C. C. THOMAS.

FLUID DISTRIBUTING DEVICE.

APPLICATION FILED SEPT. 29, 1914.

1,165,637. Patented Dec. 28, 1915.

Fig. 1.

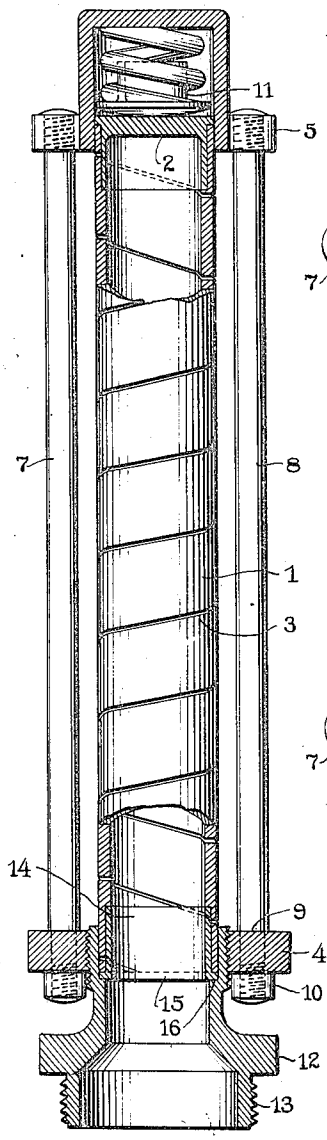


Fig. 2.

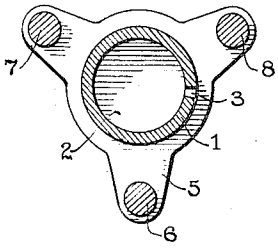


Fig. 4.

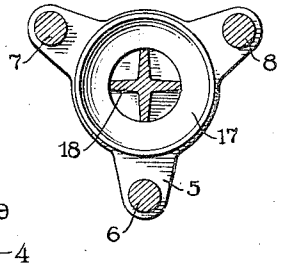
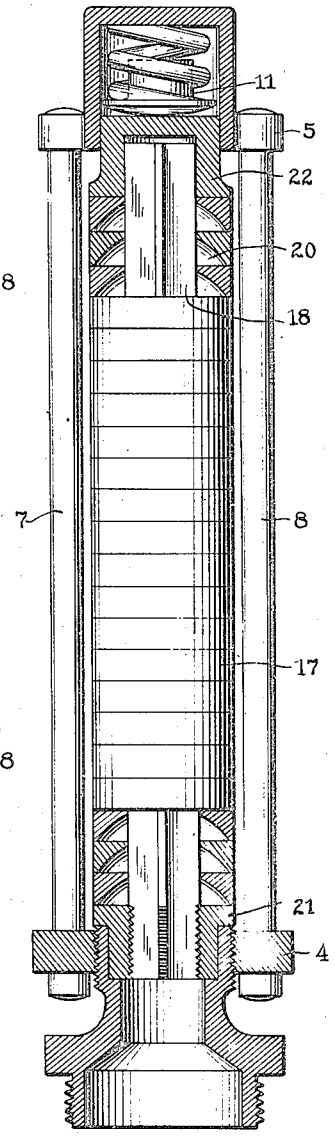


Fig. 3.



Witnesses-

J. L. Johnson

Robt. L. Barry

Inventor

Carl C. Thomas

By Frank W. Hubbard

Attorney

UNITED STATES PATENT OFFICE.

CARL C. THOMAS, OF BALTIMORE, MARYLAND.

FLUID-DISTRIBUTING DEVICE.

1,165,637. Specification of Letters Patent. Patented Dec. 28, 1915.

Application filed September 29, 1914. Serial No. 864,029.

To all whom it may concern:

Be it known that I, CARL C. THOMAS, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented new and useful Improvements in Fluid-Distributing Devices, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

This invention relates to fluid distributing devices and more particularly to those for producing sprays.

One of the objects of the invention is to provide a spraying device which may be adjusted to vary the size of its discharge opening or openings either manually or by variation of the pressure of the fluid supplied thereto, whereby said device may be set to meet ordinary conditions and then adjusted from a distance to meet contingencies.

A further object is to provide a device of the character set forth with means to protect the same against injury from blows or forcible contact with other objects.

A still further object is to provide a simple and efficient spray producing element.

Other objects and advantages will hereinafter appear.

Devices embodying the invention may be advantageously employed in numerous different relations. For example, one embodiment of the invention has been found highly advantageous for use as a nozzle for fire hose, the same being adapted to be lowered into a burning room and then adjusted by variation of the water pressure as may be required. Further, the device by delivering the water in the form of a spray facilitates and expedites the conversion thereof into steam which is very effective as an extinguishing medium and avoids the necessity of playing the water in large streams which cause much needless property damage.

The aforesaid embodiment of the invention and a modification thereof are illustrated in the accompanying drawing which will now be described, it, of course, being understood that the invention is susceptible of other embodiments falling within the scope of the appended claims.

Referring to the drawings, Figure 1 shows an elevation and partial longitudinal section of the first mentioned device, and Fig. 2 shows a transverse section of such device; and Figs. 3 and 4 are similar views of the modified device.

The device shown in Figs. 1 and 2 is provided with a spraying nozzle 1 of the type covered in my co-pending application, Serial No. 855,822, filed Aug. 8, 1914, but embodying improvements in construction, as hereinafter pointed out. The nozzle comprises a tubular member closed at one end by a flush fitting plug 2 and provided with helical slot 3 forming a discharge opening which may be varied in width by axial contraction of said member. Thus by this very simple adjustment, the character, amount and range of the spray produced may readily be regulated as desired.

The nozzle is supported in a guard frame including end members 4 and 5 and three connecting rods 6, 7 and 8 extending parallel to the nozzle but spaced therefrom. The rods are threaded into the end member 5 while the end member 4 is secured on said rods and against shoulders 9 thereof by nuts 10, thus producing a rugged and rigid structure which effectually protects the nozzle. The nozzle, however, is longitudinally adjustable in said frame, being slidably mounted in both end members thereof. The end member 5 is cup-shaped to receive the closed end of the nozzle and contains a spring-pressed stud or rocker 11 having a convex head bearing against the plug 2 of said nozzle. The end member 4 on the other hand has threaded therein a hollow fitting 12 which receives the open end of the nozzle and which has a threaded portion 13 providing a hose coupling. The open end of the nozzle has therein a flush fitting bushing 14 provided with a flange 15 abutting the end of said nozzle and an internal shoulder 16 of the fitting 12. Thus it will be observed that by tightening the fitting 12 in the end member 4 the nozzle may be forced downwardly in the frame against the spring-pressed stud 11. Hence if the spring be made to predominate the axial resiliency of the nozzle, the latter will be contracted with a consequent contraction of its slot to a degree varying with the degree of rotation of the fitting. On the other hand, it will be observed that the contraction of the nozzle is maintained only by the spring and that the water pressure within the nozzle acts in opposition to the latter, so that such pressure may be utilized to control the action of the spring

and thereby effect extension of the nozzle independently of the manually adjustable fitting 12. Conversely, extension of the nozzle may be effected by loosening the fitting 12 in the end member 4 while contraction of the nozzle to normal length may be effected by reducing the water pressure.

Considerable difficulty has been experienced in forming a tight joint between a helical spring member, such as the member 1, and a flow-connection, such as the member 12, or a closure, such as the plug 2. Soldered and brazed joints do not last, and brazing in particular is objectionable, because the heat of the brazing operation draws the temper of the portion of the spring member adjacent the point of brazing, so that as a result the spring member tends to open more widely, near the point of brazing, than elsewhere. In the construction shown in Fig. 1 these difficulties have been overcome by providing, at the inlet end of the spring 1, the flanged bushing 14, and by forming the closure plug 2, at the opposite end of the spring 1, as a similar bushing. Both of these bushings, 2 and 14, fit the internal bore of the spring 1 closely and form a tight joint therewith; and the very slight increase in diameter of the spring 1, incident to its contraction longitudinally, does not interfere with the maintenance of the tight joint between the bushings 2 and 14, and the walls of the spring member 1. Obviously, it is an easy matter to form a tight joint between the flow-connection 12 and the bushing 14.

Referring now to the device shown in Figs. 3 and 4 the same is essentially like that described except as to the nozzle construction. In this instance the nozzle comprises a plurality of annular disks 17 loosely stacked on a central member 18 having a plurality of radial ribs to engage said disks and thereby maintain the same in substantial axial alinement while permitting a free flow of fluid into the stack of disks. Each disk is flat on one side and concave on the other, thereby providing tapered spaces 20 between adjacent disks. Thus the fluid entering the stack of disks is forced into the spaces 20 and by its pressure separates the disks to provide discharge slots the width of which may be regulated as above described in connection with the spirally slotted tube. The frame is provided with end members 4 and 5 like those shown in Fig. 1 and the disks are confined between a ring 21 abutting the shoulder of the hose fitting and a solid cylindrical member 22 bearing against the spring-pressed stud 11 contained in the end member 5. The member 18 upon which the disks are stacked is threaded into the ring 21 and thus supported thereby while its opposite end projects into a recess in the member 22. Thus it will be observed that the spring-pressed stud 11 will normally hold the disks 17 in engagement but will yield to the pressure of the fluid to permit separation of the disks to a degree determined jointly by the fluid pressure and the adjustment of the fitting 12 which through the disks regulates the normal pressure of the stud 11.

What I claim as new and desire to secure by Letters Patent is:

1. A fluid distributing device comprising a tubular member having a lateral circumferential discharge opening, said member being extensible to vary the width of such opening, a flow-connection for one end of said member, a closure for the other end of said member, spring means engaging the said closure, and a cage connecting said spring means and said flow-connection, whereby said spring is caused to resist tendency of the tubular member to extend.

2. A fluid distributing device comprising a tubular member having a lateral circumferential discharge opening, said member being extensible to vary the width of such opening, a flow-connection for one end of said member, a closure for the other end of said member, spring means engaging the said closure, and a cage, adjustable as to length, connecting said spring means and said flow-connection, whereby said spring is caused to resist tendency of the tubular member to extend.

3. A fluid distributing device comprising a tubular member having a lateral circumferential discharge opening, said member being extensible to vary the width of such opening, a flow-connection for one end of said member, a closure for the other end of said member, spring means engaging the said closure, and a cage connecting said spring means and said flow-connection, and comprising a cup member inclosing such spring means.

4. A fluid distributing device comprising a tubular member having a lateral circumferential discharge opening, said member being extensible to vary the width of such opening, a flow-connection for one end of said member, a closure for the other end of said member, spring means engaging the said closure, and a cage connecting said spring means and said flow-connection, and comprising a cup member inclosing such spring means and the end of said tubular member.

5. A fluid distributing device comprising a tubular member having a lateral circumferential discharge opening, said member being extensible to vary the width of such opening, a flow-connection for one end of said member, a closure for the other end of said member, spring means engaging the said closure, and a cage connecting said spring means and said flow-connection, said

spring means including a rocker intermediate the spring and the end of said tubular member.

6. A fluid distributing device comprising a tubular member having a lateral circumferential discharge opening, said member being extensible to vary the width of such opening, a flow-connection for one end of said member, a closure for the other end of said member, spring means engaging the said closure, and a cage connecting said spring means and said flow-connection, said spring means including a rocker intermediate the spring and the end of said tubular member, and said cage comprising a cup member inclosing the spring means and rocker.

7. A fluid distributing device comprising a helical spring, a flow-connection therefor, and a sleeve forming a continuation of the bore of the flow-connection, and fitting within and engaging the end of said spring.

8. A fluid distributing device comprising a helical spring, a flow-connection therefor, and a sleeve forming a continuation of the bore of the flow-connection, there being space provided between the said sleeve and the flow-connection, in which space the adjacent end of the spring is seated.

9. A fluid distributing device comprising a helical spring, a flow-connection for one end thereof, and in which such end of the spring is seated, means closing the other end of said spring, means resisting expansion of the spring, and a flanged bushing fitting closely within the flow-connection-end of said spring, and within the bore of said flow-connection, and forming a tight joint between the flow-connection and the said spring.

10. A fluid distributing device comprising a helical spring and an end closure therefor comprising a flanged plug located in the main within said spring, and fitting closely the walls of said spring, and means holding such plug in place within said spring.

11. A fluid distributing device including a distributing member adapted to be extended and contracted to regulate the discharge therefrom and extensible and contractible supporting means for said member having a resilient bearing therefor at one end and a rigid bearing therefor at its opposite end.

12. A fluid distributing device, including a distributing member contractible and extensible for regulation of its discharge and inherently tending to extend and a frame having a resilient bearing and a rigid bearing for said distributing member, one of said bearings being adjustable with respect to the other.

13. A fluid distributing device, including a spiral slotted tubular member adapted to be axially contracted to contract the slot therein and tending to extend axially and a frame supporting said member, said frame having a resilient part and a rigid part bearing against opposite ends of said member and one adjustable with respect to the other.

14. A fluid distributing nozzle including a tubular member spirally slotted and a supporting frame for said member having sockets for the opposite ends thereof, one of said sockets having therein a spring-pressed device tending to axially contract said member and one of said sockets being adjustable axially of said member.

In witness whereof, I have hereunto subscribed my name in the presence of two witnesses.

CARL C. THOMAS.

Witnesses:
TEKLA BAST,
L. A. WATSON.