R. J. CARTMEL.

Hydraulic-Engine.

No. 212,591. Patented Feb. 25, 1879.

FIG. 1

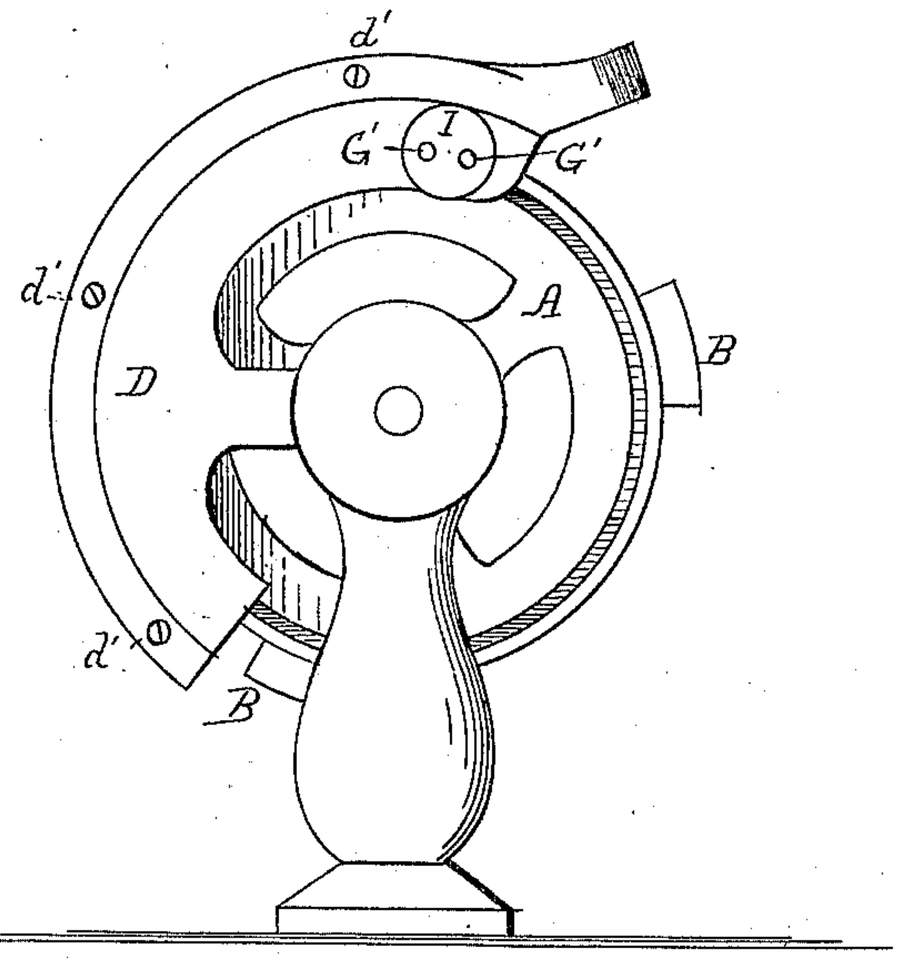


FIG. 2

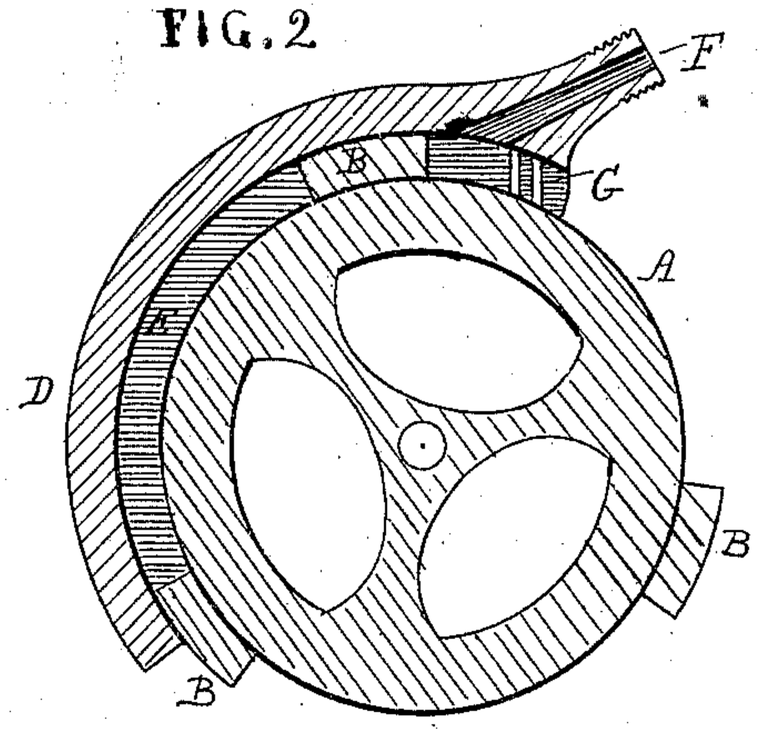


FIG. 3

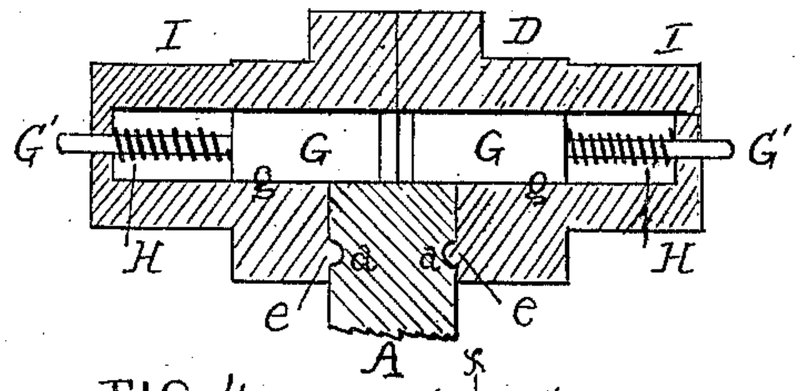
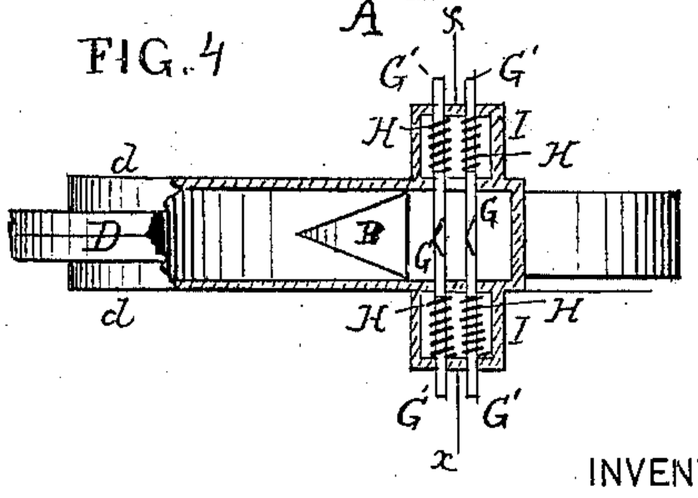


FIG. 4



WITNESSES

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ROBERT J. CARTMEL, OF SANTA ROSA, CALIFORNIA.

IMPROVEMENT IN HYDRAULIC ENGINES.

Specification forming part of Letters Patent No. **212,591**, dated February 25, 1879; application filed December 17, 1877.

To all whom it may concern:

Be it known that I, ROBERT J. CARTMEL, of Santa Rosa, in the county of Sonoma and State of California, have invented certain new and useful Improvements in Hydraulic Engines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to an improved hydraulic engine, its object being to utilize both the momentum and the hydraulic pressure of a column or body of falling water, and to produce an apparatus simple and cheap in its construction and highly efficient in operation.

To this end my invention consists of a rotary disk or wheel provided with a series of beveled projections or pistons on its periphery, and journaled in bearings forming part of a segmental shell or casing, which is provided with a segmental chamber, in which the periphery of the wheel or disk and its projections or pistons are adapted to travel, the said segmental chamber being provided at its upper end with horizontal valves, adapted to be operated laterally by the beveled projections or pistons, and with an induction-port for the entrance of water, the water escaping at the lower end of the chamber and rotating the wheel or disk in its passage through said chamber, as more fully hereinafter set forth.

My invention further consists in the combination, with the segmental shell or casing and the rotating disk, of two segmental shoulders, formed at the lower edges of the segmental chamber, and projecting inwardly into annular grooves formed on opposite sides of the rotating disk or wheel, whereby the escape of water between the joints at the sides of the disk or wheel and the segmental chamber is prevented.

Figure 1 represents a side elevation of my engine; Fig. 2, a vertical section; Fig. 3, an enlarged sectional view through the valve-boxes, and Fig. 4 a top view with a portion of the casing removed.

The letter A represents a rotating disk or wheel, constructed of any suitable material, preferably, however, of metal, and provided with a series of any suitable number of projections or pistons, B, on its periphery, three of said projections or pistons being employed in the present instance. The shaft of the wheel or disk A is journaled in suitable bearings C, which are attached to or formed with a segmental casing, D, which is provided with a segmental chamber, E, which sits over, and in which the periphery of the wheel A and its projections or pistons travel.

The segmental casing is constructed in two parts, *d d*, as shown in Fig. 3, which are secured together by means of screws *d' d'*, or in any other convenient manner. One of said parts may be provided on its face with a raised segmental bead, which sets into a segmental groove in the face of the other part, serving to pack the joint between the two parts and keep said parts in fixed position. At the lower edges of the segmental chamber E are formed two segmental inwardly-projecting shoulders, *e*, which set into annular grooves *a*, formed on opposite sides of the disk or wheel A, serving to pack the joint between the wheel and disk and the segmental chamber, thereby preventing the escape of water.

The projections or pistons B are beveled or inclined on opposite sides from their rear to their front portions, terminating in a point in front, in such manner as to separate the valves G laterally as they pass successively into the chamber. Said valves are located directly below the induction-port F of the engine, which port lies preferably in a line tangential to the segmental chamber, in order to offer no angular obstructions to the entrance of the water, thus securing the full benefit of the momentum of the same. The said valves are secured and adapted to travel in ways *g*, formed in suitable chambers I, located at each side of the casing or shell, and are operated by means of springs H, after the passage of the pistons, to close the chamber.

In order to provide for greater security against the escape of water behind the pistons, two sets of said horizontal valves are preferably employed, one located immediately at the rear of the other, in such manner that the rear valves will fully close before the piston has fully passed the front valves. I do not,

however, intend to limit myself to said double valves.

In order to provide for the separation of the valves by the pistons the adjoining edges are beveled, as clearly shown in the drawings.

The operation of my invention will be readily understood from the above description.

Power is transmitted from the wheel to any suitable machinery by means of a pulley on the journal of the wheel and a belt extending therefrom to the machinery.

Having described my invention, what I claim is—

1. In combination with the segmental chamber and the rotating disk, the horizontally-working valves and laterally-beveled pistons, adapted to automatically operate the valves, substantially as specified.

2. In combination with the segmental shell and rotating disk, the segmental shoulders setting in the annular grooves in the disk, substantially as and for the purposes specified.

In testimony that I claim the foregoing as my own I hereunto affix my signature in presence of two witnesses.

R. J. CARTMEL.

Witnesses:
JAMES H. MCGEE,
D. C. RUPE.