(No Model.) 3 Sheets—Sheet 1.

J. H. TENNYSON.

AUXILIARY CUT-OFF FOR ENGINES.

No. 506,565. Patented Oct. 10, 1893.

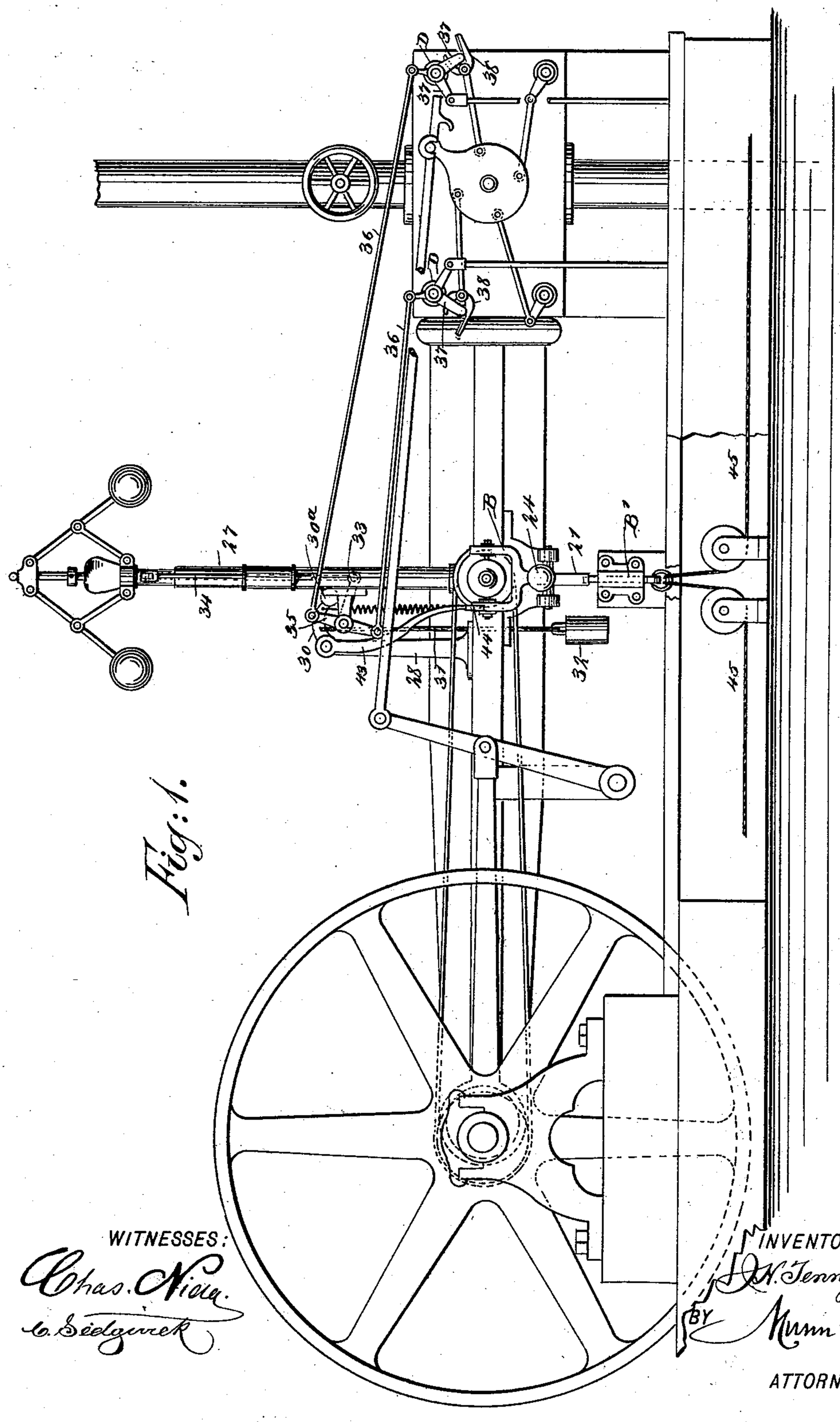


Fig. 1.

WITNESSES:
Chas. Nida.
C. Sedgwick

INVENTOR
J. H. Tennyson
BY Munn & Co
ATTORNEYS.

(No Model.) 3 Sheets—Sheet 2.

J. H. TENNYSON.

AUXILIARY CUT-OFF FOR ENGINES.

No. 506,565. Patented Oct. 10, 1893.

Fig: 2.

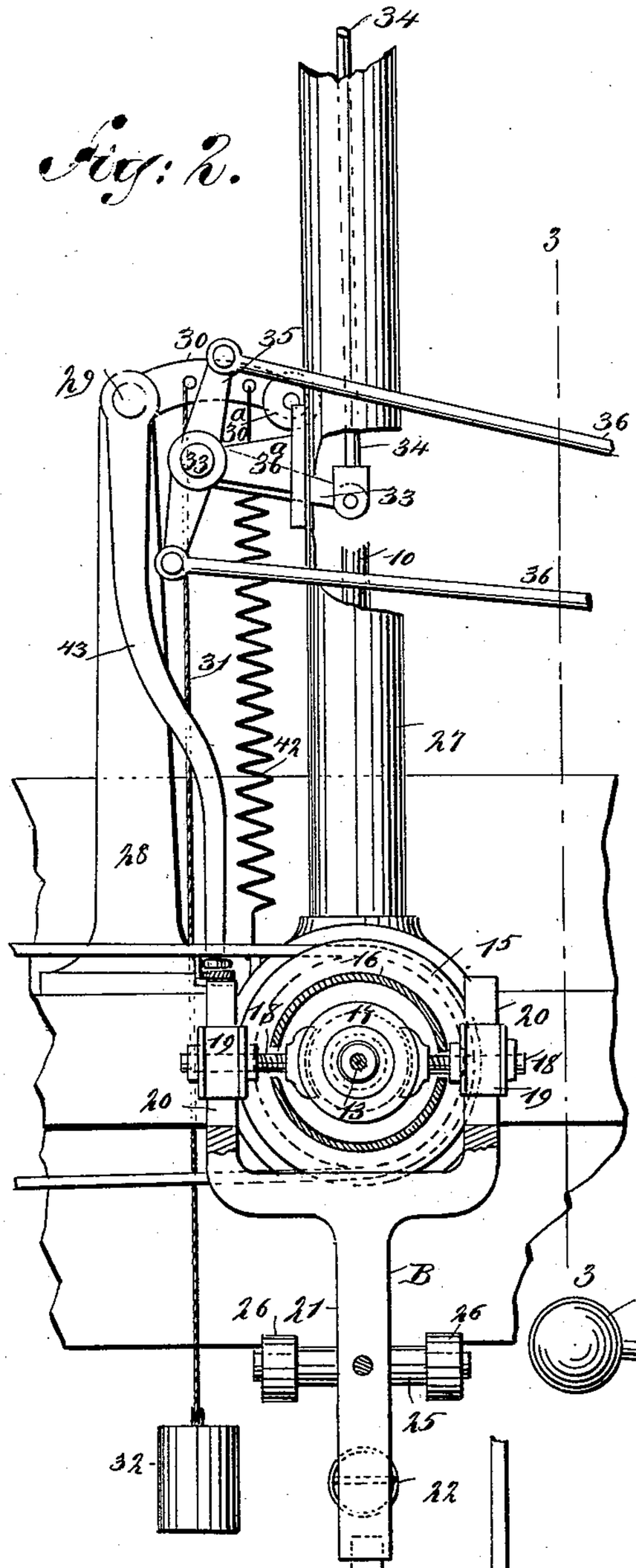


Fig: 3.

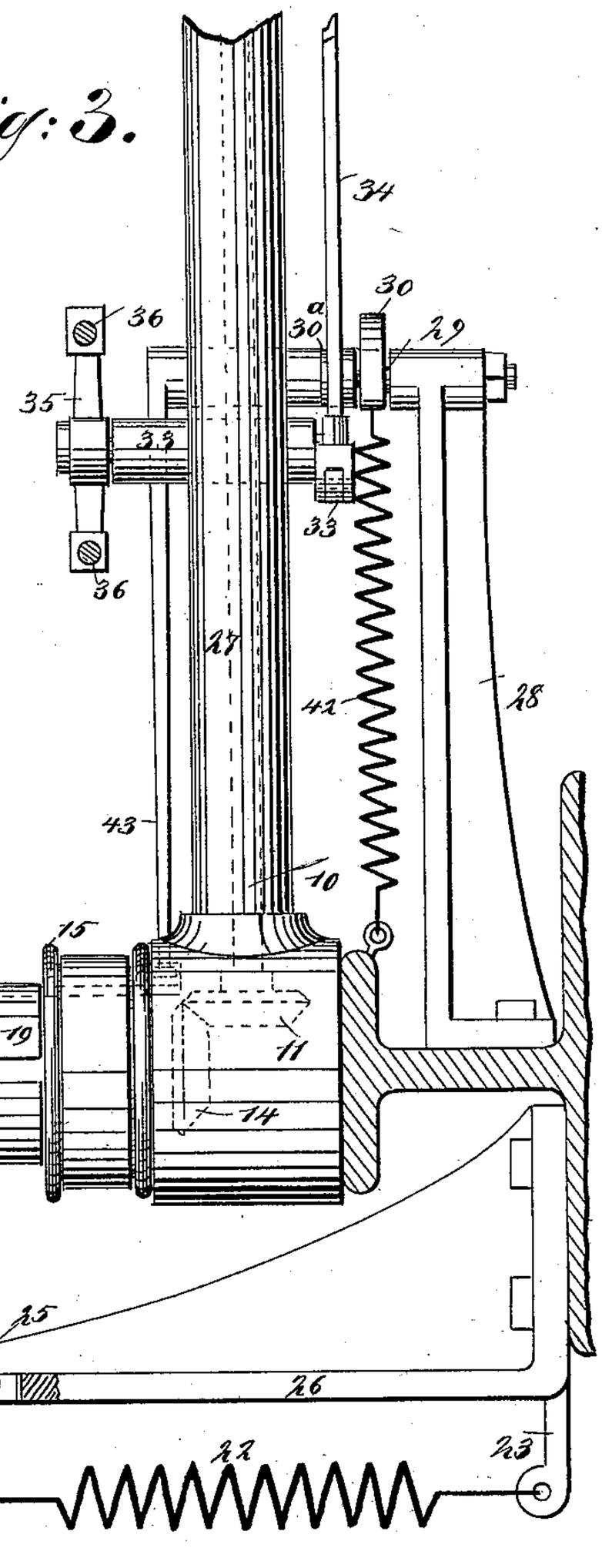
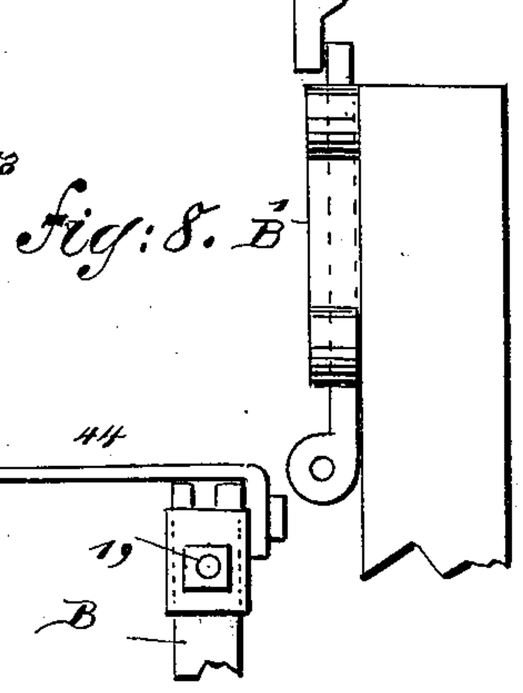


Fig: 8.



WITNESSES:

Chas. Nicla.

C. Sedgwick

INVENTOR

J. H. Tennyson

BY Munn & Co

ATTORNEYS.

(No Model.) 3 Sheets—Sheet 3.

J. H. TENNYSON.

AUXILIARY CUT-OFF FOR ENGINES.

No. 506,565. Patented Oct. 10, 1893.

Fig: 4.

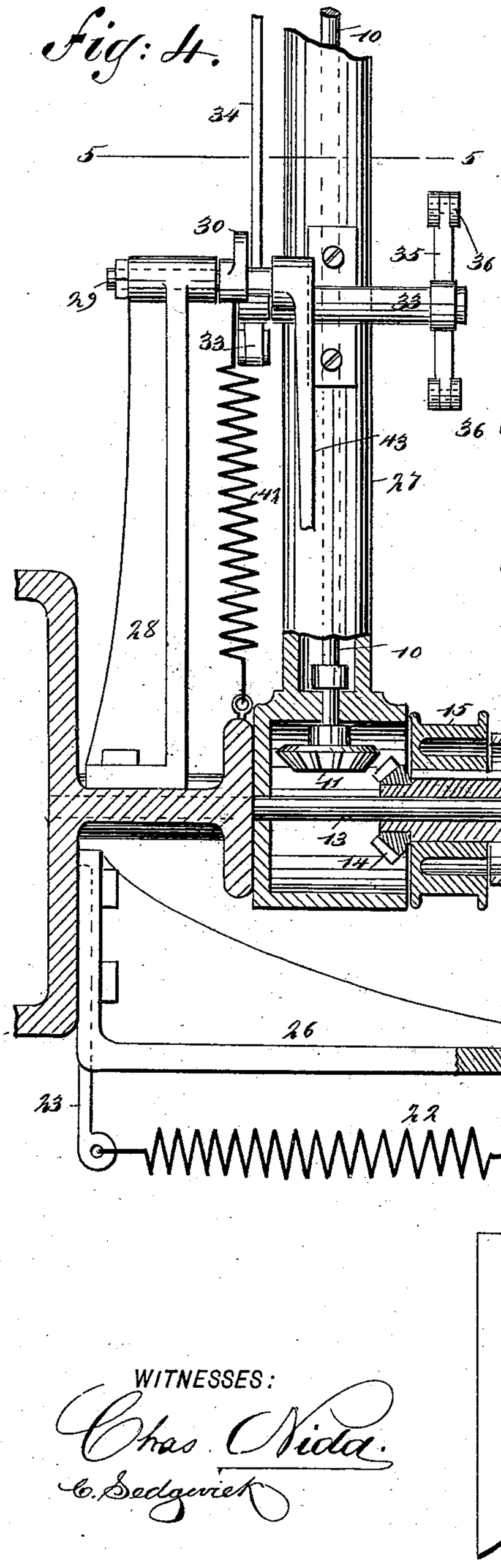


Fig: 5.

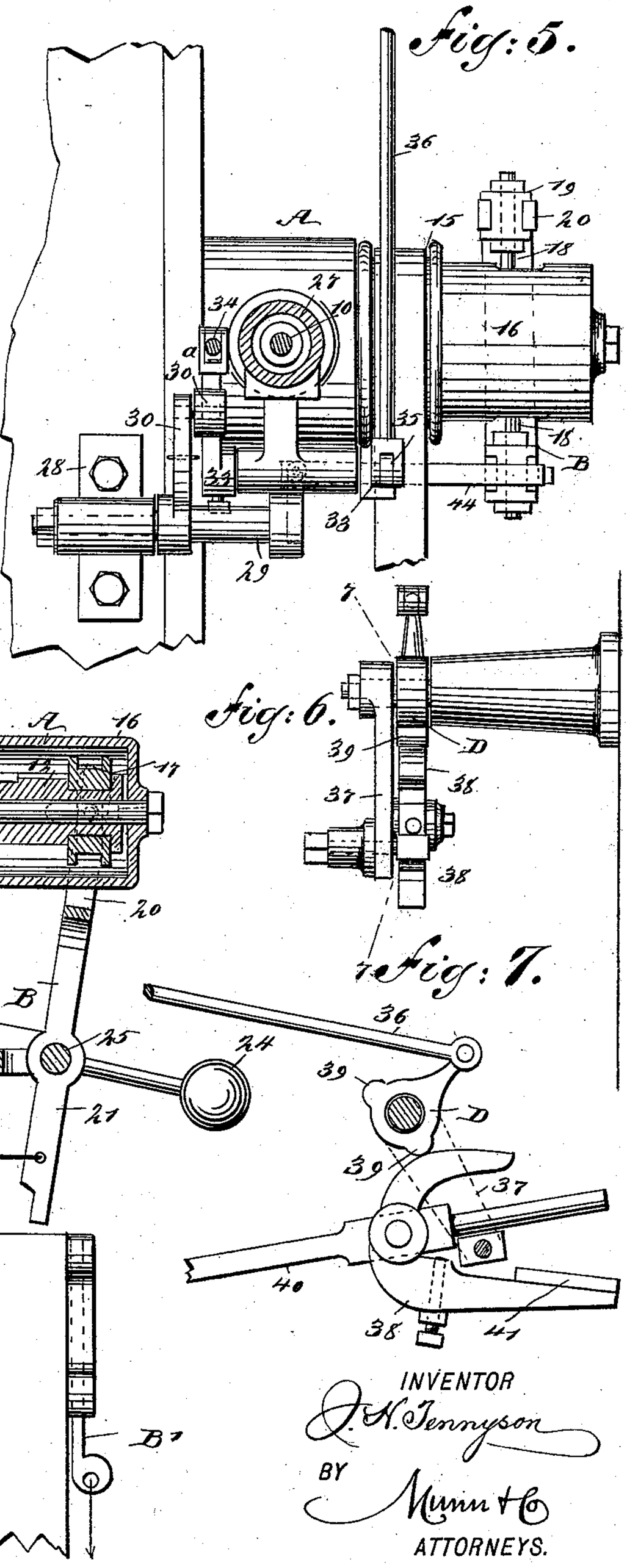


Fig: 6.

Fig: 7.

WITNESSES:

Chas. Nida.

C. Sedgwick

INVENTOR

J. H. Tennyson

BY

Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

JOHN H. TENNYSON, OF NEW YORK, N. Y.

AUXILIARY CUT-OFF FOR ENGINES.

SPECIFICATION forming part of Letters Patent No. 506,565, dated October 10, 1893.

Application filed June 14, 1893. Serial No. 477,558. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. TENNYSON, of New York city, in the county and State of New York, have invented a new and Improved Auxiliary Cut-Off for Engines, of which the following is a full, clear, and exact description.

My invention relates to an auxiliary cut-off for engines of the Corliss type, or for engines of like type, and it has for its object to provide a simple, durable and economic device capable of attachment to any engine, whereby from any point in the building, no matter how far distant from the engine, the engine may be stopped in a moment, the cut-off being effected as quickly, if not quicker, than when the stoppage is performed in the usual manner.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth and pointed out in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of an engine of the Corliss type having the auxiliary cut-off applied. Fig. 2 is a side elevation of the major portion of the device and a vertical section through the governor gear casing. Fig. 3 is a front elevation of the device, and is likewise a partial sectional view, the section being taken practically on the line 3—3 of Fig. 2. Fig. 4 is a longitudinal section through the governor driving gear, illustrating a shifting form of gear and the gear in its shifted position, the governor casing and the auxiliary cut-off device being shown in rear elevation. Fig. 5 is a horizontal section through the governor casing, taken practically on the line 5—5 of Fig. 4, and illustrating the auxiliary cut-off mechanism in plan. Fig. 6 is an edge view of the crab and cut-off valve of the engine. Fig. 7 is a section taken practically on the line 7—7 of Fig. 6; and Fig. 8 is a detail view, illustrating the manner in which the auxiliary cut-off mechanism is held in its inactive or normal position while the sections of the governor gear are in mesh.

The governor gear A is a shifting gear, and is practically in two sections as shown in Fig. 4. The governor stem 10, carries at its lower end a gear 11, preferably a beveled gear, and this gear constitutes one section of the shifting gear above alluded to. A second section consists of a hub 12, held to slide upon a guide rod 13, or its equivalent, and the hub carries at its inner end a gear 14, to mesh with the gear connected with the governor stem. A pulley 15, is keyed or otherwise secured upon the hub 12; and the outer end of the hub is preferably concealed by means of a casing 16. Near the outer end of the hub a clutch sleeve 17, is located thereon, which sleeve does not revolve; and the said clutch sleeve is connected at opposite sides with trunnions 18, the trunnions having pivotal or rocking engagement with the sleeve to a greater or less extent, and the trunnions are passed through blocks 19, after they have been passed through a suitable opening in the casing 16, as shown in Fig. 5, and the trunnion blocks are mounted to slide to a greater or less extent in the arms 20 of a fork B. This fork extends upward at opposite sides of the casing 16, as best shown in Fig. 2, and is provided with slide ways also shown in Fig. 2, in which the blocks 19 have their movement. Thus it will be observed that no matter how the fork B is rocked and moved, that is, inward or outward, there can be no possible jam in its connection with the hub 12. The fork B, is provided with a shank 21, which extends downward and at its lower end is adapted to engage with a bolt B′ of any approved construction, or the equivalent of the bolt, said bolt being attached to any convenient fixed support. When the stem of the fork is in engagement with the bolt the governor gears 11 and 14, will be in mesh; and such position is the normal position of both the gears and the fork. A spring 22, is usually secured to the lower portion of the stem of the fork and to any convenient portion of the engine frame, or a bracket 23, projected from the frame, as shown in Fig. 4; and the tendency of the spring 22, is to draw the shank of the fork out of engagement with the bolt.

In order that when the fork is released

from the bolt its inward movement shall be expedited to the greatest possible extent, a weight 24, is attached to the front portion of the shank near its lower end, the weight extending some distance forward from it. In this manner, as soon as the bolt is disengaged from the fork, the spring and weight will act combinedly to throw the movable section of the shifting governor gear out of engagement with the non-shifting section or that connected with the governor stem. The shank of the fork is pivotally located upon a cross bar 25, and the weight 24, is placed in front of the pivotal portion of the shank, the cross bar 25 being supported ordinarily by arms 26, which are projected from the engine frame.

Preferably at the rear of the governor casing 27 a standard 28, is erected upon the engine frame, as shown in Figs. 2, 3, 4 and 5; and in this standard, at its upper end a rock shaft 29, is journaled. The rock shaft has securely and rigidly attached to it an arm 30, which arm is usually curved in a forwardly direction for example, as is best shown in Figs. 2 and 5, and the said arm has preferably connected with it two chains or cables 31, carrying weights 32 at their lower ends, which weights are capable of quickly drawing the arm 30 downward, and thereby rocking the shaft. The curved arm 30, which may be termed a trip arm, is ordinarily provided with a friction roller 30^a at one side, shown best in Fig. 5, and this friction roller is located immediately over and is adapted to contact with the governor crank 33, which crank carries as is usual the shifting rod 34, usually connected with the governor sleeve for the purpose of drawing downward the governor pawls, as shown in Fig. 1. The governor crank likewise carries the usual rocking bar 35, to the opposite ends of which the ordinary cut-off rods 36, are pivotally connected, the said rods at their opposite ends being connected with the cut off valves D; the said valves are provided with the usual fingers 37, adapted to be engaged by the crabs 38, carried by engines of the Corliss type.

The cut off valve is provided with stops 39, shown in Fig. 7, and when the picking rod 40, is manipulated, the pick 41, will operate upon the valve fingers 37 in the usual manner; and when the cut-off rods are shifted from their normal position by the trip mechanism which has been partially described above, one of the stops 39 on the valve will so engage with the crab, as shown in Fig. 7, as to prevent the pick of the crab from touching the valve fingers and thus a positive and permanent cut off is insured.

The end of the governor crank which carries the rocking bar 35, is journaled in suitable bearings 36^a, projected from any convenient support. In order that the forward movement of the trip arm 30 may be made as rapid as possible, so as to insure a cut off at the valve in an instant, if possible, one or more springs 42, may be secured to said arms and to any part of the frame of the engine. The outer end of the rock shaft has attached to it an arm 43, which may be termed a lock arm, and this arm is shaped in any manner that may be demanded in practice, or by the character of the engine to which the attachment is made. The arm 43, however, extends downward normally, as shown in Fig. 2, and is usually provided at its lower end with a friction roller; said roller is shown in Fig. 8, being made to rest upon a lock bar 44, which is secured to the upper end of one member of the fork B; and while the fork is in its normal position the lock bar 44, by engagement with the lock arm 43 will hold the rock shaft 29 in such position as to prevent the trip arm 30 from engaging with the governor crank, and releases the shaft and arm in a great measure from the tension of the springs and the weights. Only one weight is shown in the drawings, but any desired number may be employed. The bolt B′, is connected by chains or cables 45, as shown in Fig. 1, with any desired portion or portions of the building in which the engine is located; and by drawing upon either of the ropes or cables the bolt may be taken out of engagement with the shank of the shifting fork. I do not, however, restrict myself to the use of cables, chains, wire or like devices for tripping the bolt, as electrical devices may be employed for that purpose; and I further desire it to be understood that the details of the invention may be varied, equivalents being substituted, and that some of the parts may be omitted without departing from the nature of the invention.

In operation, when the bolt B′, is withdrawn from engagement with the shifting fork, the fork is drawn inward at its shank end, as shown in Fig. 4, and the two sections of the driving governor gear are separated, thus silencing the governor. At the same instant, the lock bar 44, is withdrawn from under the lock arm 43 of the trip mechanism, and the weights and springs 32 and 42, will act to draw downward the trip arm 30, bringing it in such engagement with the governor crank as to change the position of that crank and cause the governor balls to be closed, and at practically the same time the governor crank will have so shifted the rocking bar of the cut-off rods as to cause the valves with which they are connected to cut off, presenting the proper lugs to the crabs to prevent their picks from touching the cut-off fingers. Thus it will be observed that from any portion of the building the engine may be stopped almost instantly, and even with greater facility and dispatch than can be accomplished by the mechanism ordinarily located upon the engine for that purpose. The device is furthermore exceedingly simple, it is durable and it is economic in its construction, and it can be applied to any cut-off engine, or any ball governor and will at all times operate in the manner desired.

Having thus described my invention, I

claim as new and desire to secure by Letters Patent—

1. In an engine, the combination, with cut-off valves and rods, and a governor and governor gear, of means for shifting said gear, a trip mechanism connected with the cut-off rods, and a means for releasing the trip mechanism, as specified.

2. In an engine, a governor gear provided with a shifting section, a device for shifting the same, substantially as described, and a trip mechanism controlled by the governor and having a shifting action upon the cut-off rods, whereby the governor gear is disconnected and the trip mechanism automatically closes the cut off valves, substantially as described.

3. In an engine, a shifting governor gear, a trip mechanism controlled thereby, adapted to act upon the governor crank, a shifting mechanism connected with the governor gear, a locking device connected with the shifting mechanism, and means, substantially as shown and described, for releasing the lock from said shifting mechanism at the engine, or at any point remote therefrom, as and for the purpose specified.

4. In an engine, the combination, with a shifting governor gear, a rocking arm adapted for engagement with the governor crank, a support normally maintaining the arm out of engagement with the crank, and a shifting mechanism connected with the governor gear, capable of being operated from a point near the engine or remote therefrom, and a releasing device connecting the shifting mechanism and the support of the rocking arm, whereby the shifting mechanism and arm will operate simultaneously, as set forth.

5. In an engine, the combination, with a shifting governor gear, of a rocking arm adapted to act upon the governor crank, tension devices connected with the rocking arm and tending to draw it to an engagement with the governor crank, a supporting device connected with the rocking arm, a shifting mechanism connected with the governor gear, and a releasing device carried by the shifting mechanism and engaging with the supporting device of the rocking arm, as and for the purpose specified.

6. In an engine, the combination, with a shifting governor gear, a rock shaft, a trip arm projected from the rock shaft and adapted to engage with the crank of the governor, and tension devices tending to draw the arm to a contact with the governor crank, of a shifting mechanism connected with the governor gear, tension devices connected with the shifting mechanism and operating to carry the sections of the gear out of engagement, a supporting arm connected with the rock shaft, a releasing device adapted for engagement with the supporting arm and connected with the shifting mechanism, a locking device adapted for engagement with the shifting mechanism, and means for tripping said locking device, as and for the purpose specified.

JOHN H. TENNYSON.

Witnesses:
ANDREW M. LESTER,
W. H. PHILLIPS.