G. S. FOLLENSBEE.

Rotary Pumps.

No. 126,046. Patented April 23, 1872.

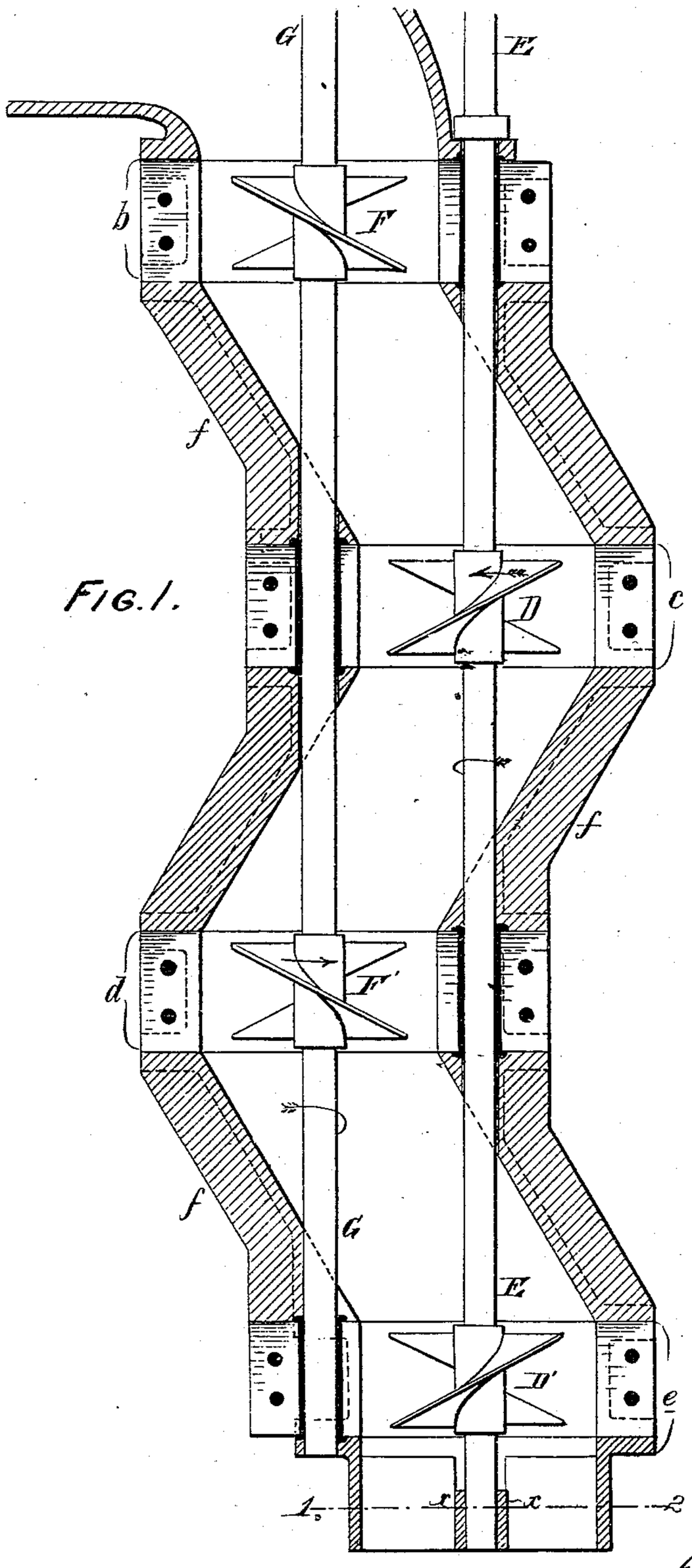
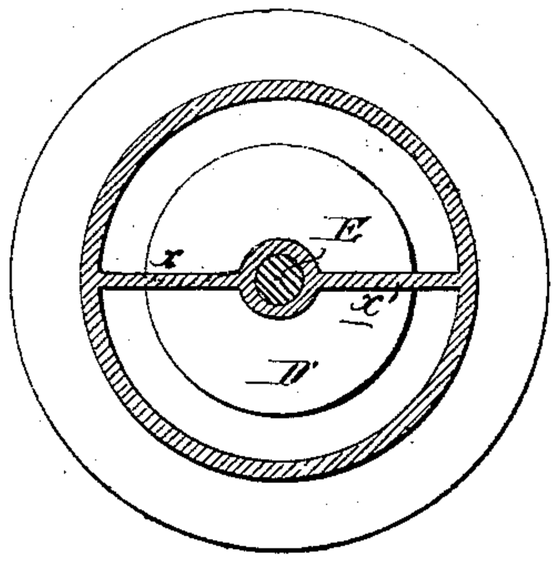


FIG. 1.



WITNESSES,
John Parker
Thos. McElwain

George S. Follensbee
by his Attys
Howson and Sons

126,046

UNITED STATES PATENT OFFICE.

GEORGE S. FOLLENSBEE, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN ROTARY PUMPS.

Specification forming part of Letters Patent No. 126,046, dated April 23, 1872.

Specification describing an Improved Water-Elevator, invented by GEORGE S. FOLLENSBEE, of Philadelphia, Pennsylvania.

Improved Water-Elevator.

My invention relates to improvements in that class of water-elevating apparatus in which a propeller or propellers revolve in a casing; and my improvement, which is too fully explained hereafter to need preliminary description, has been designed with the view of obviating the defects arising from the whirling motion imparted to the water by the propellers.

In the accompanying drawing, Figure 1 is a vertical section of my improved water-elevator; Fig. 2, an inverted sectional plan on the line 1 2, Fig. 1.

The casing of the elevator consists of a number of alternate vertical and inclined flanged sections, secured together by bolts passing through the flanges, as shown in the drawing. The interiors of the sections *b*, *c*, *d*, and *e* of this casing are made vertically cylindrical, these portions being arranged to the left and right alternately, those to the right for receiving the propellers D and D′ on the shaft E, and those to the left for the propellers F and F′ on the shaft G; and the cylindrical sections of the casing communicate with each other through the inclined passages or sections *f*, so that the interior of the casing assumes the zig-zag form represented in Fig. 1. The shafts are caused to turn in contrary directions, as pointed out by the arrows, and the blades of the shaft E are made in the form of a right-handed screw-thread, while those of the shaft G have blades shaped like a left-handed screw-thread. The lower end of the casing communicates with the water, which, by the action of the propellers, is elevated within the casing and discharged therefrom through the orifice at the top. The action of a propeller within a casing on water has a tendency to elevate the same, but at the same time to give it a whirling motion by which its ascent is impeded; hence stationary vanes, having an inclination the reverse of the blades of the propellers, have been arranged in the interior of the casing to counteract the whirling tendency, as in the patent granted to W. T. Barnes March 20, 1849. While the stationary vanes, however, accomplished this end, the friction of the water against them was such as to absorb a large portion of the driving power, thus detracting from the apparatus as an economical medium for elevating water. In my improvement the whirling of the water by one propeller is counteracted by the next propeller above, which, instead of detracting from the capacity of the apparatus, adds to the elevating efficiency of the same. The whirling of the water beneath the lowermost propeller D′ is prevented by a plate, *x*, which extends across and is secured to or forms a part of the lowermost section of the casing.

I claim as my invention—

1. The combination of a casing and two or more propellers, arranged one above the other and rotating on different vertical axes, so that the water raised by one propeller must pass diagonally to the other, substantially as and for the purpose described.

2. A water-elevator, in which are combined two parallel propeller-shafts, having different axes, carrying propellers, and rotating in opposite directions, substantially as herein described.

3. The combination, substantially as described, of the shafts E and G, their propellers, and the zig-zag casing.

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

GEO. S. FOLLENSBEE.

Witnesses:

WM. A. STEEL,

HARRY SMITH.