WILLIAM J. TATE.

Improvement in Hydraulic Engines.

No. 120,548. Patented Oct. 31, 1871.

FIG. 3.

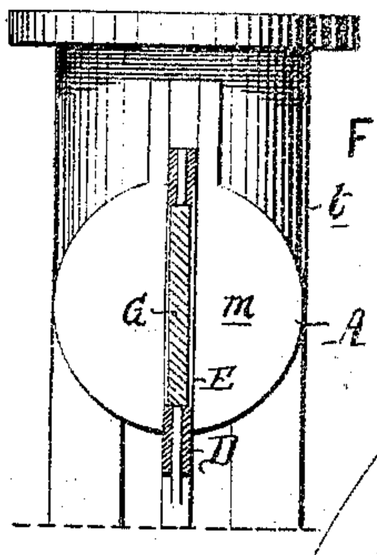


FIG. 1.

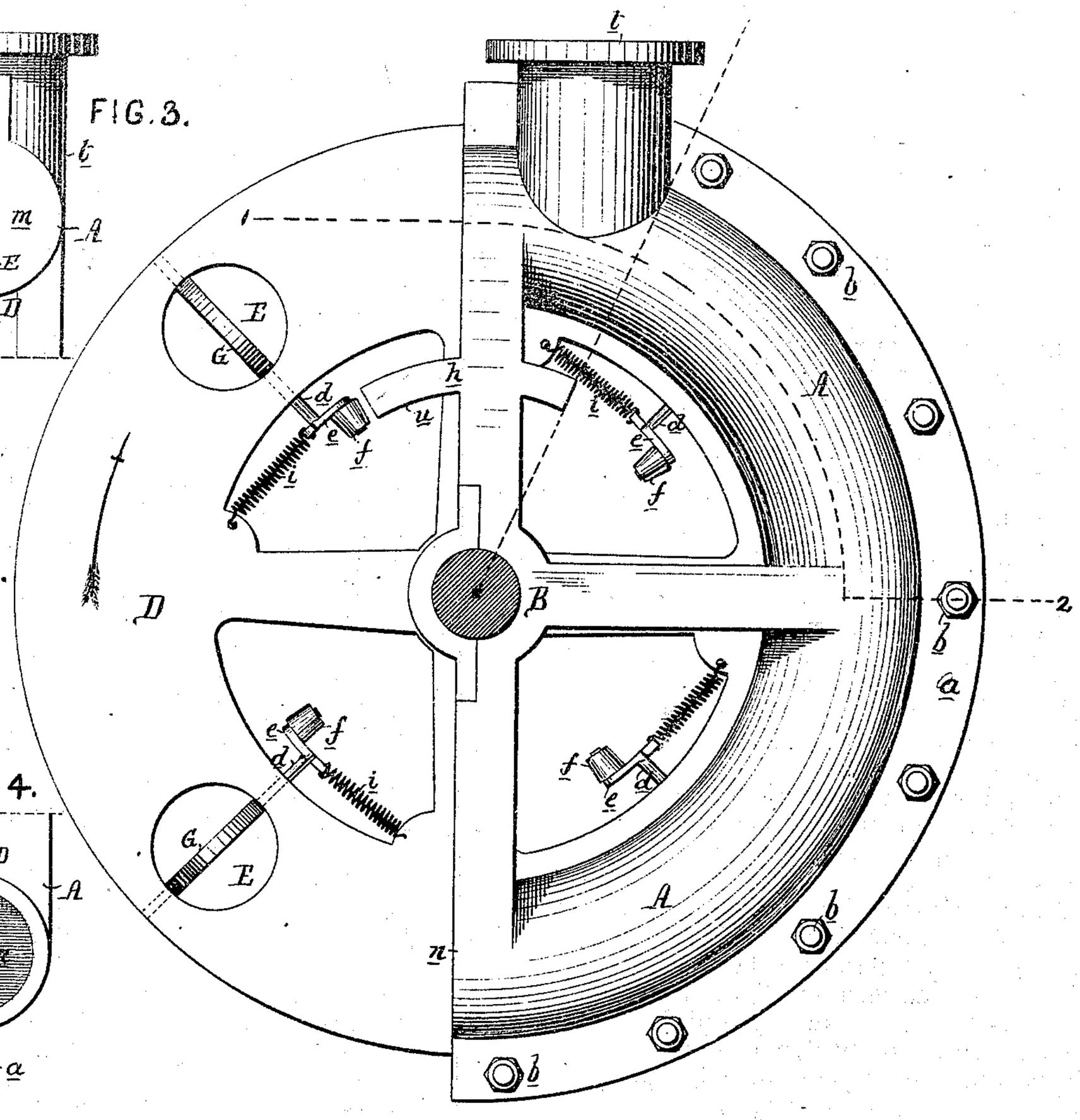


FIG. 4.

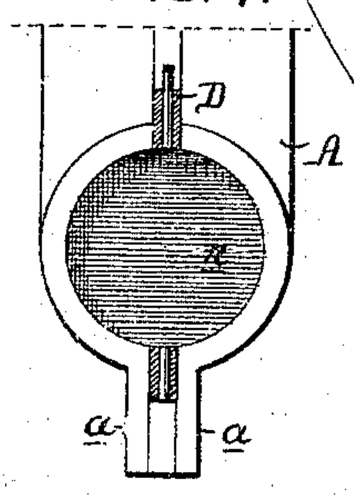


FIG. 2.

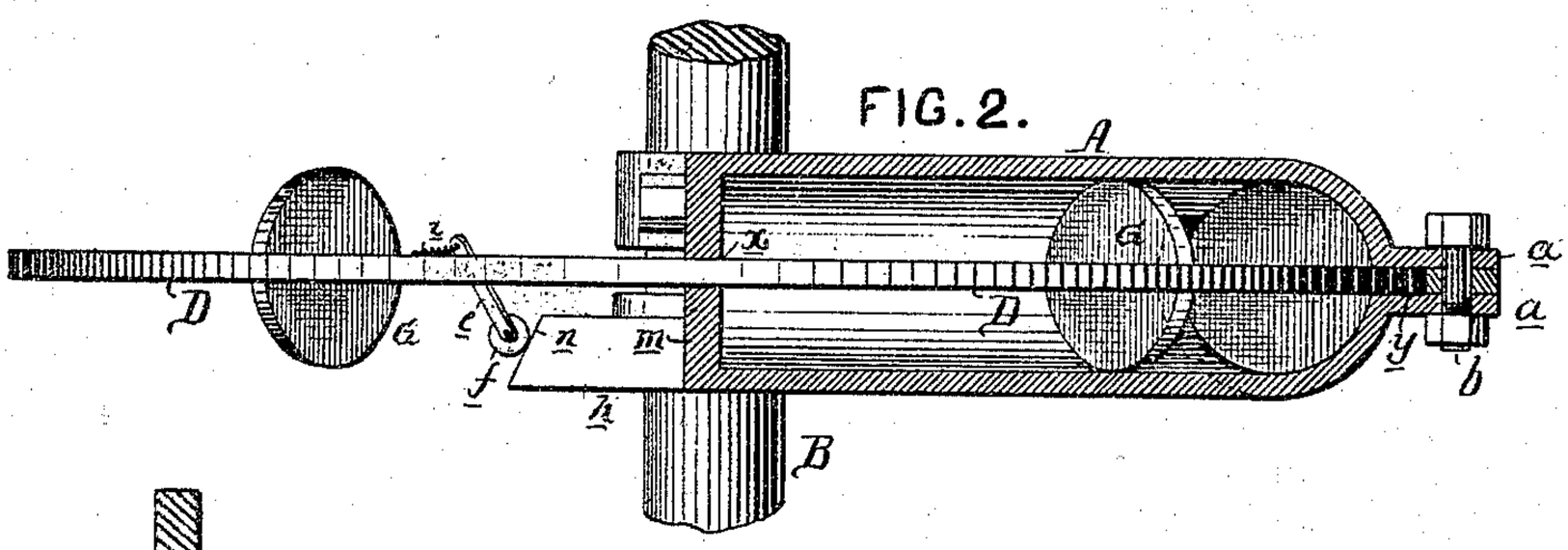


FIG. 5.

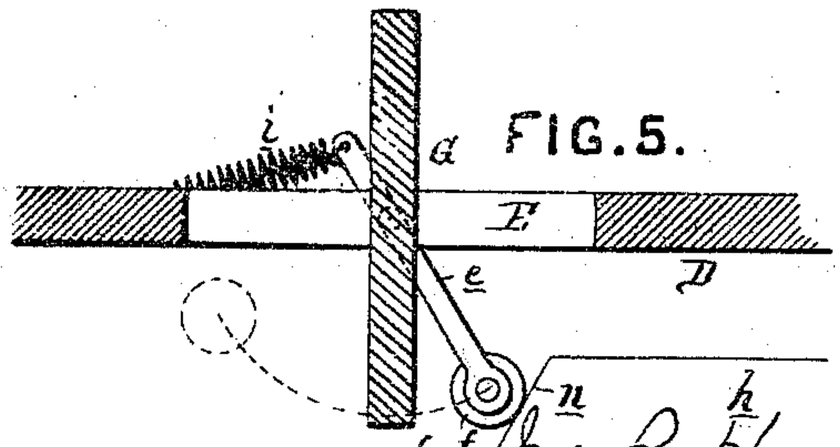
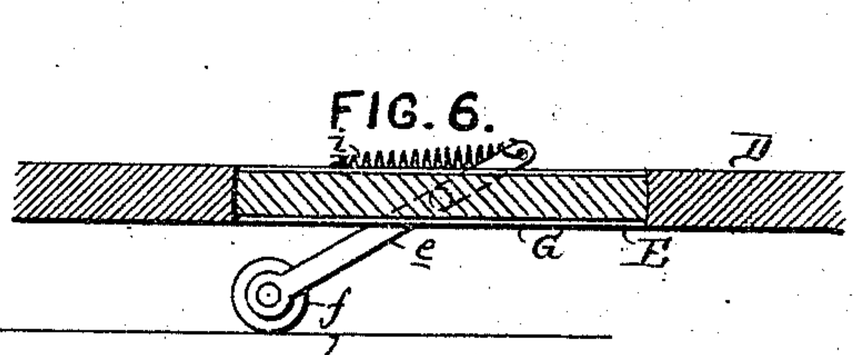


FIG. 6.



WITNESSES { Jno. B. Hardwig. Thos. McElwain.

William J. Tate by his Attys Howson and Son

UNITED STATES PATENT OFFICE.

WILLIAM J. TATE, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN HYDRAULIC ENGINES.

Specification forming part of Letters Patent No. 120,548, dated October 31, 1871.

To all whom it may concern:

Be it known that I, WILLIAM J. TATE, of Philadelphia, county of Philadelphia, State of Pennsylvania, have invented certain Improvements in Machinery for Obtaining and Applying Motive Power, of which the following is a specification:

My invention consists of certain mechanism, too fully explained hereinafter to need preliminary description, for obtaining rotary motion by the action of water or steam, or for applying motive power to the raising and forcing of water, or to the creation of a blast of air.

Figure 1 is a side view of my machine for obtaining and applying motive power; Fig. 2, a sectional plan on the line 1 2, Fig. 1; Figs. 3 and 4, detached views of part of the machine; and Figs. 5 and 6, enlarged views, representing the swivel-pistons or brackets in different positions.

A is a semi-annular or segmental casing, which is, in the present instance, composed of two sections secured together by bolts *b* passing through flanges *a a*, as seen in Fig. 2, the casing inclosing a semi-annular or segmental chamber concentric with a shaft, B, which is arranged to turn in suitable bearings on the said casing A, and to which is secured a ring, D, the latter fitting snugly in a slot, *x*, Fig. 2, in the closed front *m* of the casing, and projecting with its outer edge into an annular groove, *y*, formed between the two flanges *a a* of the casing. In the ring D is a number of circular openings, E, arranged at equal distances apart in a circle concentric with the shaft B, there being four such openings in the present instance. To a spindle, *d*, passing through the ring D and across each opening, is secured a disk, G, which can be moved to the position shown in Fig. 5, or to that shown in Fig. 6, the disk in the latter case exactly fitting in the opening E. The spindle *d* of each disk is furnished with an arm, *e*, carrying at its end a roller, *f*, which, under the circumstances described hereinafter, comes in contact with an inclined plane on a projection, *h*, of the casing A, and each arm is connected by a spiral spring, *i*, to the ring D, which tends to retain the disk in the position shown in Fig. 5. It should be understood that each disk G is of a diameter coinciding with the internal diameter of the casing, viewed transversely; that the front of the casing is closed at the top *m*, as shown in Fig. 3, with the exception of the slot *x*, Fig. 2, for the admission of the ring D, but open at the bottom *n*, as shown in Fig. 4.

Supposing the above-described mechanism to be used as a water-wheel, the water is introduced into the segmental chamber through a branch, *t*, and, acting on the nearest disk G within the chamber, will cause the ring D to revolve in the direction of the arrow, Fig. 1. As the disk G in that figure approaches the closed front *m* of the casing the roller *f* of the arm *e* will come in contact with the inclined plane *u* of the projection *h*, as shown in Fig. 5; and as the ring D continues to turn the disk will be moved to the position shown in Fig. 6, and, owing to the roller of the arm riding over the straight portion of the projection *h*, the disk will be retained in that position until it has passed through the slot *x* in the front *m* of the casing and into the interior of the same, when the disk, released from the control of the projection *h*, will at once resume the position shown in Fig. 5 and become the piston or bucket for the water to act against, and each disk in succession will perform this duty, and cease to perform it after it leaves the open end *n* of the casing, followed by the waste water.

The mechanism may be used as a steam-wheel or rotary steam-engine, the steam being introduced through the branch *t*, and, after acting on the disks to turn the shaft B, being discharged at the open end *n* of the casing.

The machine, instead of being used as a means of obtaining power from water or steam, may be employed as a medium for applying power—as a pump, for instance, or as a blower; in which case the shaft B and its ring D must be revolved in a direction contrary to that pointed out by the arrows, the water or air being permitted to enter the open end *n* of the casing, and being forced through the same and through the branch *t*, and the disks being closed, as shown in Fig. 6, before and during their passage through the slot *x* at the closed end *m* of the casing.

Without restricting myself to any specific devices for controlling the disks,

I claim—

The combination of the semi-annular or segmental casing A and the revolving ring D carrying disks G adapted to the said casing and hung to the ring D so that they can be brought flush with or at right angles to the face of the same, all substantially as and for the purpose set forth.

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

Witnesses: WILLIAM J. TATE.

JOHN K. RUPERTUS,

W. J. R. DELANY. (118)