J. C. KUPFERLE & P. WHITE.

HYDRANT.

No. 182,938. Patented Oct. 3, 1876.

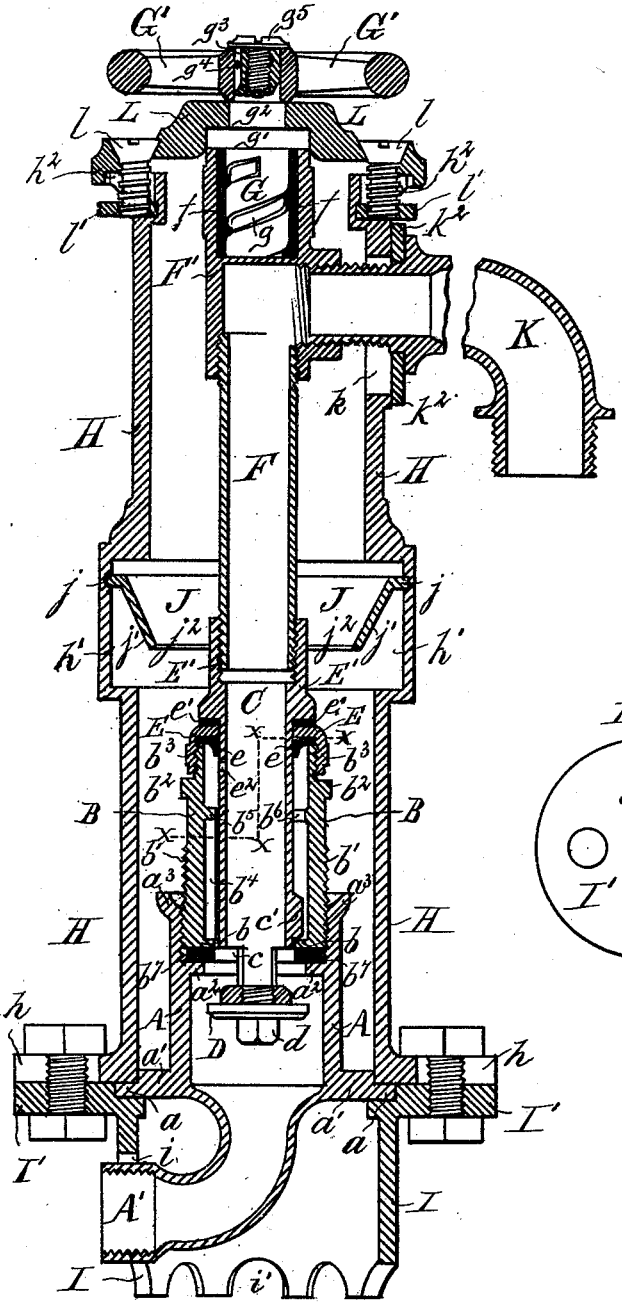


Fig. 1.

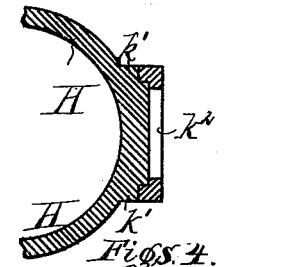
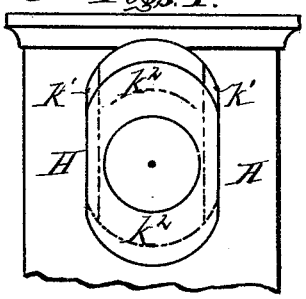


Fig. 4.



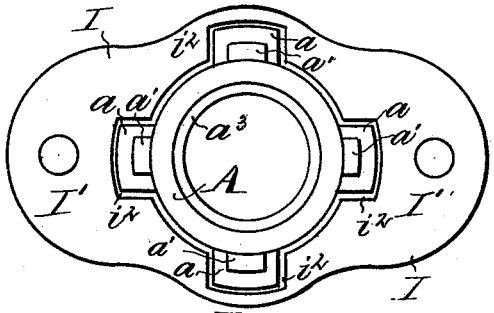


Fig. 3.

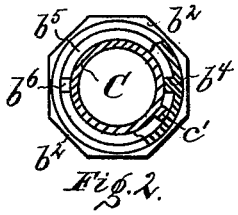


Fig. 2.

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UNITED STATES PATENT OFFICE.

JOHN C. KUPFERLE AND PETER WHITE, OF ST. LOUIS, MISSOURI.

IMPROVEMENT IN HYDRANTS.

Specification forming part of Letters Patent No. **182,938**, dated October 3, 1876; application filed July 13, 1876.

To all whom it may concern:

Be it known that we, JOHN C. KUPFERLE and PETER WHITE, both of St. Louis, Missouri, have invented an Improved Hydrant, of which the following is a specification:

This invention is an improvement in various important respects on the patent for hydrant issued to us, and dated 14th March, 1876, No. 174,824.

The nature of the present improvements consists in novel construction of parts, their combination and operation, all of which will hereinafter appear.

Of the drawing, Figure 1 is a sectional elevation. Fig. 2 is a cross-section on line *x x* of Fig. 1. Fig. 3 is a top plan of foot-piece containing the shell of the pump. Fig. 4 represents details, each showing adjustable attachment of discharge-nozzle.

A is the body or shell of the pump proper. A′ is the inlet-pipe, connecting to body A. We form the shell A to have projecting lugs, as at *a* a^1, (see Figs. 1, 3,) the purpose of which will hereafter appear. Within the shell A we form the valve-seat a^2 and upper threads, terminating with the flaring flange a^3. (See Fig. 1.) This flange is to guide and center the action of valve-stem and its parts when the latter is to be taken out or replaced from the pump. B is the body-cylinder. This, at bottom, has an annular seat, *b*—the threads at b^1, the shoulder at b^2, the upper threads, b^3. Within, the cylinder has a rib, b^4, extending between the seat *b* and an upper shoulder, b^5, this latter further having an open space at b^6. (All shown in Figs. 1, 2.) The seat *b* is to secure between it and the valve-seat a^2 a leather washer or packing, b^7. (See Fig. 1.) The threads b^1 are to connect the cylinder B to the part of the pump A. The shoulder b^2 and threads b^3 are to secure the cap of valve-stem to cylinder B. The rib b^4 is to form a hold for a further lug on valve-stem, to engage for purposes of screwing or unscrewing said valve-stem and its parts; also the cylinder B from the shell A of the pump. The shoulder b^5 guides the action of stem in the cylinder. C is the valve-stem, made hollow to afford the required upward passage of the water. Near bottom this stem has inlet-openings *c*. At c^1 is the lug to engage the rib in the cylinder for the purpose just stated. D is the valve proper. *d* is the stem projecting below; also at top of valve, and, by its threads, connects to bottom of valve-stem.

Now, to secure the parts already described in operative position, the lug of the valve-stem must be brought in line with the lug-opening in the shoulder b^5 of the cylinder B. This latter can then be slipped on the stem. The washer b^7 is next placed between the seats a^2 *b*, and the valve D, by its stem, next screwed on the end of the valve-stem, and all said parts can be readily seated, as shown in Fig. 1, by screwing the cylinder B on the shell A. It will therefore be noted that, by means of the lug on valve-stem and the rib in the cylinder B, said valve-stem and its parts (also the cylinder B) can readily be connected or disconnected from the shell A, and removed from same, as well as from the boxing, without the necessity of disturbing the shell A, or disconnecting the inlet-pipe A′, or removing the boxing or housing, that contains all said parts, out of the ground.

E is a cap provided with an inner cup-shaped packing, *e*, (see Fig. 1,) to form the needed tight joint between valve-stem and top of the cylinder B, to which said cap, by its thread, connects. Between the cap E and a sleeve-coupling, E′, is a washer, e^1, surrounding valve-stem, and which forms joint for the waste, the cap below, by its packing *e*, preventing the return of waste into valve-stem. The portion of the waste-aperture e^2 in valve-stem is, therefore, as shown in Fig. 1, and so that on the downstroke of valve-stem and inlet of water-pressure to pass through hydrant, said waste will be closed, being below packing and cap E. (See Fig. 1.) But when the hydrant is closed, or valve is seated by the return to first position of valve-stem, said waste will be above said cap E, and between it and the packing e^1, thus allowing the waste water to pass freely down the boxing, or outside of the operating parts, and escape in the ground. The sleeve-coupling E′ serves to unite the discharge-pipe F to valve-stem. F′ is a further sleeve-coupling, screwed to top of the pipe F.

As seen in Fig. 1, our hydrant is operated by a hand-screw instead of lever attachment, as in our former patent. The pitch of form-

ing the screw-stem is, therefore, important, since the reciprocation of the valve-stem should be as short a stroke as possible. As shown in Fig. 1, the threads of the stem are large, with wide pitch, and it is our purpose to lessen the time, expense, and labor incurred in case the corresponding threads that are to be provided in the socket of the coupling F^1 were cut and expressly made in manner usual in providing screw-threads. Hence, we fill in the coupling F′ with Babbitt metal *f*, after the hand screw-stem has been run down in the seat of said coupling, and the corresponding threads for same will thus be formed, and that in a most quick, equally as effective, and durable a manner. G is the hand screw-stem, formed with threads *g* and shoulders g^1 g^2. (See Fig. 1.) The threads engage the coupling F′. The shoulder g^1 is to abut against the cover of the housing, (see Fig. 1,) while that of g^2 is to form a bearing for the hand-wheel. The stem G has further a groove at g^3, while a screw-socket terminates the top end of said stem.

G′ is the hand-wheel. This has a pin, g^4, to engage the groove g^3. g^5 is the set-screw that secures hand-wheel at the top of the stem. To secure the stem, hand-wheel, &c., the pin of this latter should be brought in line with the groove of the former. This done, seat the wheel flush on the upper shoulder g^2, and secure the top by the screw g^5, and as shown in Fig. 1. It is, therefore, by turning the hand-screw that the valve-stem is caused to open and close the hydrant, and it will be noted that in so doing the hand-wheel abuts against the shoulder g^2 on the upstroke of the stem, and on the downstroke the top face or shoulder of g^1 abuts against the under face of the cap L.

H is the housing. This has the improved features, as follows: The constructive shape of the housing can be, as shown in Fig. 1, to present at bottom flanges *h*, chamber h^1 near center, and at top the shoulder h^2. The bottom flanges of the housing are to couple same to a foot-piece, I. This foot-piece I is the lower extension of the housing proper, but its constructive design and purpose is to secure the shell A of the pump and its inlet-pipe in proper position, and hold said parts so that same cannot be changed out of true line or position during the insertion of or operation of the valve-stem and its parts. Further, the foot-piece is also to enable the discharge-pipe to be directed either side, and otherwise to form a safe and more permanent seat for the hydrant-box. The foot-piece I, therefore, consists, besides its body-cylinder, of a flanged top, I′, (see Figs. 1 and 3,) pipe-opening at *i*, edge-openings i^1, and recesses at i^2. (All shown in said figures.) The flanged top is to secure the bottom of housing H to the foot-piece I by bolts. (See Fig. 1.) The recesses at top of foot-piece are to seat the lug *a* of the shell of the pump previously alluded to. (See Figs. 1, 3.) The shell A, thus seated, is prevented from turning to one side or the other, and thus the better enables the valve-stem to be screwed or unscrewed. The inlet-pipe is also held fast at *i*, Fig. 1. In seating the housing H at top of foot-piece I, it will be noted that the lugs a^1 of the shell A engage the cylinder-body of the housing, and this can therefore be turned to one side or the other to suit the direction desired for the outlet-pipe before coupling the parts below by the screw-bolts and nuts. The edge-openings i^1 permit water and sediment to escape.

In the chamber h^1 of the housing we provide a guide, J, of the construction shown in Fig. 1. This guide is seated by its flange *j* in the side grooves in the housing. The annular sides j^1 of the guide incline to the center, but so as to leave a large open space at j^2. (See Fig. 1.) This guide must therefore be inserted from the side into its seat in the housing, and its function is, besides guiding the valve-stem and its parts, to find the shell A in the act of insertion; also is to permit a free passage for the sediment, dirt, water, &c., to pass.

In our former patent this feature was a complete funnel, seated at top of shell of the pump, and afforded no passage for the impediments that would become lodged in it, and consequently rendered ineffective the operating parts. All this is avoided by the construction of this device to be of the character shown in Fig. 1, and as just described.

K is the discharge. This pipe is screwed to the coupling connecting to valve-stem, so as to reciprocate with same. Because this pipe K must move up and down, the opening at *k*, through which it passes in the housing, is elongated, (see Fig. 1;) and further, the outside of pipe K is adjustably attached. Thus the housing H has at the sides of the opening K the shoulders k^1. (See Fig. 4.) A movable cap, k^2, is fitted along side shoulder of the pipe K, and said cap has corresponding edges at k^3, to slide on the shoulder k^1 aforesaid. The adjustability of the cap k^2 and pipe K is more clearly shown by the dotted lines in Fig. 4.

In brief, the operation of our hydrant can be stated as follows: By turning the hand-wheel, the valve-stem is lowered, its valve is open, and the pressure of the water causes same to discharge out of nozzle. At the same time that the hydrant is open the waste is closed. (See Fig. 1.) By reversing the hand-wheel the valve-stem is raised, the valve reseated, and the hydrant is closed, while the waste is permitted freely to escape.

Our hydrant possesses all the advantages of a portable hydrant that can have its operating parts disconnected from the shell of the pump without troubling the housing or disconnecting the pipe attachment below. It is non-freezing. It is entirely protected, so far as its operating parts are concerned, while in construction it is cheap, in operation most effective, and otherwise possesses advantages for use readily apparent. L is the cap to close

the hydrant top. It is secured by screw-bolts l passing through proper slots made in the shoulder h^2 of the housing, and a nut, l', secures the bolts. (All shown in Fig. 1.)

What we claim is—

1. The recesses i^2 in the foot-piece I and lugs a of the shell of the pump, combined as and for the purpose set forth.

2. The shell A, having lugs a a^1, the foot-piece I, having recesses i^2, and flange I′, the housing H, and its flange h, all combined as and for the purposes set forth.

3. The guide J, having flange j, inclined sides j^1, in combination with housing H, as and for the purposes set forth.

4. The cylinder B, having seat b, inner guide-shoulder b^5, the opening b^6, the rib b^4, the threads b^1 b^3, shoulder b^2, as and for the purpose set forth.

5. The rib b^4 in the cylinder-body B, in combination with lug c^1 on valve-stem C, as and for the purpose set forth.

6. The opening b^6 in the shoulder b^5 of the cylinder-body, as and for the purpose set forth.

7. The valve-stem C, having lug c^1, the cylinder-body B, having seat b, threads at b^1 b^3, shoulder b^2 b^5, rib b^4, opening b^6, packing b^7, the valve D, cap E, cup-leather e, shell A, having seat a^2, flange a^3, all said parts being combined to operate in the manner and for the purpose herein shown and described.

8. The cap E, packing e, in combination with cylinder B, valve-stem C, having waste e^2, as and for the purpose set forth.

9. The coupling E′, washer e^1, cap E, washer e, waste e^2, valve-stem C F, and cylinder B, said parts combined and operating with relation to the waste, in the manner and for the purpose set forth.

10. The Babbitt metal f, in combination with screw-coupling F′, and stem G, having shoulders g^1 g^2, as and for the purpose set forth.

11. The hand-wheel G′, its pin g^4, in combination with groove g^3 of stem G, having also shoulder g, as and for the purpose set forth.

12. The hand-wheel G′, its pin g^4, stem G, having groove g^3, threads g, shoulders g^1 g^2, the set-screw g^5, screw-coupling F′, and cover of housing H, all said parts being combined as and for the purpose set forth.

13. The combination of the screw g^5, hand-wheel G′, screw-stem G, coupling F′, said parts being constructed as herein shown and described, to operate in the manner and for the purpose set forth.

In testimony of said invention we have hereunto set our hands in presence of witnesses.

JOHN C. KUPFERLE.
PETER WHITE.

Witnesses:
JOHN HENGER,
WILLIAM W. HERTHEL.