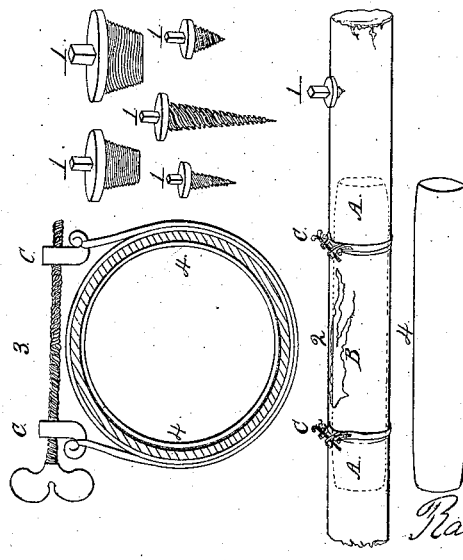
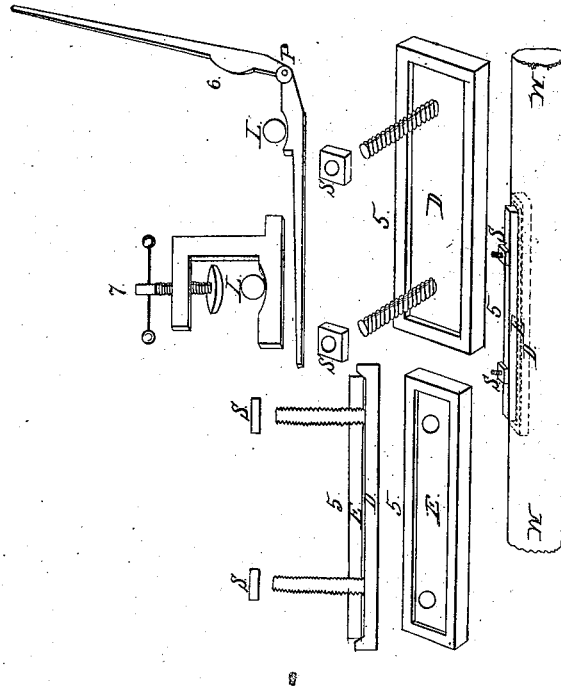


*R. Bulkley,*

*Leak Stopper,*

*Nº 1,598.*

*Patented May 8, 1840.*



*Witnesses:*  
*Joseph Bulkley,*  
*Ezra Smith.*

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# UNITED STATES PATENT OFFICE.

RALPH BULKLEY, OF NEW YORK, N. Y.

## IMPROVEMENT IN THE METHOD OF STOPPING ACCIDENTAL BREACHES IN FIRE-HOSE.

Specification forming part of Letters Patent No. 1,598, dated May 8, 1840.

*To all whom it may concern:*

Be it known that I, RALPH BULKLEY, of the city of New York and State of New York, have invented a new and useful improvement, (the object of which is to preserve in use at the time of a fire such fire-engine and hydrant-water leaders as may have been unexpectedly rendered useless at the time of a fire, either by being cut by incendiaries or other evil-disposed persons, or such as may have burst by an overstrain, or have been caused to leak through any description of unforeseen accidental breaches resulting from imperfections, casualties, or design,) called "The New York Patent Breach-Clogs," it being that of the application of methods herein described for quickly repairing and restoring to use during and at the time of a fire, without detaching them from the line or otherwise, the intermediate parts or sections of such engine or hydrant-water leaders as may have been caused to leak by unexpected accidents, imperfections, casualties, or design not heretofore provided for by any application or improvement.

The breaches to which water-leaders are liable, and which this application and improvement are intended to correct, being uncertain as to form and extent, require "breach-clogs," varied in form and dimensions, calculated to meet every emergency pertaining thereto; and among the many methods of the application of this improvement in repairing, in the vicinity of and at the time of a fire, uncertain and varied breaches in fire-leaders, so as to retain their usefulness at a time or times when most needed, during the existence of a fire, the following may be enumerated, to wit: If the aperture in the leader be of small size, it may be quickly stopped by the application of a short screw with flattened head and gimlet-point; but if the aperture be a slit in a lengthwise direction, it may be temporarily repaired for use by two corresponding plates of metal—the one to be placed inside of the aperture of sufficient length to cover it, and the corresponding plate upon the outside of the aperture of sufficient length to cover it—and the two plates screwed together by screws previously fitted, thus firmly binding the edges of the leather between the said plates of metal. If the aperture be so large, or of a description that it

cannot be secured by such screws or plates, then a section of metal or other description of pipe or tube of suitable dimensions may be inserted within the defective part and the application of either or any of the apparatus denominated "breach-clogs;" and if the breach required to be stopped be not in itself large enough to admit of the application of the breach-clog fixtures, or either of them, then the water-leader may be severed by cutting; or incisions of suitable extent may be made for the convenient and necessary application of the said apparatus for the contemplated object, as herein described. That portion of the water-leaders which covers the inserted tube may be secured thereon either by cords or straps, or by metallic clasps secured by screws or keys. The said tubes may be of any required length—say from four to twelve inches, more or less—previously prepared, and it may be preferable to have small projections at or near the ends of the tubes, to prevent the leader from slipping off. These sectional tubes may be made of any suitable material and of any required form or strength, with screws or otherwise, suitable for attaining the object intended, as herein set forth, by the application of breach-clogs, moldings, or wrappers of cloth or other substance, which may be applied upon or near the ends of the tubes, when necessary for tightening or for the better fitting into any variety of diameter of hose or leaders which by hard strain are liable to be unequally distended; also, the application of stop-water fixtures by compression upon the exterior of engine and hydrant-water leaders may be made either by lever or screw pressure. The lever-pressure may be applied in form nearly similar to tongs used for handling heated iron, or on a pivot at the junction of the handles, or by screws in the form of ordinary press-screws, the form and strength depending on the strength required to overcome the internal pressure upon the leader or hose.

It is believed this improvement in its application, as described, differs from all others in use, it being that breach-clogs and stop-water fixtures, as described, form no part of engine or hydrant-water leaders, but are merely to be held in reserve for use as appendages thereto, being in their application a distinct and independent apparatus of intended

use only in cases of casualties, and in the immediate temporary repair of unexpected breaches in water-leaders, from whatever cause, or to whatever extent, or in whatever form the same may occur, with a view to retain their desired usefulness at and during the fire at the time of which they were injured by applying the said breach-clogs at the time and in the vicinity of a fire, with or without detaching the injured section of leader from the line, as convenience may require; hence they not only differ in their application, but in the object to be attained—to wit, that of restoring to immediate use for the time being water-leaders, which, by reason of casual defects, would, as heretofore practiced, be detached from the line of leaders and thrown aside during the remainder of the fire at which they had been injured.

Fire-engine and hydrant-water leaders are a compound article, and are in a complete and finished state when delivered from the hands of the workmen or manufacturers. Again, when leaders are injured during their use at a fire, such use being the object for which they were manufactured, no workmen or materials are at hand in preparation for repairs; but, on the contrary, when water-leaders become thus injured, instead of being immediately repaired and retained in use, they are detached from the line and thrown aside as entirely useless as to their intended object during the remainder of the fire, and at some convenient future period they are gathered up and taken to the usual workshops for ordinary repairs at a future day, and a different description of repairs from those contemplated by this improvement—such as sewing or common riveting; hence appears the difference, as intended to be explained, between an original improvement, the formation of a compound article, the water-leader, in itself complete for all its intended uses when delivered from the hands of the workman or manufacturer, and the improvement comprised in the application of breach-clogs to be held in reserve, and to be applied to the intermediate parts of sections of water-leaders, as herein described, on incidental occasions.

Among the advantages which this improvement possesses the following may be enumerated, to wit:

The first and most important is that of guarding against the evil designs and attempts of incendiaries, for it is reasonable to be presumed that incendiaries who are bad enough to fire a city are also bad enough to destroy the means used for extinguishing fires; and when the frail substance of which water-leaders are composed is taken into consideration, it will doubtless be admitted that it is in the power of incendiaries to impede or annul every preparation made for extinguishing fires by merely cutting the water-leaders, and thereby preventing the conveyance of water to a fire. In this view of the subject there might be instances when the application of this improve-

ment of breach-clogs might, for the time being and during the raging of a fire, be paramount in value to all other expensive preparations combined for extinguishing fires, for if every line of leaders directed toward a fire were cut and rendered useless as to their intended object, they might all, by the application of this improvement in breach-clogs, be repaired and again in use in a short time—perhaps two or three minutes—each company having its apparatus always prepared and in readiness for application on incidental occasions. There might therefore be instances when all the expensive preparations for procuring water, engines, and other apparatus for extinguishing fires would be rendered unavailable in consequence of the cutting of water-leaders by the combined acts of incendiaries; and, on the other hand, even if they were so cut, they might be immediately restored to use by the application of this improvement; and the said improvement and application, as herein described, together with stop-water fixtures, as also herein described, are hereby claimed as patent rights; and thus, when alluding to the conflagration of a city, while all the expensive preparations for extinguishing fires might be rendered unavailable and inoperative, as above stated, such conflagration might be arrested or prevented by preserving the continued use of such preparations for extinguishing fires by immediately restoring to use any number of cut water-leaders by the application of this improvement of breach-clogs, as above described; and with a knowledge that means were at hand for the immediate repair of injuries arising from the incendiary acts of cutting water-leaders, evil-disposed persons would have less inducement to perpetrate such acts, and the commission of them would be less frequent in consequence of there being less prospect of meeting with success.

Secondly. By the use of water-leaders from which the water is constantly escaping much of the labor of the firemen is lost by means of portions of the water passing out of the leaders into the streets through apertures, and the loss of such water might at times in itself be of serious damage during frequent and destructive fires.

Thirdly. When leaders are used with numerous even small apertures, permitting the water to escape, the remaining part of the water which passes on to the point of discharge escapes with less force than if the whole quantity were retained in the leader. The principal advantage in the use of water-stops, as above described, consists, first, in quickly stopping the water in the leaders, in order the more conveniently to apply the breach-clogs for incidental repairs to the said leaders; and, secondly, by the use of water-stops for stopping and starting the water in the leaders in the immediate vicinity of a fire the loss of time is prevented in sending directions to stop and again to start to the attendant at the hy-

drant, thus frequently causing delay when only a momentary delay is necessary for changing the direction of a leader. This part of the improvement, however, must be cautiously applied, as it depends on the relative strength of the leader as compared with the pressure of the water from the fountain-head.

As supplemental and additional to that part of the foregoing specification, and the more fully to illustrate wherein this improvement differs from all others in use, it may be observed in relation to water-leaders that the object of the persons who manufacture them is accomplished when such leaders are completed and delivered from their hands in a finished state. The said leaders are afterward transferred to certain operators for use as occasion may require. These operators—firemen or hydrant-men—are of various occupations, who in the course of duty continue the water-leaders in their possession for use unless, from some cause, they become defective, and when found to be so much defective as to be unfit for use it is again practically a part of their duty to condemn and abandon them as of no further use during the remainder of a fire at which they were injured. It is therefore one of the objects of this improvement, practically, to furnish the said operators with the means of immediate temporary repair of any and every description of aperture that may be casually or intentionally made in such leaders, such means of repair being in the application and use of the said improvement denominated "breach-clogs," it being that the breaches above alluded to, whether incidental or caused intentionally by evil-disposed persons, usually occur while the said leaders are in charge of the said operators.

The following is a supplemental or additional description of that part of the foregoing specification which relates to the "screw-clogs." The said screw-clogs consist of screws

of various dimensions, pointed or of conical form and blunted at the smaller end, preparatory for piercing the intermediate parts of the hose laterally, and for clogging or stopping such small breaches or perforations, uncertain as to size, as may casually occur. The said screw-clogs may be applied while the hose are in use in a distended state, and while the water is passing through them and while the water is spurting through the perforation or breach into which the screw-clog is to be pierced or inserted. The said screw-clogs are believed to differ from all other improvements in use. They differ in principle and object from the screws which unite the hose, section to section, it being that these uniting-screws are a component part in the original formation of hose. There is a passage-way for water through the screws, and they are applied uniformly at the ends of sections for the express and only object of uniting entire sections of hose; whereas screw-clogs are a solid mass, to be applied to the hose laterally, and the said breach-clogs are to be kept in readiness, of various dimensions, to meet emergencies, and for stopping or clogging every variety of small breaches or perforations that may occur, with a view thereby to prevent the disuse of hose in consequence of casualties at the time of a fire.

What I claim as my invention, and desire to secure by Letters Patent, is—

The mode of repairing lateral breaches in hose by means of screws, as herein set forth; also, of repairing larger breaches in the same by means of metallic plates and inflexible tubes inserted in hose, constructed and secured in the manner herein described.

RALPH BULKLEY.

Witnesses:

JOSEPH BULKLEY,  
EZRA SMITH.