E. ROLLAND.

HYDRAULIC REACTION WHEEL FOR WATERING OR OTHER PURPOSES.

APPLICATION FILED AUG. 27, 1919.

1,435,140. Patented Nov. 7, 1922.

2 SHEETS—SHEET 1.

Fig. 1.

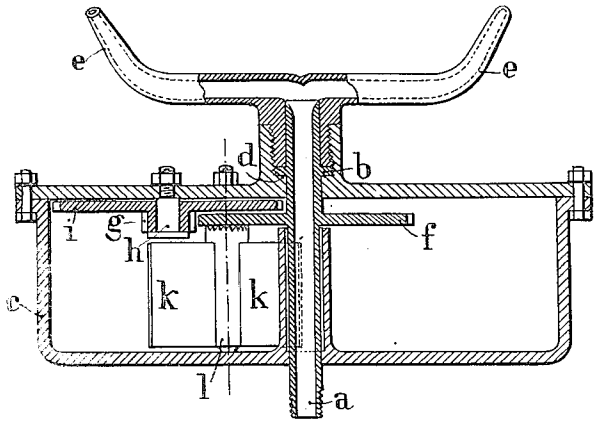
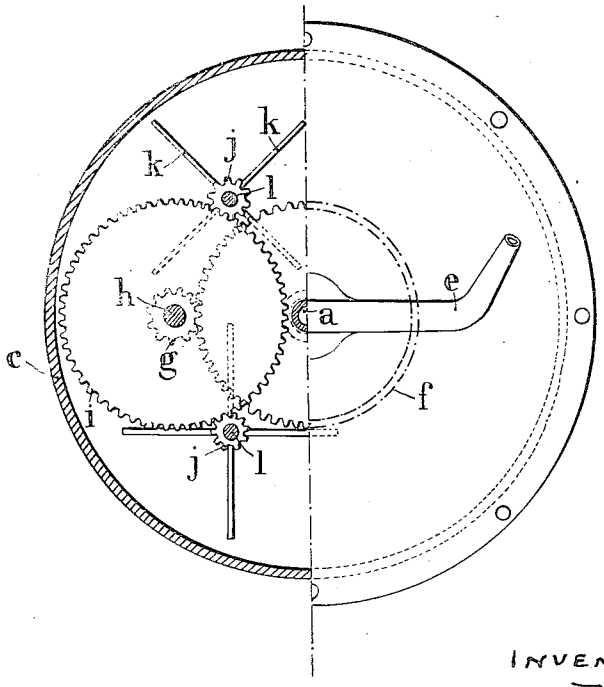


Fig. 2.



INVENTOR

EDMOND ROLLAND

BY Howson and Howson

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2 SHEETS—SHEET 2.

Fig. 3.

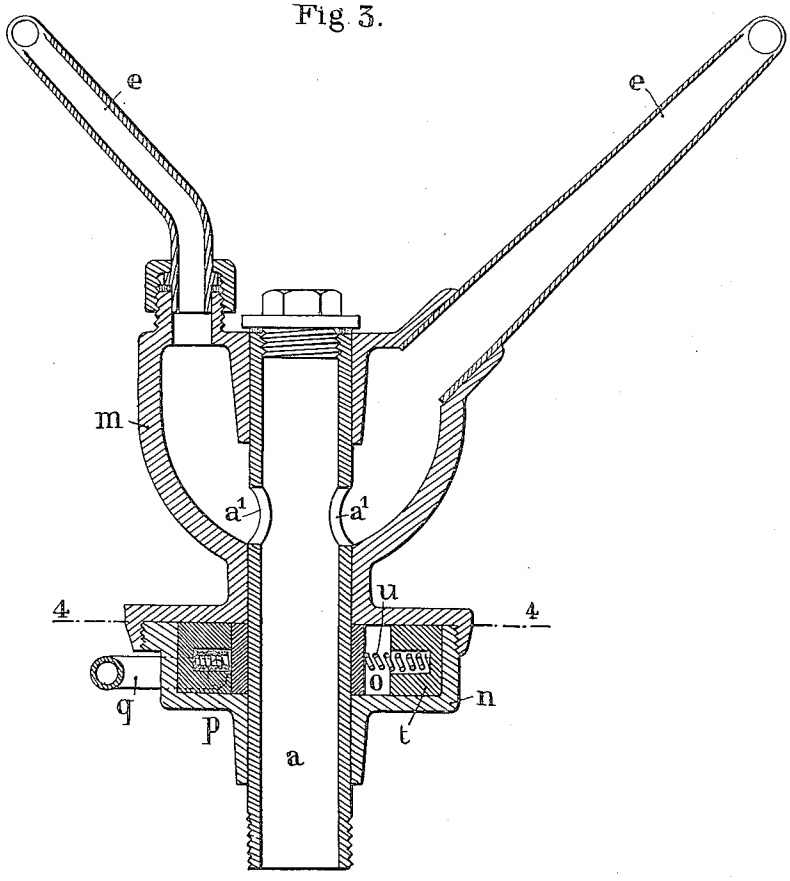
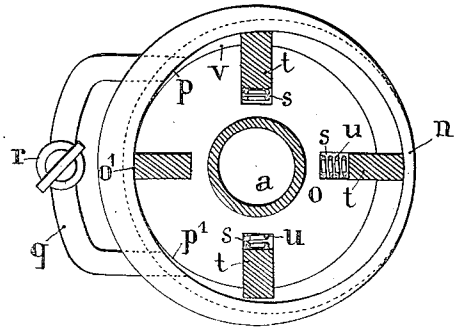


Fig. 4.



INVENTOR

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Patented Nov. 7, 1922. 1,435,140

UNITED STATES PATENT OFFICE.

EDMOND ROLLAND, OF BOULOGNE-SUR-SEINE, FRANCE.

HYDRAULIC REACTION WHEEL FOR WATERING OR OTHER PURPOSES.

Application filed August 27, 1919. Serial No. 320,192.

To all whom it may concern:

Be it known that I, EDMOND ROLLAND, a citizen of the Republic of France, and a resident of 24 Rue de Sèvres, Boulogne-sur-Seine, Seine, France, have invented new and useful Improvements in Hydraulic Reaction Wheels for Watering or Other Purposes, of which the following is a specification.

This invention relates to an improvement in hydraulic reaction wheels for watering or other purposes, which can be used for any desired outputs, characterized by the said wheel being combined with a brake device intended to reduce its speed of rotation for the purpose of avoiding any deformation of the sprays or jets of water by centrifugal force, and of thus ensuring the maximum reach.

Two constructions of a device according to the invention are illustrated by way of example in the accompanying drawings.

Figure 1 is a vertical axial section of a first construction,

Figure 2 is a corresponding plan of the same, half in section and half in elevation,

Figure 3 is a vertical axial section of a second construction and

Figure 4 a section on line 4—4 of Figure 3.

According to the first construction, the water inlet or supply branch a provided with a collar b, forms an axis to a casing c. The collar b mounted with a slight amount of friction in a seat d of the casing c, prevents any vertical movement of the said casing. The branches e of the hydraulic reaction wheel are screwed into the seat d for which they form a plug.

On the branch a, and inside the casing c, is secured a gear wheel f which meshes with a pinion g mounted on a spindle h bolted to the upper wall of the casing c. A gear wheel i secured to the pinion g, meshes with two pinions j secured to blades k trunnioned on spindles l secured to the casing c.

The casing c is filled with any desired fluid in which the blades, during the working of the reaction wheel, have a double movement of rotation.

The water admitted through the branch a, escapes through the branches e; the reaction produces a rotation of the said branches and of the casing c; the toothed wheel f remaining stationary, the blades k are caused to rotate by means of the pinion g meshing with the wheel f, the wheel i and the pinions j. The blades rotating in the fluid contained in the casing, oppose to the rotation of the latter a resistance which is a function of the multiplication or ratio of the wheels and pinions f, g, i, j and of the viscosity of the fluid.

The fluid utilized could be for instance air, water, oil, etc., according to the speed with which it is desired to work the reaction wheel.

It is also possible to act on the quantity of the fluid contained in the casing, for the purpose of varying the speed of the reaction wheel.

According to the second construction, the water inlet branch a forms the spindle for a hollow core m which carries the branches e of the reaction wheel; openings a^1 are provided in the branch a for the passage of water from the said branch to the branches e. The hollow core m is extended at the bottom by a circular box n eccentric relatively to the axis of the branch a. In the interior of the said box n is arranged a circular disc o secured to the branch a and centered relatively to the same; it is in contact with the inner wall of the box n at a point o^1. At either side of the said point are provided in the box n openings p and p^1 connected together by a pipe q in which is provided a cock r.

The disc o carries rectangular mortises s in which can move blades t always in contact with the inner wall of the box n under the action of helical springs u.

The water admitted through the branch a, passes through the openings a^1, fills the core m and escapes through the branches e, producing at the same time a rotation of the hollow core and of the box n secured to it; the device contained in the said box playing the part of a rotary pump, the liquid contained in the space v tends to escape through the pipe q and offers to the movement of rotation of the core m a resistance which is the greater, the less liquid is allowed to pass through the cock r. It is therefore possible, by regulating the opening of the cock, to regulate at will the speed of rotation of the reaction wheel.

In this construction, the thrust of water on the movable part is practically cancelled, owing to which the friction of the box n on the disc o is done away with; the same ar-

rangement could be applied to the first construction, so as to do away with the friction of the collar *b* on the casing *c*.

Various modifications in detail of construction will readily occur to those skilled in the art which do not depart from what I claim as my invention.

Claims:

1. A hydraulic reaction wheel having an inlet duct, a brake device mounted thereon, and comprising a brake member connected to said wheel and rotating therewith, a brake fluid casing in which the brake device is housed, and within which it rotates in operative association with the braking fluid, substantially as described.

2. A hydraulic reaction wheel having an inlet duct, a brake device mounted thereon, and comprising a group of blades operated by the rotation of the wheel, and a fluid casing housing said blades and adapted to contain a brake fluid engaged by said blades during the operation of the wheel.

3. A hydraulic reaction wheel having an inlet duct, a brake device mounted thereon, said brake device comprising a pinion rigid with the inlet duct, planetary gear rotating with the reaction wheel and meshing with said stationary pinion on the inlet duct, together with a fluid casing and blades rotated in said fluid casing by said planetary gear to afford a braking action, substantially as described.

In testimony whereof I have signed my name to this specification.

EDMOND ROLLAND.

Witnesses:

JACQUES ARMENGAUD,

PIERRE ARMENGAUD.