C. E. FOSTER.

NOZZLES OR JETS FOR FOUNTAINS.

No. 177,630. Patented May 23, 1876.

Fig. 1.

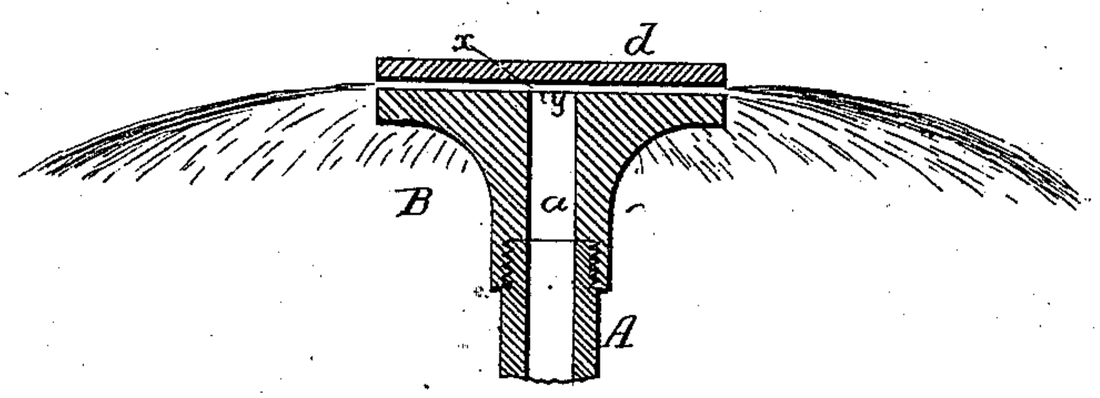


Fig. 4.

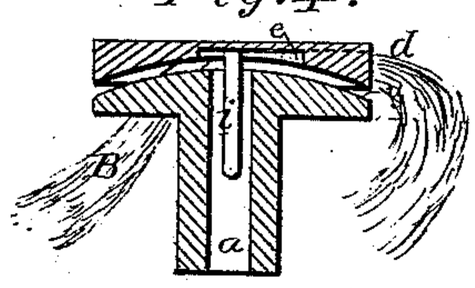


Fig. 2.

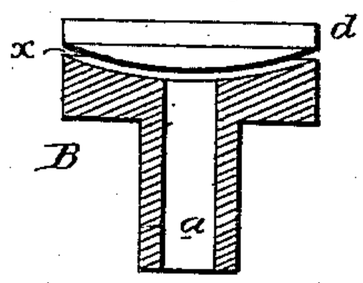


Fig. 3.

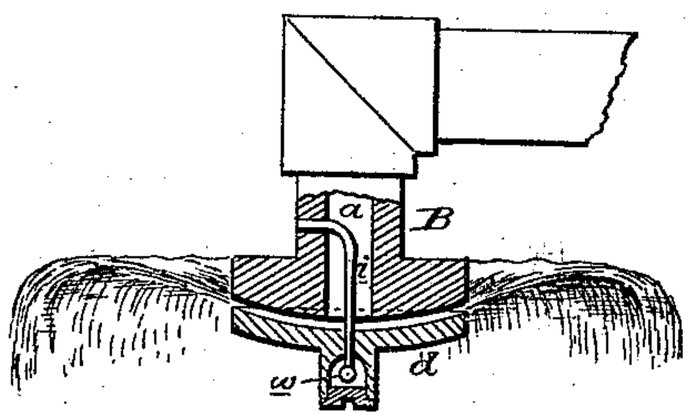


Fig. 5.

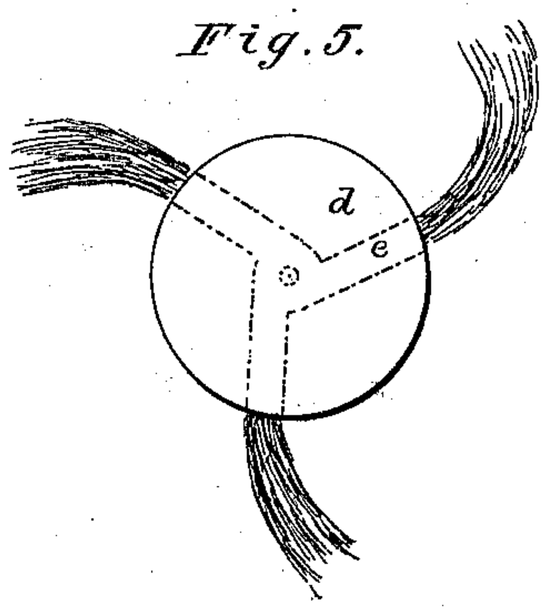
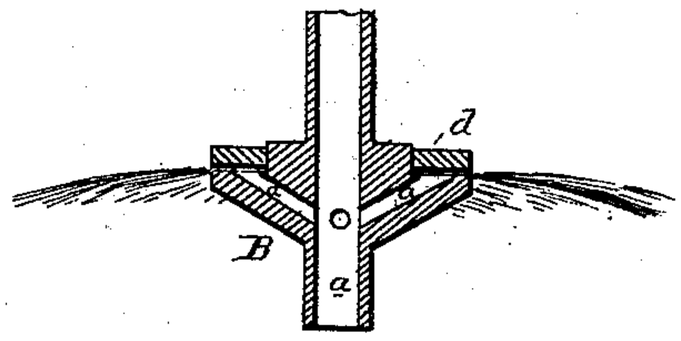


Fig. 6.



Witnesses:

F. B. Hunt

Courtney A. Cooper.

Charles E. Foster

UNITED STATES PATENT OFFICE.

CHARLES E. FOSTER, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN NOZZLES OR JETS FOR FOUNTAINS.

Specification forming part of Letters Patent No. **177,630**, dated May 23, 1876; application filed February 1, 1876.

To all whom it may concern:

Be it known that I, CHARLES ELWOOD FOSTER, of Washington city, District of Columbia, have invented a Nozzle or Jet for Fountains, of which the following is the specification:

The object of my invention is to prevent the clogging of the nozzles or jets of fountains, and this I attain by substituting a loose cap or plate for the usual fixed cover-plate of the nozzle.

In the accompanying drawing, Figures 1 to 4 are sectional views, showing different forms of nozzles, constructed in accordance with my invention; Fig. 5, a plan view of Fig. 4, and Fig. 6, a modification.

A is the discharge-tube of the fountain, threaded at the end, and adapted to the threaded socket of the nozzle B, having the usual central opening *a* and flanged end, terminating in a flat or rounded face or seat, *y*. In ordinary nozzles the cap-plate *d* is fixed a short distance from the flanged end of the nozzle, leaving an intervening space, *x*, into which the water flows, and from which it is discharged at all sides, forming an "umbrella-jet." Owing to the contracted dimensions of the space *x*, particles carried by the water find a ready lodgment therein, speedily clogging, in part, at least, the outlet, altering the regular form of the jet, and in a short time rendering the removal of the cap-plate and the cleansing of the nozzle absolutely necessary. The same result ensues with revolving jets, the bent tubes of which soon become clogged. This difficulty is effectually prevented by my invention, which consists, essentially, in substituting a loose plate, *d*, for the ordinary fixed plate; a further improvement consisting in imparting a rotary motion to the plate by the force of the water.

In Fig. 1 the nozzle is shown with a perfectly flat face, *y*, to which the lower face of the cap *d* corresponds. Upon admitting water to the nozzle its upward flow is arrested by the plate, as in ordinary nozzles, the pressure of the atmosphere, however, maintaining the plate in its position, instead of the retaining-pins and other devices heretofore employed. As the plate floats loosely upon the thin rapidly-flowing film of water it will yield to permit the passage of particles, and is liable to be dislodged by any inequality of the pressure; in practice, therefore, it is best to employ some means of confining the plate laterally. One mode is shown in Fig. 2, where the under convex side of the plate fitting the corresponding concave face of the nozzle prevents any lateral motion, the form of the jet being somewhat altered; or the plate may be steadied by a stationary rod, *i*, extending into a recess in the plate, and confining the latter horizontally without interfering with its vertical motion.

Another mode of maintaining the plate in its position consists in imparting to it a rapid rotary motion, which may be effected by forming spiral, curved, or tangential channels *e* at the under face of the plate, the reaction of the water in its passage from said channels causing the plate to revolve. Advantage may be taken of the rotation of the plate to make a "revolving jet," by increasing the thickness of the plate and depth of the channels, so that the water will issue therefrom in separate streams, as shown in Figs. 4 and 5.

It is not necessary for the plate to be uppermost, as it will operate equally well when the nozzle is inverted, as shown in Fig. 3. To prevent the plate from falling when the water is shut off, an enlargement, *w*, may be formed on the rod, and, by limiting the descent of the plate, it will, upon the full head of water being turned on, rise from contact with the stop or enlargement and approach the nozzle. The dimensions of the space or channel *x* through which the water flows will depend partly upon the weight of the plate and partly upon the relative diameters of the plate and the opening and the force of the water—for instance, if the opening is reduced in diameter or the force of the water increased, the height of the channel *x* will be diminished. Where the jet is not to be at the end of the tube the seat for the plate may be annular, and an annular plate used, as shown in Fig. 6.

It will be apparent that the nozzle may be varied in form and used with various classes of fountains to produce jets of different shapes, and that advantage may be taken of rotation of the plate *b* without any frictional bearings in the construction of a motor. I, however, make no claim to this here.

Without confining myself to any special

construction or arrangement of the parts of the device, I claim—

1. A nozzle for fountains, in which the cap is free to move upon or away from its seat, and is retained in its position by atmospheric pressure, as set forth.

2. The combination, in a nozzle, of the seat *y*, central opening, and a plate, *d*, resting loosely on said seat.

3. The combination, in a nozzle, of the seat *y*, plate *d*, and a rod for retaining the plate laterally, substantially as set forth.

4. The loose plate *d* adapted to the seat *y* of the nozzle, and provided with channels at its inner face, substantially as specified.

5. The combination of the plate *b* adapted to the seat *y*, rod *i*, and enlargement or stop, for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES E. FOSTER.

Witnesses:
F. B. HUNT,
WILLIAM L. BRAMHALL.