(No Model.)

W. H. TOWLE.

SAFETY STOP FOR ENGINES.

No. 498,330. Patented May 30, 1893.

Fig. 1.

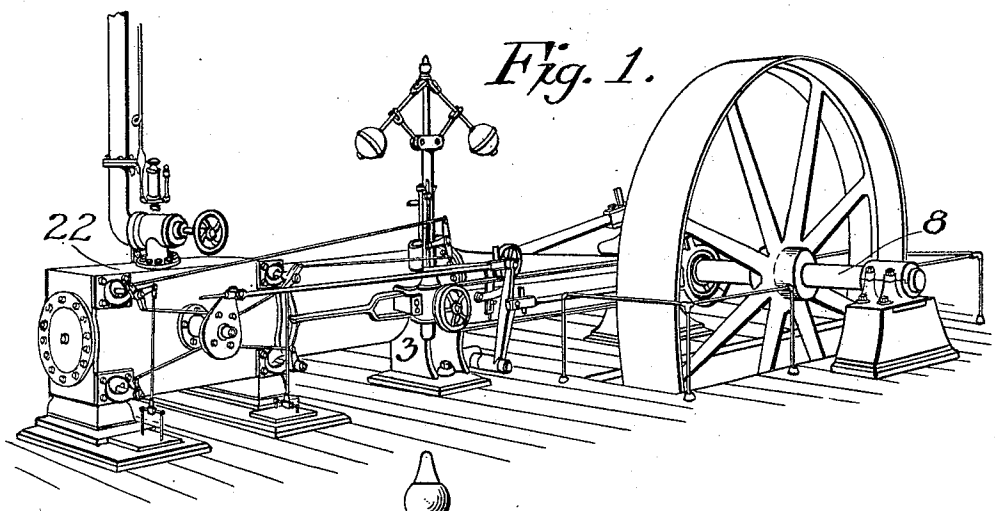
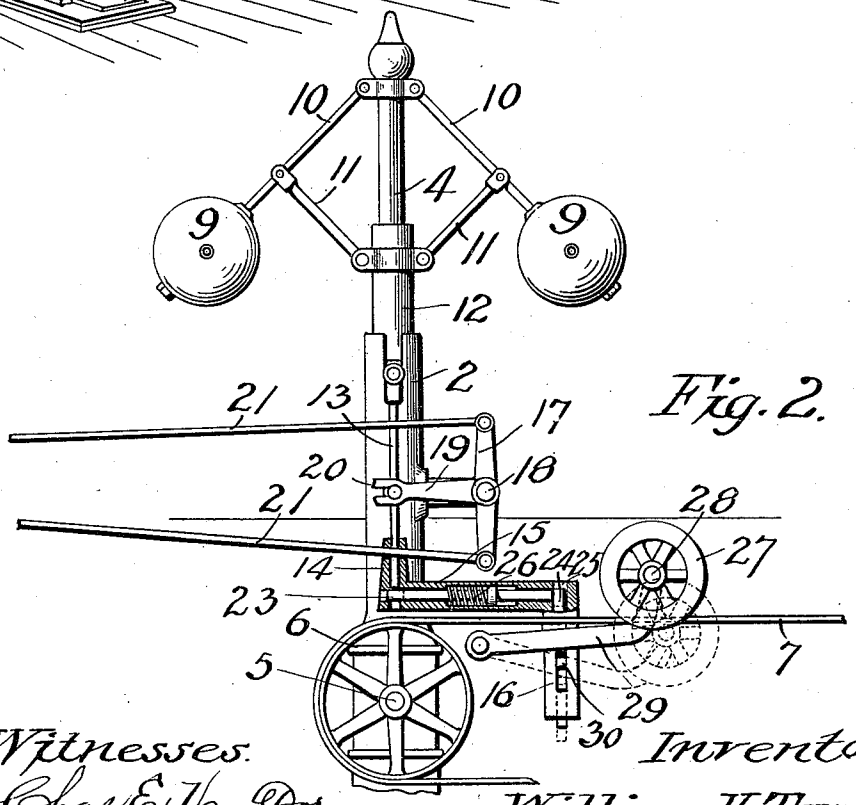


Fig. 2.



Witnesses.
Chas. E. Van Dorn.
M. E. Cooley

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UNITED STATES PATENT OFFICE.

WILLIAM H. TOWLE, OF MINNEAPOLIS, MINNESOTA.

SAFETY-STOP FOR ENGINES.

SPECIFICATION forming part of Letters Patent No. 498,330, dated May 30, 1893.

Application filed February 20, 1893. Serial No. 462,952. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. TOWLE, of the city of Minneapolis, county of Hennepin, State of Minnesota, have invented certain new and useful Improvements in Safety-Stops for Engines, of which the following is a specification.

My invention relates to safety stops for engines and the object which I have in view is to provide means whereby an engine may be stopped when the engine governor ceases from any cause to operate, as, for instance, when the governor belt breaks.

To this end my invention consists in general in the combination with the governor and the governor belt, of a drop normally supported by said belt and a latch device in connection therewith which is adapted to release a supporting rod of the governor when said latch is freed by the falling of the belt device; and the invention consists further in various details of construction and in combinations all as hereinafter described and particularly pointed out in the claims, and will be more readily understood by reference to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a perspective view of a Corliss engine provided with a safety stop embodying my invention. Fig. 2 is an enlarged detailed elevation of an engine governor provided with one of my safety stops, a portion of which is shown in section to more clearly illustrate the construction.

As shown in the drawings, 2 represents the governor standard formed upon the engine base 3 and down through which the governor spindle or shaft 4 extends, being provided on its lower end with the usual beveled gear meshing with a similar gear, (not shown,) in the shaft 5, projecting through the base and provided with the drive pulley 6 over which the governor belt 7 extends. The opposite end of this belt passes over the fly wheel shaft 8 of the engine. The governor balls 9, the levers 10 and the supporting rods 11 thereof are of the usual construction, as is also the vertically movable sleeve whereon the lower ends of the rods 11 are pivoted. The rod or stem 13 has its upper end connected with the sleeve 12 and the foot of this rod is retained in the vertical sleeve 14 formed in the end of the bracket 15 which has the downwardly extending sleeve 16 at its opposite end. The double bell crank 17 is journaled upon a stud shaft 18 extending from the standard 2. The middle arm 19 of the bell crank is connected with the stem 13 by a pin and yoke 20, whereby movement of the stem up or down is communicated to the bell crank and through the same to the valve rods 21 connected in the usual manner with the rotary valves in the steam chest 22 of the engine. The governor is shown in Fig. 2 in the full stroke position, that is, the valve rods are so drawn out by the bell cranks as to hold the valves wide open. Such position of the governor parts is due to the working of the engine under a very heavy load and at a consequently reduced speed, thereby decreasing the centrifugal throw of the governor and permitting the balls to sink to such an extent as to fully open the valves. At this time the governor will be prevented by the latch or stop 23 from flying any farther as the foot of the stem 13 will be brought down upon the top thereof. This latch is arranged within the upper arm of the bracket 15 and is normally held forward by the vertical latch bar 24 slidably arranged in the vertical slot or opening 25 provided in the vertical arm of the bracket. The bar 24 is supported in any suitable manner and filling the upper end of the opening 25 prevents the latch 23 from being forced back by the coiled spring 26 arranged within the horizontal arm of the bracket. 27 represents a flange pulley which is journaled upon the stud shaft 28 extending from the pivoted arm 29, and this pulley is adapted to run upon the top of the governor belt, and resting thereon is normally supported. In case, however, the governor belt breaks this pulley 27 will drop of its own weight and its arm 29 will strike the projection or rod 30 upon the latch bar 24 and draw the bar from engagement with the end of the latch 23, whereupon the latter will be forced back by its spring to open the passage through the sleeve 14 and allow the stem 13 to drop down through the same, the stem being forced down by the weight of the governor balls which have ceased to revolve, owing to the breaking of the governor belt, thereby tilting the

bell crank and closing the steam valves, thus shutting down the engine; whereas, without this safety appliance the engine would be apt to run away and do great damage.

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

1. The combination, with an engine governor and its valve connections, of the governor belt and the means for driving the same, with a pulley adapted to run upon said belt, the arm whereupon said pulley is journaled, the stem or rod of the governor, and a latch for normally preventing said stem from falling below the full stroke position, and a connection between said latch and said pulley arm whereby upon the breaking of said governor belt said latch is withdrawn to permit said governor stem to fall and operate the governor connections to close the engine valves, substantially as described.

2. The combination, with an engine, of the governor, the governor belt whereby the same is driven, the governor stem or rod, the bell crank connected therewith, the valve rods extending from said bell crank to the engine valve or valves, a latch or stop whereon said stem is adapted to rest when the engine is at full stroke, and a device connected with the governor belt and with said latch, whereby upon the breaking of said belt said latch is withdrawn, substantially as and for the purpose specified.

3. The combination, with an engine and its valves, of the governor belt thereof, the governor stem or rod, the valve connections therewith, a sleeve wherein the end of said stem is movable, a latch bar extending through and adapted to close the opening through said sleeve to prevent the falling of said stem below a given point, a second latch bar to engage the first bar to hold the same in the position described, means for forcing out the first bar when released from the second, a projection on said second latch bar, a pulley adapted to run upon the governor belt, and the pivoted arm whereon said pulley is journaled, said arm adapted to engage said projection when said pulley is allowed to drop by the breaking of the belt whereby said second bar is withdrawn from engagement with the first latch bar, and the latter withdrawn to free said stem, substantially as and for the purpose specified.

In testimony whereof I have hereunto set my hand this 16th day of February, A. D. 1893.

WILLIAM H. TOWLE.

In presence of—
C. G. HAWLEY,
F. S. LYON.