

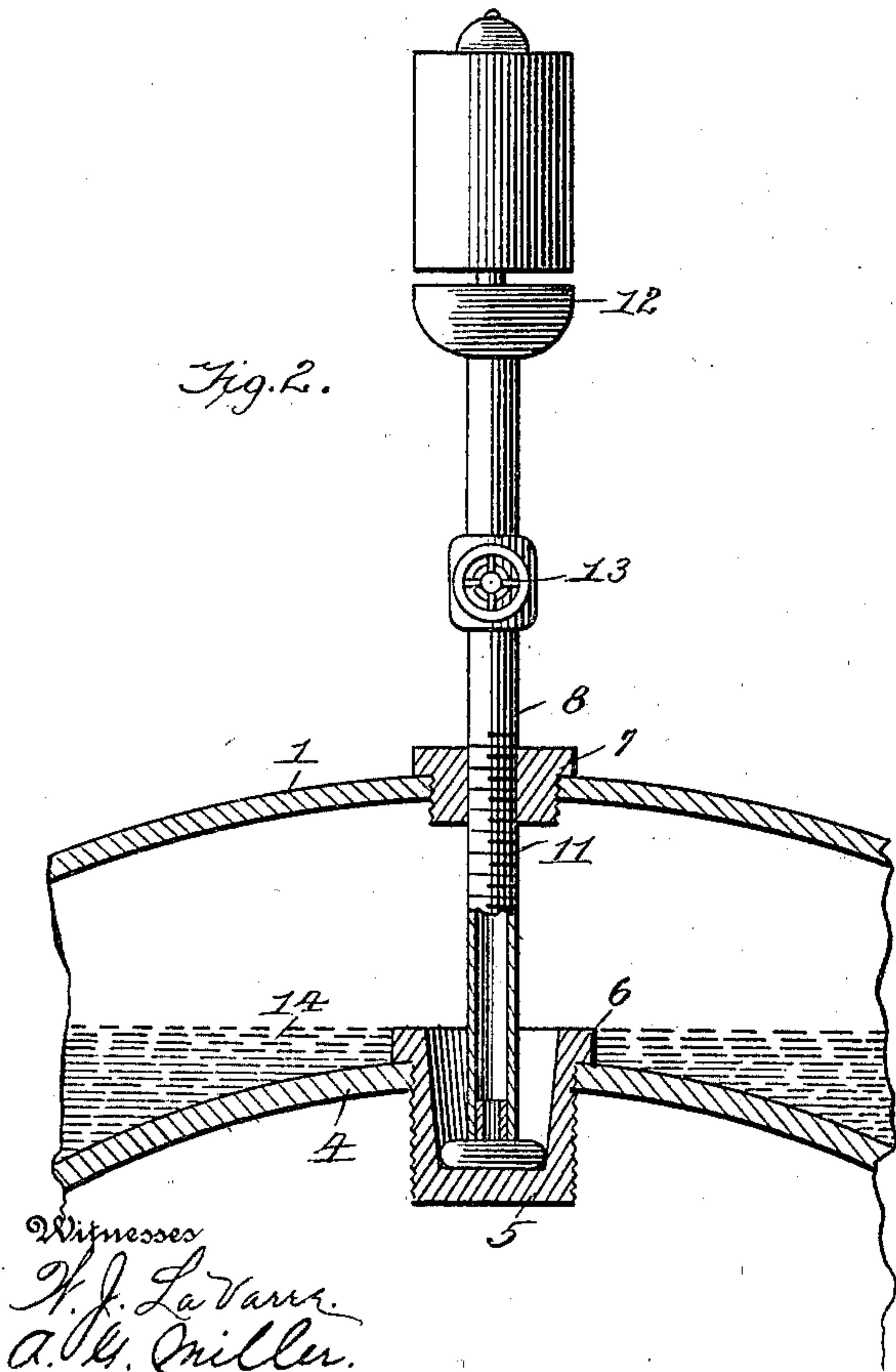
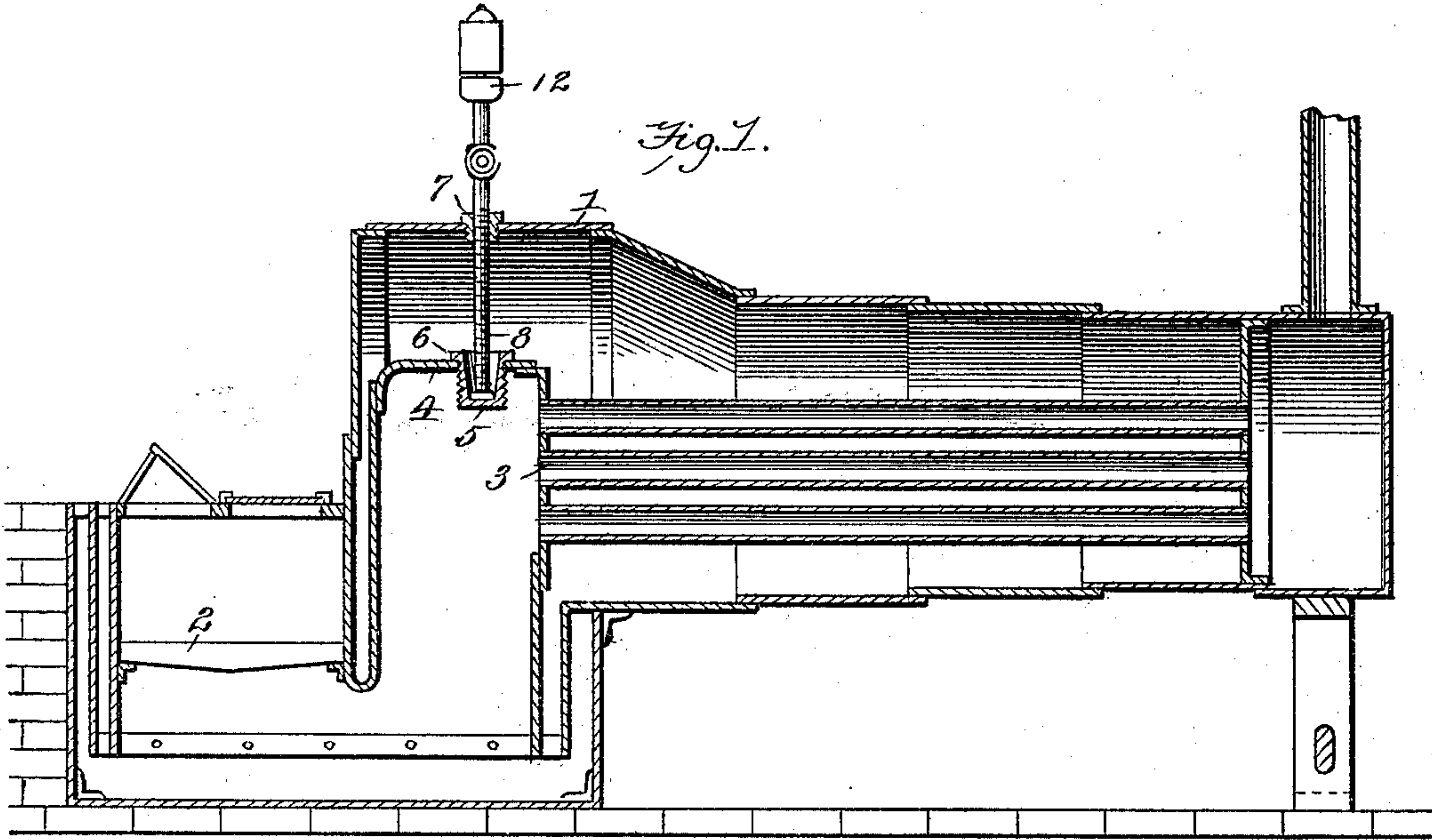
No. 635,016.

Patented Oct. 17, 1899.

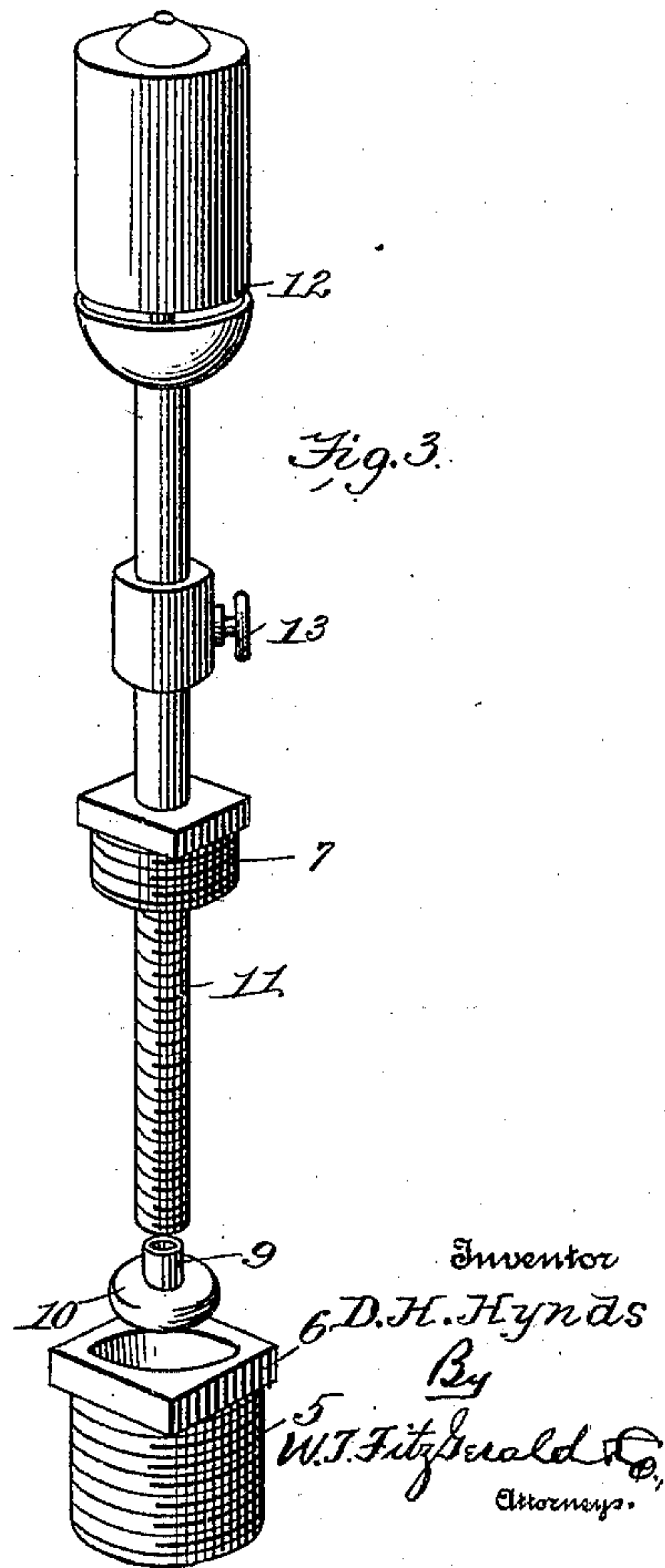
D. H. HYNDS.
AUTOMATIC ALARM FOR BOILERS.

(Application filed Feb. 4, 1899.)

(No Model.)



Witnesses
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UNITED STATES PATENT OFFICE.

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AUTOMATIC ALARM FOR BOILERS.

SPECIFICATION forming part of Letters Patent No. 635,016, dated October 17, 1899.

Application filed February 4, 1899. Serial No. 704,555. (No model.)

To all whom it may concern:

Be it known that I, DAVID H. HYND, a citizen of the United States, residing at Shiloh, in the county of Cleburne and State of Arkansas, have invented certain new and useful Improvements in Automatic Alarms for Boilers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to boiler attachments, and more particularly to a device designed to reliably indicate a low or dangerous condition of the water in the boiler by automatically indicating that the dangerous low-water mark has been reached, such indication being effected by certain coöperative devices, as a steam-whistle, a gong, or the like, as will be hereinafter more particularly set forth.

It is thought, therefore, that the object of my invention will be obvious from the foregoing statement, and I will therefore proceed to describe the details of construction involved and the preferred accessories required to illustrate the operative position or use thereof, reference being had to the accompanying drawings, in which—

Figure 1 shows a longitudinal section of an ordinary stationary boiler with my invention applied thereto. Fig. 2 is an enlarged detail showing a section of the boiler, taken on a line at right angles to that shown in Fig. 1, while Fig. 3 is a detailed view of my device complete, showing the several parts thereof separated from each other ready to be assembled in their respective operative positions.

Briefly stated, my invention consists of means for seating a fusible plug secured to the lower end of a pipe which extends from the whistle above into the boiler and into direct contact with the crown-sheet or a removable receptacle which is mounted in the crown-sheet, the steam being introduced into said pipe and whistle by the melting of the plug which closes the end of said pipe as it is exposed to a dry heat, owing to the fact that the water with which it is normally surrounded becomes evaporated or turned into steam.

Referring in detail to the several parts of my invention by designating-figures, 1 is the dome or top portion of an ordinary stationary boiler, 2 being the grate-bars supporting the fire-box, and 3 designating the ordinary flues usually provided. The crown-sheet 4 is of the usual construction, except that in its central portion I form a threaded aperture designed to receive the exteriorly-threaded cup 5, preferably provided with the wrench or angular portion 6 to insure that it may be securely seated in position. When said cup is seated in position in the aperture provided in the crown-sheet, the upper end extends slightly above the top of the crown-sheet, thereby insuring that the upper portion thereof will be surrounded by water even when the water in the cup has been entirely evaporated. It will be understood that the cup 5 is formed of substantially the same material as that provided for the crown-sheet, which of course insures that it is non-fusible at the temperatures usually produced during the operation of producing dry steam, while immediately above said cup I form in the top of the boiler a threaded aperture designed to receive the tubular plug 7, through which passes the pipe 8, which is preferably threaded at this point in order to secure a more perfect union between the parts to prevent the escape of steam.

The pipe 8, it will be seen, extends downward sufficiently to almost reach the bottom of the cup 5, the lower end of said pipe receiving the stem 9 of the fusible plug or body 10, the threads 11 upon said pipe being provided for the purpose of enabling said pipe to be forced positively downward against the fusible plug, thereby insuring a perfect closure and that no leakage or passage of steam upward through said pipe can take place until said plug is fused by a dry heat, as will be hereinafter fully set forth. The upper end of the pipe is provided with the whistle 12 of the ordinary or any preferred construction, or said whistle may be replaced by any preferred device for giving an alarm, the valve 13 being also provided at a point below the whistle in order that the steam may be entirely cut off, if desired.

It will be obvious that the details of construction presented may be modified or changed to any reasonable extent without departing from the spirit of my invention, and
 5 I do not therefore wish to be confined strictly to the exact showing set forth.

Having described the construction of my invention, the operation of my automatic alarm may be stated to be as follows: After
 10 the several parts have been adjusted in their respective operative positions, as shown in Fig. 2, it will be clear that when the water (indicated at 14) has reached a level with the top of the cup the heat of the furnace will al-
 15 most instantly evaporate all of the water in said cup, and as the water in the boiler is too low to pass over the edge of the cup the fusible plug 10 will become melted, thereby opening the lower end of the pipe 8, and thus per-
 20 mitting the escape of the steam upward through the pipe, causing the whistle to give out an alarm, thus giving the engineer warning that it is necessary to replenish the supply of water in the boiler.

By the arrangement herein described and by the extension of the top of the cup 5 above the surface of the crown-sheet a sufficient supply of water will be preserved to entirely cover the crown-sheet, thereby removing the
 30 danger which would otherwise result from a superheated crown-sheet when a new supply of water is injected into the boiler, as it is well known that the explosion of a boiler results from a too sudden production of steam
 35 when the pump is started and when the crown-sheet is red-hot. It will be seen that the cup 5 may be easily removed from its position and replaced should it become burned out or otherwise injured. It is also obvious that a
 40 new fusible plug may be easily inserted by simply unscrewing the tubular plug 7 and incidentally bringing with it the pipe 8, thus permitting the stem 9 of a new fusible plug or closure to be inserted, when the tubular
 45 plug 10 may be replaced and the pipe 8 prop-

erly adjusted firmly down upon the plug in order to insure against leakage. The fusible plug 10 may be made of any suitable material deemed desirable for the purpose specified and may be made in quantities, and a few of
 50 them kept ready at hand in case of need. The valve 13 is designed to stop the blowing of the whistle after the alarm has been heeded and the pumps again started, thus enabling the attendant to select his own time for re-
 55 newing the fusible plug.

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

1. The herein-described safety appliance 60 for boilers, consisting of a non-fusible pocket closed at the bottom and open at the top secured to and depending below the crown-sheet and extending slightly above the same; a pipe extending from the outside of the boiler 65 downward into said pocket, in combination with a hollow fusible plug fitting the end of said pipe and resting against the bottom of said pocket, whereby when the water has been evaporated from said pocket said plug 70 will become melted and permit the steam to pass outward through said pipe, as specified and for the purpose set forth.

2. As an improvement in boilers, the herein-described safety appliance, consisting of a non- 75 fusible pocket or cup open at the top and closed at the bottom, seated in the crown-sheet of the boiler; a hollow fusible plug placed in the bottom of said pocket; an exit-pipe extending outward through the boiler and having its inner 80 end so disposed that it will rest against said fusible plug, means to adjust said pipe so that it will bear tightly against the plug, as specified and for the purpose set forth.

In testimony whereof I affix my signature 85 in presence of two witnesses.

DAVID H. HYND. S.

Witnesses:

CHAS. W. MAGEE,
 GEORGE S. CARR.