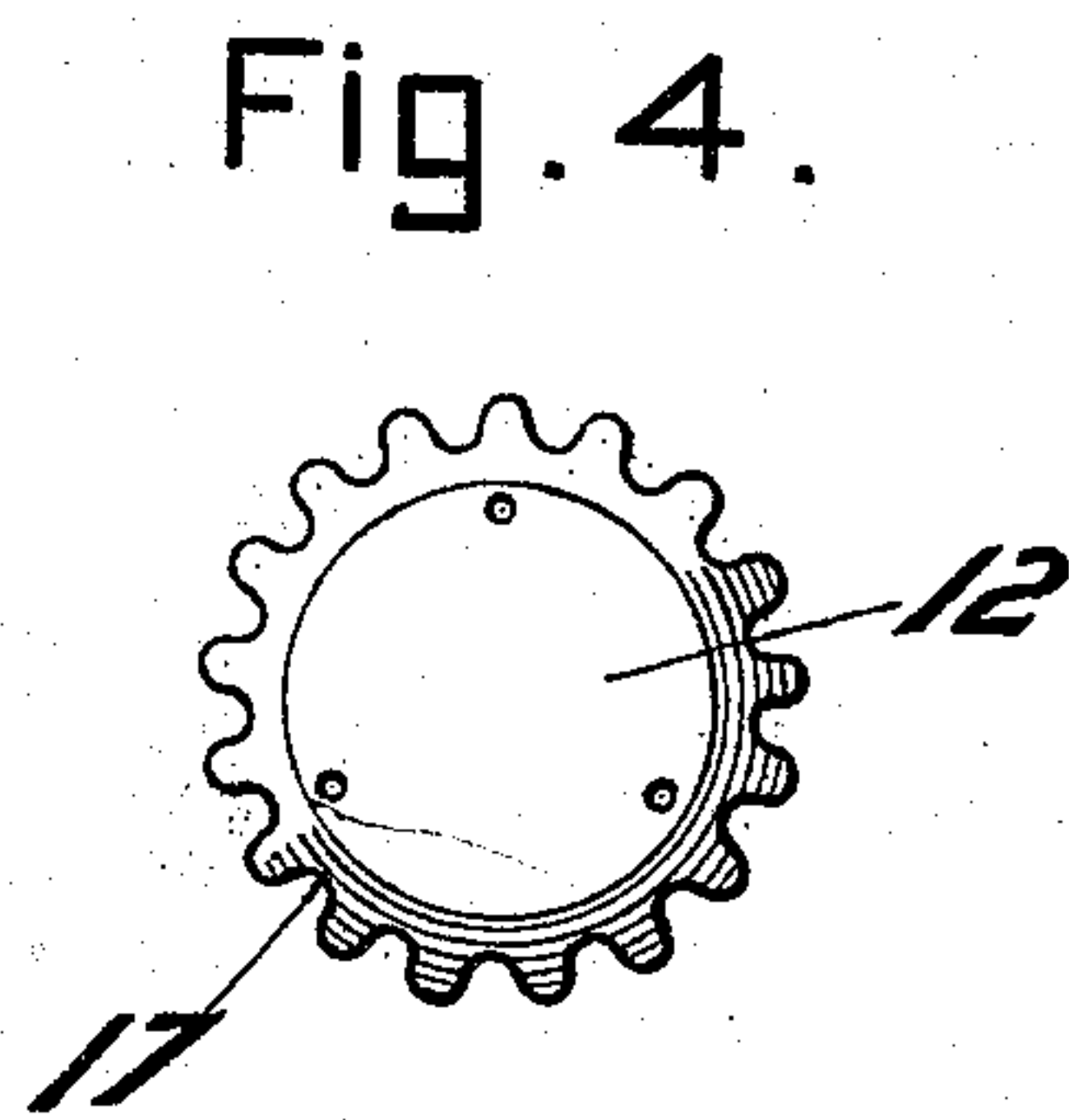
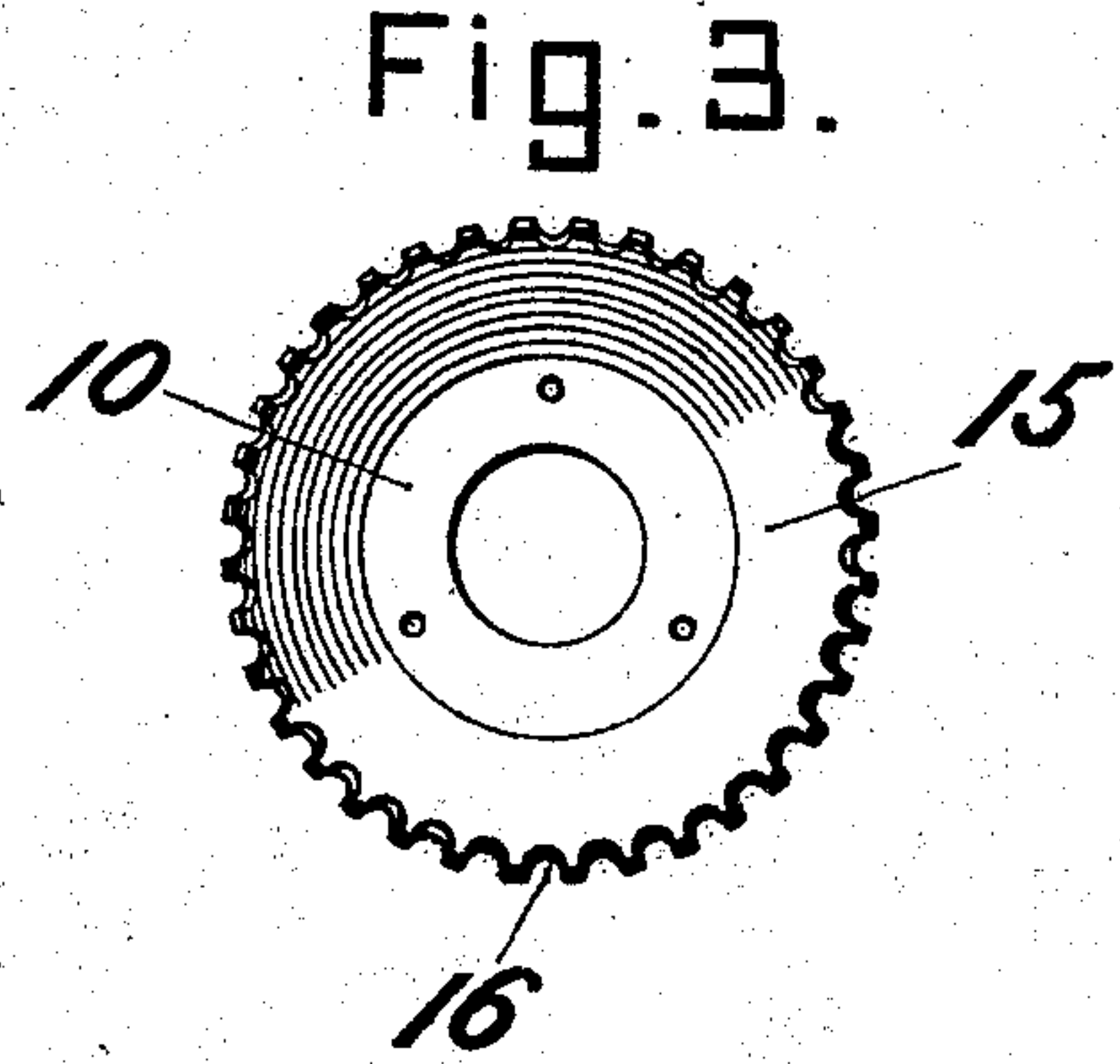
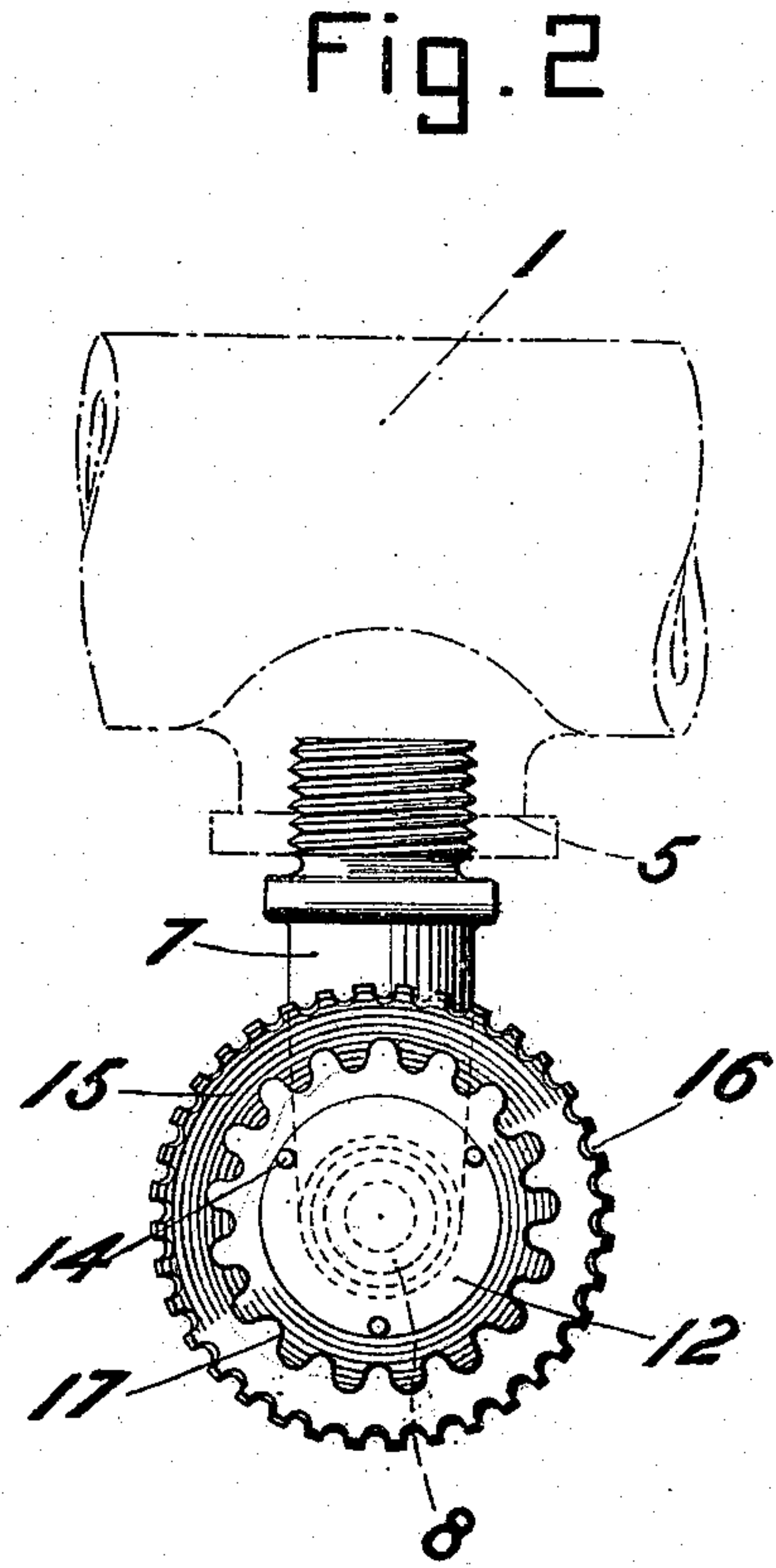
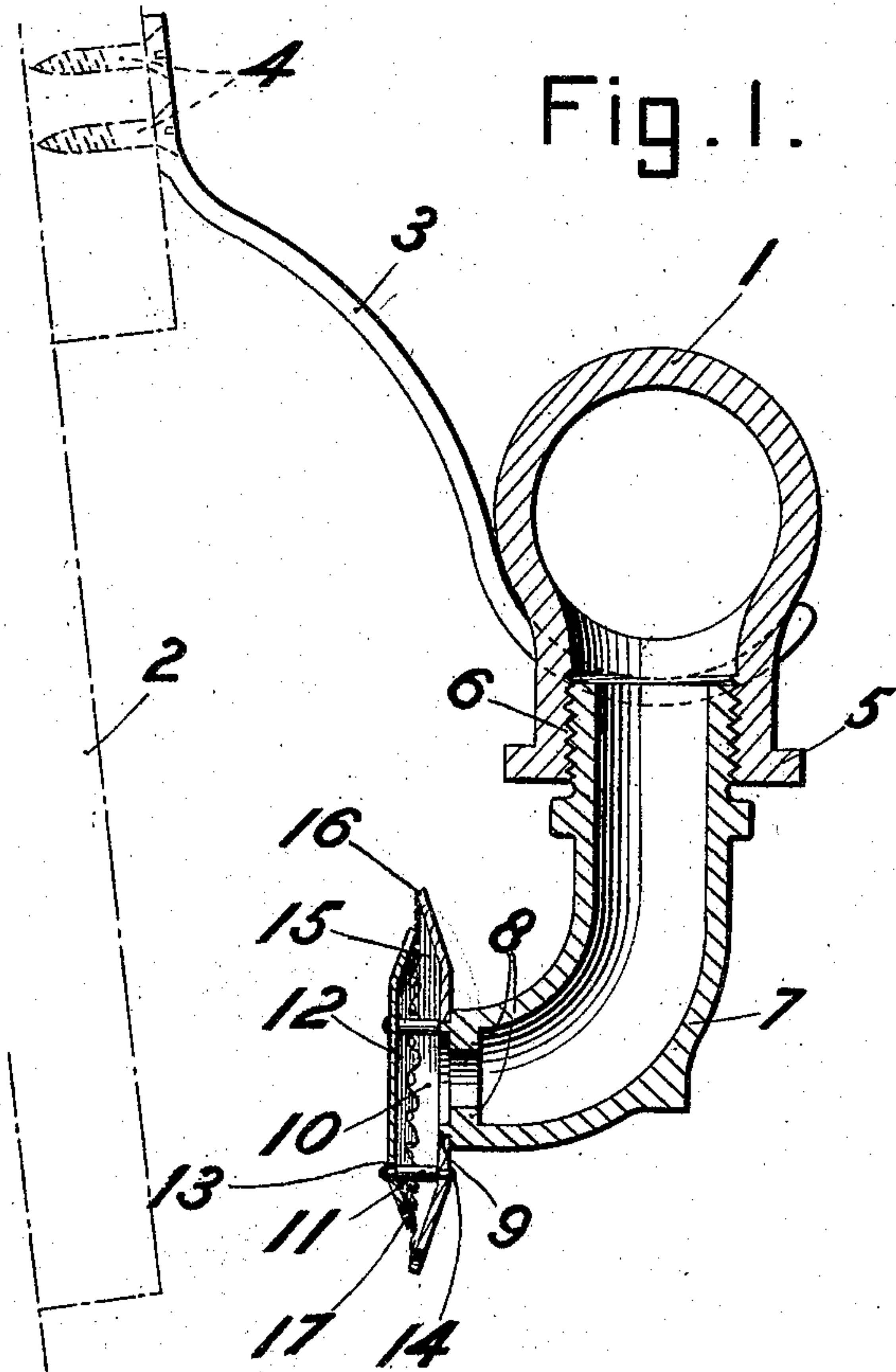


No. 885,029.

PATENTED APR. 21, 1908.

W. ESTY.
OPEN SPRINKLER.
APPLICATION FILED MAR. 26, 1906.



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OPEN SPRINKLER.

No. 885,029.

Specification of Letters Patent.

Patented April 21, 1908.

Application filed March 26, 1906. Serial No. 307,999.

To all whom it may concern:

Be it known that I, WILLIAM ESTY, a citizen of the United States, residing at Laconia, in the county of Belknap and State of New Hampshire, have invented certain new and useful Improvements in Open Sprinklers, and do hereby declare the following, in connection with the accompanying drawings, to be a full and clear disclosure of my invention.

My invention relates to that class of fire extinguishing systems in which the sprinkler heads are open, and the water ordinarily supplied thereto by the mechanical operation of valves located in the risers or cross-feeds.

Such systems are ordinarily outside systems, designed to protect the surfaces upon which they are mounted from fires in neighboring structures, and to this end, it is desirable that through them a proper and predetermined amount of water be supplied to and evenly distributed over a predetermined area of the surface to be protected, and that the water be uniformly supplied without waste. Sprinkling systems of this general type have heretofore been faulty in that the structure of the sprinkler head has been such that the water on being discharged therefrom is splashed from the wall instead of passing down the same, and furthermore, in that efficient provision for evenly distributing the water over considerable areas, has been lacking.

An object of my invention is to provide a sprinkler head that will deliver water to the protected surface without loss through splashing.

Another object of my invention is to provide means for uniformly distributing the water over predetermined wall areas.

A further object of my invention is a sprinkler head readily detachable from the feeders, and replaceable if desired by heads of different distributing capacity.

Again, an object of my invention is a sprinkler head and mounting, such that the feeders do not interrupt, or lie in the path of the discharging water, thereby interfering with the distribution thereof.

I attain the first object of my invention, namely, the elimination of splashing, by a peculiar arrangement of parts, hereinafter to be specifically described, by means of which the water is thrown against the exposed surface at a considerable angle thereto, and in drops or fine streams rather than in sheets.

The second object of this invention, viz., the uniform distribution of water over predetermined areas I attain by an arrangement of angularly disposed water guiding surfaces, the angular position or shape of which, in conjunction with the size of orifice, determines the area controlled, and the amount of water supplied thereto.

Having briefly set forth the objects and nature of my invention I will now describe the same in connection with the accompanying drawings in which

Figure 1 is a view in cross-sectional elevation of the assembled device in position upon a wall. Fig. 2 is an end elevation of the assembled device. Fig. 3 is a view of the distributing plate and Fig. 4 is a view of the deflecting plate.

Referring to the drawings, in Fig. 1, a feeder 1 is shown supported at a distance from the protected wall 2 by a suitable bracket 3, the latter being attached in any desirable manner as by screws 4 to the wall 2. At the desired intervals the feeder 1 is as shown at 5 provided with threaded pipe openings 6 into which the threaded head pipings 7 are adapted to screw.

The pipings 7 are shown as of some little length and as of elbow shape. At the discharge end thereof an interior ring or projection 8 is provided. Exteriorly the lower or outer end of the pipes 7 are shouldered as at 9 for the purpose of seating the distributing plate 10. Concentrically mounted upon the plate 10 by means of bolts or rivets 11 is the deflecting plate 12. The plates 10 and 12 are held spaced from one another by shoulders 13 on the bolts and are securely maintained in place between these shoulders and the bolt heads 14.

The distributing plate 10 is shown as having an outwardly inclined portion or guiding surface 15, terminating in a serrated edge 16, the angularity of which inclined portion limits or determines the radial throw of the water. The deflecting plate 12 is shown as having a portion inwardly or reversely inclined to the distributing plate 10 and likewise terminating in a serrated edge 17. As will be seen the distributing plate is here shown as of greater diameter than the deflecting plate, and the disposition of the inclines in the two plates is such that were the plate 12 continued it would intercept the plate 10.

In operation the water under pressure

from the feeder 1 passes in a solid stream through the pipe 7 until it hits the ring 8 when it is choked and spread, and emerging strikes the deflector 12. Here it is further spread, and thrown along the guiding inclines 13 to the incline 15 of the distributing plate. Passing along the incline 15 the water finally emerges through the circumferential space between the plates and through the serrations 16 and 17 to be discharged in drops of fine streams against the wall 1. It will be seen that owing to the relative position of feeder and head, the feeder does not intercept the path of the discharging streams, and that therefore there is no interruption in the wall area wetted.

It is apparent that the particular structure shown is susceptible of many modifications and that all such fall within the true scope of the invention. For instance, the manner of attaching the pipe 7 to the feeders, and the design of the piece 7 are largely immaterial. Similarly, the manner of mounting the plates 10 and 12 need not be that shown, and the shapes of these plates may be varied according to circumstances, such as position and area of surfaces to be wetted. Other features could be varied or even omitted.

Having described my invention what I claim and desire to secure by Letters Patent is

1. A sprinkler having in combination a discharge piece or piping to engage a feeder, said piping having at the discharge end thereof an internal ring or projection to choke and spread the stream, an external shoulder, a distributing plate mounted on said piping against said shoulder, said plate having an outwardly inclined serrated flange or edge, a deflecting plate concentrically mounted on said distributing plate, said latter plate having an inwardly inclined serrated flange or edge to direct the water upon the incline of the distributing plate, and spaced from the latter to provide passage between the two for the water.

2. A sprinkler having in combination a discharge piece or piping to engage a feeder, said piping having at the discharge end thereof an internal ring or projection to choke and spread the stream, an external shoulder thereon, a distributing plate mounted on said piping against said shoulder, said plate having an outwardly inclined flange or edge, a deflecting plate concentrically opposed to said distributing plate, said latter plate having an inwardly inclined flange or edge to direct the water upon the incline of the distributing plate, the edge of one of said plates being serrated, and said plates being spaced to provide passage between the two for the water.

3. A sprinkler having in combination a discharge piece or piping to engage a feeder,

said piece having at the discharge end thereof an internal ring or projection to choke and spread the stream, an outwardly inclined serrated distributing plate mounted on said piping, an inwardly inclined serrated deflecting plate concentrically opposed to said distributing plate but spaced therefrom to provide passage between the two for the water.

4. A sprinkler having in combination a discharge piece or piping to engage a feeder, a serrated deflecting plate having a deflecting surface mounted opposite the discharge opening, a serrated distributing plate opposed to said deflecting plate and having a reversely inclined surface to receive the water therefrom and to distribute the same upon the surface to be wetted.

5. A sprinkler having in combination a discharge piece or piping to engage a feeder, said piping having at its discharge end an internal ring or projection to choke and spread the stream, a serrated deflecting plate having an inclined deflecting surface mounted opposite the discharge opening, a serrated distributing plate opposed to said deflecting plate and having a reversely inclined surface to receive the water therefrom and to distribute the same upon the surface to be wetted.

6. In a sprinkler system for protecting substantially vertical walls, a feeder, a projecting hanger for supporting said feeder at a distance laterally from the vertical surface protected, a sprinkler head consisting of a depending elbow piece threaded at its upper end to engage the feeder and provided at its other or discharge end with a distributing vertically extending device disposed substantially parallel to the protected surface, said distributing device extending beyond the feeder towards the protected surface having means for directing the water against the protected surface at points between said surface and the feeder and upward beyond the feeder.

7. In an open sprinkler system, the combination of a feeder supported at a distance away from the protected surface, and a vertically extending always open water distributing device connecting with said feeder, said distributing device extending laterally toward the protected surface nearer than the feeder does and having means for directing the water both upwardly as well as downwardly and laterally against the protected surface between said surface and the feeder and upwardly to points beyond the feeder.

8. An always open sprinkler having, in combination, a discharge pipe with a choked outlet communicating with a feeder; a vertically extending distributing plate fast on said pipe, said plate having a central opening communicating with the outlet from said pipe, and being outwardly inclined at its

outer margins; and a vertically extending deflecting plate opposite the opening from said pipe and said distributing plate, and secured immovably to said pipe and plate, said
 5 deflecting plate being of smaller width than said distributing plate and being inwardly inclined at its outer margins toward the inclined surface of said distributing plate, the
 10 being such that such incline would, if extended, intercept the incline of the distributing plate, and the outer edges of said plate being permanently separated to leave a discharge gap which always remains the same
 15 size.

9. An always open sprinkler having, in combination, a discharge pipe with a choked outlet communicating with a feeder; a distributing plate fast on said pipe, said plate
 20 having a central opening communicating with the outlet from said pipe, and being outwardly inclined at its outer margins; and a deflecting plate opposite the opening from said pipe and said distributing plate, and secured immovably to said pipe and plate, said
 25 deflecting plate being of smaller width than said distributing plate and being inwardly inclined at its outer margins toward the inclined surface of said distributing plate, the
 30 direction of the incline of the deflecting plate being such that such incline would, if extended, intercept the incline of the distributing plate, and the outer edges of said plates being permanently separated to leave a discharge gap which always remains the same
 35 size.

10. An always open sprinkler having, in combination, a discharge pipe communicating with a feeder; a distributing plate fast on
 40 said pipe, said plate having a central opening communicating with the outlet from said pipe, and being outwardly inclined at its outer margins; and a deflecting plate opposite the opening from said pipe and said distributing plate, and secured immovably to
 45 said pipe and plate, said deflecting plate being of smaller width than said distributing plate and being inwardly inclined at its outer margins toward the inclined surface of said
 50 distributing plate, the direction of the incline of the deflecting plate being such that such incline would if extended intercept the incline of the distributing plate, and the outer edges of said plates being permanently separated to leave a discharge gap which always
 55 remains the same size.

11. An always open sprinkler having, in combination, a discharge pipe communicating with a feeder; a distributing plate fast on
 60 said pipe, said plate having a central opening communicating with the outlet from said pipe, and being outwardly inclined at its outer margins; and a deflecting plate opposite the opening from said pipe and said distributing plate, and secured immovably to
 65 said pipe and plate, said deflecting plate being of smaller width than said distributing plate and being inwardly inclined at its outer margins toward the inclined surface of said
 70 distributing plate, and the outer edges of said plates being permanently separated to leave a discharge gap which always remains the same size.

12. An always open sprinkler having, in combination, a discharge pipe with a choked
 75 outlet communicating with a feeder; a distributing plate fast on said pipe, said plate having a central opening communicating with the outlet from said pipe, and being outwardly inclined at its outer margins; and a deflecting
 80 plate opposite the opening from said pipe and said distributing plate, and secured immovably to said pipe and plate, said deflecting plate being inwardly inclined at its outer margins toward the inclined surface
 85 of said distributing plate, and the outer edges of said plates being permanently separated to leave a discharge gap which always remains the same size.

13. An always open sprinkler having, in combination, a discharge pipe communicating with a feeder, a distributing plate fast on
 90 said pipe, said plate having a central opening communicating with the always open outlet from said pipe, and being outwardly inclined at its outer margins; and a deflecting plate
 95 opposite the opening from said pipe and said distributing plate, and secured immovably to said pipe and plate, said deflecting plate being inwardly inclined at its outer margins
 100 toward the inclined surface of said distributing plate, and the outer edges of said plates being permanently separated to leave a discharge gap which always remains the same size.
 105

In testimony whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

WILLIAM ESTY.

Witnesses:

GEORGE W. SHERWELL,
 FRED A. PHELPS.