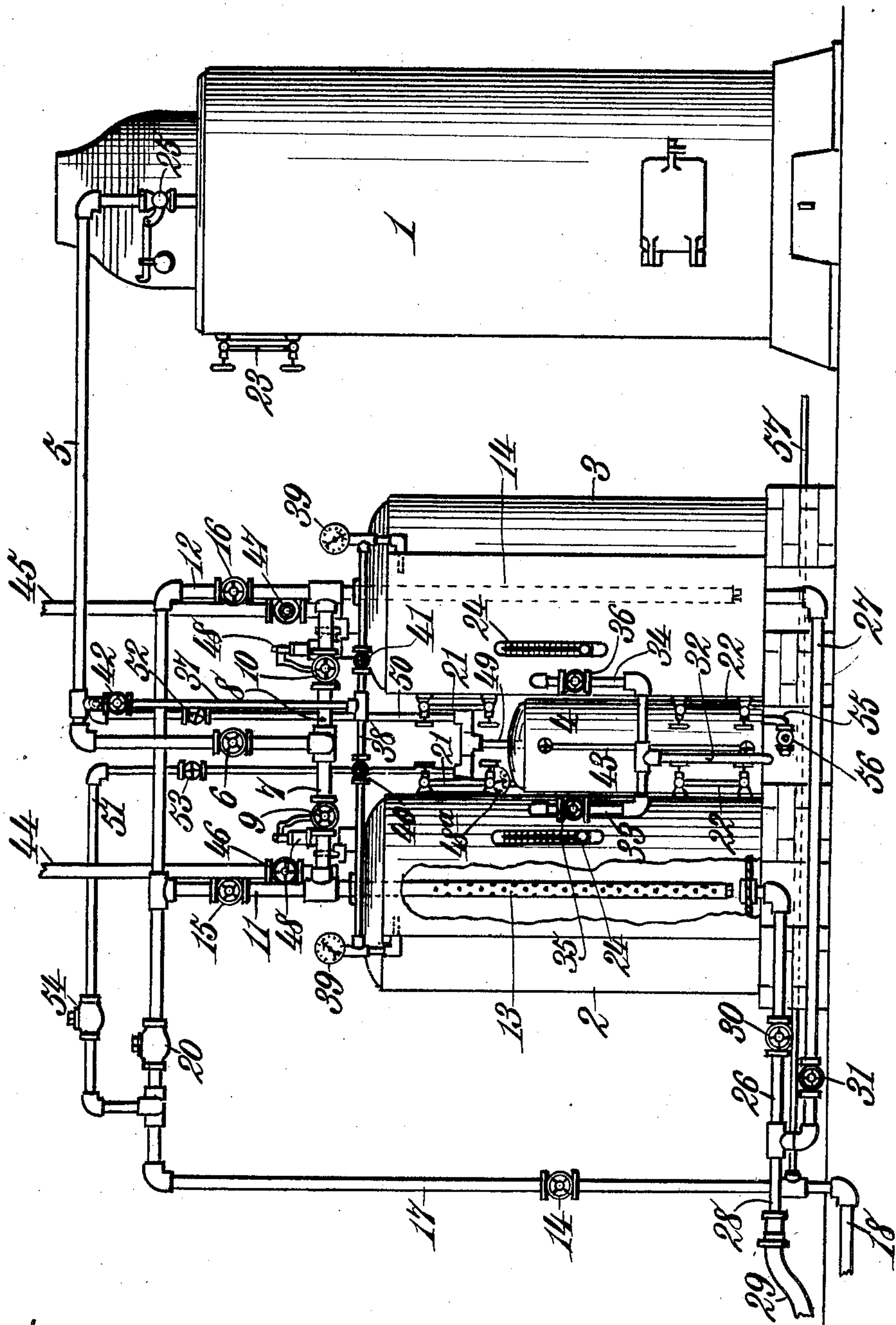


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J. G. BRANCH.
WASHING AND DISINFECTING APPARATUS.
APPLICATION FILED MAY 26, 1905.



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UNITED STATES PATENT OFFICE.

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WASHING AND DISINFECTING APPARATUS.

No. 827,610.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOSEPH G. BRANCH, a citizen of the United States, residing at St. Louis, in the State of Missouri, have invented
5 new and useful Improvements in Washing and Disinfecting Apparatus, of which the following is a specification.

This invention relates to an apparatus for use in washing and disinfecting garbage-
10 wagons.

The principal object of the invention is to provide an apparatus of the character indicated in the use of which water or water having a disinfectant combined therewith may
15 be discharged at any desired pressure and temperature in the wagons, whereby the same may be readily cleansed and, if necessary, disinfected.

A further object of the invention is to provide a duplex form of apparatus whereby the heated water or the heated water containing the disinfectant may be discharged from one receptacle while a companion receptacle is being supplied with the water or the
25 water and disinfectant.

Other subsidiary objects of the invention relate to details of construction and to combinations and operations of parts, all as hereinafter described, and particularly pointed
30 out in the claims following the specification.

In order that the invention may be clearly understood, I have illustrated the same in the accompanying drawing, in which the figure represents a view in side elevation of a
35 complete apparatus constructed according to my invention.

Referring now to the drawing, 1 indicates a vertical boiler, in which the steam used in the apparatus for heating purposes and for creating pressure is generated. 2 3 indicate, respectively, two similar tanks for containing water or water and disinfectant to be employed, and 4 indicates a tank for containing the disinfectant. Leading from the boiler 1
45 is a steam-pipe 5, provided with a valve 6 and having branches 7 8, provided with valves 9 10. The branches 7 and 8 connect to vertical pipes 11 12, said vertical pipes having perforated extensions 13 14, which
50 project centrally into the tanks 2 and 3, respectively, to near the bottoms thereof, the lower ends of said extensions being closed. The pipes 11 and 12 above the point of connection with the branch pipes 7 and 8 are
55 provided with valves 15 and 16, respectively.

17 indicates the feed-water pipe to the tanks, said pipe being connected to the upper ends of the vertical pipes 11 and 12. The pipe 17 leads to the water-main 18 of the street and at suitable points in its length is
60 provided with a valve 19 for turning off the water-supply and a check-valve 20 to prevent the water in the tanks being forced under steam-pressure back into the main. Sight-gages 21 22, located, respectively, near the
65 top and bottom of each tank, are provided for determining the height of water in said tanks, and a similar gage 23 is provided on the boiler. Each of the tanks 2 3 is also provided with a thermometer 24 in order that
70 the temperature of the contents of the tanks may be indicated at all times. A safety-valve 25 is provided for the boiler.

26 indicates a discharge-pipe leading from the bottom of the tank 2, and 27 indicates a
75 similar pipe leading from the bottom of the tank 3, said pipes being connected to a common discharge-pipe 28, adapted to have a suitable hose 29 applied thereto for discharging the contents of one or the other or
80 of both of the tanks 2 3 into the wagons to be cleansed or upon the substance or material to be disinfected. The pipe 26 is provided with a valve 30 and the pipe 27 with a
85 valve 31.

32 indicates a pipe communicating with the bottom of the disinfectant-tank 4 and having branches 33 34, communicating, respectively, with the tanks 2 and 3 about
90 midway the height thereof. The branch pipe 33 is provided with a valve 35 and the branch pipe 34 with a valve 36.

In the use of the invention I find it desirable to heat the contents of the tanks 2 and 3 through the medium of the perforated pipes
95 13 and 14 and to create pressure upon the contents of the tanks by separate steam-pipes. To this end I employ a pipe 37, which is tapped at its upper end into the steam-pipe 5 and at its lower end communicates
100 with a pipe 38, which latter at its opposite ends enters the tops of the tanks 2 and 3. Suitable pressure-gages 39 are provided for each tank to indicate the pressure of steam thereon. On opposite sides of the point of
105 connection of the pipe 37 with the pipe 38 the latter is provided with valves 40 and 41, respectively. The pipe 37 is provided with a valve 42. A sight-gage 43 is provided on the tank 4 to indicate the amount of disinfectant
110

drawn therefrom. 44 45, respectively, indicate exhaust-pipes leading from the tanks 2 and 3, and each of which is provided with a valve 46 47, respectively. As a precaution-
 5 any measure each tank is provided with a pop safety-valve 48. The disinfectant-tank is provided with a pressure-gage 48^a.

In the operation of the device as thus far described water is admitted to the tanks 2
 10 and 3 by closing the valve 6 in the steam-pipe 5 and opening the valves 15 and 16 in the pipes 11 and 12 and the valve 19 in the water-supply pipe 17, and water passes from the main 18 up through the pipes named and dis-
 15 charges through the perforated pipes 13 and 14 in the tanks. When the requisite amount of water has been supplied to the tanks, which will be indicated by the tubes 21, the valves 19, 15, and 16 are then closed. As-
 20 suming that it be desired to supply steam to heat the water in the tank 2 only, the valve 6 in the steam-pipe 5 and the valve 9 in the branch pipe 7 would be opened, all other valves being assumed to be closed, and steam
 25 would pass down through the pipe 11 and out into the water of the tank 2 through the perforated pipe 13. If it is desired to supply steam to the tank 3 to heat the water therein at the same time that steam is supplied to the
 30 tank 2, then the valve 10 in the branch pipe 8 would also be opened. In practice, however, it is desirable to heat the contents of one tank while discharging the contents of the other. Thus the contents of tank 2 having been
 35 heated I would in practice close the valve 9 and open the valves 42 and 40 to admit steam to the tank 2 above the water therein, and when the requisite pressure had been at-
 40 tained valve 30 in the discharge-pipe 26 would then be opened and the contents of tank 2 discharged through the hose 29. While the contents of tank 2 were being dis-
 45 charged, valve 10 in branch pipe 8 would be opened, admitting steam through the perforated pipe 14 to heat the contents of tank 3, and by the time this has been accomplished the contents of tank 2 will have been dis-
 50 charged and the valve 40, admitting steam to said tank, may be closed. The valve 10 would also be closed and the valve 41 opened to permit steam to enter the tank 3 above the
 55 contents thereof. When the requisite pressure has been attained in the latter tank, valve 31 will be opened and the contents dis-
 60 charged through the hose 29. It will of course be obvious without detailed description that by opening the appropriate valves the contents of both tanks can be simultane-
 ously heated and pressure be created above the contents thereof and that said contents may be discharged simultaneously from both tanks. As stated above, however, the alter-
 65 nate method of operation is preferred. After the water has been discharged from the tanks the latter will of course be filled with

steam. To get rid of this, the valve 46 or 47 is opened and the steam is allowed to exhaust through the pipe 44 or 45 or through both pipes simultaneously, as the case may be. The above description assumes that only wa-
 70 ter has been discharged from the tanks 2 and 3. I will now describe the method of supplying disinfectant to the tanks. As stated above, when the contents of a tank—say 2—has been discharged the tank would be filled
 75 with steam. When the valve 46 is opened to allow this steam to escape, the sudden lowering of the pressure and temperature consequent thereon will create suction in the
 80 tank 2, and by opening the valve 35 of the pipe 33 I utilize this suction to siphon over, as it were, disinfectant from the tank 4 into the tank 2. The same result in a more pro-
 85 nounced degree would be secured by closing valve 46 after substantially all of the steam has exhausted from tank 2 and then open-
 90 ing the valves 15 and 19 and admitting water into the tank 2, the rapid condensation of the steam creating a partial vacuum in the tank and drawing the disinfectant
 95 from the tank 4 when the valve 35 is opened. The contents of tank 4 are of course under atmospheric pressure in these operations. The tank 3 is supplied with disinfectant in
 100 the same way by opening the valve 36. It will thus be seen that the flow of the disinfectant is dependent upon the amount of pressure in the tank. Such pressure is decreased
 105 as the cold water gradually absorbs the heat remaining in the tank, and the rate of flow of the disinfectant will increase until the body
 110 of the liquid in tank 2 and in tank 4 plus the weight of air above each are equal, when the pressure will be equalized between the two tanks and the disinfectant will cease to flow.
 115 The valve 35 must then be closed. I have also arranged the apparatus with a view to enabling the disinfectant to be used separately—that is to say, without first discharg-
 120 ing it into the tanks 2 and 3. To this end a small pipe 49 enters the top of the disinfectant-tank 4 and is connected with a pipe 50, which is tapped into the steam-pipe 37 above
 125 the valve 42, and also with a pipe 51, which is connected to the water-supply pipe 17 beyond the check-valve 20. The pipe 50 is provided with a valve 52, and the pipe 51 with a
 130 valve 53 and a check-valve 54. By opening the valve 53 and the valve 19 water can be supplied to the tank 4 to dilute the disinfectant, if desired, and by opening the valve 52
 135 steam may be admitted to the tank 4 to create the necessary pressure above the contents of said tank to enable the same to be discharged. A suitable pipe 55, provided
 140 with a valve 56, leads from the bottom of the disinfectant-tank for permitting the contents thereof to be discharged in the manner described should the apparatus be used in
 145 this way. Ordinarily, however, the disin-

fectant would be supplied to the tanks 2 and 3 and combined with the water of said tanks, and the disinfecting fluid thus provided would be discharged in a highly-heated state from the hose 29.

57 indicates a pipe leading from pipe 17 to the inspirator of the boiler.

In practice the apparatus above described will be located at or near the place where the garbage - wagons discharge their contents. After each wagon is dumped it is backed up to the apparatus and the water and disinfectant discharged into the wagon, thus cleansing and disinfecting the same. This cleansing and disinfecting of the wagons occupies but a little time and in practice about one wagon per minute can be thus cleansed and disinfected.

By the use of this apparatus the garbage itself can be deodorized and disinfected before being hauled through the streets. In actual use I find that a temperature of 200° Fahrenheit and over of the water and a pressure of sixty pounds to the square inch thereon is necessary to enable the garbage and offal matter to be thoroughly removed from the ordinary zinc-lined garbage-wagons. I also find that with sixty-pounds boiler-pressure three hundred and eighteen gallons of water at a temperature of 60° Fahrenheit can be heated in seven and one-half minutes to 200° Fahrenheit.

The apparatus can be used to heat water or other liquid in large quantities to any desired temperature not exceeding the temperature of steam under boiler-pressure. When mounted on wheels, the apparatus makes a simple and portable device, by means of which an infected house or an old building being demolished or an infected district can be quickly and thoroughly disinfected or purified.

If a vaporized disinfectant is desired, the disinfectant is placed in the tanks either in a liquid or dry form and the steam from the boiler passed directly through the tanks and nozzle.

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

1. In a washing and disinfecting apparatus, in combination with a source of steam-supply, a closed tank having a discharge-pipe, a pipe communicating with said tank for supplying water thereto, a perforated pipe extending centrally into said tank substantially from top to bottom thereof and connected with the source of steam-supply, means for admitting steam above the body of liquid to discharge the contents of said tank, a disinfectant-tank, and means for causing, a pres-

sure-controlled flow of disinfectant therefrom into said tank to impregnate said liquid.

2. In a washing and disinfecting apparatus, in combination with a source of steam-supply, a closed tank having a discharge-pipe, a pipe communicating with said tank for supplying water thereto, a perforated pipe extending centrally into said tank substantially from top to bottom thereof and connected with the source of steam-supply, means for admitting steam above the body of liquid to discharge the contents of said tank, a disinfectant-tank and means for impregnating said liquid by causing a controllable flow of disinfectant into said tank from the disinfectant-tank by the successive employment of a reduced and an increased pressure within said tank.

3. In a washing and disinfecting apparatus, in combination with a source of steam-supply, a closed tank having a discharge-pipe, a pipe communicating with said tank for supplying water thereto, a perforated pipe extending centrally into said tank substantially from top to bottom thereof and connected with the source of steam-supply, means for admitting steam above the body of liquid to discharge the contents of said tank, a disinfectant-tank communicating with said first-named tank, and means for producing a partial vacuum in the latter tank to cause a flow of disinfectant thereinto from the disinfectant-tank to impregnate said liquid, said flow being regulated by the amount of vacuum pressure within said tank.

4. In a washing and disinfecting apparatus, in combination with a pair of tanks adapted to contain a liquid, a source of steam-supply, a steam-supply pipe leading therefrom, pipes connecting said steam-pipe with said tanks and terminating in perforated pipes located centrally within and extending substantially through the length of the respective tanks, pipes communicating with the source of steam-supply and with the upper ends of said tanks, a discharge-pipe communicating with said tanks, valves in the various pipes permitting alternate or simultaneous use of said tanks, a disinfectant-tank, and means for causing a flow of disinfectant therefrom into either of said tanks to impregnate the liquid therein by the successive use of a reduced and an increased pressure within said tanks.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOSEPH G. BRANCH.

Witnesses:

EDWARD LUCIUS DILLAR,
W. HUDSON.