E. O. CARTWRIGHT.

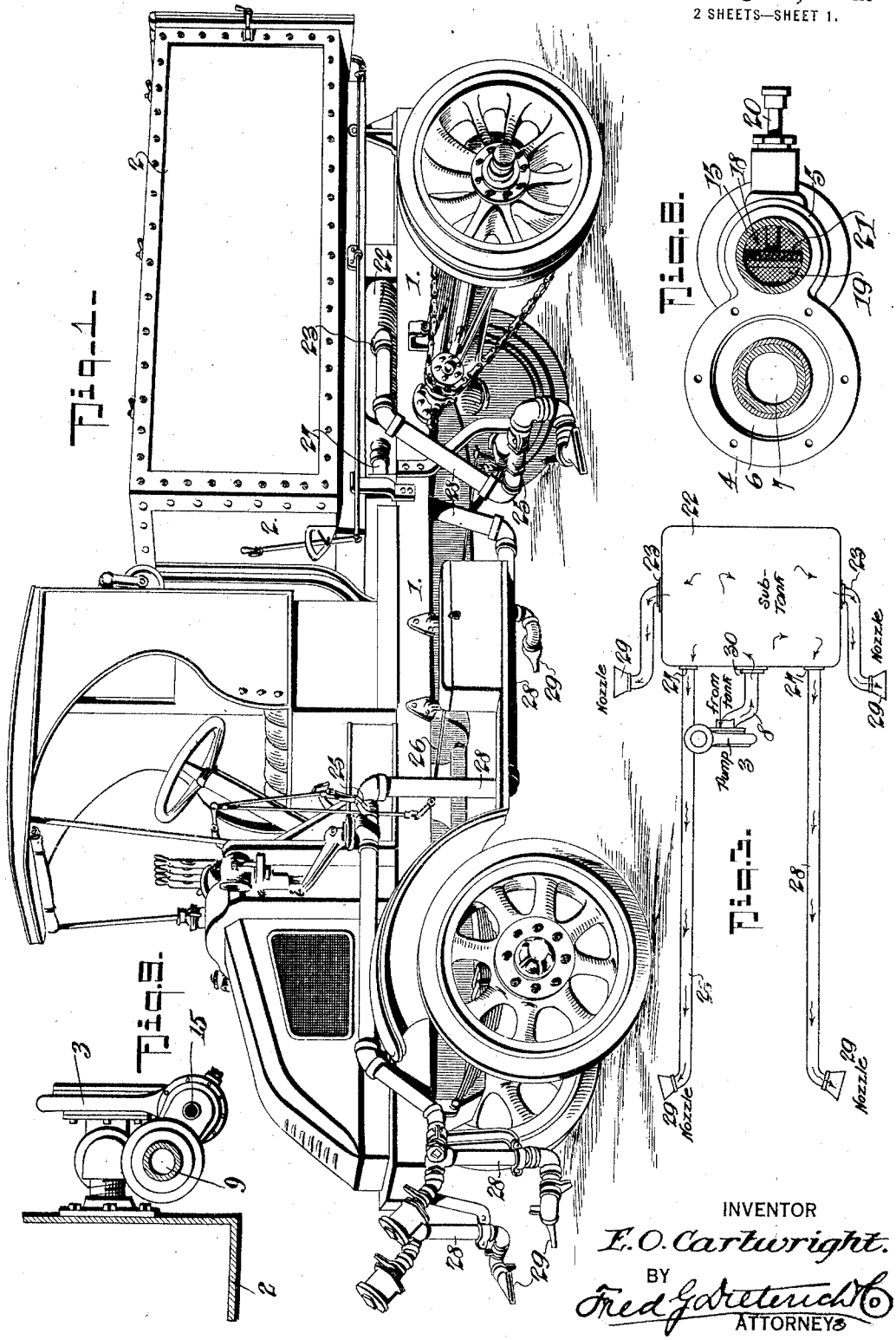
STREET AND SEWER CLEANING APPARATUS.

APPLICATION FILED APR. 8, 1919.

1,388,510.

Patented Aug. 23, 1921.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 2.

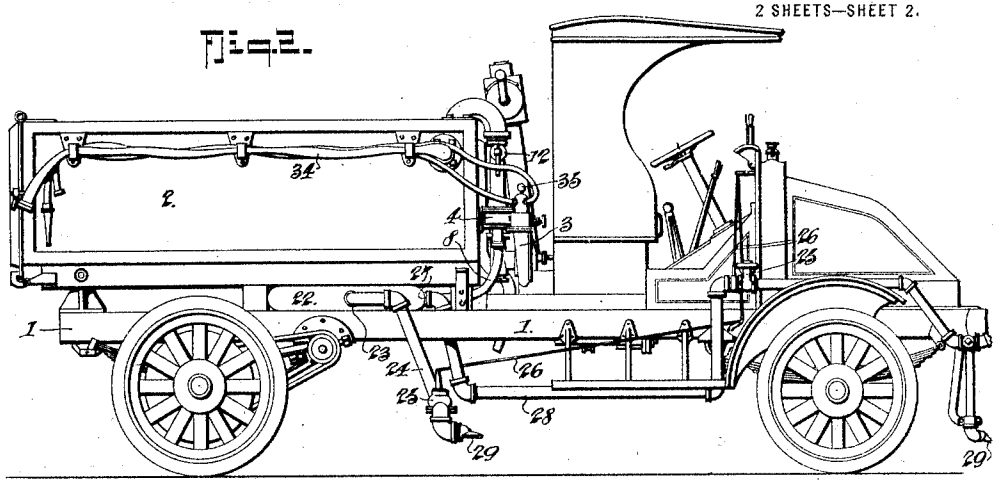


Fig. 4.

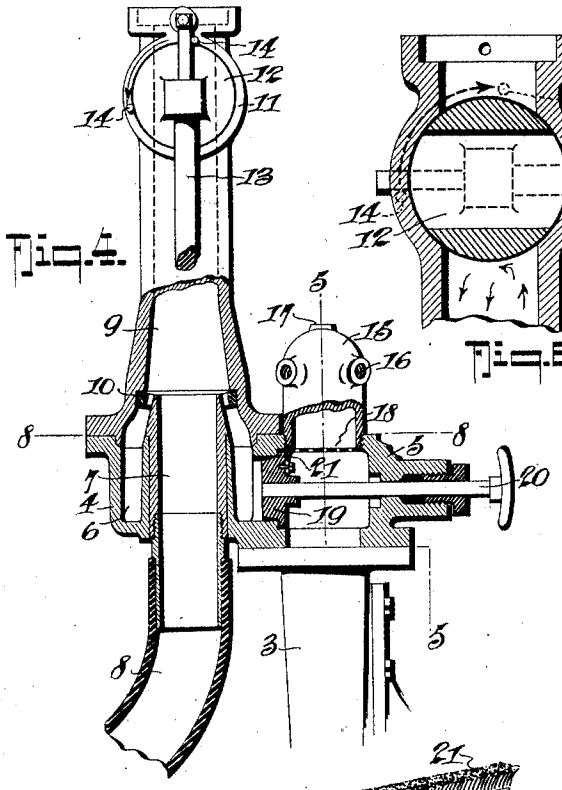


Fig. 6.

Fig. 5.

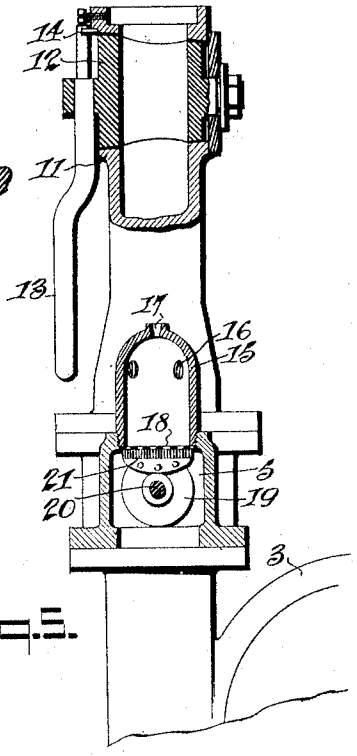
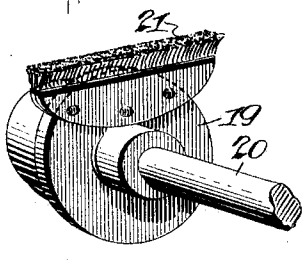


Fig. 7.



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UNITED STATES PATENT OFFICE.

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STREET AND SEWER CLEANING APPARATUS.

1,388,510. Specification of Letters Patent. Patented Aug. 23, 1921.

Application filed April 8, 1919. Serial No. 288,613.

To all whom it may concerns

Be it known that I, ERNEST O. CARTWRIGHT, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented a new and useful Street and Sewer Cleaning Apparatus, of which the following is a specification.

My invention relates to the class of apparatus disclosed in my copending applications filed October 25, 1918, Serial No. 259668 and March 7, 1919, Serial No. 280976 patented Feb. 17, 1920, No. 1,331,239 and it particularly has for its object to provide an apparatus which is not only useful for cleaning out sewers, sumps, etc., but it may also be employed for street washing service. To that end the present invention provides an improved arrangement of ejector-injector apparatus with provisions whereby the stream of pressure water may be forced through the ejector in a reverse direction, for the purpose either of "blowing out" the suction duct to relieve it of obstructions or for directing the pressure fluid into an equalizing distributing reservoir from which the fluid is distributed to the various nozzles of the sprayer system.

The invention comprises an ejector mechanism (of the general type disclosed in my copending application filed March 7, 1919, Serial No. 281,272) which is provided with a valve or cutoff device in the outlet duct of the ejector so that when the apparatus is employed for cleaning out sewers, etc., should the suction intake duct become clogged, the operator may close the cutoff valve in the discharge duct of the ejector and the full pressure liquid from the pump will be caused to act, in the reverse direction, through the suction duct thereby "blowing out" or freeing the duct of obstructions. When the valve is closed, by connecting the suction duct (usually including a flexible pipe) to the distributing reservoir of the spraying system of the apparatus the liquid may be supplied thereto under considerable pressure and in sufficient volume to be used for street cleaning purposes.

The invention also resides in those novel details of construction, combination and arrangement of parts which will be first fully described, then be specifically pointed out in the appended claims, and illustrated in the accompanying drawings, in which:—

Figure 1 is a perspective view of my apparatus ready for use.

Fig. 2 is a side elevation of the same from the side opposite to that shown in Fig. 1.

Fig. 3 is a diagrammatic view illustrating the connections between the pump, the ejector and the distributing reservoir of the sprayer system.

Fig. 4 is a detail vertical section and part elevation of the ejector mechanism.

Fig. 5 is a detail section and part elevation on the line 5—5 of Fig. 4.

Fig. 6 is a detail vertical section showing the cutoff valve.

Fig. 7 is a detail perspective view of the brush cleaner hereinafter referred to.

Fig. 8 is a horizontal section on the line 8—8 of Fig. 4.

Fig. 9 is a detail horizontal section showing the connection between the pump and the tank.

In the drawings, in which like numerals of reference indicate like parts in all of the figures, 1 represents the chassis frame of the truck on which the invention is employed and 2 indicates the separating tank in which the supply of liquid is kept. The construction of the tank 2, *per se*, forms no part of the present invention as it may be of any approved construction such for instance as is shown in my previous applications aforesaid.

3 represents the centrifugal pump and 4 the ejector mechanism which coöperates with the pump in elevating material into the tank or in effecting the operation of the sprayer or street washing system of pipes and nozzles. The ejector 4 may be of the general construction shown in my copending application Serial No. 281,272 and it consists of a casing having an entrance chamber 5 into which the pump 3 discharges the fluid under pressure and from which the fluid is passed through a valved port into a pressure chamber 6, in which is contained the nipple 7 through which the material is sucked. The chamber 6 communicates with the out-

let passage 9 of the ejector through a ported ring 10 so as to direct the pressure fluid toward the outlet end of the ejector and cause it to envelop the material sucked up through the nipple 7.

The pump 3 has its intake connected with the tank 2 to withdraw the contents of the tank.

8 indicates the suction duct connected with the nipple 7. The outlet portion of the ejector 9 is formed with a valve seat 11 for the rotary cutoff valve 12 which is operated by a handle 13, the movements of which are limited by stop pins 14.

15 is a distributing dome having connection 16 with which the hose 34 are coupled and having a port 17 to which a pressure gage 35 may be connected, the passage into the dome 15 being covered by a screen 18 and in order to clean the screen 18 from adhering matter I provide a brush 21 on the valve 19, the valve 19 being carried on a stem 20 that is reciprocably mounted so that by moving the valve stem 20 in and out the brush 21 will be caused to clean the screen 18.

22 designates the distributing tank for the street washing or spraying system of pipes and nozzles. The tank 22 has a pair of side outlets 23 to which the pipes 24 are connected, the pipes 24 supplying the rear side nozzles 29. The tank 22 also has a pair of ports 27 in its front wall which connect with the pipes 28 that extend to the front of the vehicle and carry the front nozzles 29. The pipes 24 and 28 are provided with suitable control valves 25 operated from adjacent to the operator through lever and rod connections 26.

30 is the receiving opening for the tank 22 and this is adapted to be coupled to the suction nipple 7 by having the duct 8 coupled to the port 30 when it is desired to utilize the device for street spraying or washing purposes.

In the use of my apparatus when it is desired to use the apparatus as a sewer cleaning outfit in the manner indicated in my previous application, the valve 12 is opened (see Fig. 5) and the suction duct 8 is disconnected from the tank 22 and coupled with an extension that is adapted to be let down into the sewer to be cleaned. When the valve 12 is opened and the valve 19 opened, the water pumped by the pump 3 will coöperate with the ejector to lift the material from the sewer and deposit it into the tank.

When, however, the apparatus is to be used as a street cleaning or flushing apparatus, the duct 8 is connected to the center intake 30 of the tank 22 and the valve 12 is closed. Upon opening the valve 19 the pressure fluid from the pump will be forced back through the nipple 7, duct 8 and delivered into the tank 22. As soon as the operator opens the valves 25 the fluid pumped will be supplied to the several sprayer nozzles 29, etc.

It will thus be seen that by the present arrangement the utility of an apparatus of this character is greatly increased since it may be employed not only for the purpose of removal of material but it may also be employed for the purpose of washing or spraying streets.

In this application I make no claim, *per se*, to the sprayer system of pipes, nozzles and control valves shown, as the same may be of any approved and well-known construction.

It will also be observed that when the apparatus is used as a sprinkler system with the pipe 8 connected to the distributing reservoir the tank 2 may be filled with water when the vehicle is crossing a stream by submerging the nozzles 29 and opening the valve 12 without the necessity of disconnecting the hose 8 from the distributing reservoir.

From the foregoing description, taken in connection with the accompanying drawings, it is thought the complete construction, operation and advantages of the invention will be readily understood by those skilled in the art and I desire it understood that changes in the details of construction and arrangement of parts may be made without departing from the spirit of the invention or the scope of the appended claims.

What I claim is:—

1. In combination with the tank, and the pump for withdrawing fluid from the tank, of an ejector coöperating with the pump for elevating material and depositing it into the tank, said ejector including an outlet, and a cutoff valve in said outlet and a set of sprayer pipes and valves mounted on the vehicle and connected with said ejector.

2. The combination with the tank, the vehicle on which it is mounted, the system of sprayer pipes and valves mounted on the vehicle, and the pump having an intake connected with the tank, of an ejector cooperating with the pump and connected to the outlet thereof for elevating material and depositing it into the tank, said ejector including an outlet, and a cutoff valve in said outlet, and a duct connected with the inlet of the ejector and adapted to be connected with the system of sprayer pipes and nozzles, whereby when said valve is closed and said duct is connected the pressure fluid from the pump will be delivered to the sprayer system.

3. In combination with the tank, the pump for withdrawing liquid from the tank and the support on which the aforesaid parts are mounted; an ejector coöperative with the pump to fill the tank and having an intake duct and an outlet, a cutoff valve in the outlet, a sprayer system of pipes and noz-

zles, a distributing reservoir for said system, and means connecting the intake duct of the ejector to said sprayer system.

4. In apparatus of the class described, the combination of a tank, a pump and an ejector having an intake duct and a discharge outlet duct, the latter being connected to deliver into the tank, said ejector having a pressure supply port connected with the pump, and a valve for controlling passage through said outlet duct, and a set of sprayer pipes and valves mounted on the vehicle and connected with said ejector.

5. In apparatus of the class described, the combination of a tank, a pump and an ejector having an intake duct and a discharge outlet duct, the latter being connected to deliver into the tank, said ejector having a pressure supply port connected with the pump, a valve for controlling passage through said outlet duct, a sprayer system of pipes and nozzles, a duct between said sprayer system and the intake duct of said ejector, all being arranged whereby when said valve is closed the pressure fluid from the pump will be supplied to the sprayer system.

6. In apparatus of the class described, the combination of a tank, a pump and an ejector having an intake duct and a discharge outlet duct, the latter being connected to deliver into the tank, said ejector having a pressure supply port connected with the pump, a valve for controlling passage through said outlet duct, a sprayer system of pipes and nozzles, a duct between said sprayer system and the intake duct of said ejector, all being arranged whereby when said valve is closed the pressure fluid from the pump will be supplied to the sprayer system, said duct which connects the sprayer system with the intake duct of the ejector being detachable from said sprayer system.

7. In combination with the tank and the pump for withdrawing fluid from the tank, of an ejector coöperating with the pump for elevating material and depositing it into the tank, said ejector including an outlet, a cutoff valve in said outlet, said ejector including an inlet and a set of sprayer pipes and valves connected with the inlet of the ejector, all being arranged whereby the tank may be filled with fluid through the sprayer pipes on submergence of the nozzles thereof in a source of fluid supply when said cutoff valve is open, and whereby the contents of the tank may be forced out through the sprayer pipes and nozzles when said cutoff valve is closed.

ERNEST O. CARTWRIGHT.