(No Model.) 2 Sheets—Sheet 1.

H. H. BUFFUM.

AUTOMATIC GOVERNOR AND CUT-OFF.

No. 273,250. Patented Mar. 6, 1883.

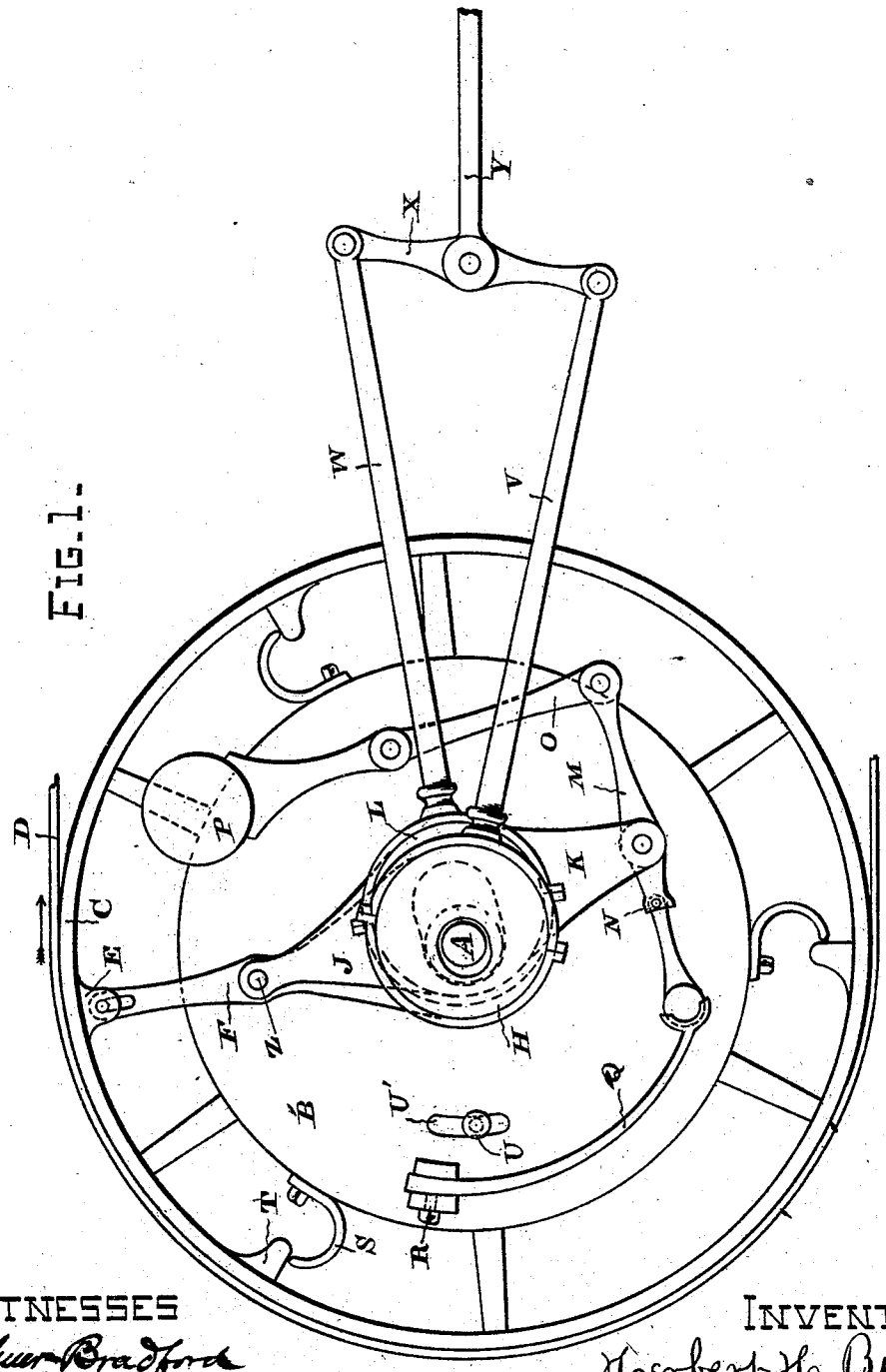

FIG. 1.

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(No Model.) 2 Sheets—Sheet 2.

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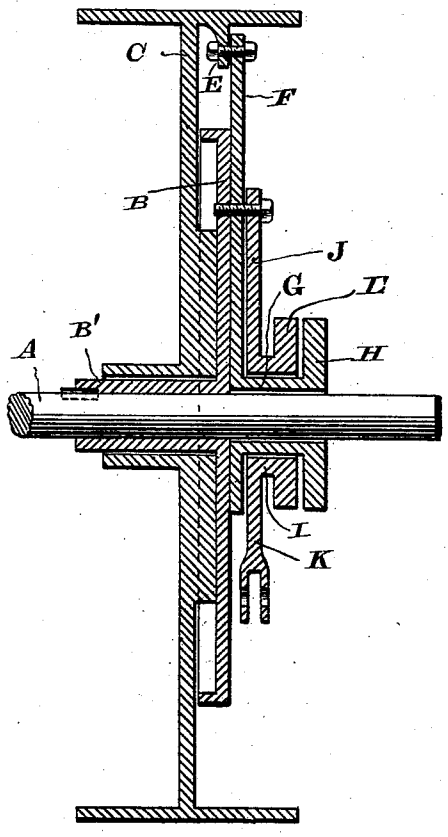
FIG. 2.



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UNITED STATES PATENT OFFICE.

HERBERT H. BUFFUM, OF SAN FRANCISCO, CALIFORNIA.

AUTOMATIC GOVERNOR AND CUT-OFF.

SPECIFICATION forming part of Letters Patent No. 273,250, dated March 6, 1883.

Application filed November 20, 1882. (No model.)

To all whom it may concern:

Be it known that I, HERBERT H. BUFFUM, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented a new and Improved Automatic Governor and Cut-Off for Steam-Engines, of which the following is a specification.

My invention relates to an improved governor cut-off for steam-engines; and the objects of my improvement are, first, to provide a rotary governor and cut-off with a system of pivoted cam-levers operated by means of springs, and a pivoted weighted lever-arm to control the throw of the valve covering the steam-ports of the cylinder; second, to a means whereby an increased supply of steam may be quickly admitted to the cylinder whenever a sudden and great strain comes upon the engine or machines operated by it. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation of my improved governor cut-off. Fig. 2 is a vertical sectional view.

Similar letters refer to similar parts throughout the several views.

A represents the main driving-shaft of an engine, and upon which is keyed a disk, B, having a side hub or sleeve, B′, over which is loosely fitted the hub of the fly-wheel C, whose band or belting D communicates motion to the machinery driven or operated by the engine, and thus performs the double duties of a fly and driving wheel. A lug, E, is formed upon the inner face of the fly-wheel C, and to it is pivoted the arm F, having a sleeve, G, to the outer end of which is suitably attached the eccentric H. Over this last-named sleeve is placed a second sleeve, I, having two arms, J K, extending in opposite directions, and also an eccentric, L. It should here be remarked that the last-named eccentric and the arms which are attached to its sleeve occupy a position between the face-lines of the eccentric H and the arm F, as is clearly shown in Fig. 2. The upper arm, J, is pivoted to the disk B by the screw-bolt Z, which also forms the pivot for the lever F. To the lower arm, K, is pivoted the lever M, having upon one arm a hinged joint, N. To one end of this lever is attached the lower end of a rod, O, pivoted upon the disk B, and provided at its upper end with the governor ball or weight P. The other arm of the lever M rests within the cup-shaped end of the spring Q, firmly secured by the lugs and clamp-screw R to the face of the disk B. Upon the rim of the disk B, I secure the curved springs S S, the outer ends of which rest against lugs T, projecting from the inner face of the rim of the fly-wheel C, as seen in Fig. 1. A stud, U, secured upon the solid portion of the fly-wheel, enters a slot, U′, cut in the disk B, and stops the backward movement of the fly-wheel when at rest. The eccentrics H and L are provided with suitable eccentric straps and rods, V and W, which connect with a swing arm or lever, X, pivoted to the valve-rod Y.

The operation of my improved governor cut-off will be as follows, to wit: The revolution of the main driving-shaft imparts a continuous rotary movement to the disk B, and by means of the spring-arms S S and lugs T T operates the fly or driving wheel C, and by a belt-connection imparts motion to the machinery intended to be operated by the engine. Should the steam be increased or the engine run too fast, the greater number of revolutions given to the disk B will cause the governor ball or weight P to recede from the center of its revolution, and by means of the connecting levers and arms J K move the eccentric L upon the sleeve G, or, in other words, throw it back, and cause the steam to be cut off earlier in the stroke. Should a sudden strain come upon the machinery the engine is operating and the working parts move more slowly, the difference in velocity will be quickly felt by the fly-wheel C, whose speed will be decreased, and its retarded motion will cause the lever F to be moved upon its pivotal point Z, and the eccentric H will be thrown forward, and the supply of steam to the cylinder be increased; but when the strain upon the machinery is reduced the reaction or tension of the springs S will throw the fly-wheel back to its original position, and the increased supply of steam will be cut off by the backward movement of the eccentric H. It should here be remarked that the tension of the springs S S should be equal to the ordinary working power of the engine

when both the eccentrics H and L are thrown back and the valve is cutting off steam at a quarter-stroke; but should the speed be lessened, or the supply of steam be decreased below the ordinary limit, the governor-ball P will fall toward the center, and thereby throw the eccentric L forward and give a greater throw to the valve-rod Y, and the speed of the engine will be increased until it arrives at its medium rate of speed.

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

1. In an automatic governor and cut-off, the disk B, keyed upon the main driving-shaft, and having a sleeve, B′, over which is loosely journaled the fly-wheel C, having inner lugs, T T, which are impinged upon by fixed spring-arms S S, in combination with the pivoted lever F and eccentric H, all when constructed, arranged, and operating substantially in the manner and for the purpose set forth.

2. In an automatic governor and cut-off, having a loosely-journaled fly-wheel operated by a disk keyed upon the main driving-shaft, the pivoted lever F, eccentric H, arms J and K, connected with the eccentric L, lever-arm M, spring Q, rod O, and ball P, in combination with the connecting-rods V and W, and valve-rod Y, all constructed and arranged to operate substantially in the manner and for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 8th day of November, 1882.

HERBERT H. BUFFUM. [L. S.]

Witnesses:
C. W. M. SMITH,
WILMER BRADFORD.