

No. 610,521.

Patented Sept. 13, 1898.

C. BONAFEDE.
AUTOMATIC FUNNEL.

(Application filed Dec. 18, 1897.)

(No Model.)

2 Sheets—Sheet 1

Fig. 1.

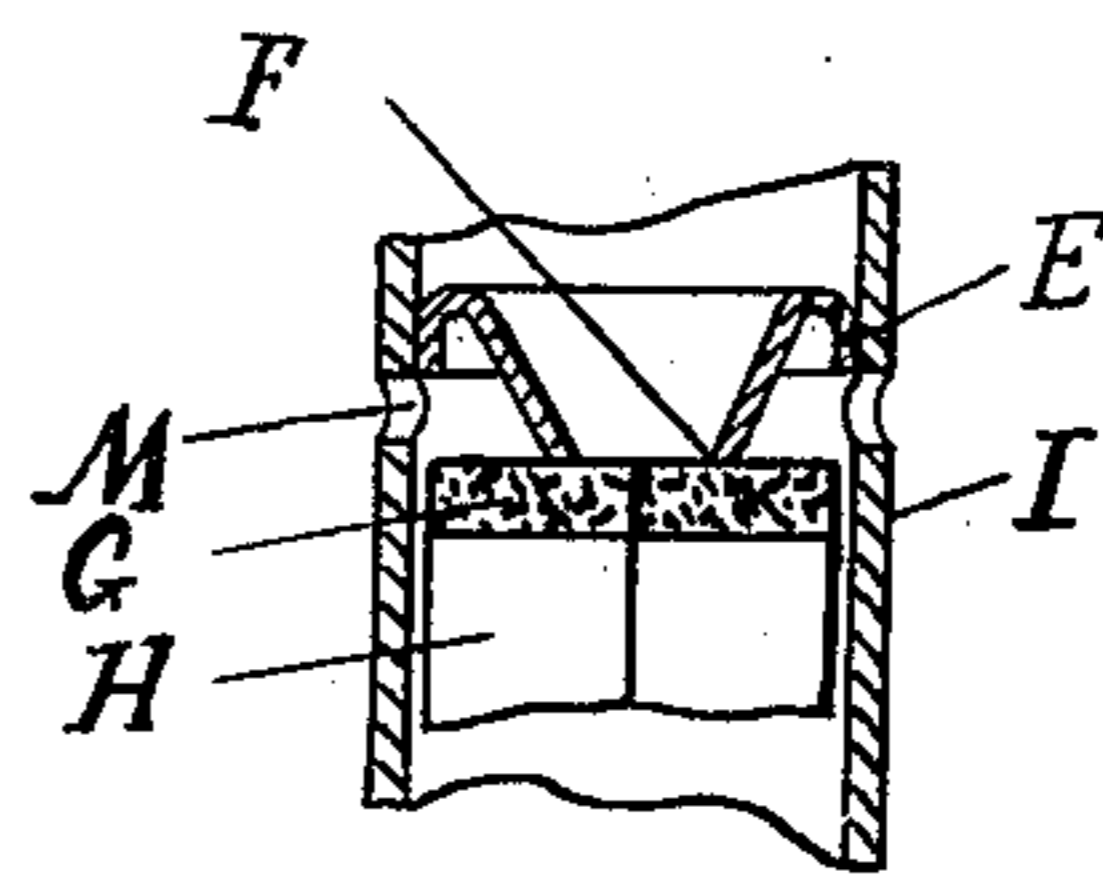
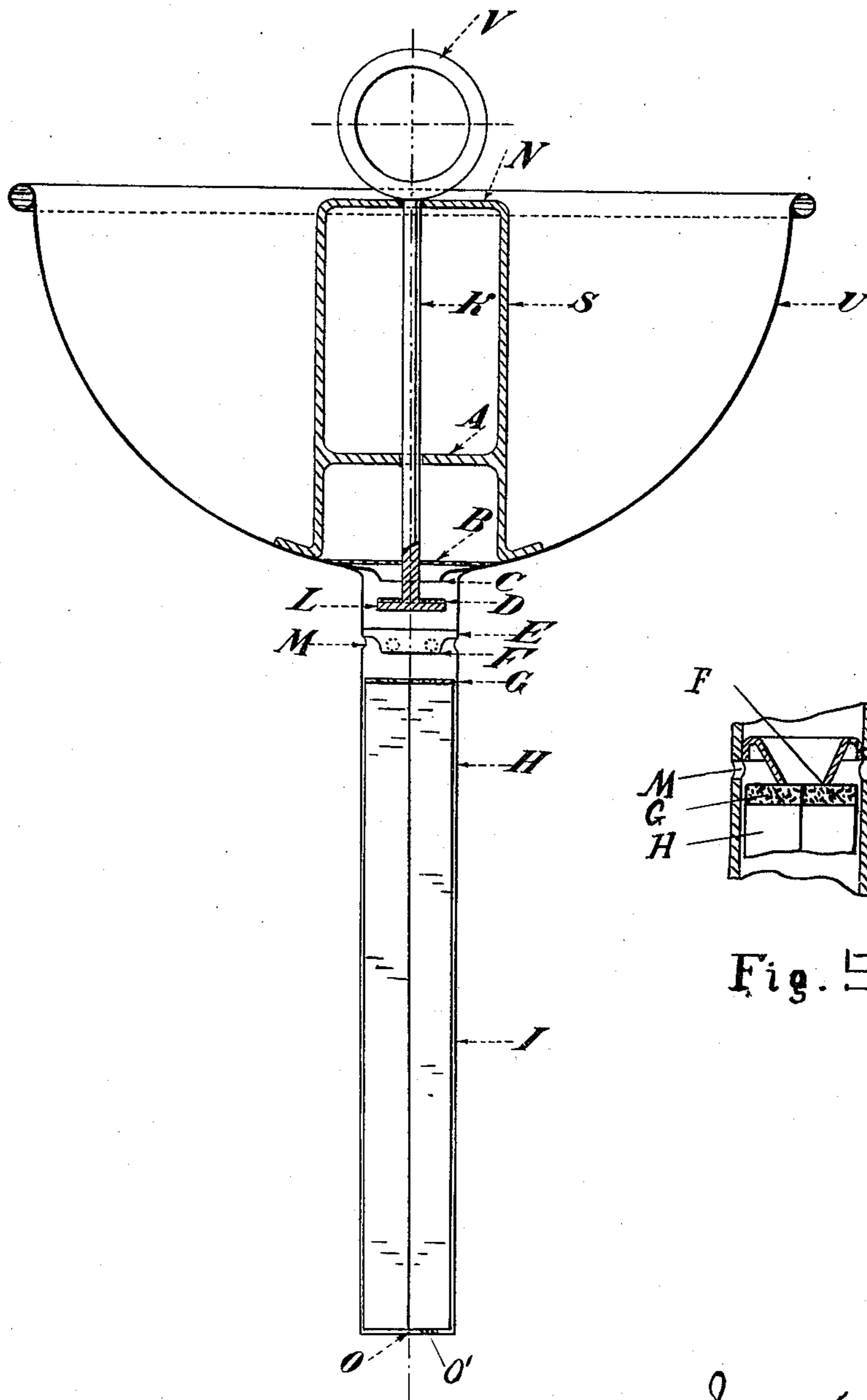


Fig. 5.

Witnesses:
W. C. Pinckney
C. Holloway

Inventor:-
Carlo Bonafede,
By J. M. Co. Me...
attorney

No. 610,521.

Patented Sept. 13, 1898.

C. BONAFEDE.
AUTOMATIC FUNNEL.

(Application filed Dec. 18, 1897.)

(No Model.)

2 Sheets—Sheet 2.

Fig. 2.

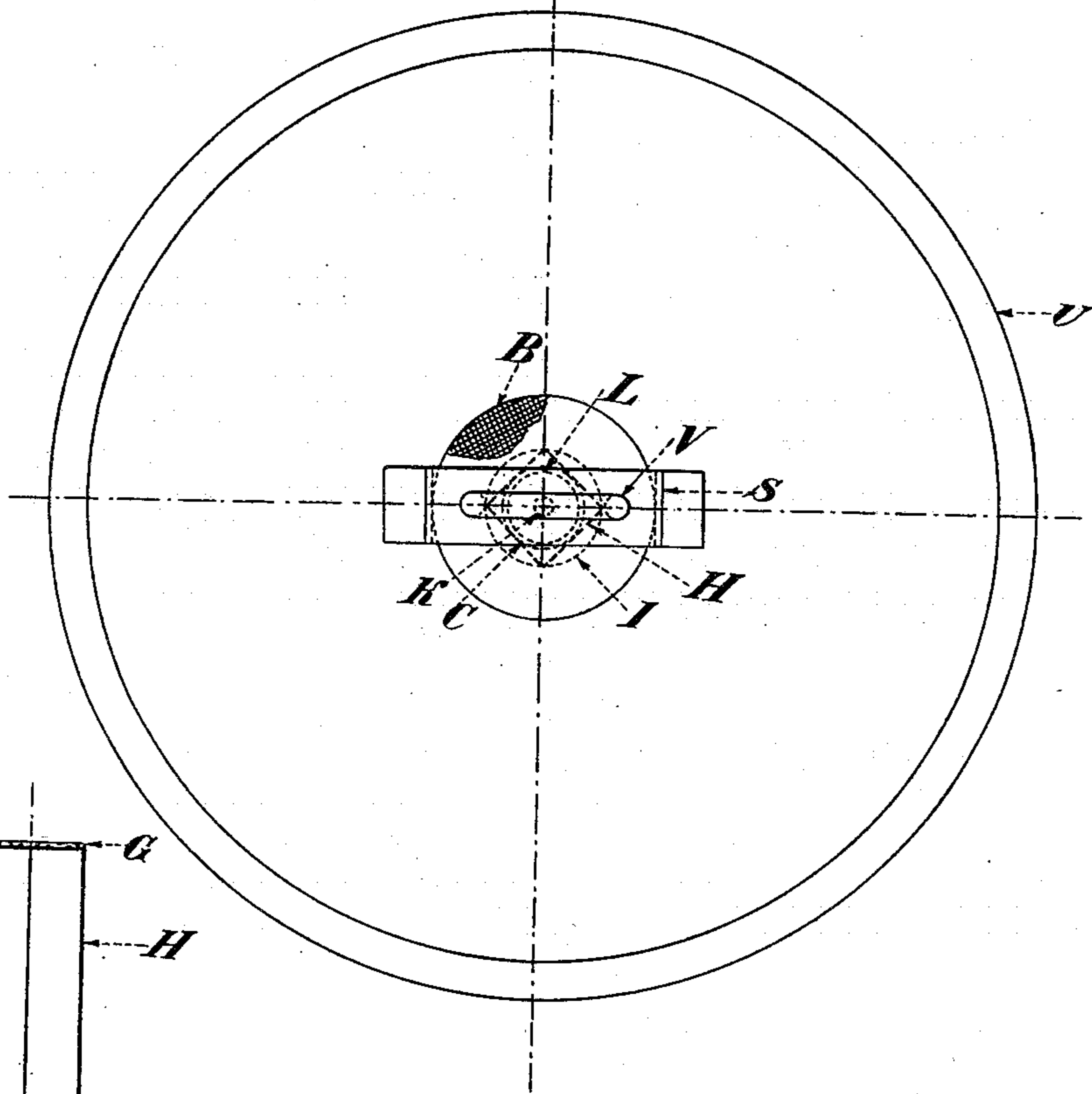
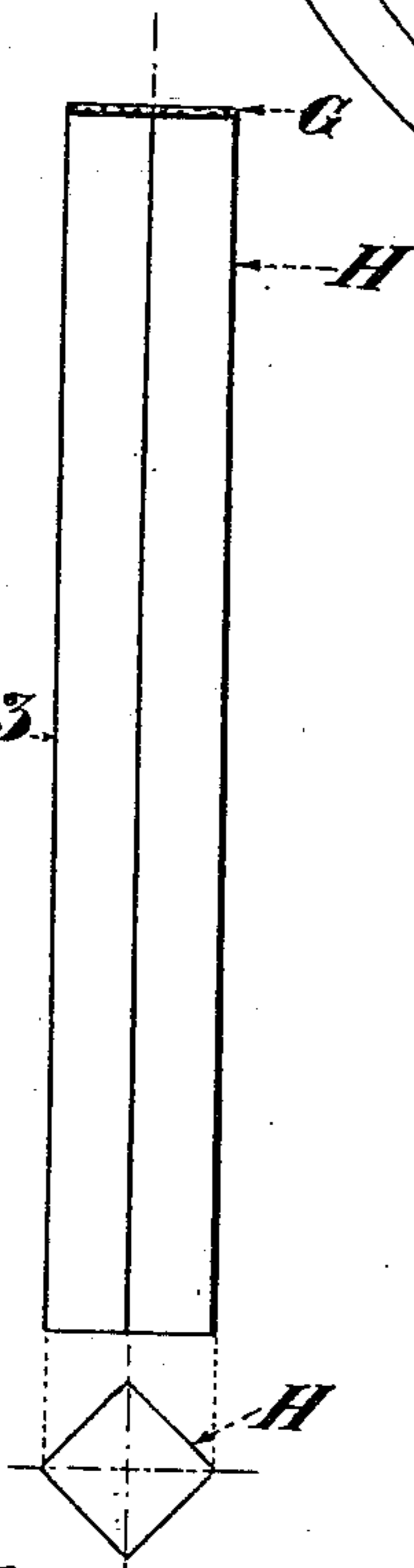


Fig. 3.



Witnesses:
W. C. Pinkney
C. Holloway

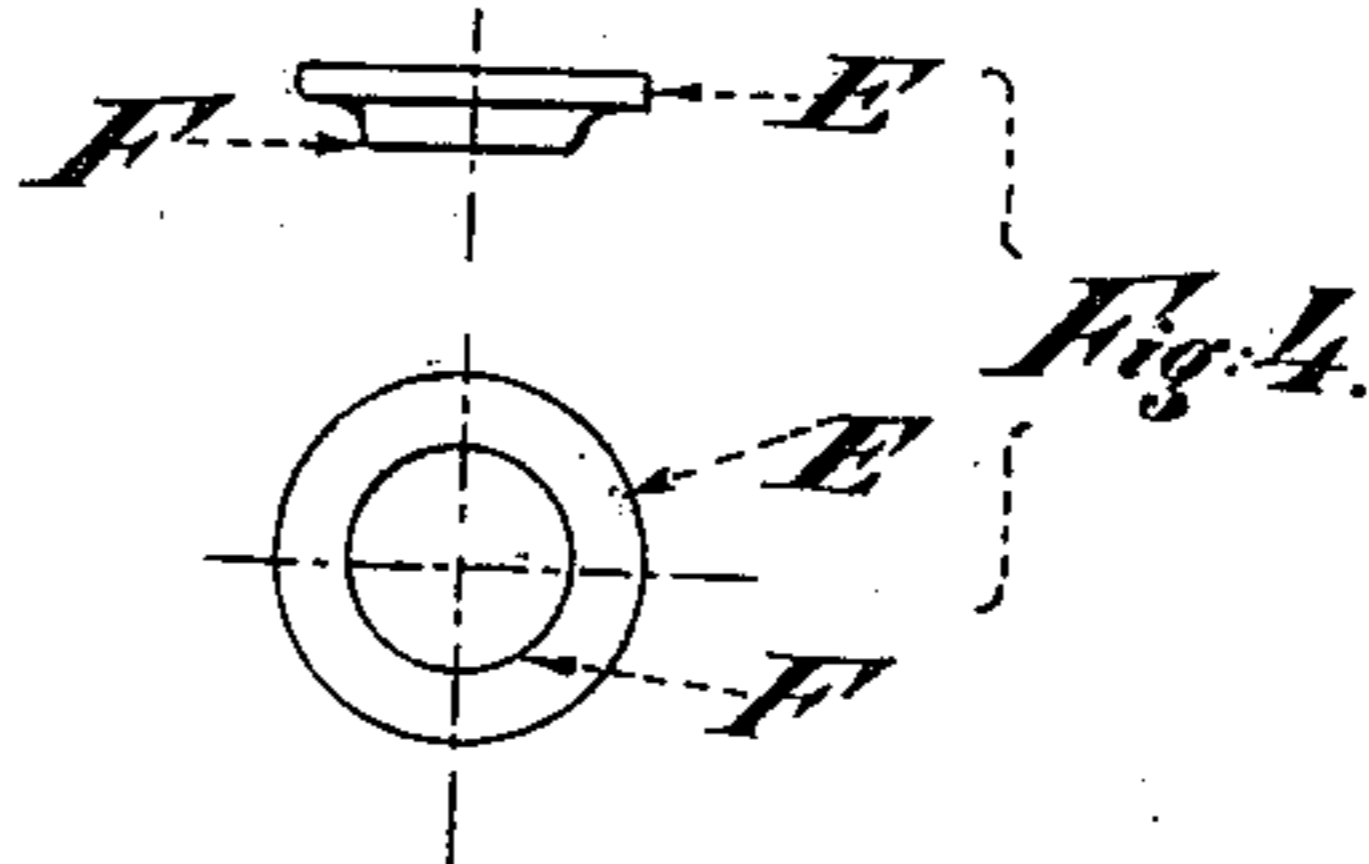


Fig. 4.

Inventor:
Carlo Bonafede,
By J. M. B. B. B.
Attorney

UNITED STATES PATENT OFFICE.

CARLO BONAFEDE, OF ROME, ITALY.

AUTOMATIC FUNNEL.

SPECIFICATION forming part of Letters Patent No. 610,521, dated September 13, 1898.

Application filed December 18, 1897. Serial No. 662,369. (No model.) Patented in Italy May 29, 1897, No. 41,818.

To all whom it may concern:

Be it known that I, CARLO BONAFEDE, engineer, a subject of the King of Italy, residing at Rome, Italy, have invented certain new and useful Improvements in Automatic Funnels, (patented in Italy, No. 41,818, May 29, 1897,) of which the following is a specification.

The object of this invention is to provide an improved funnel adapted to automatically stop the flow of liquid from the funnel when the liquid reaches the desired height in the receptacle being filled.

In the annexed drawings, Figure 1 is a central vertical section of the funnel. Fig. 2 is a plan view of the same. Fig. 3 shows the float in elevation and bottom plan. Fig. 4 shows a ring in elevation and plan, and Fig. 5 shows a central vertical section of the ring.

The funnel consists of a cup-shaped body U, having an opening or valve-port C in the middle of its bottom, the metal of the bottom being bent down around the opening to form a flat valve-seat, against which valve L presses when said valve is closed. The closure is made hermetically tight by a gutta-percha or other packing disk D on the upper side of the valve.

K is a valve-rod for valve L, movably supported in cross-bars A N of frame S, supported by the cup and being rigidly secured to the bottom of the cup, so as to extend over the middle thereof, as shown in Figs. 1 and 2.

Ring V is both a handle for lifting the funnel as a whole and for closing the valve L.

I is the funnel-tube and is adapted to be inserted in the filling-orifice of a bottle or other receptacle to be filled. The tube is open at the bottom at O and contains a float consisting of a hollow parallelepiped body H, preferably of thin tin or aluminium. Any suitable stop O' may be placed at the bottom of tube I to hold the float therein when not supported by liquid. The float being polygonal in cross-section, while tube I is round, abundant space is left for passage of liquid through the tube. The upper end of the float has a packing-disk G and forms an automatic float-operated valve adapted to form close contact with the valve-seat above it, preferably formed of a ring secured in tube I a short distance below valve L. The narrow

downturned flange E of the ring closely fits tube I and is secured thereto in any suitable manner. The body of the ring is hopper-shaped, having a valve opening or port F, adapted to be closed by valve G.

B is a strainer.

M are air-vents to allow air to escape from the tubes.

If the device be inserted, say, in the neck of a bottle and liquid be poured into the cup part U, it will flow through ports C F into the bottle until it fills the bottle, rising into the neck and to the same height in tube I around the float. Before the bottle-neck is full enough to overflow float H rises, and the valve at its upper end hermetically seals opening F, stopping the flow of liquid into the bottle, thereby preventing overflow and waste.

It is evident that when the funnel is raised to remove it from the bottle the float will fall, being unsupported except by the liquid, and uncover opening F; but liquid left in the cup U will not escape, because opening C is closed by valve L and packing D as the funnel is lifted by handle V, which closes valve L before lifting the funnel. The space between openings C F is so proportioned that the liquid held therein at the moment when valve L is closed, escaping on the opening of valve G into the bottle, will wholly or partially fill the space vacated by the tube I and the float.

It is not essential that the valve operated by the float be a part of the float itself. The only support of the float when raised is the liquid in which it is submerged, so that the float falls freely when the funnel is raised.

I claim—

1. The combination in an automatic funnel, with the cup-like body and tube, of a float in the tube, a valve seat and port above the float, a valve operated by the float to close said port to automatically stop flow of liquid when the float rises, and a second valve-port and valve above the float-operated valve, and means for closing said upper valve manually.

2. The combination with the cup, tube, and handle, of a funnel, of a float in said tube free to rise and fall, two valves for controlling escape of liquid from the cup one of said valves being closed by the rising of said float and opened by the lifting of the funnel, the

other valve being connected to said handle, whereby it is closed by lifting said handle.

3. The combination with the cup, and tube of a funnel, of two valve-ports one below the
5 other with space for liquid between them, an automatic valve for closing the lower port, and a manually-operated valve for the upper port.

4. The combination with the cup and tube
10 of a funnel, of float H, valve G operated thereby, a ring fitting in the tube and having a valve-port F therein, valve L, D, port C therefor, and means for operating said valve L, D.

5. The combination with the cup and tube of a funnel, said tube having holes M near
15 the top thereof, a ring in the tube just above said holes, said ring having a contracted valve-seat F below said holes, a float, and a valve operated thereby.

Signed at the consulate-general of the
United States in Rome, Italy, this 3d day of
December, 1897.

CARLO BONAFEDE.

Witnesses:

GIOVANNI BORTOLUZZI,
W. E. MANTIUS.