W. J. KENDERDINE.

Governors for Engines.

No. 211,240. Patented Jan. 7, 1879.

Fig. 1.

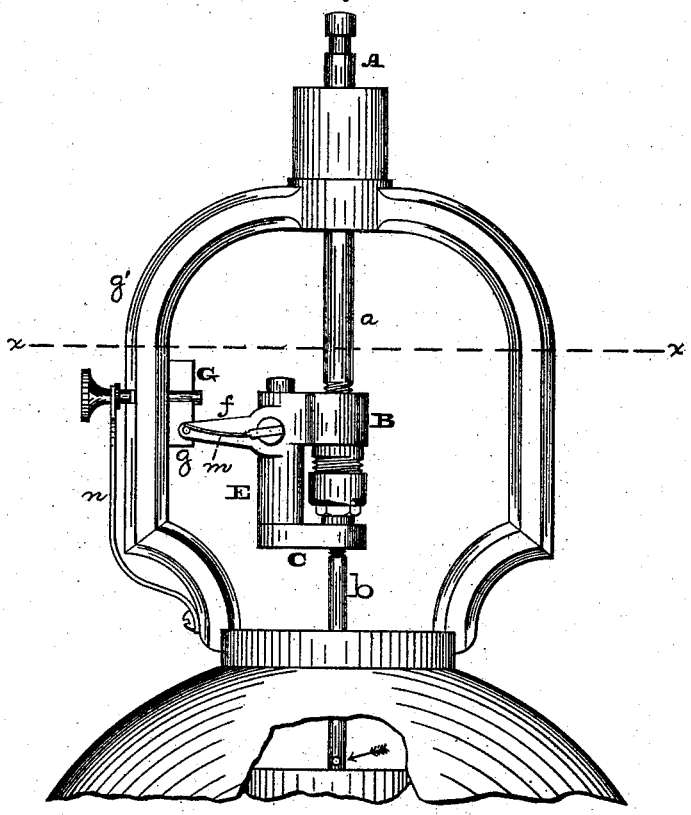


Fig. 2.

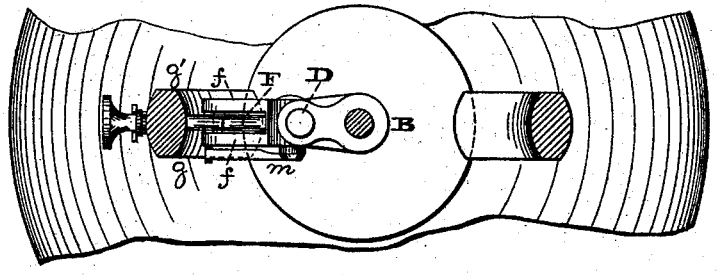
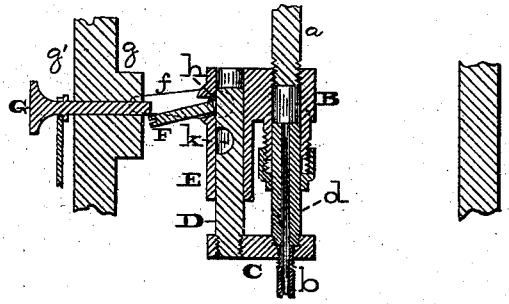


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

WILLIAM J. KENDERDINE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF HIS RIGHT TO JONATHAN YERKES, OF SAME PLACE.

IMPROVEMENT IN GOVERNORS FOR ENGINES.

Specification forming part of Letters Patent No. **211,240**, dated January 7, 1879; application filed July 30, 1878.

To all whom it may concern:

Be it known that I, WILLIAM J. KENDERDINE, of the city and county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Safety Attachments for Steam-Engine Governors, which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a side elevation of the attachment embodying my invention. Fig. 2 is a horizontal section thereof in line *x x*, Fig. 1. Fig. 3 is a vertical section of a portion thereof.

Similar letters of reference indicate corresponding parts in the several figures.

My invention consists of a governor having a safety attachment for causing the automatic closing of the valve by the action of steam, the same consisting of a two-part stem, the upper part whereof is secured to a movable connection, and the lower part is telescoped thereto, fixed to the valve, and communicates with the valve-chamber, said connection also carrying means for holding and releasing the lower part of the stem, whereby, when the belt breaks or flies from the governor-pulley, or other accidents occur, and the aforesaid connection is thereby materially raised, the lower part of the stem is released, and steam entering said part presses on its head, so as to fully close the valve.

Referring to the drawings, A represents the stem of the governor-valve, which is operated in well-known manner. The stem is formed of two parts or lengths, the lower end of the upper part, *a*, whereof is connected to a cylinder, B, into which is telescoped a piston, *d*, on the upper end of the lower part, *b*, of the stem, said piston *d* and part *b* being hollow and communicating with the valve-chamber. C represents a cross-head, which is firmly fixed to the piston *d* or part *b* of the stem, and to the same is connected a plunger, D, which is fitted in a sleeve, E, attached to the upper part, *a*, of the stem. Projecting from the sleeve E are arms or a bifurcation, *f*, which embrace a vertical piece, *g*, on one side of the stand, or an upright, *g'*, of the governor, so as to guide said sleeve and connected parts, and between the arms there projects a trigger, F, which is pivoted to said sleeve, and is formed with a head, *h*, adapted to enter a notch or recess, *k*, in the plunger D, for locking said plunger and sleeve and connecting them as one, and controlling the lower part, *b*, of the stem. To the upright *g'* there is fitted a sliding pin, G, which extends horizontally, and so disposed that at certain times the trigger F will come in contact with said pin G and force the head *h* from the recess *k*, and thus cause the disengagement of the sleeve and plunger. A spring, *m*, is fitted to the head *h* or trigger F for holding said head in the notch *k*, as also to cause the automatic dropping of the head in said notch when the plunger is properly elevated. A spring, *n*, is fitted to the pin G for holding the latter in position to engage with the trigger F, and said pin is constructed with shoulders or narrow sides, so that, by withdrawing the pin and imparting a quarter-turn to it, the shoulders will engage with the outer walls of the opening in which the pin plays, and thereby hold the pin out of the path of the trigger.

The operation is as follows: When the parts are in the position shown in Fig. 1, the two parts *a b* of the stem A move as one, the sleeve E and plunger D being connected by the head *h* of the trigger F, and the governor-valve will be affected by the action of the balls, as in ordinary governor-valves. Steam from the valve-chamber enters the part *b* of the stem, as indicated by the arrow, Fig. 1, and fills said part, the piston *d*, and the space of the joint between the bottom of the part *a* or inner roof of the cylinder B and top of the part *a*.

When the belt which communicates power to the pulley of the governor breaks or runs off, or some other accident occurs, the governor-balls fall, and the stem A is raised to full extent. The trigger F then strikes the pin G or is tripped, and causes the head *h* to emerge from the recess *k* of the plunger D, thus disconnecting the plunger and sleeve, and no longer controlling the lower part, *b*, of the stem. Owing to the pressure of steam on the upper end or head of the piston D, the latter is immediately forced outward or downward, and as the part *b* is connected to the piston said part is likewise lowered and the valve is forced on its seat, thus closing the valve and

shutting off steam leading to the engine, the advantages whereof are evident. By raising the part *b* the piston again returns to the cylinder B, the plunger D enters the sleeve E, and the head *h* engages with the recess *k* of the plunger, thus again connecting the parts *a b* of the stem as one.

I am aware that is not new to construct a stem of two parts, which are connected by a loosely-pivoted catch balanced by weights and a counterbalanced lug; and I am also aware that it is not new to balance a valve and employ an auxiliary valve, the object whereof is to open and close communication with the atmosphere, so as to preserve the balance by the action of the steam, the loss of the balance serving to fully close the valve; but such features are not my invention, and they are hereby disclaimed.

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

1. A governor having a safety attachment for causing the automatic closing of the valve by the action of the steam, the same consisting of a two-part stem, the upper portion whereof is secured to a movable connection, and the lower part is telescoped thereto, fixed to the valve, and, being hollow, communicates with the valve-chamber, said connection also carrying means for holding and releasing the lower part of the stem, whereby, when the connection is materially raised, the lower part of the stem is released, and steam entering said part presses on its head, so as to fully close the valve, substantially as and for the purpose set forth.

2. The two-part stem A, in combination with the plunger D, sleeve E, and trigger F, and suitable tripping device, substantially as and for the purpose set forth.

3. The two-part stem A, in combination with the plunger D, having a recess, *k*, and the trigger F, with a head, *h*, and suitable tripping device, substantially as and for the purpose set forth.

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Witnesses:
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