June 14, 1949. W. E. SNOWDEN 2,473,349

DRY CHEMICAL FIRE EXTINGUISHER

Filed Nov. 30, 1945

Fig. 1

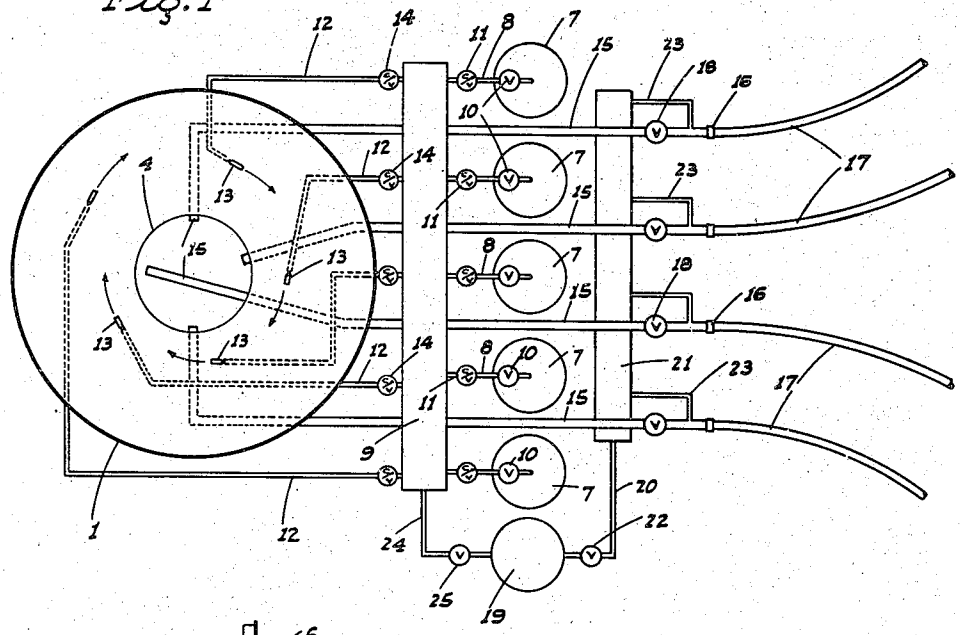
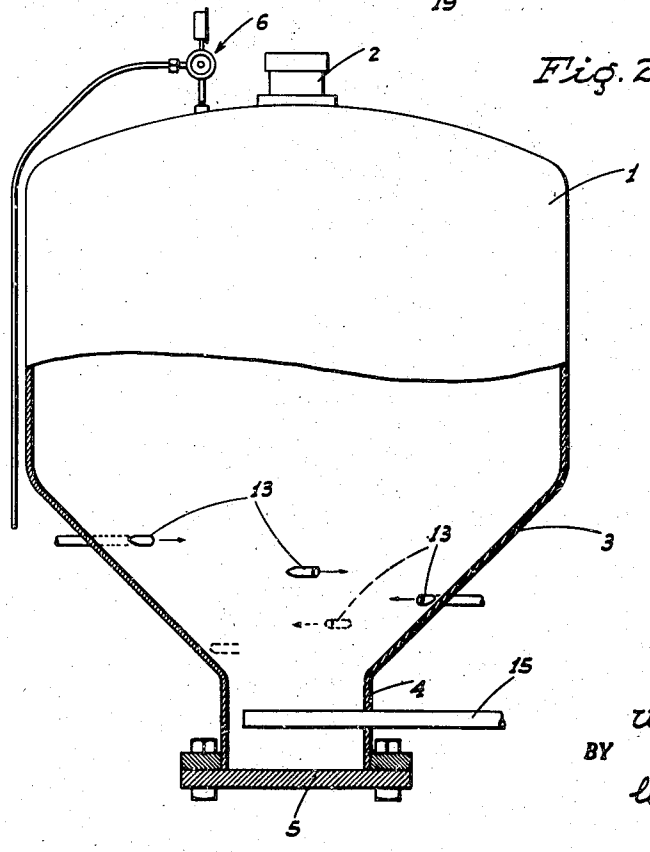


Fig. 2



INVENTOR.
Ward E. Snowden
BY
Webster & Webster
ATTYS

Patented June 14, 1949

2,473,349

UNITED STATES PATENT OFFICE

2,473,349

DRY CHEMICAL FIRE EXTINGUISHER

Ward E. Snowden, Modesto, Calif., assignor to Snowden Chemical Company, Modesto, Calif., a partnership

Application November 30, 1945, Serial No. 631,935

2 Claims. (Cl. 169—1)

1

This invention relates in general to fire extinguishing equipment, and in particular the invention is directed to a novel, dry chemical fire extinguisher of the type wherein a powdered dry chemical is fed by high pressure gas from a reservoir through a hose to a discharge nozzle.

One object of the present invention is to provide a dry chemical fire extinguisher, of the type described, which comprises, in novel combination, a dry chemical reservoir to which a plurality of high pressure gas supply cylinders connect, and a plurality of hoses leading from outlet conduits on the reservoir to discharge nozzles on the outer ends of said hoses.

A further object of the invention is to provide a dry chemical fire extinguisher, as in the preceding paragraph, in which the high pressure gas supply cylinders, together with the hoses, are connected into communication with the interior of the reservoir in a unique manner so as to assure of free, high pressure delivery by the gas of the dry chemical into said hoses.

An additional object of the invention is to provide the dry chemical fire extinguisher with an effective and practical manifold arrangement between the high pressure gas supply cylinders and the dry chemical reservoir.

Another object of the invention is to provide valve regulated means whereby gas under pressure from a supplementary cylinder can be introduced, selectively, into the hoses after use, and upon being valved off from the dry chemical reservoir, for the purpose of blowing out any dry chemical remaining therein and which would tend to plug or clog the hoses if not so discharged.

A further object of the invention is to produce a simple and inexpensive device, and yet one which will be exceedingly effective for the purpose for which it is designed.

These objects are accomplished by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings similar characters of reference indicate corresponding parts in the several views:

Figure 1 is a diagrammatic plan view of the apparatus.

Figure 2 is an enlarged elevation, partly in section, of the dry chemical reservoir.

Referring now more particularly to the characters of reference on the drawings, the improved dry chemical fire extinguisher which is the subject of this invention comprises a relatively large upstanding pressure-tight reservoir 1 adapted to

2

receive a dry or powdered chemical fire extinguishing material therein; the filling of such reservoir 1 being accomplished through the medium of a removable filler cap 2. Beginning substantially intermediate the ends of said reservoir the same tapers inwardly, as at 3, and terminates at its lower end in a straight sided, reduced diameter neck 4; said neck being closed at the bottom by a removable bottom plate 5. At the top the reservoir is fitted with a combination safety valve, pressure gauge and vent pipe unit 6.

A plurality of high pressure gas supply cylinders 7, filled with nitrogen or similar gas, are disposed adjacent the reservoir 1, and each cylinder is connected by a conduit 8 with a manifold 9; there being a hand valve 10 interposed in each conduit 8. Between said hand valve 10 and manifold 9 each conduit 8 has a check valve 11 therein, with said check valve closing toward the corresponding cylinder 7. In the present embodiment there are five of said cylinders thus coupled to the manifold 9.

A plurality of conduits 12 corresponding in number to the conduits 8 lead from the manifold 9 into the dry chemical reservoir 1 through the tapered portion 3 thereof. The inner ends of the conduits 12 project only a slight distance into the reservoir 1 and are disposed substantially tangentially of the reservoir portion 3 and in a spiral path; the spacing of said nozzles being substantially equal circumferentially of the reservoir, and the nozzles all discharging in the same direction. A check valve 14 is interposed in each conduit 12 and closes toward the manifold 9.

A plurality of outlet pipes 15, here four in number, lead from within the neck 4 of the reservoir outwardly to connection, as at 16, with flexible fire hoses 17, on the outer end of which suitable discharge nozzles (not shown) are affixed. The outlet pipes 15 lead out from the neck 4 from circumferentially and relatively widely spaced intake points above the bottom plate 5 in substantial clearance relation, as is clearly shown, and said pipes include hand valves 18 therein.

When it is desired to use the above described dry chemical fire extinguishing arrangement the hand valves 10 on the cylinders 7 are opened, whereupon a substantial volume of gas under high pressure is delivered into the manifold 9 and thence through the conduits 12 into the dry chemical reservoir 1, creating high gas pressure within the latter. One or more of the hand valves 18 is then opened, whereupon an admixture of dry chemical and high pressure gas

feeds from the neck 4 of the reservoir into the pipes 15, whose valves 18 are open, and thence delivers to the corresponding fire hoses 17.

With the dry chemical, high pressure gas mixture thus being used, the entry of gas into the reservoir through the nozzles 13 produces a turbulence or agitation of the dry chemical in said reservoir such that free and positive outlet of the dry chemical-gas mixture into the pipes 15 is assured. This turbulence or agitation is effectively produced by reason of the tangential disposition of the nozzles 13 in the taper portion 3 of the reservoir in a spiral path and in circumferentially spaced relation.

After use of the equipment the hand valves 10 and 18 are closed, but thereafter it is desirable that the hoses 17 be blown out in order to remove therefrom the dry chemical which remains in the same, and which dry chemical, if not blown out, will tend to clog the hoses against effective subsequent use. The following arrangement is employed to blow out the hoses 17 after each use thereof:

A supplemental cylinder 19 is connected by a conduit 20 with another manifold 21; there being a hand valve 22 in the conduit 20. Other conduits 23 lead from the manifold 21 to each of the pipes 15 between the connections 16 and hand valves 18. It will thus be seen that when the hand valve 22 is opened high pressure gas from the supplemental cylinder 19 feeds through the manifold 21 and conduits 23 into the hoses 17, whereby those of the latter which have been used may be blown out to remove dry chemical therefrom.

Should occasion demand the supplemental cylinder 19 may be connected to the manifold 9 through the medium of a conduit 24 which includes a hand valve 25 therein.

From the foregoing description it will be readily seen that there has been produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

Having thus described the invention, the following is claimed as new and useful and upon which Letters Patent is desired:

1. A dry chemical fire extinguisher comprising a pressure tight reservoir for dry chemical, a plurality of high pressure gas supply cylinders, a manifold, separate conduits leading from the cylinders to the manifold, other separate conduits leading from the manifold to the reservoir, hand valves in said first named conduits, check valves in said first named conduits between the hand valves and manifold and closing toward the cylinders, check valves in said other separate conduits closing toward the manifold, outlet pipes leading from the reservoir, and fire hoses coupled to said pipes.

2. A dry chemical fire extinguisher comprising a pressure tight reservoir for dry chemical, a plurality of high pressure gas supply cylinders, a manifold, separate valve controlled conduits leading from the cylinders to the manifold, other separate valve controlled conduits leading from the manifold to the reservoir, a plurality of outlet pipes leading from the reservoir, a hand valve in each of said outlet pipes, a fire hose coupled to each outlet pipe beyond the corresponding hand valve, another manifold, separate conduits leading from said other manifold to the outlet pipes between corresponding hand valves and fire hoses, a separate high pressure gas supply cylinder, a feed conduit leading from said separate cylinder to the first named manifold, and another feed conduit leading from said separate cylinder to said other manifold; there being a normally closed hand valve in each of the feed conduits.

WARD E. SNOWDEN.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
467,142	Singer	Jan. 12, 1892
1,568,139	Dewey	Jan. 5, 1926
1,583,838	Johnson	May 11, 1926
1,877,649	Dugas	Sept. 13, 1932
2,274,708	Kennedy	Mar. 3, 1942

FOREIGN PATENTS

Number	Country	Date
641,056	France	July 27, 1928
790,067	France	Nov. 12, 1935