(No Model.)

B. J. LINDGREN & A. H. WHATLEY.

STOP MOTION FOR GOVERNORS.

No. 563,862. Patented July 14, 1896.

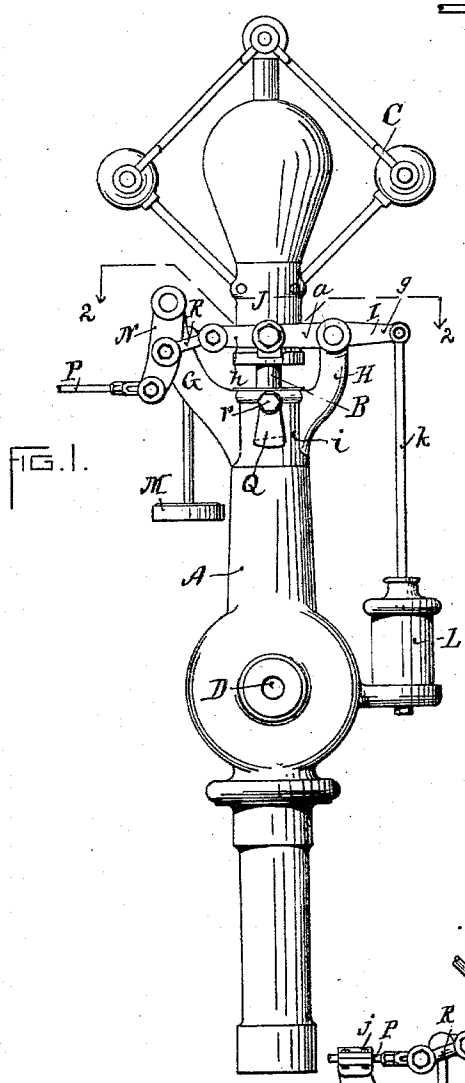

FIG. 1.

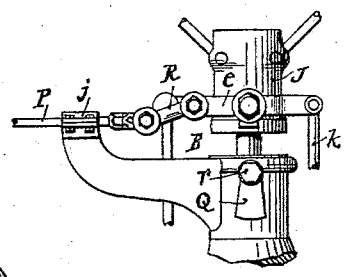

FIG. 5.

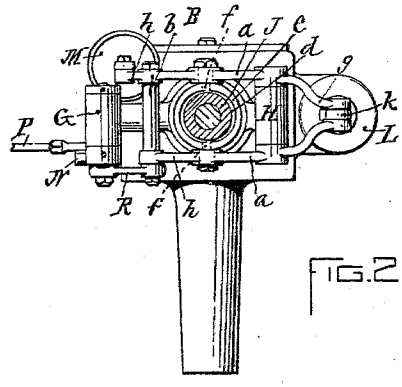

FIG. 2.

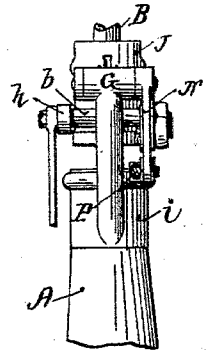

FIG. 3.

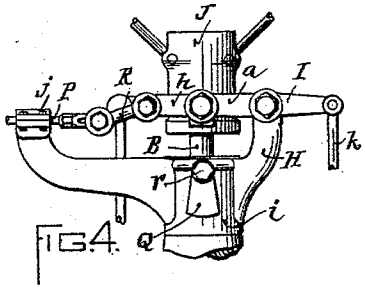

FIG. 4.

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UNITED STATES PATENT OFFICE.

BROR J. LINDGREN AND ALFRED H. WHATLEY, OF PROVIDENCE, RHODE ISLAND, ASSIGNORS TO THE RICE & SARGENT ENGINE COMPANY, OF SAME PLACE.

STOP-MOTION FOR GOVERNORS.

SPECIFICATION forming part of Letters Patent No. 563,862, dated July 14, 1896.

Application filed February 11, 1896. Serial No. 578,917. (No model.)

To all whom it may concern:

Be it known that we, BROR J. LINDGREN and ALFRED H. WHATLEY, citizens of the United States, residing at Providence, in the State of Rhode Island, have invented a new and useful Improvement in Stop-Motions for the Governors of Steam-Engines, of which the following is a specification.

The object of our invention is to provide positive means for automatically shutting off the steam from the engine upon the occurrence of any accident which results in stopping the rotation of the governor while the engine is continuing its action; and our invention consists in the employment of a reversely-operating toggle-link movement between the governor and the cut-off-valve gear, as hereinafter fully set forth.

In the accompanying drawings, Figure 1 represents a side elevation of a steam-engine governor provided with our improvement. Fig. 2 represents a section taken in the line 2 2 of Fig. 1. Fig. 3 represents a detail side view taken at right angles to the view shown in Fig. 1. Fig. 4 is a detail side view showing modification in the attachment of the link connection for reversing the action of the valve-gear. Fig. 5 shows another modification.

In the drawings, A represents the fixed standard, which serves to support the upright shaft B of the governor C, said shaft being driven by means of a pulley secured to the horizontal shaft D, from which connection is made with the upright shaft B by means of a suitable bevel-gear and pinion.

The head *i* of the standard A is provided with the arm H, to which is pivoted the lever I, which lever is made in two parts *a a*, the said parts being held together by means of the tie-bolt *b*. The two parts of the lever I are arranged at opposite sides of the sliding sleeve J of the governor, the said sleeve being provided with the circumferential groove *d*, within which is placed the loose ring *e*, the said ring being provided with perforations, which are adapted to receive the studs *f f*, extending inwardly from the opposite part of the lever I, so that upon the rise and fall of the sleeve J a corresponding movement will be imparted to the lever I.

The lever I is connected at its short arm *g* with the piston-rod *k* of the oil-cylinder L, which serves to steady the action of the governor, and to the end of the long arm *h* of the lever is connected the pendent weight-rest M for effecting the proper adjustment of the action of the governor.

To the upper end of the arm *g*, which extends upward from the head *i*, is pivoted the pendent lever N, and to the lower end of the lever N is jointed the valve-gear rod P, by means of which proper connection is made with the cut-off-valve gear of the engine. The lever N is connected with the long arm *h* of the lever I by means of the short toggle-link R in such a manner that upon the normal rise and fall of the governor during the operation of the engine a corresponding back-and-forth movement will be transmitted through the rod P to the valve-gear, but upon the loosening or breaking of the belt which drives the governor, whereby the governor is caused to sink below the proper position for its lowest extreme of normal variation, then the action of the link R upon the lever N and rod P will be such as to cause the reversal of the movement of the said rod to cause the closing of the valves of the engine to shut off the steam.

Upon the screw-stud *r*, at the side of the head *i* of the standard A, is placed the loose arm Q, which may be turned up to form a bearing-rest for the lever I in properly supporting the governor at the ordinary stopping of the engine, but which, when the engine is in operation, is to be turned downward to the position shown in Fig. 1, so as to provide for the resulting abnormal downward movement of the lever I at the slipping or breaking of the driving-belt.

A modification is shown in Fig. 4, in which the valve-gear rod P is made to slide loosely in the guide-bearing *j*, and the link R is connected directly to said rod, without the intervention of the lever N.

Another modification is shown in Fig. 5, in which the lever I is dispensed with and the

link R connected directly to the loose ring *e* and jointed directly to the valve-gear rod P.

We claim as our invention—

1. In a stop-motion for the governor of a steam-engine, the combination of the governor, with the valve-gear rod, and the intermediate toggle-link which serves to reverse the movement of the valve-gear rod upon the abnormal downward movement of the governor, substantially as described.

2. In a stop-motion for the governor of a steam-engine, the combination of the governor, with the lever actuated by the rise and fall of the governor, the valve-gear rod, and the toggle-link which serves to reverse the movement of the valve-gear rod upon the abnormal downward movement of the governor, substantially as described.

3. In a stop-motion for the governor of a steam-engine, the combination of the governor, with the lever actuated by the rise and fall of the governor, the valve-gear rod, the connecting toggle-link which serves to reverse the movement of the valve-gear rod upon the abnormal downward movement of the governor, and the intermediate lever, substantially as described.

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