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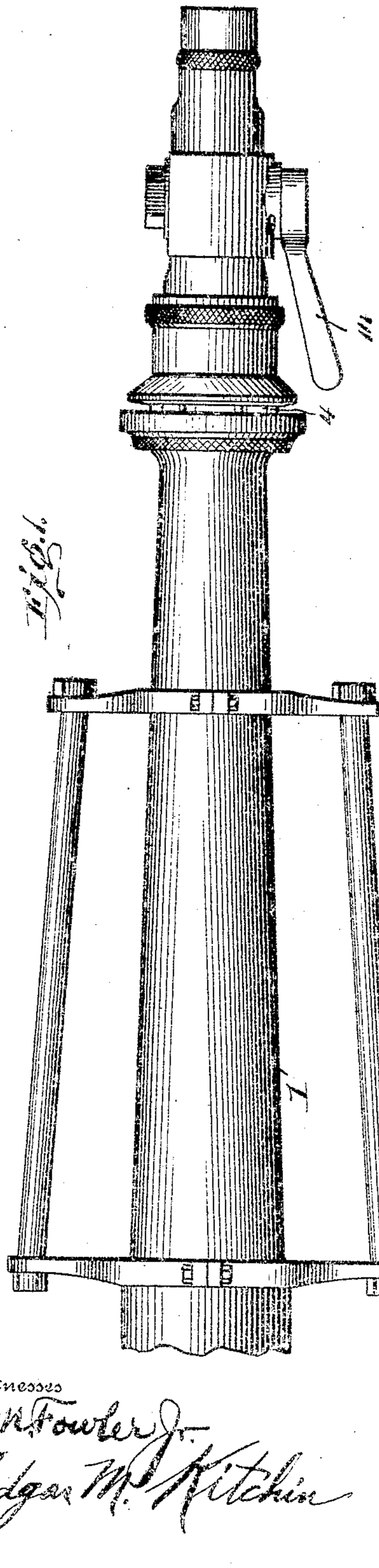
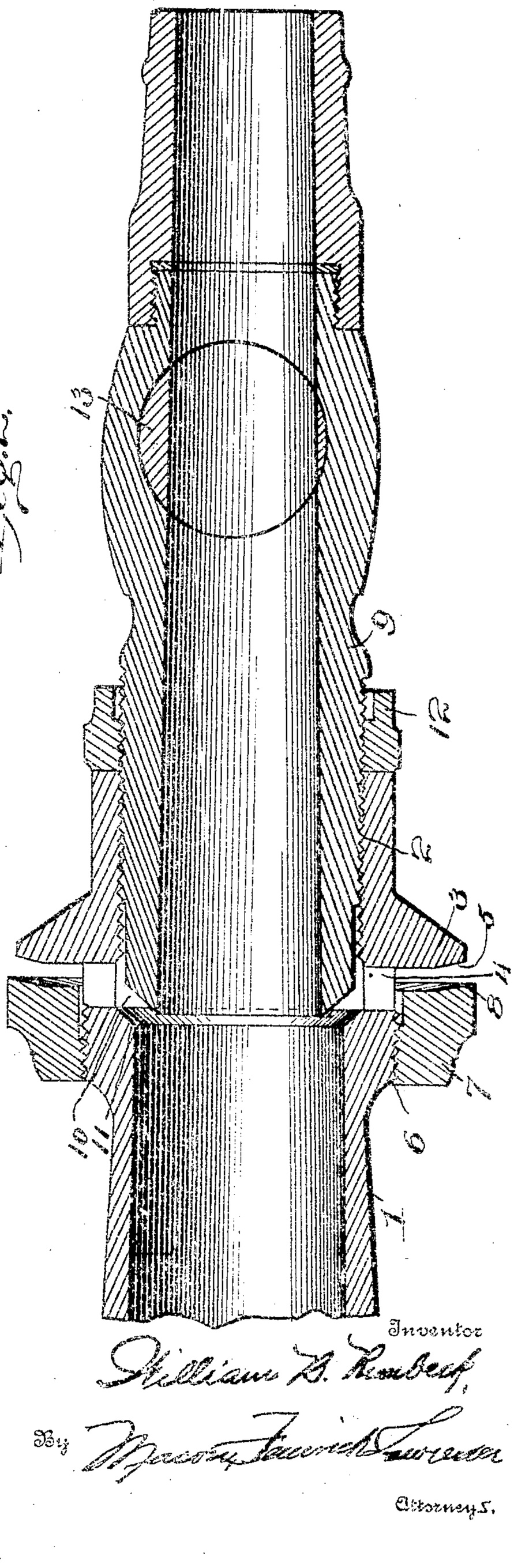
W. B. RUNBECK.

FIRE HOSE NOZZLE.

APPLICATION FILED JULY 20, 1904.





Witnesses

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No. 786,684. Patented April 4, 1905.

UNITED STATES PATENT OFFICE.

WILLIAM B. RUNBECK, OF WASHINGTON, DISTRICT OF COLUMBIA.

FIRE-HOSE NOZZLE.

SPECIFICATION forming part of Letters Patent No. 786,684, dated April 4, 1905.

Application filed July 29, 1904. Serial No. 218,687.

To all whom it may concern:

Be it known that I, WILLIAM B. RUNBECK, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Fire-Hose Nozzles; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in hose-nozzles, and particularly to such as are especially adapted for use on fire-hose.

The object in view is the provision of means for producing a lateral spray for protecting the person supporting the nozzle from the action of the flames, and this object is obtained by the employment, in combination with a nozzle-section formed with lateral apertures, of a tubular section longitudinally movably connected with said nozzle-section and extending past said lateral apertures and a ring carried by said nozzle-section and adapted to be moved longitudinally thereof for closing said apertures to a greater or less degree.

With this and other objects in view the invention comprises certain novel constructions, combinations, and arrangements of parts, as will be hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 represents a view in side elevation of a nozzle embodying the features of the present invention. Fig. 2 represents a longitudinal vertical central section taken through the same, parts being broken away and the parts being illustrated upon a large scale.

In the present art attempts have been made to provide means for protecting a fireman against the action of heat and flames, and I propose to accomplish this result in a most efficient manner by the employment, in combination with a hose-nozzle, of means for producing a lateral spray, means for varying the pressure upon said spray, and means for altering the thickness or width of the spray, whereby only a small amount of water may be thrown laterally in front of the fireman as he enters a building, or a large quantity of water may be discharged about the operator, the quantities discharged being altered in degree corresponding, of course, to the degree of exposure of the operator, provision being made for permitting the regular streams to flow from the nozzle while the spray is in operation or for cutting off said stream, as may be desired. These desirable results are preferably obtained by the employment of elements such as are delineated in the accompanying drawings, in which—

1 indicates any of the common forms of nozzle having its front or discharge end internally threaded, as at 2, and being provided with an annular flange 3, extending outwardly from the outer surface at the rear end of the threaded portion. Just in the rear of the flange 3 are provided apertures 4 4 in the nozzle or nozzle-section 1, said apertures being of any suitable number and of any desired size for permitting the discharge of the required quantity of water. Here it is to be noted that the flange 3 produces a straight annular shoulder in line with the upper edges of the notches 4, said straight shoulder extending for a portion of the width of the flange 3, said flange being formed with a beveled portion 5 beyond said straight portion. The nozzle-section 1 is externally threaded, as at 6, just in the rear of the aperture 4 and a sleeve 7 is threaded onto the portion 6 in position for being moved across the apertures 4. It will be observed that the sleeve 7 may be threaded longitudinally of the nozzle-section 1 for increasing or decreasing the space between the outer edge of said sleeve and the inner edge of the flange 3, the outer edge of said sleeve being formed with a flat portion corresponding to and extending parallel with the flat shouldered portion of the flange 3 and the sleeve being further provided with a beveled portion 8, extending beyond the flat portion and lying parallel to the beveled portion 5 of flange 3, both beveled portions 5 and 8 being disposed on an outward incline, whereby in operation water directed between the flange 3 and sleeve 8 will be given a natural slightly-forward tendency in addition to its lateral movement.

It is of course well known to those familiar

with hydraulics that the discharge of liquids from a pipe through a lateral aperture is not made with the same velocity with which the current within the pipe is moving, and as it is desirable to at times impart to the spray moving between the flange 3 and sleeve 7 as great an impetus as is possible I provide a baffle-plate for directing a certain proportion of the current within the nozzle-sections 1 through the aperture 4, said baffle-plate comprising a section of tube 9, threaded into the threads 2 and having the diameter of its bore less than the diameter of the nozzle-section 1, the lower or rear end of said tube-section 9 extending across the apertures 4 and being beveled outwardly, as at 10, for cutting the stream within the nozzle 1 and directing a portion of the same outwardly through the apertures 4. In this connection it is to be noted that I preferably provide a bevel 11 at the end of the bore of the nozzle-section 1 corresponding with and arranged approximately parallel to the bevel 10, said bevel 11 being adapted to form a seat for the bevel 10 when the tube-section 9 is threaded into the nozzle-section 1 to its fullest extent. Thus it is to be observed that the tube-section 9 may be threaded longitudinally into position for completely closing the space between its rear end and the front end of the nozzle-section, and the lateral discharge of water thus prevented, or said tube-section 9 may have its rear end spaced to any desired extent from the bevel 11 of the front end of the nozzle-section 1, whereby the degree of pressure upon the lateral spray may be effectually controlled, the sleeve 7 serving to control the thickness of the spray being discharged.

A lock-nut 12 is preferably threaded onto the tube-section 9 in position for coming in contact with the outer end of the threaded portion 2 when the tube-section 9 is brought to its normal position, whereby said tube-section may be locked in a given position by the tightening of the threads thereof, due to contact of nut 12 with the end of threaded portion 2. Thus the tube-section 9 may be set at a given point and maintained against displacement during any given operation. The nut 12 may of course be threaded for a sufficient distance longitudinally of the tube-section 9 for permitting said tube-section to close the space between the beveled portion 10 and bevel 11 when desired.

An important feature of the present invention lies in the fact that I provide a plug-valve 13, interposed in the length of the tube 9 and arranged for cutting off the stream normally passing through the nozzle, the said valve being positioned within the tube-section instead of within the nozzle-section for permitting the stream to be cut off while the spray is maintained. The bore of the plug 13 is disposed at one side of the plug, so that said plug may be of a minimum diameter, and only one side of the plug is adapted to close the bore of the tube-section 9 when the plug is turned to a closed position. Any suitable operating-handle 14 may be connected to the valve 13 for facilitating the manual operation thereof.

In practice I have found that each of the webs or sections of material separating the several apertures 4 will ordinarily cause a break in the sheet of water being discharged laterally unless means are provided for preventing such breach in the sheet of water. I find, further, that the inclined surfaces 5 and 8, extending at an angle with respect to the horizontal surfaces of the flange 3 and sleeve 7, provide such means, and the presence of the angle in the annular groove produced between the flange 3 and the ring 7 effects a union of the water discharged through the apertures 4, so that a continuous unbroken annular sheet is discharged. I find, further, that any angle formed in the said annular groove will produce this effect; but of course I prefer the angle illustrated, as it has the additional advantage of giving the sheet of water discharged a slightly forward inclination.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A nozzle comprising a nozzle-section formed with apertures, an annular flange at one side of said apertures, and a sleeve at the other side of said apertures producing a corresponding, annular flange, whereby an annular groove is produced between said flanges, each of the contiguous faces of said flanges being formed with an angle intermediate its width.

2. A nozzle comprising a nozzle-section formed with lateral apertures, an annular flange at one side of said apertures formed with a straight portion for part of its width and a beveled portion for the remainder of its width, and a sleeve at the other side of said apertures adjustable longitudinally of the nozzle-section, the end of the sleeve contiguous to the said flange being formed with a flat portion for part of its width and a beveled portion beyond the flat portion corresponding to the flat and beveled portions on said flange.

3. In a nozzle the combination with a nozzle-section, formed with lateral apertures and with a valve-seat, of a tube-section arranged with its bore in line with the bore of said nozzle-section, said tube-section being adapted to be moved longitudinally into contact with the said valve-seat and means for varying the area of said lateral apertures.

4. In a nozzle, the combination of a nozzle-section apertured for permitting lateral discharge therefrom, an annular, beveled seat formed in said nozzle-section in the rear of the apertures thereof, a beveled deflector adapted to move toward and away from said seat for controlling the bulk of discharge

through said apertures, and means outside the apertures for controlling the pressure of said discharge.

5. In a nozzle, the combination of a nozzle-section apertured for permitting lateral discharge therefrom, means inside said nozzle-section controlling the bulk of such discharge, and means outside said apertures for controlling the pressure of such discharge.

6. In a nozzle the combination with a nozzle-section formed with lateral apertures, of a tube-section movable longitudinally within said nozzle-section for controlling the discharge through said apertures and means for closing the bore of said tube-section.

7. In a nozzle, the combination with a nozzle-section formed with lateral apertures and an internally-threaded portion extending beyond said apertures, an annular flange extending outwardly from said threaded portion in front of said apertures, a tube-section adapted to be threaded into said threaded portion past said apertures, and a sleeve threaded onto said nozzle-section in the rear of said apertures and adapted to be moved over the apertures.

8. In a nozzle the combination with a nozzle-section formed with lateral apertures, of a tube-section movable within said nozzle-section past said apertures and a sleeve on said nozzle movable over said apertures.

9. A nozzle comprising a laterally-apertured nozzle-section, a threaded extension projecting beyond said nozzle-section, a valve-seat formed in said nozzle-section in the rear of said apertures, a tube-section threaded into said threaded extension, a deflector at the inner end of said tube-section shaped to fit said valve-seat, and a lock-nut for locking said tube-section at various points of adjustment within said threaded extension.

10. A nozzle comprising a nozzle-section formed with lateral apertures, an annular flange at one side of said apertures formed with an angular surface, and a flange disposed opposite the first-mentioned flange and formed with an angular surface parallel to the angular surface of the first-mentioned flange.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

WILLIAM B. RUNBECK.

Witnesses:
ROBINSON WHITE,
EDGAR M. KITCHIN.