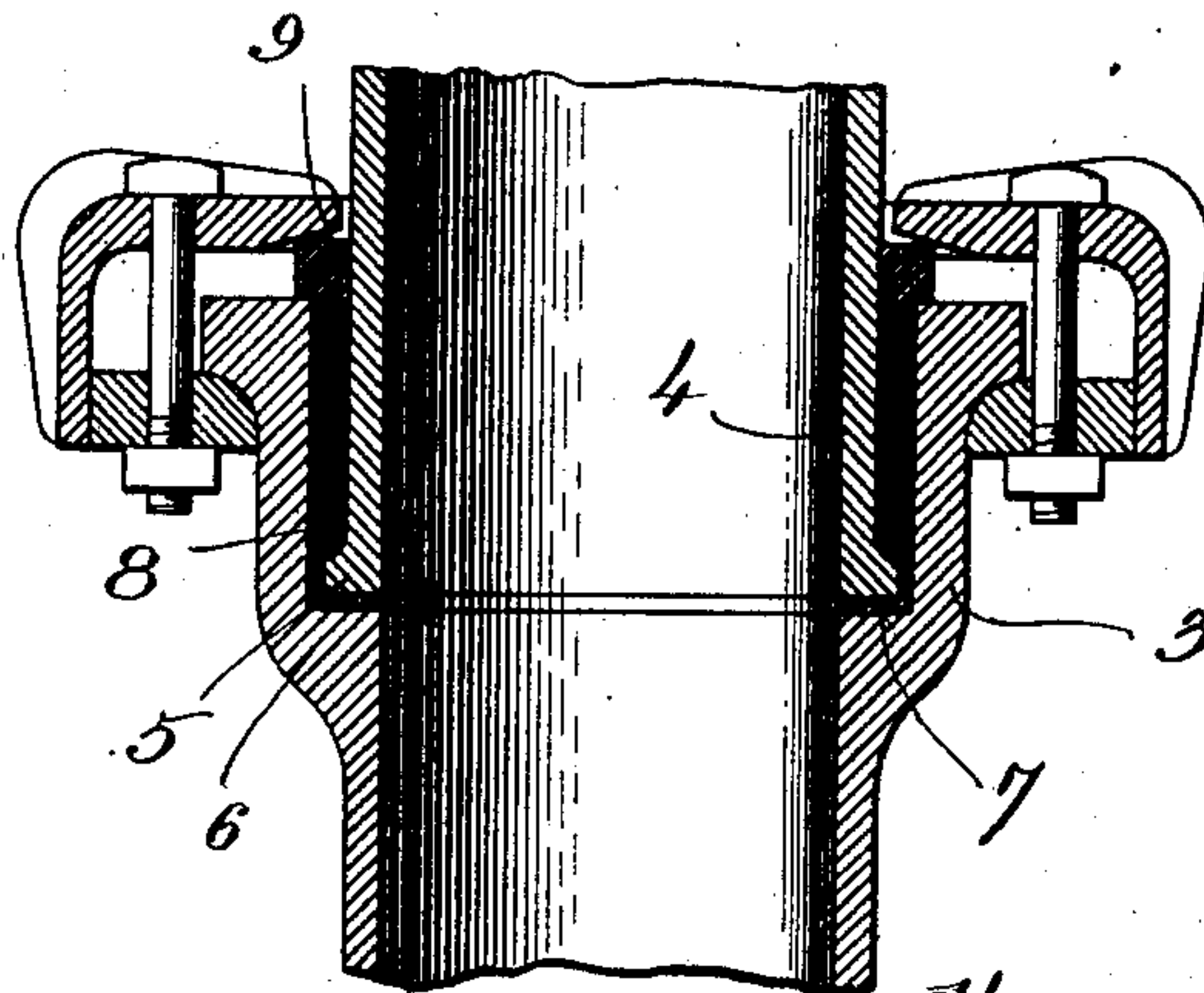
No. 753,595.

PATENTED MAR. 1, 1904.

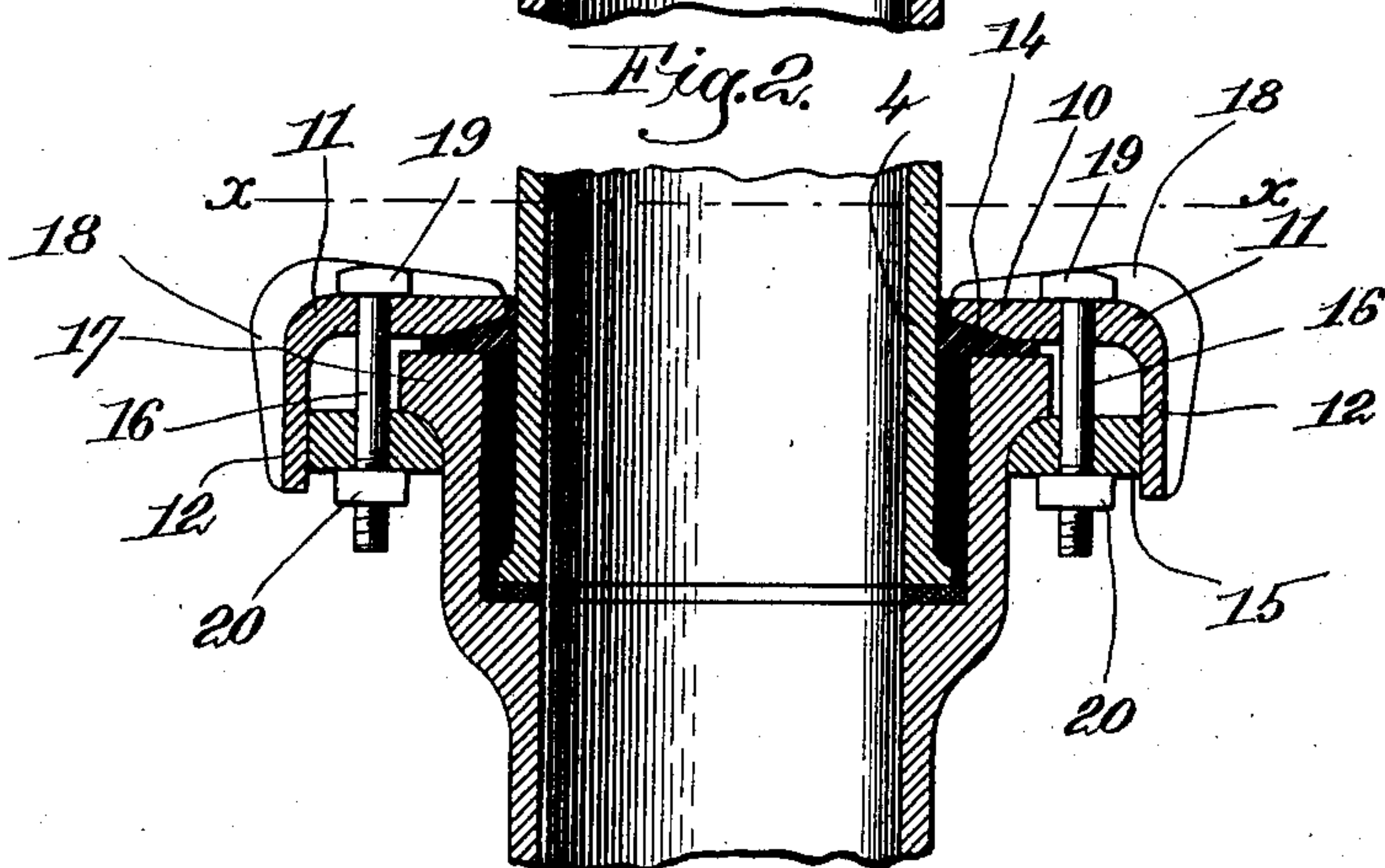
W. A. LEARNED.  
INSULATED PIPE JOINT.  
APPLICATION FILED SEPT. 8, 1903.

NO MODEL.

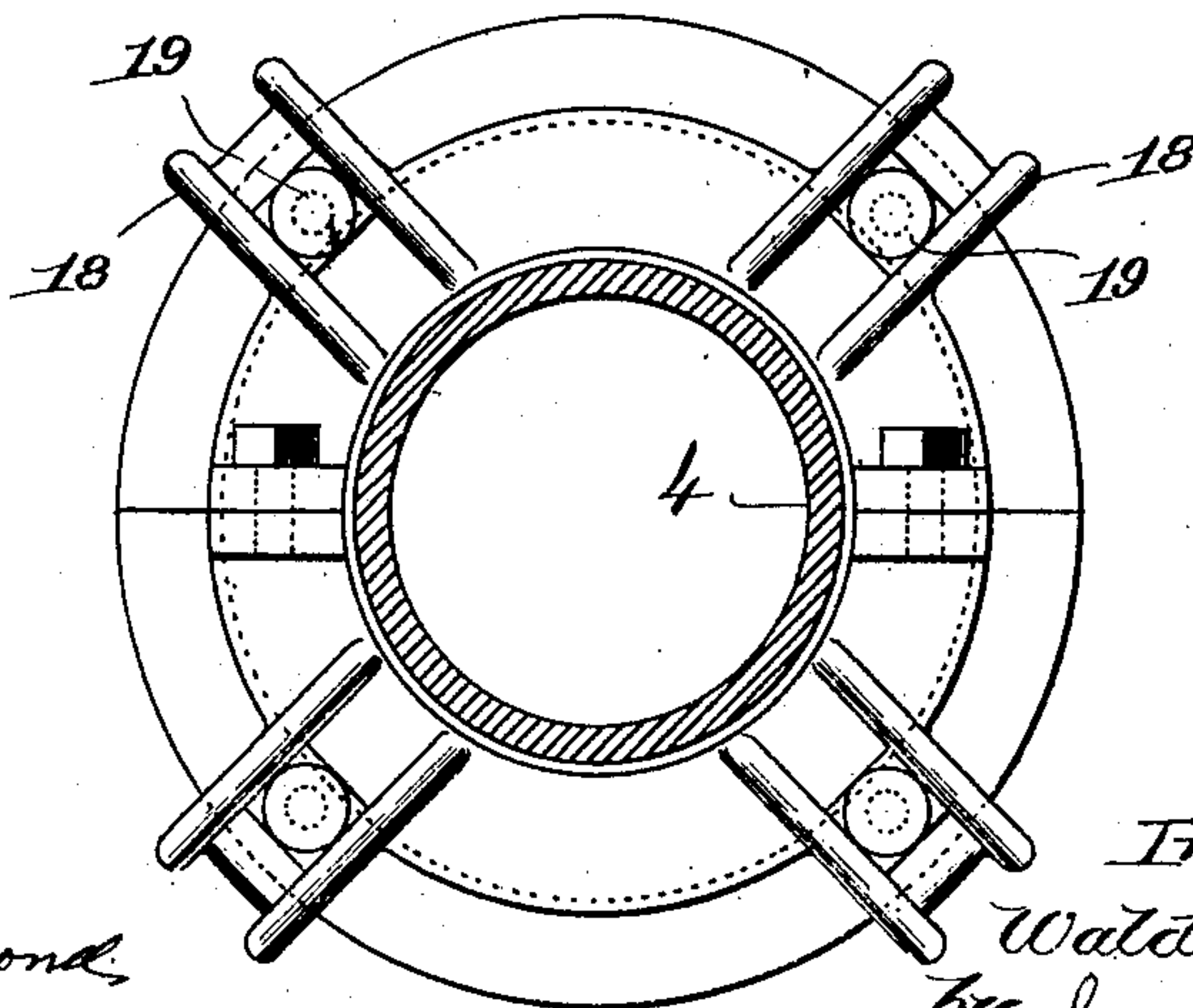
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



Witnesses:

Thomas J. Drummond,  
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Inventor:

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# UNITED STATES PATENT OFFICE.

WALDO A. LEARNED, OF WATERTOWN, MASSACHUSETTS.

## INSULATED PIPE-JOINT.

SPECIFICATION forming part of Letters Patent No. 753,595, dated March 1, 1904.

Application filed September 8, 1903. Serial No. 172,371. (No model.)

*To all whom it may concern:*

Be it known that I, WALDO A. LEARNED, a citizen of the United States, residing at Watertown, in the county of Middlesex and State of Massachusetts, have invented an Improvement in Insulated Pipe-Joints, of which the following description, in connection with the accompanying drawings, is a specification, like figures on the drawings representing like parts.

This invention has for its object to provide an insulated pipe-joint which will effectively prevent any damage by electrolysis to water, gas, or similar mains.

Another object of the invention is to provide an insulated pipe-joint of this character which can be used without danger of leaking on mains carrying water or gas under an extremely-high pressure.

I have shown my invention as applied to an ordinary bell-and-spigot pipe-joint, and in forming my improved joint I first fill the space between the bell and spigot with a novel insulating compound which can be readily poured when heated, but which hardens or sets very quickly. After this filling of insulating compound has hardened I force a ring of yielding insulating material, such as rubber, hard against the end of the bell, the exposed face of said insulating compound, and the portion of the spigot adjacent said compound with sufficient pressure so as to absolutely prevent any leakage of the joint.

Referring now to the drawings, Figure 1 shows a section through a pipe-joint extending longitudinally of the pipe and prior to the operation of forcing the ring of yielding insulating material into place. Fig. 2 is a similar view showing the pipe-joint completed. Fig. 3 is a section on the line *x x*, Fig. 2.

3 designates the bell end of a pipe-section, and 4 designates the spigot end of an adjacent pipe-section. These two parts fit one within the other, as is usual in the ordinary bell-and-spigot joint. Between the extreme end 5 of the spigot and the shoulder 6 of the bell is a ring of insulating material, which may either be the same material which fills the space between the bell and spigot or may be a separate ring or gasket of suitable insulating material. In the present embodiment of my in-

vention I have shown the latter construction, and 7 designates such ring or gasket of suitable insulating material—such, for instance, as fiber wood or asbestos.

The space between the bell and spigot is filled by an insulating compound 8, which is preferably waterproof and which can be readily melted and poured, but which hardens or sets quickly after pouring and which also possesses the quality of molecular inertia—*i. e.*, the property of resisting sudden strains without change of form, while yielding to continued pressure, however slight. A compound having these characteristics will be described later.

9 designates a ring of yielding insulating material, such as rubber, which is adapted to be clamped by any suitable means hard against the end of the bell, the exposed face of said insulating material, and the side of the gasket adjacent said insulating material, as best shown in Fig. 2. Any suitable clamping device adapted for this purpose may be used, and in the present embodiment of the invention I have illustrated a clamping device comprising a clamping-ring 10, having projecting therefrom the arms 11, the ends of which stand parallel with the pipe, as at 12. This ring has its internal diameter slightly greater than the spigot 4 and is provided with the beveled or inclined clamping-face 14.

15 designates a suitable ring, which is adapted to engage the back side of the flange 17 of the bell and which is of a size to fit under the portions 12 of the arms 11. The clamping-ring 10 and the packing-ring 15 are clamped together by means of bolts 16.

I have shown the arms 11 as provided with ribs or flanges 18, between which the heads 19 of the clamping-bolts 16 are seated. These ribs serve not only to prevent the bolts 16 from turning while the nuts 20 thereon are being tightened, but also serve to strengthen the arms 11.

The rings 10 and 15 are both preferably split, as shown in Fig. 3, so that they may be easily applied to the pipe. In forming my improved joint I first place the gasket 7 in position, if such gasket is to be used, and also slip the ring 9 upon the end of the spigot.



Thereafter the spigot is inserted within the bell and the space between the spigot and bell filled with my improved insulating compound, which, it will be remembered, can be readily melted by heating, so that it may be poured. This compound is such that it hardens very quickly after pouring, and when it becomes sufficiently hardened the ring 9 is put in place, and the two members of the clamping device are properly positioned, as seen in Fig. 1.

Upon tightening up the nuts 20 of the clamping-bolts the inclined face 14 of the clamping-ring 10 serves to force the member 9 hard against the end of the bell, the exposed end of the insulating material and the portion of the spigot adjacent said material, as seen in Fig. 2, thus making an absolutely-tight joint.

Since the gasket 7 is of insulating material and the ring 9 also of insulating material, it will be seen that the two sections of the pipe are thoroughly insulated from each other, the filling material 8 and the ring 7 insulating the two sections of the pipe from each other, and the ring 9 insulating the clamping-ring from the spigot end of the pipe. Furthermore, by means of the ring 9 and the way in which it is clamped in position an absolutely-tight joint is made which will not leak under any internal pressure.

I have found from experience that a compound having the following ingredients has the properties which I have described above: tar distilled until the residue reaches 530° to 550° Fahrenheit and this residue mixed at about 330° Fahrenheit with rosin-soap made up of equal parts of powdered rosin and air-slaked lime. These parts are mixed together in about the following proportions, by weight: seventy-two parts pitch, fourteen parts rosin, fourteen parts lime.

A compound made as above described can be readily melted and poured and will quickly harden or set after pouring and also possesses the quality of yielding and flowing slightly under continued pressure. Because of this latter quality the compound will yield sufficiently to allow the two pipe-sections to move or settle with respect to each other to a certain extent, so that the pipe-joint is not only an insulated joint, but is slightly flexible, and is flexible in such a way that the changing of

the relative positions of the two parts of the joint do not break or destroy its insulation or render the joint liable to leakage.

It will be understood that while I have shown one form of clamp my invention is not limited to any specific clamp, but is intended to cover the use of a pipe-joint constructed as above described and having any form of clamping device for holding the ring 9 in place.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. An insulated pipe-joint comprising two pipe-sections having a bell and spigot respectively, an insulating compound filling the space between the bell and spigot, which compound will pour when heated but will set or harden quickly after being poured, a ring of yielding insulating material surrounding the spigot, and means to force said ring hard against the end of the bell, the exposed face of insulating material and the portion of the spigot adjacent said material.

2. Two pipe-sections having a bell and spigot respectively, an insulating compound filling the space between said pipe-sections and insulating one from the other, a ring of yielding insulating material surrounding the spigot, and means to force said ring hard against the end of the bell, the exposed face of insulating material and the portion of the spigot adjacent said material, said ring operating to prevent any leakage in the joint.

3. Two pipe-sections having a bell and spigot respectively, an annular ring or gasket of insulating material between the end of the spigot and the shoulder of the bell, a flexible insulating compound filling the annular space between the bell and spigot, a ring of yielding material surrounding said spigot and a clamping-ring to force said ring hard against the end of the bell, the exposed face of the insulating compound and the portion of the spigot adjacent said compound.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WALDO A. LEARNED.

Witnesses:

LOUIS C. SMITH,  
JOHN C. EDWARDS.