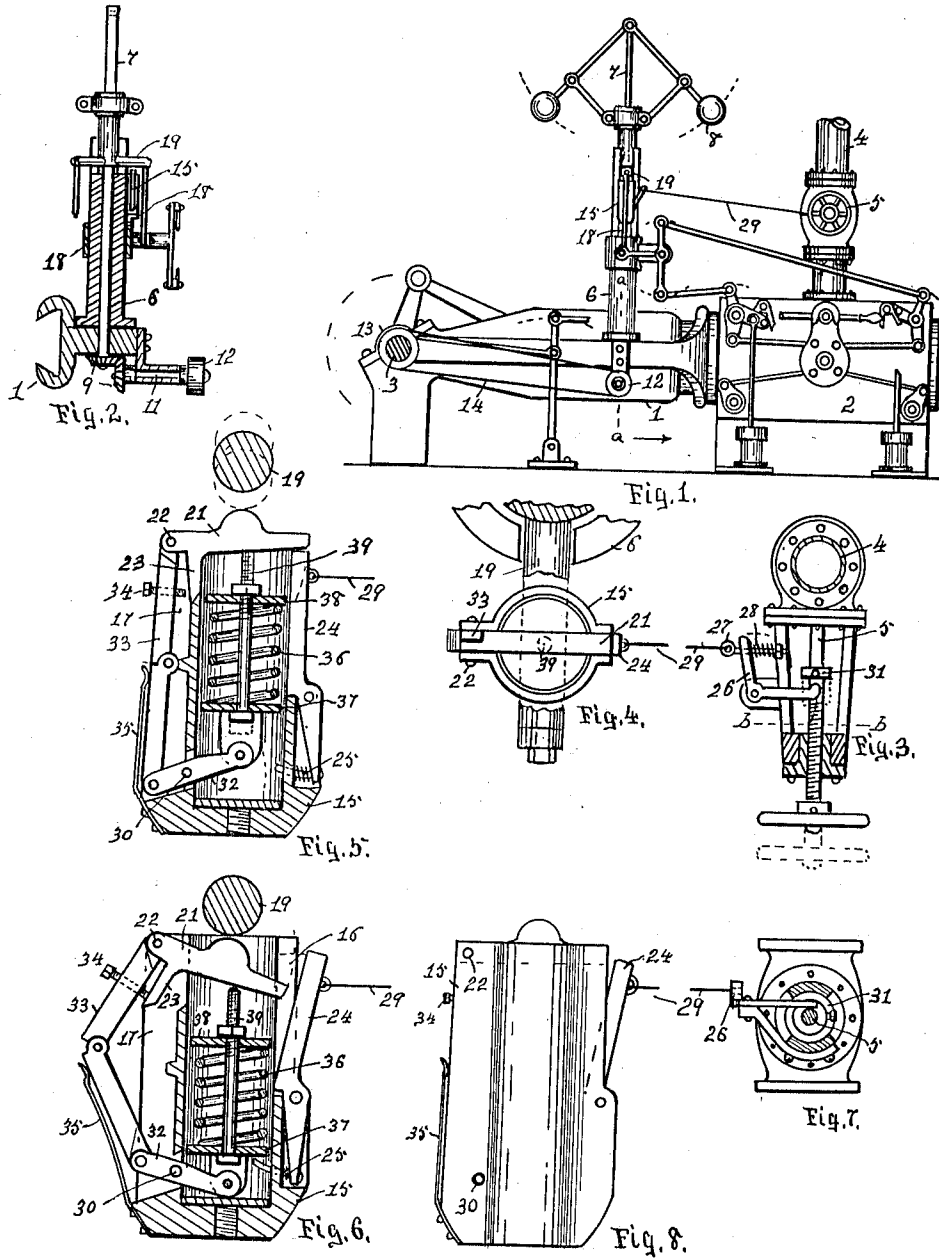


L. SINGLE.
AUTOMATIC STOP AND OVERLOAD CONTROLLER.
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1,019,851.

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Witnesses.

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UNITED STATES PATENT OFFICE.

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AUTOMATIC STOP AND OVERLOAD-CONTROLLER.

1,019,851.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, LEONARD SINGLE, a citizen of the United States, residing at Hamilton, Ohio, have invented a new and useful Improvement in Automatic Stops and Overload-Controllers, of which the following is a specification.

My invention relates to automatic stops and overload controllers adapted to the use of Corliss engines or for other suitable purposes, and the objects of my improvements are to provide automatic means for yieldingly retarding the action of the governor in shutting off the steam at slow speed without interfering with its emergency action; to provide automatic means for preventing the governor from closing the valves when the throttle valve is closed for convenience in starting the engine again and to automatically release the governor at a predetermined increase of speed for emergency action when the throttle valve is open; and to provide simple and durable construction and assemblage of the various members for securing facility of operation and efficiency of action. These objects are attained in the following described manner as illustrated in the accompanying drawings, in which:—

Figure 1 is a side elevation of a Corliss engine embodying my improvements; Fig. 2 a transverse section on the line *a— a* of Fig. 1; Fig. 3 a plan with parts of the bracket for the throttle valve stem in section; Fig. 4 a plan of the automatic stop; Figs. 5 and 6 longitudinal vertical sections of the automatic stop in respective operative positions; Fig. 7 a section on line *b— b* of Fig. 3, and Fig. 8, a side elevation.

In the drawings 1 represents the bed of a Corliss engine, 2 the cylinder, 3 the crank shaft, 4 the steam pipe, 5 the throttle valve therein, 6 the column supported on the bed, 7 a shaft journaled in the column and whereon the speed governor 8 is attached, 9 bevel gears engaging said shaft with the transverse shaft 11 whereon pulley 12 is driven from pulley 13 on the crank shaft by means of the belt 14, all being constructed and arranged in the ordinary manner.

The casing 15 of the automatic stop preferably cylindrical in cross-section is formed with front and rear open slots 16 and 17. By means of a bracket 18 said casing may be removably secured on the column 6 directly under the adjustable lug 19 which may be actuated in a vertical plane in the

ordinary manner by changes in the speed of the governor. Arm 21 pivotally secured at one end within slot 17 on pin 22 and movable at the other end within slot 16 is formed with a leg 23. A stop 24 hinged on the front wall of the casing is automatically movable within the slot 16 by the exertion of spring 25 for intercepting the arm 21 with the lug 19 at a predetermined point in its descent, as shown in Fig. 5.

A bell crank lever 26 fulcrumed at a fixed point in relation to the throttle valve stem 5 is provided at one end with a sliding eye bolt 27 which is maintained in normal position therein under a yielding pressure by means of an adjustable spring 28 and is connected with stop 24 by means of a wire 29. A collar 31 adjustably secured on stem 5 serves during the opening movement of said valve stem to contact with the opposite end of lever 25 for actuating said lever with the wire 29 to move and maintain stop 24 outwardly from the path of arm 21 as shown in Fig. 6. After the said stop has been thus moved to its outward limit against the exertion of spring 25 the yielding exertion of the stronger spring 28 permits the continued movement of the valve stem for completing the opening of the throttle valve. When the throttle valve is being closed the exertion of spring 25 serves to move the stop 24 into its normal closed position again for intercepting the arm 21 in its descent.

Lever 32 fulcrumed within slot 17 on pivot 30 terminates at one end within the casing. A knee-lever 33 pivotally secured at its respective ends on the other end of lever 32 and on the pin or pintle 22 is provided with an adjusting screw 34 for contacting with leg 23 at a predetermined point in the descent of arm 21. A spring 35 secured on the casing serves to yieldingly maintain the knee-lever in the locked position as shown in Fig. 5.

A coiled spring 36 adjustably secured between plates 37 and 38 by means of the bolt 39 is movably supported within the casing upon the end of lever 32 for maintaining the point of said bolt in yielding contact with the middle portion of arm 21.

In operation, when the throttle valve is closed, the exertion of spring 25 moves and maintains the stop 24 under the end of arm 21 as shown in Fig. 5 for supporting lug 19 with the governor in position for permitting

the starting of the engine. The partial opening movement of the throttle valve causes the collar 31 on its stem to move and maintain the bell crank lever and the wire 29 with the stop 24 out of the path of arm 21 as shown in Fig. 6, and the completion of the said opening movement of the throttle valve is permitted by the yielding action of spring 28 as shown in Fig. 3. With a gradual decrease in the speed of the governor as from increased duty or low steam pressure lug 19 is retarded at a predetermined point in its descent after contacting with arm 21 by the yielding exertion of spring 36, for delaying its action in shutting off the steam and thereby stopping the engine before the overload can be controlled.

In the event of an emergency as the breaking of belt 14 the sudden decrease in the speed of the governor would cause the weight on lug 19 to move the arm 21 to overcome the exertion of spring 36, and to contact leg 23 with screw 34 for moving the knee-lever to unlock lever 32, thus permitting the spring 36 to descend bodily out of action as shown in Fig. 6 and the governor to shut off the steam and stop the engine. After lug 19 is raised the exertion of spring 35 automatically moves and maintains the knee-lever and lever 32 with the spring 36 bodily into normal operative position again as shown in Fig. 5.

Having fully described my improvements, what I claim as my invention and desire to secure by Letters Patent of the United States is:—

1. The combination of a movable machine part, a stop pivotally mounted at a fixed

point, a spring for actuating the stop to intercept said part, means for limiting the opposite movement of the stop, a valve stem, a collar adjustably secured thereon, a lever fulcrumed at a fixed point and engaging with the collar, and yielding connections therewith for moving the stop into contact with said means by the initial opening movement of the stem and for permitting the completion of the opening movement thereof.

2. The combination of a movable machine part, an arm pivoted at a fixed point for intercepting said part, a supporting spring therefor, a positive stop pivoted at a fixed point, a spring for moving the stop in the path of the arm, means for limiting the opposite movement of the stop, automatic means actuated by the arm for removing the supporting spring, a valve stem, a collar thereon, a lever fulcrumed at a fixed point and engaging with the collar, an adjustable member yieldingly secured to the lever and tension connections therefrom with the stop.

3. The combination of a throttle valve, a collar adjustably secured on the stem thereof, a bell crank lever pivotally secured in fixed relation to the valve stem, with one arm in the path of the collar, a spring actuated member slidably engaging with the other arm of the lever, a spring actuated stop pivotally secured in fixed relation to the lever, and actuating connections therewith from said member.

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Witnesses:

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