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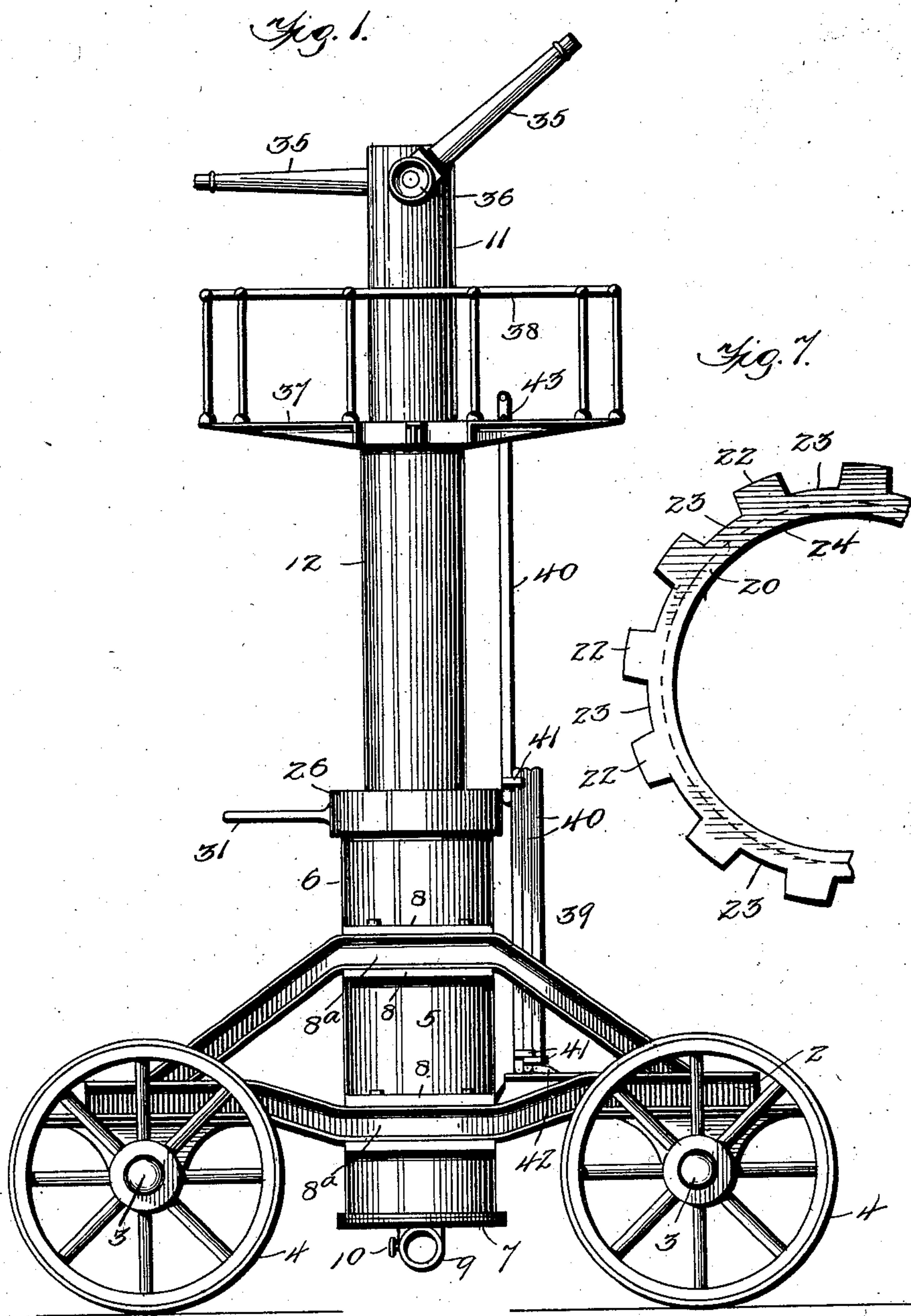
Patented Apr. 22, 1902.

T. H. HYDE & A. D. BURNS.  
WATER TOWER.

(Application filed Nov. 29, 1901.)

(No Model.)

3 Sheets—Sheet 1.



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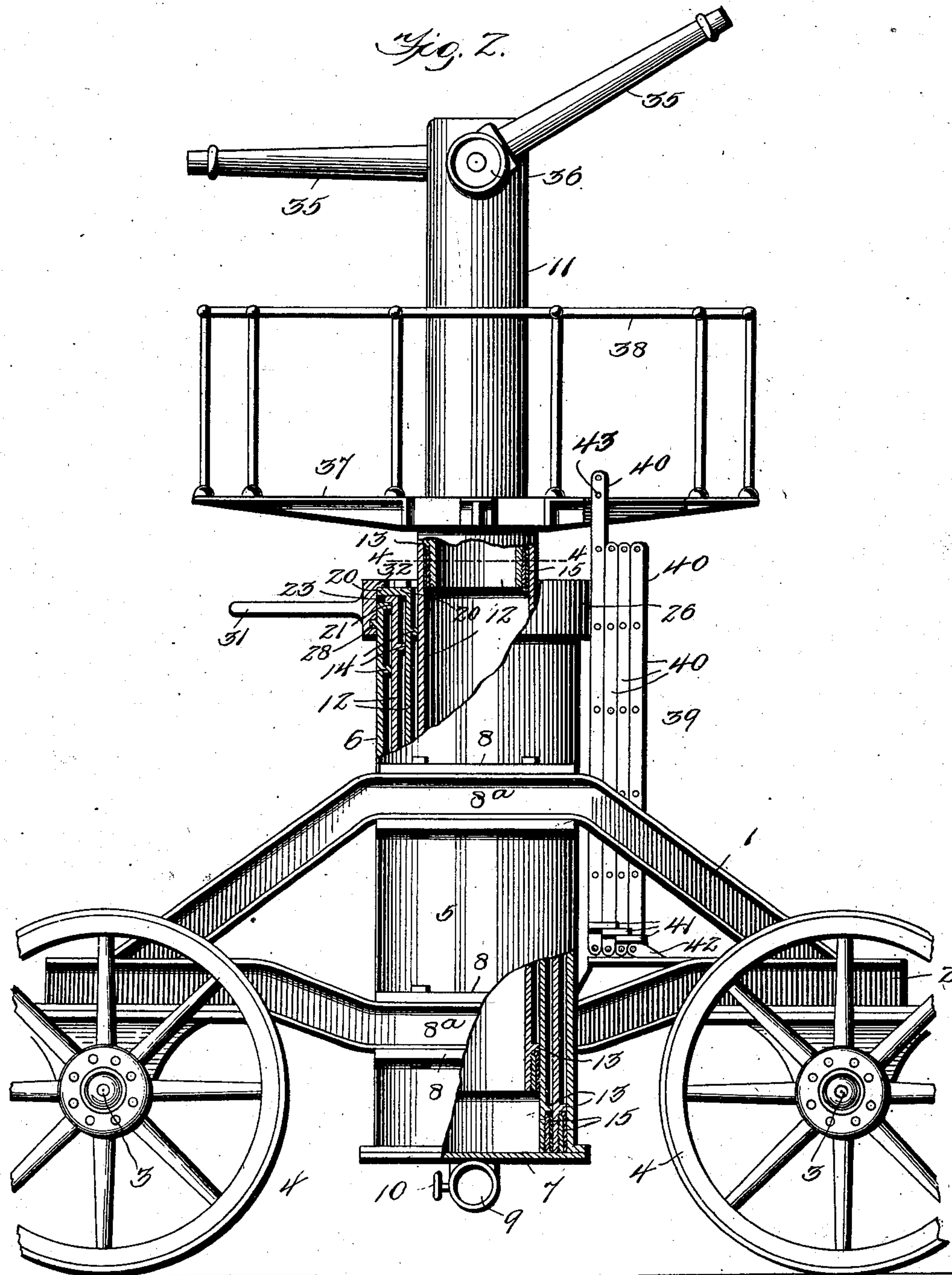
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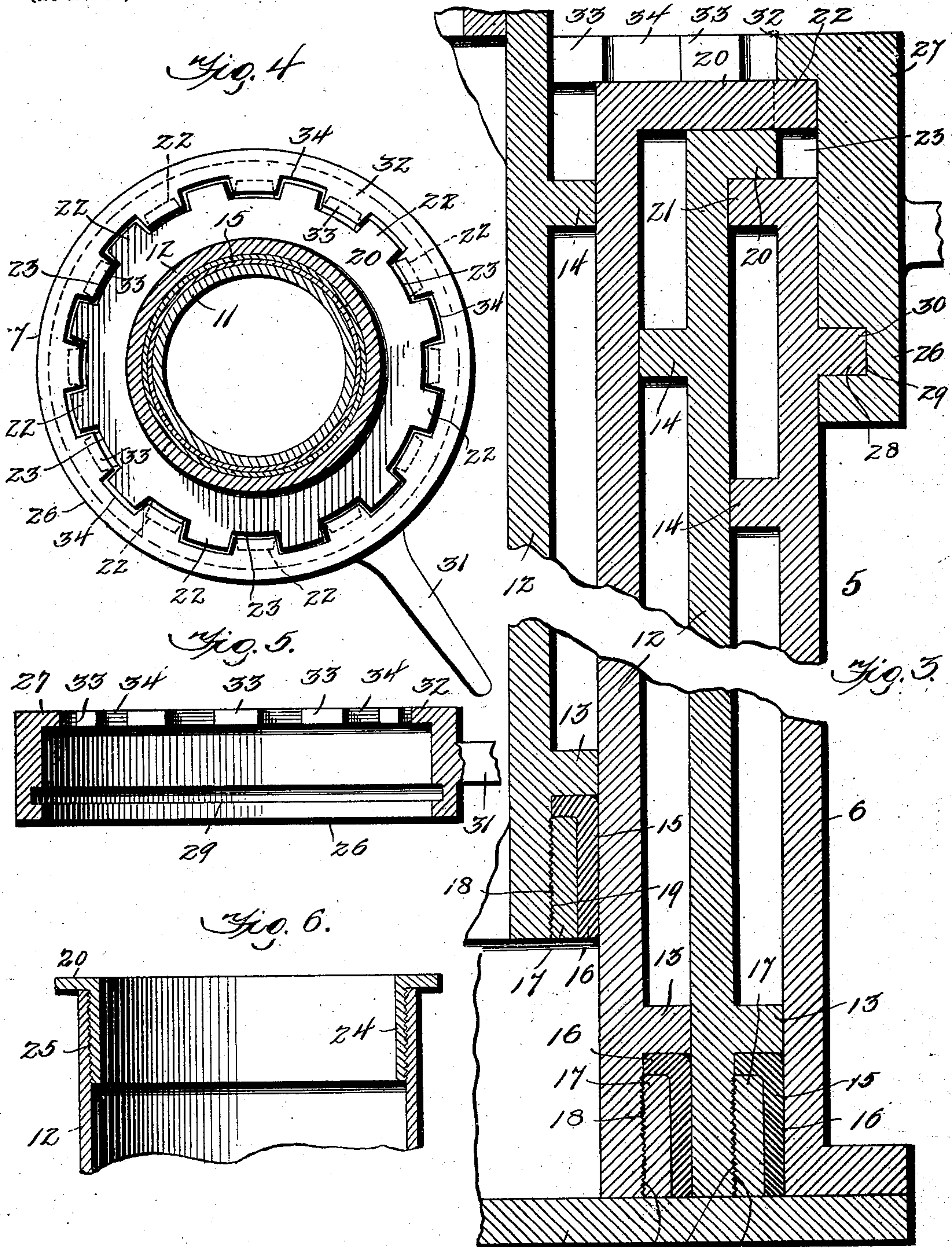
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# UNITED STATES PATENT OFFICE.

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## WATER-TOWER.

SPECIFICATION forming part of Letters Patent No. 698,284, dated April 22, 1902.

Application filed November 29, 1901. Serial No. 84,084. (No model.)

*To all whom it may concern:*

Be it known that we, THOMAS HENRY HYDE and ALLEN DEWEY BURNS, citizens of the United States, residing at Youngstown, in the county of Mahoning and State of Ohio, have invented certain new and useful Improvements in Water-Towers; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to fire-extinguishing apparatus, and has special reference to that type of apparatus commonly known as the "water-tower."

To this end the invention contemplates certain novel and practical improvements in the construction of a water-tower, rendering the same thoroughly effective in the service usually required of fire-extinguishers of that character.

As a general object the invention has in view an improved water-tower of the portable type, being capable of ready transportation to the scene of activity and also readily shiftable from one position of advantage to another, while at the same time comprising means whereby a stream or streams of water can be distributed or directed upon a conflagration at the proper working elevation. In carrying out this object the invention embodies a construction wherein the pressure of the water is utilized to effect the extension of the tower to the desired height and also involving simple and practical means whereby the height of the tower is always under ready and perfect control.

Another object of the invention is to so simplify and arrange the movable elements of the tower that the same are controllable through the medium of a single device which alone constitutes the locking and releasing means for the several telescoping sections of the telescopic standpipe of the tower.

The invention also provides a tower of such construction that one or a number of firemen can be supported in convenient and effective working position with relation to the nozzle or nozzles, and, furthermore, to associate with the extensible telescopic standpipe a suitable ladder of an extensible form which moves in unison with the tower and either becomes ex-

tended therewith when shot upward or collapsed when the tower or pipe sections resume their nested positions.

With these and many other objects in view, which will more readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts herein- after more fully described, illustrated, and claimed.

The essential features of the invention involved in the novel mounting of the tower or standpipe sections, and the novel relation of the same to the common releasing device, as well as to the ladder and other parts of the apparatus, are necessarily susceptible to considerable modification, from a structural standpoint, without departing from the spirit of the invention; but a preferred embodiment of the tower and its appurtenances is shown in the accompanying drawings, in which—

Figure 1 is a side elevation of a water-tower embodying the improvements contemplated by the present invention. Fig. 2 is an enlarged elevation, partly in section, exhibiting more clearly the nested relation of the telescoping pipe-sections of the stand-pipe and also plainly showing certain of said sections locked in their nested positions by the releasing device. Fig. 3 is an enlarged fragmentary sectional view showing the preferred structural formation and relation of the telescoping stand-pipe section. Fig. 4 is a cross-sectional view on the line 4-4, Fig. 2, showing the releasing device turned to a position for giving clearance to the holding member of one pipe-section and also showing the locking-lugs of the said releasing device disposed in the vertical plane of the catch-lugs on the holding member or flange of the next succeeding lower pipe-section. Fig. 5 is an enlarged detail sectional view of the axially movable or turning releasing device. Fig. 6 is a detail sectional view showing a structural change which may be resorted to in providing the lockable pipe-sections with a holding member or flange at the upper end. Fig. 7 is a detail plan view of the separate holding member shown in Fig. 6.

Like numerals of reference designate corresponding parts in the several figures of the drawings.



In carrying out the present invention the tower proper may be utilized in connection with any suitable form of carrier or support providing means for the ready transportation and handling thereof, as well as for firmly sustaining it in operative relation to a structure. In apparatus of this character it is customary to associate the tower with a vehicle or truck so constructed as to provide for not only the firemen, but also auxiliary fire apparatus, and therefore it will be understood that the herein-described water-tower and appurtenances may be mounted upon any approved form of vehicle. However, it has been deemed sufficient for illustrative purposes to illustrate in the drawings a simple form of supporting-frame 1. This supporting-frame is necessarily sufficiently heavy and strong for the purpose intended, and, as shown in the drawings, may consist of a frame of the diamond pattern made from channel-beams suitably united to provide the complete supporting-framework. It is also preferable that the said supporting-frame, whether of the diamond or other form, be suitably mounted upon a portable carrying-truck 2, having the axles 3, upon which are journaled vehicle-wheels 4, which permit of the tower being transported or moved in the same way as ordinary portable fire apparatus.

The important features of the invention are directly associated with the tower proper, which essentially consists of an upright telescopic stand-pipe 5, which is mounted within and supported by the frame 1. The telescopic stand-pipe 5 includes in its general organization a base-section 6, which, while in the form of a pipe, is provided at its lower end with a closing head 7 and constitutes the receiving-chamber into which the water is primarily introduced and which also is of a sufficient size to have nested therein all of the telescopic pipe-sections of which the remainder of the tower is composed. The base-section 6 of the stand-pipe may be rigidly mounted within or on the supporting-frame 1 in any suitable manner. Various expedients may be resorted to for uniting it to said frame—such, for instance, as spaced supporting-flanges 8, upon the sides thereof, receiving therebetween the horizontal side portions 8<sup>a</sup> of the diamond frame 1, and secured thereto by bolts or other fastenings—although, as stated, this mounting may be varied to suit the form of frame or other conditions without affecting the invention. The base-section 6 of the telescopic stand-pipe also has connected thereto, preferably at its lower end, an inlet-pipe connection 9, preferably fitted with a check-valve 10 of ordinary form and providing means for preventing the escape of water and holding it in the tower in the event of the hose giving out. In this connection it will of course be understood that water is admitted through the inlet 9 by means of hose connection and that any desired number of hose may be employed.

The stand-pipe as an entirety consists of a number of separate telescoping pipe-sections, including the base pipe-section 6, and any number of such pipe-sections may be employed according to the extreme height at which it may be desired to use the tower. For convenience in designating the different sections of the stand-pipe and rendering the operation of the lockable sections plain the said stand-pipe may properly be said to consist of the fixed or stationary base-section 6, a nozzle-carrying section 11, and a plurality of intermediate telescoping sections 12, cooperating with the base and nozzle sections, and all of which intermediate sections are preferably lockable and releasable with the exception of the pipe-section next succeeding and receiving the nozzle-section, although it is obvious that all of the telescoping sections may be lockable and releasable and controllable from the single releasing device hereinafter more particularly referred to. All of the said stand-pipe sections are related to each other on a true telescoping principle, and various structural modifications may be employed without affecting the telescopic action, although in the drawings the preferable construction is shown and will now be referred to.

Each of the telescoping sections of the stand-pipe, excepting the lowermost or base section 6, is provided at or contiguous to the lower end thereof with an exterior limiting-stop 13, which is designed to cooperate with and come in contact against a complementary arresting-stop 14, provided upon the inner side of the next succeeding outer section, at or within the upper end portion of said section, as may be plainly seen from Figs. 2 and 3 of the drawings. All of the pipe-sections, with the exception of the uppermost or nozzle-carrying section 11, are provided with the interior arresting-stops 14, which serve to arrest and hold from further outward movement the next succeeding inner section, which telescopes therein. The complementary stops 13 and 14 upon directly-adjacent pipe-sections may be provided in various ways—as, for instance, by counterboring the pipe-sections to produce annular shoulders; but the preferable and practicable construction is shown in the drawings to consist of forming the said stops by means of annuli or rings either integrally or separately formed and carried by the respective pipe-sections, the lower or limiting stops 13 extending annularly about the exterior of the pipe-sections and the upper or arresting stops 14 extending annularly around the interior of the pipe-sections having the same. In this construction the complementary and opposing stops 13 and 14 are necessarily disposed in the same vertical plane and constitute the sole points of bearing between adjoining pipe-sections, thus reducing the frictional surface to a minimum.

To insure proper piston and liquid-tight joints between the sliding sections of the tele-



scopie tower, each of said sections is fitted at its lower end with an exterior piston-packing 15. This piston-packing is so termed on account of the piston action of the telescoping sections, and though different kinds of packing may be employed the preferable construction is shown and consists of leather packing-cups 16, encircling the exterior of the lower ends of the sliding sections and held firmly in place against the exterior lower limiting-stop 13 through the medium of a binding-ring 17, working inside of the cup 16 and interiorly threaded, as at 18, to engage the correspondingly exteriorly threaded portion 19 of the pipe end. This provides a thoroughly-effective packed joint, which prevents leakage about the sliding joints of the pipe-sections.

An important feature of the invention resides in the provision of means for readily controlling the height of the tower when in use. This is provided for through the medium of a single releasing device, so constructed as to permit of one or a number of the pipe-sections to be released and projected out of the base-section at the will of the operator. As already stated, all of the pipe-sections, excepting the lowermost or base section, may be lockable and releasable; but it has been deemed sufficient for illustrative purposes to show all of the intermediate sections 12 as controllable through the said releasing device, with the exception of the pipe-section next succeeding and receiving the nozzle-section. In carrying out this part of the invention each lockable and releasable intermediate pipe-section 12 is provided at the upper end thereof with a holding member 20. This holding member is preferably in the form of a lug-flange extending outwardly from the said upper end of the pipe-section and lying above the inturned abutment or rest-flange 21, projected inwardly from the upper end of the lower or base section 6. The outturned lug-flanges 20 of all of the lockable sections overlie one another, and the major diameter thereof is the same as the external diameter of the base-section 6, whereby all of the said lug-flanges may cooperate with the same releasing and locking device. Each of the outturned lug-flanges 20 of the intermediate pipe-sections is formed at its periphery with a continuous circular series of catch-lugs 22, which alternate with correspondingly-shaped reentrant clearance-spaces 23, and the said clearance-spaces 23 of the holding member or flange 20 of one pipe-section are disposed out of alinement and in alternating relation with the corresponding spaces of the next adjacent holding member or flange, whereby the catch-lugs of one holding member or flange are alternately related to the catch-lugs of adjacent members or flanges, as may be plainly seen by reference to detail Figs. 3 and 4 of the drawings.

The holding members or flanges 20 may be

provided at the upper ends of the lockable pipe-sections in any suitable manner. For instance, they may be formed integrally with the pipe-section, as suggested by the illustration in some figures of the drawings, or may consist of separate parts having bushing or neck portions 24, fitting inside of the upper end of the pipe-sections and held fast therein by suitable means, such as a screw connection or joint 25. This construction is indicated in detail Figs. 6 and 7 of the drawings; but it will be obvious that in both constructions the thought is the same—namely, that of providing the lockable sections at their upper ends with outturned holding-members or lug-flanges 20, which cooperate with a single releasing device 26, loosely and rotatably mounted upon the exterior of the upper end portion of the base-section 6. The retaining device 26 is preferably in the form of a sleeve 27, fitting the exterior of the base-section and having an interlocking bearing connection 28 with the said base-section. This loose interlocking bearing connection 28 preferably consists of an internally-grooved bearing-collar 29, formed at the lower end of the sleeve 27 and receiving an annular retaining-rib 30, provided upon the exterior of the base-section. The said sleeve 27 is also preferably provided with an offstanding lever-handle 31, whereby the sleeve may be readily turned in either direction, and at its upper end the latter is further provided with an inturned lug-flange 32, overhanging the complementary flanges 20 of the lockable sections when the tower is collapsed. The said flange 32 is formed at its inner edge with a series of regularly-spaced locking-lugs 33, alternating with correspondingly-shaped clearance-spaces 34, through which may pass the catch-lugs 22 on the holding members or flanges of the said lockable sections. With the parts constructed and related as described when the tower is collapsed all of the lockable sections are secured by simply turning the releasing device 26 to bring the locking-lugs 33 thereof over the catch-lugs 22 of the uppermost holding member or flange 20. To release this holding member or flange and the pipe-section carrying the same, it is simply necessary to turn the releasing device to bring the clearance-spaces 34 thereof within the vertical plane of the lugs of said holding member, whereupon the pressure of water within the tower will immediately force the section to its highest position. However, by reason of the alternating relation of the several holding members or flanges 20 this movement of the releasing device brings the lugs thereof into interfering relation to the lugs 22 of the next lower holding member or flange, as may be plainly seen from the position of parts shown in Fig. 4. Hence the lockable sections are releasable one at a time and successively; but this operation causes no delay whatever in projecting the tower, as the second section



can be released before the first has arrived at its uppermost limit. When water is out of the tower, all of the sections become nested or collapsed within the base-section, so that the tower will occupy a compact arrangement upon its truck; but at the time of using the tower when the water is first turned on into the base-section the pressure thereof will immediately project the nozzle-bearing section and the next succeeding section to their uppermost positions, after which the lockable sections may be released one at a time as occasion may require.

The nozzle-carrying section 11 is designed to have fitted to the upper end thereof one or a plurality of distributing-nozzles 35, having swivel or other suitable joint connections 36 with the pipe-section, whereby the firemen may direct the same at any desired angle or at any required position and facilitate the manipulation of the nozzle. The pipe-section next succeeding the nozzle-carrying section has suitably fastened or built upon the upper end thereof a working platform 37 of sufficient strength to support one or more firemen and preferably provided with a guard-railing 38.

To render the apparatus completely available at all times, it has preferably associated with the telescopic stand-pipe an extension-ladder 39. This ladder may be of any suitable type adapted for the purpose and preferably consists of a plurality of slidable ladder-sections 40, having sliding stirrup or equivalent couplings 41, whereby the sections can be extended one after the other. In the present invention, however, the lowermost or base section of the ladder has a fastened connection at its lower end, as at 42, with the platform or body of the truck, while the uppermost ladder-section has a suitable connection, as at 43, with the working platform 37 of the stand-pipe, whereby the ladder will necessarily be caused to be extended and collapsed simultaneously with the stand-pipe, and thus providing at all times a ladder-way from the ground to the working platform.

From the foregoing it is thought that the construction, operation, and many advantages of the herein-described water-tower will be readily understood without further description, and it will also be understood that various changes in the form, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a water-tower, a telescopic stand-pipe having a plurality of lockable sections, and one releasing device supported in a fixed location and having locking means common to all of the lockable telescoping sections for effecting a locking thereof when nested, and also

providing for the release of the sections one at a time and successively.

2. In a water-tower, a telescopic stand-pipe having lockable telescoping sections, and a single releasing device supported in a fixed location and having locking means common to, and coöperating in a similar manner with, all of said lockable sections.

3. In a water-tower, a telescopic stand-pipe having a stationary base-section and other telescoping lockable sections, and one releasing device carried solely by the base-section and having locking means, common to all of the lockable sections, for effecting the individual locking and releasing thereof.

4. In a water-tower, the telescopic stand-pipe having a base-section and other telescoping lockable sections, and one releasing device mounted upon the upper end of the base-section and having locking means common to all of the lockable sections for effecting the individual locking and releasing thereof.

5. In a water-tower, a telescopic stand-pipe having lockable telescopic sections each provided with a holding member, and one releasing device occupying a fixed location and having locking means common to, and coöperating in a similar manner with, the holding members of all of said lockable sections.

6. In a water-tower, a telescopic stand-pipe having lockable telescoping sections provided with similar holding members overlying one another when the sections are nested or collapsed, and a single releasing device mounted to operate in a fixed plane and having locking means coacting in a similar manner with the holding members of the several sections to effect a locking of the sections when nested, and also for the release thereof one at a time and successively.

7. In a water-tower, a telescopic stand-pipe having telescoping sections provided with lug-flanges, and a single releasing device having a corresponding and complementary flange.

8. In a water-tower, a telescopic stand-pipe, having telescoping sections provided at their upper ends with outturned holding-flanges having spaced lugs, and a single releasing device having a corresponding and complementary flange.

9. In a water-tower, a telescopic stand-pipe having sections provided at their upper ends with outturned flanges having spaced lugs, the major diameter of the flanges of the different sections being the same, and a single releasing device rotatably supported and having an inturned flange overhanging those of the telescoping sections and also provided with a series of spaced lugs.

10. In a water-tower, a telescopic stand-pipe having a base-section and other sections, the latter being provided at their upper ends with outturned flanges having spaced lugs, said lugs on the adjacent flanges being alternately related, and a single releasing device consist-



ing of a sleeve rotatably supported on the base-section and having an intumed flange also provided with a series of spaced lugs.

11. In a water-tower, a telescopic stand-pipe comprising a plurality of telescoping pipe-sections, said sections being provided with cooperating complementary limiting and arresting stops, and all excepting the lowermost or base section being provided with an exterior piston-packing including a packing-cup and a detachable binding-ring.

12. In a water-tower, a telescopic stand-pipe comprising a series of telescoping sections, common means for locking all of the telescoping sections, excepting the innermost one, in their nested positions, and also for succes-

sively releasing the individual sections one at a time, said innermost section being a nozzle-bearing section, and the section next succeeding the same carrying a working platform, and an extension-ladder whose base-section is connected with the supporting-frame of the tower and whose top section is connected with said working platform, said extension-ladder being extended and collapsed simultaneously with the stand-pipe, substantially as set forth.

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