

E. O. CARTWRIGHT.
 PORTABLE PUMPING APPARATUS
 APPLICATION FILED MAY 29, 1919.

1,388,511.

Patented Aug. 23, 1921.

3 SHEETS—SHEET 1.

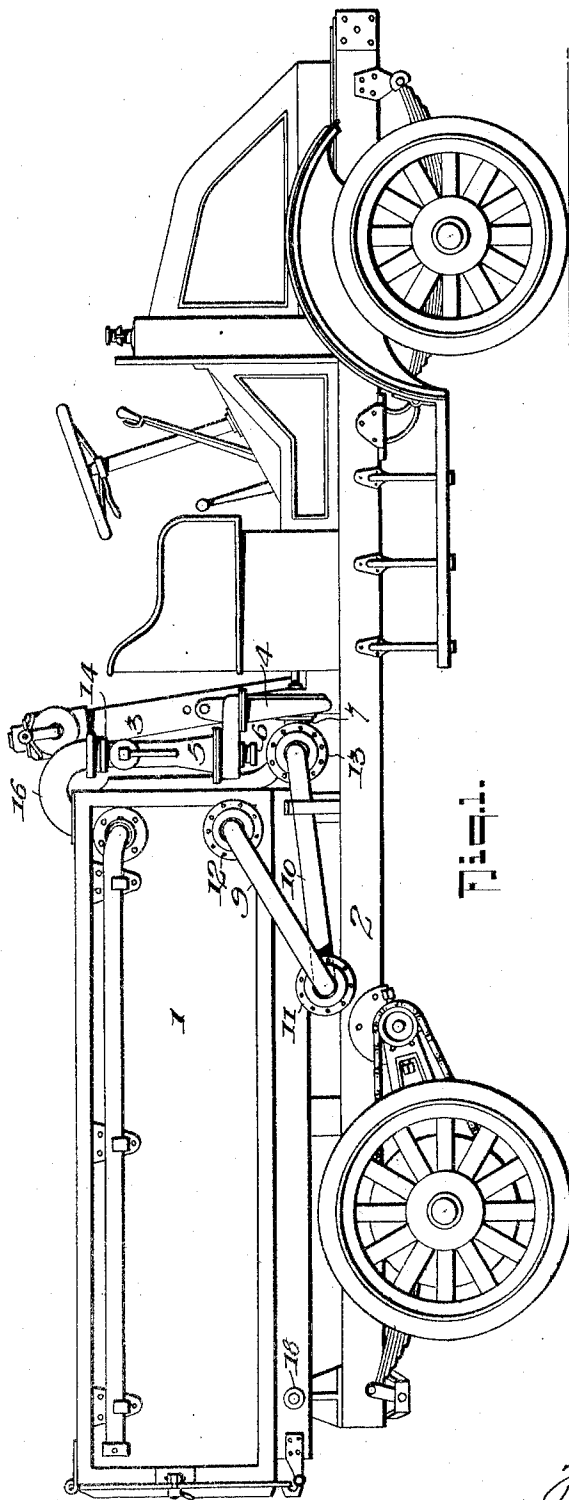


Fig. 1.

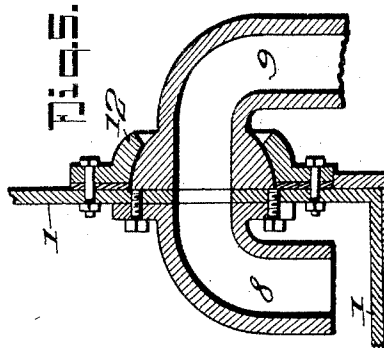


Fig. 2.

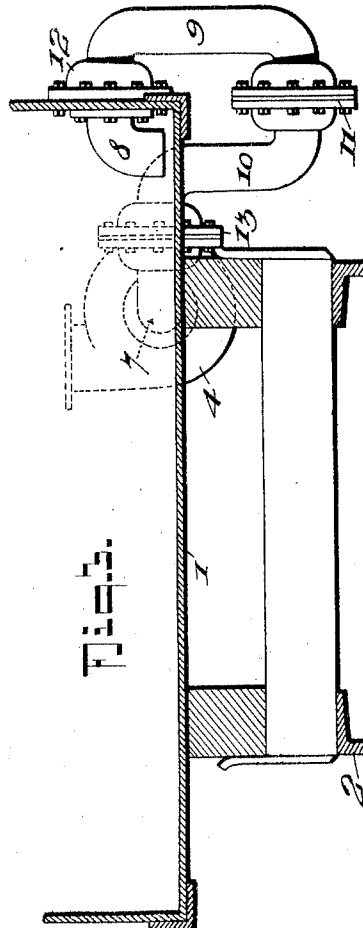


Fig. 3.

INVENTOR

E. O. Cartwright.

BY

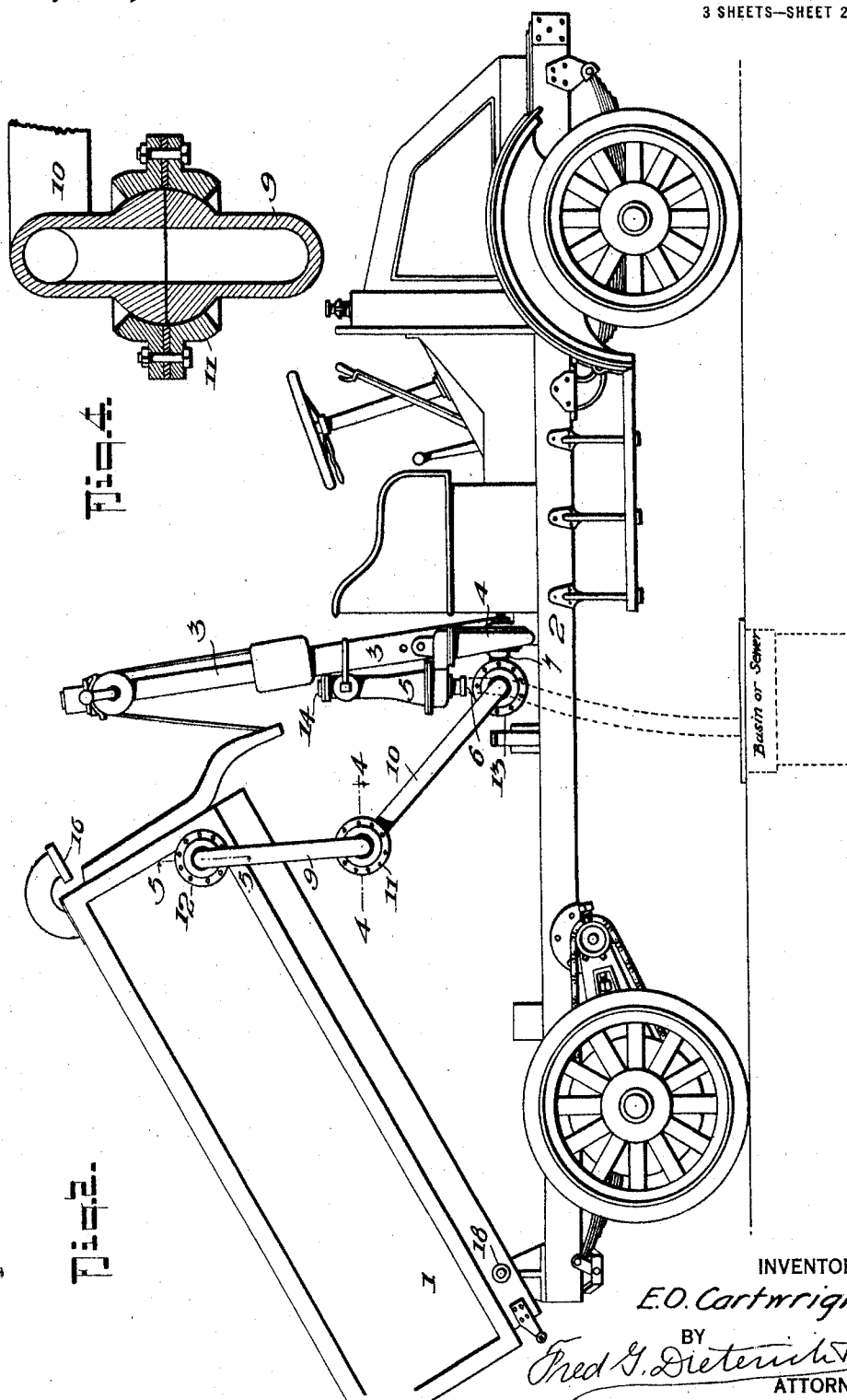
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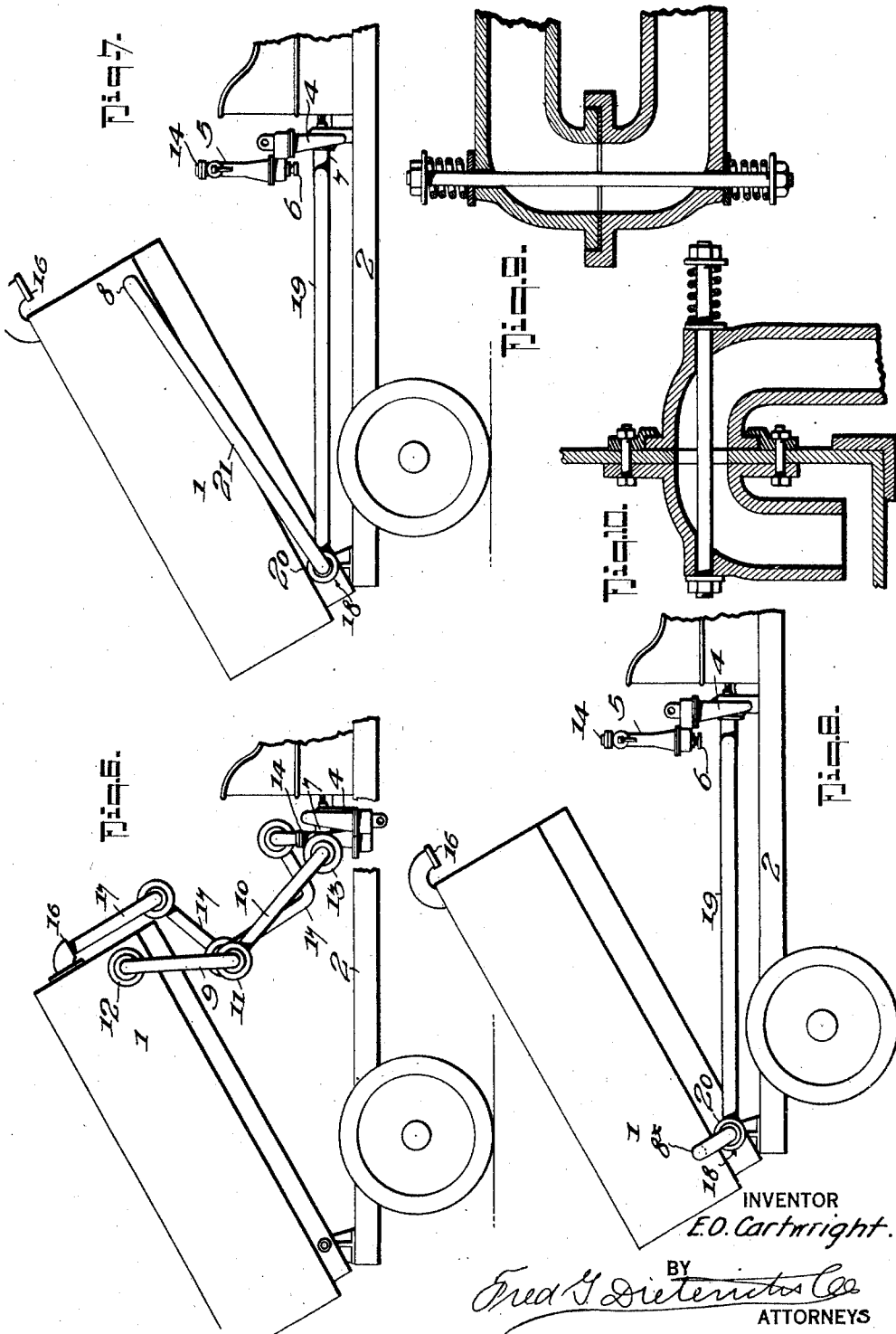
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3 SHEETS—SHEET 3.



UNITED STATES PATENT OFFICE.

ERNEST O. CARTWRIGHT, OF SPRINGFIELD, OHIO, ASSIGNOR TO CHARLES F. GARDNER, OF SPRINGFIELD, OHIO.

PORTABLE PUMPING APPARATUS.

1,388,511.

Specification of Letters Patent.

Patented Aug. 23, 1921.

Application filed May 29, 1919. Serial No. 300,544.

To all whom it may concern:

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 Improved Portable Pumping Apparatus, of which the following is a specification.

My invention relates to the art of portable apparatus for cleaning out sewers, sumps and the like and in its general nature the present invention is a modification of the apparatus disclosed in my application filed October 25, 1918, Serial No. 259,668. Apparatus of the type constituting the subject matter of my present invention comprises, in general, a wheeled vehicle on which is mounted a settling tank that is adapted to be tilted to discharge the contents thereof, there being a pump provided on the vehicle coöperating with an ejector mechanism for lifting the material from the sump and depositing it into the settling tank and withdrawing from the settling tank the separated liquid through the pump to constitute the motive fluid of the ejector. In my application aforesaid, I have disclosed a connection between the pump inlet and the outlet from the tank which is in the nature of a union so arranged that when the tank is down the sections of the union will be coupled and when the tank is elevated they will be automatically uncoupled. It also has been heretofore proposed to connect the outlet from the tank to the pump by means of a flexible hose connection but practice has demonstrated that when the hose connection is made flexible enough to allow for the raising and lowering of the tank body it is not sufficiently strong to withstand the powerful suction of the pump and hence will collapse. In avoiding this objectionable feature of the flexible hose connection, the separable section coupling was employed, as indicated in my application above referred to, and has been found quite satisfactory. My present invention has for its object to provide a modification in which a non-separable connection between the outlet of the tank and the inlet of the pump may be provided which will eliminate the objection of the flexible hose coupling and which will be operative at all times and free from danger of collapsing, due to the suction force of the pump. To this end, my invention consists in connecting the

pump and the tank outlet by a non-collapsible articulated pipe connection so arranged that as the tank is raised and lowered the pipe connection will adapt itself thereto without bending, the necessary movement being provided at the joints of the sections of the pipe. The connection between the tank and the ejector being a pressure one and the delivery into the tank being at a high level a separable section coupling may be employed without danger of spilling or material leakage on separation of the sections but if desired an articulated non-collapsible pipe connection, similar to that employed between the inlet of the pump and the outlet of the tank may be also employed.

In its more detailed nature, the invention embodies those novel features of construction, combination and arrangement of parts, all of which will be pointed out in the appended claims, and illustrated in the accompanying drawings, in which:

Figure 1 is a side elevation of the apparatus with the tank in the lowered position.

Fig. 2 is a side elevation of the apparatus with the tank tilted.

Fig. 3 is a detail cross section through the bottom half of the tank looking forward and clearly illustrates the relative positioning of the collapsed articulated pipe connection between the tank bottom outlet and the pump.

Fig. 4 is a detail horizontal section on the line 4-4 on Fig. 2.

Fig. 5 is a detail section on the line 5-5 of Fig. 2.

Fig. 6 is a diagrammatic side view of modification embodying a means for effecting an articulated connection between the ejector and tank inlet as well as the tank outlet and pump.

Fig. 7 is a similar view of a modification of the means of connecting the pump and tank outlet.

Fig. 8 is a similar view of a further modification thereof.

Fig. 9 is a detail section of a modification of one of the articulated pipe joints.

Fig. 10 is a similar view of the flexible pipe connection with the tank outlet.

Referring now to the accompanying drawings, in which like letters and numerals of reference indicate like parts in all of the figures, 1 indicates the tank body, the construction of which and of the internal sep-

arating apparatus for effecting a separation of the solids and liquids may be of any approved type. 2 designates the chassis frame of the motor vehicle on which it is preferable to mount the apparatus. 3 designates the elevating mechanism for raising and lowering the tank body and 4 designates the centrifugal pump which is adapted to be driven in any desired way, for example, by a drive connection with the power plant of the vehicle. The pump 4 carries the ejector 5, the construction of which may also be of any approved type, as for instance that disclosed in my application filed March 7, 1919, Serial No. 281,272, or any other construction which may be found suitable for the purpose. The ejector 5 has its suction entrance 6 arranged so as to be adapted to receive the material elevated, the same being conducted from the sump to the ejector through a pipe connection which is adapted to be secured to the intake of the ejector.

7 designates the intake elbow of the pump which is connected with the outlet elbow 8 of the tank or settling bed body by an articulated inflexible or non-collapsible pipe connection consisting of the members 9 and 10 which are connected to one another by a movable joint 11 and are respectively connected to the elbows 8 and 7 by movable joints 12—13 in the preferred embodiment of the invention. The construction of the joints 11—12—13 may be of any well-known type yet I do not wish to be understood as limiting myself to any specific details of construction of the said joints beyond what may be expressly stated with regard thereto in the claims.

The outlet 14 of the ejector may be connected with the inlet elbow 16 of the tank body by a separable section coupling, as disclosed in my application first above referred to, but if desired an articulated pipe connection 17 may be employed similar in construction to that which connects the outlet 8 of the tank with the intake 7 of the pump (see Fig. 6). In this way, all possible danger of drip which might occur in the use of a separable section coupling is avoided and by the use of the inflexible or non-collapsible pipe sections 9 and 10, with their joined couplings, danger of collapsing the same, due to the heavy suction of the pump, is avoided.

Instead of employing two relatively short pipe sections 9 and 10 and having the outlet of the tank body adjacent to the forward end, the outlet may be located adjacent to the pivot 18 of the body and connected with a relatively stationary pipe section 19 which is in turn connected to the inlet of the pump, the articulated joint between the section 19 and the outlet 8* being designed to lie with its axis of movement coincident with the

axis of movement of the pivotal axis 18 of the tank 1. Such an arrangement is diagrammatically indicated in Fig. 8, and instead of locating the outlet 8* adjacent to the pivotal axis 18 a second section 21 of pipe may be extended from the articulated joint 20 along the tank to connect with the outlet elbow 8 located at the forward end of the tank body.

Various other modifications of the invention will present themselves to those skilled in the art and I desire it understood that I do not wish to limit myself to the specific details of construction shown and described.

What I claim is:—

1. In apparatus of the class described, a supporting vehicle, a tank, a pump and an ejector fixedly mounted on the vehicle for elevating the material from the sump and depositing it into the tank, a duct between the outlet of the ejector and the tank for delivering the material into the tank, and an articulated non-collapsible pipe connecting the inlet of the pump with the tank for withdrawing material from the tank, the nozzleway of the ejector being in communication with the outlet of the pump substantially as shown and described.

2. In apparatus of the class described, a supporting vehicle, a tank and an ejector fixedly mounted on the vehicle, said ejector adapted to receive at its suction end a pipe lowered into the sump, said tank having an inlet and an outlet, a duct connecting the inlet of the tank with the outlet of the ejector, the nozzleway of the ejector being in communication with the outlet of the pump, and an articulated inflexible duct connecting the outlet of the tank to the inlet of the pump.

3. In apparatus of the class described, a supporting vehicle, a tank and an ejector mounted on the vehicle, said ejector fixedly adapted to receive at its suction end a pipe lowered into the sump, said tank having an inlet and an outlet, a duct connecting the inlet of the tank with the outlet of the ejector, the nozzleway of the ejector being in communication with the outlet of the pump, an articulated inflexible duct connecting the outlet of the tank to the inlet of the pump, said duct comprising a plurality of sections of substantially inflexible piping and movable joints connecting the same.

4. In apparatus of the class described, the combination with a vehicle, and a tiltable settling bed tank body thereon having an outlet, an ejector, a pump on the vehicle for forcing water through the ejector to operate the same, said ejector being fixed on said pump and adapted to receive material to be elevated and a duct from the ejector to the tank body for delivering the material

into the tank body, and an articulated inflexible pipe connection between the outlet of the tank body and the intake of the pump, whereby the tank body may be tilted and said articulated pipe connection will adapt itself thereto.

5. In apparatus of the character described, the combination with a vehicle, a tiltable settling bed body thereon, an ejector, a pump for withdrawing water from the body and forcing it through the nozzle-way of the ejector, said ejector being fixedly mounted on said pump, an articulated inflexible pipe connection from the outlet of the ejector for delivering the material into the settling bed body, an outlet from the settling bed body, a relatively stationary pump intake and an articulated non-col-

lapsible pipe connection between said bed body outlet and said pump intake. 20

6. In combination with a vehicle, a centrifugal pump mounted thereon, a settling bed body carried on the vehicle, means for pivotally mounting the said body on the vehicle, means for raising and lowering said body, said body having an outlet, an articulated duct connecting said outlet with the intake of said pump and including pipe sections, an articulating joint located at the pivotal axis of the settling bed body, and an ejector coöperating with and fixed on the pump for delivering material into the settling tank body, substantially as shown and described. 25 30

ERNEST O. CARTWRIGHT.