

D. T. Hitchcock

Force Pump.

N^o 10,428.

Patented Jan. 17, 1854.

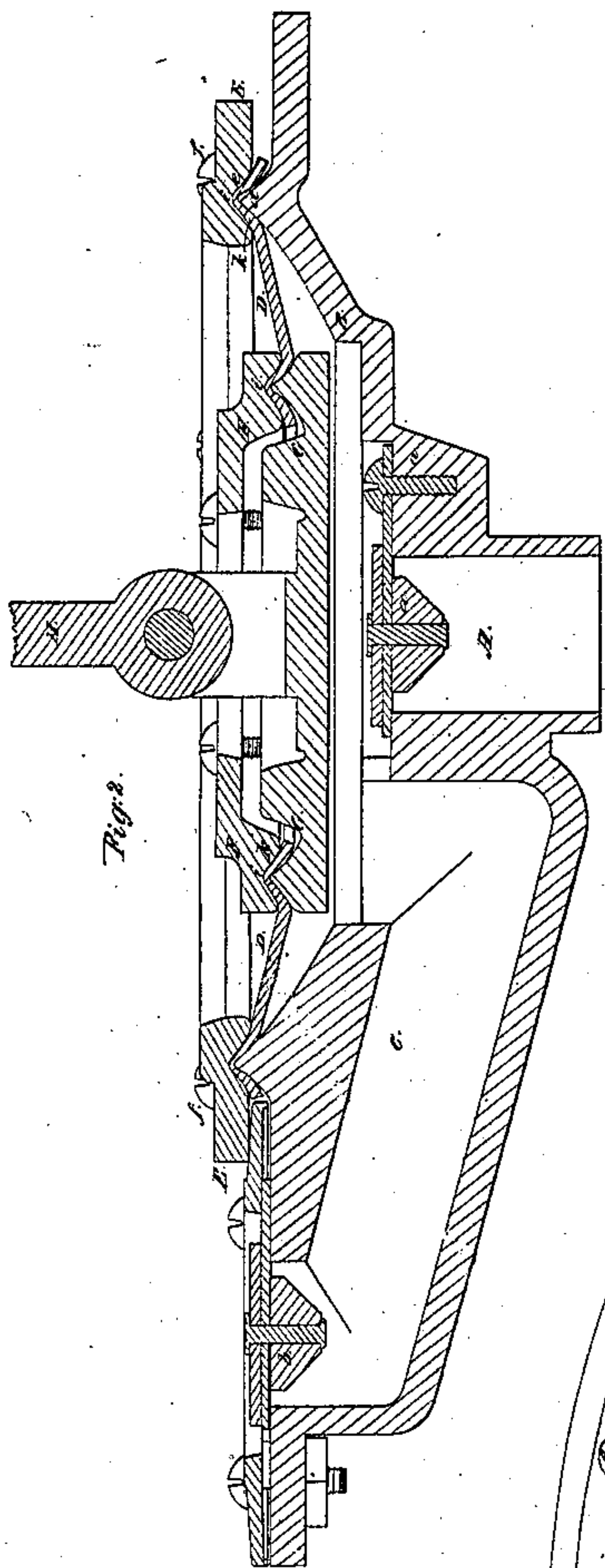


Fig. 3.

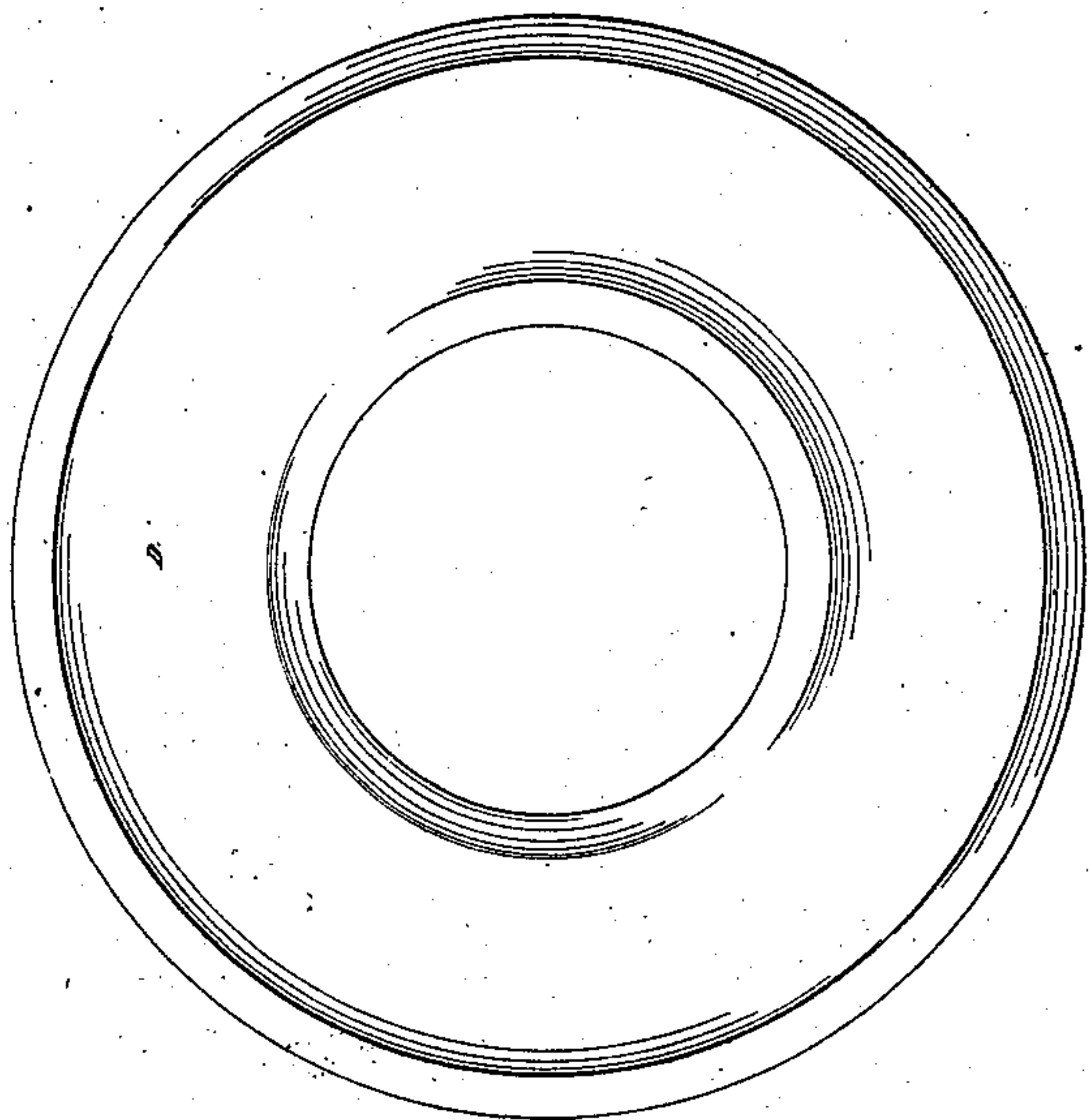


Fig. 1.

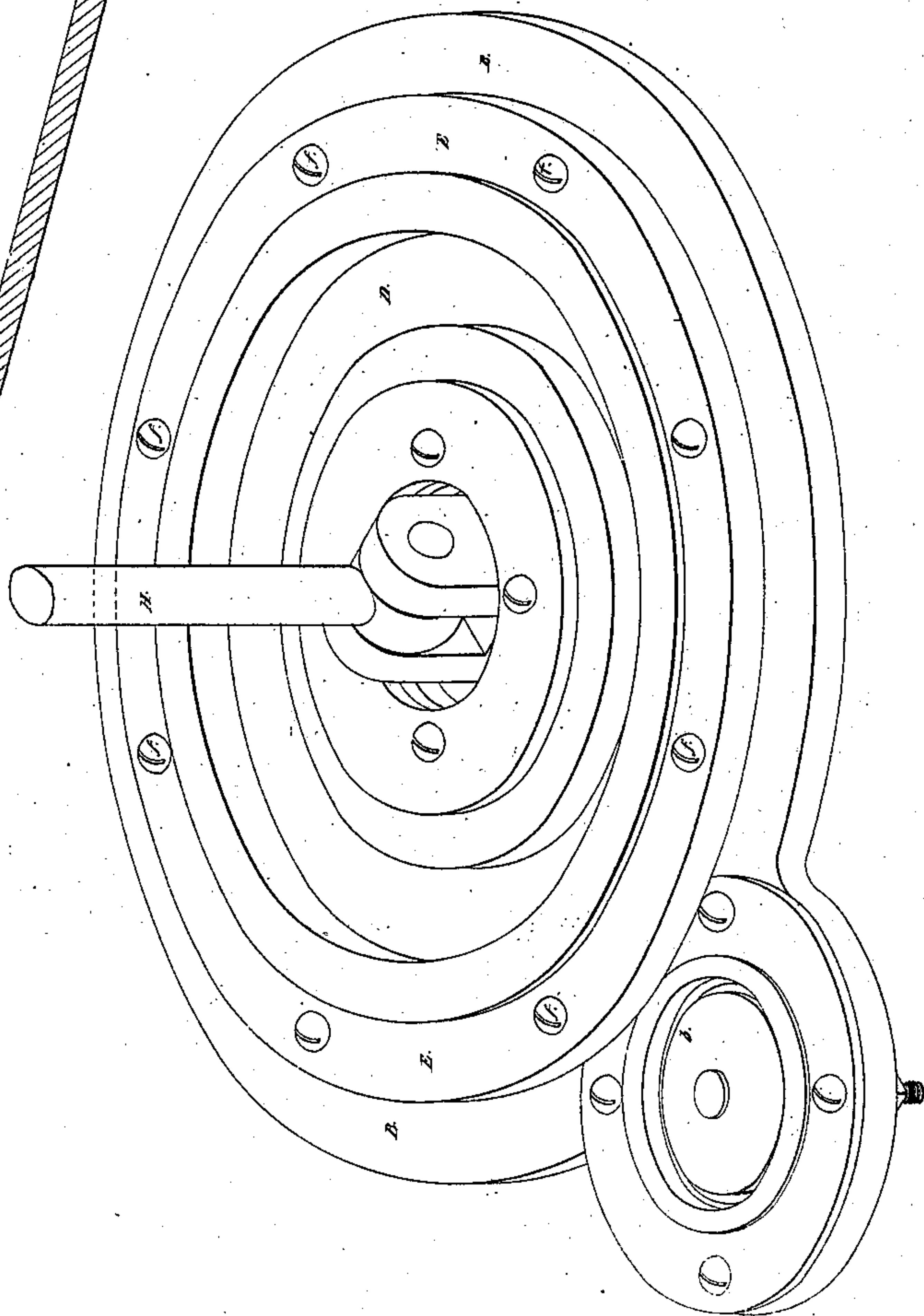
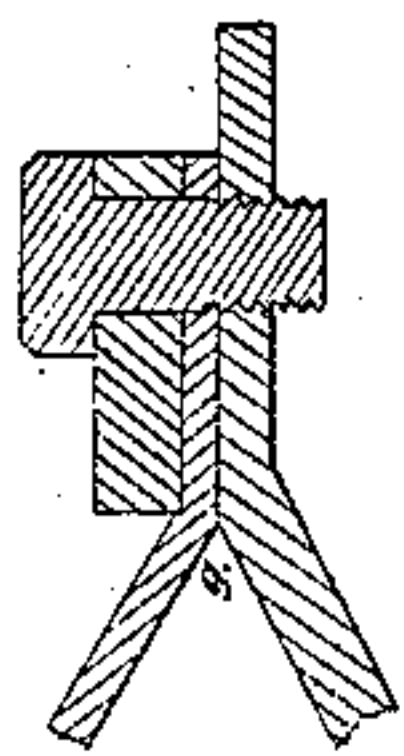


Fig. 4.



UNITED STATES PATENT OFFICE.

DANIEL T. HITCHCOCK, OF WARREN, MASSACHUSETTS.

DIAPHRAGM-PUMP.

Specification of Letters Patent No. 10,428, dated January 17, 1854.

To all whom it may concern:

Be it known that I, DANIEL T. HITCHCOCK, of Warren, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Diaphragm-Pumps; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is an isometric view of the pump; Fig. 2, a section through the same; Fig. 3, a plan of the india rubber disk, and Fig. 4 shows the method heretofore adopted of securing the disk between the confining disks.

In order that others skilled in the art may make and use my invention I will proceed to describe first the general construction of my pump, and then the improvements which I have added thereto.

A is the induction pipe which enters the bottom plate B through the center and is capped by the induction valve *a*.

C is the eduction pipe and *b* the eduction valve.

D is the disk of india rubber or the elastic substance which is confined near its exterior circumference between the bottom plate B and the ring F, which latter is secured to the plate B by a suitable number of screws *f*. The interior circumference of the elastic ring or disk is confined between two metallic disks F and G. The pump rod H is attached to the lower disk G and the pump is operated by alternately raising and depressing the disk G with the diaphragm D. As the latter is raised the water flows in through the induction valve *a* and as it is depressed this valve is closed and the water is forced out through the eduction valve *b*.

In pumps of this description as heretofore constructed the elastic disk has been confined between two plates or rings of metal, which are brought together with great force by the use of screws or other analogous means, as seen in Fig. 4 of the accompanying drawings. The disk was thus

pinched between the two plates at the point *g*, where it was required to bend with each up and down motion of the diaphragm, and the consequence was that the india rubber or other elastic substance was speedily cut or worn away at this point.

To obviate this inconvenience is the object of my present invention, which consists in so constructing the rings or plates between which the elastic disk is confined that the point where the latter is pinched or held does not coincide with the point where it is required to bend, and thus there is no tendency to break or cut at this point.

The ring E is constructed with a groove or depression *e* upon its under surface, and the plate B has a corresponding angular elevation or raised ring, *d* upon its upper surface. The angular elevation *d* is more acute than the depression *e*, so that as the elastic disk is confined between them it shall be pinched very tightly at *i*, where the disks come nearest together, whence the compression gradually decreases to the point *k*, where the disk is required to bend. It will thus be perceived that the disk is not compressed at the bending point, and the wearing away of the diaphragm at this point is avoided.

Having thus fully described the nature of my invention, I would state that I do not claim the pinching of the diaphragm between plates with parallel sides, as this has been done before; but

What I do claim as my invention and desire to secure by Letters Patent is—

The securing of an elastic diaphragm between two plates, the sides of which are so inclined as to gradually compress the diaphragm, and take up its elasticity, by which means it is prevented from cutting, substantially as described.

In testimony whereof I have hereunto set signature.

DANIEL T. HITCHCOCK.

In presence of—

GEO. MORRILL,
SAM. COOPER.