

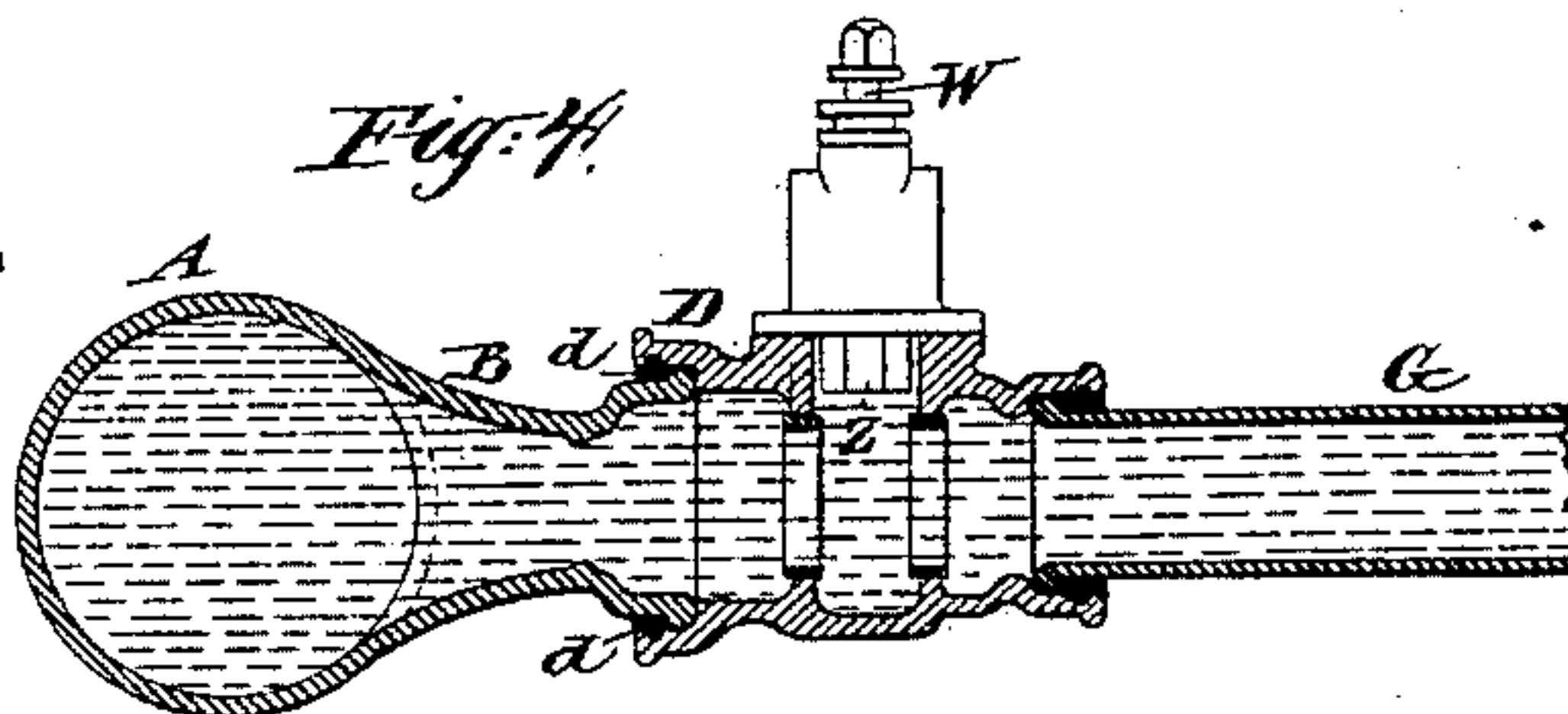
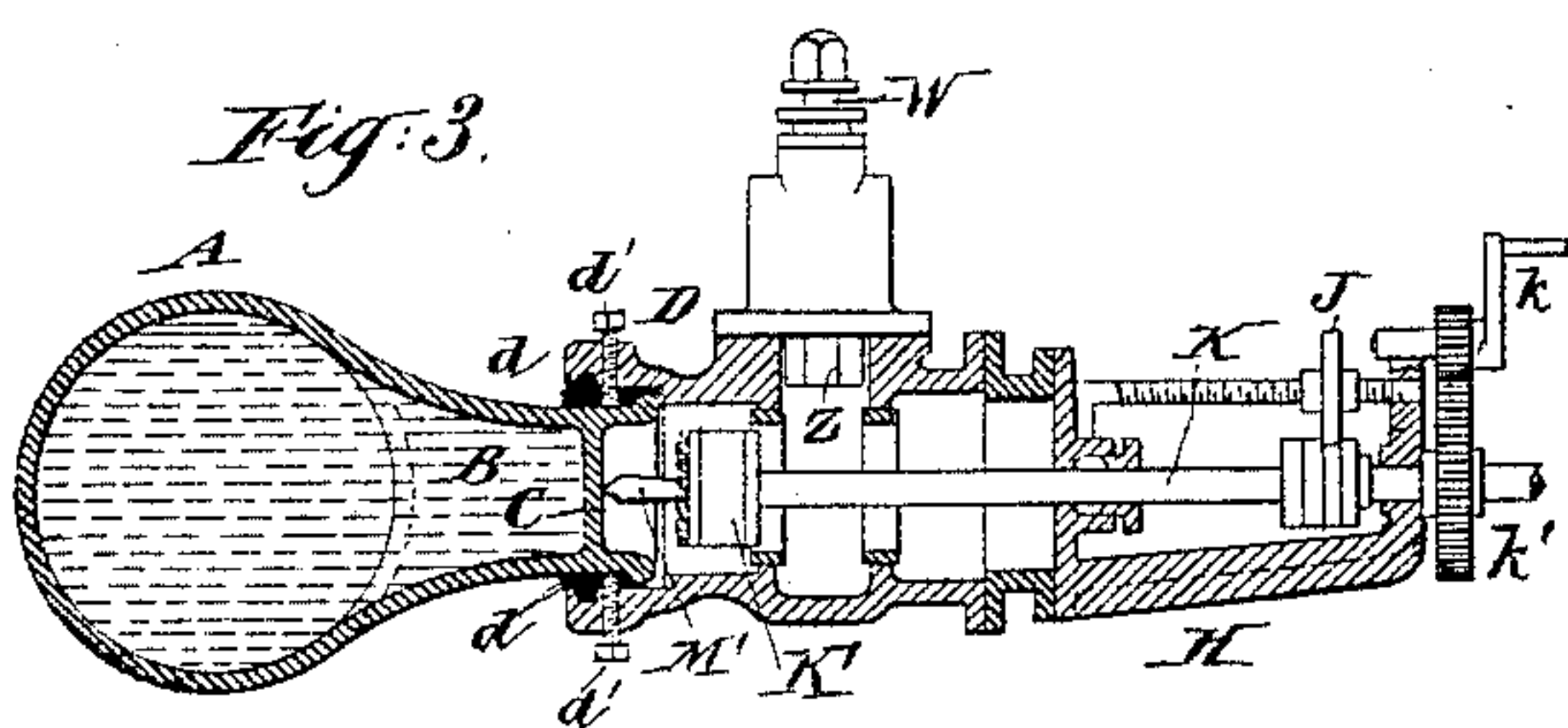
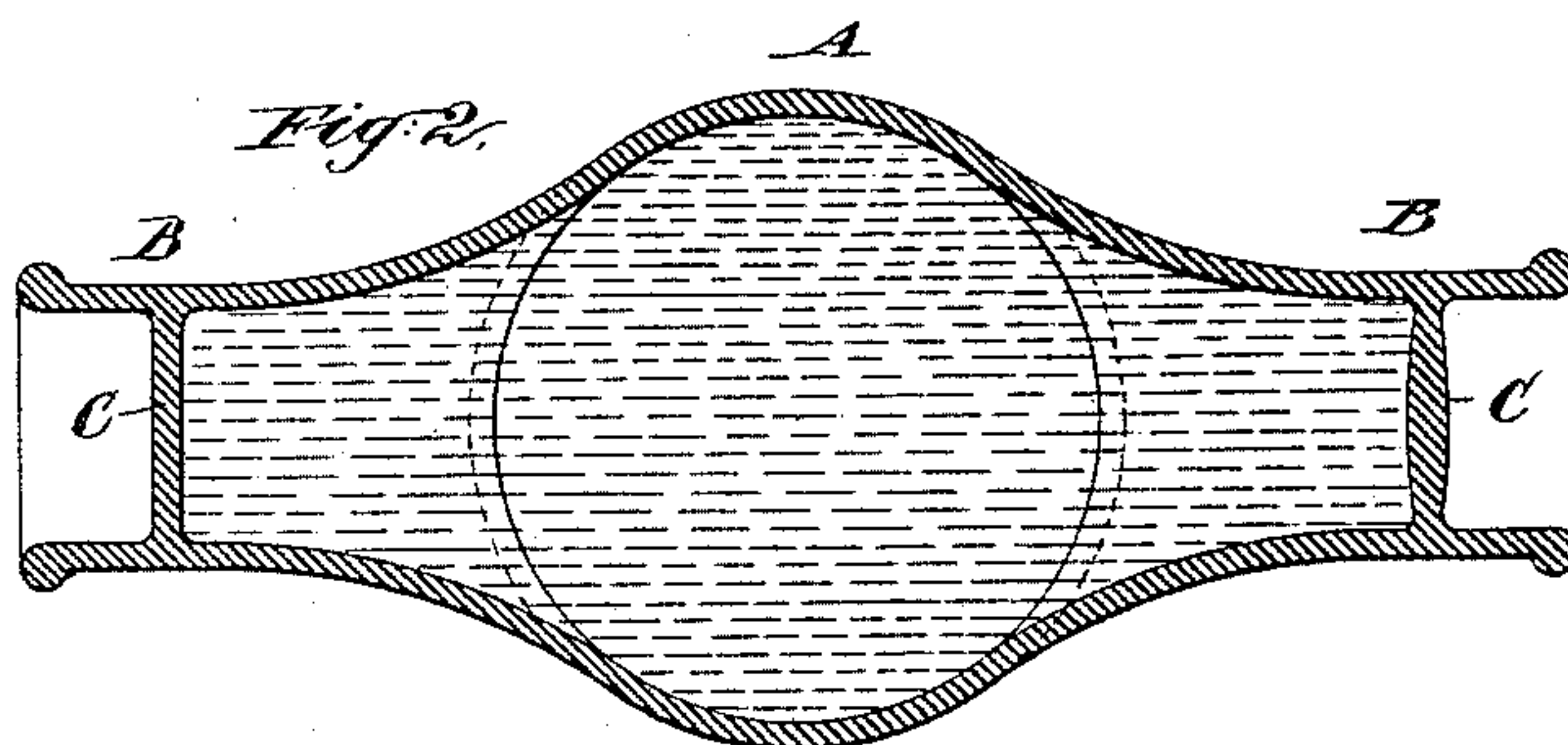
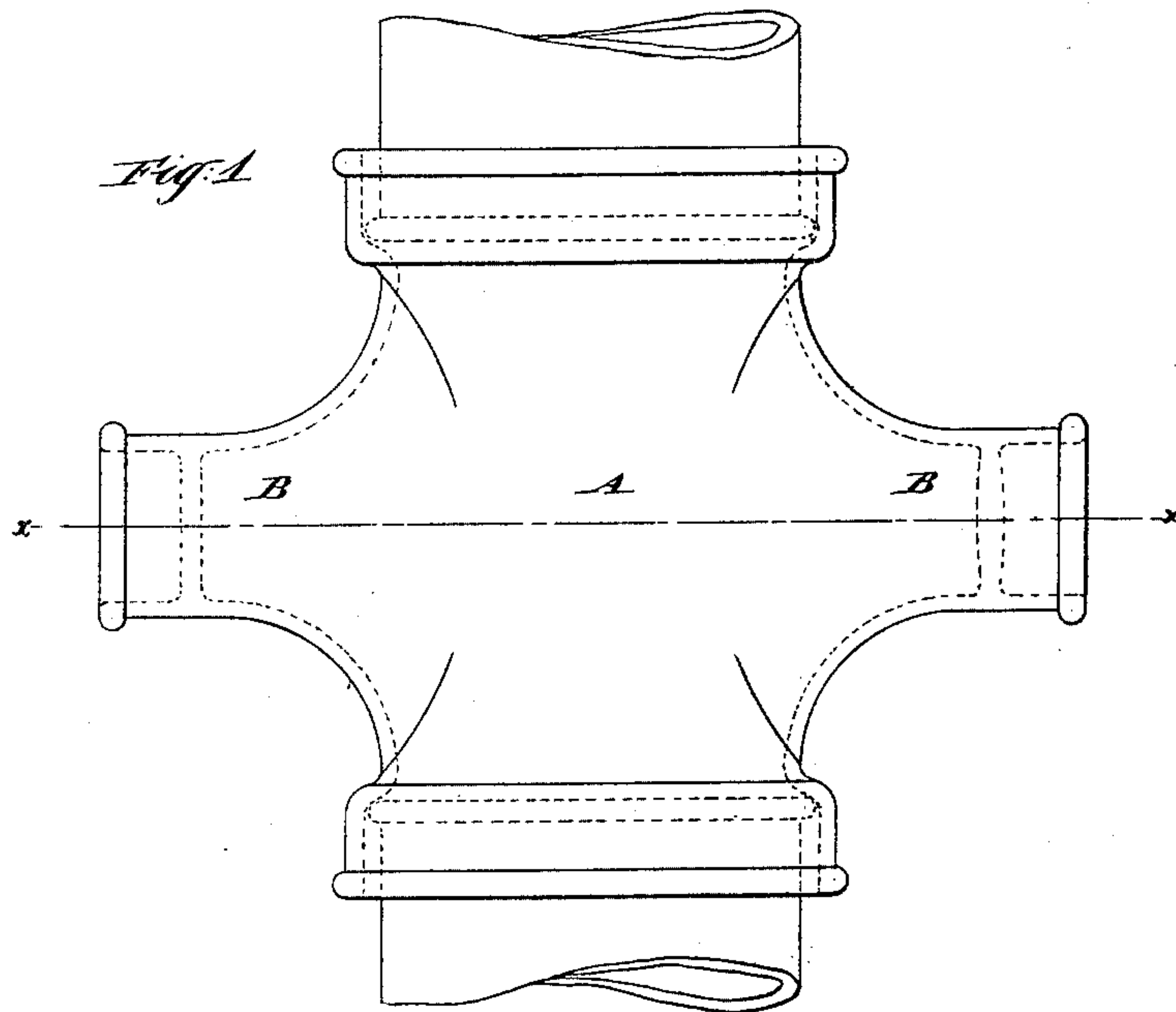
(No Model.)

P. ELEY.

METHOD OF AND APPARATUS FOR CONNECTING BRANCHES TO PIPES.

No. 460,773.

Patented Oct. 6, 1891.



Witnesses:

Charles R. Searle,
H. A. Johnstone.

Inventor:

Philip Eley
by his attorney
James D. Brewster

UNITED STATES PATENT OFFICE.

PHILIP ELEY, OF BAYONNE, NEW JERSEY.

METHOD OF AND APPARATUS FOR CONNECTING BRANCHES TO PIPES.

SPECIFICATION forming part of Letters Patent No. 460,773, dated October 6, 1891.

Application filed November 4, 1890. Serial No. 370,329. (No model.)

To all whom it may concern:

Be it known that I, PHILIP ELEY, a citizen of the United States, residing at Bayonne, in the county of Hudson and State of New Jersey, have invented a certain new and useful Improvement in the Method of and Apparatus for Connecting Branches to Pipes, of which the following is a specification.

This invention relates more especially to the connection of branches to mains conveying water, gas, &c., in towns and villages having intersecting streets; and its principal object is to facilitate the work by lessening the number of parts to be manipulated in joining a branch to the main, and thus saving time and expense. It has long been customary to provide certain lengths of the main at the intersection of streets and other necessary crossing-points with spurs or blank branches, which are tightly stopped by the insertion in each of a short length of pipe having a close transverse web or diaphragm in the interior or at one end, constituting a plug, which remains in the spur until such time as it requires to be removed or cut open for making connection between the main and a branch pipe.

In my patent, No. 438,740, dated October 21, 1890, I have shown and described a method for connecting a branch pipe permanently to one of the hollow plugs or to the spur while leaving the plug within, and I include in the same patent an apparatus for perforating, cutting out, and removing the diaphragm or web to permit the fluid to flow from the main through the branch pipe.

By my present improvement I am enabled to dispense with the plugging of the blank branch on the main, and consequently with one joint and its necessary packing, while at the same time having the diaphragm sink within the branch, as before. To thus operate, I provide the main section with spurs or blank branches, each having a diaphragm or web cast in one therewith, and extending tightly across, requiring no work or attention previous to laying the main in the ground, and possessing no tendency to open by internal or external pressure.

For full comprehension of my invention and of the preferable means employed for putting same into practice reference must be

had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate like parts.

In said drawings, Figure 1 is an elevation of a main length having blank branches arranged according to my invention, and Fig. 2 is a cross-section of same on line *x x*. Fig. 3 is a longitudinal sectional elevation illustrating a main having one blank branch with a valve and milling apparatus in place ready for cutting out the diaphragm. Fig. 4 is a sectional elevation showing a modified form of blank branch.

A represents a length of the main suitable for location at a street or road where one or more branch pipes are likely to be called for, B B being spurs or blank branches with which such pipes may be connected, these branches each having formed integrally within them a diaphragm or web C of sufficient strength to successfully resist the natural internal and external pressure, and situated a sufficient distance inward from the mouth of the blank branch to allow the spigot end of a valve connection to be applied and leaded or otherwise secured to the interior of the bell before the diaphragm is cut out.

The blank branches may have straight or spigot-shaped mouths, as shown in Figs. 1, 2, and 3, or may be bell-shaped, as in Fig. 4. When it is required to connect a branch pipe to one of these, it will be inclosed by a valve-casing D, provided with a packed shaft W, by which a valve Z is operated in the usual approved manner, the joint between the pipe and the casing being properly packed or calked, as at *d*, and, if necessary, further fixed rigidly together by screws *d'*. The branch pipe E will be attached in a similar manner to the opposite end of the valve-casing. Previous to this, however, the apparatus specified in the before-mentioned Letters Patent No. 438,740, or its equivalent, is brought into use. The frame H is bolted or otherwise firmly fixed to the valve-casing in the position shown in Fig. 3, and the shaft K, with its drill M and milling-tool K', is introduced within the casing D, with the drill-point close up to the diaphragm C of the blank branch. The shaft K is then turned rapidly by a suitable crank *k* and gears *k'* and the feed-wheel J rotated slowly until the drill thus operated has pro-

duced the required small hole through the center of the diaphragm C, leaving the drill in that position. The speed of the feed-wheel is then increased and the shaft moved
 5 endwise until the milling-tool K' comes up to the diaphragm, and then again, commencing to feed slowly, the tool K' acts upon the diaphragm until it is completely cut out.

The drill is preferably formed with a spring,
 10 which will spring out when it passes through the diaphragm, so that it will bring with it the disk cut out when the tools are retired, which is effected by reversing the action of the feed-wheel. The tool being clear, the
 15 valve Z is closed, and the tool-frame H is then detached from the casing D, after which the branch pipe proper G will be permanently affixed thereto in any approved manner.

The above mechanism is described and
 20 shown in detail in my patent before cited; but while I prefer to use it in connection with my present invention other mechanism of approved arrangement may be adopted without departing from the essential points of the
 25 improvements.

What I claim is as follows:

1. The mode of connecting branch pipes to mains by forming a blank branch or spur

upon a main length with a close transverse diaphragm or web recessed within the mouth
 30 of said blank branch and integral therewith, attaching a proper valve and casing to the blank branch, inserting a milling-tool within the valve-casing and blank branch, boring
 35 and cutting out the diaphragm in the latter, retiring the tool, closing the valve, removing the tool-casing, and finally attaching the branch pipe to the valve-casing, the different operations being in the succession herein
 40 named.

2. A main pipe-section having a spur or blank branch cast thereupon and provided with a transverse diaphragm or web arranged at a proper distance within its end, cast integral therewith, and capable of being removed
 45 by boring or cutting previous to the connection of a branch pipe, substantially as and for the purpose specified.

In testimony that I claim the invention above set forth I affix my signature in presence two witnesses.

PHILIP ELEY.

Witnesses:

ROBT. A. KEELOND,
 CHAS. S. BARBER.