G. MIDDLETON.

EXPANSIBLE PLUG.

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1,146,944. Patented July 20, 1915.

Fig. 1

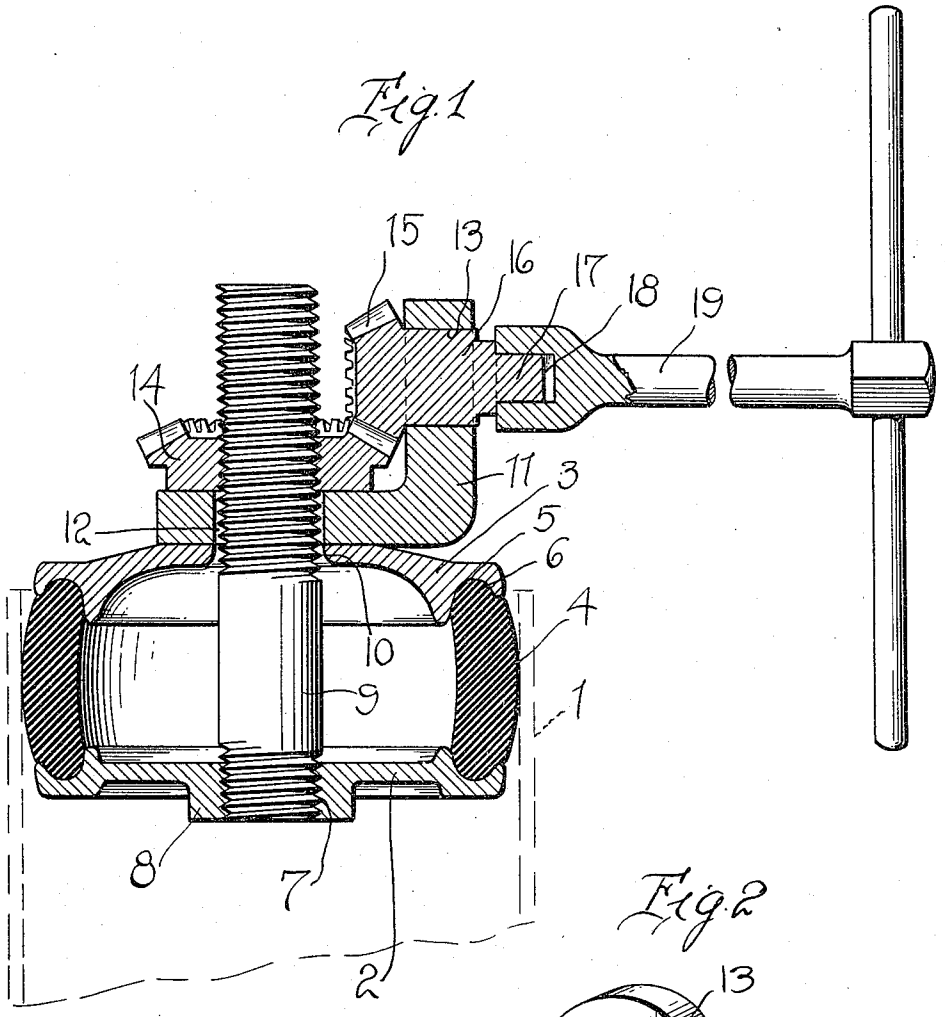
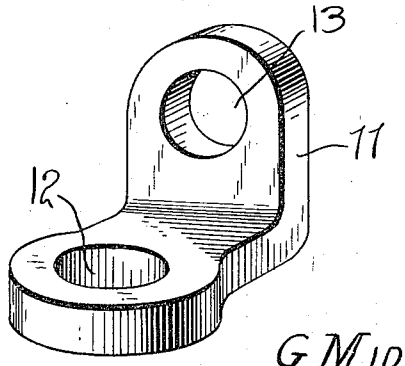


Fig. 2



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GEORGE MIDDLETON, OF PROVIDENCE, RHODE ISLAND.

EXPANSIBLE PLUG.

1,146,944. Specification of Letters Patent. Patented July 20, 1915.

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To all whom it may concern:

Be it known that I, GEORGE MIDDLETON, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Expansible Plugs, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to new and useful improvements in plugs and more particularly to what will be hereinafter known as an expansible plug, the main object of the present invention being the provision of a plug which can be quickly and readily applied to the end of a pipe upon the interior thereof and expanded to entirely close the open end of the pipe.

Another object of the present invention is the provision of an expansible plug which consists of opposed clamping plates, a compressible element disposed between said plates, and means for forcing said plates against the compressible element to expand the same into contact with the interior of a pipe.

With the above and other objects in view, my invention consists in the novel features of construction, combination and arrangement of parts as will be hereinafter referred to and more particularly pointed out in the specification and claim.

In the accompanying drawing forming a part of this application, Figure 1 is a transverse sectional view of a plug constructed in accordance with my invention, the handle of the operating mechanism being illustrated in elevation; and Fig. 2 is a detail perspective view of the guide bracket.

Referring more particularly to the drawing, the numeral 1 illustrates in dotted lines the open end of an ordinary soil pipe which is used in the general construction of plumbing and within the upper end of this soil pipe, I place my improved plug which, in its construction, includes what will be hereinafter known as the base plate 2 and the cover plate 3, both forming clamping means for the compressible ring 4. This ring 4 is formed of rubber or may be formed of any composition of such form that the same may be readily compressed so that it will bow outwardly and engage the interior of a pipe. Each of the clamping plates 2 and 3 are provided adjacent their outer edges with annular grooves 5 adapted to receive the reduced portions 6 of the ring 4, so that any outward movement of the edges of the ring 4 will be prevented.

The clamping plate 2 is provided with a thread-end opening 7 and around this opening, it will be noted that the clamping plate is reinforced as at 8 so that by forming the opening 7 therein, it will not weaken the plate. Threaded within this opening 7, is the inner end of a bolt 9, the other end of said bolt extending out through the opening 10 within the other clamping plate 3. The end of the bolt 9, opposite the opening 7, is provided with considerable more screw threads than the end within the opening 7 and mounted upon the longer end of the bolt, is a bracket 11 angular in form, as illustrated in Fig. 2 and each arm thereof being provided with an opening, said openings being indicated by the numerals 12 and 13, the opening 12 being adapted to receive the longer end of the bolt 9. Threaded upon the extended end of the bolt, is a gear wheel 14, the upper face of which is provided with bevel gear teeth adapted to mesh with a second gear wheel 15, which is mounted upon the shaft 16, said shaft being mounted within the opening 13 and provided with a reduced rectangular stem 17, the purpose of which will be hereinafter more fully set forth.

It will be noted that by having one end of the angular bracket 11 disposed between the gear 14 and the clamping plate 3, it will force the clamping plate 2 toward the plate 3, upon rotation of the gear, thus compressing the ring 4. The rectangular stem 17, which is formed upon the shaft 16, is adapted to be inserted within a substantially rectangular bore 18 formed in the end of a wrench member 19, whereby the shaft 15 may be readily rotated to rotate the gear wheel 15 which, in turn, will rotate the gear wheel 14 and force the clamping plate 2 toward the plate 3, so as to compress the ring 4.

It will be apparent from the foregoing that in applying my improved device, the ring 4 and clamping plates are inserted within the end of a soil pipe or any other form of pipe, as illustrated in Fig. 1. It is understood, however, that the ring 4 will be in its normal condition so that it can be readily inserted within the end of the pipe. The wrench member 18 is then actuated to rotate the gears 15 and 14, so as to force the

clamping plate 2 toward the plate 3 and compress the ring 4, so that it will assume a bowed position, as shown in Fig. 1, whereby the outer surface of the ring will be brought into contact with the inner surface of the pipe and form a water-tight plug.

It will be apparent from the foregoing that I have provided a simple and durable plug which can be quickly and easily applied within the end of a pipe and which is extremely simple in its construction, in that a few turns of the wrench member 19 or any other suitable form of wrench which will adapt itself to the stem 17, will adjust the plates 2 and 3, so that the ring 4 will be pressed into bowed form, whereby the outer surface thereof will contact with the inner face or surface of a pipe. Furthermore, a few turns of the wrench will disengage the ring 4 from the pipe so that the plug can be easily removed. The plug consists of comparatively few parts and in view of the same, it can be manufactured and placed upon the market at a comparatively low cost.

While I have shown and described the preferred form of my invention, it will be obvious that various changes in the details of construction and in the proportions may be resorted to for successfully carrying my invention into practice, without sacrificing any of the novel features or departing from the scope of the invention, as defined by the appended claim.

It will be noted that the bracket 11 is rotatably mounted upon the bolt 9 so that it can be quickly and readily swung to any desirable position, it being understood that the gear 15 will readily rotate over the gear 14, and thus it will be noted that the device can be applied from various positions.

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

An expansible plug including a compressible ring, co-acting clamping plates engaging opposite ends thereof, a bolt which is attached to one plate and extends through the other plate, being free with respect thereto, a removable L-shaped bearing bracket, one arm of said bracket freely receiving the bolt and bearing against the second mentioned plate, a nut threaded upon the bolt and engageable against the bracket plate, and a member journaled in the other arm of the bracket plate and engageable with the nut, said member being operable for rotating the nut upon the bolt, and moving the second mentioned plate toward the first mentioned plate, whereby the compressible ring may be radially expanded.

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

GEORGE MIDDLETON.

Witnesses:
GEORGE R. DREW,
FRANK L. HANLEY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents. Washington, D. C."