

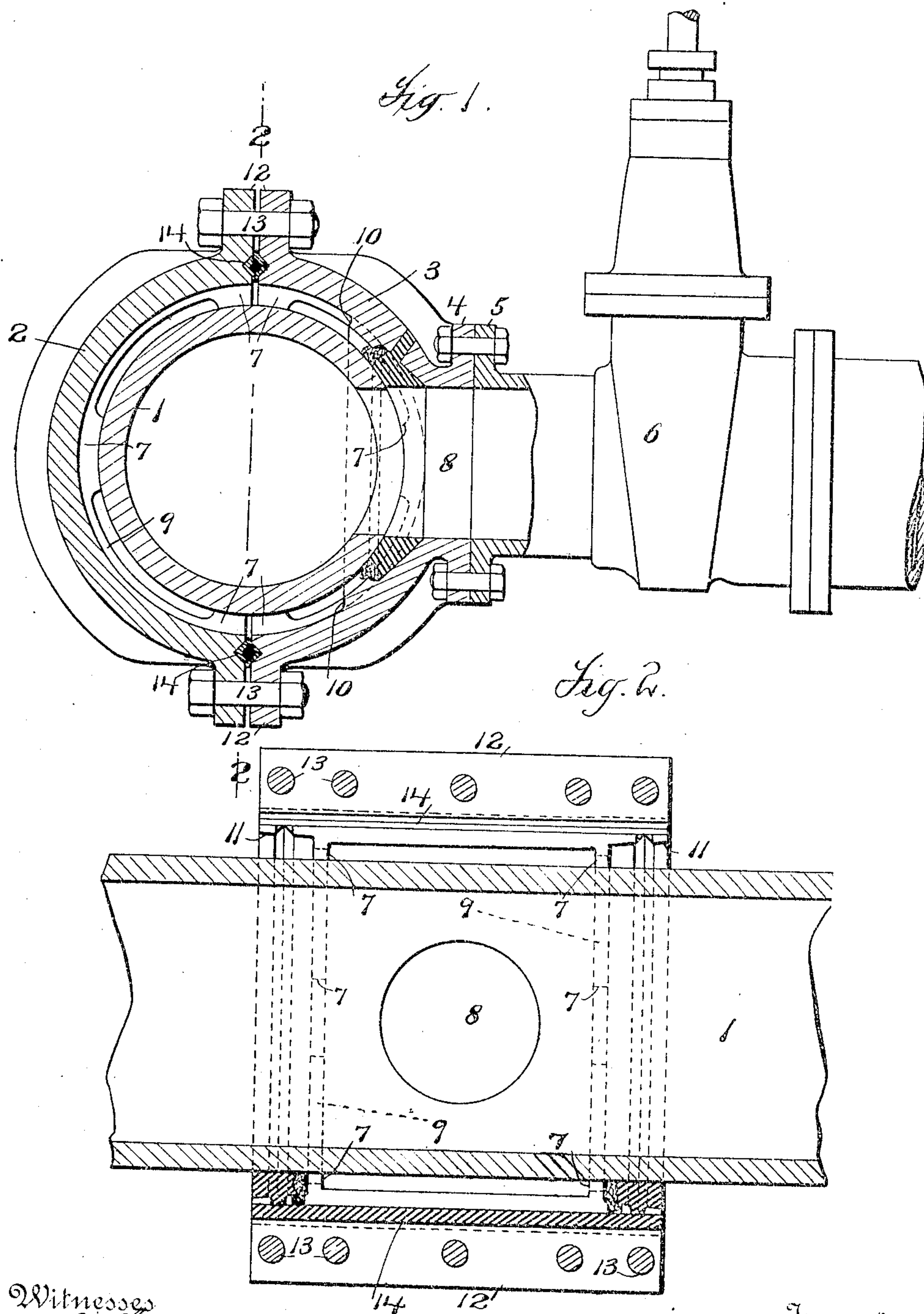
No. 875,729.

PATENTED JAN. 7, 1908.

D. F. O'BRIEN.  
CONNECTING BRANCH SLEEVE.

APPLICATION FILED MAY 12, 1904.

2 SHEETS—SHEET 1.



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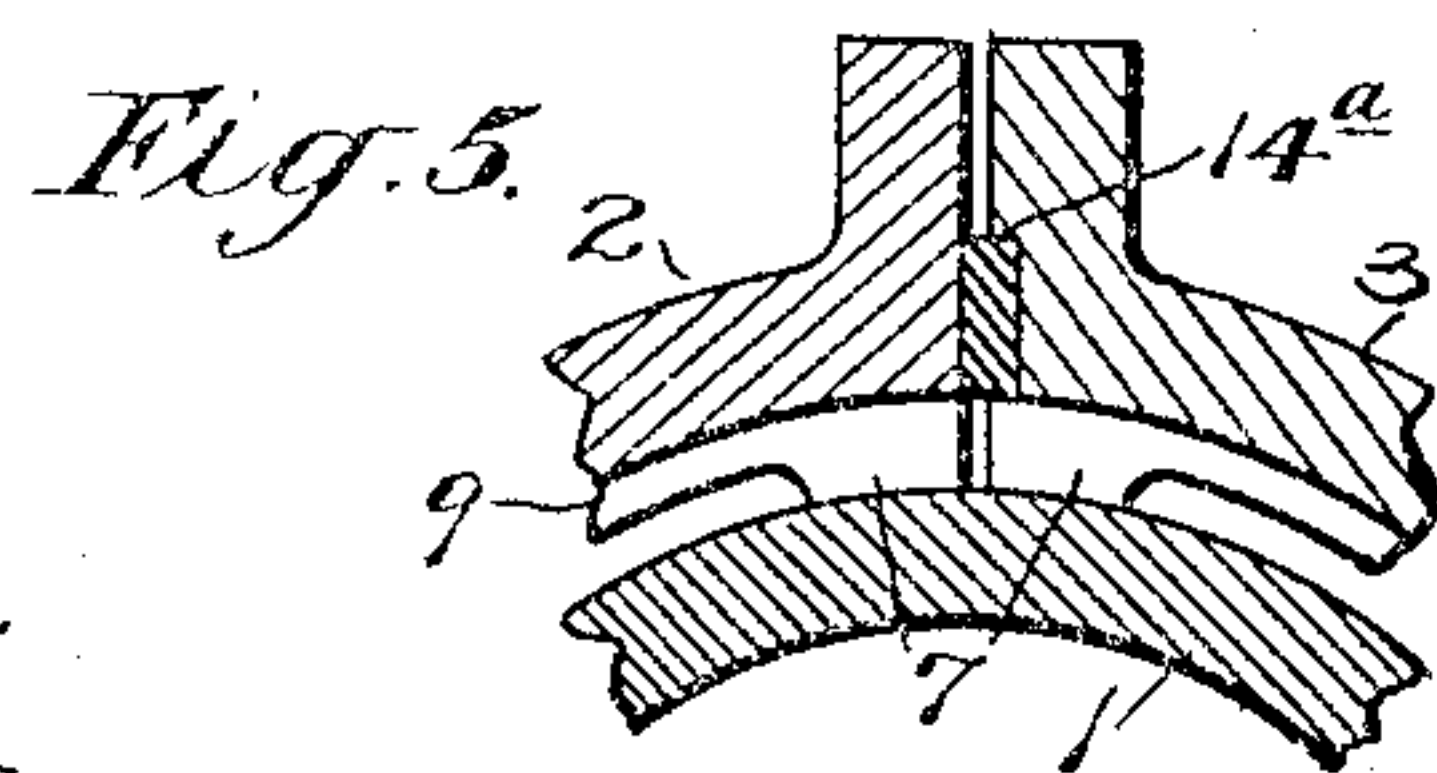
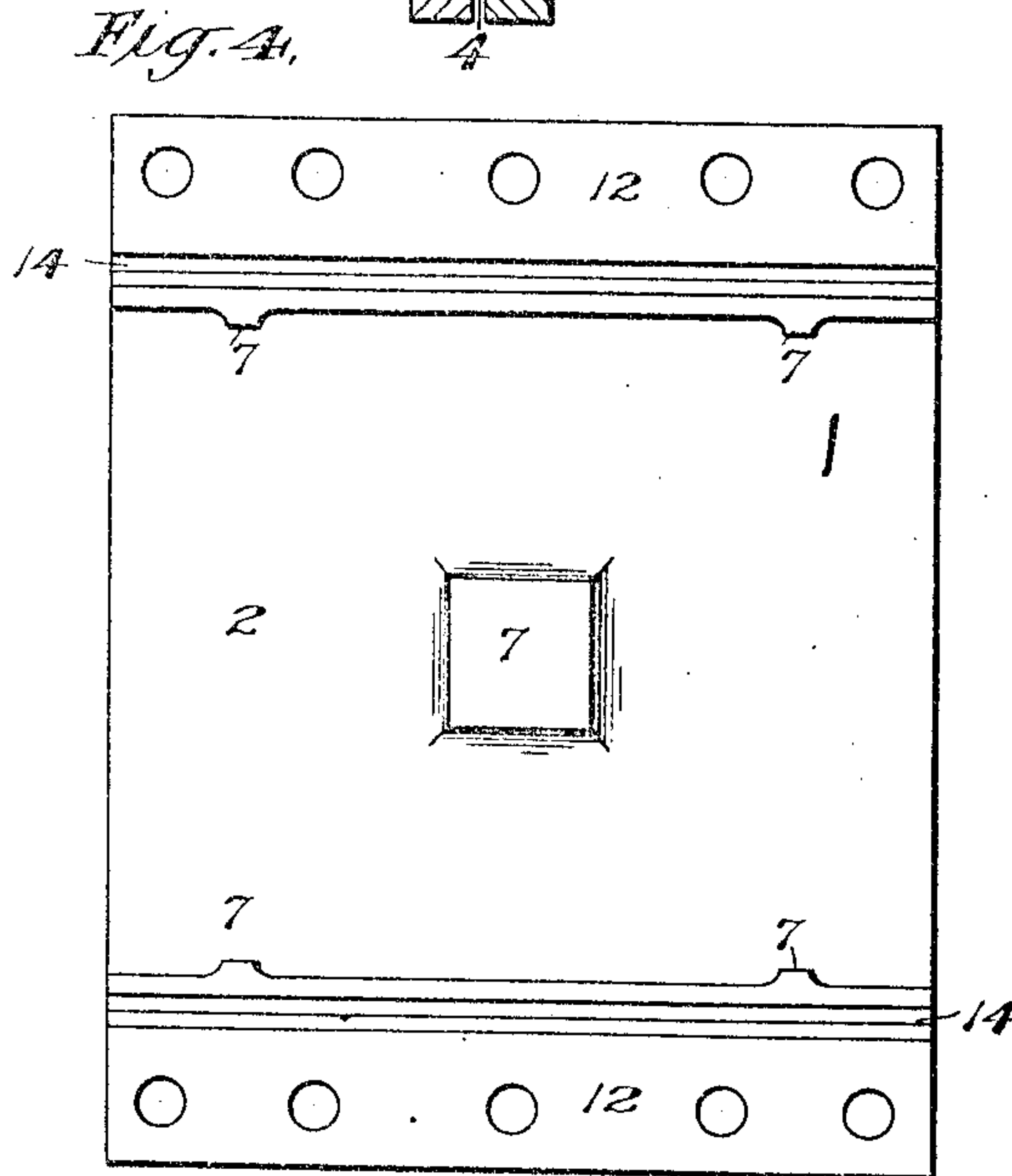
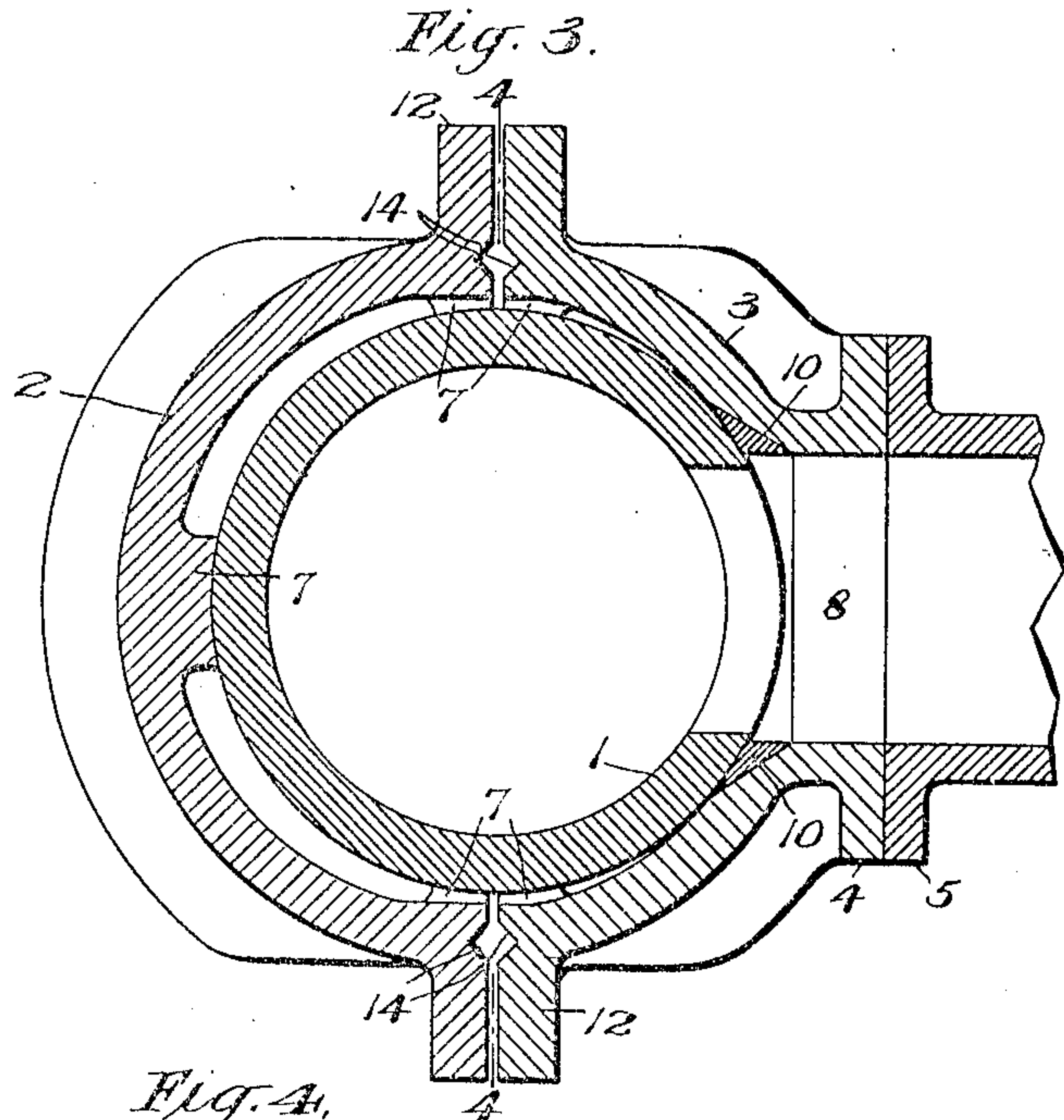
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2 SHEETS—SHEET 2.



Witnesses:

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# UNITED STATES PATENT OFFICE.

DENIS F. O'BRIEN, OF NEWARK, NEW JERSEY.

## CONNECTING BRANCH SLEEVE.

No. 875,729.

Specification of Letters Patent.

Patented Jan. 7, 1908.

Application filed May 12, 1904. Serial No. 207,611.

*To all whom it may concern:*

Be it known that I, DENIS F. O'BRIEN, a citizen of the United States, residing at Newark, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Connecting Branch Sleeves, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to improvements in split sleeves for use in making connections with water mains under pressure. These split sleeves, as usually constructed, consist of two members adapted to inclose a water main and provided with flanges by which they may be secured together in position about the main. One of these members is usually termed the back and the other the front or hub member, and this latter member is provided in its hub with an opening of the size of the opening to be tapped in the water main, with which opening in the water main such opening in the hub registers. At its outer end this hub is usually provided with a flange or otherwise shaped, in order to adapt it for connection with a valve casing. In attaching these sleeves to a water main, the space between the inner surface of the sleeve and the outer surface of the main must be packed to prevent leakage, the packing ordinarily employed being lead or sulfur and sand, which, while in a molten state, is poured into this space. In order to economize in the amount of packing material used in this space, it is necessary that the outer surface of the main and inner surface of the sleeve should approach each other as closely as possible, leaving, however, a sufficient space between them to permit the packing material to flow easily. A further reason for this close proximity between the inner surface of the sleeve and the outer surface of the main is that it is necessary to provide a substantially rigid bearing or engagement between the two surfaces so as to prevent movement of one relatively to the other because of the constantly varying pressures in the main, which relative movement when it does take place in time results in such a compression of the packing as to cause leakage.

Heretofore it has been necessary, in order to secure this close proximity of the inner surface of the sleeve and outer surface of the main, for water works companies to keep on hand sleeves of different interior diameters so as to accommodate mains varying in exter-

nal diameter. Furthermore, the records of water works systems as to the size of mains sunk in the ground many years ago are not accurate as to the size of mains and it frequently happens that a contractor or city, relying upon such records of early work, would order a sleeve for a main according to the records, but upon uncovering the main and adjusting the sleeve thereon they would ascertain that the sleeve either would not fit on the main at all and was therefore useless or would be so unnecessarily large as to result in a great waste of lead to pack the space between the main and sleeve, it being frequently necessary in the latter case to employ iron or other wedges in filling up the space between the sleeve and main so as to lock the two together and thus prevent the movement of one relatively to the other above referred to.

It is the object of the present invention to improve the construction of these sleeves, and, primarily, to provide a sleeve of such construction that it can, with slight changes, such as an ordinary workman can make, in its internal construction, be adapted for, or accommodated to, mains of any of the usual diameters, thus rendering it unnecessary for water works companies to keep on hand the sleeves of different internal diameters heretofore referred to.

The present invention has for its object also certain other improvements in these sleeves whereby they can be much more economically and more effectively packed than is possible with such prior constructions.

As a full understanding of the improvements of the present invention can best be given by a detailed description of an organization embodying the same, such description will now be given in connection with the accompanying drawings, in which—

Figure 1 is a transverse section of a water main provided with a split sleeve embodying the improvements of the present invention in their preferred forms; the front or hub member of the sleeve being shown connected with a valve casing. Fig. 2 is a vertical section on the line 2 of Fig. 1 and looking toward the right of said figure; and Figs. 3, 4 & 5 are sectional views, illustrating modifications which will be hereinafter referred to.

Referring to said drawings, 1 represents the water main, 2 the back of the sleeve and 3 the front or hub member of the sleeve, which is provided with a flange 4 to which is



bolted the flange 5 of a valve casing 6 of well known construction. Heretofore the two members of a split sleeve have been provided with a substantially smooth or unbroken interior surface, and, as before pointed out, it was necessary to have sleeves of varying diameter to accommodate mains of varying external diameters. In the present case, however, the sleeve and preferably each of the two members thereof, is provided with a plurality of projections 7 suitably distanced apart circumferentially of the sleeve for engagement with the other surface of the main upon which the sleeve may be adjusted. Preferably, two sets of such projections are provided, longitudinally of the sleeve, one on each side of the opening 8 in the hub, and preferably also each set consists of or comprises four such projections. Preferably also these projections instead of being formed directly upon the inner surface of the sleeve, are formed upon circumferential rings 9 projecting inwardly from the surface of the sleeve, such rings being provided for a purpose which will be hereinafter referred to. Each of these projections 7 is of such small size, as to length and width, that portions thereof may be readily chipped off or otherwise removed from the end by any ordinary workman so as to accommodate the sleeve to any main to which it is desired to apply it no matter what the diameter of that main may be within the usual limits. As these projections 7 are shown in the drawing they are adapted for engagement with the periphery of a main of the minimum diameter, and in use they will bear directly against the periphery of the main so as to prevent any movement of the main and sleeve relatively to each other because of variations of pressure in the main. Should the main to which the sleeve is to be applied, however, be of larger diameter than the minimum all that it is necessary for the workman to do, in order to accommodate the sleeve to such larger sized main is to chip off a small portion of the ends of the projections, and preferably of each one, the amount so chipped from each of the projections varying in accordance with the diameter of the mains. These projections are of such height as to provide for the accommodation of mains of all diameters and in the case of a main of the largest diameter substantially the whole of each projection will be removed, the main in that case resting directly upon the rings 9. A clearance will therefore be provided by these rings between the inner surface of the sleeve and the outer surface of the main so that the space between the two surfaces may be readily packed with molten lead, etc. either around the opening 8 in the hub or at the ends of the sleeve or at both places. In order to provide for the packing of the two surfaces around the opening 8, the front or hub mem-

ber of the sleeve is provided interiorly with a ring 10 surrounding the opening 8 and at a suitable distance therefrom to provide a space for the reception of yarn or the like to hold the lead together. In order to adapt the sleeve for packing at its opposite ends also the interior diameter of the sleeve is increased at each end, as indicated at 11, 11, so as to provide sufficient space for the reception and free flowage of the lead packing.

The flanges 12 of the two members of the sleeve may be secured together in any suitable manner, but preferably by means of bolts 13 passing through the flanges. The meeting faces of these flanges also are so shaped as to adapt them to be economically packed should packing at these points be desired. For this purpose the meeting faces of the flanges are provided with recesses 14, one of which will preferably be present in each face, as in Fig. 2, although one recess, as 14<sup>a</sup>, may be employed in one face, the other face being left plain, as in Fig. 5. In these recesses or pockets 14 or 14<sup>a</sup> may be placed a gasket of any suitable material, such, for example, as a piece of lead pipe, as illustrated in Fig. 1, the two members of the sleeve being then drawn closely together by means of their bolts and thus compressing the material between them in these pockets.

In the construction illustrated in Figs. 3 and 4, the inner sleeve is provided on opposite sides of the opening in the hub member of the sleeve with projections 7, and the back member is provided with a single projection 7 in line with such hub member; the main in this case resting directly against the inner surface of the hub member of the sleeve.

What I claim is:—

1. A split sleeve for making connections to water mains under pressure provided with an interiorly projecting portion or portions of small dimensions so as to be capable of being readily reduced in depth to adapt the sleeve to mains of different diameters, substantially as described.

2. A split sleeve for making connections to water mains under pressure provided on opposite sides of the hub opening, considered lengthwise of the sleeve, with interiorly projecting portions of small dimensions so as to be capable of being readily reduced in depth to adapt the sleeve to mains of different diameters, substantially as described.

3. A split sleeve for making connections to water mains under pressure provided on opposite sides of the hub opening, considered lengthwise of the sleeve, with rings each having an inwardly projecting portion or portions of small dimensions so as to be capable of being readily reduced in depth to adapt the sleeve to mains of different diameters, substantially as described.

4. A split sleeve for making connections to



water mains under pressure provided on each side of the hub opening, considered lengthwise of the sleeve, with a plurality of projecting portions of small dimensions so as to be  
5 capable of being readily reduced in depth to adapt the sleeve to mains of different diameters, substantially as described.

5. A split sleeve for making connections to water mains under pressure provided on each  
10 side of the hub opening, considered lengthwise of the sleeve, with a ring having a plurality of projecting portions of small dimensions so as to be capable of being readily reduced in depth to adapt the sleeve to mains  
15 of different diameters, substantially as described.

6. A split sleeve for making connections to water mains under pressure provided with an

interiorly projecting portion or portions of small dimensions so as to be capable of being  
20 readily reduced in depth to adapt the sleeve to mains of different diameters, the hub member of the sleeve being adapted interiorly for the reception of packing between it and the main and at or in proximity to  
25 its opening and with an opening through which such packing may be poured and introduced into the recess, substantially as described.

In testimony whereof, I have hereunto set  
30 my hand, in the presence of two subscribing witnesses.

DENIS F. O'BRIEN.

Witnesses:

J. A. GRAVES,  
A. WHITE.