No. 679,706. Patented July 30, 1901.

W. D. SMITH.

AUTOMATIC STOP FOR GOVERNORS FOR STEAM ENGINES.

(Application filed Oct. 28, 1899. Renewed Apr. 16, 1901.)

(No Model.)

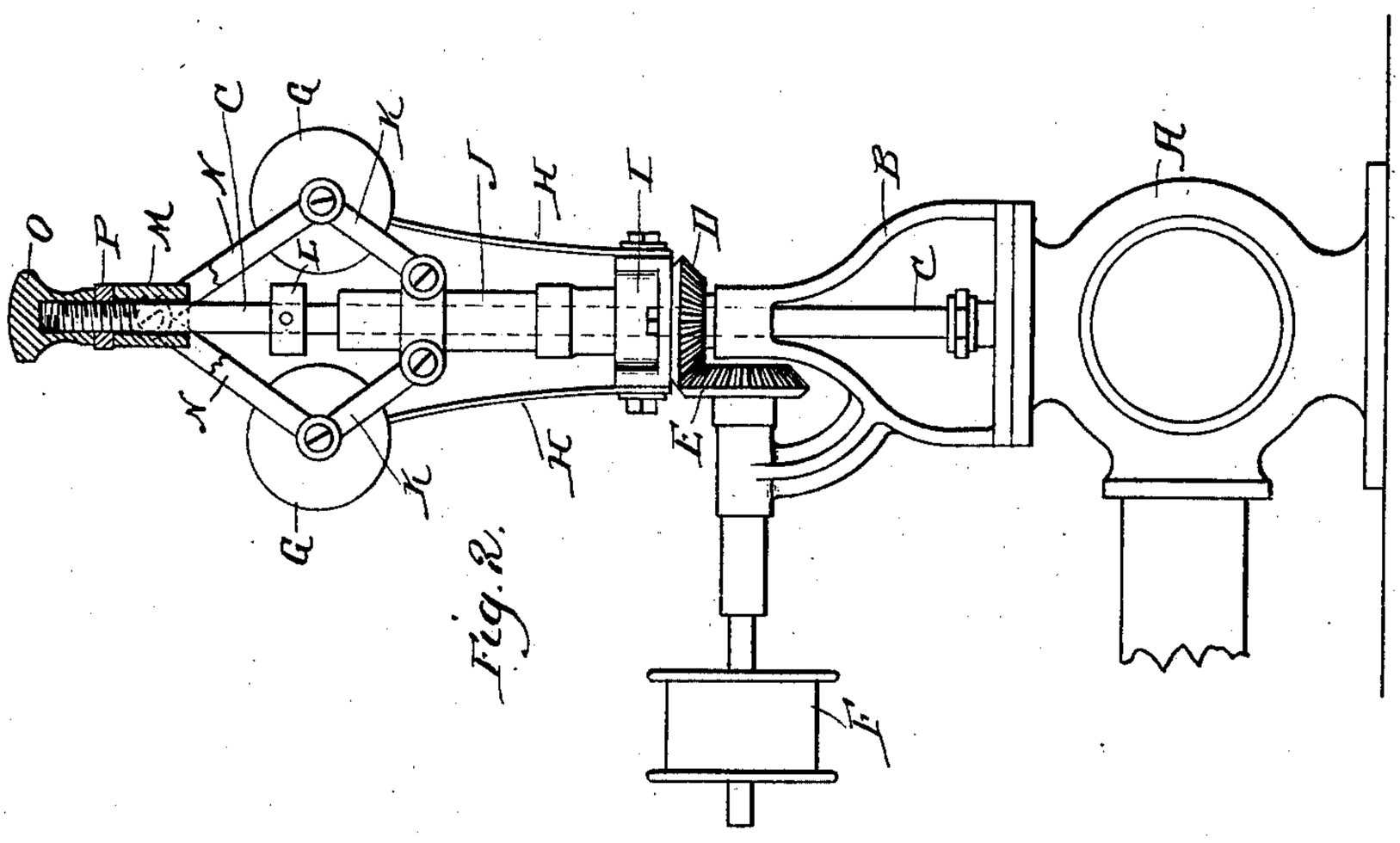

Fig. 2.

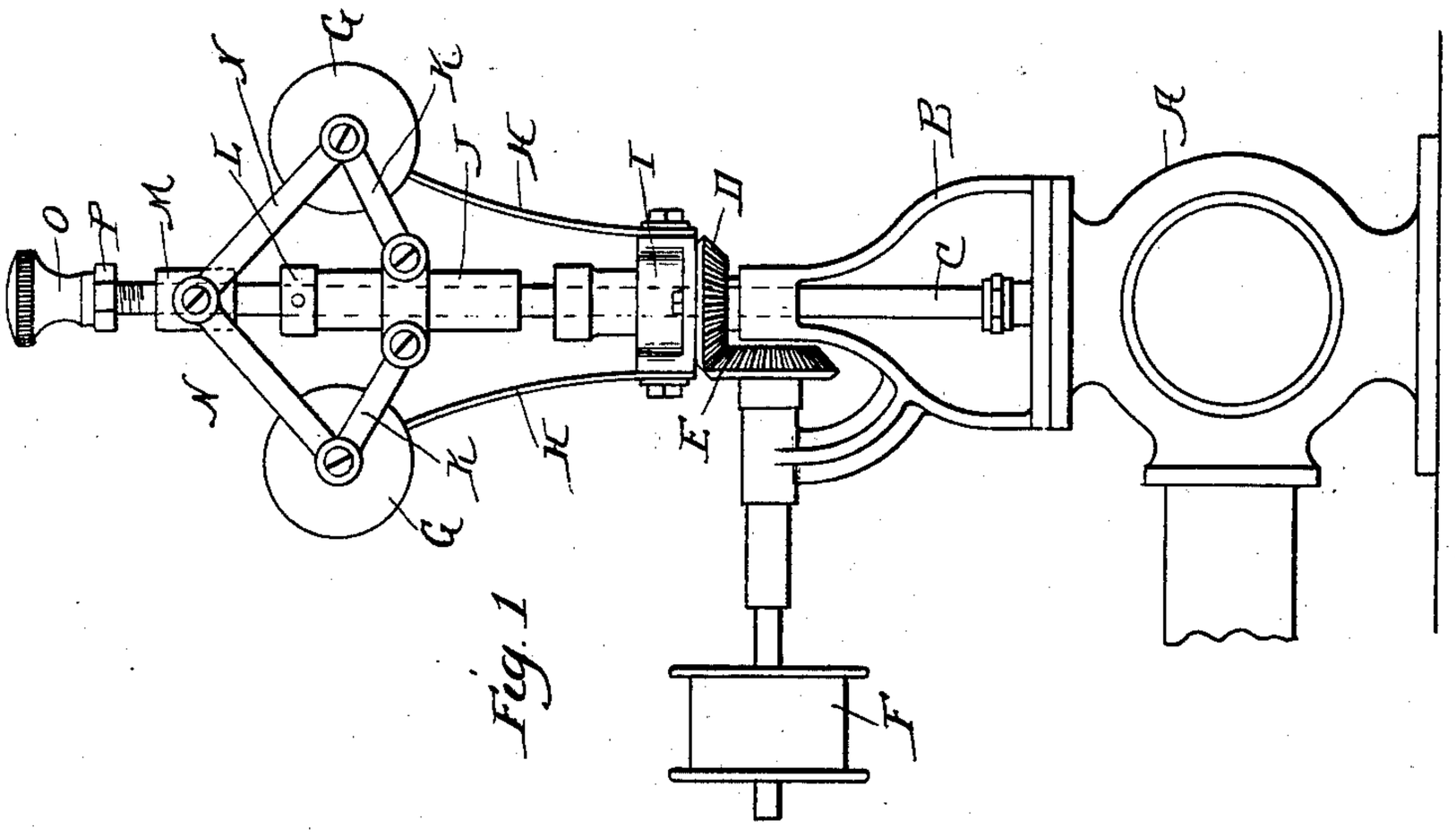

Fig. 1.

Witnesses:
H. B. Hallock.
S. J. Williamson

Inventor.
William. D. Smith
By Wm. C. Hazelton & Co.
Atty.

UNITED STATES PATENT OFFICE.

WILLIAM D. SMITH, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO GEORGE H. TABER, JR., OF SAME PLACE.

AUTOMATIC STOP FOR GOVERNORS FOR STEAM-ENGINES.

SPECIFICATION forming part of Letters Patent No. 679,706, dated July 30, 1901.

Application filed October 28, 1899. Renewed April 16, 1901. Serial No. 56,071. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM D. SMITH, a citizen of the United States, residing at Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented a certain new and useful Improvement in Automatic Stops for Governors for Steam-Engines and the Like, of which the following is a specification.

My invention relates to a new and useful improvement in automatic stops for governors for steam-engines and the like, and has for its object to provide a simple and effective arrangement which may be so adjusted as to either maintain the engine at its normal speed or reduce its speed should the governor fail to perform its ordinary functions by the slipping or breaking of its belt.

With these ends in view this invention consists in the details of construction and combination of elements hereinafter set forth and then specifically designated by the claims.

In order that those skilled in the art to which this invention appertains may understand how to make and use the same, the construction and operation will now be described in detail, referring to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is an elevation of a governor made in accordance with my improvement, showing the balls thereof swung by centrifugal force to the position assumed at the normal speed of the engine; and Fig. 2 a similar view, a portion thereof being sectioned, the balls being shown in the position assumed when the governor fails to perform its ordinary function by the breaking or slipping of its belt.

In carrying out my invention as here embodied, A represents the valve of an ordinary governor, B the frame thereof, and C the valve-stem, which passes through the hub of the beveled gear D. The corresponding gear E, meshing with the first-named gear, reaches the latter, and in turn receives its rotation from the belt-pulley F. The centrifugal balls G are attached to the upper ends of the spring-arms H, the lower ends of which arms are attached to block I, which revolves with the gear D.

The construction thus far described is that of a well-known governor and forms no part of my invention, which latter will next be set forth.

A sleeve J is fitted to slide upon the valve stem or rod, and is connected by the links K with the balls G, so that when said balls move outward this sleeve will be drawn upward upon the valve-rod, and this upward movement of the sleeve is transmitted to the rod by said sleeve coming in contact with the collar L, secured thereon, as will be readily understood, thus with the varying of the speed of rotation of the balls, due to the varying of the speed of the engine, the valve-rod will be moved up or down, as the case may be, and to that extent vary the admission of steam through the medium of the valve in the well-known manner. A second sleeve M is fitted to slide upon the valve-rod above the collar L and is connected with the balls by the links N, and the upper end of the valve-rod has threaded thereon the thumb and jam nuts O and P, respectively. By this construction when the balls move inward the collar M is moved upward upon the valve-rod, and when said balls reach a certain point upon this inward movement the sleeve M will come in contact with the nut P, and thereafter any further inward movement of the balls will force the valve-rod upward and have the same result as the previous outward movement of the balls—that is to say, varying the admission of steam to the engine by the operation of the governor-valve. The point at which this manipulation of the governor-valve by the inward movement of the balls takes place is determined by the adjustment of the thumb and jam nuts upon the valve-rod, and in practice this may be so adjusted as to approximately maintain the normal speed of the engine or slow the same down or cut off the supply of steam entirely. From this description it follows that should the belt driving the governor suddenly break, thus arresting the centrifugal action of the balls, the latter would swing inward by the spring action of the arms H, throwing the sleeve M upward into contact with the nut P and hold the speed of the engine at the predetermined point until attention could be given the governor. The same result would

take place should the belt slip or the governor for any cause be prevented from revolving. The obvious advantage of such an arrangement of governor is the prevention of the racing of the engine should accident happen to the governor. The simplicity of my improvement makes it durable and positive and reliable in its action and in no wise interferes with the ordinary action of the governor.

It is to be noted that my improvement may be applied to any form of centrifugal ball-governor, and when such governor is constructed to lower the valve-rod upon the outward movement of the balls my improvement is reversed in position, so as to force the rod downward when the balls swing inward past a certain limit.

Having thus fully described my invention, what I claim as new and useful is—

1. In combination with a governor of the character described, suitable means whereby the valve is held open at normal speed, a sleeve adapted to slide upon the valve-rod, means for connecting said sleeve with the balls, an obstruction—such as a nut, carried by the rod against which said sleeve is adapted to abut, whereby the valve-rod may be moved in the direction for closing the valve when the balls swing inward past a predetermined limit, as specified.

2. In combination with a centrifugal ball-governor having a valve-rod actuated in one direction by the outward swinging of the balls, of a sliding collar connected to the balls by links for actuating the valve-rod in the same direction when the balls swing inward past a predetermined limit, as specified.

3. In combination, a governor-valve controlling the admission of steam to an engine or the like, a rod extending from said valve, balls mounted upon suitable arms, means for revolving said balls, a sleeve mounted loosely upon the rod, links connecting said sleeve with the balls, a collar secured upon the valve-rod whereby the outward movement of the balls will effect the movement of the valve-rod through the sleeve in the direction for reducing the flow of motive fluid to the engine, a second sleeve loosely mounted upon the valve-rod, links connecting the last-named sleeve with the balls, and an adjustable nut so located upon the rod as to bring about the movement of said rod in the direction before named by the swinging inward of the balls past the predetermined point, as specified.

In testimony whereof I have hereunto affixed my signature in the presence of two subscribing witnesses.

WILLIAM D. SMITH.

Witnesses:

MARY E. HAMER,

L. W. MORRISON.