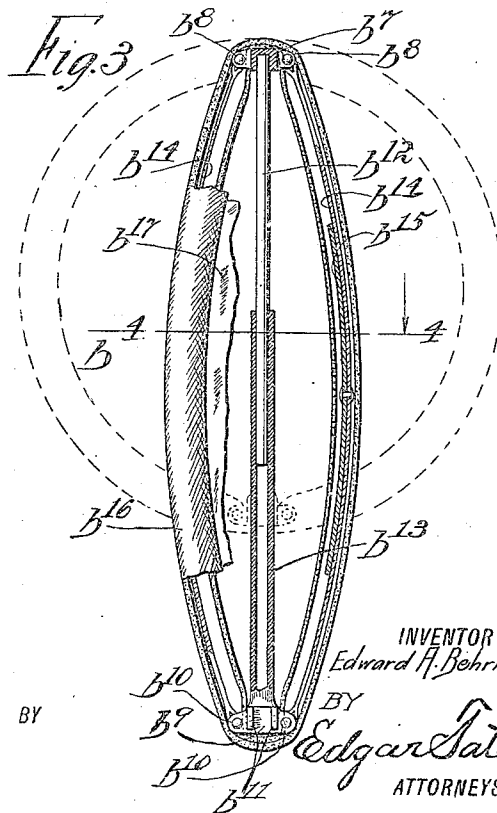
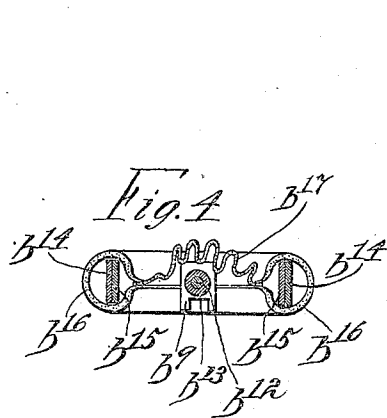
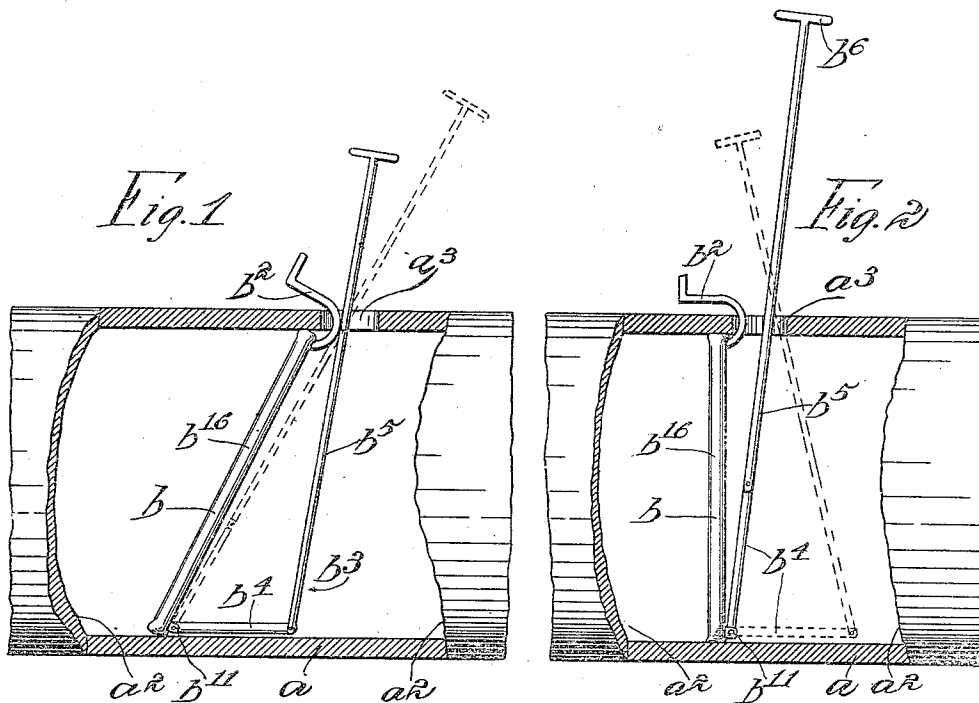


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GAS MAIN STOPPER.
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Patented Mar. 22, 1910.



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GAS-MAIN STOPPER.

952,499.

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To all whom it may concern:

Be it known that I, EDWARD A. BEHRINGER, a citizen of the United States, and residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Gas-Main Stoppers, of which the following is a specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to gas main stoppers; and the object thereof is to provide a device of this class which will be cheap in construction and simple and effective in operation; and by means of which the flow of gas in the gas mains may be stopped at any point while alterations or repairs are being made; and with these and other objects in view the invention comprises an expandible, flexible disk adapted to be collapsed and inserted into the gas main from the outside thereof through a small aperture cut therein and expanded to perfectly fit transversely in the gas main.

The invention is fully disclosed in the following specification of which the accompanying drawing forms a part in which the different parts of my invention are designated by suitable reference characters in each of the views and in which:—

Figure 1 is a side view of a gas main partly broken away and showing my invention ready for use. Fig. 2. A view similar to Fig. 1 showing my invention in use. Fig. 3. A front view of the collapsible disk which I employ with parts broken away and parts in section and with parts shown in different positions in dotted lines. Fig. 4. A section on the line 4—4 of Fig. 3.

I have shown at *a* a gas main a section of which has been broken away at *a*² exposing the interior thereof; and on the top side thereof I have shown at *a*³ a small aperture or hole.

In the practice of any invention I provide an elastic, expandible frame *b* having at its upper end a curved or hook-shaped handle *b*² and at its lower end with a handle *b*³ comprising a link member *b*⁴ and a rod member *b*⁵ terminating at its upper end in the handle *b*⁶, and the link member *b*⁴ is pivoted at one end to the lower part of the frame *b* and at the other end to the lower end of the rod member *b*⁵ of the handle device *b*³.

In the practice of my invention the parts

*b*⁴ and *b*⁵ are first moved into position (with respect to the part *b*) shown in dotted lines and the parts *b*, *b*⁴ and *b*⁵ are then inserted into the gas main *a* through the aperture *a*³ and moved into the positions shown in full lines in Fig. 1; and in this operation the handle *b*² of the disk member *b* is engaged with the front wall of the aperture *a*³ to facilitate the proper location of the parts in the gas main *a*; and with the parts in this position it will be seen that the disk member *b* stands obliquely in the gas main *a*.

By holding the upper end of the frame *b* against the upper inner side of the gas main *a* by means of the handle *b*² in the position shown in Fig. 1 the bottom of said frame may be pulled backwardly by manipulating the handle device *b*³ into the position shown in Fig. 2 and the disk member will stand vertically in the gas main *a*.

The construction of the frame member *b* is plainly shown in Fig. 3 and consists of a head member *b*⁷ terminating upwardly in the curved handle *b*² and having laterally directed lugs *b*⁸ which carry pivot bearings; and a foot member *b*⁹ having laterally directed lugs *b*¹⁰ which carry pivot bearings similar to the pivot bearings *b*⁸ in the head members and rearwardly directed lugs *b*¹¹ which form a pivot connection for the link member *b*⁴ of the handle device *b*³ shown in Fig. 1; and secured to the head member *b*⁷ is a downwardly directed rod *b*¹² which fits into an upwardly directed tube or sleeve *b*¹³ secured at its lower end to the foot member *b*⁹.

The two pivots *b*⁸ and *b*¹⁰ on the same side of the central axis of the frame member *b* are connected by a stiff, flexible spring band *b*¹⁴ as plainly shown in Fig. 3; and the spring band *b*¹⁴ is given further stiffness by means of a leaf member *b*¹⁵ riveted at the middle of the spring band member *b*¹⁴; and the other two pivots are similarly connected.

As shown in Fig. 3 the normal positions of the spring members in connection with the head member *b*⁷ and the foot member *b*⁹ form an ellipse; and in practice I cover this ellipse with a tubular covering *b*¹⁶ of soft leather or other suitable soft and durable material; and the inclosed space within the ellipse is filled up with a membrane *b*¹⁷ of cloth, leather or the like, secured to the inner periphery of the tubular casing or covering and this membrane is of the same vertical dimension as the ellipse but of greater dimension laterally and with the parts in

the position shown in Fig. 3 in full lines. This membrane has vertical corrugations or folds.

When the frame member *b* is inserted into the gas main *a* through the aperture *a*³ the parts thereof are in the positions shown in solid lines in Fig. 3 and as said frame member is forced into the position shown in Fig. 2 it is compressed vertically and the parts thereof take the position shown in dotted lines in Fig. 3; and the outer tubular casing or covering *b*¹⁶ becomes circular and fits the inside of the gas main *a*, and the membrane *b*¹⁷ forms, together with the tubular casing, a complete partition transversely of the gas main; and the springs *b*¹⁴ and *b*¹⁵ firmly hold the tubular casing in its expanded position and this completely stops the flow of gas, and repairs or alterations in the main or the connections thereof may be made without danger of explosion or loss of gas, or of injury to the operator.

When it is desired to remove my improved gas main stopper the handle device *b*³ comprising a link member *b*⁴ and the rod member *b*⁵ are moved into the positions shown in dotted lines in Fig. 2; and by exerting a backward pressure upon the handle *b*⁶ the lower end of the rod member *b*⁵ and the link member *b*⁴ will push forwardly on the bottom of the frame member *b* and move the same into the position shown in Fig. 1 when the disk will assume the shape shown in Fig. 3 in solid lines due to the action of the springs *b*¹⁴ and *b*¹⁵ in returning to their normal positions and the device may be withdrawn through the aperture *a*³. Said aperture may be closed in any desired manner.

The above mentioned operation of moving the frame *b* from the position shown in Fig. 1 to the position shown in Fig. 2 may be accomplished partly by pulling on the rod member *b*⁵ when the same is in a straight line with the link member *b*⁴ as shown in dotted lines in Fig. 1, and partly by pushing forwardly on the handle *b*⁶ of the rod member *b*⁵ in the direction of the arrow *x* in Fig. 1 when the parts *b*⁵ and *b*⁴ occupy the positions shown in solid lines in Fig. 1, this latter operation as will be understood giving a backward pull at the bottom of the disk *b*.

The handle *b*² serves not only to keep the top of the frame *b* from slipping forwardly

into the gas main *a* but also prevents it from slipping circumferentially in said main and enables the operator to tell at a glance by the position of said handle member the position of the frame in said main, and further by maintaining said frame in a position adjacent to the aperture *a*³ the operator is able to see said frame at all times.

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

1. A stopper or closure device for gas mains comprising a contractible and expandible spring frame consisting of a head member, a foot member and spring members, said head and foot members being provided with co-acting, parallel, sliding guides, and said spring members connecting said head and foot members, a tubular, flexible casing surrounding said frame and a flexible membrane secured to and embraced within the said tubular casing, said head member being provided with a hook-shaped handle and said foot member being provided with a handle device comprising a rod member and link member pivotally connected to said rod member and said foot member.

2. A stopper or closure device for gas mains, comprising a contractible and expandible spring frame member, composed of a head and foot member, spring side members connecting said head and foot members, co-acting and slidably connected guides connecting said head and foot members, a flexible membrane secured to and embracing said frame, a hook-shaped handle device connected with the head member and a linked handle device connected with the foot member.

3. A stopper or closure device for gas mains comprising a contractible and expandible spring frame, having head and foot members, a hook-shaped handle device connected with the head member and a linked handle device connected with the foot member.

In testimony that I claim the foregoing as my invention I have signed my name in presence of the subscribing witnesses this 17th day of July 1909.

EDWARD A. BEHRINGER.

Witnesses:

H. R. CANFIELD,
C. E. MULREANY.