

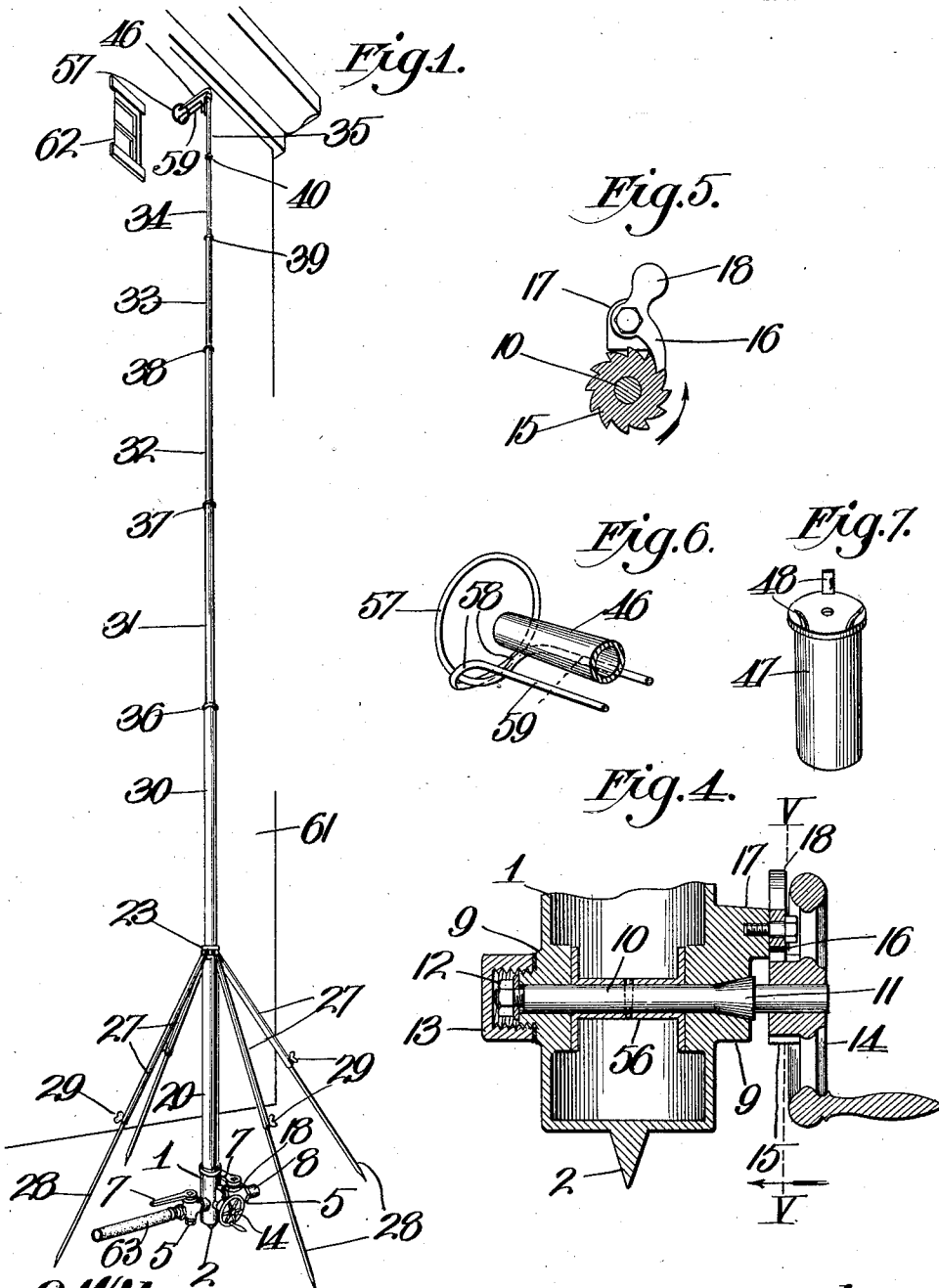
C. W. FINK.
WATER TOWER.

APPLICATION FILED MAY 19, 1911.

1,009,293.

Patented Nov. 21, 1911.

2 SHEETS—SHEET 1.

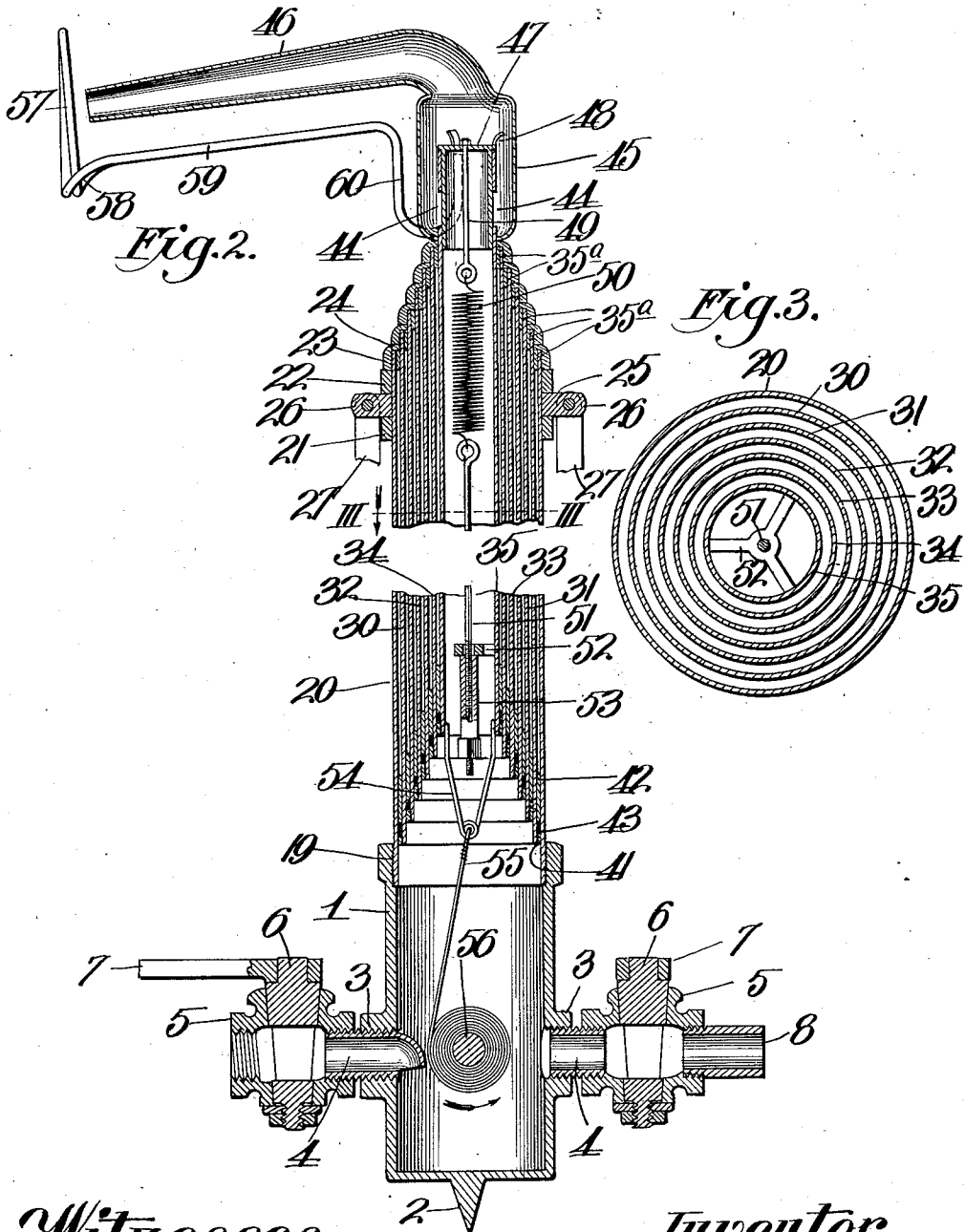


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2 SHEETS-SHEET 2.



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UNITED STATES PATENT OFFICE.

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WATER-TOWER.

1,009,293.

Specification of Letters Patent.

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Application filed May 19, 1911. Serial No. 628,238.

To all whom it may concern:

Be it known that I, CLYDE W. FINK, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Water-Towers, of which the following is a specification.

This invention relates to water towers, and has for its object to produce a telescopic tower for automatic extension by the force or pressure of the water to be discharged therefrom.

A further object is to produce a tower of the type mentioned having a valve to sustain the pressure of such water until the tower is extended the desired distance.

Another object is to provide means for arresting the extending action at any time desired to enable the water to unseat the valve and discharge at the upper end of the tower.

A still further object is to provide means for varying the resistance offered by the valve to the body of water exerting force upon it.

Another object is to provide means whereby each section of the tower shall be successively retracted within the section next below it.

Another object is to produce a tower which can be readily turned to discharge the water in any direction.

Another object is to provide means whereby the tower can be easily and quickly tilted to dispose its discharge or upper end nearer the point upon which it is desired to direct the water.

Another object is to provide the tower with a substantially horizontal nozzle and a resilient guard to protect the nozzle and the tower from injury by forcible contact of the former with the casing of a doorway or window through which it is attempted to project the nozzle.

With these and other objects in view as hereinafter appear, the invention consists in certain novel and peculiar features of construction and organization as hereinafter described and claimed; and in order that it may be fully understood reference is to be had to the accompanying drawing, in which—

Figure 1, is a perspective view of a fully extended tower embodying my invention, in operative relation to a building. Fig. 2, is an enlarged central vertical section of the

tower in folded or retracted condition. Fig. 3 is a horizontal section on the line III—III of Fig. 2, but on a larger scale. Fig. 4, is a central vertical section of the lower part of the tower, in a plane at right angles to that in which Fig. 2, is taken. Fig. 5, is a section on the line V—V of Fig. 4. Fig. 6, is a sectional perspective view of a part of the nozzle and guard therefor. Fig. 7, is a detail perspective view of the valve controlling the discharge of water from the tower.

In the said drawings, 1 indicates a cylindrical socket piece constituting the base of the tower and provided centrally with a depending stud 2, to act as an anchor and pivot for the tower, as hereinafter explained. At suitable points, the socket piece is provided with threaded openings 3, and screwed therein are short pipes 4, upon which are mounted valves 5, 6 indicating the plugs of the valves and 7 handles by which the plugs may be turned, and one of the valves is provided with a pipe 8, for convenience in discharging water from the tower when it is desired to relower or retract the same, the rapidity of such retraction being regulated and controlled by the proper manipulation of the said valve. The socket piece is also provided with opposite perforated enlargements 9, constituting journals for a horizontal shaft 10, and said shaft near one end, is provided with an enlargement 11 to prevent endwise movement of the shaft in one direction, a nut 12 screwed on the opposite end of the shaft preventing movement of the same in the opposite direction, and to guard against the escape of water around the last-named end of the shaft, a screw cap 13 is provided for engagement with the adjacent enlargement. Secured on the opposite extremity of the shaft is a hand wheel 14, and rigid with the same is a ratchet wheel 15, normally engaged by a gravity pawl 16 pivoted on a lug 17, cast with the adjacent enlargement, and said pawl is weighted at 18 at one end so that it shall occupy an inoperative position when the tower is being retracted, as hereinafter more particularly referred to.

The upper end of the bore of the socket piece is slightly enlarged at 19, and secured in the same is the lower end of a tube section 20, provided at its upper end with external collars 21 and 22, spaced a short distance apart, and above collar 22 a collar

23 is secured upon the tube section, and is provided at its upper edge with an annular flange 24 projecting inwardly beyond the inner surface of said tube section. Between
 5 collars 21 and 22, a collar 25 is pivotally mounted on the tube section and provided with a plurality of outwardly projecting ears 26 to which the upper ends of a series of legs are pivotally attached, said legs comprising tubular members 27, and rods 28
 10 fitting telescopically in members 27, and to secure the members or rods 28 at the desired points of adjustment, set screws 29 are mounted in the lower ends of members 27.

15 A series of tube sections 30, 31, 32, 33, 34 and 35, as shown are arranged in telescopic relation to each other, and the lower one 30, is arranged in telescopic relation to tube section 20, the arrangement being such
 20 that when the tube sections are fully depressed the upper extremity of each projects slightly above the corresponding extremity of the one next below, and secured upon the upper extremities of sections 30 to 34 inclusive, are collars 36, 37, 38, 39, and 40,
 25 said collars corresponding in all respects to collar 23 except that they diminish in diameter in the order enumerated, so as to fit snugly upon their respective tube sections, and when the latter are folded as hereinbefore mentioned, the collar of each tube
 30 section rests upon the collar of the underlying tube section, and thus limits the folding or downward adjustment of the sections.

35 Secured upon the lower end of each tube section except tube section 20, is a pair of spaced collars 41 and 42, and clamped between the same are packing rings 43, for establishing a liquid tight joint between each
 40 section and the section inclosing the same.

The inner or uppermost tube section 35 is provided near its upper end with one or more perforations 44, and inclosing the perforated end of said tube section is the enlarged end or hollow base 45 of a laterally projecting nozzle 46, the upper end of the
 45 said base lying above the upper extremity of section 35, a distance slightly greater than the height of the said perforations, for a purpose hereinafter explained.
 50

47 is an inverted cup valve fitting slidably in the upper end of the section 35, and, when fully depressed, resting upon the upper end of said tube section and closing
 55 the perforations 44 thereof, and projecting upwardly and outwardly from the upper extremity of said valve are arms 48, adapted when the valve is fully raised, to engage the upper end of the nozzle base 45 and prevent
 60 any possible chance of the valve being dislocated under the lifting action of the water. To hold the valve yieldingly depressed and closed, a rod 49 depends from it and is attached to the upper end of a retractile spring
 65 50, connected at its lower end to the upper

end of a rod 51, extending slidably through a spider 52, secured in tube section 35 near the lower end of the same, and engaged below said spider by a tubular nut 53, which
 70 by engagement with the underside of the spider, limits upward movement of the valve unless the spring stretches.

Soldered or otherwise secured to and depending from the lower end of the innermost tubular member 35, is a bail 54, and
 75 attached thereto is a cable 55 mounted upon a reel 56 secured on shaft 10, between the enlargements 9 of socket piece 1, the arrangement being such that the turning of the shaft in one direction winds the cable
 80 upon the drum.

A spring guard or cushion made of wire is bent to form a ring 57, hooks 58 at the bottom of the ring, a pair of arms 59 and a pair of spring loops 60 at the inner ends of the
 85 arms, the ends of the loops being secured in any suitable manner to the base 45 of the nozzle, so that the arms 59 shall occupy a plane below and at opposite sides of the nozzle, and the ring shall stand substantially
 90 concentric with and forward of the nozzle.

Assuming that the parts are in the position shown by Fig. 2, and that the tower is disposed adjacent to a building 61, into an upper window 62 of which it is desired to project a stream of water, a hose line 63 is coupled to a valve 5, or a hose line may be coupled to each valve, the hose lines being connected to any suitable source of water supply. The valve is then opened to permit the water to enter the socket piece and impinge on the bottom thereof for the purpose or more securely anchoring the tower. The water as it rises, follows the line of least resistance and concentrates its lifting
 105 force on the valve and exerts sufficient upward pressure thereon to slide section 35 upward until its collar 42 engages the internal collar 35^a at the upper end of the tube section 34, it being understood that each of the tube sections is provided with a similar collar 35^a. The collars 35^a are employed in order to provide wider bearings between adjacent tube sections to prevent one from slipping out of the upper end of the other
 115 and also to maintain them in more perfect alinement when the inner one is extended. As the collar 42 of each tube section engages the collar 35^a of the inclosing tube section, the pressure of the water on valve 47 raises
 120 said inclosing tube section, these operations being repeated until the tower is extended to the height desired, when the operator throws the pawl 16 into engagement with the ratchet wheel 15, and locks the reel from further
 125 rotation and hence arrests upward movement of the sections. As this occurs, the water pressure overcomes the resistance of spring 50 and slides valve 47 upward until its lower end uncovers openings 44 through
 130

which the water passes to and is discharged by the nozzle.

If it should be desired to project the nozzle through a window, the telescopic legs may be variably adjusted to tilt the tower toward the building, and if this operation is not performed accurately the resilient guard adjacent to the nozzle will come in contact with the window casing and prevent the nozzle from sustaining any severe shock or jar by such contact with the part mentioned. When the nozzle is projected through the window the arms 59 of the guard may rest upon the sill thereof with the hooks 58 engaging the inner edge of the sill and tend to prevent any accidental outward movement of the nozzle.

To retract or lower the tower, intake 5 is closed and the hose line connected thereto may be detached, the tower may then be restored to a substantially upright position by the readjustment of the legs. One of the valves, preferably the right hand one is then opened, and the pawl is thrown out of engagement with the ratchet wheel to permit the tower to settle to folded or retracted condition, the speed of retraction or folding being regulated and controlled by the amount of water which escapes from the valve. Wheel 14 is then turned in the direction indicated by the arrows shown in Figs. 2 and 5, to take up the slack produced in the cable by the downward or folding movement of the sections. To arrest the tower before it is completely lowered, the valve controlling the escape of the water is closed and thus leaves a body of water within the tower which will hold the same extended and should it be desired to point the nozzle in different directions the tower can be turned by utilizing point 2 as the pivot, said point also cooperating with the legs as a firm and substantial anchorage for the tower when in operation.

From the above description it will be apparent that I have produced a water tower embodying the features of advantage enumerated as desirable, and I wish it to be understood that while I have illustrated and described the preferred embodiment of the invention I do not desire to be restricted to the exact details of construction shown and described as obvious modifications will suggest themselves to one skilled in the art.

I claim:

1. A water tower comprising a socket piece, one or more valve-controlled pipes communicating therewith, a reel within the socket piece, means secured to the socket piece for turning the reel in one direction, a series of tube sections fitting one within the other, and the bottom and lower one within and secured to the socket piece, and the innermost and top one provided with one or more discharge openings above the

upper end of the section inclosing said innermost section, a nozzle provided with an enlargement at the upper end of the innermost section and in communication with said opening or openings, a valve, yielding means holding said valve normally closing said opening or openings of said section, and a flexible connection between the innermost section and said reel.

2. A water tower comprising a socket piece, one or more valve-controlled pipes communicating therewith, a reel within the socket piece, means secured to the socket piece for turning the reel in one direction, a series of tube sections fitting one within the other, and the bottom and lower one within and secured to the socket piece, and the innermost and top one provided with one or more discharge openings above the upper end of the section inclosing said innermost section, a nozzle provided with an enlargement at the upper end of the innermost section and in communication with said opening or openings, a valve, yielding means holding said valve normally closing said opening or openings of said section, a flexible connection between the innermost section and said reel, a collar pivotally inclosing the outermost or bottom tube section, telescopic legs secured to said collar and adapted to engage the ground to brace the tower in operative position, means to secure the telescopic legs at any desired point in their adjustment, and a spring guard attached to the upper end of the tower and embodying arms below and substantially parallel with the nozzle.

3. A water tower, comprising a socket piece, one or more valve-controlled pipes communicating therewith, a reel within the socket piece, means secured to the socket piece for turning the reel in one direction, a series of tube sections fitting one within the other, and the bottom and lower one within and secured to the socket piece, and the innermost and top one provided with one or more discharge openings above the upper end of the section inclosing said innermost section, a nozzle provided with an enlargement at the upper end of the innermost section and in communication with said opening or openings, a valve, yielding means holding said valve normally closing said opening or openings of said section, a flexible connection between the innermost section and said reel, a collar pivotally inclosing the outermost or bottom tube section, telescopic legs secured to said collar and adapted to engage the ground to brace the tower in operative position, means to secure the telescopic legs at any desired point in their adjustment, and a spring guard attached to the upper end of the tower and embodying arms below and substantially parallel with the nozzle, hooks at

the outer ends of the arms, a ring forward of and substantially concentric with the discharge end of the nozzle, and loops at the inner ends of the said arms.

- 5 4. A water tower, comprising a socket piece, one or more valve controlled pipes communicating therewith, a reel within the socket piece, means secured to the socket
10 piece for turning the reel in one direction, a series of tube sections fitting one within the other, and the bottom and lower one within and secured to the socket piece, and the innermost and top one provided with one or
15 more discharge openings above the upper end of the section inclosing said innermost section, a nozzle provided with an enlarge-

ment at the upper end of the innermost section and in communication with said opening or openings, a valve, yielding means holding said valve normally closing said opening or openings of said section, means
20 for varying the resistance of the valve to opening movement, and a flexible connection between the innermost section and said reel.

25 In testimony whereof I affix my signature, in the presence of two witnesses.

CLYDE W. FINK.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."