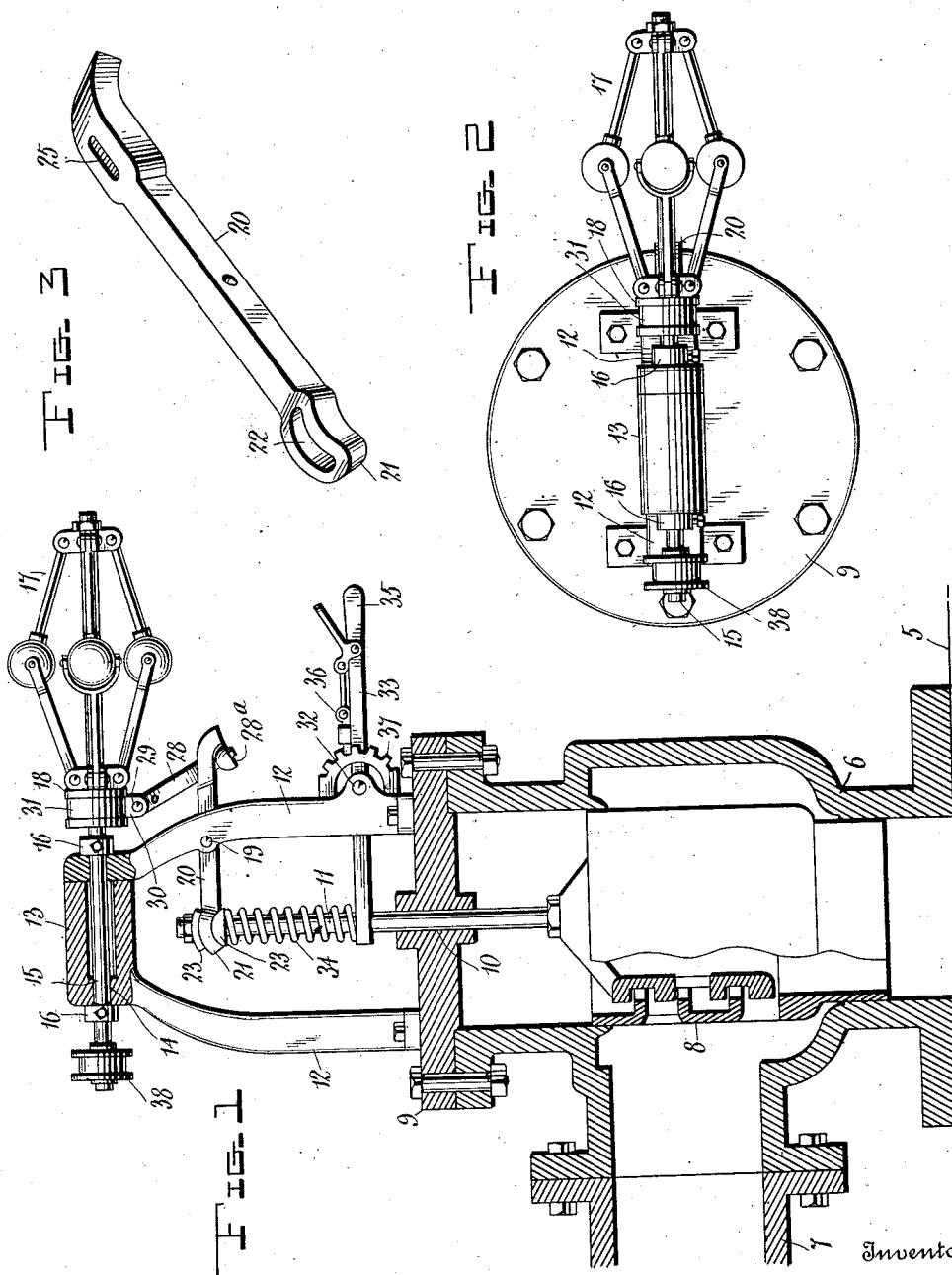


APPLICATION FILED AUG. 4, 1911.

1,047,747.

Patented Dec. 17, 1912.

2 SHEETS—SHEET 1.



Witnesses

George L. Atkins

M. S. Christensen,

By Handley Kuller

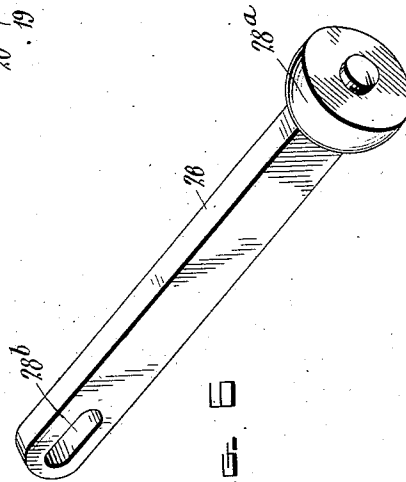
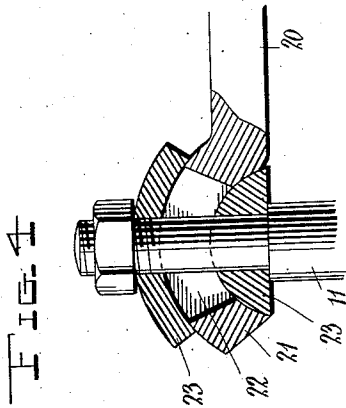
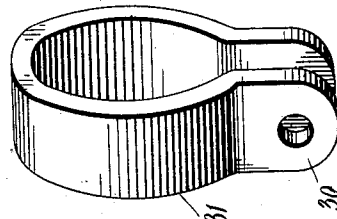
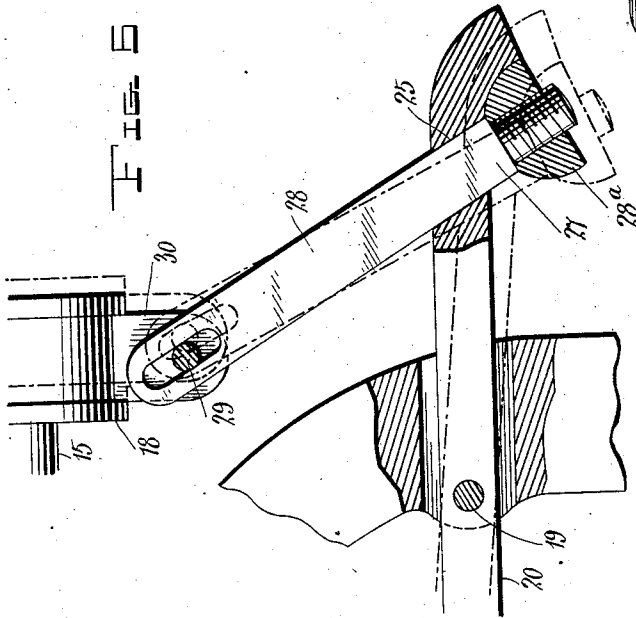
Attorneys

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GOVERNOR REGULATOR.
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2 SHEETS-SHEET 2.



Witnesses

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UNITED STATES PATENT OFFICE.

MARTIN S. CHRISTENSEN, OF HEREFORD, SOUTH DAKOTA.

GOVERNOR-REGULATOR.

1,047,747.

Specification of Letters Patent.

Patented Dec. 17, 1912.

Application filed August 4, 1911. Serial No. 642,418.

To all whom it may concern:

Be it known that I, MARTIN S. CHRISTENSEN, a citizen of the United States, residing at Hereford, in the county of Meade, State of South Dakota, have invented certain new and useful Improvements in Governor-Regulators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to an improvement in governors adapted for use in connection with either steam or gas engines, and has for its principal object to provide the controlling valve of the engine with a governor which is connected to the main shaft of the engine.

Another object of the invention is to provide a governor for the purpose described, in which novel means are employed for positively adjusting the delicacy of the governor.

A further object of the invention is to provide a governor of the class described, which is composed of a minimum number of parts, is therefore simple in construction, and is cheap to manufacture.

With these and other objects in view, the invention consists in the construction and novel combination of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended; it being understood that various changes in the form, proportion, size and minor details of construction within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings: Figure 1 is a view, partly in elevation and partly in section, showing the application of my invention to a slide valve of a steam engine. Fig. 2 is a top plan view thereof. Fig. 3 is a perspective view of the lever, Fig. 4 is an enlarged detail sectional view showing the connection between the valve stem and lever. Fig. 5 is an enlarged detail sectional view showing the connection between the lever and the connecting rod, Fig. 6 is a perspective view of the connecting rod, Fig. 7 is a perspective view of the connecting eye.

Like reference numerals designate corresponding parts in all the figures of the drawing.

Referring to the drawings, the numeral 5 designates the usual steam chest having a valve casing 6 mounted thereon. A steam pipe 7 is connected to the casing, and a slide valve 8 controls the passage of the steam through the casing. The casing is provided with a closure plate 9, having a central opening 10 wherethrough passes the valve stem 11. Mounted upon the plate 9 is an inverted U-shaped bracket which includes spaced legs 12—12 and a bight 13, said bight being formed with a bearing 14 which is disposed at right angles to the stem 11. Disposed within the bearing 14 and projecting from either end thereof is a shaft 15. Collars 16—16 are carried by the shaft and engage the opposite ends of the bight of the bracket to hold the shaft against longitudinal movement. Mounted upon one end of the shaft is a centrifugal governor 17, which includes the usual sliding collar 18, said collar being grooved and splined upon the shaft, said governor being employed for controlling the valve 8. A transverse bearing pin 19 is mounted in one leg of the bracket, and fulcrumed thereon is a lever 20. This lever is formed from an angular rod, and has one end 21 curved downwardly and formed with an elongated opening 22 for receiving the upper end of the valve stem 11 for permitting said lever 20 to be rocked without shifting the valve stem laterally. Spaced nuts 23—23 are attached to the upper end of the stem, and are disposed above and below the lever. The other end of the lever is curved downwardly and is formed with an inclined opening 25, and disposed within said opening is one end 27 of a connecting rod 28 of a size corresponding to the opening 25. Associated with the end 27 is a curved nut 28^a, which is disposed below the curved end of the lever. By means of the slot 25, the connecting rod 28 is retained in a relatively fixed position therewith, and by means of the nut 28^a that end of the lever 20 may be adjusted along the rod 28, as will be readily understood. The other end of the rod 28 is formed with an elongated opening 28^b. This end of the rod is disposed between ears 30 which are integral with a shipper ring 31 that is disposed around the grooved collar 18. A pin 29 is disposed within the opening 28^b of the rod, and is connected to the ears 30 of the shipper ring. Pivoted upon a bearing pin 32 mounted on the leg of the bracket below the lever 20, is

an operating lever 33, one end thereof being formed with an elongated opening for receiving the valve stem 11. A coil spring 34 is disposed around the stem 11 between the lever 20 and the operating lever 33. The other end of the lever is formed with a handle 35, and associated with this lever is the usual pawl 36 which coacts with a rack 37 carried by the adjacent leg of the bracket. Mounted upon the end of the shaft opposite the governor is a pulley 38 which is adapted to be connected to the usual crank shaft of the engine.

In operation, as the shaft 15 is rotated, the sleeve 18 of the governor 17 will be shifted outwardly along said shaft. As the sleeve 18 thus moves, the connecting arm 28 will be carried therewith, and as a result, the slot 28^b will permit the connecting rod 28 to be lowered, as clearly shown in Fig. 5 of the drawings. This movement of the rod 28 will permit of the swinging of the lever 20 upon its pivot 19, said swinging of said lever being caused by the coil spring 34 bearing against the inner end of the hand lever 35 and the inner end of said lever 20. As a result of the upward movement of the inner end of the lever 20, the valve stem 11 will be raised, thereby permitting more steam to pass from the steam chest through the valve casing and into the steam pipe 7. Now it will be observed that if it is desired to lower the maximum speed of the engine, the handle 35 of the hand lever 33 is raised so that the inner end of said lever is depressed. As a result, the tension of the coil spring 34 is reduced. Therefore, when the sleeve 18 moves outwardly by reason of the action of the governor 17, the inner end of the lever 20 will be caused to be raised a distance depending upon the tensile strength of the spring 34 as will be readily understood. As a result, the movement of the valve 8 is limited.

What is claimed is:

1. In combination with a valve casing having inlet and exhaust ports, of a valve slideable in said casing for controlling the inlet port, a cover plate for the casing formed with an opening, a valve stem projecting

through the opening of the cover plate, an inverted U-shaped bracket extending from the plate and including spaced legs and a bight portion, a shaft journaled in said bight portion, a centrifugal governor on said shaft, a lever fulcrumed on one leg of the bracket and having a loose connection at one end with the valve stem, a connection between the other end of the lever and the governor, an operating lever also fulcrumed on the leg of the bracket and having its inner end formed with an opening wherethrough passes the valve stem, a coil spring disposed around said stem intermediate the lever and the operating lever, means for locking the lever in a predetermined position to control the limit of movement in one direction of the governor.

2. In combination with a valve casing having inlet and exhaust ports, of a valve slideable in said casing for controlling the inlet port, a cover plate for the casing formed with an opening, a valve stem projecting through the opening of the cover plate, an inverted U-shaped bracket extending from the plate and including spaced legs and a bight portion, a shaft journaled in said bight portion including a grooved collar, a ring disposed in the groove of the collar, formed integral with the ring and disposed at right angles thereto, a lever fulcrumed on one leg of the bracket and having an opening in one end for receiving the upper end of the valve stem, a rod connected at one end to the other end of the lever and having pivotal connection at the other end with the ear of said ring, an operating lever fulcrumed on the leg and having an opening in one end wherethrough passes the valve stem, a coil spring disposed around the stem intermediate the lever and the operating lever, and means for locking the lever in a predetermined position to control the limit of movement in one direction of the governor.

In testimony whereof, I affix my signature, in presence of two witnesses.

MARTIN S. CHRISTENSEN.

Witnesses:

CHARLES FRANCIS,
JOHN HAER.