(No Model.)

J. L. HENDERSON.

MOTIVE ENGINE.

No. 466,237. Patented Dec. 29, 1891.

Fig. 1.

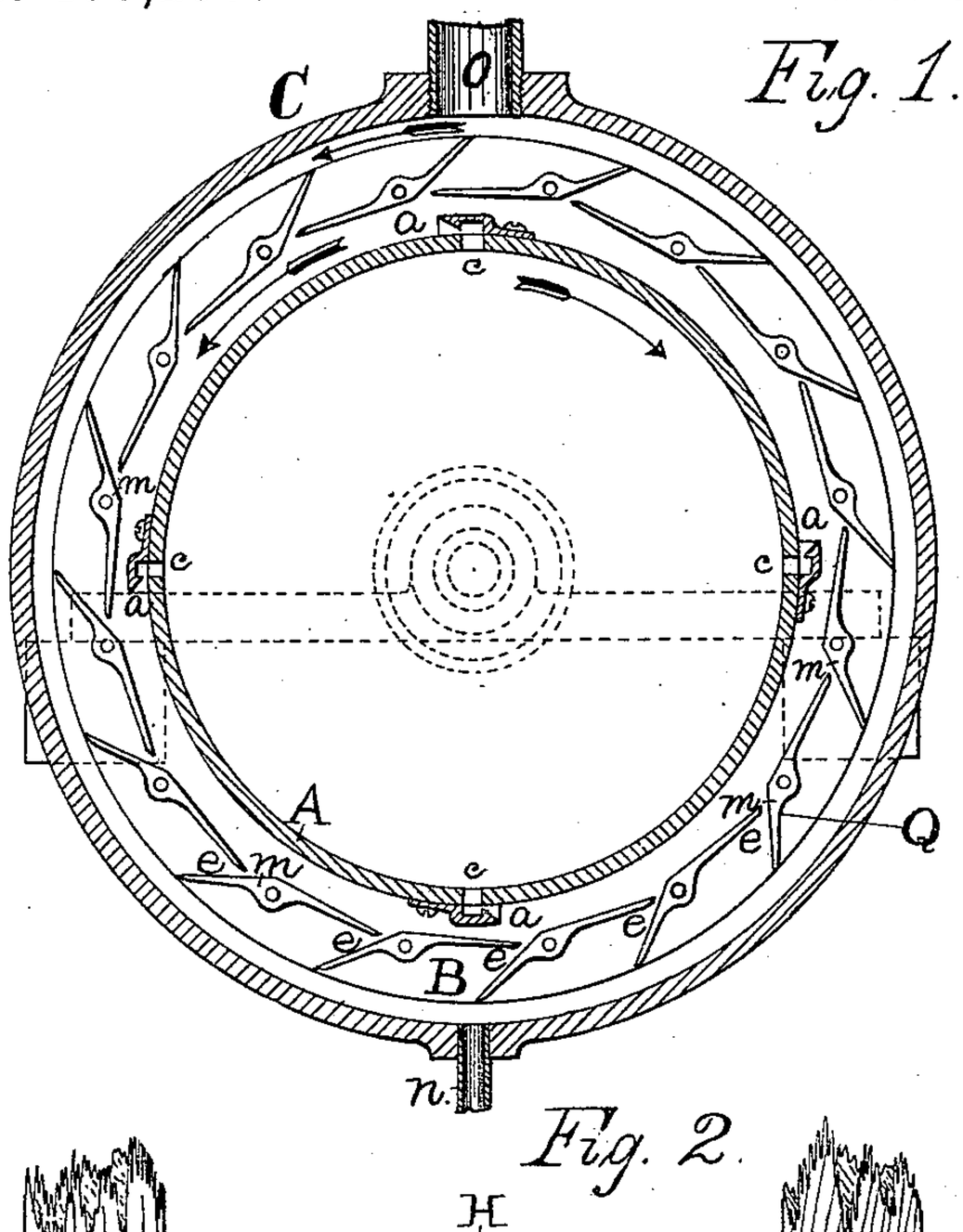


Fig. 2.

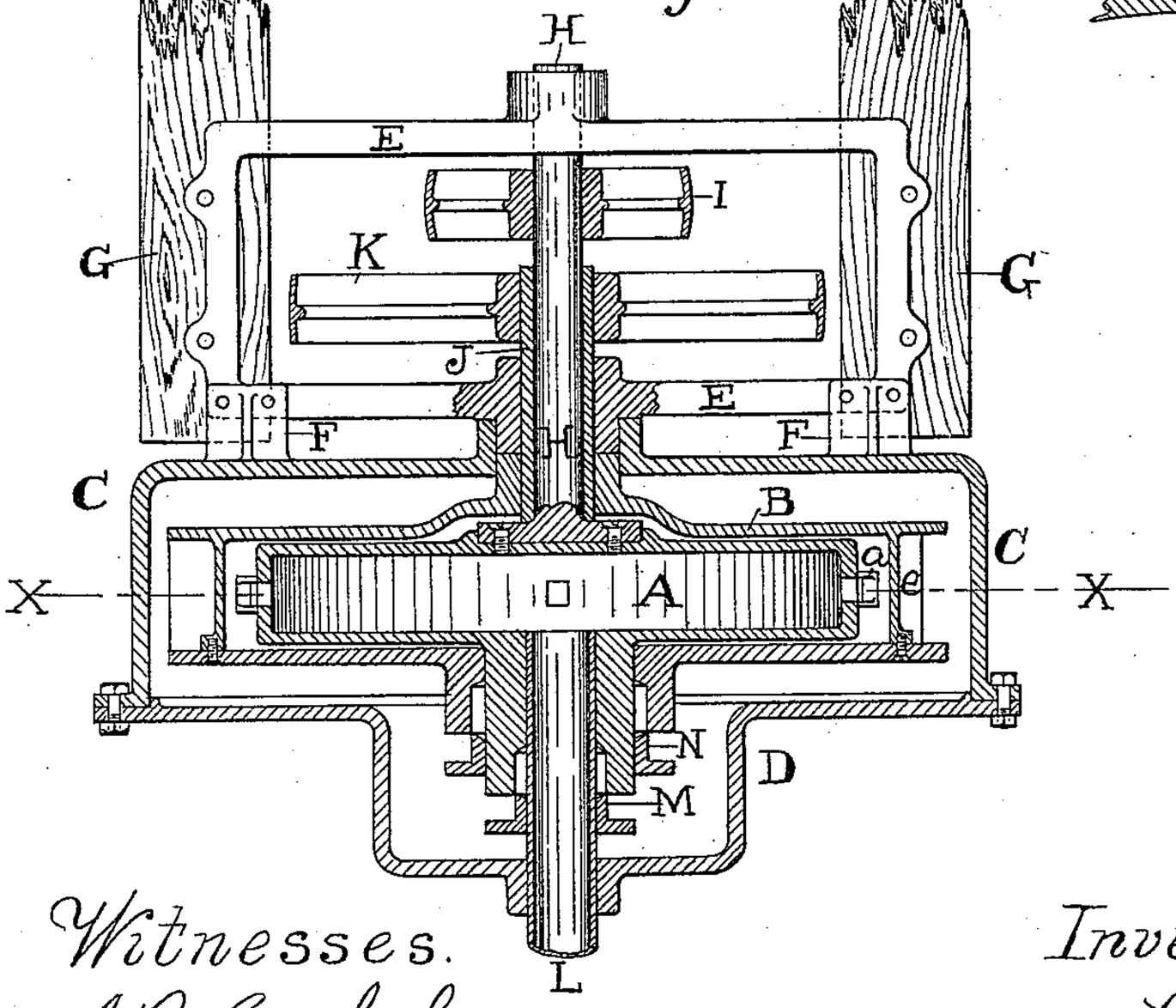
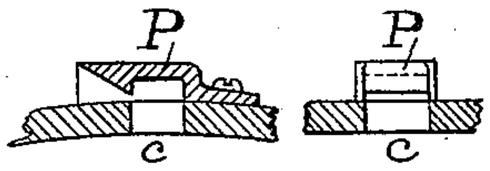


Fig. 3.



Witnesses.
A. R. Carlyle.
J. Mills

Inventor.
James L. Henderson
by John Richards Atty.

UNITED STATES PATENT OFFICE.

JAMES L. HENDERSON, OF ALAMEDA, CALIFORNIA, ASSIGNOR OF ONE-HALF TO ALFRED LATHAM, OF SAME PLACE.

MOTIVE ENGINE.

SPECIFICATION forming part of Letters Patent No. 466,237, dated December 29, 1891.

Application filed August 18 1891. Serial No. 403,004. (No model.)

To all whom it may concern:

Be it known that I, JAMES L. HENDERSON, a citizen of the United States, residing in the city and county of Alameda, State of California, have invented a new and useful Motive Engine to be Impelled by Elastic or Inelastic Fluids; and I hereby declare the following specification and drawings accompanying the same to be a full and exact description of my invention.

My invention relates to that class of motive engines in which the impelling force acts continuously by impact, reaction, and also by expansion in the case of elastic fluids; and it consists of a primary revolving wheel or cylinder filled by the impelling-fluid under pressure and having on its periphery tangential jets which discharge the fluid against the vanes of a second cylinder or wheel, having also issuing apertures and revolving in an opposite direction in the case of the impelling-fluid being inelastic, or, if desired, in the case of an elastic fluid, both wheels running in the same direction, the issues being arranged accordingly.

My invention also includes various details of construction that will hereinafter be explained in connection with the drawings, in which—

Figure 1 is a section through one of my improved motive engines, taken in the center of the plane of rotation. Fig. 2 is a partial section of the same engine, taken transverse to Fig. 1 on the axis of rotation; and Fig. 3 is an enlarged detail showing the nozzles or issues of the initial or inner cylinder of my engine.

Similar letters of reference indicate corresponding parts.

The main operating parts of the engine, consisting of the revolving cylinders or wheels A and B, are inclosed in a case or frame C, which envelopes the whole, prevents radiation of heat, and retains vapor or fluid escaping from the engine, so that it will be discharged at the pipe O, any condensed water escaping at the drain-pipe *n*. The main casing C has on the front a removable cover D, which permits the main running parts A and B of the engine to be removed or replaced, and is bolted to a sole plate or frame E by flanges F. This frame E is in turn fastened to either a masonry foundation or timber framing G, as shown in Fig. 2. The inner wheel A is attached to and revolves with the shaft H and the pulley I in the direction indicated by arrows in Fig. 1. The outer wheel B is attached to and revolves with the tubular shaft J and the pulley K, also as indicated by arrows in the same figure.

Entering the inner wheel A at the front is a pipe L, through which the impelling-fluid is introduced, a close joint to resist pressure being formed by the packing-gland M, Fig. 2. The outer wheel B is also provided with a packing-gland N, so that the interior of both wheels A and B can be filled under pressure with steam, water, or other fluid, and none escape, except through the actuating-orifices *a* and *e* of the two wheels. The inner wheel A being filled with fluid under pressure, it is discharged at the orifices *a*, formed by caps P, which can be bolted on, as shown in the enlarged view, Fig. 3, or can be formed integrally with the wheel-rim, if desired. These orifices *a* are made tapering or flaring, as shown, so that their section will conform in some degree to the expansion of steam, air, or other elastic fluid when such is employed, the holes *c* through the rim of the wheel A being made large enough to cause no retardation at that point and before the most contracted portion or beginning of the issue *a* is reached. Issuing from these orifices *a*, the fluid impinges on the vanes Q of the outer wheel B at the points *m m*, Fig. 1, and then escapes at the orifices *e* in a reverse direction, causing a reactive force thereby, and is then retained by the outer casing C and discharged at the pipe O. The first or initial wheel A thus receives the reactive force of the fluid as it issues at *a* and the second wheel the impact at *m m*, also the reactive force of issue at the orifices *e*, both wheels utilizing the expansion of the impelling-fluid when it is of elastic nature, as before explained. In the case, however, of employing an elastic fluid when expansion is a more important force than impact, the issues of the outer wheel B can be reversed, and both wheels A and B revolve

in the same direction. The initial energy of the impelling-fluid is thus applied to and divided between the two wheels A and B in such ratio as their relative rate of rotation may determine, which rate is governed by the method of connecting them together.

The pulleys I and K or other gearing to connect the wheels A and B can be so arranged as to modify the relative velocity of the wheels and the share of initial energy applied to each. I do not, therefore, confine myself to the proportions or form of gearing shown, as other well-known devices would produce the same result.

Having thus described the nature and objects of my invention and manner of constructing the same, what I claim as new, and desire to secure by Letters Patent, is—

1. In a motive engine, the two wheels A and B, said wheel A being provided with cap-covered orifices which provide tangential fluid-outlets, and said wheel B being provided with a series of angular plates, between which are intermediate openings adjacent to the periphery of the other wheel, all arranged so that each wheel will receive and impart a portion of the energy of the impelling-fluid, substantially as described.

2. In a motive engine, the wheel A, having in its periphery cap-covered orifices which provide tangential fluid-outlets, and the outer wheel B, having a series of angular plates or surfaces revolving at such slower velocity as to substantially equalize the energy of the impelling-fluid on the two wheels, substantially as described.

3. In a motive engine, the wheel A, having in its periphery cap-covered orifices which provide tangential fluid-outlets, an inlet pipe or conduit for conveying the impelling-fluid into the interior of wheel A, and the outer wheel B, provided with the angular vanes Q, which provide surfaces against which the fluid impinges as it issues from the orifices in the periphery of wheel A, said vanes Q having the intermediate orifices *e*, through which the fluid passes in a reverse direction, causing a reactive force thereby, substantially as described.

4. In a motive engine, the combination of the two wheels A and B, said wheel A having the peripheral orifices *c* covered by the external caps P, having flaring openings *a*, and said wheel B having the reversely-directed orifices *e*, substantially as described.

5. In a motive engine, the combination of the wheel A, which contains the impelling-fluid, the periphery of said wheel being provided with a suitable number of holes *c*, the cap-plates P, bolted upon the rim adjacent to said holes and having the tapering or flaring orifices *a*, which are contracted in size at a point immediately adjacent to the hole *c*, and the wheel B, having the vanes Q, between which are the orifices *e*, which act reversely to the orifices in the wall A, substantially as described.

In testimony whereof I have hereunto affixed my signature in the presence of two witnesses.

JAMES L. HENDERSON.

Witnesses:
ALFRED A. ENQUIST,
WILSON D. BURT, Jr.