

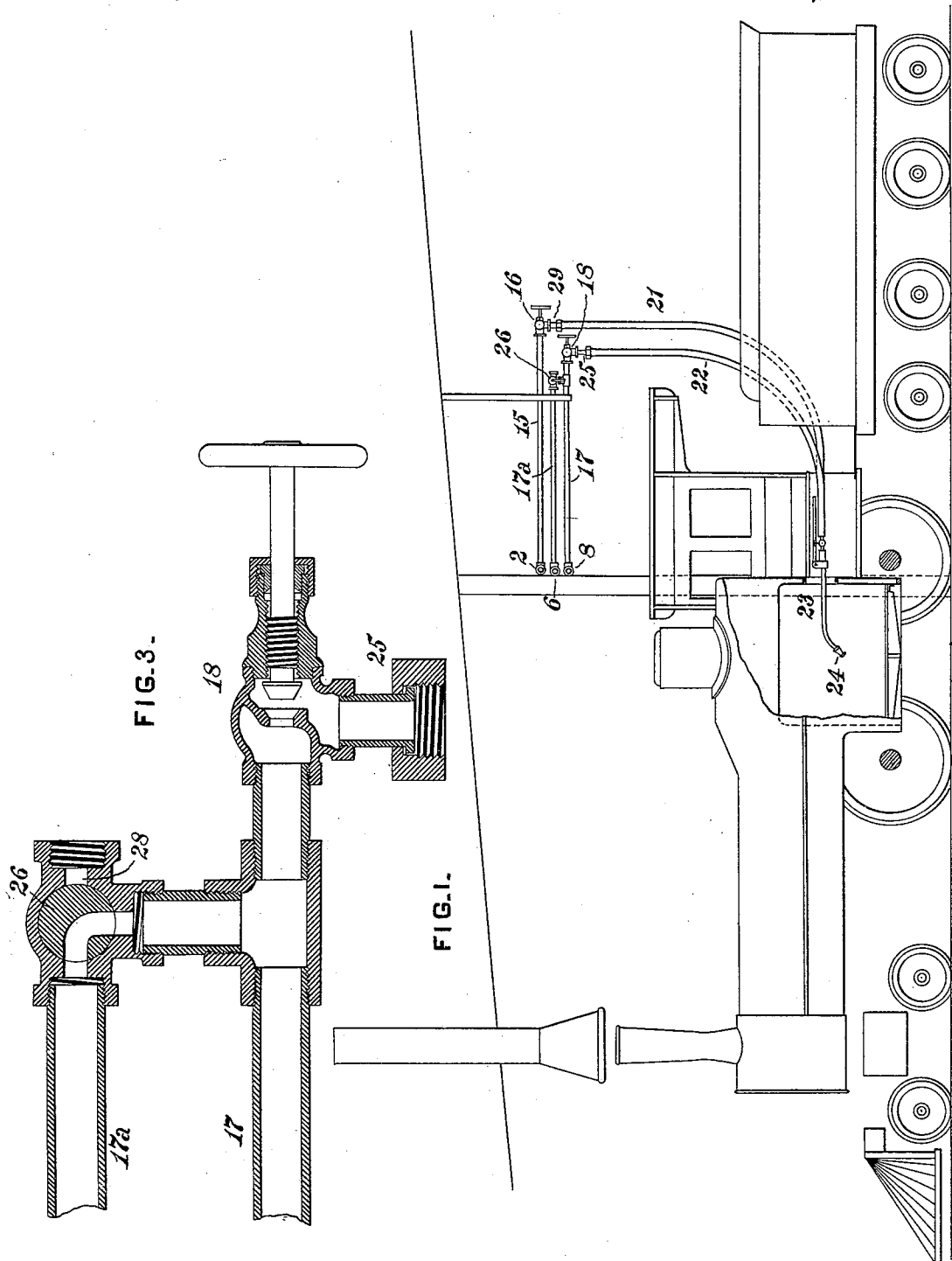
(No Model.)

2 Sheets—Sheet 1.

J. McNAUGHTON.
LOCOMOTIVE FIRE KINDLING APPARATUS.

No. 508,739.

Patented Nov. 14, 1893.



WITNESSES:

T. J. Hogan.
J. E. Gaither.

INVENTOR,

INVENTOR,
Jas. M. Haughton,
by J. Snowden Bell

Att'y.

THE NATIONAL LITH' GRAPHING COMPANY,
WASHINGTON, D. C.

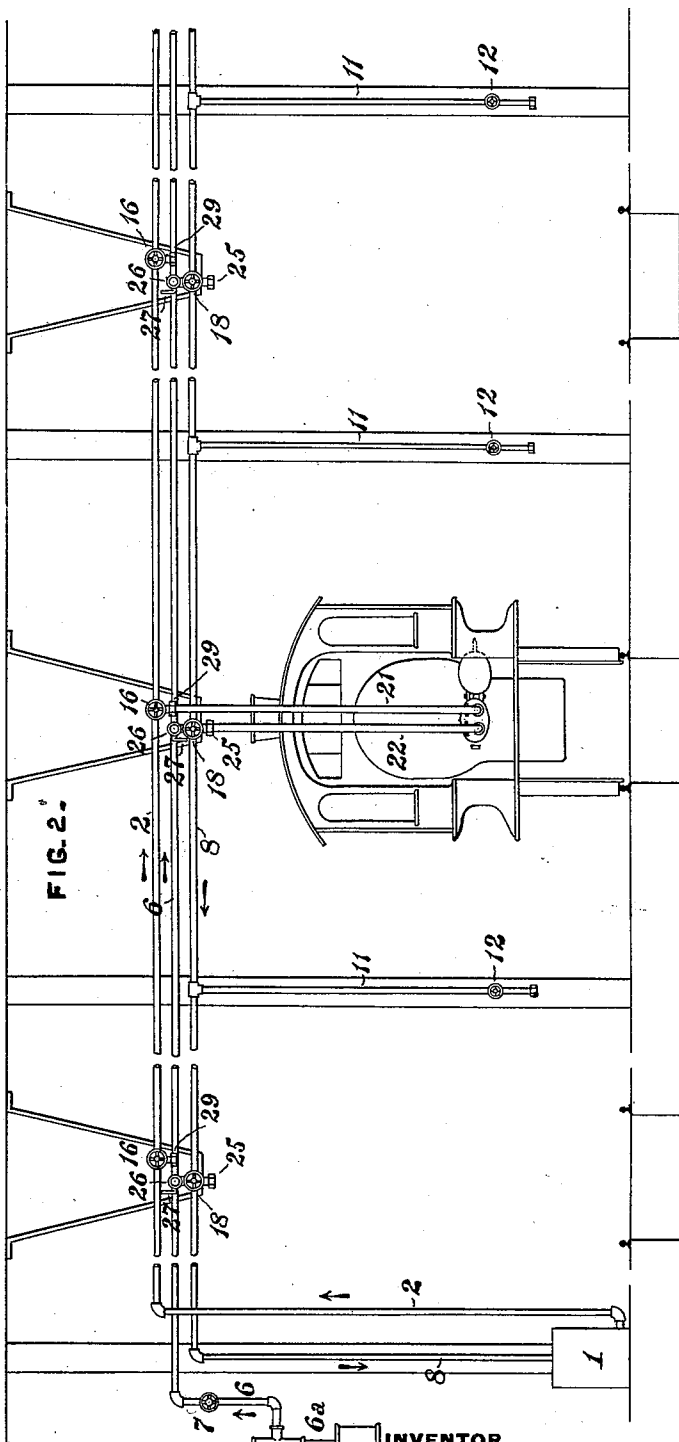
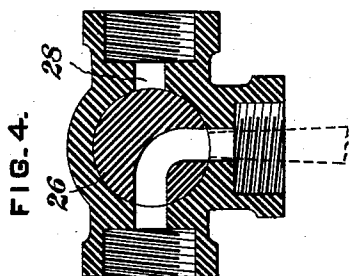
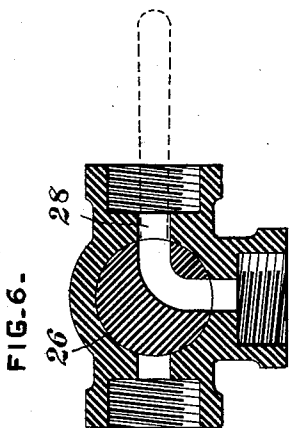
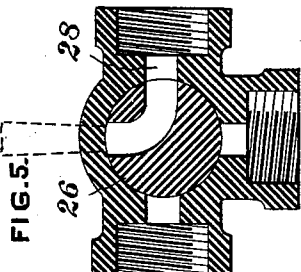
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UNITED STATES PATENT OFFICE.

JAMES MCNAUGHTON, OF WAUKESHA, WISCONSIN, ASSIGNOR TO JOHN S. LESLIE, OF PATERSON, NEW JERSEY.

LOCOMOTIVE FIRE-KINDLING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 508,739, dated November 14, 1893.

Application filed August 15, 1893. Serial No. 483,174. (No model.)

To all whom it may concern:

Be it known that I, JAMES MCNAUGHTON, of Waukesha, in the county of Waukesha and State of Wisconsin, have invented a certain new and useful Improvement in Locomotive Fire-Kindling Apparatus, of which improvement the following is a specification.

My present invention relates to fluid distribution apparatus for kindling fires in locomotive engines, of the general class or type set forth in Letters Patent of the United States No. 495,904, granted and issued to me under date of April 18, 1893, and its object is to further facilitate and perfect the application and operation of appliances for such purpose, by the provision of an apparatus of simplified and inexpensive construction, by means of which a supply of liquid fuel and an air blast may be delivered to a burner, at any desired point of connection in a system of distribution piping, and an automatic circulation of liquid fuel and air may be instituted and maintained therein for such period as is necessary for the kindling of a fire, and the cessation of such circulation, and automatic return of all surplus liquid fuel from the piping to the reservoir, be effected upon the completion of the operation of kindling the fire.

To this end, my invention, generally stated, consists in certain novel combinations, embodying a main fuel reservoir, a supply pressure pipe, a service pressure pipe, a regulating cock controlling communication between said pipes, and controlling a release port from the service pressure pipe, a fuel service pipe, and a delivery connection leading from the fuel service pipe.

The improvement claimed is hereinafter fully set forth.

In the accompanying drawings: Figure 1 is a partial end view of an apparatus for kindling locomotive engine fires, illustrating an application of my invention, the same being shown in position in a round house, and connected to a locomotive engine; Fig. 2, a side view of the same; Fig. 3, a sectional view, on an enlarged scale, through the regulating cock and its connections, and Figs. 4, 5 and 6, sectional views of the regulating cock in its three different positions respectively.

In the practice of my invention, I provide a main or fuel supply reservoir 1, for the reception of the liquid fuel, such as crude petroleum or other fuel oil, which is to be used for kindling, said reservoir being of any desired capacity, and being located in, or conveniently adjacent to, a round house in which locomotives are housed during intervals between trips. Liquid fuel from the main reservoir 1 is conveyed, by fluid pressure, to different desired points of delivery in the round house, by a system of distribution piping, the preferred construction of which is as follows: A supply pressure pipe 6, which may be controlled by a cock or valve 7, leads from any suitable source of fluid pressure supply, as a reservoir of fluid under pressure, or an air compressor, 6^a, and passes along the round house above the several engine stalls, being suspended at a convenient height above the floor. A service pressure pipe 8 leads out of the upper portion of the main fuel reservoir 1, and extends along the round house adjacent to the supply pressure pipe 6, being provided, adjacent to each stall, with an air delivery pipe 17, the discharge end of which is fitted with a coupling or other suitable connection 25, for a flexible hose, and is controlled by a cock or valve 18. Each of the air delivery pipes 17, of the service pressure pipe 8, communicates with the supply pressure pipe 6, through a connecting pipe 17^a, controlled by a three way regulating cock 26, actuated by a handle 27, and working in a chest or casing having a release port 28, opening to the atmosphere. In the working position shown in Figs. 3 and 4, the regulating cock 26 establishes communication between the supply pressure pipe and the service pressure pipe; in Fig. 5, which is its shut off position, it closes communication between said pipes; and in Fig. 6, it is in release position and opens communication from the service pressure pipe to the atmosphere, through the release port 28.

A fuel service pipe 2, leads out of the lower portion of the main reservoir 1, and extends along the round house, adjacent to the supply pressure pipe 6 and service pressure pipe 8, and fuel delivery pipes 15 lead from the fuel service pipe 2, adjacent to the air delivery pipes 17, the fuel delivery pipes 15 having

their discharge ends fitted with couplings or other suitable connections 29, for flexible hose, and being controlled by cocks or valves 16.

5 The ends of the supply pressure pipe, service pressure pipe, and fuel service pipe, farthest from the main reservoir, are closed by suitable tight caps, and blower service pipes 11, controlled by valves 12, may, as in Patent
10 No. 495,904 aforesaid, be led from the service pressure pipe 8, adjacent to the several stalls, the ends of the blower service pipes being provided with suitable connections for flexible blower hose.

15 While I deem a construction in which the service pressure pipe is provided with delivery pipes, as shown, to be preferable in practice, it will be obvious that, if desired, the air delivery pipes may be dispensed with, and
20 simple connecting pipes provided with regulating cocks be employed, as the air supply may be taken directly from the compressor or other source of supply, without departure from the spirit of my invention.

25 In the operation of the apparatus, the main reservoir 1 having been charged with the fuel oil which is to be used, a suitable quantity of coal, in practice about four hundred pounds, is placed upon the grate of the engine in
30 which a fire is to be kindled. Flexible hose sections, 21 and 22, are coupled, respectively, to the oil delivery pipe 15 and the air delivery pipe 17, adjacent to the engine, and are connected, at their opposite ends, to a pipe
35 23, having, upon its outer end, a burner or mixer 24, of any suitable and preferred construction, which is passed into the firebox of the engine and placed adjacent to the coal therein. The valve 7, of the supply pressure
40 pipe 6, and the valves 16 and 18, of the fuel and air delivery pipes 15 and 17, are opened, and the regulating cock 26 turned into the working position, as shown in Figs. 3 and 4. An automatic circulation of fuel oil and air,
45 as indicated by the arrows in Fig. 2, is thereupon established in the pipes 2, 6, and 8, the oil being forced up from the main reservoir 1, through the pipe 2, by the pressure in the then communicating pipes 6 and 8, and dis-
50 charged to the burner through the delivery pipe 15 and flexible hose 21, air under pressure being coincidently delivered to the burner from the pipe 6, through the connecting pipe 17^a and flexible hose 22. A spray of mingled
55 fuel oil and air is thereby forced out of the openings of the burner or mixer 24, and, being ignited, its flame is projected downwardly upon the coal in the firebox of the engine. The combustion at the burner openings is
60 continued for about ten minutes or less, after which the fire will be found to be fully ignited, and the burner or mixer can be withdrawn from the firebox. After the fire has been kindled, the valves 16 and 18, of the fuel and
65 air delivery pipes, are closed, and the hose sections 21 and 22 disconnected and removed;

the regulating cock 24 is also turned into release position, so as to exhaust the air from the pipe 8 and main reservoir 1, and stop the circulation in the system of piping. Such
70 surplus oil as may remain in the fuel service pipe 2 and delivery pipe 15, will then immediately drain back, by gravity, to the main reservoir, thus withdrawing all oil from the piping except during the short period re-
75 quired for kindling a fire. After the air has been released, the regulating cock is turned into shut off position, to prevent the escape of air while the operation is being repeated at some other stall of the round house.

80 My invention presents the structural advantage of ready and convenient installation at very slight cost, the system of distribution piping being light, simple, and inexpensive. In its operation, the burner hose sections may
85 be easily and quickly connected to, and disconnected from, the delivery pipes of any stall in a round house in which an engine to be fired up is standing, and a feature of special importance is its freedom from risk of
90 damage to the building and engines therein by fire. Inasmuch as no oil is required to be stored in the round house, only a small volume passes through the fuel service pipe in the brief time occupied in the kindling operation,
95 and any surplus remaining in the piping thereafter, is immediately withdrawn and returned to the main reservoir, the system of piping being thus completely free from oil when the apparatus is not in use.

100 I claim as my invention and desire to secure by Letters Patent—

1. The combination, in a fluid distribution apparatus for kindling locomotive engine
105 fires, of a main fuel reservoir, a fuel service pipe leading from said reservoir to a higher level, a delivery pipe leading from the fuel service pipe, a system of piping leading from a source of fluid pressure supply to the main fuel reservoir, and a regulating cock fitted
110 in said system of piping and controlling the application of pressure to fluid fuel in the reservoir for effecting the discharge thereof through the fuel service pipe and delivery pipe, and the release of pressure therefrom
115 for effecting the return of fluid by gravity from the fuel service pipe to the reservoir, substantially as set forth.

2. The combination, in a fluid distribution apparatus for kindling locomotive engine
120 fires, of a main fuel reservoir, a source of fluid pressure supply, a fuel service pipe leading from said fuel reservoir and provided with delivery pipes at different points in its length, a system of piping connecting the fuel res-
125 ervoir and source of fluid pressure supply, and a series of regulating cocks controlling said system of piping, whereby the application and release of fluid pressure to and from fluid fuel in the fuel reservoir, for discharge
130 of fluid fuel from a delivery pipe and for return to the reservoir respectively, may be ef-

fects at or adjacent to either of the delivery pipes, substantially as set forth.

3. The combination, in a fluid distribution apparatus for kindling locomotive engine fires, of a main fuel reservoir, a source of fluid pressure supply, a fuel service pipe leading from said fuel reservoir and provided with delivery pipes at different points in its length, a system of piping connecting the fluid reservoir and source of fluid pressure supply and provided with a series of fluid pressure delivery pipes at different points in its length, and a series of regulating cocks controlling said system of piping, whereby the application and release of fluid pressure to and from fluid fuel in the fuel reservoir, for discharge from a fuel service delivery pipe and for return to the reservoir respectively, and the coincident institution and stoppage, respectively, of a discharge of fluid under pressure from a delivery pipe of the system of connecting piping, may be effected at or adjacent to either of the delivery pipes substantially as set forth.

4. The combination, in a fluid distribution apparatus for kindling locomotive engine fires, of a main fuel reservoir, a source of fluid pressure supply, a connection from the source of fluid pressure supply to the fuel reservoir and to a burner or mixer, and a valve device which controls the passage of fluid under pressure to the reservoir and to the burner or mixer, whereby fluid fuel and fluid from the source of fluid pressure supply are simultaneously delivered to the burner, substantially as set forth.

5. The combination, in a fluid distribution apparatus for kindling locomotive engine fires, of a main fuel reservoir, a fuel service pipe leading therefrom, a supply pressure pipe, a service pressure pipe leading into the

main reservoir, a regulating cock controlling communication between the supply pressure pipe and service pressure pipe, and controlling a release port from the service pressure pipe, and a delivery pipe leading from the fuel service pipe, substantially as set forth.

6. The combination, in a fluid distribution apparatus for kindling locomotive engine fires, of a main fuel reservoir, a fuel service pipe leading therefrom, a supply pressure pipe, a service pressure pipe leading into the main reservoir, a regulating cock controlling communication between the supply pressure pipe and service pressure pipe, and controlling a release port from the service pressure pipe, and delivery pipes leading from the fuel service pipe and service pressure pipe, respectively, substantially as set forth.

7. The combination, in a fluid distribution apparatus for kindling locomotive engine fires, of a main fuel reservoir, a fuel service pipe leading therefrom, a supply pressure pipe, a service pressure pipe leading into the main reservoir, a series of pipes connecting the supply pressure pipe and service pressure pipe, a series of regulating cocks, each controlling one of said connecting pipes and controlling a release port from the service pressure pipe, and a series of delivery pipes leading from the fuel service pipe and service pressure pipe respectively, these members being combined for joint operation to admit of the delivery of liquid fuel and fluid under pressure at any desired point of discharge, substantially as set forth.

JAMES McNAUGHTON.

Witnesses:

C. W. BOOTH,
WM. R. TOLLETH.