(No Model.) 4 Sheets—Sheet 1.

J. J. PARKER & W. M. MOFFIT.

HOSE NOZZLE.

No. 494,646. Patented Apr. 4, 1893.

Fig. 1.

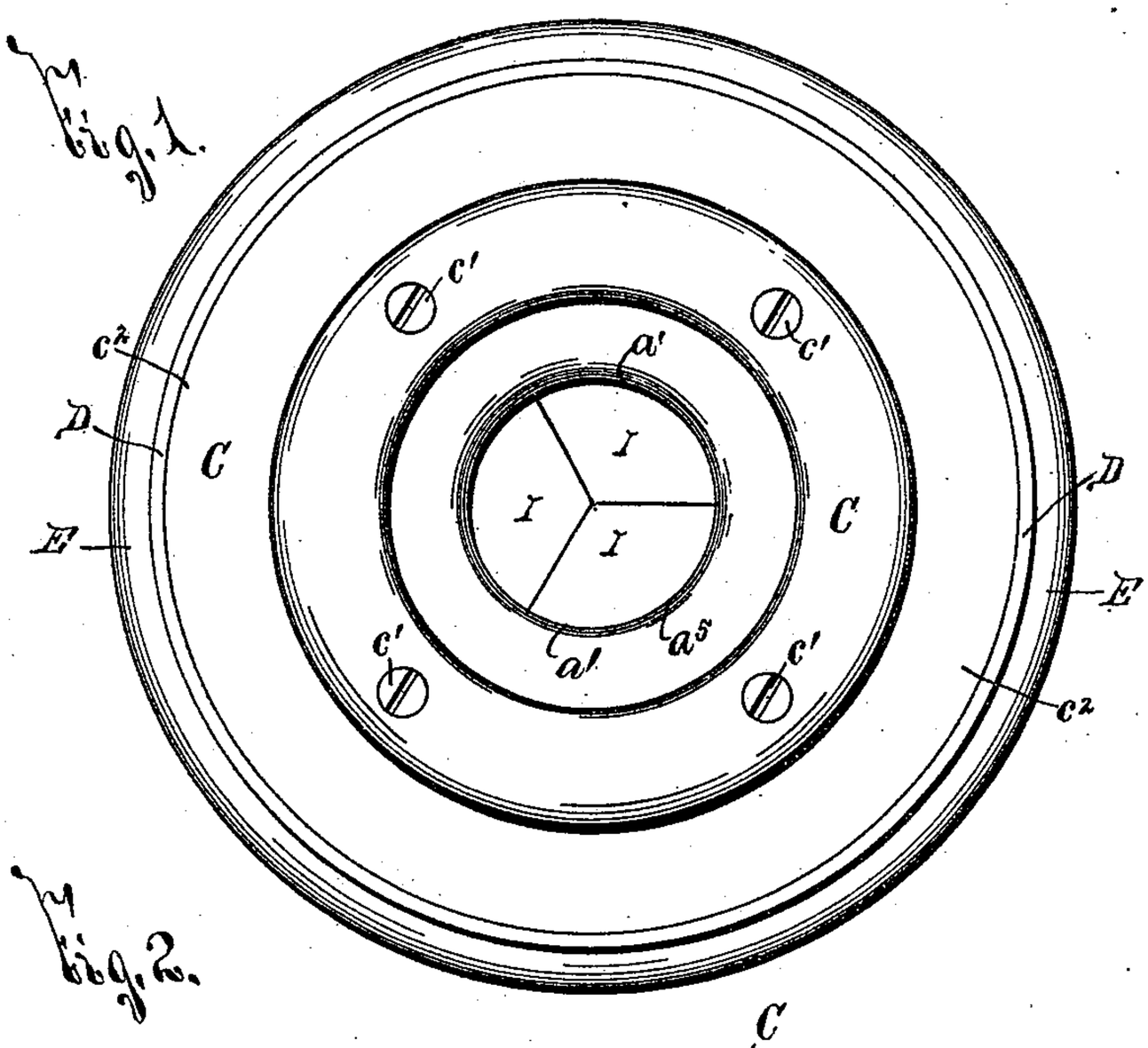
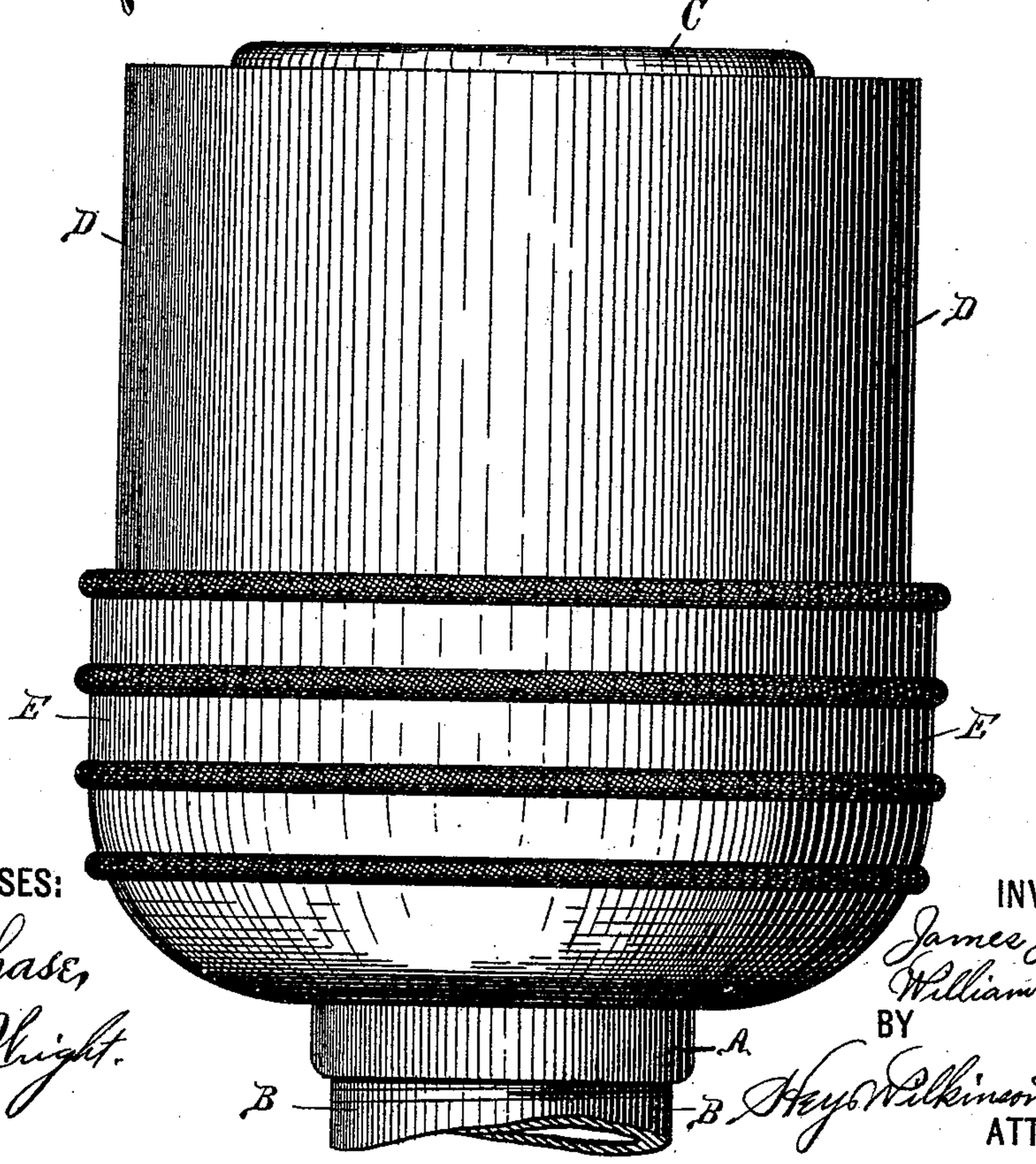


Fig. 2.



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(No Model.)

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Fig. 3.

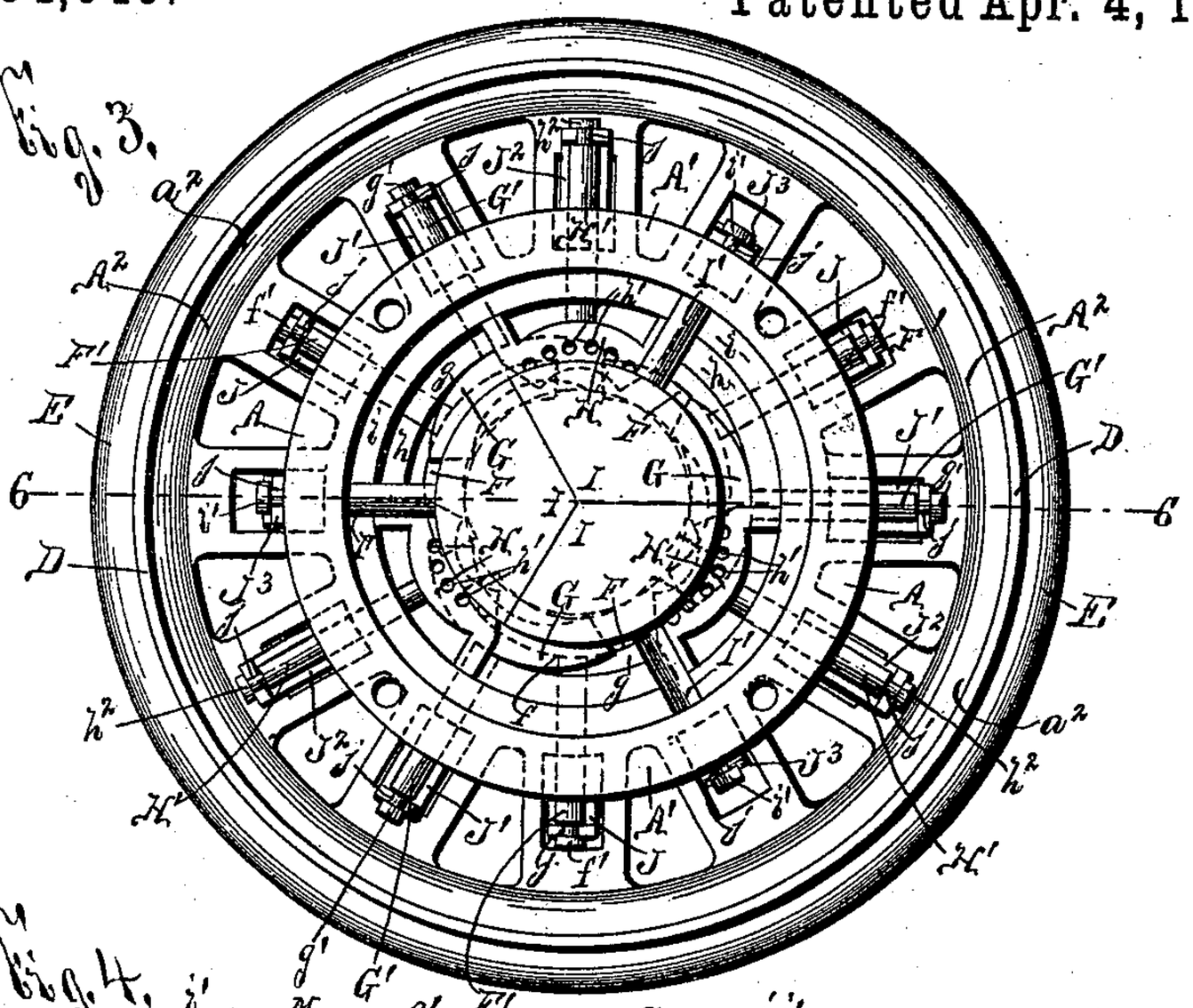

Fig. 4.

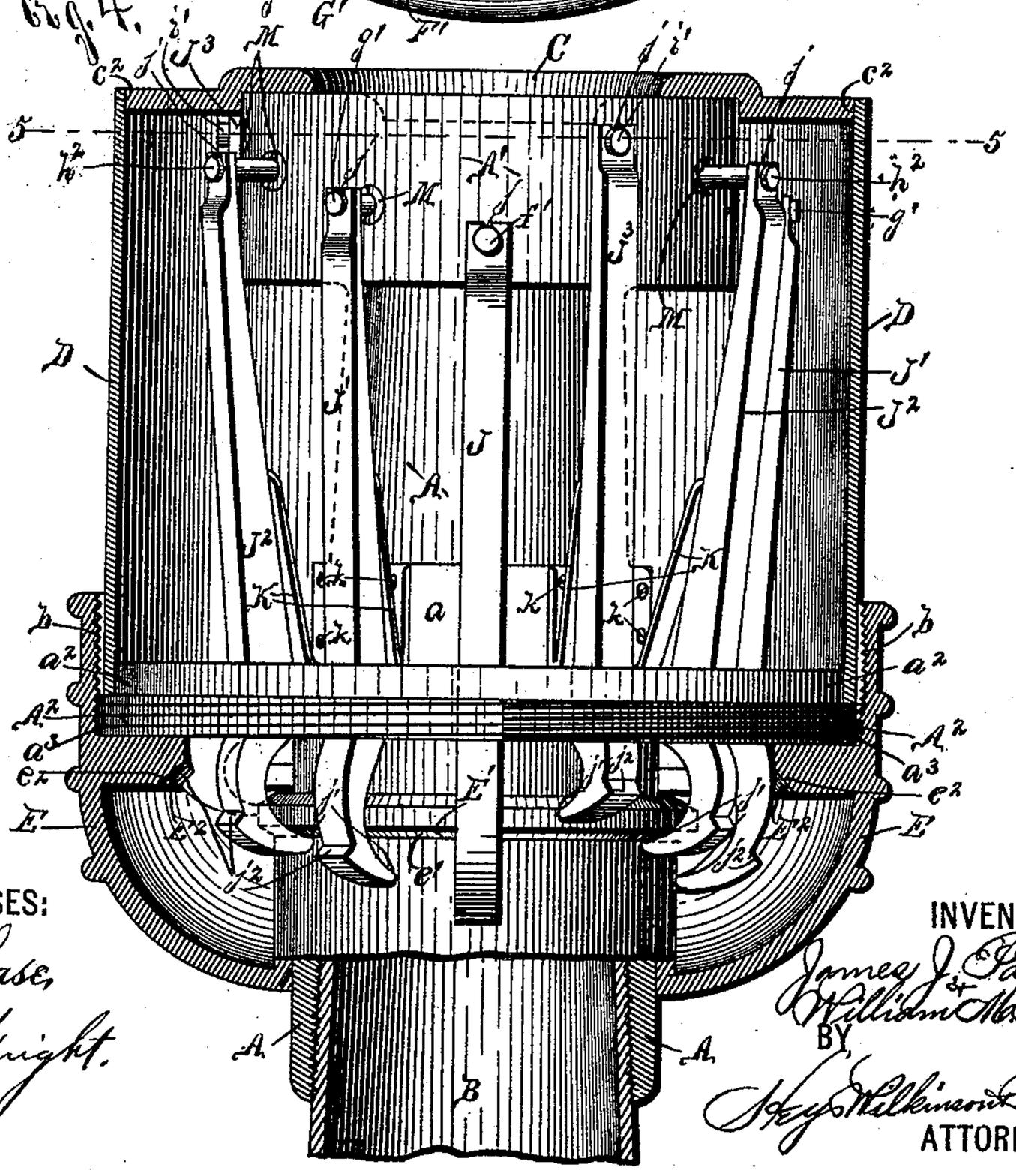

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Fig. 5.

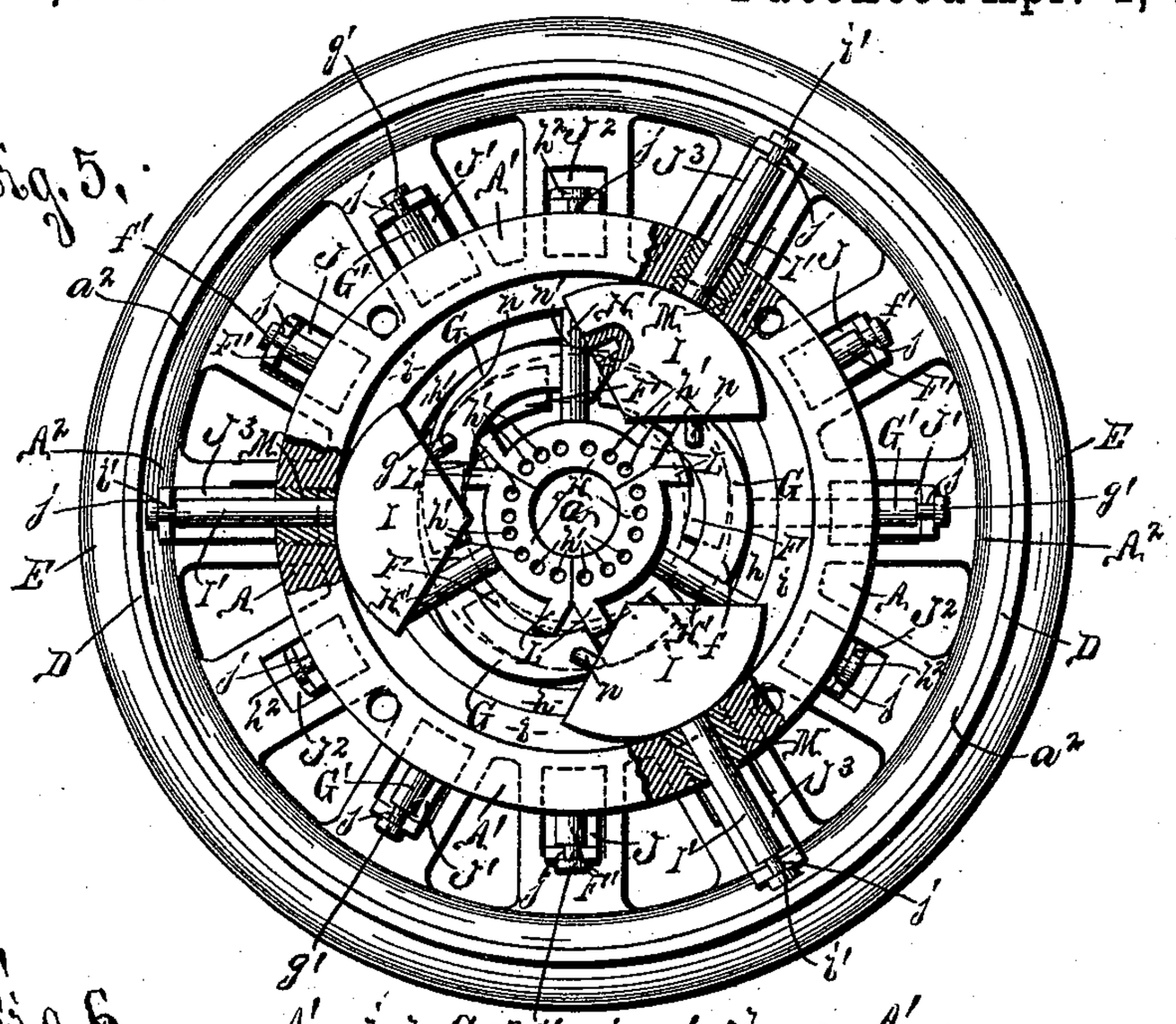

Fig. 6.

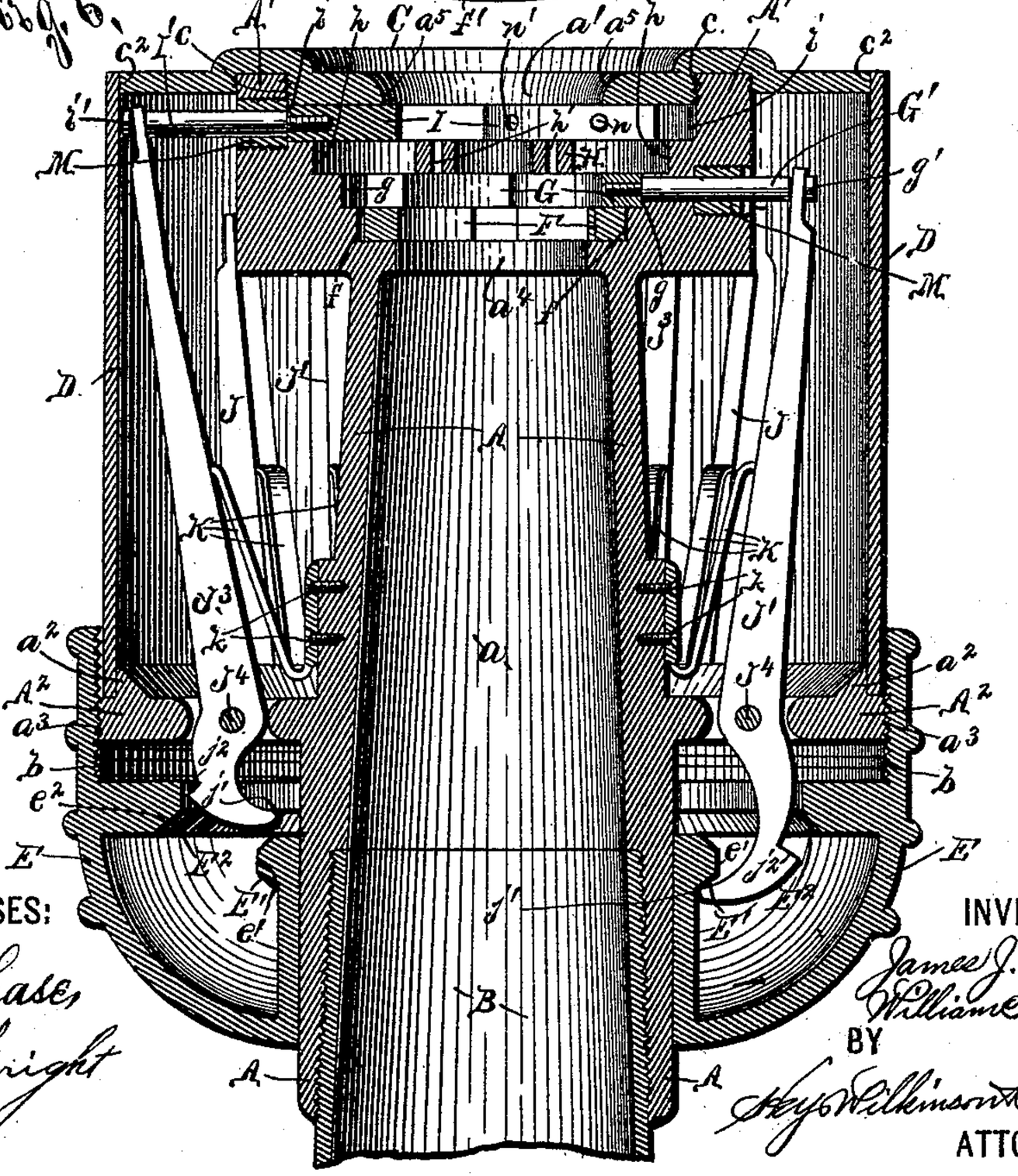

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Fig. 7.

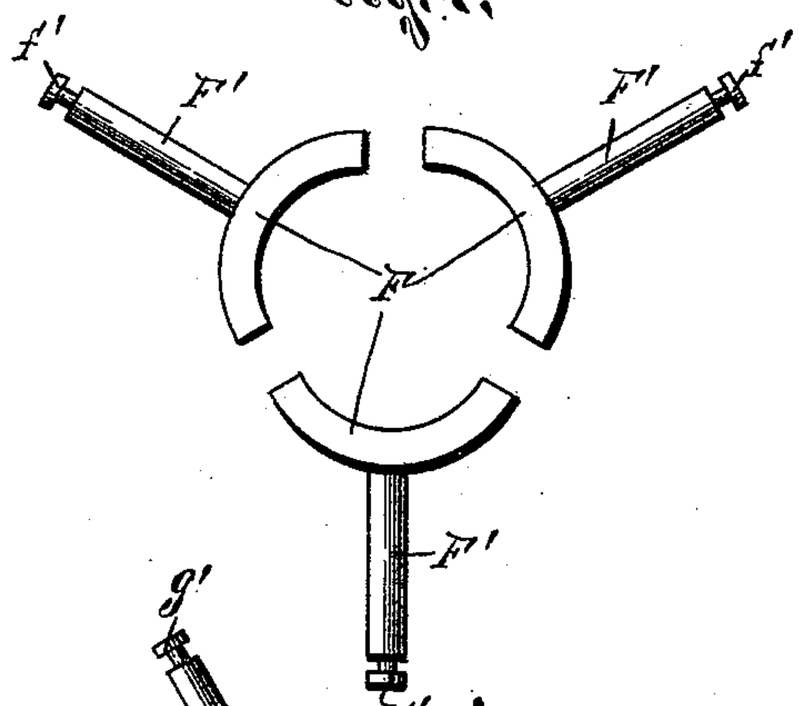


Fig. 8.

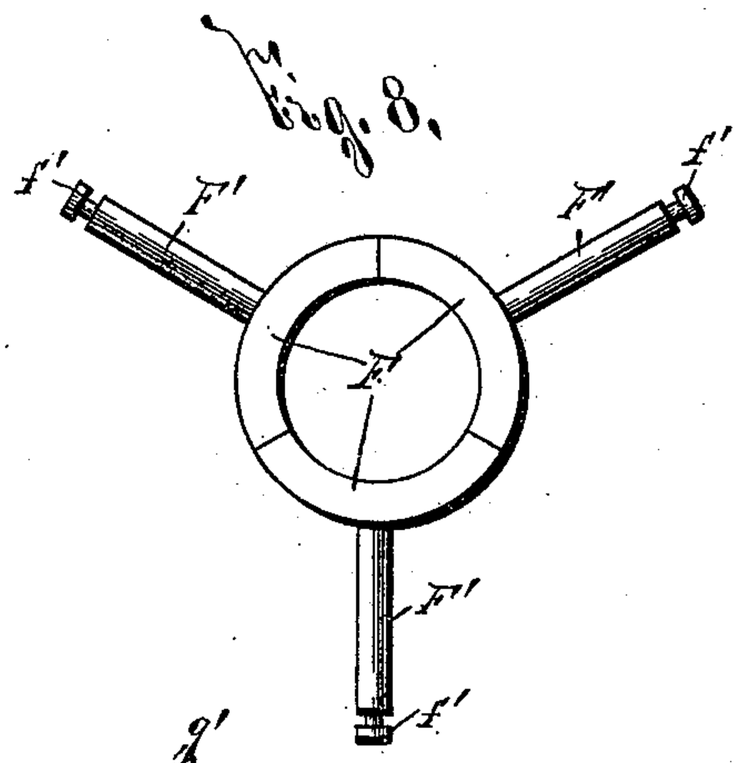


Fig. 9.

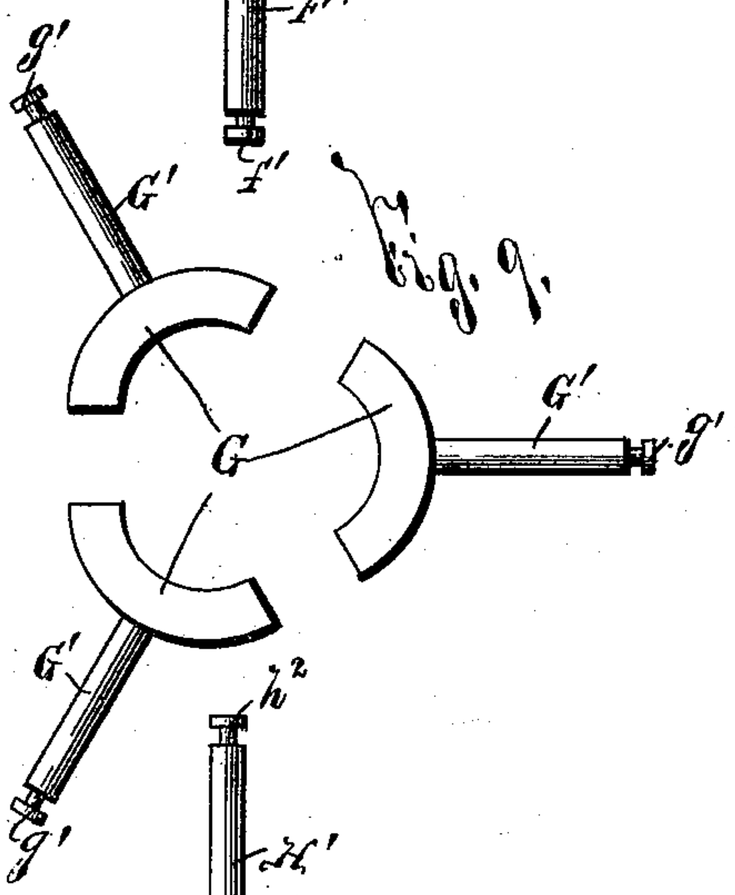


Fig. 10.

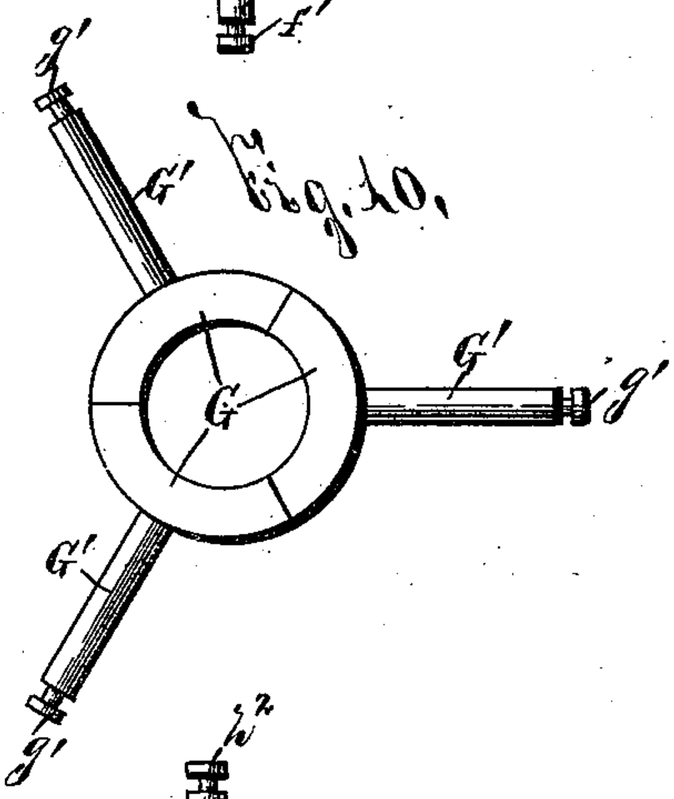


Fig. 11.

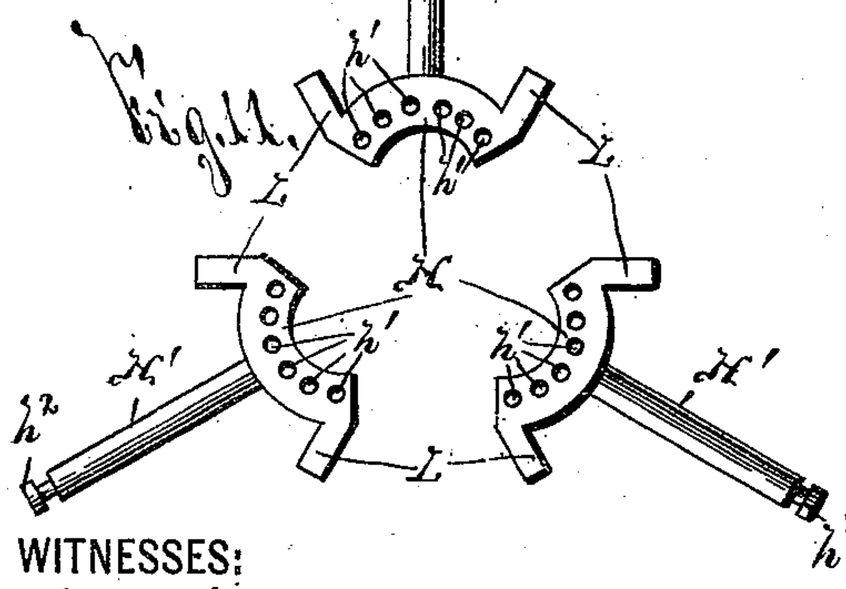
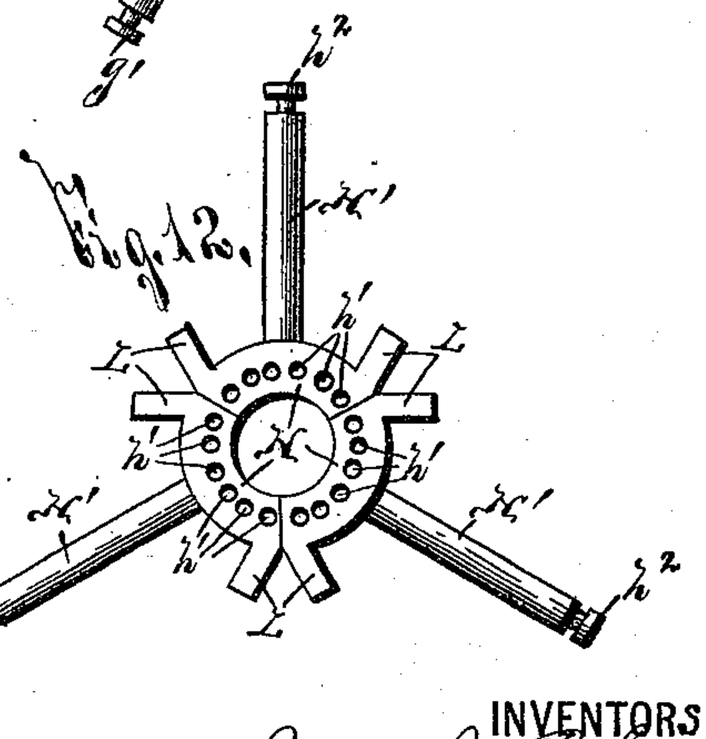


Fig. 12.



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UNITED STATES PATENT OFFICE.

JAMES J. PARKER AND WILLIAM M. MOFFIT, OF FULTON, NEW YORK.

HOSE-NOZZLE.

SPECIFICATION forming part of Letters Patent No. 494,646, dated April 4, 1893.

Application filed February 16, 1892. Serial No. 421,698. (No model.)

To all whom it may concern:

Be it known that we, JAMES J. PARKER and WILLIAM M. MOFFIT, of Fulton, in the county of Oswego, in the State of New York, have invented new and useful Improvements in Hose-Nozzles, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

Our invention relates to improvements in hose nozzles, and has for its object the production of a simple and effective device, which is practical and durable in use and economical in manufacture.

To this end it consists, essentially, in a frame having an outlet passage and an exit opening, a jaw arranged between said exit opening and movable into and out of said passage for varying the size or character of the stream thrown from the nozzle, a lever for engaging said jaw, a movable actuator for engaging the lever and operating the jaw, and in the detail construction and arrangement of the parts, all as hereinafter more particularly described and pointed out in the claims.

In describing this invention, reference is had to the accompanying drawings, forming a part of this specification, in which, like letters indicate corresponding parts in all the views.

Figures 1 and 2 are respectively top plan and side elevation of our invention attached to a piece of piping or hose. Fig. 3 is a top plan view of the parts as shown at Figs. 1 and 2, the top plate being removed. Fig. 4 is an elevation similar to Fig. 2, with the exception that the front half of the outer casing and of the sleeve movable lengthwise on the casing is broken away for the purpose of illustrating the interior parts. Figs. 5 and 6 are horizontal, transverse, and longitudinal vertical sectional views taken respectively on the lines —5—5—, Fig. 4, and —6—, Fig. 3. Figs. 7 and 8 are top plan views of the inner jaws representing the same in their open position at Fig. 7, and as closed at Fig. 8. Figs. 9 and 10 are top plan views similar to Figs. 7 and 8 of the jaws arranged at the outside of the jaws shown at Figs. 7 and 8, and Figs. 11 and 12 are similar views of the jaws at the outside of the jaws shown at Figs. 9 and 10.

It is well known that it is particularly desirable to vary the size or character of a stream of water when using the same for extinguishing fires and similar purposes, as, for instance, if the flame is a considerable distance from the end of the nozzle the stream should be somewhat decreased in diameter if unable to reach the fire when of a larger diameter. Moreover when in close proximity to a large burning surface it is very desirable to throw a spray thereagainst instead of a stream of small diameter.

Our invention is designed to permit the fireman to quickly and practically change the size or character of the stream as the size or form of the surface burning or the distance therefrom may demand.

—A— represents the nozzle frame, which is provided preferably with a central passage —*a*—, an exit opening —*a'*—, a head —A'—, and a projecting flange —A^2—. The outlet passage —*a*— preferably tapers from its inner toward its outer extremity, and discharging thereinto is the end of a pipe or hose —B—, shown at Figs. 2, 4, and 6 as screwing into the inner extremity of the frame —A—. The exit opening —*a'*— is preferably formed in a removable cap —C— suitably secured as by threads —*c*— and screws —*c'*— to the outer face of the head —A'—.

—D— represents the outer casing of our hose nozzle, which consists of a ring secured respectively at its upper and lower extremities to the flange —c^2— of the cap —C— and the annular shoulder —a^2— of the flange —A^2—.

—E— represents a sleeve or actuator movable lengthwise on the frame —A— and formed with threads —*b*— adapted to engage corresponding threads —a^3— upon the peripheral edge of the flange —A^2— and provided with the annular cams —E'— and —E^2—.

—F—G—H— and —I— represent the jaws for varying the size and character of the stream passed through the hoze nozzle, and, as best seen at Fig. 6, these jaws are arranged one at the outside of the other between the exit opening —*a'*— and the inner end of the nozzle and at the outside of a similar opening —a^4— in the shell —A—. These jaws are mounted in suitable guides —*f*—*g*—*h*— and —*i*— consisting preferably of annular grooves of different diameters, the outer groove —*i*—

being of the greatest and the inner one —*f*— of the least diameter. There are preferably three corresponding jaws of each series as best seen at Figs. 1, 3, 5, and 7 to 12 inclusive. The three inner jaws —F—, when their adjacent edges are in close contact, form a passage on the outside of the passage —a^4— of somewhat less diameter than said passage —a^4—, and consequently the diameter of the stream passed through the hose nozzle when said jaws are in operative position as shown at Fig. 8 is less than when the same are withdrawn as shown at Fig. 7, and the opening —a^4— regulates the size of the stream. The jaws —G—, when in their operative position, as shown at Fig. 10, still further reduce the size of the stream, and the next outer jaws —H—, which are formed with a series of perforations —*h'*— cut up the reduced stream, and in connection with the exit opening —*a'*—, which rounds outwardly at —a^5—, throw the stream in a broad spray and cover a great surface. The cutting up of the stream is further effected as the water passes to the outside of the jaws —H—, as shown at Fig. 5. The extreme outer jaws —I—, as best seen at Fig. 1, serve to entirely shut off the passage through the nozzle.

It is evident that any desired actuator may be used for operating successively the aforesaid jaws —F—G—H— and —I—, but we prefer to use the form of actuator —E— herein shown and described in connection with the movable levers —J—J' —J^2— and —J^3— as the same is extremely practical and is easily operated. These levers —J—J' —J^2— and —J^3— are pivoted at —J^4— to the flange —A^2—. Their long arms are provided with slots —*j*— engaged with shoulders —*f'* —*g'* —h^2— and —*i'*— upon rearwardly projecting arms —F' —G' —H'— and —I'— on the respective jaws —F —G —H— and —I—, and the short arms of said levers are formed with the opposite bearing faces —*j'*— and —j^2— adapted to be engaged respectively with the cam faces —E'— and —E^2—.

As will be readily perceived in the drawings the proportion of the short and long arms of the respective levers —J—J' —J^2— and —J^3— is so regulated as to give the respective jaws —F— —G—H— and —I— the required differential movement, although said levers are actuated by the same cams.

It will be readily understood that, as the sleeve —E— is screwed upwardly, the tapered face —*e'*— of the cam —E'— forces the depending arm of the levers —J— outwardly and rocks the upper extremity of its long arm inwardly, thus forcing the jaws —F— into the position shown at Fig. 8, and that, as the sleeve —E— continues its upward movement, the levers —J —J' —J^2 and J^3— are sucessively rocked in a similar manner and the jaws —G—H— and —I— forced to their operative positions as shown respectively at Figs. 10, 12, and 1.

It will be noted that the outer face —*e'*— of the cam —E'— is not of sufficient length as best seen at Fig. 4 to hold the lower ends of the short arms of the levers —J —J' —J^2— and —J^3— in their outward position simultaneously so that the inner jaws return to their inoperative position after their outward jaws have been subsequently brought to their operative position. As the sleeve —E— is moved downwardly the cam face —e^2— of the cam —E^2— bears against the face —j^2— of the levers —J —J' —J^2— and —J^3— and successively rocks outwardly the jaws —I—H—G— and —F—.

To facilitate the outward movement of the levers —J— —J'— and —J^3— in the outward movement of the corresponding jaws operated thereby we prefer to use a spring —K— having one end bearing against the inner face of said levers and the other secured at —*k*— to the shell —*a*—.

The jaws —H— are provided at their extremities with rearwardly extending lugs —L— adapted to bear against the adjacent faces of the respective guides in which said jaws move and the adjacent faces of the jaws —G— and —I— for supporting the jaws —H— in their operative position.

It will also be noted at Figs. 5 and 6 that the rearwardly extending arms —F'—G'—H'— and —I'—of the respective jaws —F—G—H— and —I— move through removable bushings —M—, which may be readily replaced when worn, and, as seen in Figs. 5, 7, 9, and 11, the respective jaws —F—G—H— and —I— are formed at their adjacent faces with corresponding lugs —*n*—, and receiving recesses —*n'*— for correctly centering said jaws.

The operation of our invention will be readily perceived from the foregoing description and upon reference to the drawings, and it will be particularly noted that the parts are simple and strong, easily assembled, replaced or repaired, and the operation of the nozzle practical and effective. It is evident, however, that the spring —K— may be dispensed with if desired, or replaced by a stronger spring for dispensing with the outer shoulder —E^2—, and that other changes may be made in the detail construction and arrangement of the parts of our hose nozzle without departing from the spirit of our invention, hence we do not limit ourselves to the precise detail construction and arrangement of our hose nozzle.

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

1. In a hose nozzle, the combination of a frame having an outlet passage, a series of jaws movable into and out of said passage and composed of ring sections adapted to project within said passage when in operative position and formed with substantially plane inner faces whereby the diameter of the stream is reduced, and an actuator for operating said jaw, substantially as and for the **purpose set forth.**

2. In a hose nozzle, the combination of a frame having an outlet passage, a jaw movable into and out of said passage, an actuator for operating said jaw, and a revoluble sleeve movable lengthwise of the frame and having a cam connected, substantially as described, for operating said jaw, substantially as and for the purpose specified.

3. In a hose nozzle, the combination of a frame having an inner wall inclosing outlet passage and rectilinear guides opening from said inner wall, jaws movable in said guides, and a movable sleeve having cams connected, substantially as described, for moving the jaws within the guides, substantially as and for the purpose described.

4. In a hose nozzle, the combination of a frame having an outlet passage and composed of ring sections formed with plane inner faces adapted when in operative position to project within said passage and formed with corresponding end walls adapted to contact with each other when said inner faces are within the passage whereby the diameter of the stream is reduced, a series of jaws movable into and out of said passage, a lever connected to said jaw, and a revoluble sleeve having a cam connected, substantially as described, for operating said jaw, substantially as and for the purpose set forth.

5. In a hose nozzle, the combination of a frame having an outlet passage, a series of jaws rectilinearly movable into and out of said passage, a series of levers loosely connected to said jaws for moving the same, and a movable sleeve having an annular inclining shoulder adapted to bear against said lever for operating the jaw, substantially as and for the purpose specified.

6. In a hose nozzle, the combination of a frame having an outlet passage, a jaw movable into and out of said passage, a lever for moving said jaw, a movable sleeve having an annular inclining shoulder adapted to bear against said lever for operating the jaw, and a spring for forcing said jaw outward, substantially as described.

7. In a hose nozzle, the combination of a frame having an outlet passage, a jaw movable into and out of said passage, a lever for moving said jaw, and a sleeve movable lengthwise of said frame and provided with a pair of shoulders for engaging opposite sides of said lever and forcing the same outward and inward, substantially as specified.

8. In a hose nozzle, the combination of a frame having an outlet passage, a jaw movable into and out of said passage, a lever for moving said jaw, a sleeve movable lengthwise of said frame and provided with a pair of shoulders for engaging opposite sides of said lever and forcing the same outward and inward, and a spring for engaging said lever and forcing the jaw outward, substantially as described.

9. In a hose nozzle, the combination of a frame having an outlet passage, a jaw movable into and out of said passage, a projecting flange on the frame, screw threads upon the periphery of said flange, a lever pivoted to the projecting flange and engaged with said jaw, and a movable sleeve engaging the peripheral screw threads of the flange and formed with a shoulder for rocking said lever, substantially as and for the purpose described.

10. In a hose nozzle, the combination of a frame having an outlet passage, jaws movable into and out of said passage, a projecting flange on the frame, levers having one end engaged with said jaws and the other passed through said flange, a sleeve movable lengthwise on the frame, and a shoulder on said sleeve for rocking the lever, substantially as set forth.

11. In a hose nozzle, the combination of a frame having an outlet passage, grooves at the end of said frame increasing in diameter from the inside outwardly, a series of jaws movable in said grooves and consisting of ring sections, the inner series of jaws when in operative position forming a ring of greater diameter than the outer series of jaws, levers for operating the jaws, and a movable actuator for operating said levers, substantially as and for the purpose described.

12. In a hose nozzle, the combination of a frame having an outlet passage and an exit opening, jaws movable into and out of said passage within the exit opening and formed with substantially plane inner and outer faces adapted to project within the wall of said passage and with perforations interposed between said walls, and a movable actuator for operating said jaws, substantially as and for the purpose set forth.

13. In a hose nozzle, the combination of a frame formed with outlet passage having an exit and an annular shoulder, jaws rectilinearly guided in the frame and formed with inner faces adapted to project within the wall of said passage and with rearwardly extending lugs adapted to bear on said annular shoulder of the outlet passage, substantially as described.

14. In a hose nozzle, the combination of a frame formed with outlet passage having an exit, and an annular shoulder, jaws rectilinearly guided in the frame and formed with inner faces adapted to project within the wall of said passage and with rearwardly extending lugs adapted to rise on said annular shoulder of the outlet passage, levers loosely connected to said jaws for operating the same, and an actuator connected, substantially as described, for operating the levers, substantially as specified.

15. In a hose nozzle, the combination of a frame formed with outlet passage and an exit opening, a series of jaws movable into said passage for closing the exit opening, said jaws having their adjacent faces correspondingly

formed and adapted to closely engage each other for shutting off the passage of the water, and an actuator connected, substantially as described, for operating said jaws, substantially as set forth.

In testimony whereof we have hereunto signed our names, in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 2d day of November, 1891.

JAMES J. PARKER.
WILLIAM M. MOFFIT.

Witnesses:
CLARK H. NORTON,
L. M. BAXTER.