

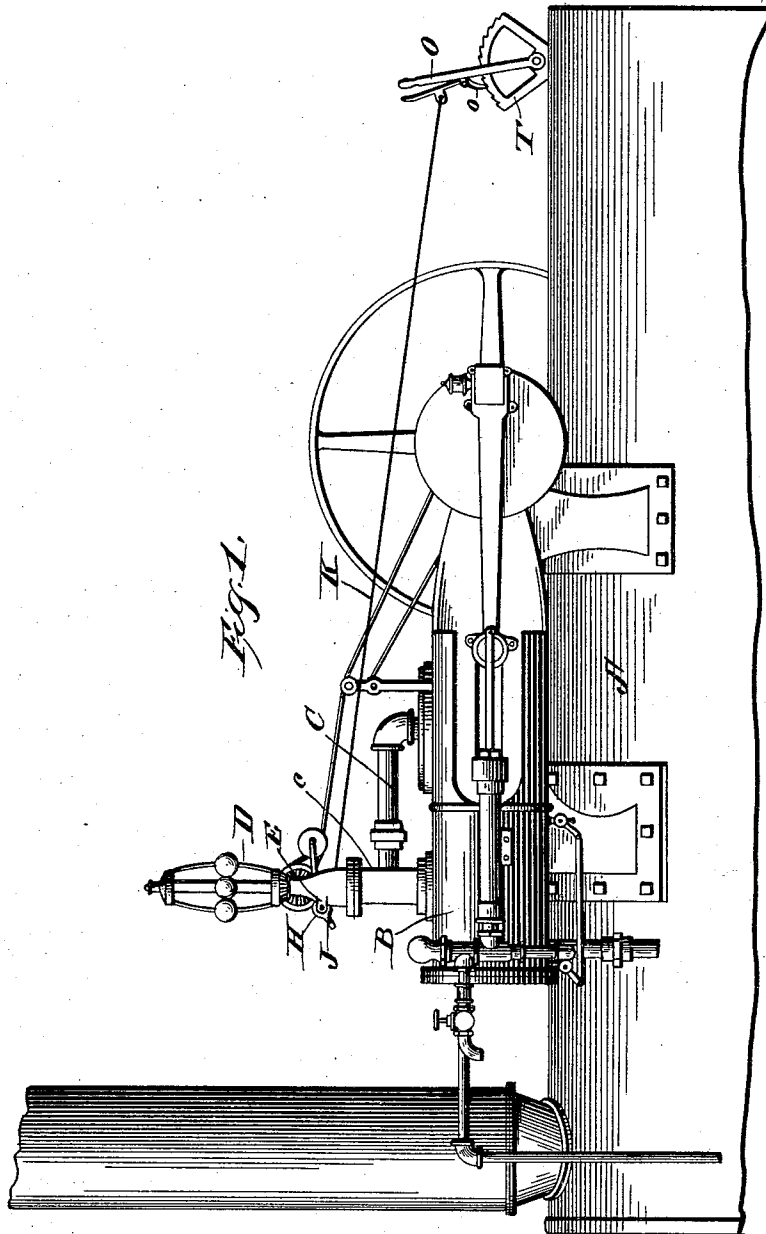
(No Model.)

2 Sheets—Sheet 1.

W. B. & H. F. WARNER.
SPEED GOVERNOR ATTACHMENT.

No. 479,040.

Patented July 19, 1892.



Witnesses

E. P. Mordeman,
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Inventors

W. B. Warner and
Henry F. Warner

By their Attorneys,

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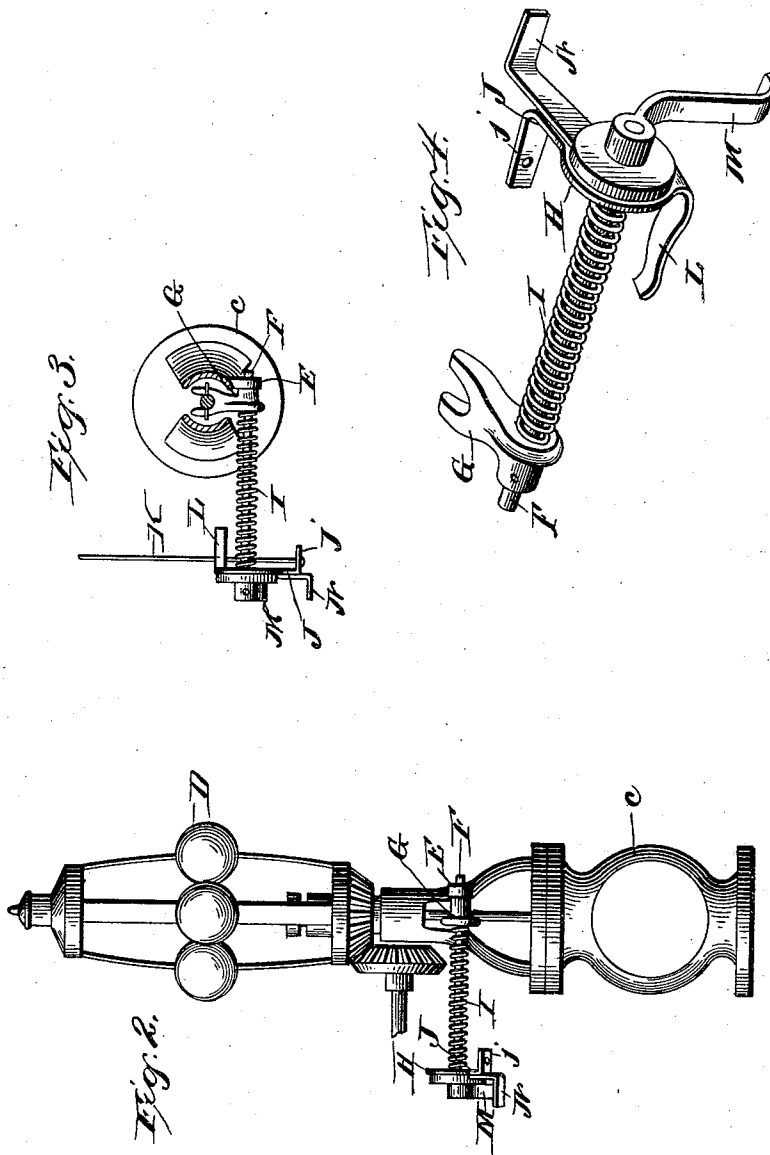
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UNITED STATES PATENT OFFICE.

WILLIAM B. WARNER AND HENRY F. WARNER, OF MONTICELLO, IOWA.

SPEED-GOVERNOR ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 479,040, dated July 19, 1892.

Application filed December 31, 1891. Serial No. 416,706. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM B. WARNER and HENRY F. WARNER, citizens of the United States, residing at Monticello, in the county of Jones and State of Iowa, have invented a new and useful Governor-Valve Regulator, of which the following is a specification.

This invention relates to governor-valve attachments or regulators for steam-engines; and it has for its object to provide a valve-regulator that is especially adapted for use in connection with the governor-valve of a traction-engine, and is designed with special reference to such engines, so as to allow for a complete control of the engine when traveling over stony grounds and up inclines. In such cases the governor of the engines will not regulate the amount of steam necessary, inasmuch as the speed the engine is traveling when meeting obstructions or going up hills will not allow the governor to be sufficiently idle to raise the valve the necessary height, while by the use of our attachment the valve may be raised independently of the governor, so that the speed may also be positively and accurately regulated; but it will of course be readily understood by those skilled in the art that when the engine is traveling over stony ground and up hills the same must necessarily travel very slow, and inasmuch as the speed the engine is traveling controls the governor-valve it naturally follows that the said valve will not be operated sufficiently by the governor-balls. In other words, this invention contemplates an auxiliary valve-controlling device which is designed to be used entirely independent of the governor at a time when the governor will not work to the extent required by the needs of the engine—to wit, when the traction-engine is traveling so slow as to need a greater head of steam than the almost-idle governor will supply.

With these and many other objects in view, which will readily appear as the nature of the invention is fully understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

In the accompanying drawings, Figure 1 is a side elevation of the upper portion of a traction-engine provided with the valve-regu-

tor constructed in accordance with this invention. Fig. 2 is a front elevation of the engine-governor detached and provided with the said valve attachment. Fig. 3 is a sectional view on the line *xx* of Fig. 2. Fig. 4 is a detail in perspective of the attachment.

Referring to the accompanying drawings, A represents a traction-engine of the ordinary construction and provided with the usual cylinder B, located thereover, receiving steam through the pipe C, having a controlling governor-valve *c*, constructed in the usual manner and controlled by an ordinary centrifugal governor D, connected with the stem of said valve working through the valve-casing and operated by the ordinary belts and pulleys, as will be readily apparent. The casting receiving the governor-valve stem directly above the valve-casing and below the ball-governors is provided with a lateral perforated offstanding bearing-lug E, that receives one end of the horizontally-oscillating or actually-rocking shaft F. Securely keyed to said shaft adjacent to said lug is the forked-stem actuating-lever or rock-arm G, the forked end of which projects within the casing and is loosely connected to the valve-stem of the governor-valve, which is also connected with the ball-governor directly above, and said lever is designed to act as an independent regulator to raise the valve-stem according to the needs of the engine and the option of the operator.

Loosely mounted upon the shaft F, near the opposite end thereof, is the oscillating disk or head H, to the inner face of which is secured a coil-spring I, coiled upon said shaft and secured at its opposite end to the forked lever G, connected to the valve-stem. The revolving or oscillating disk or head H is provided with an outwardly-extending arm J, terminating in an inner flanged end *j*, to which is connected the attachment-operating chain or rod K, controlling the movements of said attachment, while directly or almost opposite to said flanged end *j* the said head or disk H is provided with an inwardly-extending arm L, under which the operating rod or chain K passes and is held out of the way by said arm of the mechanism operating the governor and the various parts in connection therewith. The extreme outer end of the shaft F, opposite

to the bearing-lug thereof, is provided with a depending independent actuating-lever M, which, when the said head or disk has been oscillated a certain distance, is designed to be struck by the outwardly-extending tappet-arm N, secured to or integral with the arm J of said head or disk, and thus as the said tappet-arm strikes the lower end of the independent lever M the same is moved independently of the spring upon the shaft, and thus raises the forked lever to its highest point, and thus throws the governor-valve open to its fullest extent. The operating rod and chain extends from its connection with said head to the rear end of the engine and is there connected with the lever O, having its dog *o* engaging the toothed segment T, thus providing means whereby the engineer at the rear of the engine upon his platform may regularly and accurately control said attachment according to the amount of steam required and to assist the regular governor. It can be readily seen that by drawing on said lever the head H causes the spring to tighten, and thus oscillate the shaft F and the forked lever G carried thereby. Thus according to the tension of the spring caused by drawing upon the lever at the rear end of the engine the said valve is regulated and set to work according to the requirements of the engine independently of the governor when the latter is ineffective, while at the same time it can also be seen that when it is necessary for the full head of steam to be thrown into the cylinder by drawing on the lever at the end of the engine until the stop or tappet-arm engages the depending lever on the extreme end of said shaft the same will move the forked lever upon the opposite end of said shaft until the valve is opened to its fullest extent. It may be further observed that inasmuch as when the engine is moving slowly over uneven ground the governor-balls will be partly thrown out, so as to tend to close the valve, and therefore at such times the device becomes particularly useful to open the valve as far as may be necessary.

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

1. In a governor-valve regulator, the combination, with the governor-valve and the stem-casing thereabove, of an actually-rocking shaft journaled in the valve-stem casing, a lever or rock-arm keyed to said shaft and loosely connected with the valve-stem, an oscillating head loosely working upon said shaft, a coiled spring secured to said lever and head, and means for oscillating said head, substantially as set forth.

2. In a governor-valve regulator, the combination, with the governor-valve and the stem-casing thereabove, of an actually-rocking shaft journaled at one end in the valve-stem casing, a forked lever or rock-arm keyed to said shaft and loosely embracing and connected with the valve-stem, an oscillating head loosely working upon said shaft and provided with an inner flanged arm, and a supplemental inwardly-projecting arm opposite to said flanged arm, a coiled spring secured to said forked lever and head, an operating chain and rod secured to said flanged arm and passing under said supplemental arm, and means for operating said chain and rod, substantially as set forth.

3. In a governor-valve regulator, the combination, with the governor-valve and the stem-casing thereabove, of an actually-rocking shaft journaled at one end in the valve-stem casing, a forked lever or rock-arm keyed to said shaft and loosely embracing and connected with the valve-stem, an independent actuating-lever keyed to and depending from the outer end of said shaft, an oscillating head loosely working upon said shaft and provided with an inner flanged end or arm, and an outwardly-projecting tappet-arm adapted to engage with said independent lever, a coiled spring secured to said forked lever and said head, a lever-and-segment attachment, and an operating chain and rod connected with said flanged end or arm and said attachment, substantially as set forth.

4. In a governor-valve regulator, the combination, with the governor-valve and the stem-casing thereabove, of an actually-rocking spring-actuated shaft journaled in the valve-stem casing and having a rock-arm connected with the valve-stem, and means for controlling the spring rocking said shaft, substantially as set forth.

5. In a governor-valve regulator, the combination, with the governor-valve and the stem-casing thereabove, of an actually-rocking spring-actuated shaft journaled in the valve-stem casing, a lever or rock-arm keyed to said shaft and connected with the valve-stem, and means for controlling the spring oscillating said shaft, substantially as set forth.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

WILLIAM B. WARNER.
HENRY F. WARNER.

Witnesses:

B. M. GAYLORD,
J. S. HALL.