M. H. HART.

NOZZLE FOR FIRE FIGHTING APPARATUS.

APPLICATION FILED MAR. 9, 1909.

965,709. Patented July 26, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

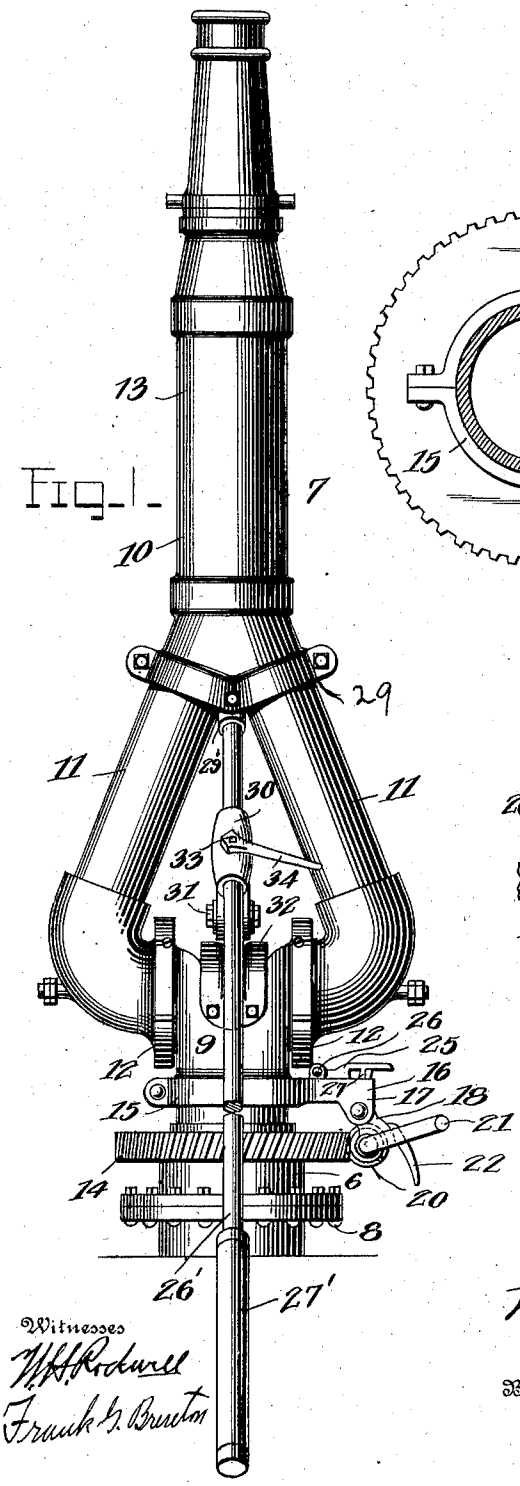



Fig. 4.

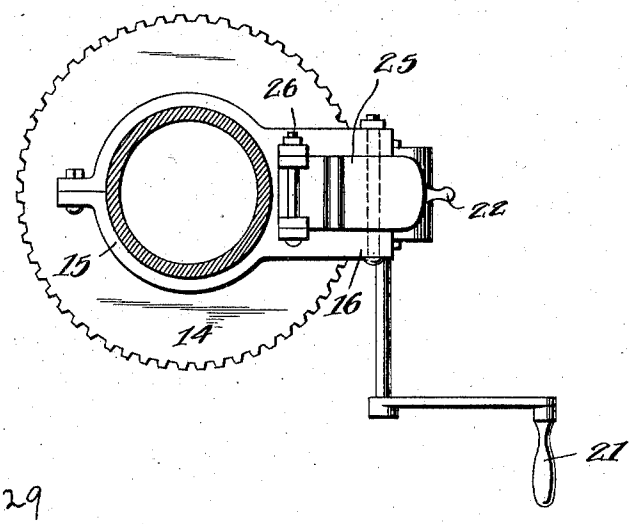
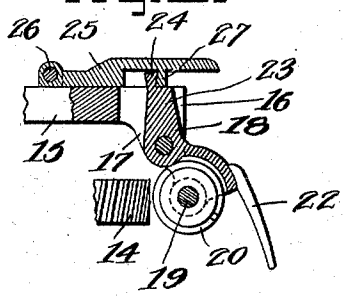



Fig. 5.




Witnesses

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2 SHEETS—SHEET 2.

Fig. 3.

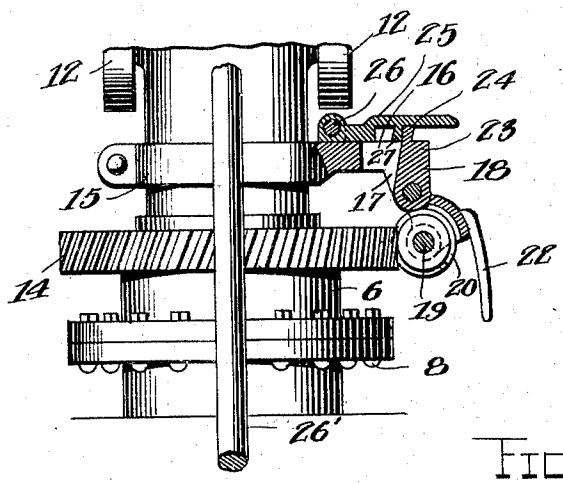


Fig. 2.




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# UNITED STATES PATENT OFFICE.

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## NOZZLE FOR FIRE-FIGHTING APPARATUS.

965,709. Specification of Letters Patent. Patented July 26, 1910.

Application filed March 9, 1909. Serial No. 482,364.

*To all whom it may concern:*

Be it known that I, MILTON H. HART, a citizen of the United States, residing at New York, borough of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Nozzles for Fire-Fighting Apparatus, of which the following is a specification.

The present invention relates more particularly to that class of nozzles that are employed on fire fighting boats, but there are features that may be successfully employed in connection with nozzles of other types, more particularly those that are mounted on a support.

One of the primary objects of the present invention is to provide novel, simple and effective means for changing the position of the delivery end of the nozzle, so that the stream issuing therefrom may be directed to any point desired and maintained at such point with the greatest ease and accuracy.

The preferred embodiment of the invention is illustrated in the accompanying drawings, wherein:—

Figure 1 is a rear elevation of the nozzle. Fig. 2 is a side elevation of the same. Fig. 3 is a detail view partly in elevation and partly in section, showing the mounting for the actuating worm. Fig. 4 is a horizontal sectional view through the structure. Fig. 5 is a detail sectional view of the structure, showing the actuating worm locked out of engagement with the worm wheel.

Similar reference numerals designate corresponding parts in all the figures of the drawings.

In the embodiment illustrated, the nozzle comprises two principal members, namely, a fixed supporting member 6 and a nozzle member 7. The supporting member 6 may be of any suitable character, bolted or otherwise fastened as shown at 8 to the supply pipe and rigidly mounted against movement. The nozzle member is composed of two sections 9 and 10. The section 9 is suitably journaled in the section 6 on a substantially vertical axis, and the section 10 has convergently disposed legs 11 rotatably coupled, as shown at 12 to opposite sides of the section 9. The legs 11 are in turn coupled to the discharge portion 13 of the nozzle. So far as thus described, no claim is herein made to the structure, the novelty residing in the means for effecting the relative adjustment of the parts, and for holding them in adjusted relation.

For the purpose of effecting the rotation of the nozzle member 7 on the supporting member 6, the following structure is preferably employed. A worm wheel 14 is fixed to and surrounds the supporting member 6, while the section 9 just above said worm wheel 14, has a split collar 15 clamped thereto. This collar carries an outstanding bracket 16 having depending ears 17 between and to which is pivoted a boxing 18. A shaft 19, journaled in the boxing, carries a worm 20 that is arranged to mesh with the worm wheel 14, and said shaft furthermore has at one end a suitable operating handle 21. The boxing is also provided with a depending handle grip 22 and with an upstanding extension 23 that terminates in a locking lug 24. A latch 25 pivoted, as shown at 26 upon the bracket, has a depending lug 27 that is arranged to engage the opposite sides of the lug 24, and thus hold the boxing in different positions, in which the worm 20 is respectively in and out of mesh with the worm wheel, as will be clear by a comparison of Figs. 3 and 5. With this structure, it will be noted that if the worm is in mesh with the worm wheel, the member 7 will be locked against accidental rotation on the supporting section 6, but by turning the worm through the medium of the handle crank 21, a minute change of the position of the nozzle member can be effected. By raising the latch 25, and swinging the boxing 18 outwardly, the worm can be disengaged from the worm wheel and locked in its disengaged position, in which case, the nozzle member can be freely rotated by hand.

The nozzle section 10, as already described, is rotatably coupled on a horizontal axis to the section 9, and for the purpose of swinging the section 10 in a vertical direction, as well as in a horizontal direction, when the worm 20 is uncoupled from the worm wheel, a handle staff 26′ is employed having a grip 27′ at its rear free end. The staff is engaged in the depending ear 28 of a split collar 29 that embraces the legs 11, said ear being located between the legs. Said staff preferably passes through the ear, in which it has a slight play but is held against detachment on said ear by nuts 29′ arranged on the staff on opposite sides of the ear. The staff also passes through a

sleeve 30, pivotally mounted, as shown at 31 to a bracket 32 secured to the section 9. A set screw 33, threaded into the sleeve 30, is movable into and out of engagement with the staff 26′ and can be operated by a wrench 34 or other suitable device.

With this construction, it will be evident that if the set screw 33 is loosened, the nozzle section 13 can be placed at any desired angle of inclination, and can be fixed in the desired position by retightening the set screw. The handle also constitutes means for swinging the nozzle on its vertical axis when the worm is disengaged from the worm wheel.

From the foregoing, it is thought that the construction, operation and many advantages of the herein described invention will be apparent to those skilled in the art, without further description, and it will be understood that various changes in the size, shape, proportion and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

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

1. In a nozzle structure of the character set forth, the combination with a supporting member, of a nozzle member journaled thereon and comprising a delivery element and convergent legs connected thereto, a sectional collar clamped upon both legs, and a directing handle secured to the collar between the legs.

2. In a nozzle structure of the character set forth, the combination with a supporting member, of a nozzle member pivotally mounted thereon, a sleeve carried by the supporting member, a handle connected to the nozzle member and being longitudinally slidable through the sleeve, and means carried by the sleeve and engaging the handle to hold said handle against its longitudinal movement therethrough.

3. In a nozzle structure of the character set forth, the combination with a supporting member, of a nozzle member pivotally mounted thereon, a sleeve pivotally mounted on the supporting member, and a handle connected to the nozzle member and longitudinally slidable through the pivotally mounted sleeve.

4. In a nozzle structure of the character set forth, the combination with relatively movable sections, of a non-rotatable handle for relatively moving the sections, said handle being connected to one section and having a longitudinally movable engagement with the other, and means for securing said handle against movement to said other section.

5. In a nozzle structure of the character set forth, the combination with pivotally connected sections, of a handle connected to one section and having a longitudinal slidable engagement with the other, and holding means for securing the handle against longitudinal sliding movement and in different positions.

6. In a nozzle structure of the character set forth, the combination with a supporting member, of a nozzle member journaled thereon and comprising pivotally associated sections, one of said sections having convergently disposed legs, a clamping collar embracing the legs, a sleeve pivotally mounted on the other section, a handle secured to the collar and slidably passing through the sleeve, and a set screw threaded into the sleeve and movable into engagement with the handle to hold the same against its sliding movement.

7. In a nozzle of the character set forth, the combination with a supporting member, of a nozzle member journaled thereon on a substantially vertical axis, said nozzle member comprising pivotally connected sections having a substantially horizontal pivot axis, a handle secured to one of the sections and having a longitudinal slidable engagement with the other, and means for securing the handle against its sliding movement.

8. In a nozzle structure of the character set forth, the combination with relatively movable supporting and nozzle members, of means connected to the nozzle member for rotating the same freely on the supporting member, and means separate from said rotating means for effecting a minute rotary movement of the nozzle member, said latter means being movable to a position to disengage the members and permit the free rotary movement of the nozzle member.

9. In a nozzle structure of the character set forth, the combination with a supporting member and a nozzle member rotatably mounted thereon and comprising pivotally connected sections, of a handle connected to one of said sections for rotating the nozzle member, and means for effecting a minute rotary movement of the nozzle member, said means being movably mounted on one member and movable into and out of engagement with the other member to permit the free movement of the nozzle member.

10. In a nozzle structure of the character set forth, the combination with relatively rotatable members, of a worm wheel carried by one member, and a worm carried by the other member and meshing with the worm wheel, said worm being movable into and out of engagement with the worm wheel.

11. In a nozzle structure of the character set forth, the combination with relatively movable supporting and nozzle members, of means connecting the members for effecting a minute relative movement between the members, said means being movably

mounted on one member and movable into and out of engagement with the other member, and means for locking said moving means both in and out of such engagement.

12. In a nozzle structure of the character set forth, the combination with relatively rotatable supporting and nozzle members, of a worm wheel carried by one member, a boxing pivotally mounted on the other member, a worm journaled in the boxing, and normally meshing with the worm wheel, and a latch for holding the boxing with the worm both in and out of mesh with the worm wheel.

13. In a nozzle structure of the character set forth, the combination with a fixed supporting member, of a nozzle member rotatable thereon, a worm wheel fixed to the supporting member, a bracket carried by the nozzle member, a boxing pivoted on the bracket, a worm journaled in the boxing and meshing with the worm wheel, a handle for operating the worm, said boxing having a depending finger piece and an upstanding locking lug, and a latch pivoted on the bracket and arranged to engage the opposite sides of the locking lug to maintain the worm both in and out of engagement with the worm wheel.

14. In a nozzle structure of the character set forth the combination with a supporting member, of a nozzle member journaled thereon and comprising pivotally connected sections, a handle connected to one section and slidably engaged with the other, and means for detachably locking the members against relative rotation.

15. In a nozzle structure of the character set forth, the combination with a fixed supporting member having a worm wheel, of a nozzle member journaled on the same on a substantially vertical axis and comprising pivotally connected sections, a handle connected to one section and slidably engaged with the other, means for securing the handle against sliding movement and in different positions, a boxing pivotally mounted on one of the nozzle member sections, means for locking the boxing in different positions, and a worm journaled in the boxing and movable into and out of mesh with the worm wheel.

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

MILTON H. HART.

Witnesses:
GEO. H. HOFMANN,
ADOLPH DOBKE.