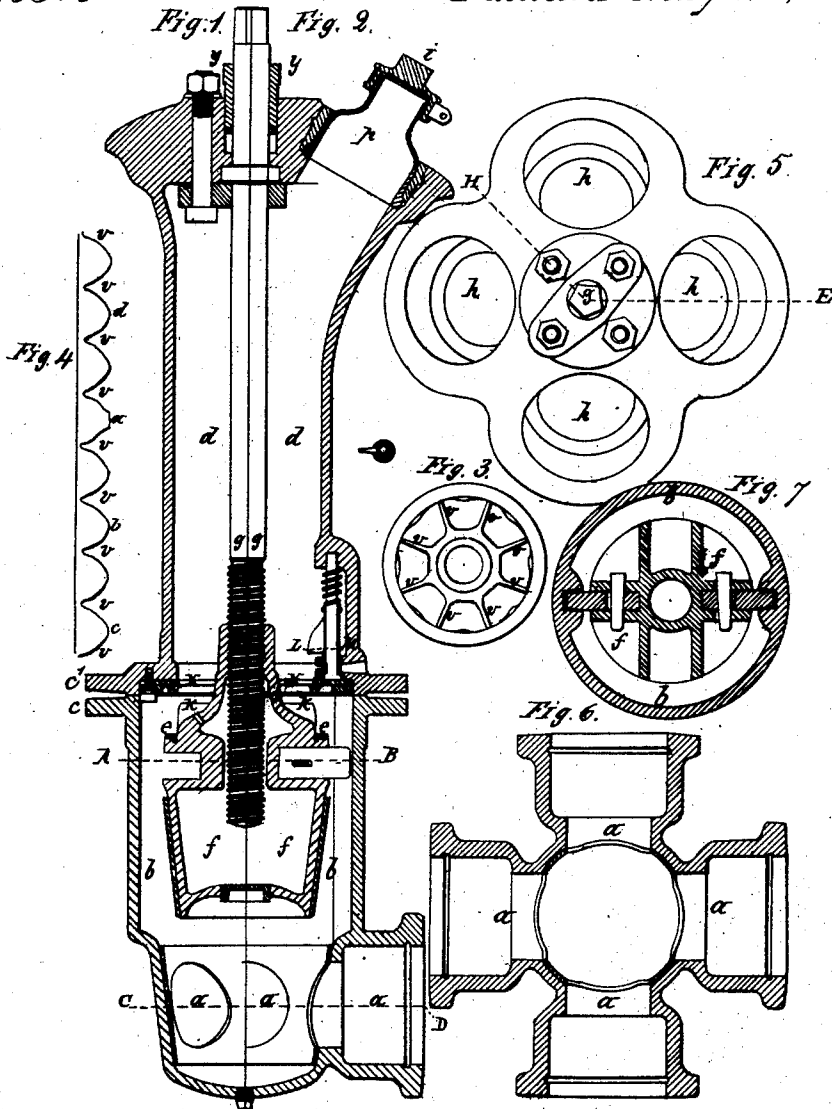


M. C. Meigs, Hydrant Valve,

N^o 28,391.

Patented May 22, 1860.



Witnesses

J. B. and G. M. L.

J. M. L.

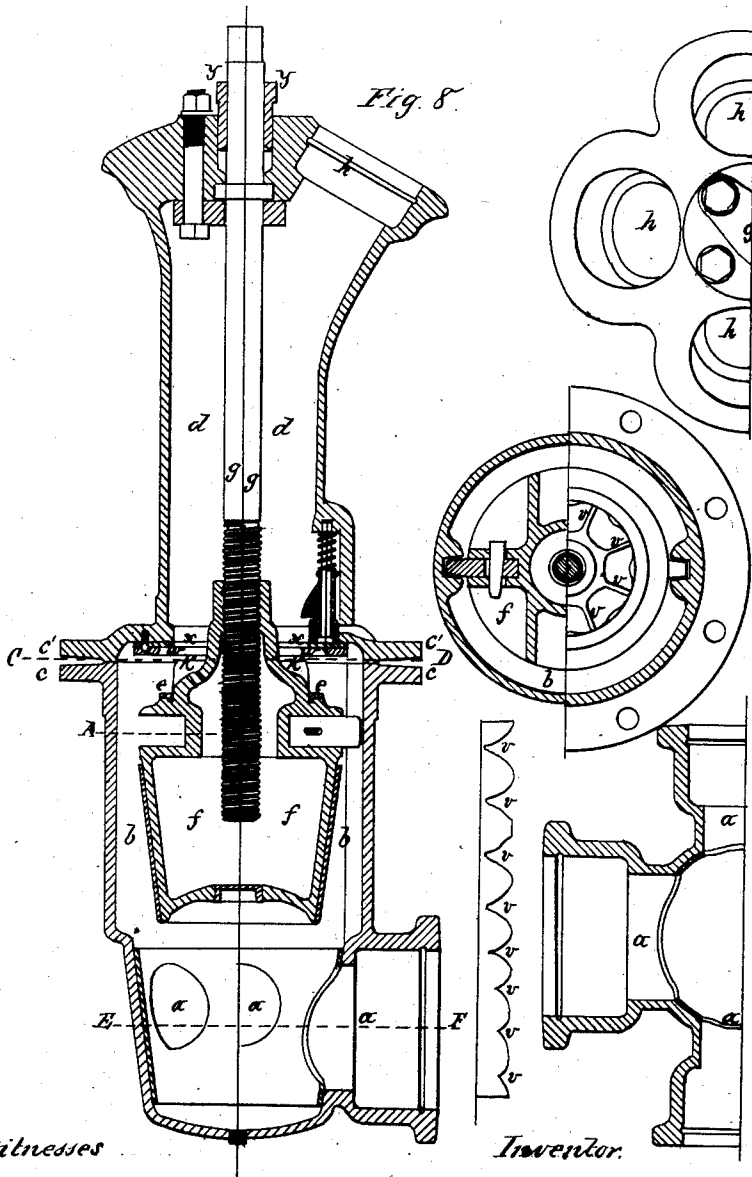
Inventor

M. C. Meigs
C. E.

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Witnesses

Jno. C. Conlan.
J. M. Macomb.

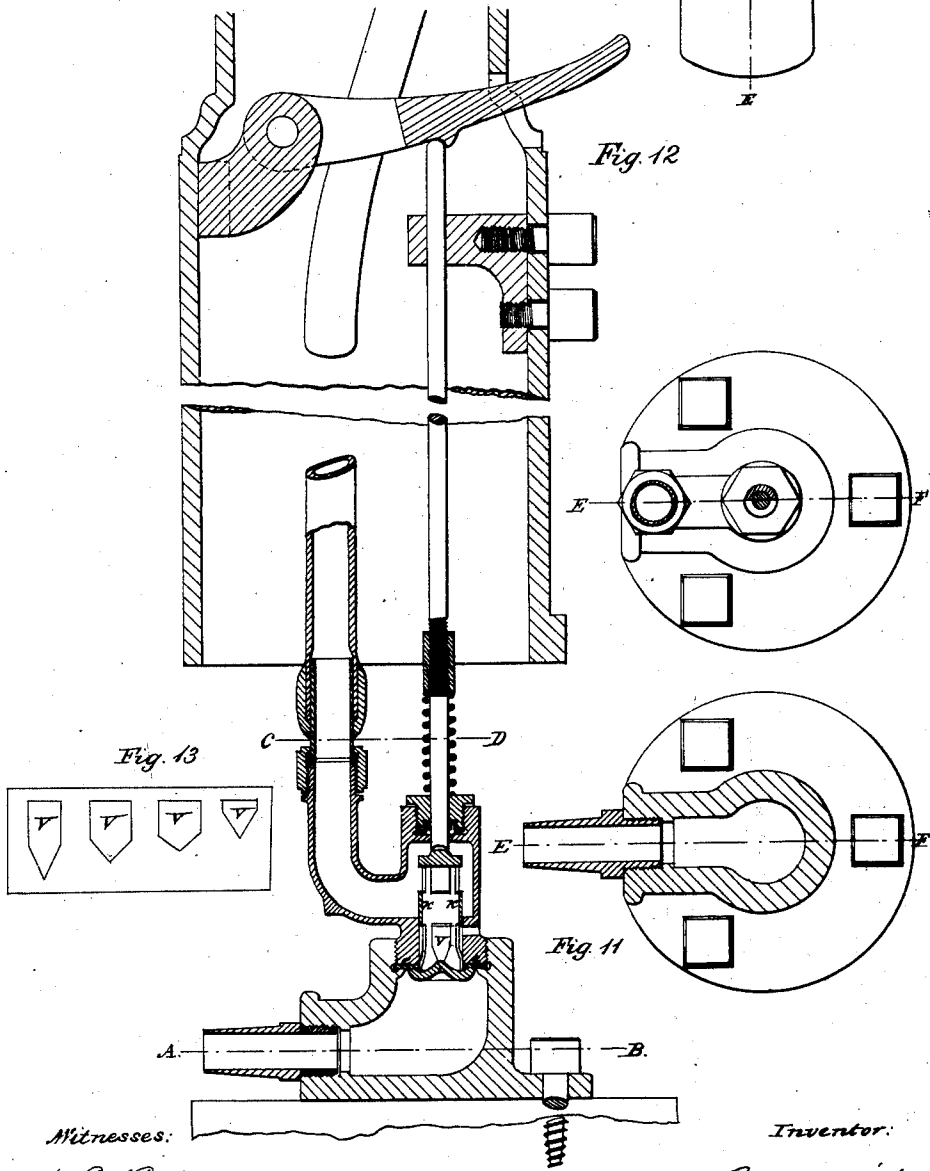
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Witnesses:
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Inventor:
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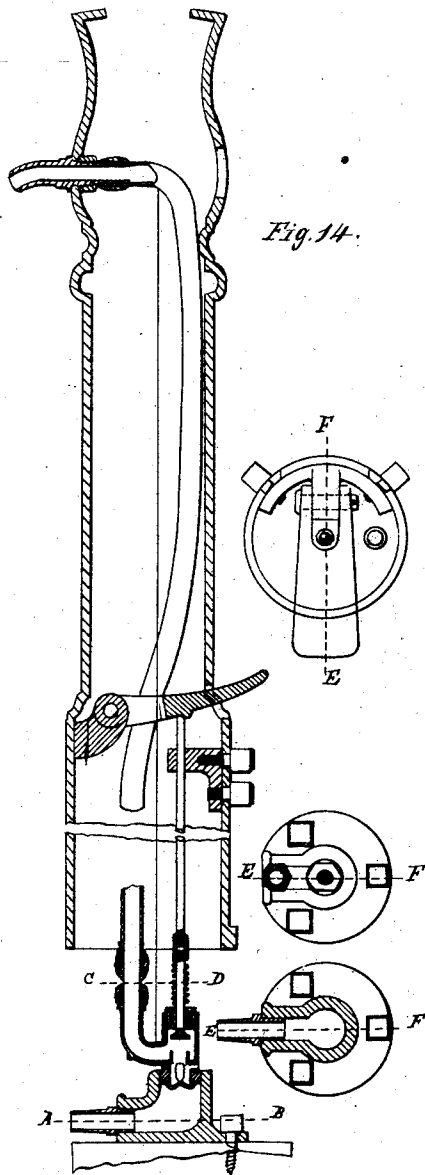


Fig. 14.

Witnesses

In Com. of the
Inventor
J. M. Macomber

Inventor

W. C. Meigs
C. E.

UNITED STATES PATENT OFFICE.

MONTGOMERY C. MEIGS, OF WASHINGTON, DISTRICT OF COLUMBIA.

VALVE FOR HYDRANTS, &c.

Specification of Letters Patent No. 28,391, dated May 22, 1860.

To all whom it may concern:

Be it known that I, MONTGOMERY C. MEIGS, civil engineer and architect, of Washington city, in the District of Columbia, have invented a new and useful improvement in the mode of constructing and operating the valves in stop-cocks and hydrants for the control and regulation, stoppage, and delivery of water of street-mains and distributing-pipes by or through the valves and hydrants to be attached to the same; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon.

The nature of my invention or improvement consists in a new form of construction of a puppet valve by which a slow or gradual and regulated closing of a pipe conveying water or other liquid is secured in such manner as to combine the advantage of the puppet and the slide valves, also; and further, in the combination of this many way plug or conical valve with a serrated or perforated slide puppet valve for a hydrant so that the flow of water through the hydrant and the mains shall be commanded by the opening or closing of a single valve having two seats and moved by a single screw.

By this contrivance I am able to use a larger valve for the hydrant without danger to the pipes from the effect of the momentum or shock of the water, and I gain the further advantage of economy in the cost of the stop-cocks and hydrants being able to combine them in a single case, work them by a single screw, and place them in a single well hole or stop-cock box covered by one iron plate at the intersection of any two streets. I thus dispense with several valves, well holes, iron covers and hydrants, and save the expense and inconvenience of their construction, establishment, and repair.

The drawings herewith will serve to show more particularly the nature of my invention or improvement.

Figure 1, is a section through the axis of the valve or stop-cock and hydrant. Fig. 2, is a section at an angle of 45 degrees with Fig. 1, also through the axis and passing through the axis of one of the water pipes connected with the stop-cock or hydrant. Fig. 3, a plan of the top of the valve showing the serratures or notches as seen from above. Fig. 4, is a development of the sur-

face of the upper or barrel portion of the valve showing one form of the notches or serratures for regulating the closing of the valve to prevent shock. Fig. 5, is a plan of the top of the hydrant showing the screw head, the stuffing box through which the screw passes, and the openings on the cast iron head into which nozzles of different sizes fitted with screws to receive hose couplings may be secured with lead joints. Fig. 6, is a horizontal section through the valve seat in the plane of the axes of the distributing pipes or mains. Fig. 7, is a section of the valve showing a mode of securing the ears which working into grooves in the valve case prevent the valve from turning when the screw is turned. In these figures the various parts of the valve and hydrant are fully shown. All the above figures represent a stop valve and hydrant combined as fitted for the intersection of two four inch water pipes. Fig. 8, shows the same stop-cock and hydrant combined as fitted for the intersection of a four inch and a six inch water pipe. Fig. 9, shows a similar stop-cock and hydrant combined as fitted for the intersection of two six inch mains or distributing pipes.

The same parts will be seen in all: the serrated slide puppet valve with the conical plug valve combined with it, the upper serratures or notches, the ring of leather or india rubber facing the upper valve seat and projecting within it so as to rub against the valve barrel, the lower conical valve seat which is lined with brass or composition and ground with the brass or composition covering of the conical plug of the valve, the openings for the attachment of different sized nozzles for hose couplings, the bells for connecting the water pipes and the other parts as described.

Fig. 10 shows the application of the conical plug valve as a four or many way stop-cock to be used when a hydrant is not desired in combination with it. This, however, it will be seen is so constructed as to permit the cover and screw and valve to be withdrawn and the parts necessary to complete the hydrant to be attached to the cross and valve seat without disconnecting the water pipes.

For sizes larger than six inch mains, I make the openings into the cross or lower valve seat oblong in form so as while preserving the full area of water way of the

pipes to avoid making so large a valve as would be needed for example with eight inch or ten inch circular openings from the water pipes into the valve and hydrant seat.

5 Figs. 11, 12, 13, show the application of perforations instead of serratures or notches to the slide puppet valve as constructed when used for street drinking fountains or
10 service hydrants. Fig. 14, shows a street drinking fountain or service hydrant complete as fitted up with the perforated slide puppet valve, and inserted in the lower part of a gas light post for street use. Figs. 11
15 to 14 are intended to show the second mode of constructing the slide puppet valve for regulating and governing the gradual stoppage without shock of the flow of water or
20 closing the valve, that is to say, by using perforations of any suitable form, circular, or angular at the end from which the water comes, and set, so as to close, not
25 altogether but successively and thus gradually and gently arrest the flow of water without the shock which is occasioned by the sudden closing of the ordinary flat seated puppet or conical valve as used by others in fire hydrants and for other purposes.

The parts are designated by letters, the same letters referring to the same parts in all the above figures. Their construction and operation are as follows:

30 *a, a, a, a,* represent four openings furnished with bells or sockets as in the ordinary cast iron crosses as used in pipe work for the attachment of four branches, but in my stop cock and hydrant these bells are
35 attached to a pot or case of cast iron or other metal the lower part of which is made conical and generally lined with brass or composition. It is of such form that it may be bored out and ground with sand or emery so as to form a seat for a conical plug
40 of sufficient size to fill it entirely and make a watertight joint between the conical surfaces of the plug and of the pot or case. This plug is represented by *f, f;* and *g, g,* is the screw which moves it up and down.

45 It will be seen by an inspection of the figures that when the conical plug *f, f,* is forced down into its seat by the screw *g, g,* all the four or more openings *a, a, a, a,* will be stopped so that no water can flow from the water pipes supposed to be inserted into the bells or sockets *a, a, a, a,* through the case or pot in which they meet. It will be seen too that upon raising the conical plug
50 *f, f,* by the screw *g, g,* the water will be free to flow out of or into any of these pipes through the conical pot which connects them. Thus by the action of a single screw lifting
55 or depressing a single plug valve four or more waterpipes are stopped or opened at the same time. A cylindrical case of cast iron *b, b,* or
60 of other metal cast with and forming one

piece with the conical pot and having a flange *c, c,* around its upper orifice for the attachment of a cover, *z,* with stuffing box *y, &c.* as shown in Fig. 10 completes with the parts before described a four way stop cock suitable
70 for use upon the intersection of distributing mains or pipes for distributing water in cities or villages or buildings, and which will in practical use give as complete a command of the water in the four or more pipes
75 meeting in the body of this stop cock as would be obtained by a number of stop cocks of the ordinary construction equal to the number of pipes meeting in this four way conical plug screw valve or stop cock. This
80 is the first part of my invention or improvement. To complete it and form the four or many way stop cock and hydrant combined, I place upon the upper part of the cylindrical case *b, b,* Figs. 1, and 2, &c. a pipe *d, d,* having
85 a flange *c' c'* by which with screw bolts it is secured to the flange *c, c.* The upper part of this pipe is enlarged and has in it a stuffing box *y, y,* through which the screw *g g* passes. It has also four or more openings
90 *h, h, h, h,* of proper size and form to receive screwed nozzles or other couplings for the attachment of four or more hose for the supply of fire engines or for the delivery of water without engines when the head or
95 pressure of the water is sufficient for that purpose.

In a recess at the bottom of this pipe *d, d,* is a ring packing of leather, india rubber or other suitable material *x* which is secured in
100 place by a ring of metal *w, w,* held by screws. This packing ring is flat and its opening is of smaller interior diameter than the opening in the metal seat upon which it rests and than the cylindrical part presently
105 to be described of the valve *f, f.*

Cast with the conical plug *f, f,* and forming a part of the valve is an addition of which *e k* is a section. This portion of the valve is nearly cylindrical in form but is
110 smaller at its upper end than at its base where it is attached to the upper base of the conical plug *f, f,* being cast in one piece with it. At *e,* a brass or composition ring is firmly attached to the upper base of *f, f,* and being truly turned and fitted forms a puppet valve face whose seat is the packing ring *x x* before described. The cylindrical portion *e, k,* above this puppet valve face is notched or perforated as shown more clearly in the
120 Fig. 4 which is a development of its cylindrical surface. The notches extend from the upper base of the cylindrical part of the valve to or near to the plane of the brass or composition ring *e, e.* Now as the whole
125 valve *f f, e k, e k,* is raised by the screw *g, g,* the upper portion of this cylinder will first enter the opening of the packing ring *x x* and obstruct the flow of water by diminishing the area for its passage from the case
130

5 *b, b*, to the pipe *d, d*, through *x, x*. As *x x*
 is of smaller interior diameter than the
 larger and lower part of the surface *e, k*,
 the edge of the packing ring will press
 10 against the surface *e k* and prevent the flow
 of water except through the openings which
 the notches *e e* afford. The water finding a
 smaller passage will by the effect of the
 principle of conservation of forces move
 15 with increased velocity through these open-
 ings but the velocity of the larger streams
 in the main pipes will be gradually reduced
 by the resistance which the water meets with
 in passing with increased velocity through
 20 the diminished area of water way afforded
 by these notches.

By varying the form of the notches the
 rate at which the water is checked and gradu-
 ally brought to a state of rest can be varied.
 20 Those shown in the figures referred to
 are found in practice to be effective. If
 all these notches terminated with their lower
 angles at the same level with reference to
 the brass ring or valve face *e, e*, it is evident
 25 that in the gradual lifting of the valve *f f*
 by the screw *g g* they would all reach the
 edge of the packing ring *x x* at the same
 moment and be thus all closed at the same
 instant of time. This would produce too
 30 great a shock by suddenly stopping the flow
 of water in the mains and therefore these
 notches are made to terminate at different
 heights or levels above the valve face *e e*
 and thus instead of being all closed at once
 35 they are closed in succession. The result of
 this contrivance is that a puppet valve of 6½
 inches in diameter thus arranged can be
 closed when the water is in full play under a
 head of over one hundred and twenty feet
 40 rushing through the hydrant with great ve-
 locity without any injurious shock upon the
 pipes, but with the same safety as an ordi-
 nary slide valve on a cylindrical pipe and with
 greater safety than the common leather con-
 45 ical valve of two or three inches diameter in
 common use upon fire plugs. This I believe
 has never before been accomplished and this
 is I believe an important and valuable im-
 provement in the construction of valves or
 50 stop cocks.

The various figures represent as herein de-
 scribed the application of this valve which I
 call a slide puppet valve to hydrants placed
 upon pipes of various sizes and require no

more particular description except Figs. 11, 55
 12, 13, and 14.

Like parts are indicated by like letters
 throughout.

Figs. 11, 12, 13, 14 represent the applica-
 tion of the same principle for regulating the 60
 gradual stoppage of the flow of water to
 avoid shock to a smaller valve, though it
 may be constructed of any size desirable.
 In this case the improvement is applied to a
 service hydrant. 65

The valve is a hollow cylinder with a
 flange at its lower end turned and fitted to
 make a water tight joint upon a leather
 packing ring. The water enters into this
 hollow cylinder through four or more holes 70
 or perforations which are shown more
 plainly and on a larger scale in Fig. 13
 which is a development of the cylindrical sur-
 face of the valve. *v, v, v*, are the openings
 through which the water enters. They are 75
 angular in form at the lower ends, and as the
 drawing shows terminate at different heights
 above the valve face *e, e*, so as to be closed
 successively as the valve rises to its seat and
 thus arrest the flow of water gradually and 80
 without shock.

What I claim as my invention and desire
 to secure by Letters Patent is—

1. The combination of a barrel or slide 85
 having the contrivance for regulating the
 flow of water through the barrel or slide by
 means of serratures or notches or perfora-
 tions of proper form and extending to and
 terminating at different depths or heights
 above the seat of the puppet valve, with the 90
 puppet valve forming a slide puppet valve.

2. The combination of the conical plug or
 many way valve used as a stop-cock for gov-
 erning the distribution and flow of water at
 the intersection of two or more water mains 95
 or distributing pipes, with the serrated or
 perforated slide puppet valve for a hy-
 drant—the valves thus combined into one
 being lifted and depressed by a single screw.

3. The combination and arrangement of 100
 the various parts into a many way stop cock
 and hydrant or fire plug substantially as de-
 scribed and set forth.

M. C. MEIGS.

Witnesses:

JNO. EDWD. GONLAND,
 J. N. MACOMB.