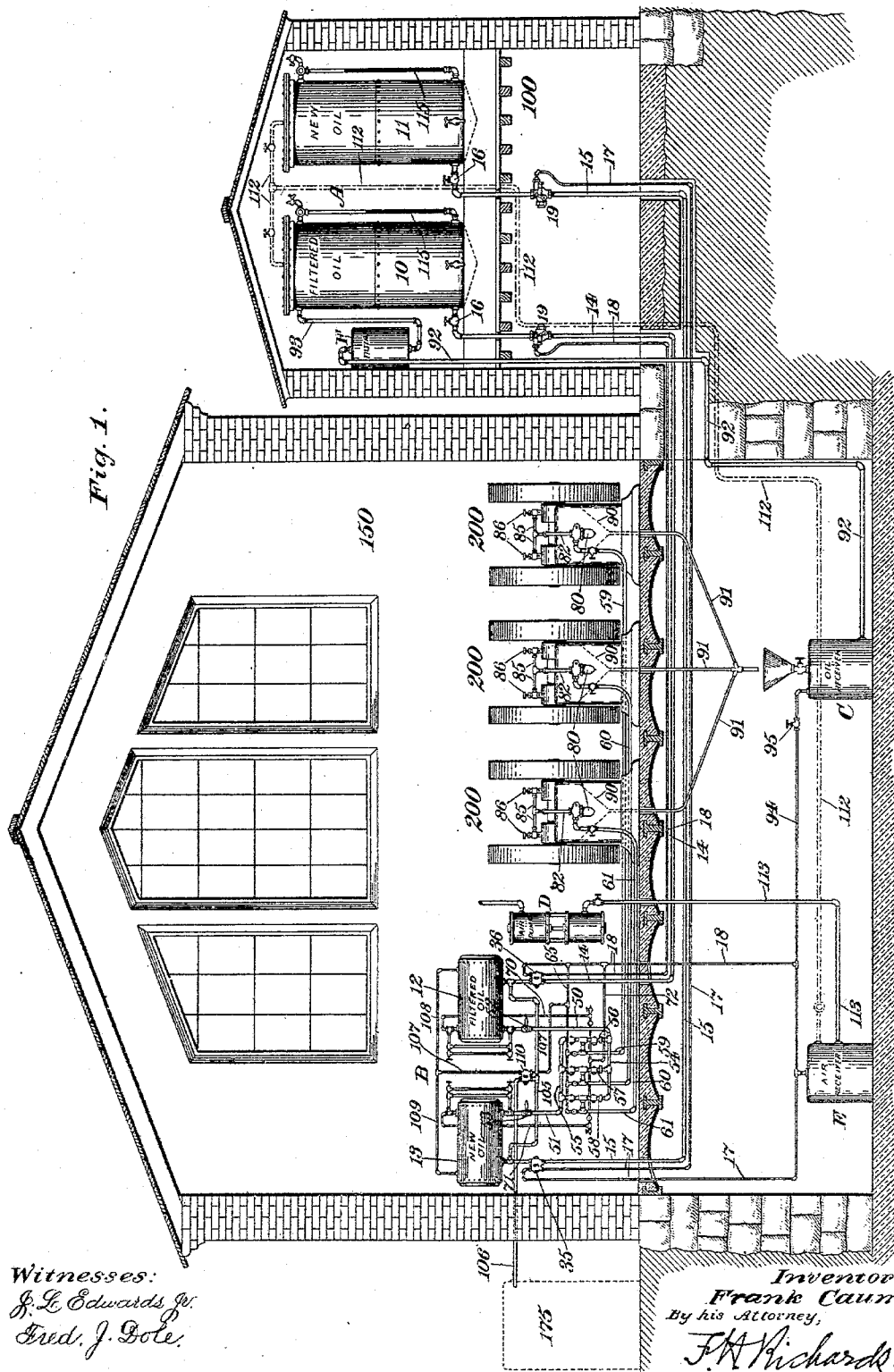


F. CAUM.
OIL DISTRIBUTING APPARATUS.

No. 564,969.

Patented Aug. 4, 1896.



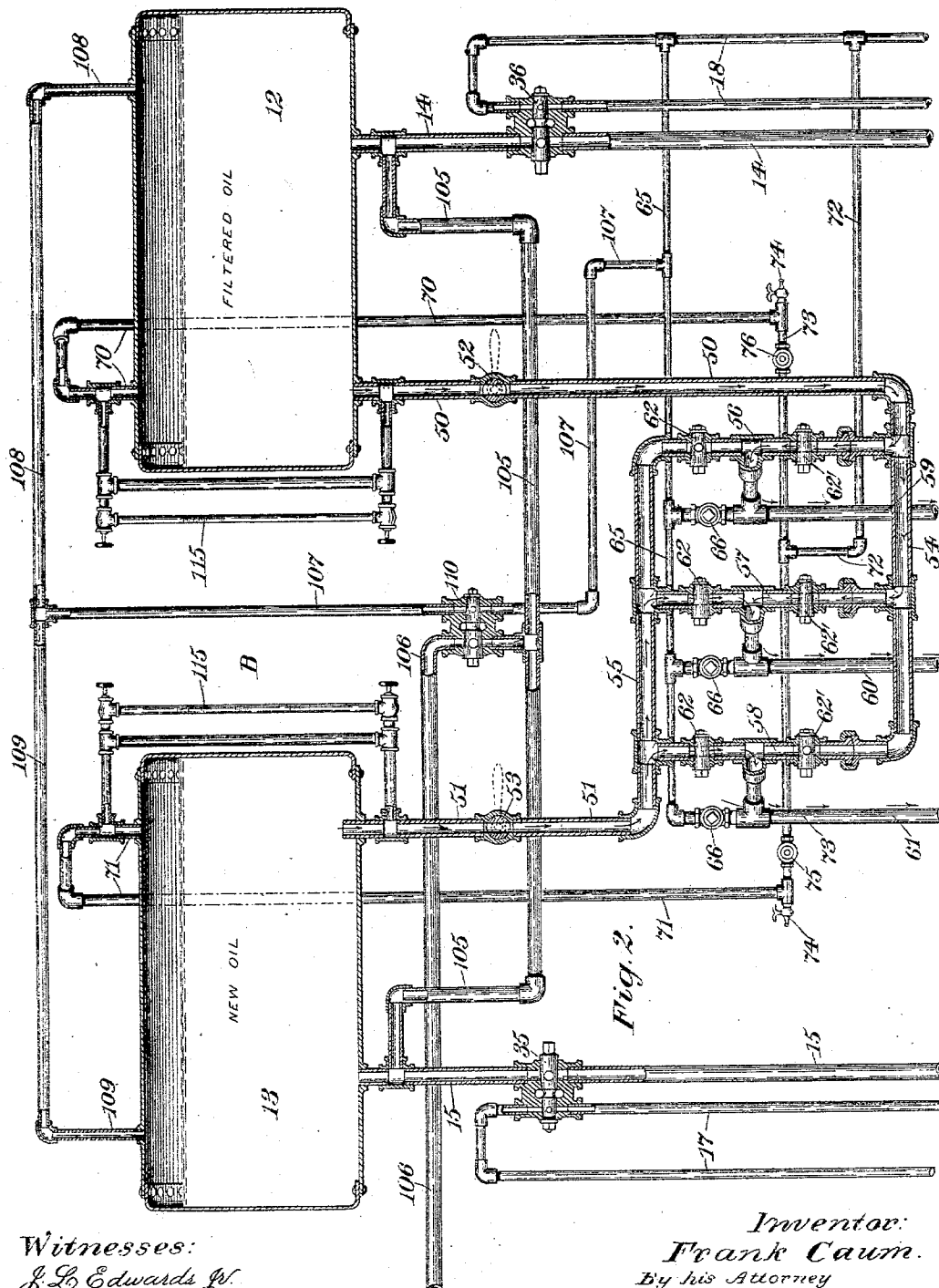
(No Model.)

3 Sheets—Sheet 2.

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Inventor:
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By his Attorney
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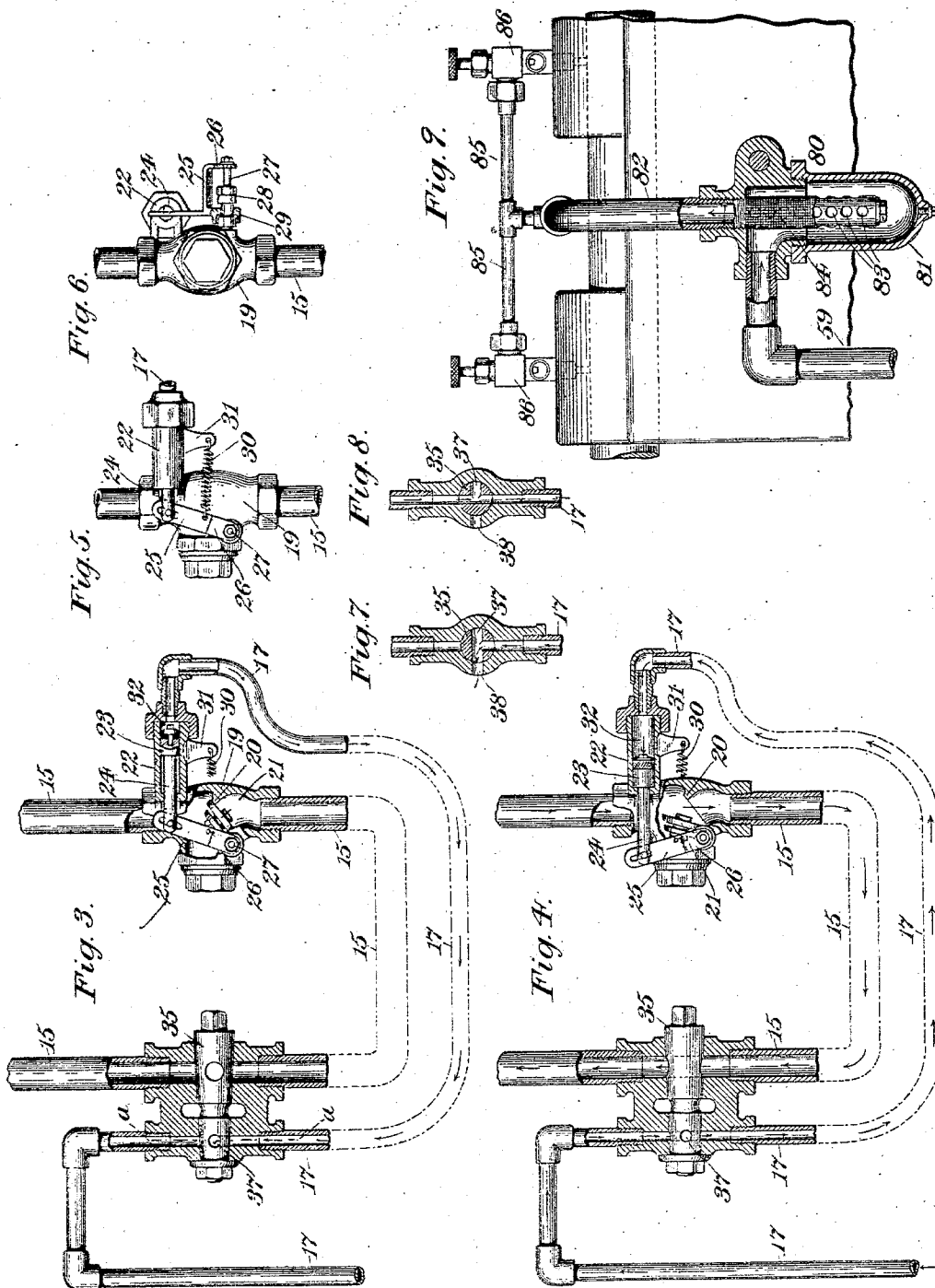
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UNITED STATES PATENT OFFICE.

FRANK CAUM, OF HARTFORD, CONNECTICUT.

OIL-DISTRIBUTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 564,969, dated August 4, 1896.

Application filed February 19, 1896. Serial No. 579,837. (No model.)

To all whom it may concern:

Be it known that I, FRANK CAUM, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Oil-Distributing Apparatus, of which the following is a specification.

This invention relates to oil-distributing apparatus; and the object of the invention is to provide an improved automatic apparatus of this character by means of which oil can be quickly, thoroughly, and effectively supplied to all parts of the machinery in connection with which the apparatus is used, and whereby the excess of oil can be saved for subsequent use and resupplied to the machinery by the same apparatus, either mixed with new oil or the new and filtered oil supplied independently of each other to the machinery, and whereby also the oil can be ejected from the building in case of fire.

In the drawings accompanying and forming part of this specification, Figure 1 is a view of this improved automatic oil-distributing apparatus, showing the main oil-receiving tanks in one building and the supplemental oil-receiving tanks, together with the oil-distributing system, disposed in the engine-room of a separate building. Fig. 2 is a view on an enlarged scale of the supplemental oil-receiving tanks and the main portion of the oil-distributing system. Fig. 3 is a view, partly in section, of the oil-conductor for connecting the main oil-tanks with the supplemental oil-tanks and showing the valve therein closed to prevent the oil from passing from one tank to the other. Fig. 4 is a view similar to that shown in Fig. 3 with the valve open to permit the oil to pass into the supplemental oil-tanks. Fig. 5 is an elevation of the valve-casing shown in Fig. 3. Fig. 6 is a view thereof looking toward the right hand and taken at right angles to the view shown in Fig. 5. Figs. 7 and 8 are vertical sectional views taken in line *a a*, Fig. 3, and showing different positions of the two-way cock; and Fig. 9 is a view, partly in section, of an improved oil-straining device connected with the oil-supply pipes adjacent to the machinery.

Similar characters of reference designate like parts in all the figures of the drawings.

In factories and other places where a large amount of machinery is in use the cost of oil for the proper lubrication of the same amounts to considerable, and hence a vast saving in the use of oil is obtained by collecting the excess of oil and resupplying it to the machinery, and thereby enabling all the necessary oil to be used on every part of the machinery without fear that this lavish use will result in a consequent large expense. In order, therefore, to provide an apparatus of this character which, as compared with analogous apparatus heretofore in use, will be compact and simple in construction and operation, and will also be automatic in its operation and operable either with compressed air or by gravity, or both combined, I have provided an improved apparatus by means of which new oil can be supplied to the machinery in any desired quantity, and such oil collected and filtered and resupplied to the machinery either independently of or mixed with new oil, or the new oil supplied independently of the filtered oil, and by means of which apparatus the oil in the supplemental oil-tanks disposed in the engine or other room, in case of fire, can also be ejected from the room and the building.

In the preferred form thereof herein shown and described this improved oil-distributing apparatus comprises, in a general way, the main oil-receiving means, (designated generally by A;) the supplemental oil-receiving means, (designated generally by B;) an oil-feeding system connecting said main and supplemental receiving means; an oil distributing or supply system embodying a mixing system, an ejecting system, and an oil-receiving system having an oil-receiver, (designated generally by C,) combined and adapted for use as a gravity oil-distributing apparatus; an air-pump, (designated generally by D;) an air-receiver, (designated generally by E;) an air system in operative connection with the oil systems, and a filter, (designated generally by F,) the whole combined and operative as a gravity and pneumatic oil-distributing apparatus, or as a pneumatic oil-distributing apparatus independently of gravity.

It will be understood that this improved automatic oil-distributing apparatus is adapted for use as a gravity oil-distributing apparatus, or as a pneumatic oil-distributing apparatus, as desired; but in its preferred form herein shown it is adapted for use as a combined gravity and pneumatic oil-distributing apparatus. It will also be understood that the main oil-tanks can be disposed in the basement of a machinery or engine room, or in any other suitable place, and the supplemental tanks fed therefrom by means of compressed air; but in the preferred construction of apparatus the main oil-receiving tanks are disposed in a separate building and the supplemental tanks fed therefrom by gravity.

In the preferred form thereof herein shown and described this improved combined gravity and pneumatic oil-distributing apparatus has two main oil-tanks or receptacles 10 and 11—one for the filtered oil and the other for the new oil—disposed in a building 100, separate from the engine or machinery room 150, and preferably on a plane above the supplemental oil-tanks.

Two supplemental oil-tanks 12 and 13 are preferably disposed in the engine-room on a plane somewhat lower than the plane of the main oil-tanks, but preferably above the plane at which the oil is supplied to the machinery, whereby the oil can be fed to the supplemental tanks and from said tanks to the machinery by gravity, if desired. These supplemental tanks are connected with the main oil-tanks by means of suitable oil-conductors, preferably consisting of pipes 14 and 15, one, as 14, connecting the main and the supplemental tanks containing the filtered oil, and the other, as 15, connecting the main and supplemental tanks containing the new oil; and which conductors are provided adjacent to the main tanks with suitable cocks 16, whereby the oil can be regulated at such main tanks, if desired; but in the preferred form of apparatus shown the oil supply to the supplemental tanks is preferably regulated adjacent to such supplemental tanks, and therefore in the engine-room; and as one means of accomplishing this regulation suitable air conductors or pipes 17 and 18 lead from a suitable air-receiver E, and are coupled to the oil-pipes 14 and 15 in any suitable manner, (herein shown adjacent to the supplemental oil-tanks,) and lead therefrom, and are shown extending in parallelism with said oil-conductors 14 and 15 to a point preferably adjacent to the main oil-tanks, where they terminate in suitable valve connections. Each of these valve connections, Figs. 3, 4, 5, and 6, in its preferred form comprises a valve-casing 19, surrounding each oil-conductor 14 and 15, and into which casing sections of each of said conductors open, said casing having a valve-seat 20 therein and a valve 21, adapted to permit the oil to pass to the supplemental

oil-tanks from the main oil-tanks in a manner hereinafter set forth. As a means for operating this valve a suitable piston-casing 22 is formed at the outer side of the valve-casing 19, and carries a piston 23 and its rod 24, one end of which rod extends through the end of the casing 22 and is pivotally secured to a suitable L-shaped lever 25, having one arm 26 thereof operatively secured, in any suitable way, to a stem or shaft 27, working in a suitable stuffing-box 28, for actuating said stem, and having a second arm 29, bearing on the stuffing-box, whereby strain and twist on the arm 26 of the lever will be prevented. The stem 27 extends through the wall of the casing and is rigidly secured to the valve 21, whereby, on the actuation of said stem or shaft by the movement of the piston, the valve will be operated. A suitable coiled spring 30 connects said lever 25 with an arm 31, secured to the piston-casing 22, whereby the piston will hold the valve closed on its seat. The air-conductors 17 and 18 are connected to the piston-casings adjacent to the outer ends of the piston-chambers 32.

At the coupling connections of each air and oil conductor, adjacent to the supplemental tanks, combined air and oil cocks 35 and 36 are provided, Figs. 3 and 4, which are adapted to operate in the oil and air conductors simultaneously, that part of each cock which extends into the air-pipes being in the nature of a two-way cock, Figs. 7 and 8, whereby on opening the same the compressed air will pass through the opening thereof and flow through the pipes and compress the pistons to actuate the valves, Fig. 4, whereby the oil from the main oil-tanks will flow through the oil-conductors 14 and 15 and through that part of the cocks opening into the oil-conductors, and thence into the supplemental oil-tanks.

When the tanks have received the desired amount, the cocks 35 and 36 are turned to prevent the passage of the air through the air-conductors to the pistons and permit the two-way passage 37 of each cock at the air-pipes to communicate with the passage 38, leading to the outside of the coupling-casing, whereby the air in the air-conductors or mixing means, intermediate of the pistons 23 and the cocks 35 and 36, will flow from the pipes and permit the pistons, by means of the springs, to return the valves to their seats, and thus cut off the flow of oil from the main tank, Fig. 3, the cocks 35 and 36 also cutting off the return of oil from the supplemental tanks, and thus preventing the opening of the valves.

The oil supply or distributing system for lubricating the machinery—which machinery, in this instance, is shown as engines 200—comprises, in its preferred form, oil-outlet conductors, preferably consisting of pipes 50 and 51, leading from the supplemental tanks 12 and 13, and having suitable cocks 52 and 53 for cutting off the supply of oil to the machinery. In the form shown the outlet-pipe

50 is provided with a branch conductor 54, and the outlet-pipe 51 with a branch conductor 55, which preferably extend in parallelism with each other, and which branch conductors 54 and 55 are connected together by any
 5 suitable number of mixing-conductors, preferably corresponding in number with the number of supply conductors or pipes leading to the machinery, and herein shown as
 10 three in number, 56, 57, and 58, and in which the filtered and new oil may unite or be mixed, and hence these conductors are hereinafter termed "mixing-conductors."

Coupled to each of the mixing-conductors
 15 56, 57, and 58 is a suitable supply-pipe leading to the machinery, and herein shown as three in number, 59, 60, and 61, each of which will, in practice, be provided with a series of
 20 branches leading to the different oil-cups, which may be constructed to regulate the quantity of oil to be supplied to the machinery.

Each of the mixing-conductors is provided with a pair of cocks 62 and 62', one at each
 25 side of the connection of each mixing-pipe 56, 57, and 58 with such supply-pipe 59, 60, and 61, whereby, in the construction shown, on turning the cocks 62 the new oil will be permitted to flow into the mixing-pipes, and on
 30 turning the cocks 62' the filtered oil will be permitted to flow into the mixing-pipes, and on turning both sets of cocks 62 and 62' both filtered and new oil will be permitted to flow together into the mixing-pipes, and thence
 35 into the supply-pipes to lubricate the machinery.

As a means for blowing out and cleaning the supply-conductors 59, 60, and 61, each
 40 supply-conductor is coupled to a suitable air-pipe 65, which leads from the air-conductor 18, and is provided with a suitable cock 66, whereby, when the oil is cut off from such
 45 supply-pipes 59, 60, and 61 and on opening one or all of the cocks 66, air will be forced through said supply-conductors to blow out the same.

When it is desired to force the oil from the supplemental tanks to the mixing-conductors
 50 56, 57, and 58, and from thence into the supply-conductors 59, 60, and 61 of the machinery by compressed air, rather than by gravity or by both, suitable air-conductors 70 and 71 are provided, one connected adjacent to the
 55 upper portion of each supplemental tank 12 and 13 and both connected to the air-receiver or to one of the main air-conductors, (herein shown connected to the pipe 18 by suitable branches 72 and 73,) the branches 73 being
 60 provided with suitable vents 74 to permit the escape of air when the supplemental tanks are being filled, and also provided with suitable cocks 75 and 76 to cut off the flow of air from the supplemental tanks when desired.

In the construction shown the end of each
 65 supply-conductor 59, 60, and 61, adjacent to the machinery, is preferably provided with a

suitable filter 80, which, in its preferred form, comprises a suitable sediment-casing 81, into which the supply-conductors open and from which the main oil-conductor, as 82, leading
 70 to the machinery, extends, and which oil-conductor has its lower end either formed in one or separate members, and provided with perforations 83, inclosed by suitable wire or other
 75 perforated fabric 84, whereby the oil from the supply-pipes will be filtered as it flows through the perforations into the oil-conductors 82, and by which it is carried into the various branch conductors 85 and thence to the
 80 oil-cups 86, or other devices, for the proper lubrication of the machine, after which it is collected in any suitable manner, such as by troughs 90, and conducted by suitable receiving
 85 conductors or pipes 91 to a suitable oil-receiver C, which is connected by a conductor 92 to a suitable filter F. (Shown, preferably, adjacent to and connected with the main filtered-oil tank 10 by a suitable conductor or
 90 pipe 93.) The oil-receiver C is also connected with the air-receiver E or the main air-conductor, as desired, by a suitable air conductor or pipe 94, and is provided with a suitable
 95 cock 95, whereby on the opening of the same the air will force the oil from the receiver C into the filter F and through the same into the main filtered-oil tank 10, where it can be
 again supplied to the supplemental oil-tank 12 and from thence to the machinery, in the manner above set forth.

When, in case of fire or other accident, it is
 100 desired to force the oil from the supplemental tanks 12 and 13, and out of the engine or other room or out of the building, a suitable-ejecting system is provided, which, in the apparatus shown, comprises the branch conductor
 105 105, connected with the tank-supply conductors 14 and 15, and which branch conductor 105 is in turn connected to an oil-ejecting conductor or pipe 106, which leads from the room and the building and opens into a
 110 suitable tank 175, or other desired place.

Connected to the air-receiver or, as herein shown, to the air conductor or pipe 65, is a
 suitable air conductor or pipe 107, which is
 115 connected by suitable branch conductors 108 and 109 with the top of each supplemental oil-tank 12 and 13, to thereby permit the air to force the oil therefrom into the oil-ejecting
 120 conductor or pipe 106 in the manner hereinafter set forth. This air-pipe 107 is coupled to the ejecting-conductor 106 and is provided with a suitable combined air and oil cock 110,
 operative simultaneously in the oil and air
 125 conductors 106 and 107, whereby, as the cocks 35 and 36 are closed after the supplemental tanks are filled or partially filled and the return of oil thus cut off, on turning the cock
 130 110 air will be permitted to enter the tanks and force the oil therefrom into the branch conductor 105 and from thence into the oil-ejecting conductor 106 and out of the building. It will be understood, however, that

the oil might be permitted to run from the tanks by gravity and thus do away with the air system in this connection if desired.

If it is desired to force the oil from the main oil-tanks 10 and 11 into the supplemental oil-tanks 12 and 13 by compressed air rather than by gravity, or by both, or when the main tanks are below the plane of such supplemental tanks, a suitable air conductor or pipe 112 connects the air-receiver E with each main oil-tank.

A suitable air-pump D is connected with the air-receiver E by an air conductor or pipe 113, and is adapted to supply said receiver with the necessary quantity of compressed air.

Each main tank and supplemental oil-tank is provided with a glass gage 115, of any suitable and desired construction, for ascertaining the quantity of oil therein.

It will be understood, as before stated, that the main oil-tanks may be disposed in the basement or below the level of the supplemental oil-tanks, whereby the oil can be forced to said supplemental tanks by compressed air rather than by gravity; and it will also be understood that said supplemental tanks may be disposed at any suitable place—such as in the engine or other room or in the basement, and either below or above the plane at which the oil is supplied to the machinery—whereby it can likewise be forced thereto by compressed air. It will also be understood that I do not limit myself to the arrangement and disposition of the oil and air conductors herein shown, as it is obvious that any other disposition and arrangement of said oil and air conductors may be used, whereby the new and filtered oil can be supplied from the main to the supplemental tanks and from the supplemental tanks to the machinery, either independently of each other or mixed together, and whereby the oil may be forced out of the building in case of fire or other accident. For instance, instead of the branch conductors 54 and 55 being disposed horizontally, as herein shown, the conductors 56, 57, and 58 may be connected directly to the outlet-conductors 50 and 51, and the supply-conductors 59, 60, and 61 connected thereto, substantially as shown. It will also be obvious that instead of connecting the branch conductors 105 to the oil-feed pipes 14 and 15 such branch conductor might be connected directly with the supplemental tanks or connected with the oil-conductors 50 and 51, thus illustrating that many other dispositions and arrangements of the conductors or pipes can be made to accomplish the purposes herein set forth without departing from the scope of my invention. It will also be understood that the entire apparatus might be operated by gravity or by compressed air, or, as is shown, by both, and that any suitable means might be used throughout the system for cutting off or permitting the flow of the fluid. It will also be understood that the air-conductors

107, 108, and 109 might be dispensed with and the air-conductors 70 and 71 used to force the oil from the tanks into the ejecting-conductors 105 and 106, and thus become a part of the ejecting system as well as the distributing system.

In the operation of this improved combined pneumatic and gravity oil-distributing apparatus, the desired quality of air having been forced into the air-receiver E by the air-pump D, which may be operated in any suitable way—as by steam—the cocks 35 and 36 are opened, whereby the air flows through the air-conductors 17 and 18 and actuates the pistons 23 and thereby the valves 21, whereby the oil from the main oil-tanks 11 and 12 is permitted to flow therefrom into the supplemental oil-tanks 12 and 13, which, having received the desired amount, the cocks 35 and 36 are closed, thereby not only preventing the return of oil from the supplemental tanks, but also cutting off the supply of air to the valve-pistons 23 and permitting the air in the air-pipes, intermediate of said cocks 35 and 36 and said pistons 23, to flow therefrom through the passages 37 and 38 of the cocks and thereby permit the valves to close.

When it is desired to lubricate the machinery, the cocks 52 and 53 are opened, whereby the oil from the filtered-oil tank and the new-oil tank will flow into the oil-conductors 50 and 51, to be supplied to the machinery.

If it is desired to supply new oil only to the machinery, the cocks 62' are closed and the cocks 62 opened, (see mixing-conductor 58,) whereby new oil will flow into the supply-pipes 59, 60, and 61 and be fed to the machinery. If, however, it is desired to supply only filtered oil to the machinery, the cocks 62 are closed and the cocks 62' opened. (See mixing-conductor 56.) If, on the other hand, it is desired to supply both mixed and filtered oil to the machinery at the same time, both sets of cocks 62 and 62' are opened, (see mixing-conductor 57,) whereby the oil from both supplemental tanks will flow into the supply-conductors 56, 57, and 58.

If it is desired to force the oil by compressed air rather than by gravity, or by compressed air in connection with gravity, from the supplemental tanks, the cocks 75 and 76 are opened, whereby air will be forced into the said supplemental tanks by the air-conductors 70 and 71 and force the oil therefrom through the various conductors to the machinery. The excess of oil is then collected by the oil-receiver C and forced therefrom by compressed air into the filter F, and from thence into the filtered-oil tank, where it is again in condition for use.

When, in case of fire or other accident, it is desired to remove the oil from the supplemental oil-tanks and out of the room or building, the cocks 52 and 53 are closed, thus cutting off the oil-supply to the machinery, and the cock 110 opened, thereby permitting the

air, by means of the air-conductors 107, 108, and 109, to flow into the supplemental oil-tanks and force the oil therefrom into the branch conductor 105, and from thence into the ejecting-conductor 106 and out of the building.

By the use of this improved oil-distributing apparatus the filtered oil can be continuously and automatically re-supplied to the machinery, and by the use of the mixing system embodied therein such filtered oil—which, by constant use, somewhat loses its lubricating effect during its passage through the machinery, owing to the mixing of foreign particles therewith—can be mixed with any desired quantity of new oil and thus renew its lubricating power.

Having described my invention, I claim—

1. An oil-distributing apparatus comprising main tanks adapted to receive new and filtered oil, respectively; supplemental tanks also adapted to receive new and filtered oil, respectively; oil-conductors connecting the respective main and supplemental tanks with each other; and an oil-distributing system comprising oil-conductors connected with the supplemental tanks, and embodying a mixing-conductor adapted to permit the new and filtered oil to be supplied, independently of each other, or mixed and supplied, to the machinery.

2. An oil-distributing apparatus comprising tanks adapted to receive new and filtered oil, respectively; an oil-distributing system comprising oil-conductors connected to said tanks, and embodying a mixing-conductor adapted to permit the oil from each tank to be supplied, independently of each other, or mixed and supplied, to the machinery.

3. An oil-distributing apparatus comprising tanks adapted to receive new and filtered oil, respectively; an oil-distributing system comprising oil-conductors connected to said tanks, and embodying a mixing-conductor adapted to permit the oil from each tank to be supplied, independently of each other, or mixed and supplied, to the machinery; and air-conductors connected to said tank, whereby the oil can be forced through said oil-conductors to the machinery.

4. An oil-distributing apparatus comprising tanks adapted to receive new and filtered oil, respectively; an oil-distributing system comprising oil-conductors connected to said tanks, and embodying a mixing-conductor adapted to permit oil from each tank to be supplied, independently of each other, or mixed and supplied, to the machinery; and an ejecting system comprising an oil-conductor operatively connected to said tanks, whereby the oil can be conducted therefrom, and out of the building.

5. An oil-distributing apparatus comprising tanks adapted to receive new and filtered oil, respectively; an oil-distributing system comprising oil-conductors connected to said tanks, and embodying a mixing-conductor

adapted to permit the oil from each tank to be supplied, independently of each other, or mixed and supplied, to the machinery; air-conductors connected to said tanks, whereby the oil can be forced through said oil-conductors to the machinery; and an ejecting system comprising an oil-conductor operatively connected with said tanks; and air-conductors also operatively connected with said tanks, and adapted to force the oil into said ejecting-conductors and from the building.

6. An oil-distributing apparatus comprising tanks adapted to receive new and filtered oil, respectively; means adapted to conduct said oil to the machinery; mixing means operatively connected with the conducting means; and means operative to permit new or filtered oil to be supplied to the machinery, or permit both new and filtered oil to be fed to and mixed in the mixing means and supplied to the machinery.

7. An oil-distributing apparatus comprising a pair of tanks adapted to receive new and filtered oil, respectively; means adapted to conduct said oil to the machinery; mixing means operatively connected with the conducting means; means operative to cut off the new oil, to permit the filtered oil to be supplied to the machinery; means operative to cut off the filtered oil, to permit the new oil to be supplied to the machinery, said cut-off means being operable to permit both new and filtered oil to be fed to and mixed in the mixing means and supplied to the machinery; and an air system in operative connection with said tanks, for forcing said oil to the machinery.

8. An oil-distributing apparatus comprising a main oil-tank and a supplemental oil-tank; an oil-conductor connecting said tanks; a valve in the oil-conductor adjacent to the main tank and operative to permit the passage of oil from the main to the supplemental tank; an air-conductor operatively connected with said valve; and actuating means disposed adjacent to the supplemental tank and remotely from said valve, and operable to permit the air to operate said valve to open and close the oil-conductor.

9. An oil-distributing apparatus comprising a main oil-tank and a supplemental oil-tank; an oil-conductor connecting said tanks; a valve in the oil-conductor, and operative to permit the passage of oil from the main to the supplemental tank; an oscillatory lever connected to said valve; a piston connected to said lever for operating said valve; an air-conductor operatively connected with said piston; and actuating means adapted to permit the air to operate said piston, and thereby actuate the valve to open and close the oil-conductor.

10. An oil-distributing apparatus comprising a main oil-tank and a supplemental oil-tank; an oil-conductor connecting said tanks; a valve in the oil-conductor; a piston for operating said valve; an air-conductor connect-

ed to said oil-conductor adjacent to the supplemental tank, and operatively connected with said piston; and a combined oil and air cock operative adjacent to the supplemental receptacle, to permit air to flow through the air-conductor, to operate said piston and thereby actuate said valve and also operative to simultaneously cut off the air and the backward flow of the oil.

11. An oil-distributing apparatus comprising a pair of tanks adapted to receive new and filtered oil, respectively; a pair of supplemental tanks also adapted to receive new and filtered oil, respectively; means connecting the respective main and supplemental tanks with each other, for feeding said supplemental tanks; means for conducting the oil to the machinery; mixing means operatively connected with the conducting means; means operative to permit either the new or the filtered oil to be supplied to the machinery, and also operative to permit both the new and the filtered oil to be fed to and mixed in the mixing means and supplied to the machinery; and means adapted to collect the excess of oil and conduct it to the filtered-oil tank.

12. An oil-distributing apparatus comprising a pair of tanks adapted to receive new and filtered oil, respectively; a pair of supplemental tanks also adapted to receive new and filtered oil, respectively; means connecting the respective main and supplemental tanks with each other, for feeding said supplemental tanks; means adapted to conduct the oil to the machinery; mixing means operatively connected with the conducting means; means operative to permit either the new or the filtered oil to be supplied to the machinery, and also operative to permit both the new and the filtered oil to be fed to and mixed in the mixing means and supplied to the machinery; means adapted to collect the excess of oil; and a filter in operative connection with said collecting means and the main filtered-oil tank.

13. An oil-distributing apparatus comprising a pair of tanks adapted to receive new and filtered oil, respectively; means adapted to conduct the oil to the machinery; mixing means operatively connected with the conducting means; means operative to permit either the new oil or the filtered oil to be supplied to the machinery, and also operative to permit both the new and filtered oil to be fed to and mixed in the mixing means and supplied to the machinery; and means adapted to collect the excess of oil.

14. An oil-distributing apparatus comprising a pair of main oil-tanks adapted to receive new and filtered oil, respectively; a pair of supplemental oil-tanks also adapted to receive new and filtered oil, respectively; oil-conductors connecting said main and supplemental oil-tanks respectively; means for opening and closing said oil-conductors; an oil-distributing system comprising oil-conduc-

tors connected to said supplemental tanks, and embodying mixing-conductors means adapted to open and close said mixing-conductors to permit new or filtered oil, or both new and filtered oil mixed, to be supplied to the machinery; means adapted to cut off the supply to the machinery; means adapted to collect the excess of oil and conduct it to the filtered-oil tank; and an ejecting system comprising oil-conductors operatively connected to said tanks; and means for opening and closing said ejecting oil-conductors.

15. An oil-distributing apparatus comprising a pair of main oil-tanks adapted to receive new and filtered oil, respectively; a pair of supplemental oil-tanks adapted to receive new and filtered oil, respectively; conductors connecting said main and supplemental oil-tanks respectively; means adapted to open and close said oil-conductors; an oil-distributing system comprising oil-conductors embodying mixing-conductors; means adapted to open and close said mixing-conductors, to permit new or filtered oil, or both new and filtered oil mixed, to be supplied to the machinery from the supplemental tanks; means adapted to cut off the supply from said tanks; means adapted to collect the excess of oil and conduct it to the filtered-oil tank; an ejecting system comprising oil-conductors operatively connected with said supplemental tanks; means adapted to open and close said oil-conductors; and an air system comprising air-conductors operatively connected with the main oil-tanks, the supplemental oil-tanks, the oil-collecting means, and the oil-ejecting system, whereby the oil can be forced from the main to the supplemental tanks, from the supplemental tanks to the machinery, and from the collecting means to the filtered-oil tank, and also from the supplemental tanks to the ejecting system.

16. An oil-distributing apparatus comprising a pair of main oil-tanks adapted to receive new and filtered oil, respectively; a pair of supplemental oil-tanks also adapted to receive new and filtered oil, respectively; oil-conductors connecting said main tanks with the supplemental tanks respectively; air-conductors connected with the oil-conductors adjacent to the supplemental and main tanks; valves in the oil-conductors and operative by means of the air-conductors; oil-outlet conductors leading from the supplemental tanks and having branch conductors operatively connected by mixing-conductors; oil-supply conductors connected to the mixing-conductors and leading to the machinery; cocks in the mixing-conductors and adapted to cut off the new or the filtered oil, or to permit both new and filtered oil to be mixed and supplied to the machinery; a branch conductor connected to the supplemental-tank-feeding conductors; an ejecting-conductor connected to said branch conductor; and an air system comprising air-conductors operatively connected to said supplemental tanks and eject-

ing system, whereby the oil can be forced into the mixing-conductors, and from thence to the machinery, or forced into the ejecting-conductors; means for collecting the excess of oil, and embodying an oil-receiver; a filter; an oil-conductor connecting said oil-receiver and filter; a conductor connecting said filter with said main filtered-oil tank; an air-conductor connecting said air system with said oil-receiver, whereby the oil can be forced from the oil-receiver into and through the filter, and from thence into the filtered-oil tank; and an air-conductor connecting said air system with the main oil-tanks, whereby oil can be formed from said main oil-tanks to the supplemental oil-tanks.

17. An oil-distributing apparatus comprising a pair of tanks adapted to receive filtered and new oil, respectively; an oil-conductor leading from each of said tanks; a branch conductor secured to each of said conductors; a series of mixing-conductors connecting said branch conductors; a series of oil-supply conductors connected to said mixing-conductors and leading to the machinery; and cocks in said mixing-conductors adapted to permit filtered or new oil, or both filtered and new oil mixed, to be supplied to the machinery.

18. An oil-distributing apparatus comprising a pair of tanks adapted to receive filtered and new oil, respectively; an oil-conductor leading from each of said tanks; a branch conductor secured to each of said conductors; a series of mixing-conductors connecting said branch conductors; a series of oil-supply conductors connected to said mixing-conductors, and leading to the machinery; cocks in said mixing-conductors adapted to permit filtered or new oil, or both filtered and new

oil mixed, to be supplied to the machinery; and air-conductors connected to said tanks, and adapted to force the oil to the machinery.

19. An oil-distributing apparatus comprising tanks adapted to receive filtered and new oil, respectively; an oil-outlet conductor leading from each of said tanks; a mixing-conductor connecting said oil-conductors and adapted to supply filtered or new oil, or filtered and new oil mixed, to the machinery; an oil-supply conductor connected to said mixing-conductor and leading to the machinery; and filtering means connected to said oil-supply conductor intermediate of the mixing-conductor and the machinery.

20. An oil-distributing apparatus comprising main tanks adapted to receive new and filtered oil, respectively; supplemental tanks also adapted to receive new and filtered oil, respectively; oil-conductors connecting the respective main and supplemental tanks with each other; a valve in each of said oil-conductors; air-conductors operatively connected with said valves; actuating means operable to permit the air to operate said valves to open and close the oil-conductors, and thereby permit the oil to be supplied to the supplemental tanks; an oil-distributing system connected to the supplemental tanks and adapted to supply the machinery with oil, and embodying mixing-conductors; and means adapted to open and close said mixing-conductors to permit new or filtered oil or both new and filtered oil mixed to be supplied to the machinery.

FRANK CAUM.

Witnesses:

FRED. J. DOLE,
HENRY BISSELL.