No. 617,228. Patented Jan. 3, 1899.

C. DAMM.

WATER TOWER.

(Application filed Feb. 23, 1895.)

(No Model.) 3 Sheets—Sheet 1.

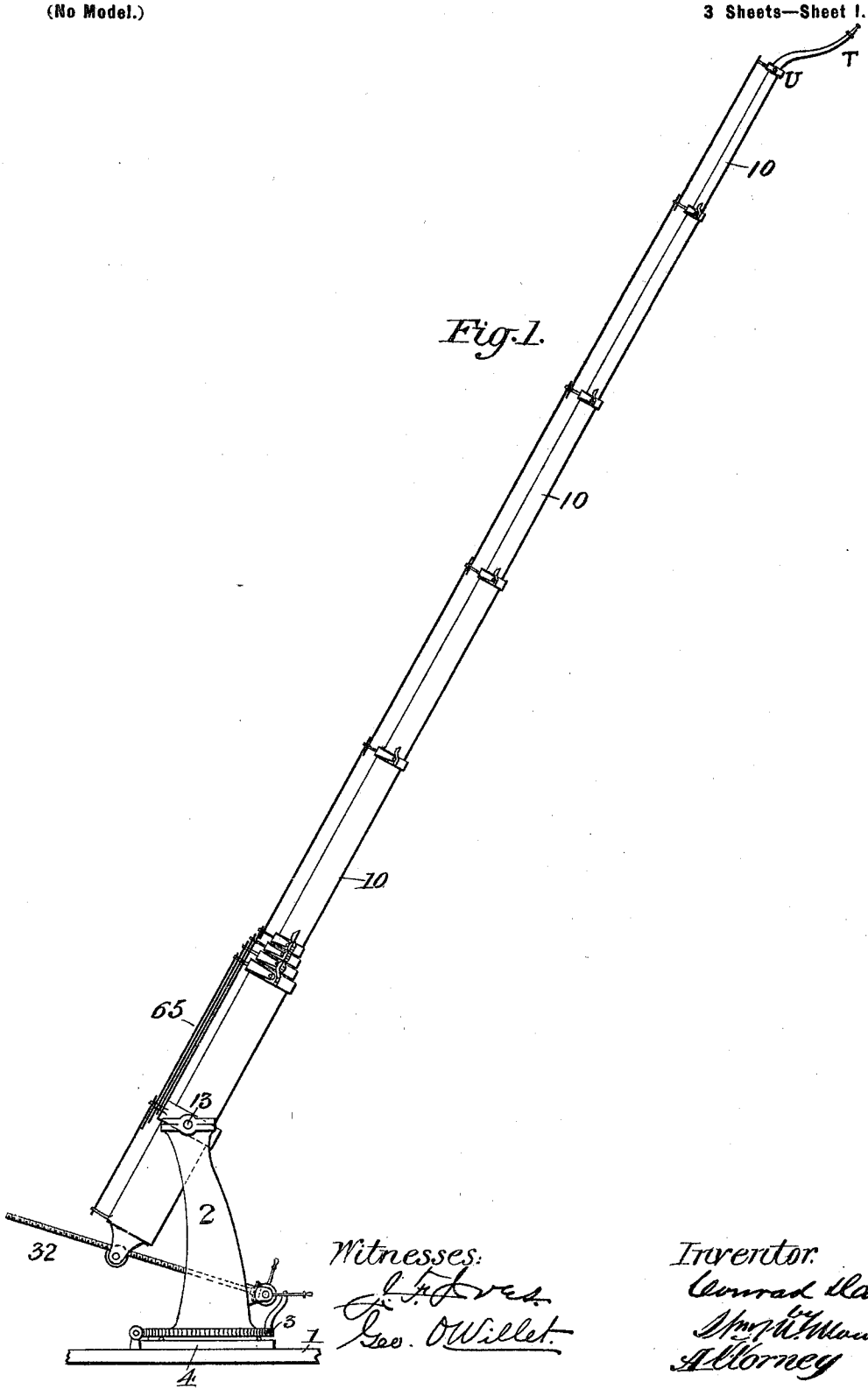


Fig. 1.

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(No Model.) 3 Sheets—Sheet 2.

Fig. 2.

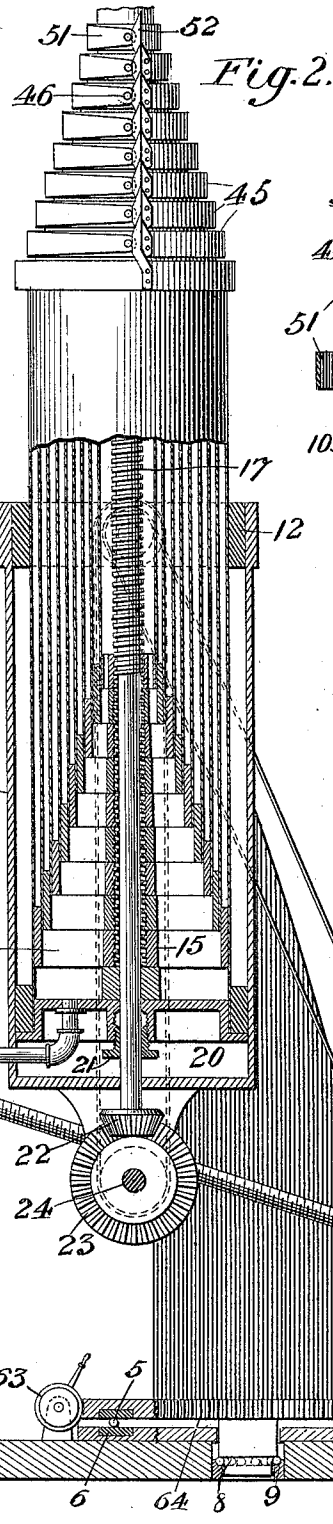


Fig. 4.

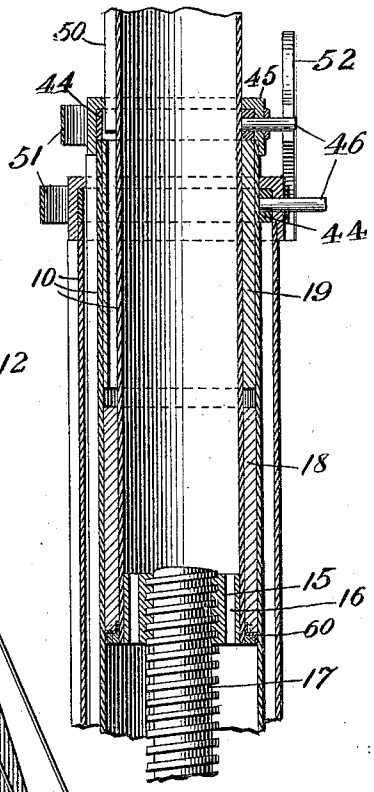


Fig. 5.

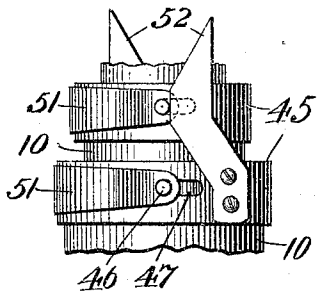
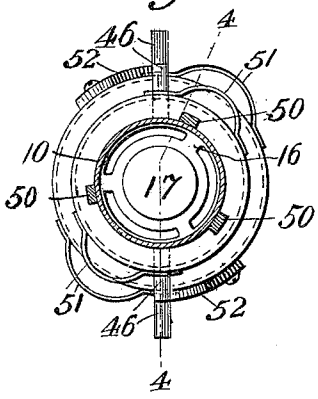


Fig. 6.



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No. 617,228. Patented Jan. 3, 1899.

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WATER TOWER.

(Application filed Feb. 28, 1895.)

(No Model.) 3 Sheets—Sheet 3.

Fig. 7.

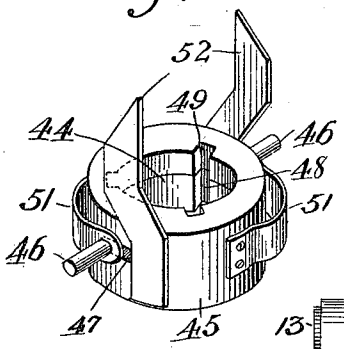


Fig. 8.

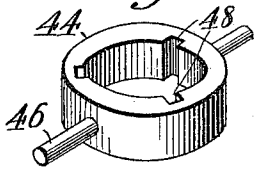
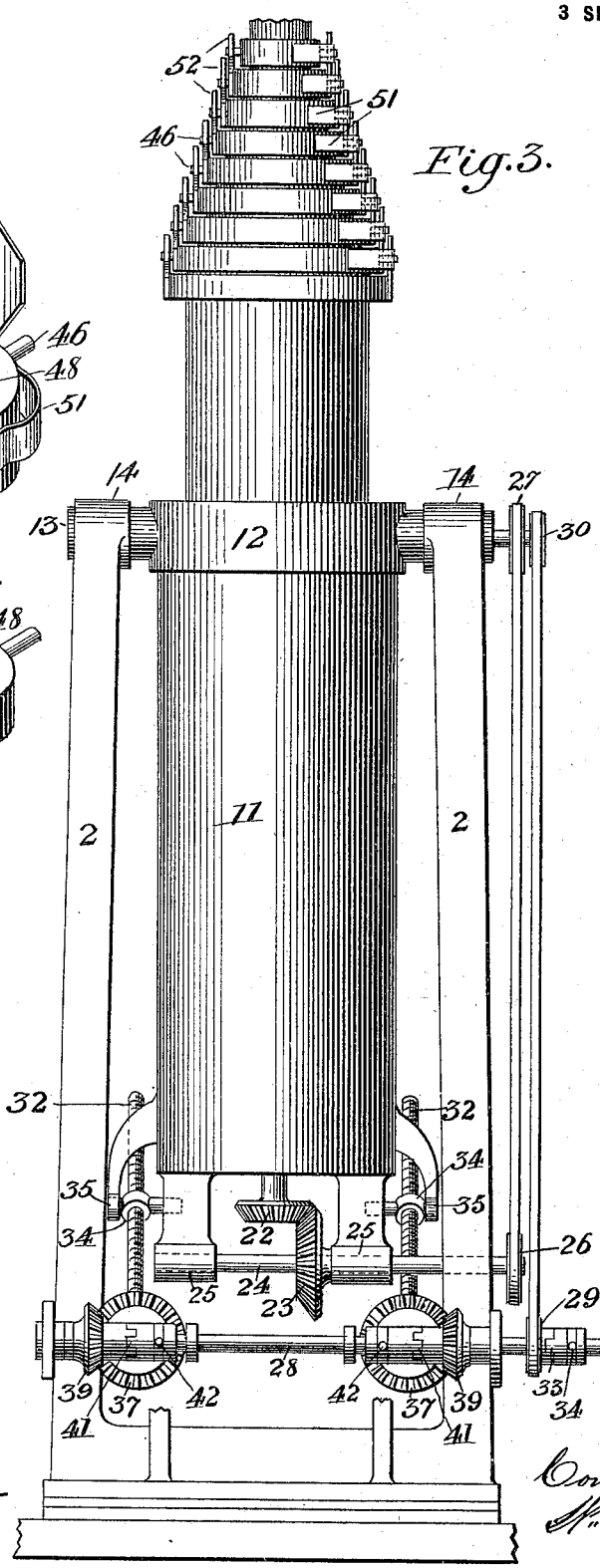


Fig. 3.



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UNITED STATES PATENT OFFICE.

CONRAD DAMM, OF CLEVELAND, OHIO.

WATER-TOWER.

SPECIFICATION forming part of Letters Patent No. 617,228, dated January 3, 1899.

Application filed February 23, 1895. Serial No. 539,524. (No model.)

To all whom it may concern:

Be it known that I, CONRAD DAMM, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, State of Ohio, have invented certain new and useful Improvements in Water-Towers, of which I hereby declare the following to be a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in sectional water-towers in which the water is introduced through the tower itself as a discharge-pipe; and the objects are to provide means for elevating and controlling the movements of the tower.

It consists in the telescoping pipe-sections with means for extending and lowering the same, and in the details of construction and arrangement of parts as hereinafter described, shown in the accompanying drawings, and specifically pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation. Fig. 2 is a side view showing the lower portion of the tubes and inclosing case in central vertical section. Fig. 3 is a rear view of the same and operating-gear. Fig. 4 is a central sectional view of the upper extremities of two tubes and lower extremity and nut in the upper or last section. Fig. 5 is a side view of the adjacent tops of two sections, showing locking cams and springs. Fig. 6 is a transverse section of upper tube, showing a plan view of the caps and locking-springs below. Fig. 7 is a perspective view of the cap over each tube-section, and Fig. 8 is a detail of locking-ring.

In the views, 1 is a portable platform, upon which are secured the standards 2 upon a common base 3, which in turn is mounted upon the lower base 4 upon rollers 5, set in the annular hardened bearings 6. The vertical bearing-stem 7 is also mounted in the sleeve 8, and rollers 9 insure easy movement.

The water-tower is composed of a series of tubes 10, adapted to telescope within each other and within the inclosing case 11. Through these tubes when extended the water flows to the terminal nozzle T, being introduced into the lower tube at U. A heavy yoke 12, provided with trunnions 13, incloses the upper end of this cover and is supported upon the standards 2 in the trunnion-bearings 14, so that the tower can swing freely at varying vertical angles. Each tube is provided at its lower extremity with the nut 15, attached by radial wings 16 to the tube-walls, thus admitting free passage of the water through the nut. Over a central screw 17 the nuts are adapted to pass, raising each tube in succession to its upper limit in the following manner: It will be seen in Figs. 2 and 4 that the nut in the upper tube is always in engagement with the screw when the tubes are closed, while the nuts on the lower tubes lie normally below the threaded portion. The screw as it revolves elevates first the upper tube and afterward the lower tubes as they are brought one by one into engagement with it. As shown in Fig. 2, each tube is provided with a sleeve 18 at its lower end, which as the tube rises engages the sleeve 19 at the upper end of the next tube and drags this tube out with it until the nut at the lower end of the second tube engages the screw and is raised thereby, each nut engaging in turn, and each tube raising the one below until the nut engages.

It would not do to have all the nuts always in engagement with the screw, since if they were all the tubes would rise exactly the same distance and no one would project beyond the rest.

20 is a head provided with a stuffing-box 21, through which the screw passes. The screw is operated by means of bevel pinion and gear 22 and 23, the gear 23 being mounted upon the shaft 24 in bearings 25. This shaft extends outside the standard and is provided with drive-wheels 26. A band passes over this wheel and over the wheel 27 upon a shaft having an axis in continuation with the axis of the trunnions, so that the tower can swing freely without interfering with the movements of the screw. From this point the movement is continued to a lower shaft 28 by means of the wheels 29 and 30 and connecting-band. A crank 31 revolves the shaft 28, which can be thrown out of gear with the driving wheels and bands to operate the erecting-screws 32, which are also operated from this shaft, as hereinafter described. This is accomplished by means of the clutch 33 and lever 34. The erecting-screws 32 pass through the nuts 36, mounted in trunnions which turn

in bearings 35, and are provided with bevel-gears 37 at their lower extremities and bearings 38, which sleeve over the shaft 28. Upon this shaft are fixed the bevel-pinions 39, which engage and revolve the gears upon the screws 32.

Clutches 41, with levers 42, operate to throw the pinions 39 in or out of gear with the shaft. These levers 42 may be connected to insure working simultaneously.

44 are rings rotatable underneath the caps 45, which are fixed upon the upper extremities of the tubes. These rings are provided with pins 46, which project through slots 47 in the caps. The rings are provided with recesses 48, through which and through similar recesses 49 in the caps splines 50 pass continuously throughout the length of the tubes and keep the tubes from turning. (See Figs. 7 and 8.) The inner rings are rotatable, so as to pass under the splines at 50 and prevent the return of the tubes as soon as the inner tube arrives at the upward limit of the stroke. This is accomplished by the springs 51, which engage the pins and are always in compression. They are secured at one end upon their respective caps. When the tubes are lowered, projecting cams 52 strike against the pins 46 and throw back the rings until the recesses 42 coincide with the splines, which of course are then able to pass downward freely. These cams are attached to every cap and operate the pins projecting through the cap of the next adjacent section above as it descends, and thus release the tube within the second section above. Each tube is released in turn in this manner except the lower tube, which does not require it.

A packing-ring is shown at 60, whereby the tubes are made water-tight.

A worm-screw 63 is employed, engaging the wheel 3 on the exterior of the upper base of the tower to rotate the same.

The advantages of this device are great, since with the positive movement of the screw the tower can be raised to any height and as many sections added as desired, and weights can be carried, such as firemen or rescued parties, from the buildings.

It will be seen that the device can be erected in a narrow space and through overhead wires or other obstructions, making it convenient for city use.

This device can be raised to any exact height required and stopped within an eighth of an inch of any given point.

In Fig. 1 is seen a sectional ladder 65, the sections of which are individually attached to the several tubes of the tower and slide past one another when the tubes are distend.

I claim—

1. In a water-tower in combination; a series of telescoping tubes provided with central nuts and water-passages; sleeves on their outer and inner extremities adapted to prevent one tube from withdrawing from another; locking mechanism adapted to secure each section to the next outer one when distended; an operating-screw adapted to engage alternately said nuts; an inclosing case for the tubes provided with trunnion-bearings, and means for operating the screw and for inclining the tower; substantially as described.

2. In a water-tower, in combination; telescoping tubes provided with terminal engaging sleeves, central nuts and continuous water-passages; a central screw constructed to engage each nut in turn as the upper tube rises; caps over the tubes; continuous splines passing through said caps but cut short at their lower extremities; locking-rings underneath said caps through openings in which said splines normally pass, and means for locking said rings underneath said splines when the tubes are fully extended, substantially as set forth.

3. In a water-tower; the combination with telescoping tubes provided with engaging-sleeves at their extremities, and central nuts connected with the walls of the tubes by radial arms; of a central screw adapted to engage said nuts in turn; locking mechanism adapted to lock each tube to the next below when distended; an inclosing case for the tubes, provided with a yoke and trunnions and a water-head and stuffing-box; bevel-gears actuating said screw, and operating-gear for the erecting-screw; all arranged substantially as and for the purpose set forth.

4. In a water-tower; the combination with telescoping tubes provided with engaging terminal sleeves; of a central erecting-screw provided with a lower smooth portion; central nuts in the tubes, the upper nut being in engagement with said screw when the tubes are closed, and the lower ones adapted to engage said screw alternately as the tubes are raised by action of the sleeves; means for operating the screw, and means for locking each tube when distended to the tube below; substantially as described.

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