

W. G. BORN.  
 APPARATUS FOR INJECTING CHEMICALS INTO LOGS.  
 APPLICATION FILED MAR. 11, 1909.

935,888.

Patented Oct. 5, 1909.

2 SHEETS—SHEET 1.

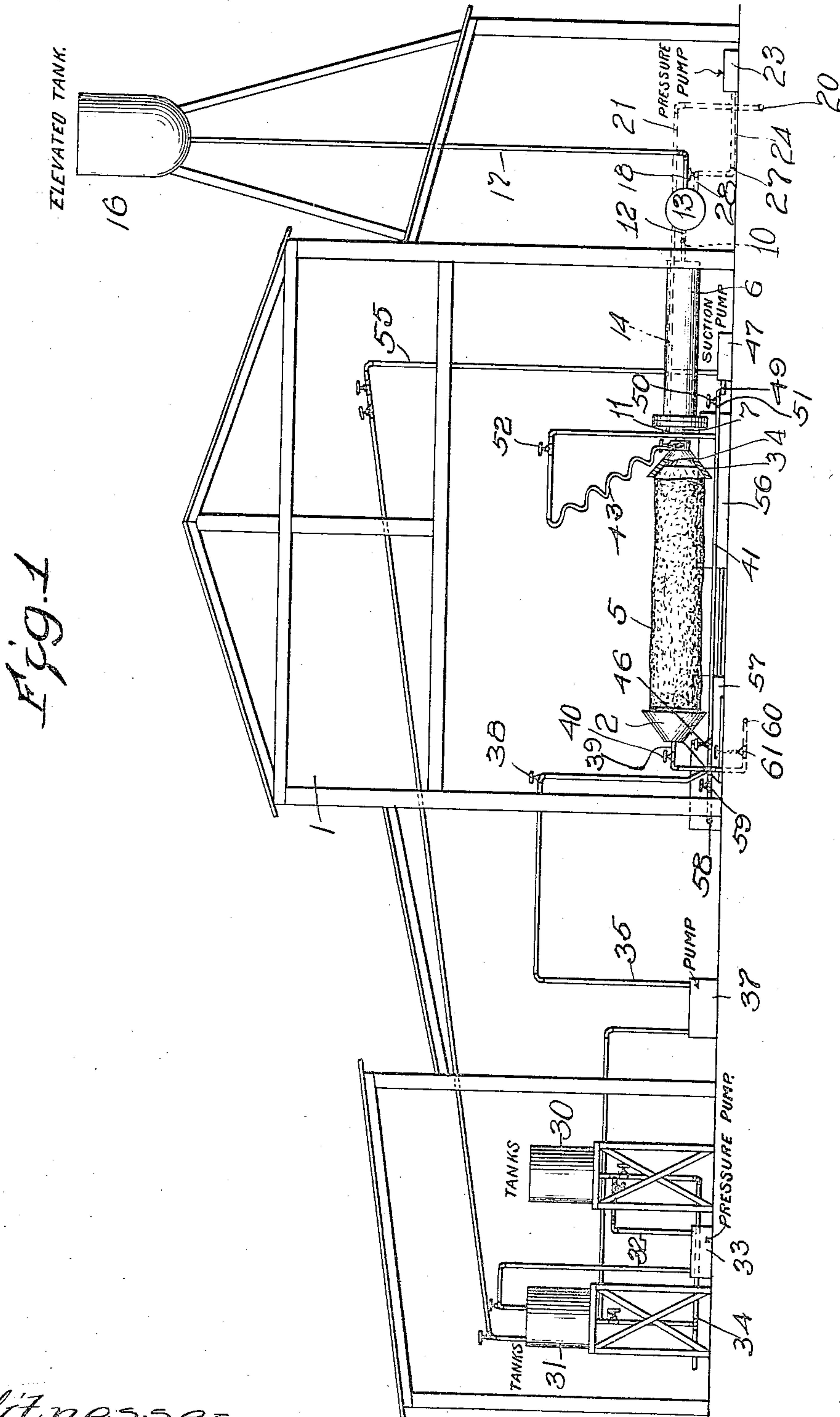


Fig. 1

Witnesses  
 R. A. White  
 H. R. L. White

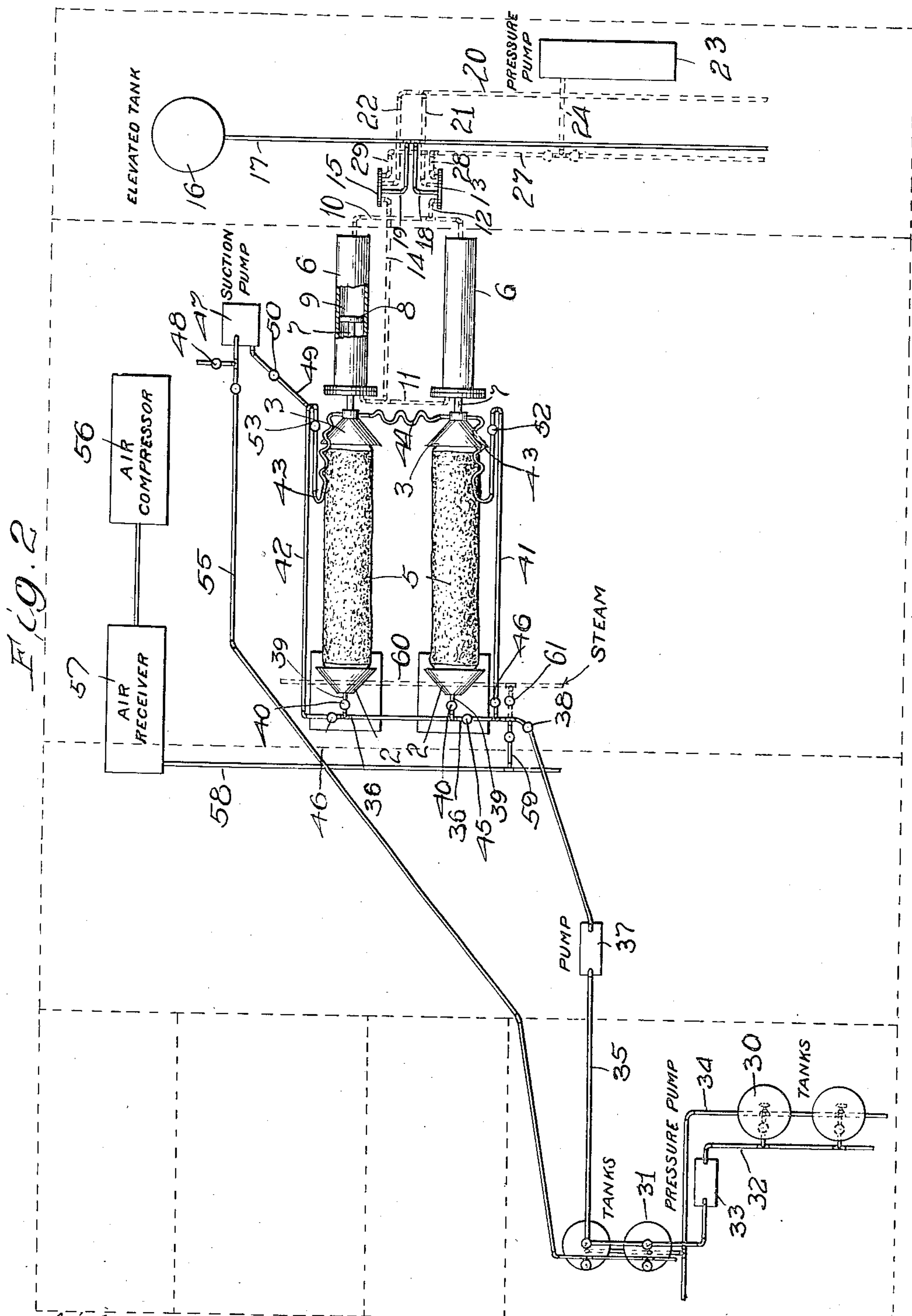
William G. Born  
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 H. R. L. White.

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# UNITED STATES PATENT OFFICE.

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## APPARATUS FOR INJECTING CHEMICALS INTO LOGS.

935,888.

Specification of Letters Patent.

Patented Oct. 5, 1909.

Application filed March 11, 1909. Serial No. 482,733.

*To all whom it may concern:*

Be it known that I, WILLIAM G. BORN, a subject of the Emperor of Germany, and a resident of Chicago, Cook county, State of Illinois, have invented certain new and useful Improvements in Apparatus for Injecting Chemicals into Logs, of which the following is a specification.

The main objects of this invention are to provide an improved form of apparatus for injecting chemicals into logs; to provide improved means for operating the engaging heads which support the logs in position to be treated; and to provide improved means for drying the logs either before or after treatment, or both.

A specific construction embodying this invention is illustrated in the accompanying drawings, in which:

Figure 1 is a diagrammatic plan view of a construction embodying this invention. Fig. 2 is a diagrammatic side elevation of the same and the housing therefor.

In the construction shown, the building 1 may be of any construction and design which is suitable for housing the apparatus. Rigidly mounted upon suitable foundations are the stationary log-engaging heads 2 and the movable log-engaging heads 3 which are oppositely disposed to the stationary heads and are arranged in pairs therewith. Any desired number of pairs of heads may be provided, and preferably when more than one pair is employed the pairs are connected in sets or batteries of two pairs each. But one battery is herein shown, though they may be multiplied to any extent. In adjacent sides of the heads of each pair are conical seats 4 which are in axial alinement with and open toward each other and are adapted to support the conically chamfered ends of a log therein. For the purpose of operating said movable heads 3 to adjust them to and from the stationary heads 2, hydraulic jacks 6 are provided which may be connected with said heads in any preferred manner, but, as herein shown, a jack is provided for each movable head, and the head is directly connected with the piston rod 7 of the jack. On the inner end of said piston rod is a piston 8 which is adapted to receive power on each side thereof.

In the outer ends of the jack cylinders 9, or those farthest removed from the heads, is connected a pipe 10, and a pipe 11 is con-

nected in the inner ends of said cylinders.

A pipe 12 connects said pipe 10 with a four-way valve 13, and a pipe 14 connects the pipe 11 with a four-way valve 15. An elevated tank 16 is supported in a convenient place above the jacks and is adapted to contain water or other fluid to be used in operating said jacks. A pipe 17 leads from said tank and is connected with the valves 13 and 15 by pipes 18 and 19 respectively, so that by proper manipulation of said valves water from said tank may be let into either end of the cylinders to operate the pistons and thereby move the movable heads 3 into and out of engagement with said logs. A waste pipe 20 is connected with said valves by pipes 21 and 22 to enable water to be drawn off from either end of the cylinders. The pressure in the elevated tank is utilized to move the heads 3 into and out of position to engage the logs, and for the purpose of forcing said heads against the logs to provide a water or air tight joint between each end of the log and its engaging heads, there is provided a hydraulic pressure pump 23 having an outlet pipe 24 which connects into a power distributing pipe 27, from which pipes 28 and 29 lead to said valves 13 and 15 respectively. When said valves are manipulated to connect the pipe 28 with the pipe 12 and to connect the pipe 14 with the waste pipe 20, the high pressure from said pump 24 will force the heads toward the logs while the water at the sides of the pistons adjacent to the logs will waste. Similarly the pipe 14 may be connected with the pump 23 while the pipe 12 is connected to the waste pipe, for forcing the heads out of engagement with the logs.

The chemicals used to treat the logs are mixed or prepared in mixing tanks 30 and are conveyed therefrom into storage tanks 31 through a pipe 32 and by means of a low pressure pump 33. A valved waste pipe connects with the tanks 30 and 31 and permits the contents of the tanks to be drawn off when it is desired to clean the tanks or substitute different chemicals. A feed pipe 35 leads from said storage tanks 31 and connects with a pipe 36 which extends transversely of the logs at the rear of the stationary heads 2. A pump 37 is connected in said feed pipe 35, and intermediate between the pump and the heads 2 said pipe rises above the level of the storage tanks and



is provided with a valve 38. Extending from the pipe 36 into each head 2 is a pipe 39 having a valve 40 therein by means of which communication between said pipe 36 and said heads may be cut off. Pipes 41 and 42 extend from the pipe 36 forwardly to near the heads 3 and then upwardly, and each is connected to the adjacent head 3 by means of a flexible pipe 43, which permits said heads to be moved with respect to the heads 2, and a flexible pipe 44 connects the heads 3 and establishes communication directly between them.

In the pipe 36 and intermediate between the pipe 41 and the adjacent pipe 39 is a valve 45 adapted to shut off communication between the feed pipe 35 and the heads 2, and in the intake ends of the pipes 41 and 42 are valves 46 adapted to shut off communication between the feed pipe and the heads 3. By means of the foregoing arrangement of pipes and valves, the chemicals may be forced through the logs in either direction without the necessity of removing or turning the logs.

For the purpose of aiding the pump 37 in forcing the chemicals through the logs, means are provided for applying suction to the ends of the logs opposite from those to which the pump may be delivering chemicals. For this purpose a suction pump 47 is provided which is connected by a pipe 49 with the pipe 42. The pipes 41 and 42 are provided near their upper ends with valves 52 and 53 respectively, so that when it is desired to apply suction to the heads 3, the valves 46 and 52 are closed and the valves 45 and 53 are opened, thereby establishing communication between said suction pumps and said heads 3. When it is desired to apply suction to the heads 2, the valves 45 and 53 are closed and the valves 40 and 46 are opened. Return pipes 55 lead to the storage tanks 31 from said suction pump 47. The suction pump 47 is provided with a waste pipe 48 from which the liquids drawn off from the logs by the pump 47 may be discharged when it is not desirable to return them to the chemical tanks 31.

Situated in a convenient place are an air compressor 56 and an air receiver 57. A pipe 58 leads from the latter and is connected into the pipe 36 by means of a valved pipe 59, and is adapted to convey air to said heads, whence it passes through the logs to dry them. A steam pipe 60 leads from a suitable source of steam supply (not shown) and is connected into the pipe 36 by means of a branch pipe having a valve 61, so that when steam is admitted to the pipe 36 it will act to clean the pipes connecting the heads, and the refuse will be discharged through the pump 47 and the waste pipe 48.

The operation of the apparatus shown is as follows: The logs are each placed between

a pair of heads in approximate alinement therewith. The valve 13 is then manipulated to bring the pipes 12 and 18 into communication with each other, and pressure is admitted from the elevated tank to the forward ends of the jack cylinders, and the pistons 8 are moved rearwardly, thereby carrying the movable heads into engagement with the ends of the logs. The valve 13 is then set to bring the pipe 12 into communication with the pipe 28, thereby admitting high pressure from the pump 23 into the forward ends of said cylinders and forcing the heads 3 into close contact with the adjacent ends of the logs and forcing the logs tightly into the heads 2. When tight joints have been established between the engaging heads and the logs, the proper valves in the chemical pipes are manipulated to admit the chemicals from the pump 37 into the heads at one end of the logs, and suction from the suction pump 47 is applied at the other end. When the chemicals have been forced through the logs in one direction for a desired period of time, the valves in the chemical pipes are manipulated to change the direction of flow, and the process is repeated until the chemicals have been thoroughly and evenly distributed throughout the logs without turning or removing the logs. After the logs have been treated with the chemicals, air is admitted from the air receiver and forced through the logs in the same manner and acts to thoroughly dry them. The valve 13 is then set to establish communication between the pipe 12 and the pipe 21 leading to the waste pipe 20, and the valve 15 is set to establish communication between the pipe 14 and the pipe 24 leading from the pipe 27, and the pressure from the pump 23 is applied at the rear ends of the cylinders and acts to move the pistons rearwardly and carry the movable heads 3 out of engagement with the logs.

Although but one specific embodiment of this invention is herein shown, it will be understood that numerous details of the construction shown may be altered or omitted without departing from the spirit of this invention.

I claim:—

1. Apparatus for injecting fluids into logs, comprising a pair of engaging heads, one of which is movable with respect to the other, a cylinder, a piston therein operatively connected with said movable head, means for admitting fluid pressure into either end of said cylinder, and means for delivering a fluid into said heads.

2. Apparatus for injecting fluids into logs, comprising a stationary engaging head, a movable engaging head in alinement therewith, fluid pressure operated means operatively connected with said movable head and adapted to move it to or from the stationary



head, and means adapted to deliver a fluid into said heads.

3. Apparatus for injecting chemicals into logs, comprising a stationary engaging head, 5 a movable engaging head in alinement therewith, a hydraulic jack having a piston therein adapted to support said movable head, means for admitting power into either end of said jack to move the head to or from the 10 jack, a source of chemical supply, and means for admitting chemicals therefrom to either of said heads.

4. The combination with a pair of heads adapted to support a log between them, of a 15 fluid operated jack connected with one of said heads and adapted to move it to and from the other head, means for reversing the power in said jack, and means for forcing chemicals through said heads and into 20 a log supported thereby.

5. The combination with a stationary head, of a movable head in alinement therewith, a cylinder, a piston therein, a piston rod on said piston and operatively connected with 25 said movable head, a pressure tank, a pipe connecting said tank with said cylinder, a valve therein adapted to admit pressure into either end of said cylinder, means adapted to augment the pressure in said cylinder, 30 and means for forcing chemicals through said heads and into a log supported thereby.

6. The combination with a pair of engaging heads having seats therein adapted to support the ends of a log, of a cylinder, a 35 piston therein, a rod on said piston and operatively connected with one of said heads, a fluid pressure tank, pipes connecting said tank with said cylinder, a valve in said pipes adapted to admit pressure from the tank 40 into either end of the cylinder, a pressure

pump, and a pipe connecting said pump with said valve, and means for forcing chemicals through said heads and into a log supported thereby.

7. The combination with a pair of engag- 45 ing heads adapted to support a log between them, of a cylinder, a piston therein, a rod on said piston and operatively connected with one of said heads and adapted to move it to and from the other head, a gravity 50 tank, a supply pipe leading therefrom, pipes leading from said supply pipe into each end of said cylinder, a valve in each of said pipes, a return pipe connected in each of said valves and returning to said tank, a pressure pump 55 and a pipe leading therefrom and connected in each of said valves, and means for forcing chemicals through said heads and into a log supported thereby.

8. Apparatus for injecting chemicals into 60 logs, comprising a pair of engaging heads having seats therein adapted to receive the ends of a log, fluid pressure operated means adapted to move one of said heads to and from the other, a source of chemical supply, 65 a feed pipe leading therefrom and opening into said seats, a pump connected in said pipe, means in said pipe adapted to control the direction of flow through the log, means for applying suction to either end of the 70 log and returning the chemicals to the supply, and means for forcing air through the log.

Signed at Chicago this 6th day of March 1909.

WILLIAM G. BORN.

Witnesses:

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MARY M. DILLMAN.