

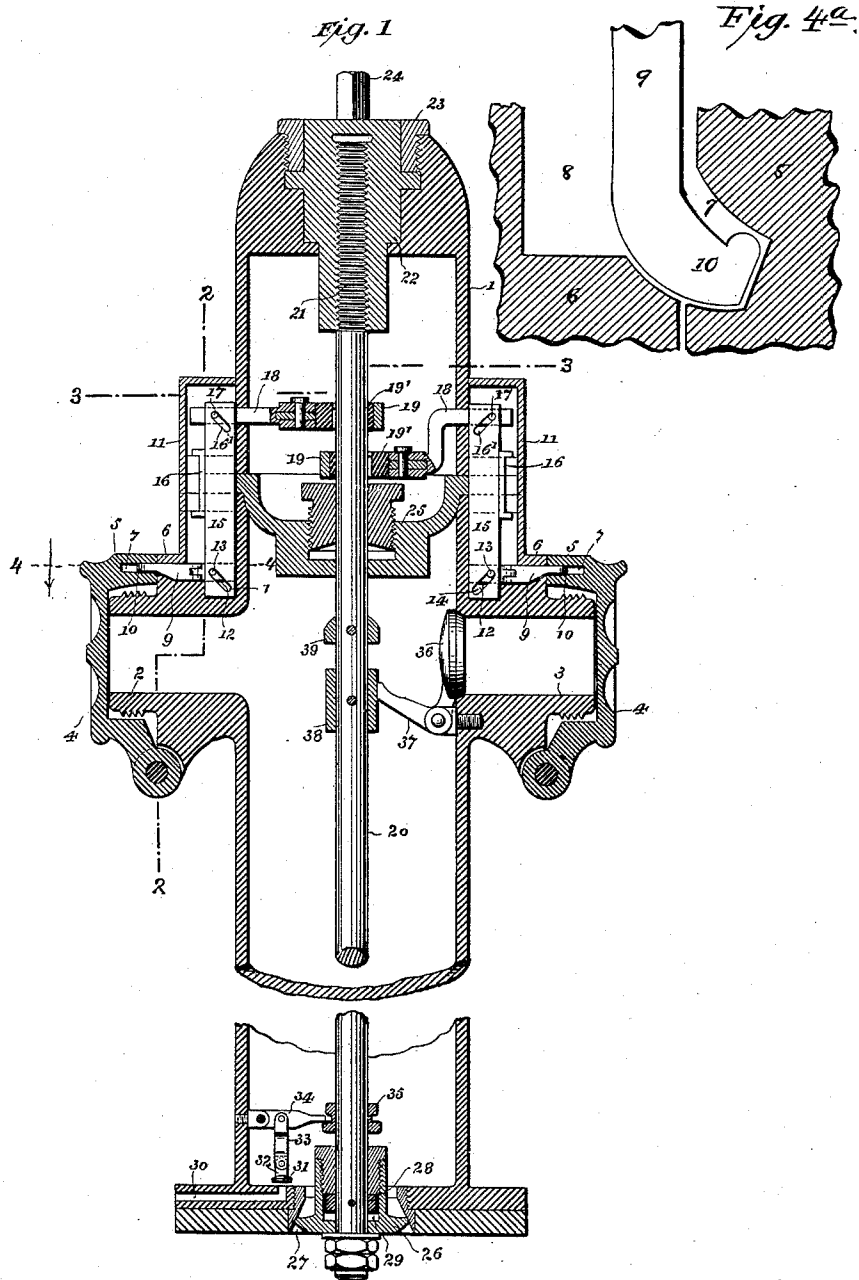
(No Model.)

2 Sheets—Sheet 1.

S. BRENTANO.
FIRE HYDRANT.

No. 468,782.

Patented Feb. 16, 1892.



Witnesses:

Raphael Netter
Barclay E. Snell

Inventor

by Simon Brentano
Arthur H. Brown
his Attorney

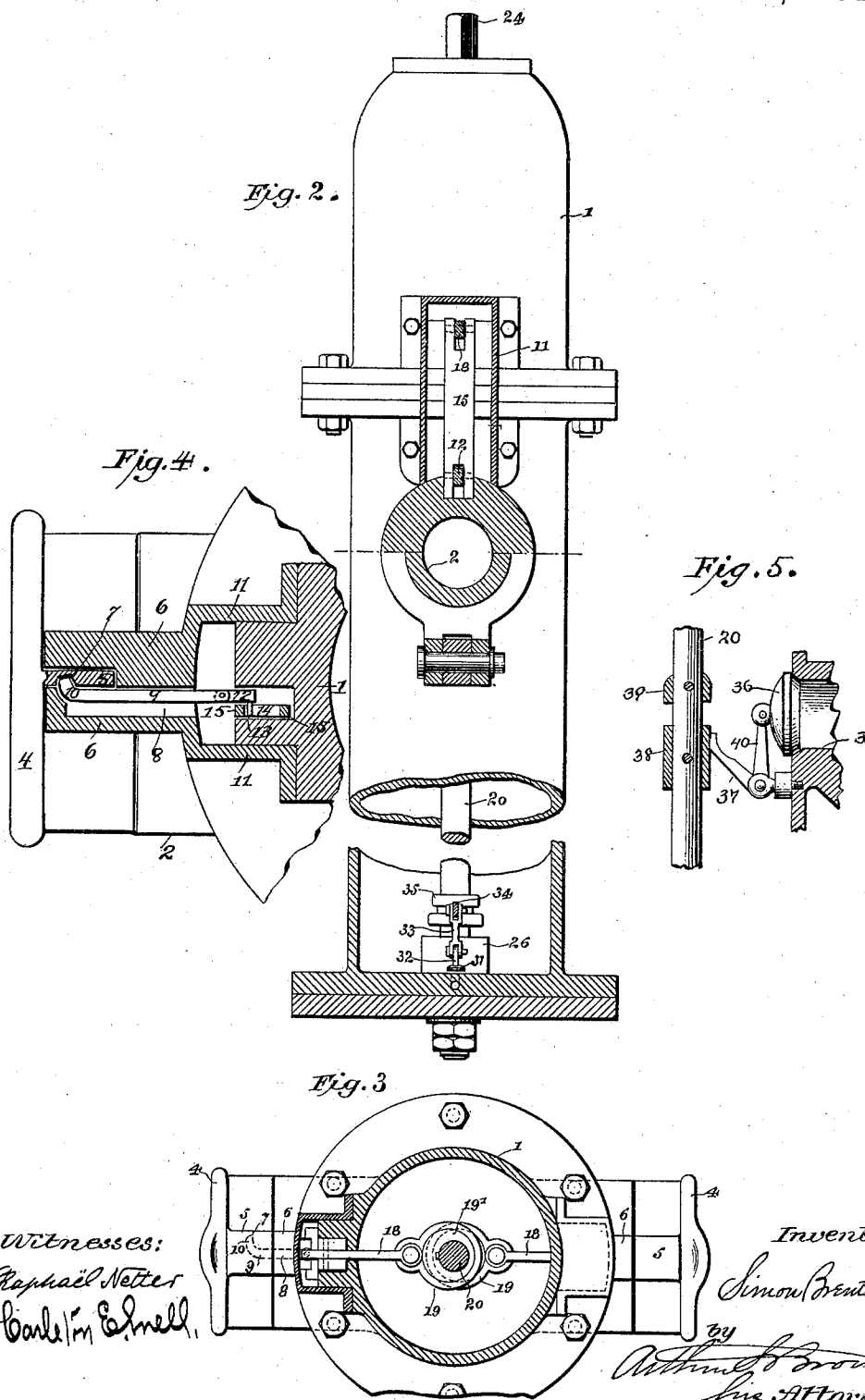
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UNITED STATES PATENT OFFICE.

SIMON BRENTANO, OF NEW YORK, N. Y.

FIRE-HYDRANT.

SPECIFICATION forming part of Letters Patent No. 468,782, dated February 16, 1892.

Application filed September 2, 1890. Serial No. 363,750. (No model.)

To all whom it may concern:

Be it known that I, SIMON BRENTANO, of the city, county, and State of New York, have invented certain new and useful Improvements in Fire-Hydrants, of which the following is a specification.

This invention relates to that class of fire-hydrants wherein, as usually constructed, screw-caps are employed, the cover is separately unfastened, and the water subsequently turned on; and the object of the invention is to reduce to a minimum the delay attendant upon opening such hydrants and to save valuable time in connecting the hose to the hydrant and in turning on the water.

In general terms the invention consists in a fire-hydrant in which unthreaded outwardly-opening caps for the hose-nozzles are employed, together with a single locking and operating mechanism, by means of which a cap is first unlocked, the water admitted after the lapse of sufficient time for the hose to be connected. A second cap is then in turn unlocked for the connection of a second hose, and a valve is then subsequently opened for the passage of water through the nozzle, cooperating with the second cap.

The improvements are illustrated in the accompanying drawings, wherein—

Figure 1 is a central vertical section of a hydrant containing the improvements. Fig. 2 is a front elevation of the same, partly in section and broken away. Fig. 3 is a horizontal section in a plane indicated by the line 3 3 in Fig. 1. Fig. 4 is a partial longitudinal section in a plane indicated by the line 4 4 in Fig. 1. Fig. 4^a is a detail sectional view showing the locking-bolt on an enlarged scale. Fig. 5 is a fragmentary vertical section showing a modification of the interior valve which closes the outlet to one of the nozzles.

1 indicates a fire-hydrant having two screw-threaded ports or nozzles 2 and 3, as shown. Any greater number of the nozzles may be provided, if desired.

Instead of the usual form of screw-cap which is ordinarily employed fitting over the hose-nozzle, (which consumes valuable time in the haste incident to a fire to unscrew, and which is also liable to become jammed or stuck by violence or by the changes in temperature,) unthreaded outwardly-opening caps 4 are employed to cover the ports or nozzles 2 and 3, the caps being hinged to the un-

der side of the ports, so as to swing down automatically upon being unlocked. If desired, the caps may be hinged to swing laterally; but the downwardly-swinging caps are preferable.

Each cap 4 is formed with an upwardly-extending portion or lug 5, which, when the cap is closed, seats against a corresponding upwardly-extending projection 6 on the cooperating port. Formed in the upwardly-extending portion 5 is an L-shaped slot or passage-way 7, which registers with a slot or passage-way 8 in the upwardly-extending projection 6.

Within each of the slots 8 is located a locking-bolt 9, having a curved outer end 10 adapted to move laterally into the slot 7 in the lug 5 and so lock the cap 4 in its closed position. The width of the slots 7 and 8 is such that as the bolt therein is moved forward or retracted there will be room for its lateral play in engaging or disengaging the outer angular end of the slot 7 as the bolt slides in the slot 8.

The preferred shapes of the slots 7 and 8, and the preferred shape of the locking end 10 of the bolt 9, are shown in Fig. 4^a. A somewhat modified construction in these respects is shown in Fig. 4.

Each slot 8 communicates with the interior of a vertical casing 11, located on the hydrant above each port or nozzle, and the inner end of each bolt 9 is pivoted to a horizontally-sliding bar 12, located within the casing. Each bar 12 is provided with a laterally and horizontally projecting pin 13, which engages an inclined slot or way 14, formed in the lower end of a vertically-movable bar 15, located in the casing 11.

Each of the bars 15 is guided between one of the sides of its casing 11 and guide-strips 16, and is formed with an inclined slot or way 16' near its upper end, which is engaged by a pin 17, extending laterally from a horizontally-sliding bar 18 projecting through a passage-way or aperture in the wall of the hydrant. This bar 18 is bolted to a ring embracing an eccentric 19', which is carried by a vertical shaft or rod 20 within the hydrant-casing. The two eccentrics are connected to the shaft by splines, so that the shaft can move vertically without moving the eccentrics with it.

The shaft or rod 20, which is employed to operate the locking-bolts 9, the water-supply

valve, &c., extends through the interior of the hydrant from top to bottom, and has a screw-threaded portion 21 adjacent to its upper end, which engages a corresponding female-threaded socket in a plug 22, mounted in the top of the hydrant, whereby the shaft or rod 20 as it is turned is also lowered or raised. The plug 22 is secured in place by a nut 23, and the upper projecting end of the shaft or rod 20 is formed with a wrench-boss 24 for the application of a key or wrench to operate the shaft.

Beneath the eccentrics 19' is located a stuffing-box 25, through which the shaft 20 passes. The stuffing-box 25 is carried by a partition, which separates the water-chamber of the hydrant from the upper part. It will readily be seen that upon turning the shaft 20 so as to lower the same the eccentrics 19' will also be turned and will act on the rings 19 to slide the bars 18 inwardly, which in turn raise the bars 15 and retract the bolts 9, thereby unlocking the caps 4.

At the lower end of the shaft or rod 20 is mounted a plug-valve 26, serving as the water-supply valve and fitting into a port or opening 27 in the bottom of the hydrant. In order that the valve 26 may not be opened until after opportunity has been given for a hose to be secured to the port or nozzle 2, a collar 28 is secured to the shaft 20, and is located (when the shaft is in its upper normal position) in the upper end of a chamber 29 in the valve 26. As the shaft 20 is moved down in its rotation the collar 28 is carried down with it to the bottom of the chamber 29 in valve 26, the rod meanwhile acting on the eccentrics 19' to unlock the bolts 9. Upon the further rotation of the shaft 20 the collar 28 bears against the bottom of chamber 29. The valve 26 is thereby unseated and the water is admitted to the hydrant, a hose having been in the meantime attached to port 2. As the main valve 26 is opened, the waste-passage 30 is closed by an auxiliary valve 31, which is suspended by pivoted links 32 and 33 to an arm 34, pivoted to the interior wall of the hydrant and having its free end engaging a peripheral groove in a fixed collar 35 on the shaft 20, said collar being located at a suitable distance above the valve 26. As the shaft 20 descends the collar 35, engaging arm 34, moves it down and causes the valve 31 to close passage 30.

36 is an internally-opening valve closing the inner orifice of the port or nozzle 3 to prevent the escape of water through the nozzle. The valve 36 is held in its normal closed position by means of an arm 37, the inner end of which rests against the surface of a sleeve 38, fixed on the shaft or rod 20. As shown in Fig. 1, the arm 37 is rigidly connected with the valve 36, which is pivotally connected with the casing. The center of gravity of the valve 36 and the arm 37 is back of the pivotal point of the arm 37, so that if the sleeve 38 were not present, as in Fig. 1, the valve would

automatically open by gravity. As the shaft 20 descends, the sleeve 38 is carried below the end of arm 37 and the latter drops back into the annular space or recess between the sleeve 38 and a collar 39, thus opening the valve 36. As the shaft 20 descends still farther the collar 39, encounters the end of the arm 37 and presses the same down far enough to open the valve 36 to its full extent. When the shaft 20 has thus been lowered to open the water-supply valve 26 to its full extent, the collar 39 is above and in contact with the arm 37, so that the valve 36 is prevented from being closed by the water-pressure. The movement just described takes place after the water has been admitted to the hydrant and after opportunity has been given to attach a hose to the port or nozzle 3, but before the hydrant has been filled with water, and consequently before the water-pressure can prevent the valve 36 dropping open by gravity. It will be noted that the peripheral groove between the sleeve 38 and the collar, rib, or projection 39 constitutes in effect a recess in the shaft or rod, so that normally the arm 37 rests against a portion of the shaft or rod, drops into said recess when the shaft is lowered, and is swung down and held open by the upper margin of the recess acting upon the arm. It will readily be understood that a reverse movement of the shaft 20 will close the valves 36 and 26, open the valve 31, and cause the bolts 9 to lock the caps 4, they having been lifted into their closed positions.

In operation the hose may be quickly attached to the hydrant, as upon turning the shaft 20 slightly with a key or wrench the caps 4 are unlocked and drop out of the way. A hose is then attached to port 2. A further turn of the rod opens the water-supply valve and admits the water. A hose may then be attached to port 3, and a further turn of rod 20 opens valve 36, and water is discharged through port 3, or, if two firemen are at the hydrant one can turn the shaft 20 continuously and the other will have time to attach hose in succession at both nozzles before the water flows therethrough.

While I have described the specific mechanism for unlocking the caps and operating the valves, I do not desire to confine myself thereto, as other suitable mechanism may be employed. As an example of a feasible modification, Fig. 5 shows a different construction of the valve 36, which in some respects is preferable to that shown in Fig. 1. In this modification the arm 37 is one arm of an elbow-lever which is pivoted to the casing. To the other arm 40 of the lever the valve 36 is pivoted at its center. This construction enables the valve to seat squarely and evenly against its seat.

I lay no broad claim in this application for the particular form of cap shown and locking mechanism connected therewith, as that matter is embraced in another application filed by me August 8, 1890, Serial No. 361,416.

Having described my invention, what I claim is—

1. In a fire-hydrant, a water-supply valve, a hose port or nozzle, and an outwardly-opening unthreaded cap normally closing said nozzle, in combination with a lock for securing the cap and a mechanism for operating both the lock and the water-supply valve, substantially as described.
2. In a fire-hydrant, a water-supply valve, a hose-nozzle, and an outwardly-opening unthreaded cap normally closing said nozzle, in combination with a lock for securing said cap and a single mechanism which in succession operates said lock to release said cap and then opens the water-supply valve, substantially as described.
3. In a fire-hydrant, a water-supply valve, a hose-nozzle, and an outwardly unthreaded cap normally closing said nozzle, in combination with a lock for securing said cap and a rotary and longitudinally-moving operating-shaft connected with and operating both said lock and said supply-valve, substantially as set forth.
4. In a fire-hydrant, a main water-supply valve, a plurality of hose-nozzles, and an outwardly-opening unthreaded cap for each of said nozzles, in combination with bolts for securing the caps, an inwardly-opening valve closing one of said nozzles, and a single mechanism for unlocking the bolts, opening the water-supply valve, and opening the inwardly-opening valve in succession, substantially as described.
5. In a fire-hydrant, a main water-supply valve, a plurality of hose-nozzles, outwardly-opening unthreaded caps for said nozzles, locking mechanisms for securing the caps, and an inwardly-opening valve closing one of the nozzles, in combination with an operating-shaft connected with said locking mechanisms, inwardly-opening valve, and water-supply valve, whereby the caps are first unlocked, the water-supply valve then opened, and the inwardly-opening valve then opened, substantially as described.
6. In a fire-hydrant, a main water-supply valve, a plurality of hose-nozzles, outwardly-opening unthreaded caps for said nozzles, locking mechanisms for securing the caps, and an inwardly-opening pivoted valve having an operating-arm and closing one of the ports, in combination with a rotary and longitudinally-moving operating-shaft connected with said locking mechanisms and said water-supply valve and having a sleeve against which the arm of the inwardly-opening valve bears and having a collar above the sleeve to engage and operate the arm, whereby the caps are first unlocked, the water-supply valve then opened, and the inwardly-opening valve subsequently opened, substantially as described.
7. In a hydrant, an outwardly-opening unthreaded valve 4, having a bolt-seat 7, in combination with a rotary shaft or rod 20, an ec-

centric 19', mounted on said shaft or rod 20, a ring 19, embracing said eccentric, a laterally-movable bar 18, connected with said ring, a vertically-movable bar 15, having inclined slots 16' and 14, a bolt 9, engaging seat 7, having a slide-bar 12, connected with said bolt, and pins 17 and 13, mounted on bars 18 and 12, respectively, and engaging slots 16' and 14, respectively, substantially as described.

8. In a fire-hydrant, a hose-nozzle, a rotary and longitudinally-movable shaft 20, having a water-supply valve at its lower end, and the sleeve 38 and collar 39, adjacent to the inner orifice of said nozzle, said sleeve and collar being separated from each other so that there is a space or recess between them, in combination with the inwardly-opening valve 36, closing the inner orifice of said hose-nozzle, said valve having an arm bearing against the sleeve 38 in the normal position of said shaft, and said arm being acted upon by the collar 39 to operate valve 36 when said shaft is moved longitudinally to open said water-supply valve, substantially as set forth.

9. In a fire-hydrant, a hose-nozzle, a water-supply valve, and a longitudinally-movable shaft or rod having a recess therein, said shaft operating said supply-valve, said supply-valve being closed in the normal position of said shaft, in combination with an inwardly-opening valve which controls the outflow through said nozzle, said valve having an operating-arm which in the normal position of said shaft or rod seats against a portion of said shaft or rod, thereby closing said nozzle, said arm, however, dropping into said recess in the shaft or rod, thereby opening said nozzle after said shaft or rod has been moved far enough to open said water-supply valve, substantially as set forth.

10. In a fire-hydrant, a hose-nozzle and a longitudinally-moving shaft or rod having a recess therein, in combination with a pivoted inwardly-opening valve which controls the outflow through said nozzle, said valve having an operating-arm which seats against a portion of said shaft or rod and which drops into said recess when said shaft is moved, substantially as described.

11. In a fire-hydrant, a hose-nozzle and a longitudinally-movable shaft or rod having a recess therein, in combination with a pivoted elbow-lever, one arm of which bears against said shaft or rod and drops into said recess when said shaft is moved, and an inwardly-opening valve controlling the outlet of water through said nozzle, said valve being pivoted at the center to the other arm of said elbow-lever, substantially as described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

SIMON BRENTANO.

Witnesses:

M. F. GOELTZ,
A. KUSTER.