May 5, 1942. A. J. KOLLMANN 2,281,773

FLUID APPLICATOR

Filed April 28, 1941 2 Sheets-Sheet 1

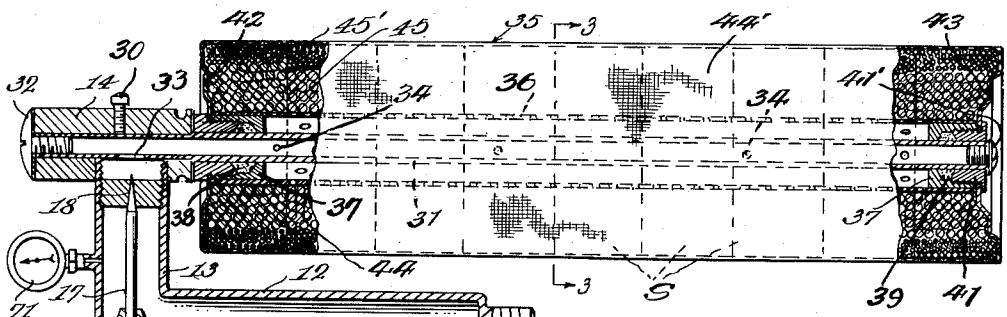


Fig. 1.

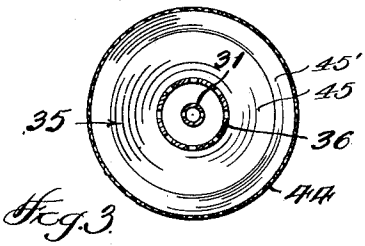
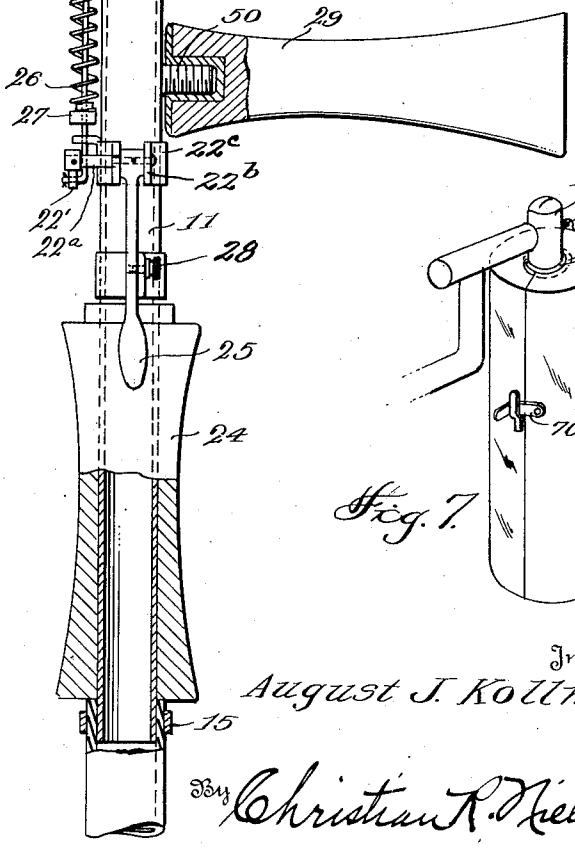


Fig. 3.



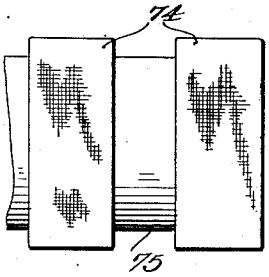


Fig. 6

Fig. 7.

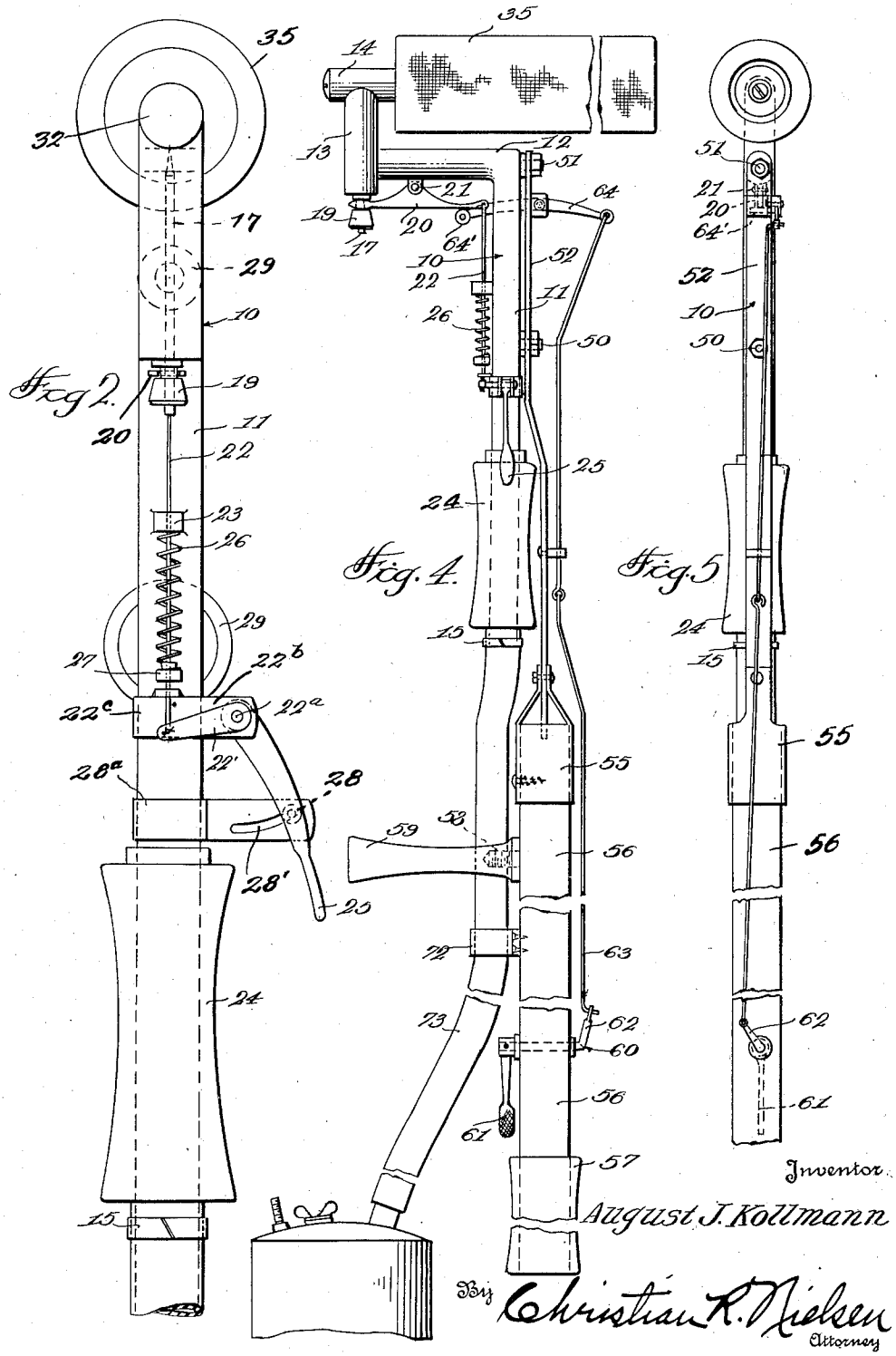
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FLUID APPLICATOR

Filed April 28, 1941 2 Sheets-Sheet 2



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FLUID APPLICATOR

August J. Kollmann, New York, N. Y.

Application April 28, 1941, Serial No. 390,801

10 Claims. (Cl. 91—49)

The invention relates to means for applying coating to surfaces such as walls, floors, paper and other materials, and has for an object to enable the application of liquid coatings under pressure directed to the surfaces to be coated, with a minimum liability of waste of the coating material, and deposit thereof accidentally on adjacent surfaces or objects not intended to be coated.

A further aim is to provide a novel means for controlling the flow of coating liquid to a tool of the character described. A still further object is to provide a novel manual support device for such a tool by which it may be manipulated for direct contact of the tool with surfaces such as walls and ceilings.

A further important aim of the invention is to present a novel form of extension handle construction for the tool.

An important aim of the invention is to enable the utilization of a porous roller applicator while at the same time minimizing liability of impairment of the functions of the device by drying out or caking of coating material in or from the roller and the duct passages for which the coating material is supplied thereto.

Another important object is to present a novel improvement in the construction of a roller applicator for the uses described, as well as a novel mounting therefor, enabling the ready removal and cleaning of the roller.

Additional objects, advantages and features of invention reside in the construction, arrangement and combination of parts involved in the embodiment of the invention, as will be more readily understood from the following description and accompanying drawings, wherein

Figure 1 is a vertical section partly in elevation of an applicator device, including a handle frame, applicator roll, and fluid supply connection and control therefor.

Figure 2 is an elevational view at right angles to Figure 1.

Figure 3 is an enlarged cross sectional view of the roller.

Figure 4 is a plan view of the device, illustrating an extension socket fitting therefor.

Figure 5 is a view of the device at right angles to Figure 4.

Figure 6 is a fragmentary side elevation of a modified form of roller.

Figure 7 is a perspective view of a holder and sealing means for the device when not in use.

There is illustrated a coating tool, suitable for use in painting walls, floors, and other surfaces, as well as applying other coating materials, and consisting of a combined mounting frame and duct 10, consisting of a main rectilinear shank portion 11, shown extending vertically in Figure 1, from which a lateral arm 12 extends a distance, a vertical short extension 13 being formed at the outer part thereof, on which a T-head 14 is formed, as shown. All of these parts are hollow, forming a substantially continuous duct, and at the lower end of the shank 11 a hose coupling 15 is provided, by which a supply of coating liquid under pressure may be connected to the end of the shank, to be fed therethrough and the remainder of the frame, as will appear. At the lower side of the lateral arm 12 in line with the upward extension 13, a gland device 16 is provided, through which a needle valve 17 is slidable, into the extension 13 and arranged to coact with a ported seat 18 mounted in the extremity of the extension just short of the cross head or T piece 14. The outer end of the valve 17 is threaded and has adjustably engaged thereon a knurled nut 19, by which it may be adjusted with respect to the seat 18, as may be required. Pivoted on the under side of the arm 12 of the frame, there is a lever 20 of the first order, one arm of which is apertured or furcated and receives the needle valve 17 therethrough with the nut 19 at the outer side of the lever, the fulcrum of this lever being a conventional pivot between ears 21 located on the under side of the arm 12 midway between the gland 16 and shank 11. At the opposite end of the lever from the needle valve, a plunger 22 is pivotally connected thereto, and extended longitudinally beside the shank 11 through a guide piece 23 a distance, the guide being fixed on the shank 11, and the plunger being extended into close proximity to a handle grip 24 fixed on the lower end of the shank just short of the hose coupling 15. The lower end of the plunger 22 is pivotally connected to a lever 22' which is fixed upon a shaft 22*a* rockably supported in arms 22*b* of a clamp collar 22*c* fixed upon the shank 11. The shaft 22*a* has a finger piece 25 adjacent the grip, so that it may be manipulated by the thumb or forefinger of the hand by which the grip 24 is grasped. A protractile helical spring 26 is engaged loosely around the plunger 22 interposed between the guide 23 and collar 27. In order that the valve 17 may be adjusted and locked in a set position, a binding screw and nut 28 is provided, the screw being extended through a slot 28' of a bracket 28*a*, the nut being manually released and tightened for adjustment of the valve open-

ing. This spring serves to thrust the plunger downwardly, and thereby moves the valve 17 to its seat yieldable to finger pressure upon the finger-piece 25.

In addition to the hand grip 24 around the lower end of the shank 11, a laterally extending grip 29 is mounted on the side of the shank a distance above the grip 24, and extending from the shank in a direction opposite to that in which the arm 12 of the frame is extended, so that the arm 12 and the grip 29 are in a common plane coincident with the shank 11. The grip 29 is removable for attachment to an extension rod, as will be subsequently described.

The cross head portion 14 above the needle valve is extended in a plane with the arm 12, in which there is set a hollow shaft 31 held stationary in the bushing by means of a combined closure and lock screw 32 engaged in the end of the shaft, and having a large head fitted over the end of the cross head 14, so as to close the same and to draw the shaft into the head properly. A lock screw 30 is also employed to hold the shaft. The shaft 31 extends from the opposite end of the head 14 for a substantial distance, and has revolubly mounted thereon an applicator roll to be described. A port 33 is formed in the side of the shaft, immediately adjacent the needle valve seat 18, to receive liquid passing the valve 17, so that such liquid may flow longitudinally outward along the shaft 31. The shaft is also provided with a series of openings 34, at proper intervals throughout its length. The openings progressively increasing in size, so that an equal distribution of liquid will be inherent. A roller 35 is provided, consisting of a foraminate tube 36, sufficiently large to lie in spaced relation to the shaft 31, and mounted in this tube at each end there are respective bearings 37 of a suitable kind, which may include packing means to guard the bearings against access of coating materials from the shaft 31, as indicated at 38. The outer bearing includes a sleeve element 39, bored to rotatably fit upon the end portion of the shaft 31, and the interior of the bearing 37 is threaded and receives a gland 41 engaged therein with the head extended over the end of the sleeve 39, so as to retain the roller assembly upon the shaft 31. At the inner end of the tube 36, a circular flange 42 is formed concentrically therearound, of substantial material and fixed rigidly and permanently in place on the assembly. At the outer end of the roller assembly, a corresponding annular flange 43 is provided securely held between the sleeve 39 and the gland 41. A large headed screw 41' is threadedly engaged within the shaft 31 for maintaining the roller assembly on the shaft.

A large cylindrical screen body 44 is provided, of a length approximately that of the foraminate tube 36 at its end fittings, and being of a diameter slightly greater than that of the flanges 42 and 43, the two latter flange elements being of the same diameter as shown. The space between the foraminate tube 36 and the outer screen 44' is packed with Monel strands or other suitable material of a non-corrosive character, and preferably consists of strands of a course structure as indicated at 45 and an outer portion of finer strands as indicated at 45'. The outer screen 44' is greater length than that of the screen body 44 and held by the outer edges of the flanges 42 and 43. The size of the flanges in relation to the screen is such that the flanges will bind the inturned edge portions of the fabric sleeve against the inner surfaces of the screen, so that the fabric is held securely in place and leakage of coating material out through the end of the roller prevented.

In the present instance, the body 44 is shown as made up of a plurality of sections indicated at S, and by this arrangement it will be apparent that any suitable number of sections may be mounted upon a given length of shaft 31, permitting the assembly of long or short applicator rollers. Also this construction permits ready renewable of the sections, as will be apparent.

The device as thus described, is adapted for use, as will be readily understood, when the operator can come into close proximity to the surfaces to be coated. The shank portion 11 may, of course, be elongated to such extent as may be required in case it is desired to enable the use of the roller against the ceiling while the operator stands upon the floor below, or to enable the operator to roll the roller from the lower part of a wall to the upper part thereof adjacent the ceiling. However, in order to avoid the necessity for separate tools for high and low work, I have provided means for attaching an extension handle to the device, as will now be described.

It will be noted that the handle 29 is formed with an interiorly threaded sleeve on its inner end which is screwed upon a short stud 50, fixed upon the shank 11 of the tool, a distance below the arm 12. At a level closely adjacent the base of the arm 12, a second stud 51 is formed, these two studs being exteriorly threaded. A plate 52 of elongated form is provided, having apertures therein to receive the studs 50 and 51, respectively, and the plate is held upon the stud by suitable nuts engaged upon the stud. The plate is formed with a socket 55 at its lower end, in which there is insertable a pole handle 56 at the lower end of which there is a handle 57, a lug 58 similar to the lugs 50 and 51 being provided upon the side of the pole a distance above the handle, the last named stud being adapted to receive the handle 59 in the same manner that the latter is shown engaged upon the stud 50. The pole 56 may be secured in the socket 55 in any suitable way. In order to enable the operation of the lever 20 from the more distant handle 57, a crank device 60 is mounted oscillatably upon the pole 56 adjacent the handle 57, having a grip lever 61 located adjacent the handle 57 and adapted to be compressed by the finger or the thumb of the hand in which the handle 57 is grasped, the crank device including a crank arm 62 connected by a link 63 to a lever 64 pivoted on the upper end of the plate 52, in a plane parallel to that of the lever 20, the lever 64 being pivoted on the plate 52 at the side of the shank opposite the lever 20, and extending beside the shank 11 and therebeyond, so as to lie adjacent an inner part of that end of the lever 20 which is connected to the plunger 22. The lever 64 is provided with a lateral wiper roll or the like 64', arranged to engage against the under side of the lever 20, so that when the link 63 is drawn downwardly, the lever 64 and its wiper will press upwardly against the lever 20 and so cause opening of the valve 17. Closure of the valve will be attained by the spring 26, as before described.

In the use of this device, a suitable coating liquid being available in an adequate supply under pressure, it is led to the shank 11 through any usual hose coupled at 15, and allowed to pass through the hollow frame 10 and past the valve 17, through the shaft 31, and tube 36, into

the mass of strands 45 and 45' through which it is caused to become distributed and to pass outwardly through the screen 44. The screen and the strands are of such nature that the coating liquid becomes uniformly distributed throughout the sleeve and exudes from the external surface thereof as long as the valve 17 is kept open, but with proper manipulation of the valve the coating does not become discharged and separated from the roller, but becomes uniformly distributed therein, so that it may be deposited upon any surface to which the roller is applied.

On this account, the coating liquid may be applied to a surface by rolling the roller thereagainst, so that the roller travels upon such surface, while rotating upon the shaft 31. A certain amount of liquid may be so applied even when the valve 17 is closed, as long as there is a proper supply of coating liquid in the roller. The screen device 44 is, to a considerable extent, flexible and yieldable, so that the Monel strands within the screen may be compressed at various parts, and the liquid contents caused thereby to become extruded through the screen sleeve on the surface of the roller. In consequence, a slight momentary variation in the openings afforded by the valve 17 will not cause inequalities of thickness of coating applied, and the operator may, very readily, maintain a proper supply of fluid in the roller by observing the quantity of coating deposited, from time to time. The expert operator will, of course, quickly learn the proper position of the needle to apply the liquid with the available pressure in such quantities as to properly accommodate the deposit of coating in proper accord with the rate of movement of the roller upon the surfaces coated.

After the tool has been used and it is desired to preserve it in condition for further use at a later time, I have provided an elongated cylindrical receptacle 65, slightly larger in interior diameter than the external diameter of the roller 35, and somewhat longer. The receptacle is made of two complemental semi-circular sections, hinged together as at 66, one section having brackets 67 for mounting upon a wall or the like. Each section is provided with semi-circular opening 68 adapted to embrace the head portion 14 when closed thereabout, and if desired a suitable packing 69 may be employed to secure an air-tight fit. Any suitable catch 70 may be employed so as to retain the sections in closed relationship. When the sections are in closed position upon the tool, the latter will be supported as well as maintain the roller sealed against air and foreign matter.

A pressure gauge 71 is mounted on the upward extension 13 of the hollow frame, so that the user of the tool may be fully informed of the proper supply of coating liquid to the tool, and may also determine the adjustment of the valve 17 by the degree of pressure registered.

If desired, a number of hose clamp devices 72 may be provided on the pole extension 56, adapted to releasably hold the hose 73 by which the coating liquid is conveyed to the coupling 15 and hollow frame 10.

In Figure 6, I have illustrated a modified form of the applicator roll, which will be found practical where two or more stripes are to be drawn along a surface. This is accomplished in the provision of individual roll sections 74 held in spaced relation by spacer blocks 75, the latter being of less diameter than the roll sections.

While I have shown and described specifically the invention, this is by way of illustration only, and I consider as my own all such modifications in structure as fairly fall within the scope of the appended claims.

I claim:

1. A coating tool of the character described comprising a roller of resilient metallic textile material, means to support the roller revolubly including a manipulating handle by which the roller may be applied to surfaces to be coated, and means to supply liquid coating material to the interior of the roller for feeding therethrough.

2. The structure of claim 1 in which said roller includes an inner body of metal textiles, and an enclosing sleeve of closely woven fabric, and means to close the ends of the roller against egress of coating liquid.

3. The structure of claim 1 in which said roller and mounting include a hollow shaft having a multiplicity of perforations longitudinally thereof, a foraminate tube spaced concentrically to said shaft and longitudinally spaced bearings between the shaft and tube, and means on said foraminate tube at each end to grip the end portions of said fabric continuously and constituting a closure between said foraminate tube and said fabric at a distance from the tube.

4. The structure of claim 1 in which said roller consists of a hollow duct shaft, a foraminate tube spaced concentrically therearound, longitudinally spaced bearings between the tube and shaft, said shaft having a multiplicity of openings therethrough spaced longitudinally thereof, a cylindrical screen in contact relation to the tube, a packing of metal textiles between the tube and screen, the ends of the screen being near the ends of the tube, a closely woven metal fabric engaged over the screen and having its ends inturned a distance, and flange members on the tube, engaged against the inturned ends of the fabric to press the same against the inner surfaces of said screen, for the purposes described.

5. In an article of the character described, a roller and mounting consisting of a hollow duct frame having a T head thereon, a stud shaft mounted in the head, said shaft being hollow, foraminate and ported for communication with the duct in said frame, a screw engaged in the shaft at one end of said T head, a roller of resilient metallic textile material engaged revolubly on said shaft, means to hold the roller releasably on the shaft, means to supply coating liquid to said hollow frame, and a manually operable valve for controlling flow of said liquid to said shaft.

6. In an article of the character described, a roller and mounting consisting of a hollow duct frame having a T head thereon, a stud shaft mounted in the head, said shaft being hollow, foraminate and ported for communication with the duct in said frame, a screw engaged in the shaft at one end of said T head, a roller of resilient metallic textile material engaged revolubly on said shaft, means to hold the roller releasably on the shaft, means to supply coating liquid to the hollow frame, and a manually operable valve for controlling flow of said liquid to said shaft, said frame comprising a body shaft portion, a lateral arm and a longitudinal extension parallel to the shank axis, a T head on said extension having said shaft fixed therein, said means to control the flow of liquid to said shaft consisting of a ported member adjacent

the shaft, at the end of said extension, a needle valve slidable in said extension and having a head portion exposed at the under side of said lateral arm, a lever of the first order pivoted intermediately on said arm and having one end engaged with said valve, a plunger longitudinally slidable on the shank and a spring device engaged with the plunger under tension tending to move the plunger to position to close said valve, yieldable to manual operation of the plunger.

7. In a tool of the character described, an applicator roll and mounting consisting of a support frame, a hollow duct stud shaft mounted fixedly thereon, means to supply coating liquid to the interior of said shaft, a foraminate tube spaced around the shaft, bearings between the tube and shaft spaced longitudinally, annular flanges at respective ends of said tube, a cylindrical screen of larger diameter than the flanges arranged around said tube, a woven fabric metallic sleeve engaged over the screen and having its end portions inturned beyond the ends of the screen between respective flanges and the screen, said flanges being spaced within the screen to bind against said end portions of the fabric and to form closure heads for the roller, and a mass of resilient metallic textile material between said screen and foraminate tube.

8. A coating tool of the character described comprising a roller of resilient metallic textile material, means to support the roller revolubly including a manipulating handle by which the roller may be applied to surfaces to be coated, a grip handle on the manipulating handle extended at right angles thereto, and means to supply liquid coating material to the interior of the roller for feeding therethrough.

9. The structure of claim 8 in which the grip handle is positioned in advance of the manipulating handle.

10. A coating tool of the character described comprising a roller of resilient metallic textile material, means to support the roller revolubly, studs projected from said means, a manipulating handle on said means, means for supplying a liquid coating material to the interior of the roller for feeding therethrough including a valve, manual means on the manipulating handle for actuating the valve, the manual means including a spring normally closing said valve, and an extension handle mounted on said studs, said extension handle having manually operable means complemental to the valve for controlling operation thereof against the action of said spring.

AUGUST J. KOLLMANN.