

W. H. Harrison,

Double-Acting Pump,

N^o 17,625.

Patented June 23, 1857.

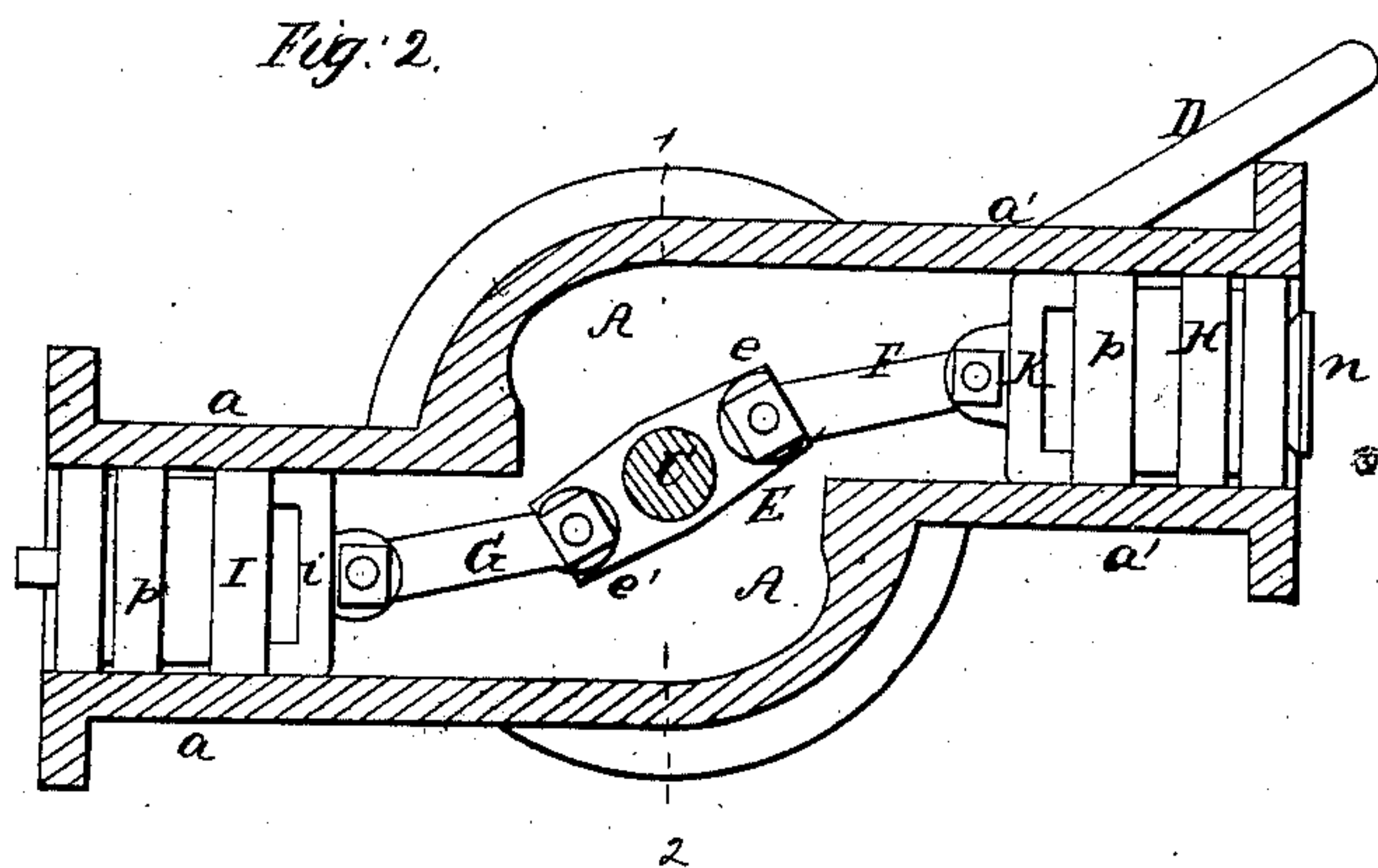
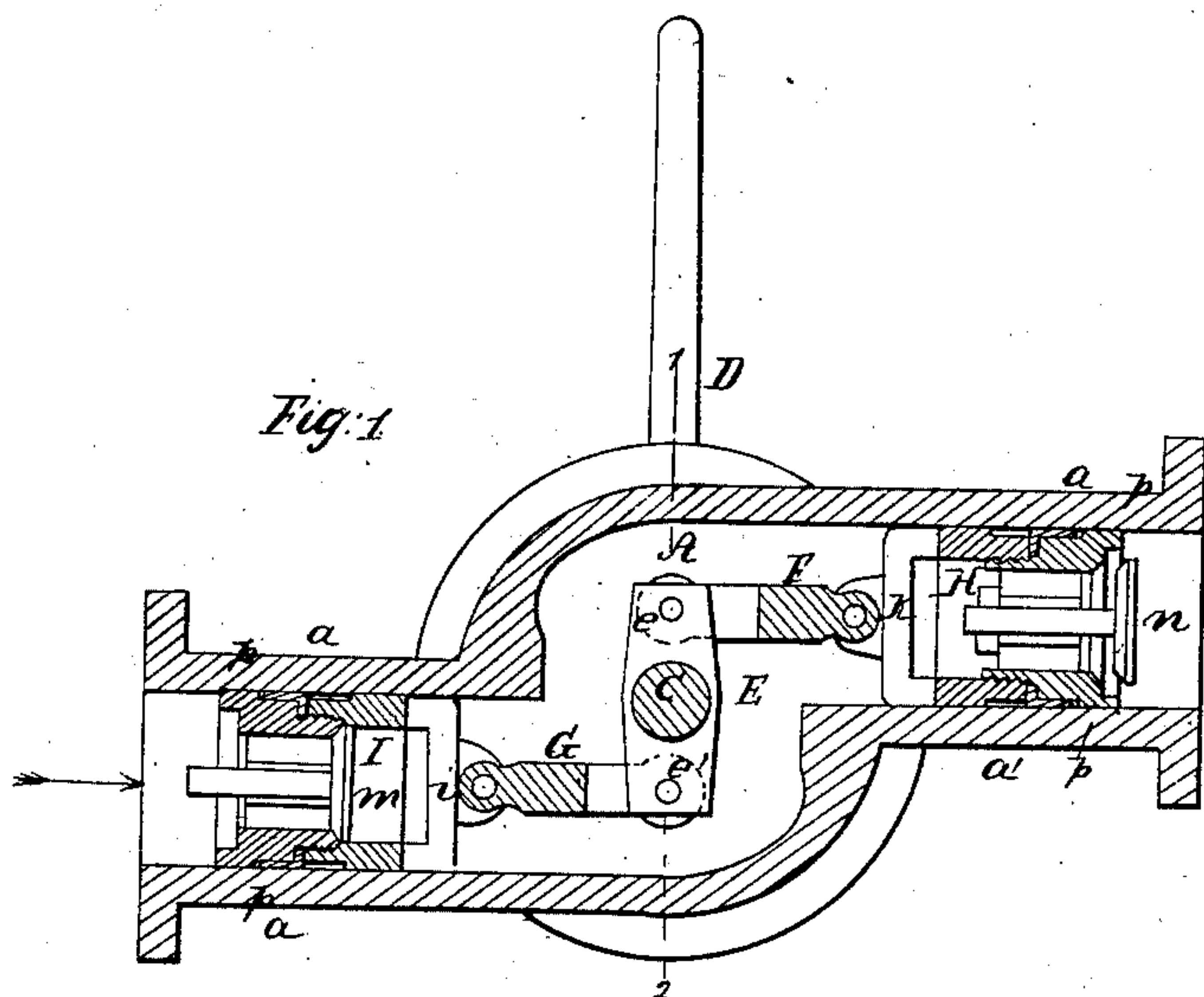
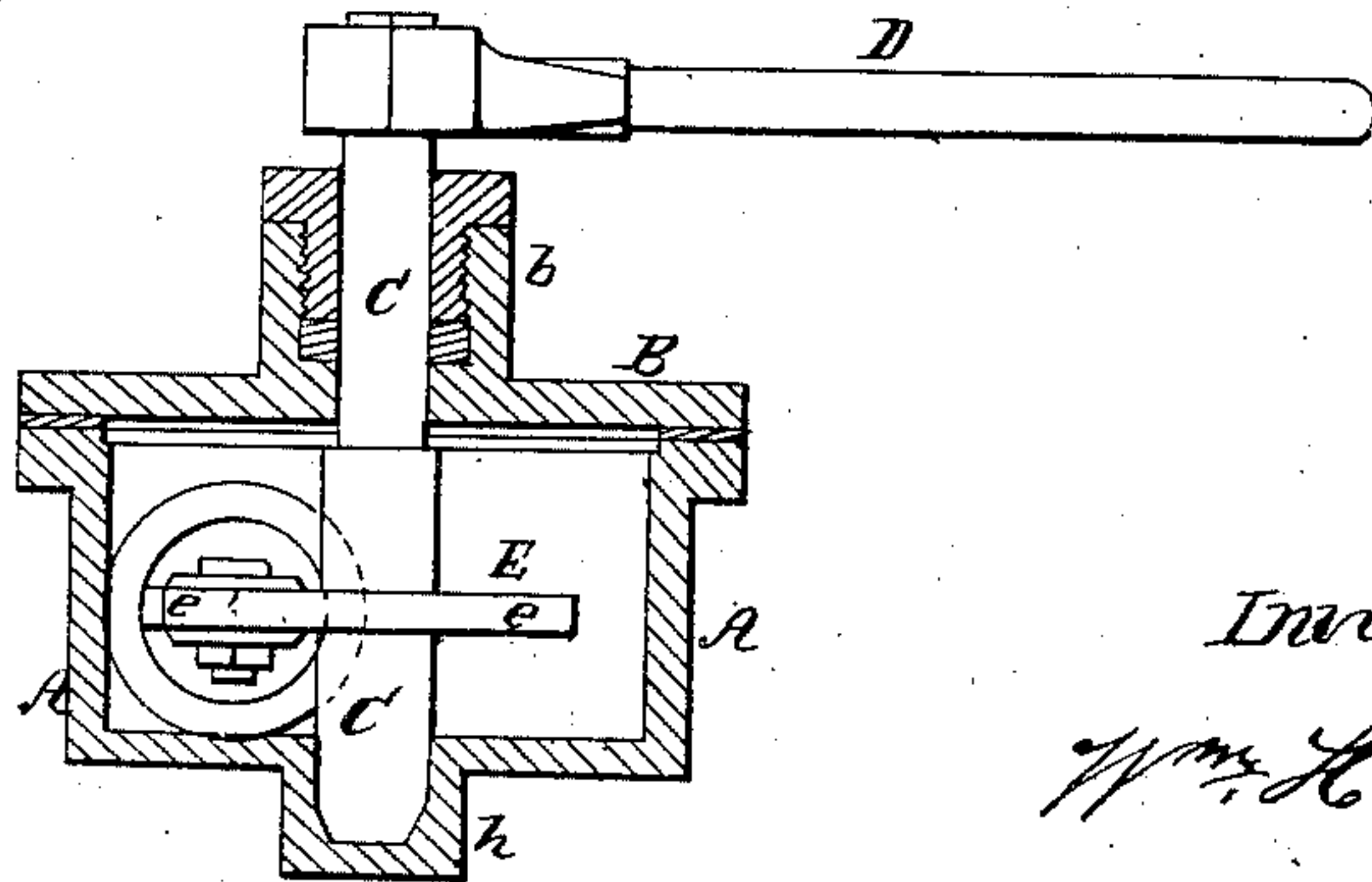


Fig. 3.



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UNITED STATES PATENT OFFICE.

WILLIAM H. HARRISON, OF PHILADELPHIA, PENNSYLVANIA.

PUMP.

Specification of Letters Patent No. 17,625, dated June 23, 1857.

To all whom it may concern:

Be it known that I, WILLIAM HENRY HARRISON, of the city of Philadelphia, and State of Pennsylvania, have invented certain
5 new and useful Improvements in Pumps; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing and to the letters of reference
10 ence marked thereon.

My invention relates to improvements in double acting pumps in which two buckets, moving in contrary directions, are used, and consists in the employment of a water-tight
15 chamber from which project two barrels the interior of which communicate direct with the said chamber, the suction pipe being attached to the end of one barrel, and the discharge pipe to the other barrel. Through
20 a stuffing box, and into the chamber, passes a rock shaft, to which (in the inside) is secured a double lever, the opposite arms of which are jointed by means of rods, one to a bucket in one barrel, and the other to
25 another bucket in the other barrel. The bucket of the barrel, which communicates with the suction pipe has a valve opening inward toward the chamber, and the bucket of the barrel which communicates with the
30 discharge pipe a similar valve opening outward from the chamber. The above mentioned shaft is caused to vibrate imparting a reciprocating motion to the buckets in contrary directions, causing the water to
35 pass into one barrel, and out of the other. The whole forms a compact and cheap pump, capable of forcing or discharging water in a continuous stream, and the crooked, and circuitous passages through
40 which the water has to flow in ordinary double acting pumps are avoided.

In order to enable others skilled in the art to make and use my invention I will now proceed to describe its construction
45 and operation.

On reference to the drawing which forms a part of this specification, Figure 1, is a sectional view of my improved double acting pump, with the buckets at half stroke and
50 shown in section. Fig. 2, the same as Fig. 1, but with the buckets at the termination of their outward stroke, and shown in elevation, Fig. 3, a transverse section on the line 1—2 (Figs. 1 and 2).

55 The same letters of reference allude to similar parts throughout the several views.

A is the body of the pump, the interior of which forms a chamber, permanently closed on one side, and furnished at the other with a packed cover B which has a
60 stuffing box *b*, of the ordinary construction. Through the latter passes one end of the rock shaft C, the opposite end of which has its bearing in the projection *h*, on the permanently closed side of the chamber A. 65

Outside the stuffing box *b*, the rock shaft C is supplied with a lever, which may be so constructed as to be adapted to hand operation or to receive suitable connections from any adjacent motive power. To the
70 rock shaft C, and inside the chamber A is secured the double lever E, to the arm *e*, of which is jointed one end of the connecting rod F, the other arm *e'*, being jointed to one end of the connecting rod G, the opposite
75 end of the latter is jointed to the bridge *i*, on the bucket I, the opposite end of the rod F being jointed to the bridge *k*, on the bucket H. The bucket I is arranged to slide in the barrel *a*, and the bucket H in
80 the barrel *a'*, the former bucket having an ordinary conical valve *m*, opening inward, and the latter bucket a similar valve *n*, opening outward, and both buckets being
85 furnished with the usual leather packing between. The interiors of the two barrels communicate directly with the chamber A, and their extreme outer ends are furnished with flanges to which are secured suitable
90 pipes, the suction pipe to the barrel *a*, and the force pipe to the barrel *a'*.

Operation: A vibrating motion being imparted to the lever D, the buckets H and I will, through the rock shaft C, lever E, and
95 rods F and G, be moved backward and forward in their respective barrels, the two buckets invariably moving in contrary directions. Supposing the bucket I to be moving in the direction of the arrow (Fig. 1,) 100 and the bucket H consequently moving in an opposite direction, the valve *m*, of the former will be closed, and the valve *n*, of the latter open, and the water, already thrown into the chamber A by the previous
105 action of the pump, will be forced through the bucket H into the discharge pipe while the water from the suction pipe is flowing into the barrel *a*, this is continued until both buckets have reached their extreme
110 inward stroke. The moment the buckets by the reverse motion of the lever D, com-

mence their outward stroke, the valve *m*, will be open, and the valve *n*, closed allowing the water already filling the space in the barrel *a*, outside its bucket, to rush through
5 the latter into the chamber A, at the same time the water in the barrel *a'* outside its bucket H is being forced through the discharge pipe.

It will now be seen that in whichever
10 direction the buckets are moved, the water will be directed to the force pipe in a stream, the continuity of which is only momentarily interrupted, at the point where the buckets reverse, and even this slight interruption of
15 the constant flow of water may be entirely avoided by attaching to the discharge pipe, an ordinary air vessel. It will also be seen that by the peculiar construction of the chamber A with its communicating barrels
20 *a*, and *a'*, the flow of water is nearly in a direct line and that the circuitous passages common to ordinary double acting pumps,

and which present such serious disadvantages, are entirely avoided.

I do not desire to confine myself to the 25 precise form of valve or bucket shown, as the same may be considerably varied without changing the result. Neither do I wish to lay any especial claim to the employment of two buckets moved simultaneously in 30 different directions. But

What I do claim and desire to secure by Letters Patent is

The combination of the chamber A, barrels *a* and *a'*, valved buckets H and I, 35 rock shaft C, lever E, and rods G and F when the whole are arranged and constructed for joint operation substantially in the manner and for the purpose herein set forth.

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Witnesses:

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