B. Holly,

Rotary Pump,

No. 12,350. Patented Feb. 6, 1855.

Fig. 1.

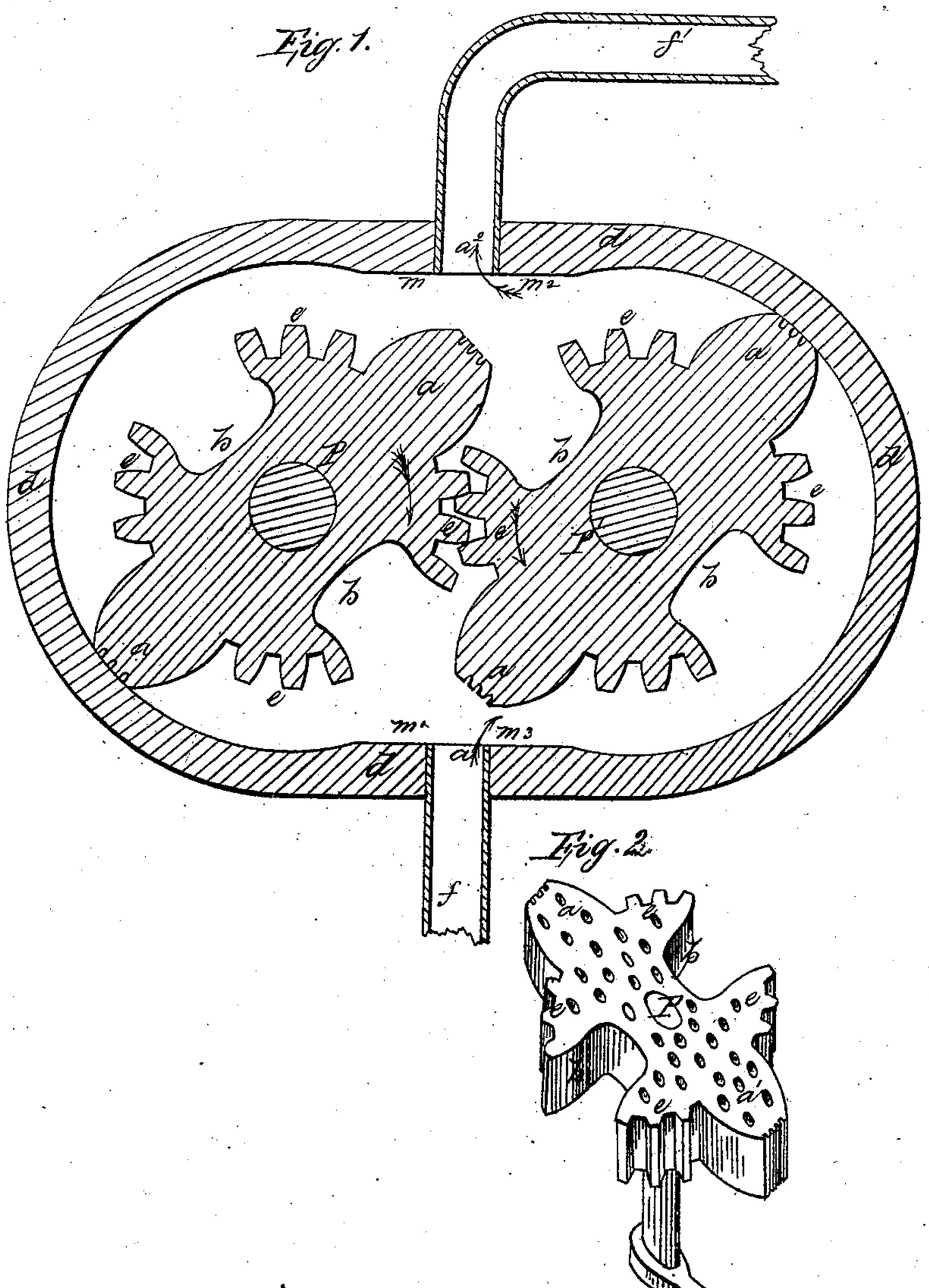

Fig. 2.

UNITED STATES PATENT OFFICE.

BIRDSILL HOLLY, OF SENECA FALLS, NEW YORK.

ELLIPTICAL OR ROTARY PUMP.

Specification of Letters Patent No. 12,350, dated February 6, 1855.

To all whom it may concern:

Be it known that I, BIRDSILL HOLLY, of Seneca Falls, in the county of Seneca and State of New York, have invented an Improvement in Rotary or Elliptical Pumps, and that the following is a full, clear, and exact description of the principle or character which distinguishes it from all other things before known and of the usual manner of making, modifying, and using the same, reference being had to the annexed drawings, of which—

Figure 1 represents a section of the pump showing the interior; Fig. 2, a perspective of one of the elliptical pistons.

My invention consists in certain improvements in the class of pumps, known as the rotary or elliptical pumps, shortly to be described, by which I obtain a more efficient and durable pump, than by any other plan with which I am acquainted.

Very many forms have been essayed for rotary pumps but they have gone into disuse, or are but little used, although a rotary pump is desirable, if it can be made serviceable.

By reference to Fig. 1 it will be seen that the elliptical pistons P P′ are provided at their transverse ends, with large cogs *a*, *a*, which are to fit, as the pistons revolve, into corresponding recesses *b*, *b*, in the line of their conjugate diameters. There are also in each piston between the large cogs *a*, *a*, and the recesses *b*, *b*, two sets of smaller cogs *e*, *e*, one set on each side of each piston, and it will be seen that by revolving the piston P on its axis the piston P′ will be carried around by it. These pistons revolving in the air tight (*d*) of elliptical form, are continually producing variable chambers between their surfaces and the walls of the case (*d*). The induction chamber *d′* and eduction chamber d^2 are at their minimum of capacity, when the transverse diameters of the pistons are at right angles to each other, and a glance at the drawings, Fig. 1, will show how the increase and diminution of these chambers will cause the water to enter the induction pipe *f*, and be forced out of the discharge pipe *f′*.

In rotary pumps of this general character a great difficulty has been, the packing of the piston or that part which rubs against or passes near to the inner wall of the case or shell. I meet this difficulty by means of a water packing by making grooves on the periphery of the cogs (*a*) (*a*) and as these become filled with water the centrifugal action of this water becomes opposed to the resistance of the water to be forced, and it is found to be equivalent, in practice to a tight packing. The friction of packing in such pumps is enormous, especially if any degree of tightness is aimed at, and the expense of tight fitting would prevent their common use. The water packing more than compensates for the want of tightness or nice fit by the diminution of friction. The cogs (*a*) (*a*) come into bearing upon the inner wall of case (*d*) at all points between the abutments *m*, *m′*, and m^2 and m^3.

It is obvious that such a pump is convertible to a rotary engine for water, steam, etc., only that in the case of steam or gaseous fluids the packing would require modification.

What I claim as my invention is:

The corrugated or grooved pistons or cogs in the manner and for the purposes specified.

BIRDSILL HOLLY.

Witnesses:

GEO. W. MEAD,

GEO. O. DANIELS.