E. F. BUFFAT.

WATER CAR.

APPLICATION FILED MAY 13, 1912.

1,162,565.

Patented Nov. 30, 1915.

3 SHEETS—SHEET 1.

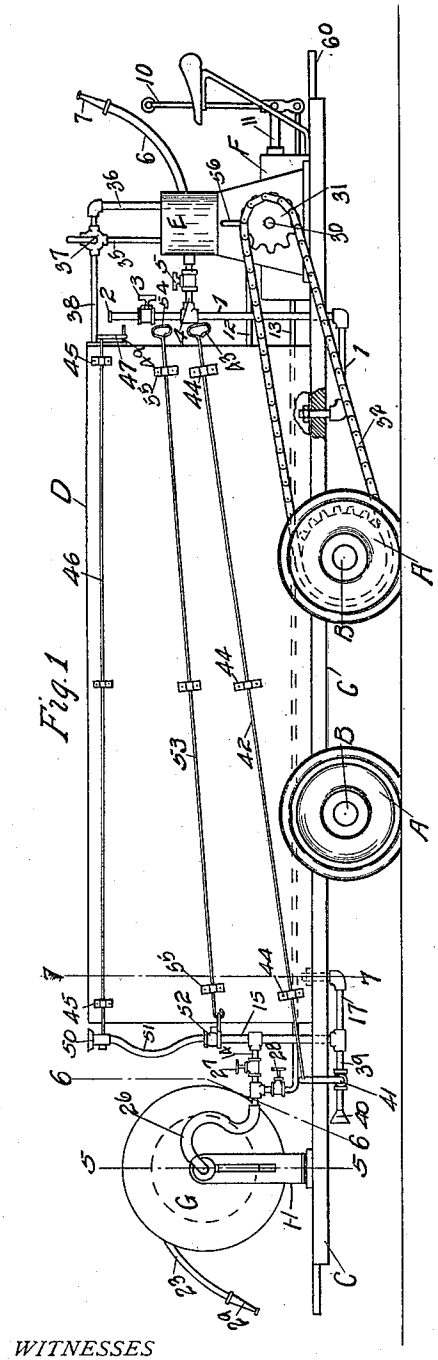


Fig. 1

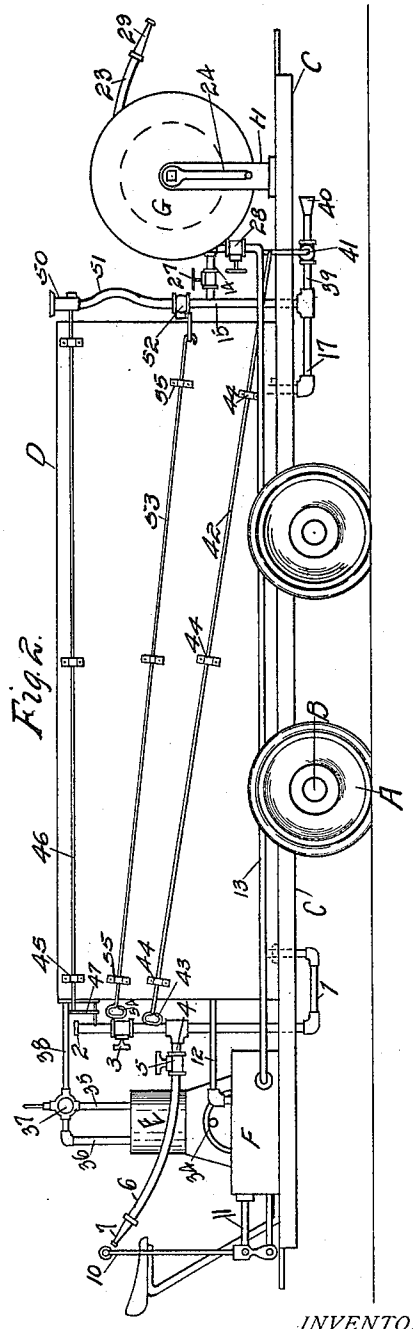


Fig. 2

WITNESSES

Etta Stallard

Richard Tierspatrick

INVENTOR

Edward F. Buffat

By Cyrus Keller

Attorney

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

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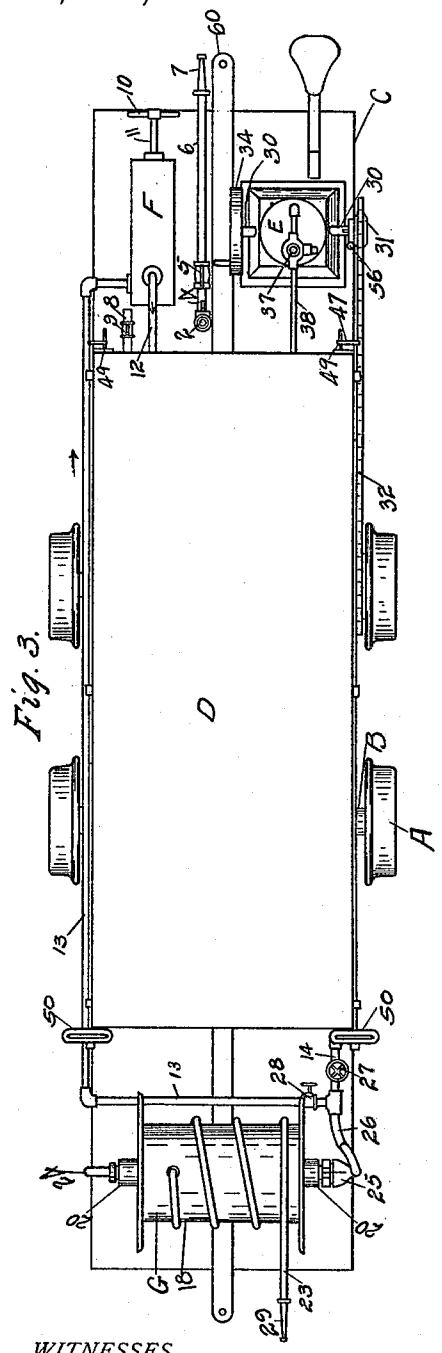


Fig. 3.

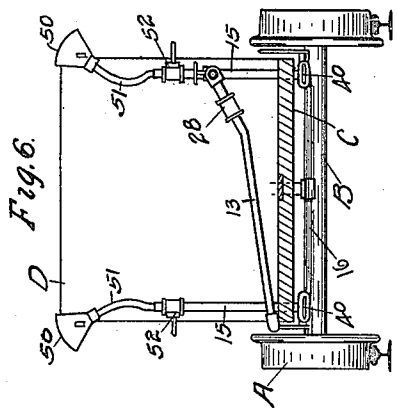


Fig. 6.

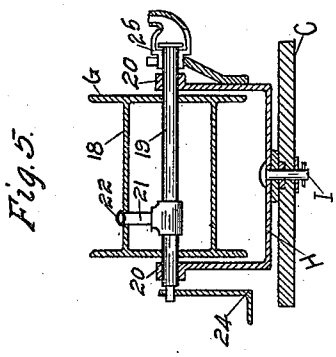


Fig. 5.

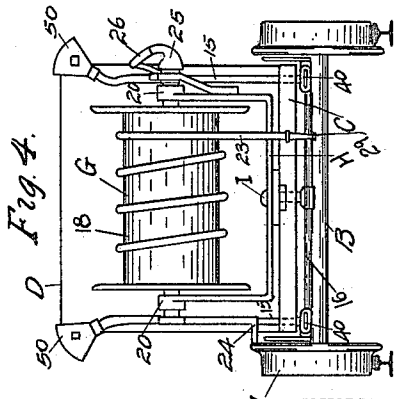


Fig. 4.

WITNESSES

Etta Stallard

Richard Kirkpatrick

INVENTOR

Edward F. Buffat

By Cyrus A. Eller

Attorney

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

E. F. BUFFAT.

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3 SHEETS—SHEET 3.

Fig. 7.

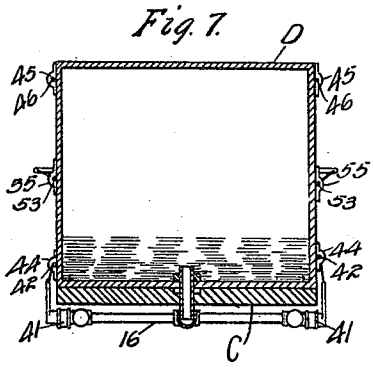


Fig. 8.

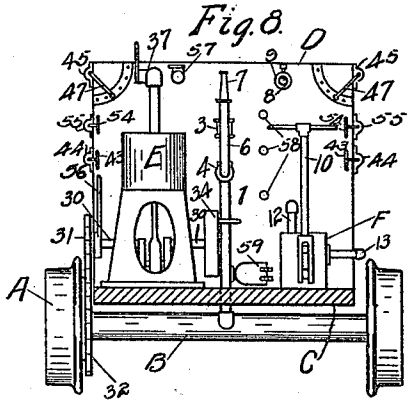


Fig. 10.

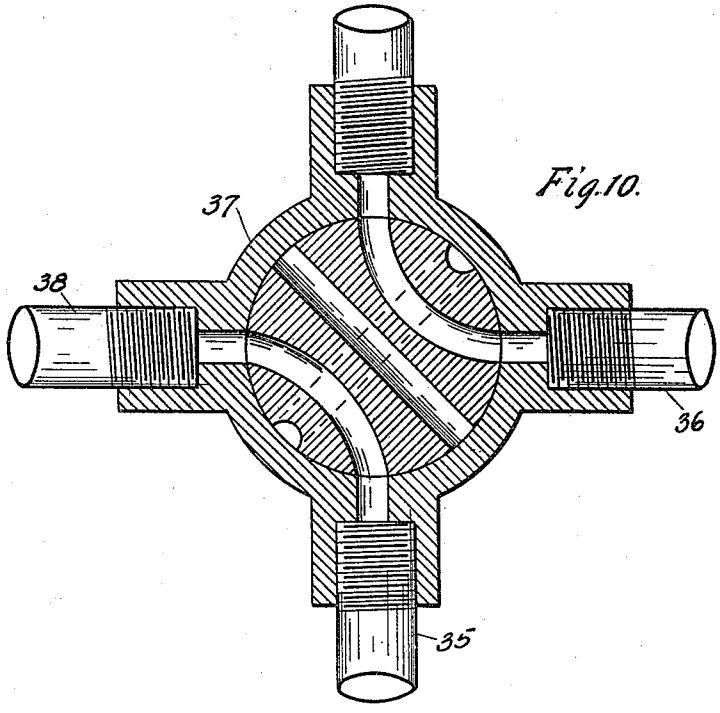
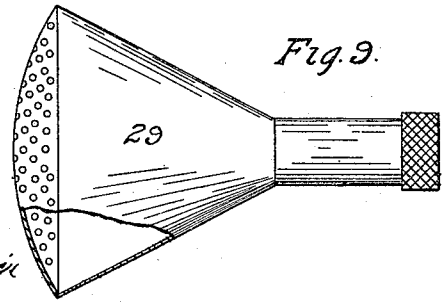


Fig. 9.



WITNESSES

Etta Stallard

Richard Tierpatrick

INVENTOR

Edward F. Buffat

By Cyrus Locke

Attorney

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

EDWARD F. BUFFAT, OF KNOXVILLE, TENNESSEE.

WATER-CAR.

1,162,565. Specification of Letters Patent. Patented Nov. 30, 1915.

Application filed May 13, 1912. Serial No. 697,006.

To all whom it may concern:

Be it known that I, EDWARD F. BUFFAT, a citizen of the United States, residing at Knoxville, in the county of Knox and State of Tennessee, have invented a new and useful Improvement in Water-Cars, of which the following is a specification, reference being had to the accompanying drawing.

My improvement relates to cars and other vehicles used for carrying and discharging water and other liquids.

The chief object of the improvement is to provide such a vehicle having provision for taking water into the vehicle and for moving from place to place and discharging said water through suitable discharging devices, usually devices for sprinkling and spraying the water forcibly against the floor, sides and top of mines, adjacent the car or at considerable distances from the latter. Pneumatic pressure is put upon the water in the vehicle to drive the water for discharging.

In the accompanying drawings, Figure 1 is an elevation of the left hand side of an apparatus embodying my improvement; Fig. 2 is an elevation of the right hand side of the same apparatus; Fig. 3 is a plan of the same apparatus; Fig. 4 is a front elevation, looking toward the right in Fig. 1; Fig. 5 is a section on the line, 5—5, of Fig. 1 looking toward the right; Fig. 6 is a section on the line, 6—6, of Fig. 1 looking toward the right; Fig. 7 is a section on the line, 7—7, of Fig. 1, looking toward the left; Fig. 8 is a rear elevation, the portion of the base or platform bearing the seat being broken away; Fig. 9 is a view of a form of nozzle; Fig. 10 is a sectional detail of a four-way air valve.

The car or apparatus comprises four carrying wheels, A, A, on axles, B, B, and a platform or base, C, and an air tight tank, D, resting upon said platform or base. The platform or base extends forward and rearward of the tank to make room for placing other portions of the apparatus upon said platform as will be hereinafter described.

Provision is made for putting water into the tank by several means. These will be next described. At the rear end of the tank, an intake pipe, 1, extends downward from the tank, D, through the platform, C, and then rearward and upward through the platform and to approximately the height of the tank and terminates there in a coupling, 2, or otherwise, to adapt said pipe for connection with any other pipe leading from a source of water supply from which water may be delivered into the pipe, 1, by gravity or by pressure. On the pipe, 1, near its upper end, is a cut-off valve, 3, by means of which flow through the pipe, 1, may be cut off. Below said valve, 3, there is a branch, 4, to the outer end of which is applied a hose, 6, having at its outer end a nozzle, 7. On said branch is a cut-off valve, 5. With the valve, 5, closed and the valve, 3, open, water may be made to flow downward through the pipe, 1, into the tank until the latter contains as much water as is desired. Thus water may be introduced against the air in the tank or the upper portion of the tank may be given ventage for the escape of air while the water is entering the tank. Such ventage may be through a short pipe, 8, having a cut-off valve, 9.

Water may also be put into the tank by means of the pump, F, which is located upon the right hand side of the rear portion of the platform, C. Said pump is shown as having a handle, 10, for working the piston stem, 11, of the pump. A discharge pipe, 12, extends from the pump into the tank. The pump has an intake pipe, 13, which may take water from any source of supply by means of any convenient connection of appliances. In the form shown by the drawings, said intake pipe leads along the right hand side of the tank and around the front end of the latter and is there coupled to a branch, 14, extending horizontally from an upright pipe, 15, at the front of the tank, said pipe extending downward through the platform, C, and there connecting with the cross-pipe, 16, which communicates with a pipe, 17, rising through the platform into the tank, so that water may pass from the tank through said pipe, 15. From the right hand end of the cross-pipe, 16, another pipe, 15, rises in front of the tank. On the front portion of the platform and in front of the tank, is mounted a hose reel, G. Said reel comprises a spool, 18, having a fixed tubular axle, 19, resting in bearings, 20, on a turn-table, H, secured to the platform, C, by means of a king bolt, I. On the tubular axle, 19, is a tubular branch, 21, which extends to the perimeter of the spool and has on its outer end a coupling, 22, for the connection of a hose, 23. The right hand end of the axle, 19, is closed, and on said end is a crank, 24. A coupling, 25, the members

of which may turn on each other without leakage is secured to the left hand end of said axle to permit rotation of the spool axle. A piece of flexible hose, 26, is secured to said coupling and to the branch, 14, with which the pipe, 13, connects, as already described. The coupling, 25, allows the axle to turn without turning the hose, 26. A valve, 27, is placed on the branch, 14, between the pipes, 13 and 15. A cut-off valve, 28, is placed on the pipe, 13, adjacent the branch, 14. With the valve, 28, open and the valve, 27, closed, there is communication from the pump through the intake pipe, 13, branch, 14, hose, 26, axle, 19, and hose, 23. On the free end of the hose, 23, there may be any desired form of nozzle, 29. In Fig. 1 such nozzle is tapering; but Fig. 9 shows an expanded rose-form nozzle comprising a strainer. For taking water into the tank through the hose, 23, and the parts intervening between said hose and the pump, F, this form of nozzle is preferably substituted for the tapering form. For taking water by this means, the hose, 23, is unwound as far as necessary from the reel, G, to allow putting the nozzle, 29, into any body of water which can be reached in this way. When the nozzle has been submerged, the pump is worked for drawing water through said nozzle, the hose, 23, the reel axle, the hose, 26, the branch, 14, and the intake pipe, 13, the pump, and the discharge pipe, 12. This pumping may be done against the air within the tank, or the air may be vented as above described. The pipes, 17, 16, 15, and 14, constitute a pipe line with which the hose, 23, is in communication through the tubular branch, 21, the tubular axle, 19, and the hose, 26.

On the left hand portion of the platform, C, and rearward of the tank is an air compressor, E, having on its horizontal drive shaft, 30, a sprocket wheel, 31. On the adjacent wheel, A, of the car is a sprocket chain, 32, which extends around said two sprocket wheels, so that when the car moves, the turning of said wheel causes the moving of said chain and the turning of the sprocket wheel, 31, and the drive shaft, 30, and the working of the compressor. After opening the clutch, 56, the compressor may also be operated by means of the crank wheel, 34, on the drive shaft, 30.

A discharge pipe, 35, and an intake pipe, 36, communicate with the compressor and with a four-way valve, 37, and a pipe, 38, leads from said four-way valve into the upper portion of the tank, the relation of these parts being such as that when the four-way valve is turned in one position, there will be communication between the tank and the compressor through the pipe, 38, the valve, and the discharge pipe, 35, the pipe, 36, communicating with the atmosphere through the valve, and when the four-way valve is set in another position, there is communication between the tank and the compressor through the pipe, 38, the valve and the intake pipe, 36, the discharge pipe, 35, communicating with the atmosphere through the valve. (See Fig. 10.)

When the four-way valve, 37, is set for communication between the tank and the compressor through the intake pipe, 36, the compressor will exhaust the air in the tank. If now the valves at all other tank openings, excepting the one allowing communication through the hose, 23, are closed, a partial vacuum will be established within the tank. During the existence of such partial vacuum, the nozzle of said hose may be inserted into water, and air pressure will then force the latter through the hose, into the tank. This operation will proceed approximately proportionally to the degree of the partial vacuum. Water may be similarly taken into the tank by means of the hose, 6, at the rear end of the apparatus. If the tank can not be entirely filled by such exhaustion of air, filling may be completed by working the pump, F. The compressor may be operated for producing such exhaustion while the car is stationary or while the car is in motion. If the latter, the partial vacuum must be created when all openings into the tank, excepting the pipe, 38, are closed. Then after the corresponding nozzle has been submerged in water, the passage from the tank into the hose, 26, or 6, is opened.

The apparatus will now be further described for the purpose of disclosing the structure and operation involved in discharging or distributing water from the tank. With water in the tank and some compressed air within the tank above the water (the air having been compressed by the compressor, E, or by forcing water into the tank while there was no venting provided), the valve, 27, in the branch, 14, may be opened. When that is done, water is driven through the pipe, 15, branch, 14, hose, 26, reel axle, 19, branch, 21, and hose 23. The hose nozzle may be held in any direction and at any distance, within the length of the hose, from the reel. In this way water may be used for wetting the floor, sides, and top of a mine entry or a mine room for the purpose of laying dust. And in this way water may be used for extinguishing fires.

For sprinkling the floor along and adjacent the track upon which the apparatus runs, a branch, 39, is extended forward. From the lower end of each pipe, 15, and on the forward end of each such branch is placed a sprinkler nozzle, 40. Rearward of each of these nozzles, the branch, 39, has a cut-off valve, 41, to which is applied a rod, 42,

extending rearward along the adjacent outer side of the tank, through guides, 44, to the rear end of the tank where the rod terminates in a handle, 43. When it is desired to discharge water through these sprinkler nozzles, the valves, 41, are opened by sliding said rods, 42, endwise.

At each side of the tank near the upper edge of the latter are two bearings, 45, in which rests a rock shaft, 46, having at its rear end a crank, 47. On the end wall of the tank and opposite each crank is a notched quadrant approximately concentric to the shaft, 46, and adapted to receive a rearward projection, 49, on the crank, 47. By means of said quadrants, said shafts may be turned through various angles, within the range of the quadrant, and secured by means of the engagement between the quadrant and the crank.

The forward end of each shaft, 46, extends a little way forward of the front end of the tank and extends through an upright rocking nozzle, 50, said nozzle being rigidly secured to said shaft, so that when said shaft is rocked, said nozzle is rocked correspondingly in an upright plane transverse to the length of the tank. Each of said nozzles is coupled to the upper end of a flexible hose, 51, the lower end of which is coupled to the upper end of the adjacent pipe, 15. Below such coupling, each such pipe has a cut-off valve, 52, to which is coupled a rod, 53, extending rearward, through guides, 55, on the tank, to the rear end of the tank and there having a handle, 54. By reciprocating said rod endwise said valve, 52, is opened and closed. Now it will be seen that water is supplied to the rocking nozzles by means of the pipes, 15, and hose sections, 51, and by means of the rock shaft, 46, direction is given to the water issuing from said nozzles. The hose section, 51, is made long enough to permit the rocking of said nozzles. In the form shown in the drawings, provision is made for turning said nozzles through a range of about ninety degrees.

When water is to be discharged from the tank while the apparatus is traveling, the air compressor may be kept in operation by means of the sprocket gearing for maintaining the air pressure on the water while the volume of the latter is being reduced in the tank. The sprocket wheel, 31, is preferably loose on the shaft, 30, and made engageable by a clutch, 56, keyed on said shaft, in order that the compressor may be readily put out of action. To prevent excessive air pressure, a pop valve, 57, is provided on the upper portion of the rear end of the tank.

Water gages, 58, are shown on the rear end of the tank for detecting the height of the water in the tank. A hand hole, 59, is provided in the lower portion of the rear wall of the tank to allow cleaning the interior of the tank.

The apparatus may be propelled in any desired manner. The drawings show a car coupling, 60, at each end of the platform, C, for engagement by a mine locomotive. If desired one or more mine cars may be placed behind the apparatus and the locomotive placed behind such car or cars for pushing or pulling the apparatus. It will be observed that the apparatus is operative while traveling in either direction. Hence it may be pushed forward on one track and pulled backward on a return track and be in operation while on either. Outside of mines, the apparatus may be put to various uses, including the spraying of ground and trees. When used where there are no track rails, the wheels, A, may be suitably modified.

It is to be observed that the nozzles, 40, may be operated independently of the nozzles, 50, and that either of the nozzles, 40, or 50, may be operated without operating its companion nozzle, and that the direction of either nozzle, 50, may be different from the direction of the other of said nozzles.

The pipes communicating with the lower portion of the tank and having restricted discharge openings such as are afforded by the nozzles herein described for the distribution of the water in restricted streams under pressure, whereby the water is sprayed or showered, are to be regarded as distribution pipes.

The hose sections which are flexible and joined to members which are movable toward and from each other, during which movement the hose sections bend to adapt themselves to the varying distance, are to be regarded as adaptable tubular members or means.

I claim as my invention:

1. In an apparatus of the nature described, the combination of a tank, a pump, means connecting the discharge side of said pump with the tank, a discharge member, means connecting the intake side of said pump and said discharge member, means connecting said discharge member and said tank, and cut-off valves on said two connecting means, substantially as described.

2. In an apparatus of the nature described, the combination of a tank, a hose, a pump, means forming a passage from said hose into the intake side of said pump, means forming a passage from said hose into the lower portion of said tank, means forming a passage from the discharge side of said pump into said tank, and means for driving air into said tank, substantially as described.

3. In an apparatus of the nature described, the combination of a tank, a hose, a pump, means forming a passage from

said hose into the intake side of said pump, means forming a passage from said hose into the lower portion of said tank, means forming a passage from the discharge side of said pump into said tank, and means for conducting air into and out of said tank, substantially as described.

4. In an apparatus of the nature described, the combination of a tank, a hose, a pump, means forming a passage from said hose into the intake side of said pump, means forming a passage from said hose into the lower portion of said tank, means forming a passage from the discharge side of said pump into said tank, and means in operative relation with one of the carrying wheels for conducting air into and out of said tank, substantially as described.

In testimony whereof I have signed my name, in presence of two witnesses, this 22nd day of April, in the year one thousand nine hundred and twelve.

EDWARD F. BUFFAT.

Witnesses:
CYRUS KEHR,
ROY A. JOHNSTON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."