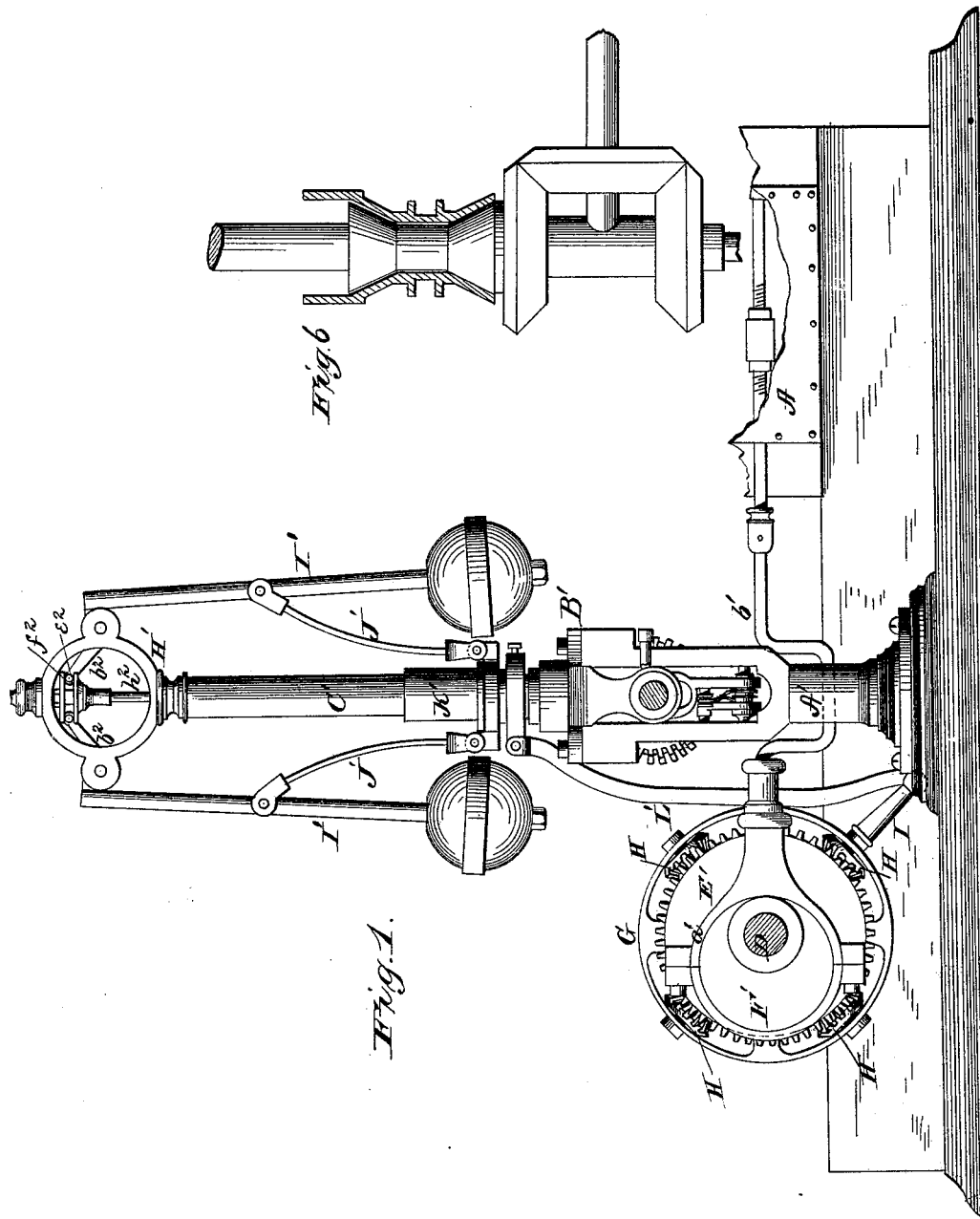


M. L. JACQUEMIN.
Governor.

No. 219,951.

Patented Sept. 23, 1879.



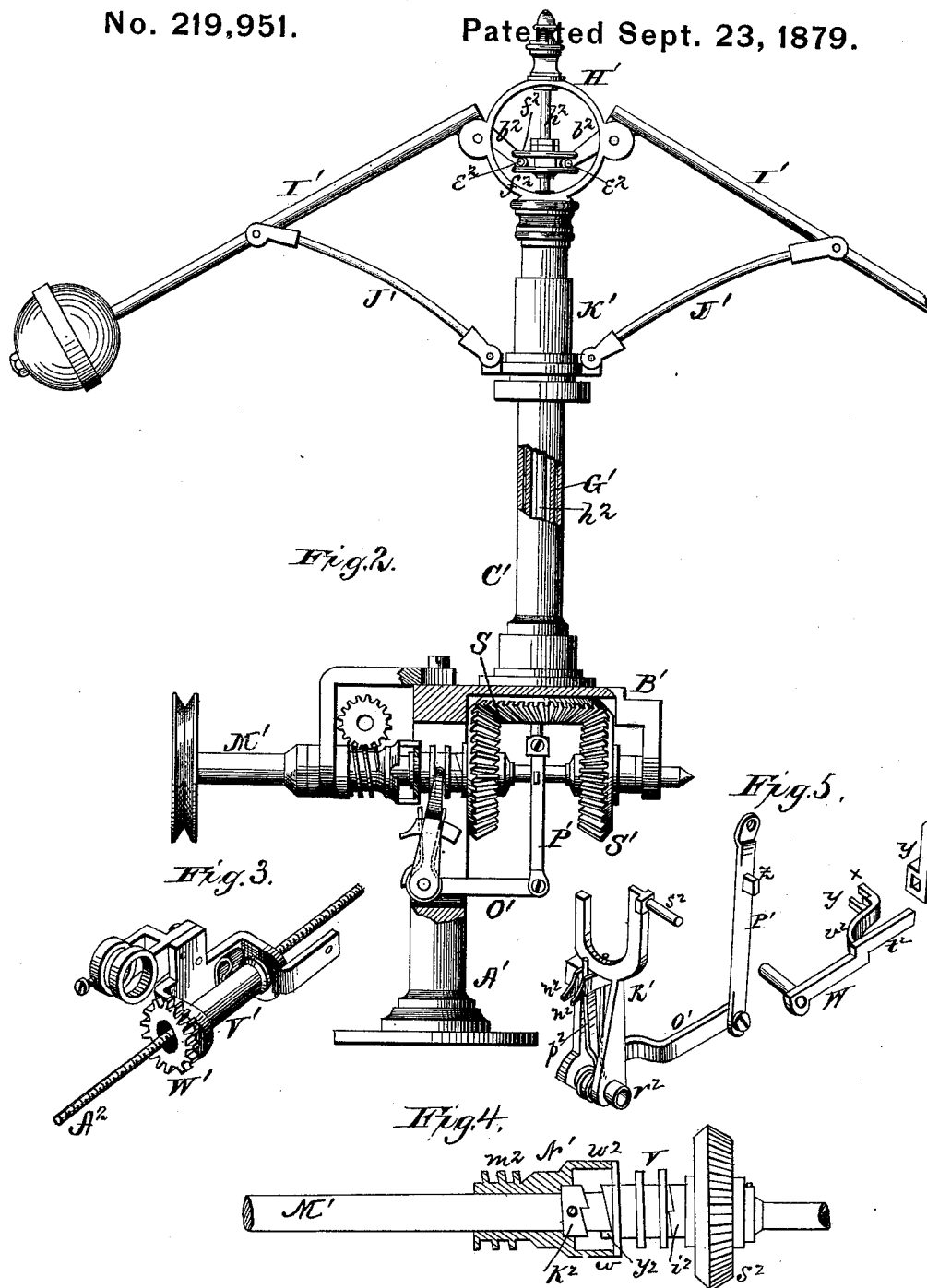
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MATHIAS L. JACQUEMIN, OF COUNCIL BLUFFS, IOWA.

IMPROVEMENT IN GOVERNORS.

Specification forming part of Letters Patent No. **219,951**, dated September 23, 1879; application filed September 3, 1879.

To all whom it may concern:

Be it known that I, MATHIAS L. JACQUEMIN, of Council Bluffs, in the county of Pottawattamie, and in the State of Iowa, have invented certain new and useful Improvements in Governors; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

The nature of my invention consists in the construction and arrangement of a governor for engines, &c., as will be hereinafter more fully set forth.

In the annexed drawings, Figure 1 is a side elevation of my governor, showing the same connected to a valve-regulating mechanism. Fig. 2 is a similar view of the governor alone. Figs. 3, 4, and 5 are detailed views of the parts thereof. Fig. 6 shows a modification of a part of the governor.

A¹ represents the foot or stand of the governor, the upper portion of which is slotted, and has a suitable plate or bed, B', which supports the hollow column C' of the governor. Through this hollow column is passed a hollow tube, G', having a beveled cog-wheel, S, attached to its lower end immediately below the bed B'.

On the upper end of the hollow tube G' is attached a cap with frame H'.

Between suitable ears on opposite sides of this frame H' are pivoted the governor-arms I' I'. Each of these arms has an inward projection or extension, b², projecting at an angle through a slot into the frame, and on the end of said projection are side pins, e², which work between two slotted disks or collars, f² f², on a vertical rod, h², which passes through the interior hollow tube G'.

The governor-arms I' are, by rods J', connected with a sliding sleeve or collar, K', on the governor-column C', and this collar is, by a suitable coupling, connected with a rod, L', the other end of which is connected to an arm projecting from the mechanism for regulating the stroke of the cut-off valve.

M' is the governor-shaft, having its bearings in suitable hangers from the bed-plate B', and receiving its motion from the shaft on

which the valve-regulating mechanism is placed by means of pulleys and belt or otherwise, as may be deemed most convenient.

On the shaft M' is secured a beveled gear-wheel, S¹, which meshes with the gear-wheel S on the lower end of the hollow tube G', and thus communicates rotary motion to the governor-arms.

The governor is thus connected directly with the device for regulating the stroke of the cut-off valve, which is, therefore, done automatically with the greatest precision and regularity.

On the shaft M' is placed a loose bevel-gear wheel, S², which meshes with the wheel S opposite to the wheel S¹, said wheel S² being formed with a clutch-hub, i².

On the shaft M' is further secured a clutch-collar, k², and a loose sleeve, N', having exterior worm-threads m².

The vertical rod h² of the governor is, at its lower end by a bar, P', connected to the long arm of an elbow-lever, O', which is pivoted at its angle in the slotted portion of the governor-stand A¹.

The short or vertical arm of the lever O' has at its end two side plates, n² n², which project on both sides and form guides for the ends of a wire spring, p², the center of which is coiled around the pivot r² of the elbow-lever.

On the pivot r² is further pivoted an arm or lever, R', the upper end of which is forked and straddles a double clutch, V, placed on the shaft M' between the two clutches i² and k².

From the arm R' extends a pin, s², upon which is placed a bar, W. This bar is formed with two arms, t² and v².

The arm t² is straight and passes through a suitable guide, Y, while the arm v² is curved and formed with two projections, x and y, to be operated by a lug, z, on the bar P', which forms the connection between the vertical rod h¹ of the governor and the elbow-lever O'.

In suitable bearings attached to the governor-bed B' is placed a sleeve, V', having interior screw-threads, and through this sleeve is passed a screw-rod, A², which may be connected at one end directly to the arm or lever of the throttle-valve, or by means of an intermediate coupling, according to the location of the gov-

error. On the sleeve V' is a worm-gear, W' , which engages with the worm m^2 on the loose sleeve N' on the shaft M' . The loose sleeve N' has two projecting arms, w^2 , which fit in notches on a flange, y^2 , of the double clutch V , so as to be turned at all times therewith.

The normal position of the double clutch V is in gear with the clutch-collar k^2 , so that the said clutch and the sleeve N' will rotate in the same direction as the shaft M' . As the engine then is started, the sleeve N' rotates with the shaft and turns the worm-gear W' and sleeve V' , moving the rod A^2 in one direction to open the throttle-valve. As the speed of the engine increases and the governor-arms I' spread outward by the centrifugal force, the lug z on the bar P' arrives at the side of the lug x on the arm v^2 of the bar W .

The movement of the vertical rod k^2 of the governor, through the medium of the bar P' , turns the elbow-lever O' , so that if the speed of the engine still increases the lug z of said bar P' will pass down below the lug x , the spring p^2 will turn the arm R' , and thereby move the clutch V sufficiently far to disengage it from the clutch k^2 . The lug z being now against the lug y on the arm v^2 of the bar W , the double clutch V remains between the clutches i^2 and k^2 , and with the worm-sleeve N' stationary on the shaft; and during this time there is no change in the position of the throttle-valve. Should, however, the speed of the engine still increase, the lug z on the bar P' will pass down below the lug y , and the spring p^2 throws the double clutch entirely over and in gear with the clutch i^2 . This clutch forming part of the wheel S^2 , which revolves in the opposite direction to the shaft M' , it will readily be seen that the worm-sleeve N' receives a rotary motion in the opposite direction, to that of its former movement, and hence the rod A^2 will be moved in the opposite direction so as to commence operating the throttle-valve and shut off the power.

As the speed of the engine decreases the bar P' ascends again, and its lug z operates on the opposite sides of the lugs y x in a reverse man-

ner, so as to first place the clutch in the intermediate position, and finally back in contact or gear with the clutch k^2 .

By this device I establish an isochronous circle or determined zone of movement of the governor-balls, where no change is caused in the throttle-valve; but as soon as the governor-arms pass either above or below this circle the valve commences to change.

In some cases a friction-clutch may be used on the governor-shaft M' . My governor may be used with any kind of engine; also for water-wheels, &c.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a governor, the combination of a hollow column, C' , hollow tube G' , with bevel-gear wheel S , rod h^2 , governor-arms I' , with projections b^2 , having pins e^2 , collars f^2 , braces J' , and sleeve K' , all substantially as and for the purposes herein set forth.

2. In a governor, a mechanism whereby an isochronous circle is established, and no change in the valve made while the governor-arms rotate in such circle, substantially as herein set forth.

3. The combination, in a governor, of the shaft M' , loose wheel S^2 , having clutch i^2 , the stationary clutch k^2 , loose worm-sleeve N' , with arms w^2 , and the movable double clutch V , with notched flange y^2 , substantially as and for the purposes herein set forth.

4. In combination with the double movable clutch V , the forked arm R' , elbow-lever O' , double-acting spring p^2 , bar P' , with lug z , and the bar W , with arm v^2 , having lugs x y , substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 1st day of September, 1879.

M. L. JACQUEMIN.

Witnesses:

FRANK GALT,
C. L. EVERT.