

W. H. STEWART.  
STREET FLUSHING APPARATUS.  
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2 SHEETS—SHEET 1.

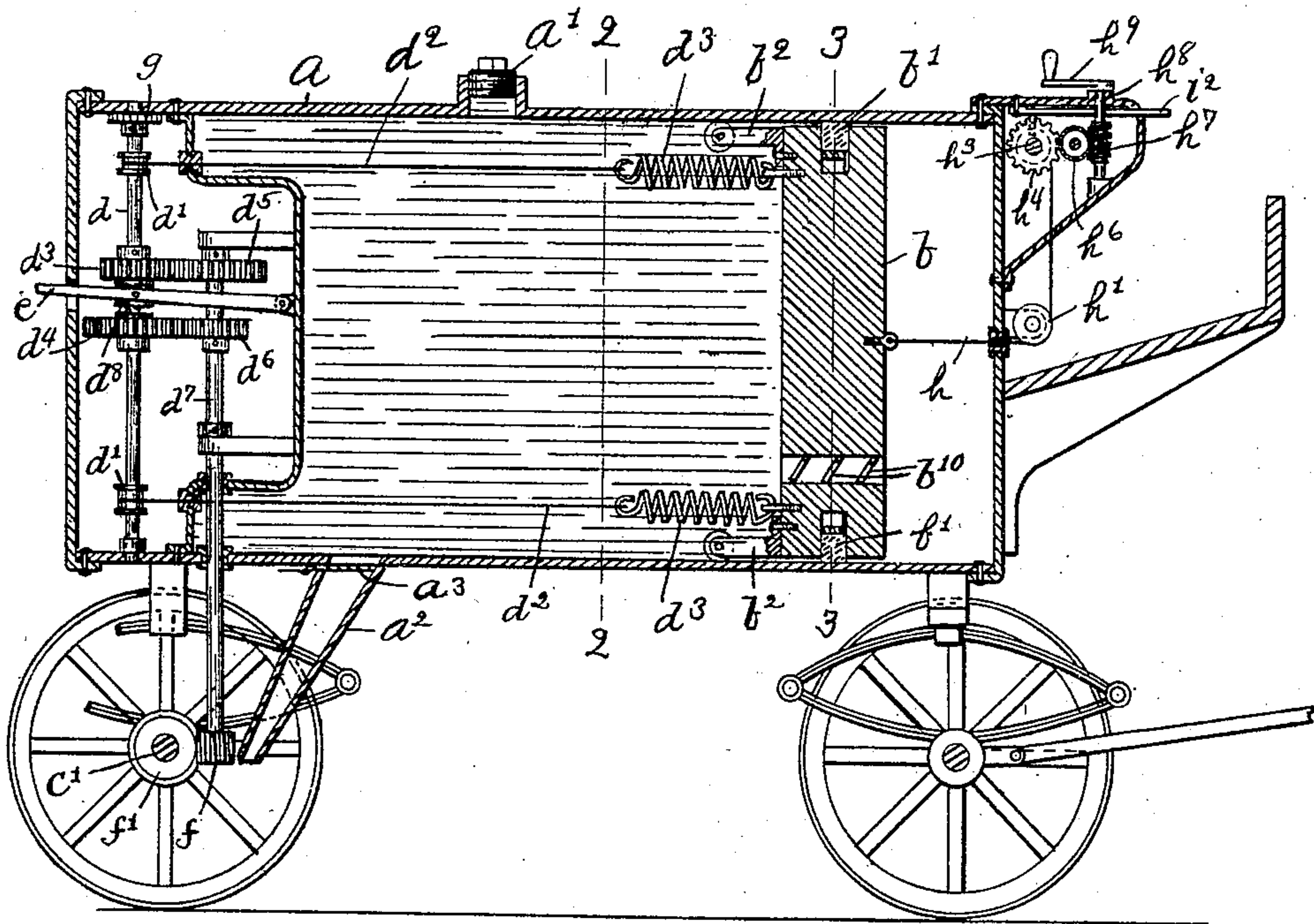


Fig. 1.

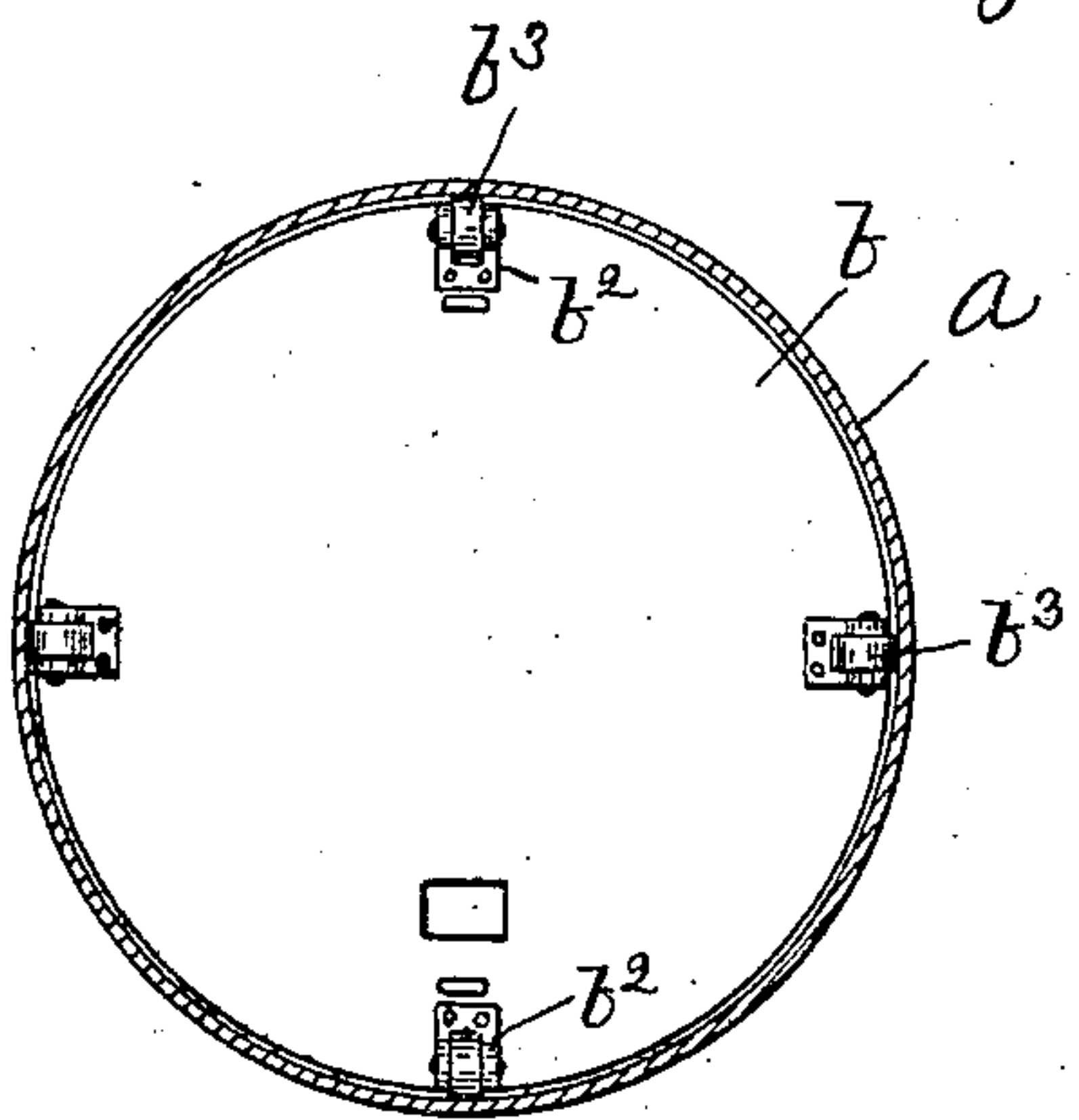


Fig. 2.

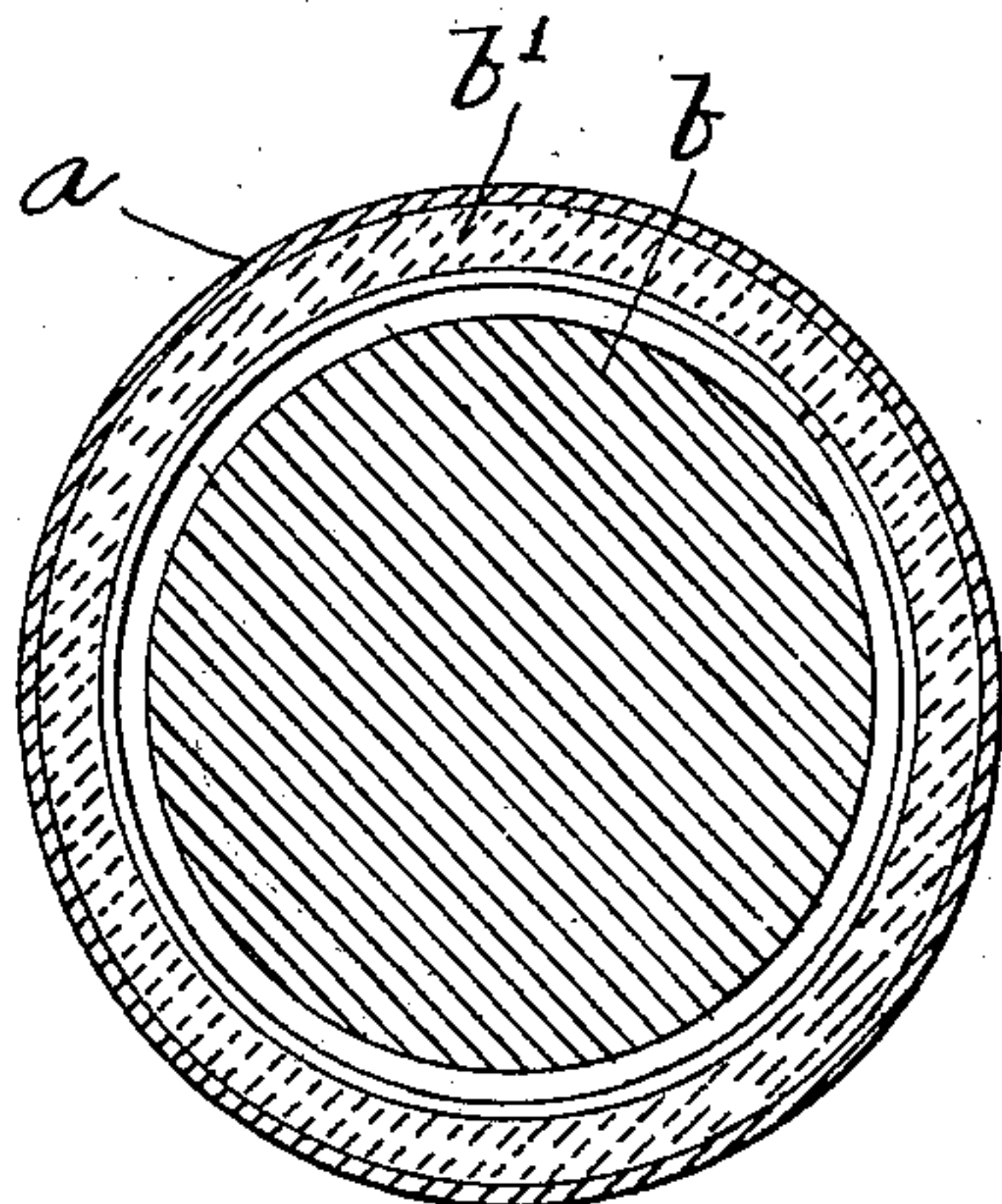


Fig. 3.

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# UNITED STATES PATENT OFFICE.

WILLIAM H. STEWART, OF ST. LOUIS, MISSOURI.

## STREET-FLUSHING APPARATUS.

969,217.

Specification of Letters Patent.

Patented Sept. 6, 1910.

Application filed December 12, 1907. Serial No. 406,227.

*To all whom it may concern:*

Be it known that I, WILLIAM H. STEWART, of St. Louis, State of Missouri, have invented an Improvement in Street-Flushing Apparatus, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to an apparatus for flushing streets, whereby water under pressure may be forcibly delivered for flushing purposes.

The invention has for its object the provision of means for mechanically producing a pressure on the water contained in the tank which is adapted to be operated by suitable power driven actuating-mechanism. Means are also provided for operating the actuating-mechanism at different speeds. Means are also provided for operating the actuating-mechanism by the revolving axle, whereby it will be operated as the apparatus moves along. Means are also provided for disconnecting the actuating-mechanism from the revolving axle, so that the apparatus may be moved along without operating the pressure-producing device. A piston, contained in the reservoir containing the water, is employed as the means for producing the pressure on the water, and the actuating-mechanism moves the piston in one direction to produce the required pressure, and means provided for returning the piston to its normal position.

Figure 1 shows in longitudinal vertical section an apparatus for flushing streets embodying this invention. Fig. 2 is a transverse section of the water containing reservoir, taken on the dotted line 2—2, Fig. 1. Fig. 3 is a transverse section of the water containing reservoir, taken on the dotted line 3—3, Fig. 1. Fig. 4 is a rear side elevation of the actuating-mechanism for the piston. Fig. 5 is a rear end elevation of the flushing apparatus shown in Fig. 1. Fig. 6 is a detail showing the actuating-mechanism which may be employed for returning the piston to its normal position. Fig. 7 is a detail of the locking-device for locking one of the shafts of the actuating-mechanism. Fig. 8 is a detail showing modified means for connecting the piston with its actuating-mechanism.

$a$  represents a cylindrical tank or reservoir, of any suitable capacity, and mounted

on a truck-frame of any suitable construction by which it may be moved from place to place. The reservoir  $a$  has an opening at the top by which it may be supplied with water, which is adapted to be closed by a cap  $a^1$ , or other suitable means. It also has a delivery nozzle  $a^2$  at the bottom adapted to be closed by a plate  $a^3$ , or other suitable means.

Contained in the reservoir  $a$  is a piston-like disk  $b$ , of suitable size and shape to substantially fit the interior of the reservoir, which is adapted to be moved in the direction of the length of the reservoir in one direction to produce a pressure on the water which is contained therein, and to be subsequently returned to its normal position. The piston  $b$  is provided with a packing-ring  $b^1$ , see Figs. 1 and 3, to insure a tight fit and prevent undue leakage. The packing-ring may be of any well known or suitable construction. The piston  $b$  has arranged on one of its faces several brackets  $b^2$ , carrying at their extremities rolls  $b^3$ , which engage the wall of the reservoir, to thereby guide the piston in its movements back and forth.

For the purpose of positively moving the piston  $b$  in one direction, to produce a pressure on the water contained in the reservoir, suitable actuating-mechanism is provided, which is adapted to be operated mechanically but positively, as for instance, it may be operated by one of the revolving members of the truck-frame, as for instance, by the revolving axle  $c$ . In case the revolving axle is selected the wheels  $c$  will be arranged thereon so that said axle will be positively rotated by the wheels as the apparatus is moved along.

While my invention comprehends the employment of actuating-mechanism for the piston of any suitable construction, adapted to be operated by one of the revolving members of the truck-frame, or in fact, adapted to be otherwise operated, a simple form of actuating-mechanism is herein shown, merely for the purpose of illustrating my present invention.

$d$  represents a vertical shaft having secured to it two drums  $d^1$ ,  $d^2$ , and around these drums cords or chains  $d^3$  are wound, which extend through holes provided in the rear wall of the reservoir  $a$ , and which are connected with the piston  $b$ , preferably by



the interposition of springs  $d^3$ , as shown in Fig. 1; or in lieu thereof a single cord may be employed, as shown in Fig. 8, which is connected to a cross-bar  $d^{20}$ , which latter is  
 5 connected by springs  $d^3$  with the piston. As the shaft  $d$  is revolved the cords or chains are wound upon the drums and the piston positively moved rearward to produce a pressure on the water which is contained in the reservoir. Means are herein  
 10 provided for revolving the shaft  $d$  at different speeds and also for permitting it to remain idle while the apparatus is being moved from place to place, in case the axle is employed as the main actuator. This  
 15 portion of the actuating-mechanism for the piston, as herein shown, consists of two gears  $d^3, d^4$ , loosely mounted on the shaft  $d$ , and arranged with a space of suitable width between them for a clutch, and two gears  
 20  $d^5, d^6$ , rigidly secured to a vertical shaft  $d^7$ , which respectively engage said gears  $d^3, d^4$ , and revolve them as the shaft  $d^7$  is turned. A collar  $d^8$  is splined on the shaft  $d$ , between  
 25 the two gears  $d^3, d^4$ , which is movable on the shaft in the direction of its length, toward and from the gears, and said collar is formed at each end with clutch teeth which are adapted to engage clutch teeth formed  
 30 on the adjacent faces of the hubs of the gears  $d^3, d^4$ . A pivoted clutch-actuating lever  $e$ , is provided for moving said clutch-member  $d^8$  into engagement with either one of said gears or to hold it at an intermediate  
 35 point between said gears, disengaged from both. When the clutch-member  $d^8$  is moved into engagement with the gear  $d^3$  said gear  $d^3$  will operate to turn the shaft  $d$ , and when moved into engagement with the gear  $d^4$ ,  
 40 said gear  $d^4$  will operate to turn the shaft  $d$ . The two gears  $d^3, d^4$ , are of different diameter and the gears  $d^5, d^6$ , engaging them, are also of different diameter, and as a result the shaft  $d$  may be revolved at different  
 45 speeds by the shaft  $d^7$ . The shaft  $d^7$  extends down to a point adjacent the axle  $c'$ , and has secured to it, at its lower end a worm-wheel  $f$ , which engages a worm  $f'$ , which is secured to said axle. The shaft  $d^7$   
 50 is thus positively rotated by the axle  $c'$ .

When it is desired to hold the piston at rest, with the water under pressure, and to move along the apparatus without increasing the pressure on the water, the delivery  
 55 nozzle being closed, a locking-device is provided for the shaft  $d$ , which is adapted to be thrown into engagement therewith, and when the shaft is thus locked the actuating-lever  $e$  will be moved to disengage the  
 60 clutch-member from both gears. The locking-device herein shown for accomplishing this result consists of a ratchet wheel  $g$ , see Figs. 1 and 7, secured to the shaft  $d$ , and a  
 65 pawl  $g'$ , which is adapted to be moved into engagement with said ratchet wheel by a

spring  $g^5$ . The pawl  $g'$  has an extension  $g^4$  which is adapted to be engaged by a cam  $g^3$  on a vertical shaft  $g^4$ , which, when turned, is adapted to operate the pawl and move it out of engagement with the ratchet wheel. 70

The piston  $b$  is designed to be drawn forward or returned to its normal position by hand actuated means, and, for the purpose of illustration, said means, as herein shown, consists of a cord or chain  $h$ , attached to  
 75 the piston, which passes through a hole in the front wall of the reservoir, and then over an idle pulley  $h'$ , and then around a drum  $h^2$ , upon which it is adapted to be wound. The drum  $h^2$  is secured to a shaft  
 80  $h^3$ , see Figs. 1 and 6, and a gear  $h^4$  is loosely mounted on said shaft, which is engaged by a pinion  $h^5$ , bearing a worm-wheel  $h^6$ , which is engaged by a worm  $h^7$ , secured to a shaft  
 85  $h^8$ , to which a hand-crank  $h^9$  is secured. By turning said hand crank the gear  $h^4$  will be revolved. A movable clutch-member  $i$  is splined on the shaft  $h^3$ , which is adapted to be moved into engagement with a clutch-member  $i'$ , on the gear  $h^4$ , and said movable  
 90 clutch-member is adapted to be moved along on the shaft, into and out of engagement with said clutch-member  $i'$ , by a hand-lever  $i^2$ . The piston is provided with one or more check valves  $b^{10}$ , which open rearward  
 95 to provide for returning the water to the rear side of the piston in case of leakage by it.

It will be observed that the springs  $d^3$ , which are connected to the piston, extend  
 100 more or less as the cords  $d^2$  are wound upon the drums  $d'$ , and thereby provide a yielding connection between the cords and the piston. This is an important feature of my invention, as the piston is thereby caused to  
 105 exert a yielding pressure on the water, and in case the team should start suddenly the piston is free to yield sufficiently to obviate breaking the parts. Furthermore, in case  
 110 the team should stop the power which has been accumulated by the extended springs can be utilized to produce a pressure on the water and continue to move the piston a short distance and thereby cause a forcible  
 115 delivery of the water for a short period of time. Furthermore, by employing springs or equivalent forms of yielding connections between the actuating-mechanism and piston the revolving axle may be much more  
 120 easily started than if a rigid connection is employed.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a street flushing apparatus, the combination of a water-containing reservoir, a piston movable therein, actuating-mechanism connected with said piston for moving it to produce a pressure on the water contained in the reservoir, a revolving-member 125 130



on the truck-frame, means for connecting the actuating-mechanism with and disconnecting it from said revolving member, means for locking said actuating-mechanism and for holding the piston in any position it may occupy to maintain the pressure on the water when the actuating-mechanism is disconnected from the revolving-member, a device for disengaging said locking means, permitting return of the piston, and actuating means connected with the piston for returning it to its normal position, substantially as described.

2. In a street flushing apparatus, the combination of a water-containing reservoir, a piston movable therein, two-speed actuating mechanism connected with the piston for moving it at different speeds to produce a variable pressure on the water contained in the reservoir, a revolving member on the truck-frame, means for connecting said actuating mechanism with and disengaging it from said revolving member, whereby the piston may be moved at different speeds or remain idle, means for locking said actuating mechanism and for holding the piston in any position it may occupy to maintain the pressure on the water when the actuating mechanism is disengaged from the revolving member, a device for disengaging said locking means, permitting the return of the piston and actuating mechanism connected with the piston for returning it to

its normal position, substantially as described.

3. In a street flushing apparatus, the combination of a water-containing reservoir having a chamber at one end, a piston movable in said reservoir, actuating mechanism contained in the chamber and connected through the wall thereof with the piston for moving it to produce a pressure on the water contained in the reservoir, a revolving member on the truck-frame, means for connecting said actuating mechanism with and disconnecting it from said revolving member, means for locking said actuating mechanism and for holding the piston in any position it may occupy to maintain the pressure on the water when the actuating mechanism is disconnected from the revolving member, a device for disengaging said locking means, permitting the return of the piston, and actuating means arranged at the forward end of the reservoir, which is connected with the piston for returning it to its normal position, substantially as described.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

WILLIAM H. STEWART.

Witnesses:

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H. B. DAVIS.