(No Model.) 4 Sheets—Sheet 1.

F. L. WOLFE.

MECHANICAL MOVEMENT FOR ENGINE REGISTERS.

No. 526,885. Patented Oct. 2, 1894.

Fig. 1.

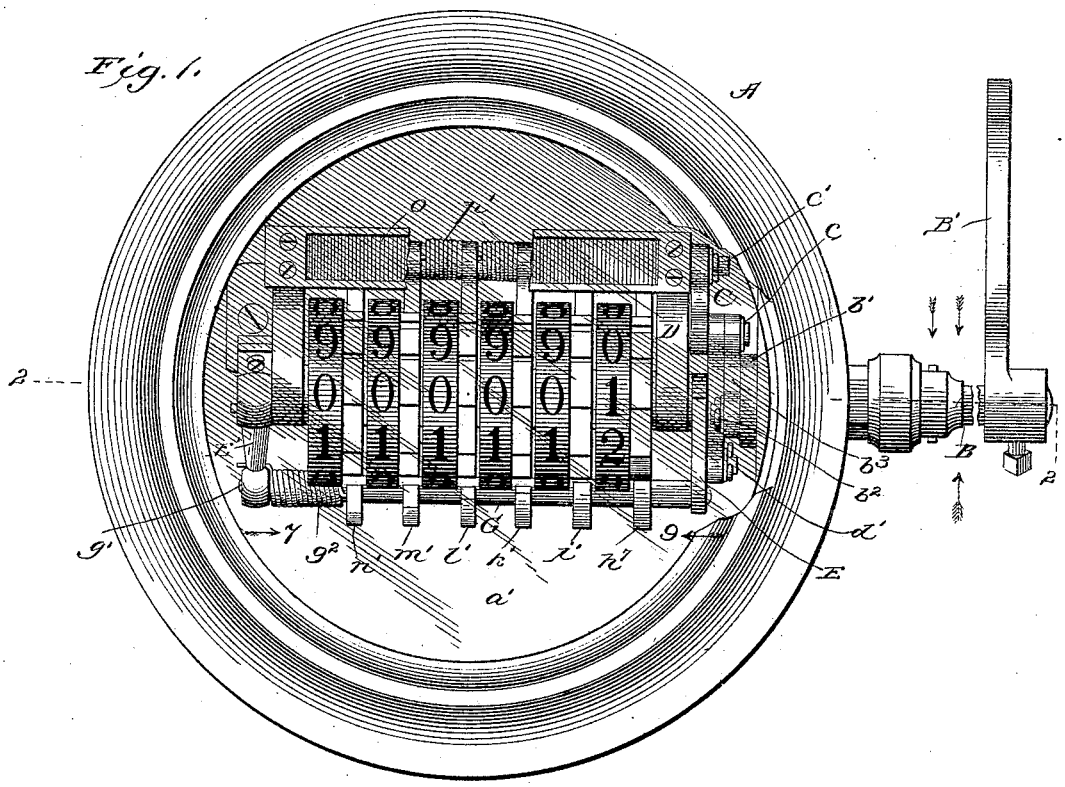

Fig. 2.

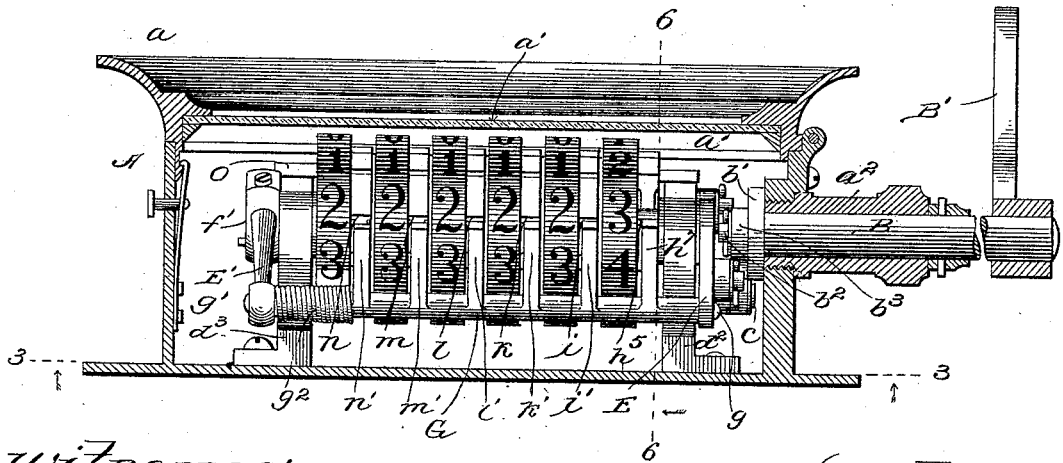

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Fig. 3.

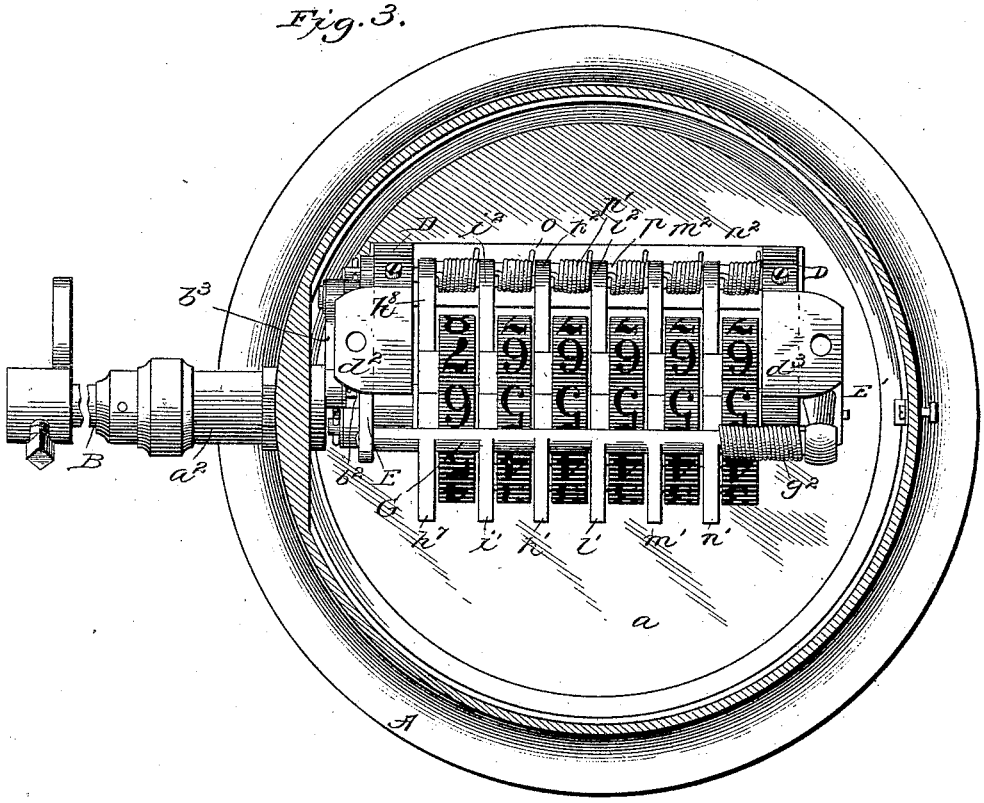

Fig. 4.

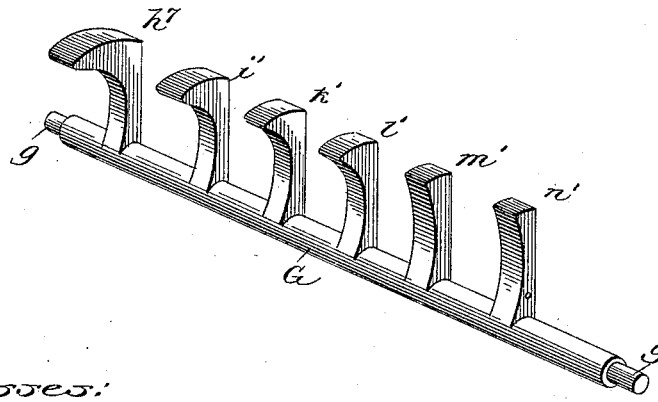

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Fig. 5.

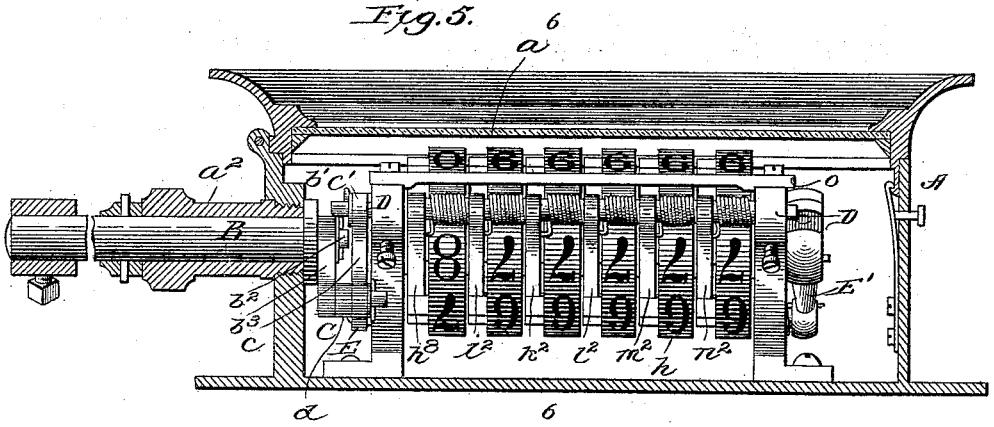


Fig. 6.

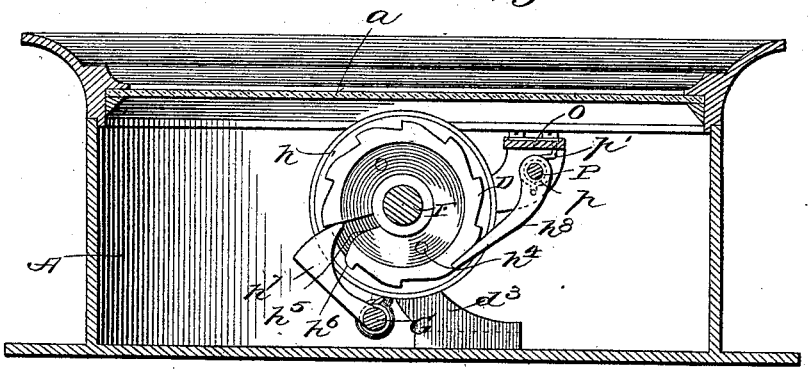
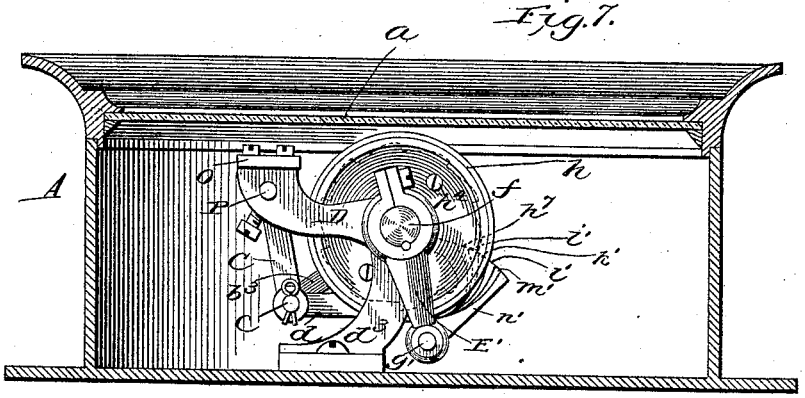


Fig. 7.



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(No Model.) 4 Sheets—Sheet 4.

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Fig. 8.

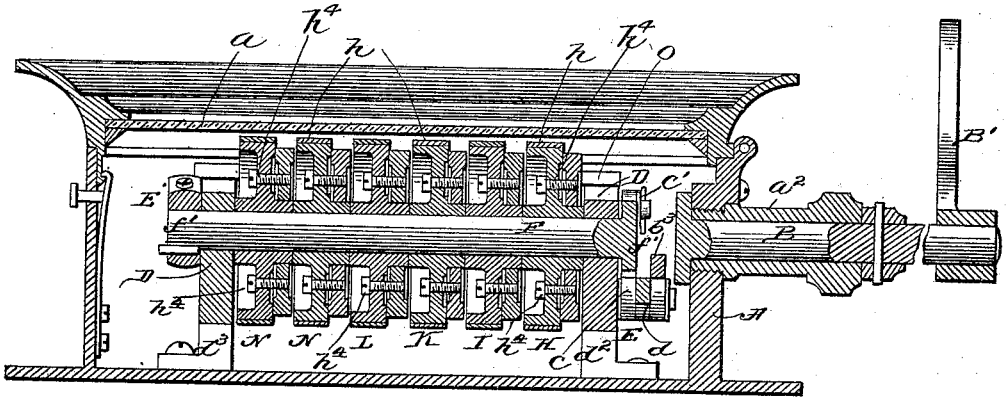


Fig. 9.

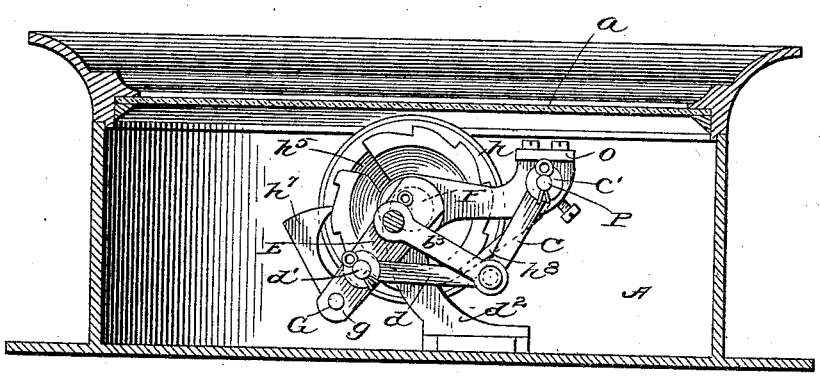


Fig. 10.

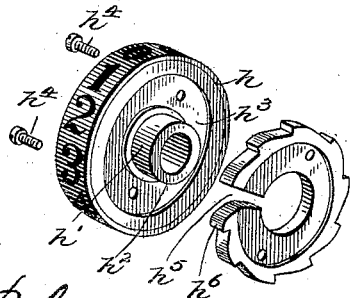
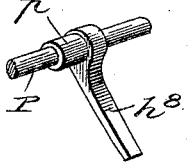


Fig. 11.



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UNITED STATES PATENT OFFICE.

FRANK LESLIE WOLFE, OF MEDFORD, ASSIGNOR TO THE CROSBY STEAM GAGE AND VALVE COMPANY, OF BOSTON, MASSACHUSETTS.

MECHANICAL MOVEMENT FOR ENGINE-REGISTERS.

SPECIFICATION forming part of Letters Patent No. 526,885, dated October 2, 1894.

Application filed December 2, 1893. Serial No. 492,623. (No model.)

To all whom it may concern:

Be it known that I, FRANK LESLIE WOLFE, a citizen of the United States, residing at Medford, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Engine-Registers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to an improvement in registers which are used to register the number of strokes of a moving part of machinery.

The object of the invention is to simplify the construction of such devices, to produce a register which works easily and smoothly whichever way the stroke is made without reference to any check pawls for preventing back motion, and also to produce a register in which the registering wheels may be set independent of one another.

The invention consists in a register having the construction hereinafter pointed out.

In the annexed drawings: Figure 1 represents a face view of the device, within a case and ready to be connected up. Fig. 2 is a diametric section through the register case on the line 2—2, Fig. 1, showing the operative parts in elevation. Fig. 3 represents an inverted view of the device along the line 3—3 of Fig. 2, looking in the direction of the arrows, the bottom of the case being removed. Fig. 4 represents a perspective view of the pawl bar with the pawls thereon. Fig. 5 is a diametric section through the register case, showing the operative parts in elevation, and taken through Fig. 1 in the opposite direction from Fig. 2, that, is looking in the direction of the two arrows, Fig. 2 being taken in the direction of the one arrow. Fig. 6 is a transverse section through Fig. 2 on the line 6—6 looking in the direction of the arrow, the case being taken in diametric section. Fig. 7 represents an end view of the registering apparatus looking in the direction of the arrow, 7, in Fig. 1. Fig. 8 is a diametric section taken entirely through the apparatus, including the register mechanism, along the line 2—2, Fig. 1. Fig. 9 is an end view of the device of the registering mechanism looking in the direction of the arrow, 9, Fig. 1, the case being shown in diametric section. Fig. 10 is a detail perspective of one of the registering wheels with its ratchet wheel. Fig. 11 is a view of one of the locking pawls.

In the drawings, the letter A indicates a suitable case provided with the hinge face, a, having the usual glass, a'. Within this case is placed the registering mechanism. Through a boxing, a^2, of this case the shaft, B, enters the said case and has on its inner end the disk, b', provided with the crank pin, b^2. Connected to this crank pin is the pitman, b^3, which engages the crank arm, c, of a crank, C, which is hung upon a pivot, c', upon a frame, D, to which frame is secured the registering mechanism as will be described. From the crank arm, c, a link, d, extends and is connected with a pin, d', upon the crank arm, E. This crank arm, E, is pivoted to the frame D which holds the registering mechanism. This frame, D, has the two end supports, d^2 d^3, in the frame of which are pivoted the crank arms, C and E. The crank arm, E, is pivoted to this support, d^2, by means of the protruding end, f, of the main shaft, F, such crank arm being secured to this shaft or made integral therewith. The other end, f', of this shaft, F, protrudes through the other support, d^3, and has keyed thereto a crank arm, E'. These crank arms, E and E', carry at their ends the pawl bar, G. On the shaft, F, between the supports, d^2 and d^3, are slipped the registering wheels, H I K L and M, such wheels snugly fitting the space between the supports, but loosely enough to turn independently of one another. As these wheels are constructed exactly alike save in one particular, which will be pointed out, a description of one will suffice for all. The detailed construction is shown in Fig. 10. Each wheel consists of a disk, h, having the characters from 0 to 9 on its periphery. This disk is made with a central boss, h', such boss having an end, h^2, which protrudes beyond the face, h^3, of the disk, the other side of the disk being concaved for lightness. Upon the end, h^2, is slipped the toothed plate, h^3, which is secured to the disk, h, by screws, h^4. The several toothed disks of the registering wheels are provided each with a deep notch, h^5 i k l

m and n, each one, after the first, shallower than the preceding one in the series, and all coming in the same place in the plates, and having the curved edge, h^6, to correspond with the curve of the teeth. The pawl bar, G, has made upon it the several pawls, h^7 i' k' l' m' and n', each pawl, after the first, having a head which is shorter than the head of the preceding pawl. The pawl bar, G, has its ends, g g', pivoted in the ends of the crank arms, E and E', and the pawls are so spaced apart that they align with the toothed plates upon the registering wheels and bear thereon, their due engagement being insured by a spring, g^2, which surrounds the bar, G, is secured at one end thereto, and at the other end to the crank arm, E'. At the other side of the registering wheels the supports, D and D', are connected together by a strong bar, O. Below this bar, O, a shaft, P, is journaled in the supports, D and D', and on the protruding end of this bar, P, at the support, D, the crank arm, C, may be pivoted. Sleeved upon this shaft, P, are the locking pawls, h^8 i^2 k^2 l^2 m^2 and n^2. Each pawl has a short sleeve, p, and on each sleeve is a coiled spring, p', one end of which is secured to the sleeve and the other bears against the bar, O. These pawls fit snugly side by side, each being adapted to engage the teeth of a toothed plate of a registering wheel and prevent back motion.

In use power is applied to the shaft, B, through the crank, B'. As this shaft turns the movement is communicated through the pitman, b^3, crank arm, C, link, d, and crank arm, E, to the pawl shaft, G. This brings the pawls toward the registering wheels. The first pawl, h^7, having the largest head engages a tooth of its toothed plate, the other pawls of the pawl bar not engaging. This causes the first registering wheel to turn. This movement continues during the strokes of the pawl bar until the notch, h^5, comes under the head of the pawl, h^7. This head dropping into the notch, h^5, permits the next succeeding pawl, i', to engage its toothed plate and turn the next registering wheel. This action continues until the notch in the toothed plate of the second wheel comes under the head of the pawl, i', when the pawl, k', engages its toothed plate, and so on for all the wheels, each pawl engaging when the pawl of the preceding wheel drops into a deep notch. All back movement of the wheels is prevented by the stop pawls; but the wheels are independent of one another and may be readily moved forward without any one disturbing another.

By the way in which the shaft, B, is connected to the pawl bar the latter is moved so as to turn the registering wheel, whatever may be the direction of the movement of the shaft, B.

Having thus described my invention, what I claim is—

The combination of the shaft, B, the pitman, b^3; the crank, C; the link, d, the crank arms, E and E', the frame, D, and the pawl bar, G, all arranged as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK LESLIE WOLFE.

Witnesses:

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RALPH W. FOSTER.