

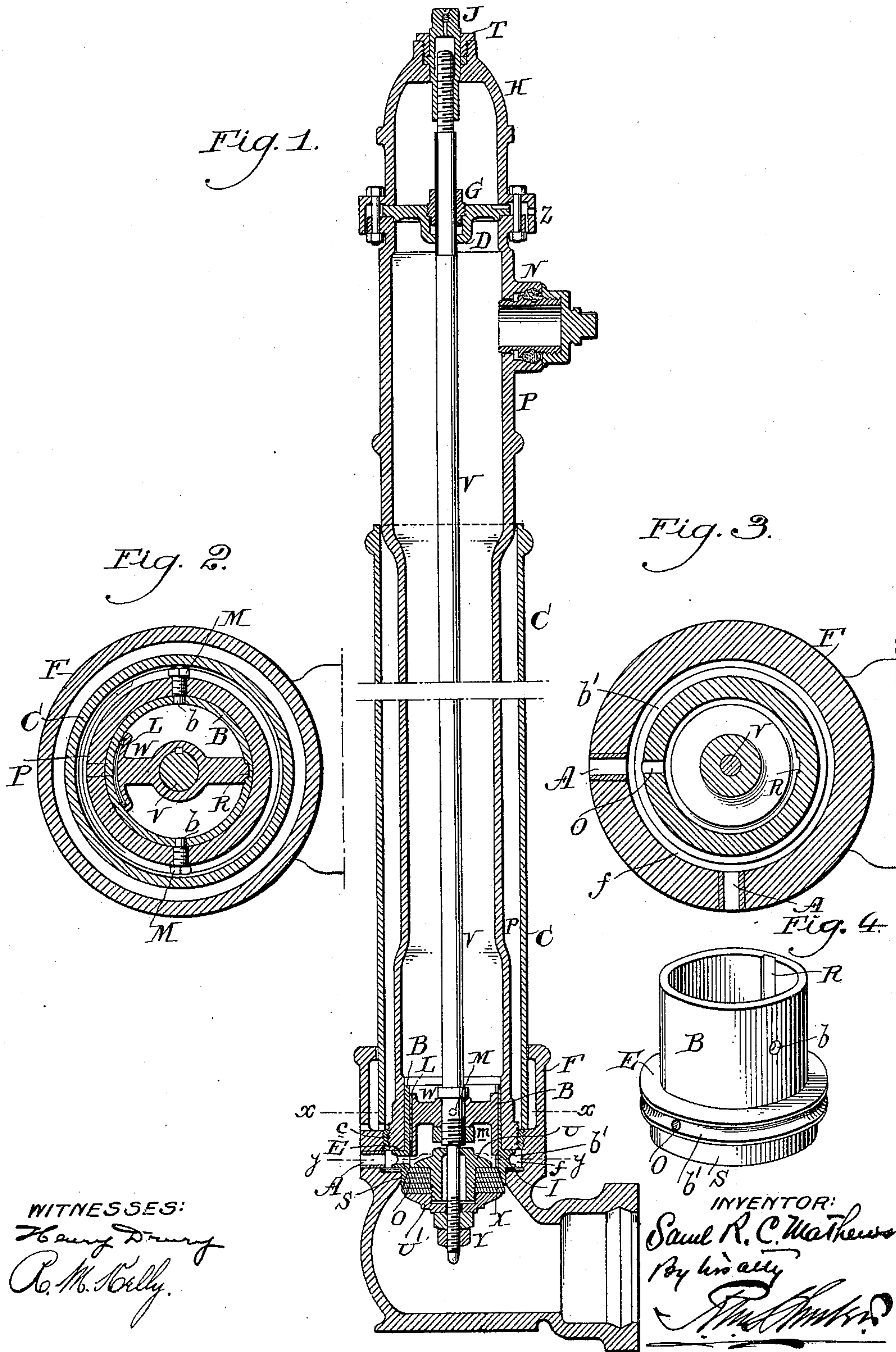
No. 607,413.

Patented July 12, 1898.

S. R. C. MATHEWS.
FIRE HYDRANT.

(Application filed Jan. 19, 1898.)

(No Model.)



UNITED STATES PATENT OFFICE.

SAMUEL R. C. MATHEWS, OF PHILADELPHIA, PENNSYLVANIA.

FIRE-HYDRANT.

SPECIFICATION forming part of Letters Patent No. 607,413, dated July 12, 1898.

Application filed January 19, 1898. Serial No. 667,133. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL R. C. MATHEWS, of Philadelphia, Pennsylvania, have invented an Improvement in Fire-Hydrants, of which
5 the following is a specification.

My invention consists in certain improvements in fire-hydrants, hereinafter described, which greatly enhance their security against freezing, the protection of the working parts,
10 and facility in making any necessary repairs.

More particularly my improvements comprehend features relating to the manner of uniting the stock to the base or elbow, whereby it may be easily and positively removed when
15 required without injury to any of the parts. Furthermore, the construction is such that a suitable waste is secured within the most limited space, thus reducing to a minimum the danger of holding water when the hydrant is
20 closed, which might be liable to freeze, with consequent injury.

My improvements also embody a construction of valve-seats both for the waste and main valve, which is positively secured and
25 held in place without the employment of objectionable screw-threads or in any manner being positively and directly attached to the elbow or base-section.

My various improvements will be better understood by reference to the accompanying drawings, in which—

Figure 1 is a sectional elevation of a fire-hydrant embodying my invention. Fig. 2 is a cross-section of same on line *xx*. Fig. 3 is
35 a cross-section of same on line *yy*, and Fig. 4 is a perspective view of the valve-seat bushing.

The upper end of the stock or post *P* above-ground is provided with one or more outlets
40 or nozzles *N* for attaching hose or steamer suction. At the top of the hydrant-stock is a retaining-nut *T*, holding in place the revolving sleeve-nut *J*, working on end of valve-rod *V* for the purpose of raising and lowering
45 the main valve *X* of the hydrant. The rod *V* extends through a gland or stuffing-box *G* in the usual manner. A waste-orifice *Z* is made to allow escape of any water that may find its way into the upper chamber under
50 pressure through the stuffing-box. Outside of the stock and forming the surface base of the hydrant is a surrounding case or jacket

C, passing down to and included within the upward-projecting flange of the elbow or bend *F*. This case forms, with the stock and el- 55
bow, a telescopic joint at top and bottom having a vertical or end play of several inches to compensate for any upheaval of the ground by the action of frost and also forming a practically dead air-tight chamber around the 60
stock from above the pavement to the bottom of the hydrant, giving a better protection against freezing than can be obtained by packing or boxing in winter and saving much trouble and expense. This construction of 65
casing also permits the ready removal of the hydrant proper from the ground in case of necessary repairs or for the removal of any obstruction in the main valve *X* without digging up the hydrant or disturbing the pave- 70
ment, curbing, or sidewalk.

The valve-rod *V* connects with the revolving nut *J* at top and extends nearly to the bottom of the elbow, where the main valve is attached to it and held in place by the nuts *Y*. 75

In the lower end of stock is inserted a cylindrical bushing *B*, of brass or other non-corroding material, having an enlarged annular or flanged portion *E*, that is received between the bottom of the stock *P* and elbow *F* and 80
is held down by the stock upon a packing *I*, of leather or rubber, in the elbow, thereby forming a close water-tight joint. Between the top and bottom faces of this annular or flanged part a horizontal waste-orifice *O* is 85
drilled through from the outer circumference to the interior of the bushing to allow the water from the stand-pipe to waste or drain down to the level of the main valve after it has been closed, so that no water can remain 90
above the valve *X* when the hydrant is closed, thus greatly lessening the danger of freezing in winter. The bushing is fitted closely within the bottom of the stock and held against turning by screws *M*, which extend through 95
the stock and into the bushing to prevent it from turning when screwing the stock in or out of the elbow. The end of the screws *M* are made without threads and fit into holes *b* in the bushing. 100

The waste-valve *W* is fitted upon the rod *V* within the bushing and is clamped in position against a collar *M* by a nut *m*.

The waste-valve structure *W* projects lat-

erally from the valve-rod, so as to extend to the waste-orifice in the bushing and at the same time leave large water-passages for the upward and downward flow of the water.

5 The brass or composition bushing B is grooved longitudinally, as at R, to receive a lug or rib on one side of waste-valve W to steady and guide it in its upward and downward motion and to prevent both valve and
10 rod, to which it is keyed, from axial turning in opening and closing the hydrant. On the opposite side of the waste-valve is a faced surface, upon which a leather facing or packing L is riveted, closing the waste-orifice O
15 when the hydrant is in use. The lower end of the waste-valve is so adjusted that when the hydrant is closed it is on a line with the upper edge of waste orifice or drip O in the flange E, and as the rod moves down in opening the hydrant, carrying the waste-valve with
20 it, the waste-orifice O is immediately closed, remaining closed while the hydrant is open. In this manner there is no waste of water while in use and the waste is opened again
25 as soon as or a little before the main valve reaches its seat in closing, allowing the water in stand-pipe or stock above the main valve to run out, avoiding the danger of freezing in winter and waste of water during time hydrant is in use. The waste-valve and main
30 valve being both firmly secured to the rod V in their relative positions give what is termed a "positive waste," always closing the waste in opening the hydrant and opening the waste
35 in closing hydrant.

On the lower side of the flange E the bushing is extended, as at S, to form a downwardly-extending seat for the valve X. It extends into the elbow or bend and is beveled to form a
40 suitable seat for the main valve X. The whole brass bushing of lower end of hydrant, its flange E between hydrant-stock and elbow, and the main-valve seat S are preferably formed in one piece, giving great strength,
45 simplicity in construction, and facility in making repairs without involving the main portion of the hydrant. It also prevents any obstruction or injury to working parts by corrosion of the iron, as all the parts in contact are
50 of brass. We are therefore insured great durability in all the most important parts of the hydrant below ground.

The interior of the bushing B is of full diameter all the way down, so as to enable the
55 waste-valve to pass partly through the valve-seat S when the main valve is fully lowered.

A channel or groove b' is cut around the entire circumference or perimeter of the flange E to enlarge the annular waste-water
60 space f , into which the water from the waste-orifice O is discharged, receiving it equally as well from any point in the circle. Connecting with this grooved space $b'f$ are two waste-openings A, bushed with brass, leading
65 from this annular channel and on same level and extending through the elbow or bend for carrying off the waste water from the hydrant.

The using of two brass-bushed waste-holes through the elbow give great security against freezing that might occur in consequence of
70 the orifices being closed by corrosion if not bushed, or in case one of them should become clogged from any cause, either one being entirely sufficient to carry off the waste water from the hydrant. 75

The main valve of the hydrant closes with the pressure of the water, so that in case of breakage by runaway teams or otherwise the main valve will remain closed, being held
80 tightly to its seat by the pressure of the water in the main, so there can be no leakage or flooding of the streets. It also allows the taking off of upper parts of hydrant and repacking stuffing-box without shutting off the water from the main, the main valve being
85 held firmly in place by the pressure of the water.

The stock P screws into a brass bushing c , in turn screwed within the elbow F, so as to prevent rusting of the stock and elbow together, and hence permitting easy removal of
90 the stock.

I do not confine myself to the minor details shown, as they may be modified in various ways without departing from the spirit of the
95 invention; but I prefer to make the parts as illustrated in practice.

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

1. In a fire-hydrant, the combination of the lower elbow and the upright stock detachably secured together, with a bushing fitting within the lower end of the stock and having an annular flange clamped between the stock and
105 elbow and with its lower edge formed into a valve-seat, a main valve arranged within the elbow and adapted to the seat of the bushing, a valve-stem extending down through the bushing to operate the main valve, and a
110 guide projecting laterally from and movable with the stem and working upon the inside of the bushing.

2. In a fire-hydrant, the combination of the lower elbow and the upright stock detachably
115 secured together, with a bushing fitting within the lower end of the stock and having an annular flange clamped between the stock and elbow and with its lower edge formed into a valve-seat and a waste-orifice through
120 the annular flange, a valve-rod, a vertically-movable waste-valve fitted within the bushing and secured to the valve-rod, and a main valve arranged within the elbow and adapted to the seat of the bushing and also movable
125 by the valve-rod.

3. In a fire-hydrant, the combination of the lower elbow and the upright stock detachably secured together, with a bushing fitting within the lower end of the stock and having an
130 annular flange clamped between the stock and elbow and with its lower edge formed into a valve-seat and a waste-orifice through the annular flange, a valve-rod, a vertically-

movable waste-valve fitted within the bushing and held against rotation by a vertical guide therein and also secured to the valve-rod, a bolt or pin extending through the stock into the bushing to hold it against rotation in the stock, and a main valve arranged within the elbow and adapted to the seat of the bushing and also movable by the valve-rod.

4. The combination of an elbow having an annular shoulder, a stock having a flat rim on the bottom and adapted to be clamped or held down upon the elbow, a bushing of non-corrodible metal fitted into the stock and extending into the elbow to form a valve-seat and having an annular flange intermediate of its ends clamped between the shoulder of the elbow and rim of the stock and also provided with a waste-orifice through said flange, a waste-valve movable in and guided by the bushing, and a main valve movable to and from the valve-seat on the lower part of the bushing, and a stem common to both the main valve and waste-valve extending entirely through the bushing.

5. The combination of an elbow having an annular shoulder and clearance-space formed with one or more waste-orifices, a stock having a flat rim on the bottom and adapted to be clamped or held down upon the elbow, a bushing of non-corrodible metal fitted into the stock and extending down into the elbow to form a valve-seat and having an annular flange (of less diameter than the diameter of the clearance-space in the elbow) intermediate of its ends clamped between the shoulder of the elbow and rim of the stock and perforated to form a waste-orifice, a waste-valve movable in and guided by the bushing, and a main valve movable to and from the valve-seat on the lower part of the bushing.

6. In a hydrant, the combination of the elbow having an annular shoulder and clearance-space f having one or more waste-orifices opening therefrom, a stock P screwed or suitably secured to the elbow, a bushing B fitted into the bottom of the stock and having an annular flange E grooved as at b' on its perimeter and through which the waste-orifice O is formed the said flange resting upon the shoulder of the elbow and clamped thereon by the stock, a waste-valve within and guided by the bushing, and a main valve seating itself upon the lower edge of the bushing below the annular flange thereof.

7. In a hydrant, the combination of the elbow having an annular shoulder and clearance-space f having two waste-orifices opening therefrom and bushed with non-corrodible metal, a stock P screwed or suitably secured to the elbow, a bushing B fitted into the bottom of the stock and having an annular flange E and through which the waste-orifice O is formed the said flange to open into the annular clearance-space f resting upon the shoulder of the elbow and clamped thereon by the stock, a waste-valve within and guided by the bushing, and a main valve seat-

ing itself upon the lower edge of the bushing below the annular flange thereof.

8. In a hydrant, an elbow having an annular clearance-space f formed with two waste-orifices A , a stock secured to the elbow and supported above the clearance-space and having a waste-orifice opening into the clearance-space, a waste-valve within the stock, and a main valve to control the water to the stock.

9. A valve-bushing for a hydrant consisting of a deep cylindrical part having a valve-seat formed in its lower rim, an outer annular flange at a considerable distance from the upper rim and in which the entire space between the upper rim and flange is made smooth or without screw-threads or projections, and a straight waste-orifice through the flange.

10. A valve-bushing for a hydrant consisting of a cylindrical part having a valve-seat formed in its lower rim and an outer annular flange at a distance from the upper rim and in which the space between the upper rim and flange is made smooth, and furthermore the construction being such that a waste-orifice is formed through the flange.

11. A valve-bushing for a hydrant consisting of a cylindrical part having a valve-seat formed in its lower rim and an outer annular flange at a distance from the upper rim and in which the space between the upper rim and flange is made smooth, and furthermore the construction being such that a waste-orifice is formed through the flange, and a guide for the waste-valve formed upon the interior thereof.

12. In a hydrant, the combination of an elbow having an annular shoulder, a stock secured to the elbow, a bushing fitting into the bottom of the stock without screw-threads and formed on its bottom rim with a valve-seat and upon its outer surface with an annular flange containing a waste-orifice and clamped between the stock and shoulder of the elbow said bushing being independent of the connection between the stock and elbow, a valve-rod, a waste-valve moved by the valve-rod within the bushing, and a main valve below the bushing and secured to the valve-rod.

13. In a hydrant, the combination of an elbow having an annular shoulder, a stock secured to the elbow, a bushing fitting into the bottom of the stock without screw-threads and formed on its bottom rim with a valve-seat and upon its outer surface with an annular flange containing a waste-orifice and clamped between the stock and shoulder of the elbow said bushing being independent of the connection between the stock and elbow, means for holding the bushing against rotary movement within the stock, a valve-rod, a waste-valve moved by the valve-rod within the bushing, and a main valve below the bushing and secured to the valve-rod.

14. In a hydrant an elbow provided with a waste-orifice in its upper flange, a stock detachably connected to the elbow, a bushing of non-corrodible metal snugly fitting and se-

cured to the stock and extending down into
but not connected with the elbow and having
a main-valve seat formed thereon, and also
further provided with an annular flange hav-
5 ing a straight transverse waste-orifice, a
waste-valve guided upon the interior of the
bushing, and a main valve arranged within
the elbow and suspended from the stock,
whereby in case of breakage of the bushing

nothing will remain in the elbow when the
stock is removed.

In testimony of which invention I hereunto
set my hand.

SAMUEL R. C. MATHEWS.

Witnesses:

R. M. HUNTER,
GEO. W. REED.