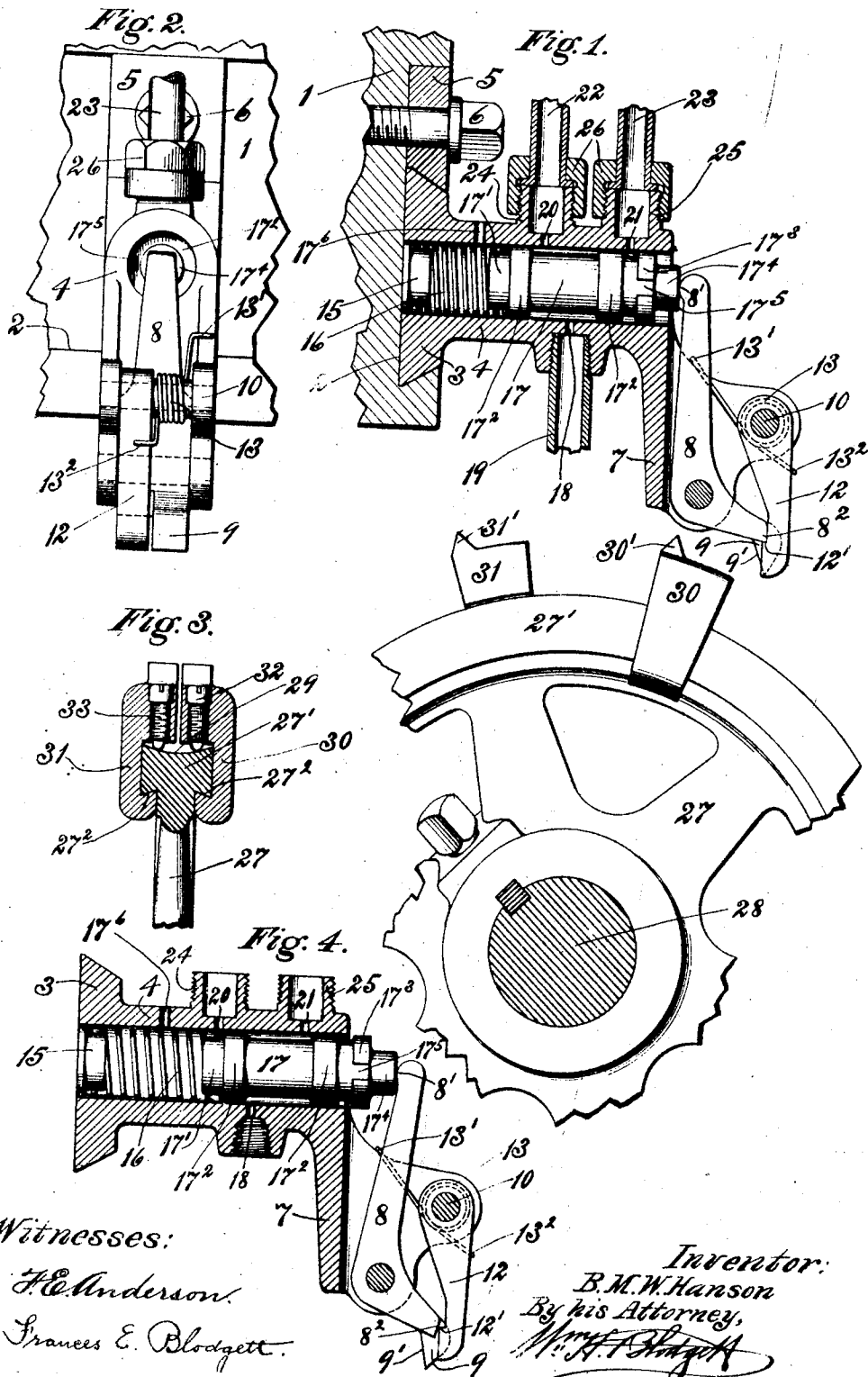


No. 826,502.

PATENTED JULY 17, 1906.

B. M. W. HANSON.
VALVE ACTUATING MECHANISM.
APPLICATION FILED DEC. 19, 1904.



Witnesses:

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UNITED STATES PATENT OFFICE.

BENGT M. W. HANSON, OF HARTFORD, CONNECTICUT.

VALVE-ACTUATING MECHANISM.

No. 826,502.

Specification of Letters Patent.

Patented July 17, 1906.

Application filed December 19, 1904. Serial No. 237,543.

To all whom it may concern:

Be it known that I, BENGT M. W. HANSON, a citizen of Sweden, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Valve-Actuating Mechanism, of which the following is a specification.

This invention relates to valve-actuating mechanism, and has for its object the provision of means for operating a valve of any suitable description and for locking said valve against movement except when released at predetermined times.

A further object of the invention is the provision of a piston-valve, lever, and cam mechanism for actuating said piston-valve and a latch for locking and releasing the lever.

A further object of the invention is the provision, in connection with the valve, lever, and latch described, of cams for actuating the lever and for releasing the latch, as will be hereinafter set forth.

In the accompanying drawings, Figure 1 is a longitudinal vertical section of the valve-casing and its supply and discharge pipes, the valve and its actuating and locking devices being shown in elevation. Fig. 2 is an end view. Fig. 3 is a section showing the shoes and cam-dogs hereinafter described. Fig. 4 is a longitudinal vertical section similar to the upper part of Fig. 1, but showing the valve in a different position.

Like numerals designate similar parts throughout the several views.

Referring to the drawings, the numeral 1 designates a section of the framework of any desired structure with which the valve is to be employed, and the numeral 2 a guideway having an undercut wall, said guideway receiving the dovetailed base 3 of a valve-casing 4 and the latter being held in place by a gib 5 and bolt 6. A slotted hanger 7 depends from the valve-casing 4, and in said hanger is pivoted an angle-lever 8, the long arm of which is rounded at 8' at its upper end and the short arm of which is beveled at 8² to form a catch-surface and below said surface has an extension 9, provided with an inclined inner wall 9' for a purpose hereinafter stated.

Journalled in the walls of the hanger is a shaft 10, carrying a depending latch 12, the free end of which has a shoulder 12', adapted to snap over the end 8² of lever 8 and to lock said lever in the position represented by Fig. 1. A torsion-spring 13, surrounding the

shaft 10 and one arm 13' of which bear against the hanger and the other arm 13 against the latch, serves normally to throw the latch to its locking position. (Shown in Fig. 1.)

In the valve-casing 4 is a longitudinal bore, and in said bore are mounted a plug 15, a coiled spring 16, and a spool-shaped valve 17, the latter having a tenon 17' entering the spring and collars 17², a slotted collar 17³, and a reduced extension 17⁴, against which the end of lever 8 bears.

In the valve-casing are an induction-port 18, communicating with the fluid-supply pipe 19, and eduction-ports 20 and 21, communicating with the discharge-pipes 22 and 23, the latter being held on chambered nipples 24 and 25 by couplings 26.

For actuating the valve-controlling lever and its latch any desired mechanism may be employed, or said parts may be manually operated in some instances, if required; but for accomplishing the results mentioned I have shown one form of mechanism which may be used, it being distinctly understood that my invention is not limited thereto, and which mechanism will now be described.

Designated by 27 is a carrier, shown as of wheel-shape, although it may be of other form, and this carrier is secured to a rotary shaft 28, which may constitute an element of a machine in which the valve is to be employed. This wheel is provided with a rim or periphery 27' of peculiar form, said rim having lateral undercut extensions 27² and a concave top 29 for a purpose hereinafter described. Shoes 30 and 31, each shaped on its under side to fit the undercut extension 27², are clamped to the rim of the wheel by screws 32 and 33, respectively, the points of which enter the concave recess 29, and by bearing against the wall of the same serve adjustably to clamp the shoes in place at the desired distance apart and to prevent them from lateral displacement. Beveled cam-dogs 30' and 31' are carried by the respective shoes, and these dogs actuate the latch 12 and the lever 8 in a manner now to be described.

In machines with which my invention may be employed it is frequently necessary to actuate certain parts on the forward movement of the valve and other parts on the reverse movement of said valve, and the pipes 22 and 23 are utilized to convey the motive fluid—for instance, compressed air—to the points

where it is utilized. As will be evident, the spring 16 normally tends to throw the valve 17 to the position represented in Fig. 4, the latch 12 having been first tripped to permit of this action. This tripping action of the latch is caused by the dog 30' of shoe 30, which as the wheel or carrier 27 rotates strikes the end 12' of the latch and forces said latch backward against the action of the spring 13 to the position represented in said Fig. 4. In this position of the valve motive fluid from the pipe 18 passes to the pipe 23, from which it is conveyed by suitable connections to the point where it is utilized. After the necessary dwell the valve is again shifted to the position illustrated in Fig. 1, and this is accomplished by the dog 31' of shoe 31, which dog as the wheel rotates will strike the incline of the projection 9' and actuate the lever 8 to force the valve 17 inward against the tension of spring 16, as shown in Fig. 1; thereby diverting the motive fluid to the pipe 22. When the lever is pushed inward, the shoulder 12' of latch 12 snaps behind the end 8' of the short arm of said lever and locks the lever until again released by the trip of the latch by dog 30', as above described. By adjusting the shoes 30 30' along the rim of the wheel 27 the valve may be released and locked at any desired intervals, and in this way the flow of fluid either to pipe 22 or to pipe 23 may be so controlled that the proper synchronism of the parts actuated by said fluid may readily be obtained. To afford necessary ventage for the fluid, a groove or slot 17^a is formed in the collar 17^b, as illustrated in Figs. 1 and 2, and a port 17^c is provided in casing 4.

As above stated, the invention is not restricted to any precise form of valve, nor is it limited to the exact devices shown and described for actuating said valve, for changes may be made in the form, proportions, and arrangement of the parts without departure from the invention.

Having thus described my invention, what I claim is—

1. The combination, with a valve, of a valve-casing provided with ports for the admission and discharge of fluid; a valve for opening and closing the eduction-port; means for actuating the valve; a device for locking said means; a movable carrier; and means on said carrier for releasing the locking device.

2. The combination, with a valve-casing having induction and eduction ports, of a valve movable in said casing; a lever for actuating said valve; and a latch for locking said lever; a movable carrier; and a device adjustably secured to said carrier for tripping the latch.

3. The combination, with a valve-casing having an induction-port and a pair of eduction-ports, of a valve for closing one eduction-

port and simultaneously opening the other eduction-port; a lever for actuating said valve in one direction; means for shifting the valve in the opposite direction; means for actuating the lever; a latch for said lever; a movable carrier; and means carried by said carrier for tripping the latch.

4. The combination, with a valve-casing having induction and eduction ports, of a piston-valve; a lever for actuating said piston-valve; means for operating the lever; a latch; a rotary carrier; and means on said carrier for operating said latch.

5. The combination, with a valve-casing having an induction-port and a series of eduction-ports, of a valve for uncovering one port and covering another port; a pivoted lever for actuating said valve in one direction; a spring for throwing the valve in an opposite direction; and a latch for said pivoted lever.

6. The combination, with a valve-casing having an induction-port and a pair of eduction-ports, of a spool-shaped valve; a lever for shifting the valve in one direction; a spring for throwing the valve in the opposite direction; a latch for the lever; means for actuating the lever; and means for tripping the latch to release said lever.

7. The combination, with a valve-casing having an induction-port and eduction-ports, of a piston-valve in said casing; a spring for forcing said valve outward; a lever for forcing the valve inward; a latch for the lever; a carrier; and devices carried by said carrier for actuating the lever, and for tripping the latch.

8. The combination, with a valve and its casing, the latter having an induction-port and eduction-ports, of a valve in said casing; a device for actuating the valve; a rotary carrier; means on said carrier for operating the valve-actuating device; a latch for the valve-actuating device; and means on the rotary carrier for tripping the latch.

9. The combination, with a valve, of a pivoted lever for actuating said valve; a carrier; a dog adjustable on said carrier for actuating the lever; a pivoted latch; and a dog adjustable on the carrier for tripping said latch.

10. The combination, with a valve, of a lever for operating said valve; a latch for the lever; a rotary carrier; a dog on said carrier for operating the lever; and a dog on said carrier for tripping the latch.

11. The combination, with a valve, of a lever for operating said valve; a latch for locking the lever; a rotary carrier; and cam-dogs on the carrier for first releasing the latch, and then actuating the lever.

12. The combination, with a valve, of a pivoted lever for actuating said valve; a latch for locking the lever; a rotary carrier; shoes adjustably secured to the carrier; and cam-

dogs one carried by each shoe, and adapted first to trip the latch, and then to actuate the lever.

13. The combination, with a valve-casing having an induction - port and eduction-ports; of a valve in said casing arranged alternately to open and close the eduction-ports; a pivoted lever for actuating said valve; a rotary carrier; a shoe on said carrier, said shoe having a cam-dog for actuating the lever; a latch for the lever; and a shoe on the carrier having a cam-dog for tripping the latch.

14. The combination, with a casing having an apron, of a valve slidably mounted in the casing; induction and eduction pipes communicating with the casing; a lever pivoted to the apron; a latch for said lever also piv-

oted to the apron; means for tripping the latch; and means for actuating the lever. 20

15. The combination, with a wheel, of shoes adjustably mounted on the rim of said wheel; cam-dogs carried by the shoes; a valve-casing having induction and eduction ports; a valve in said casing; means for actuating the valve, said means being operable by one of the cam-dogs; and a latch for the valve, said valve being operable by another of said cam-dogs. 25

In testimony whereof I affix my signature 30 in presence of two witnesses.

BENGT M. W. HANSON.

Witnesses:

F. E. ANDERSON,
FRANCES E. BLODGETT.