

(No Model.)

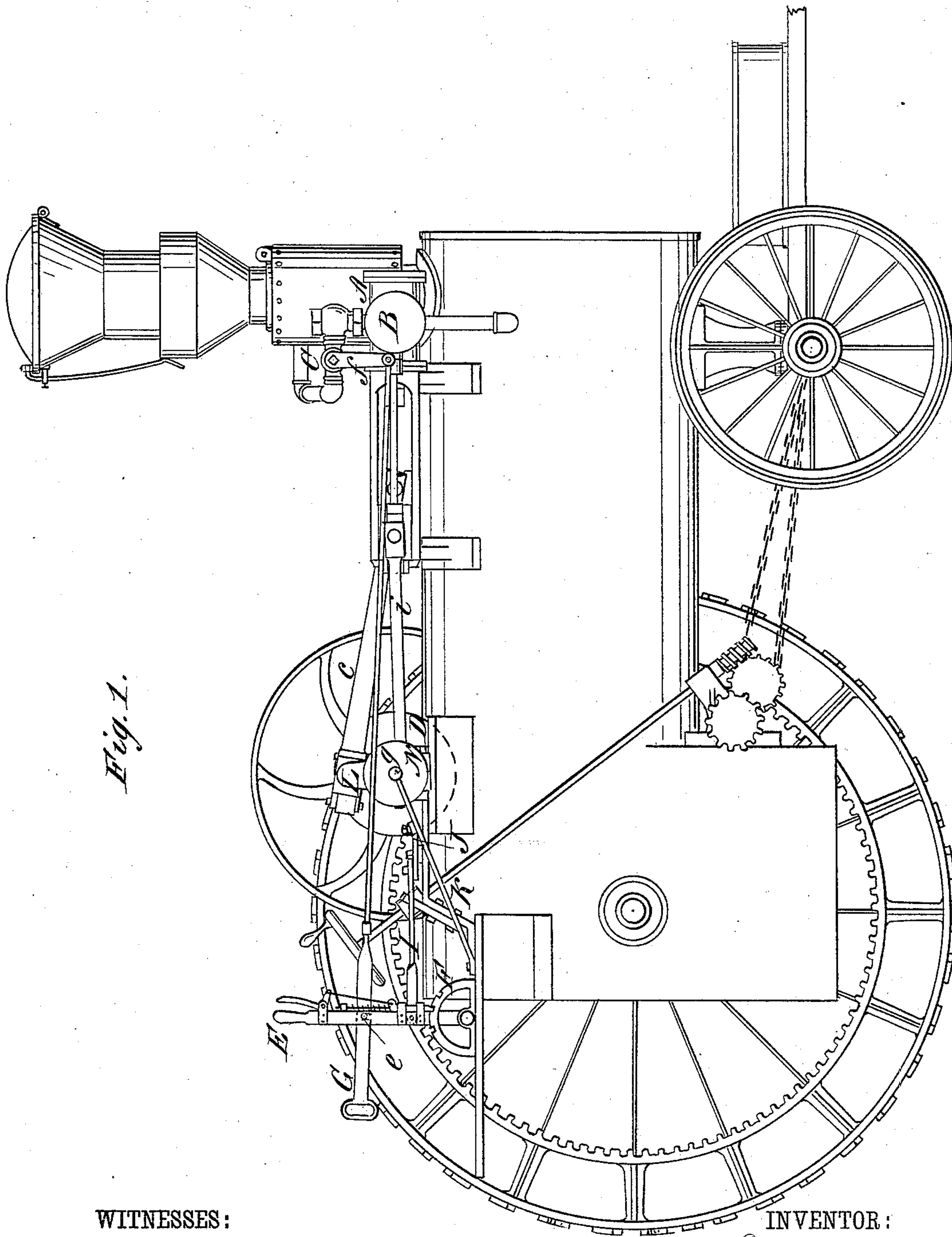
2 Sheets—Sheet 1.

J. A. STOUT.

VALVE GEAR.

No. 310,743.

Patented Jan. 13, 1885.



WITNESSES:

Donn Twitchell
L. Sedgwick

INVENTOR:

J. A. Stout
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ATTORNEYS.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 7.

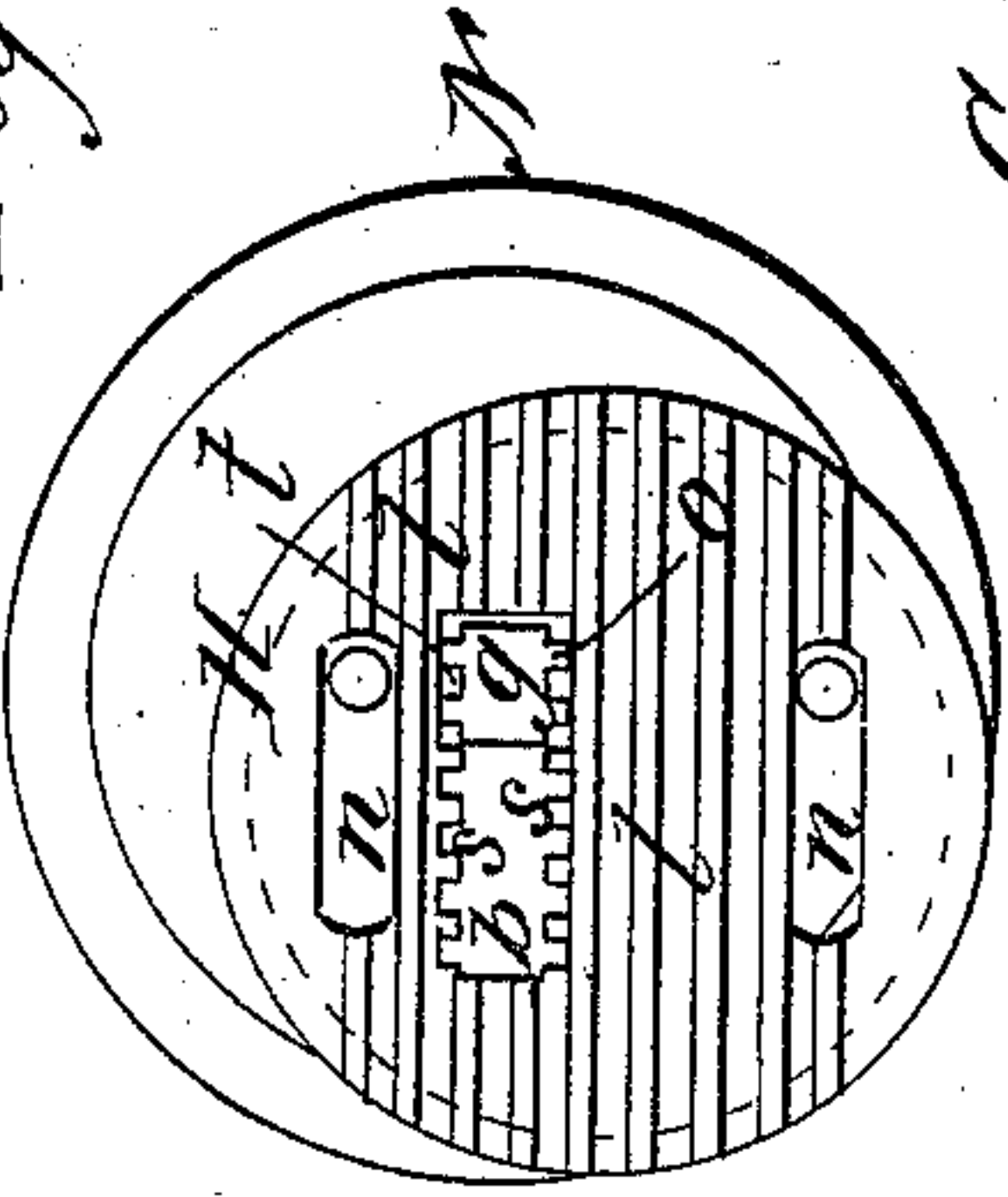


Fig. 6.

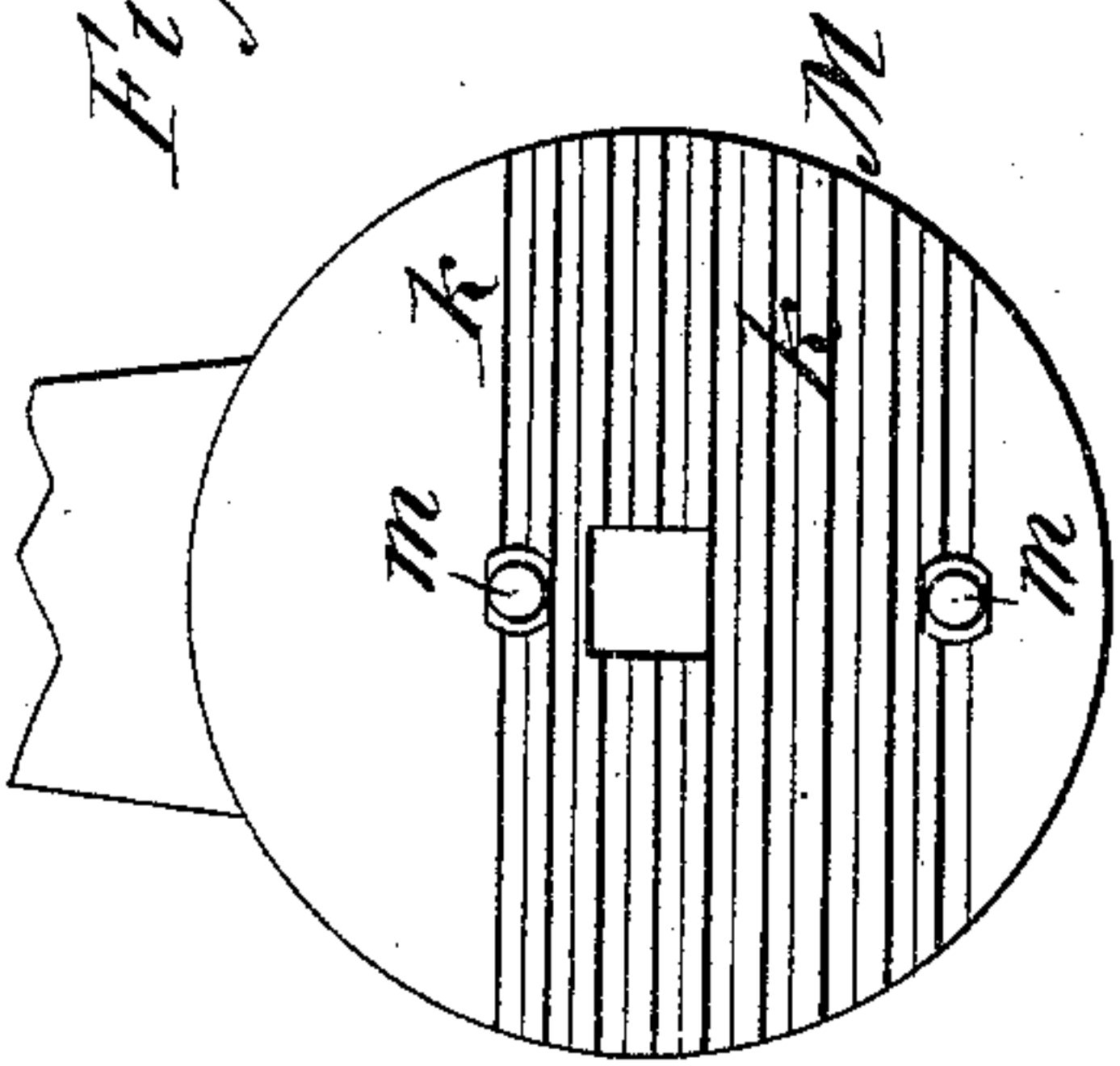


Fig. 5.

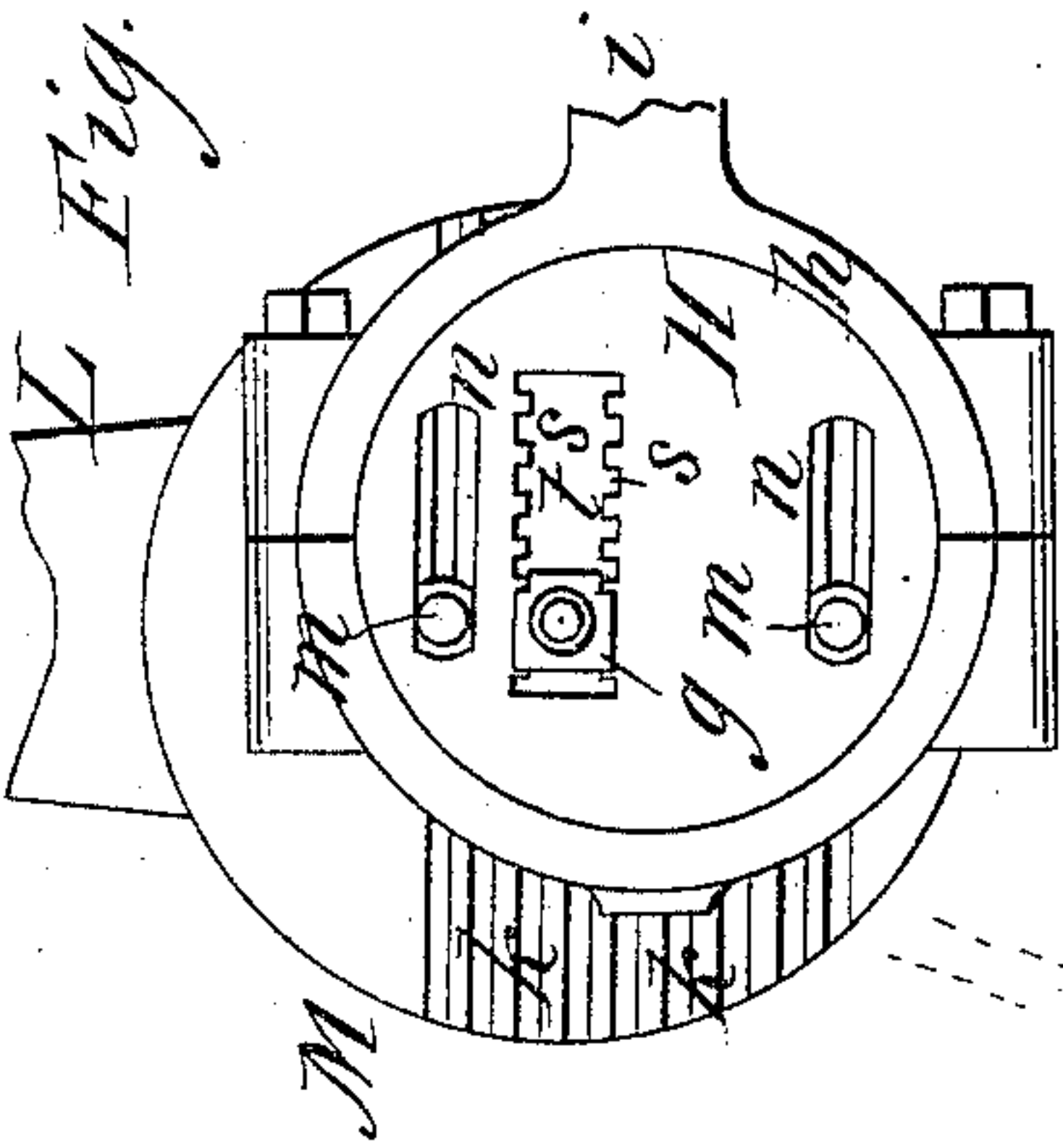


Fig. 2.

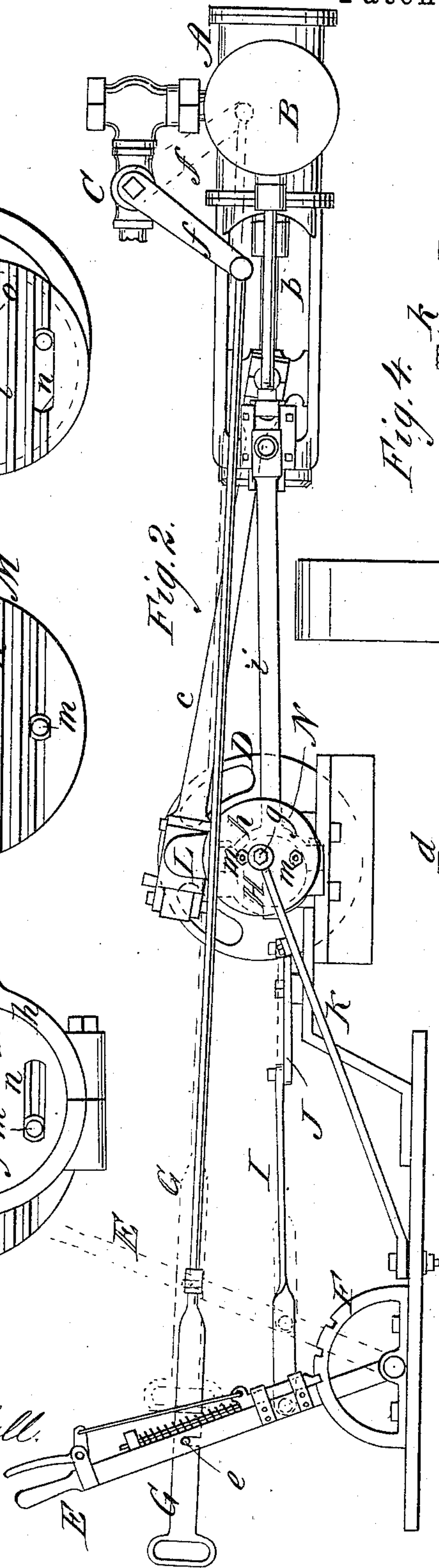


Fig. 4.

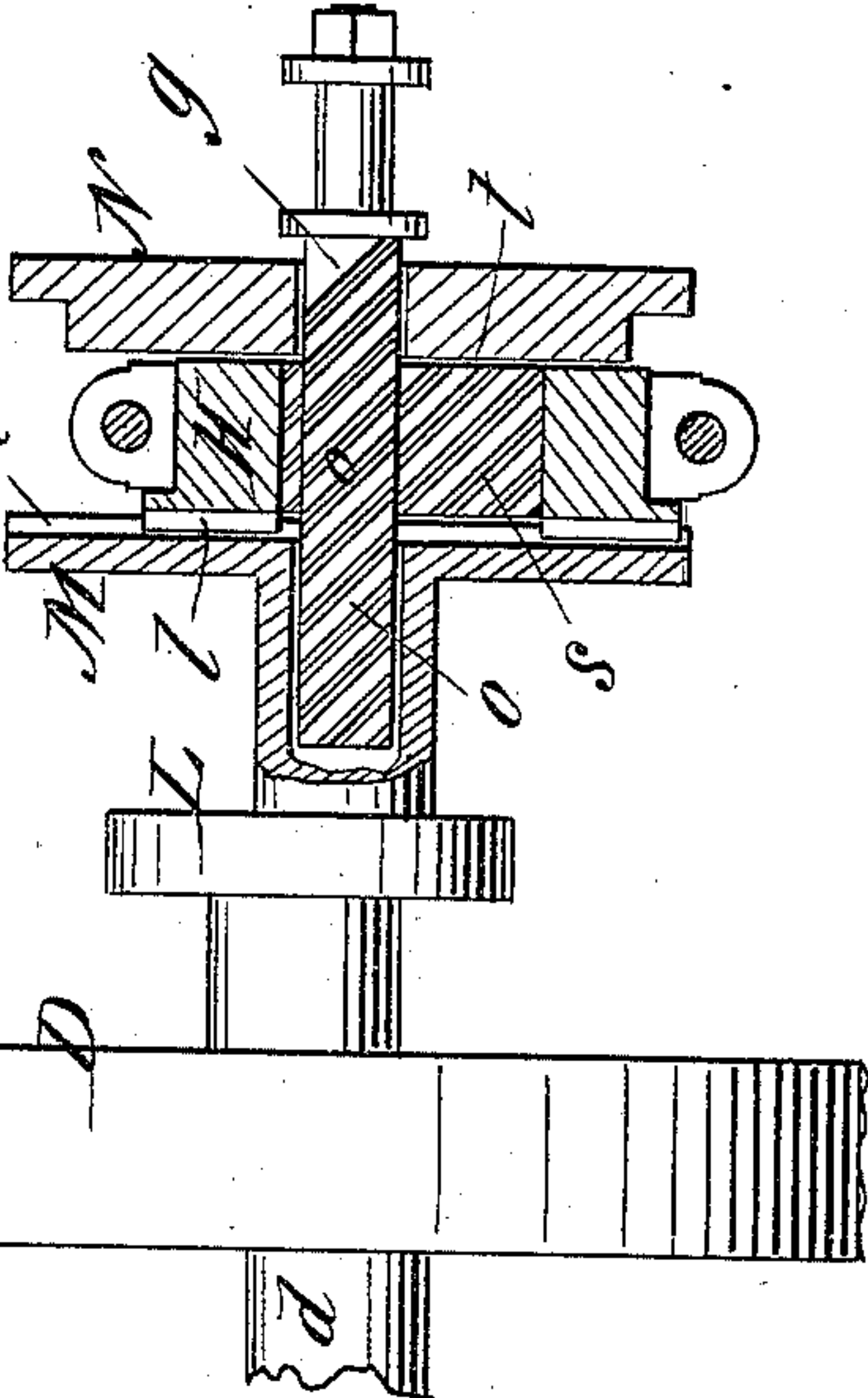
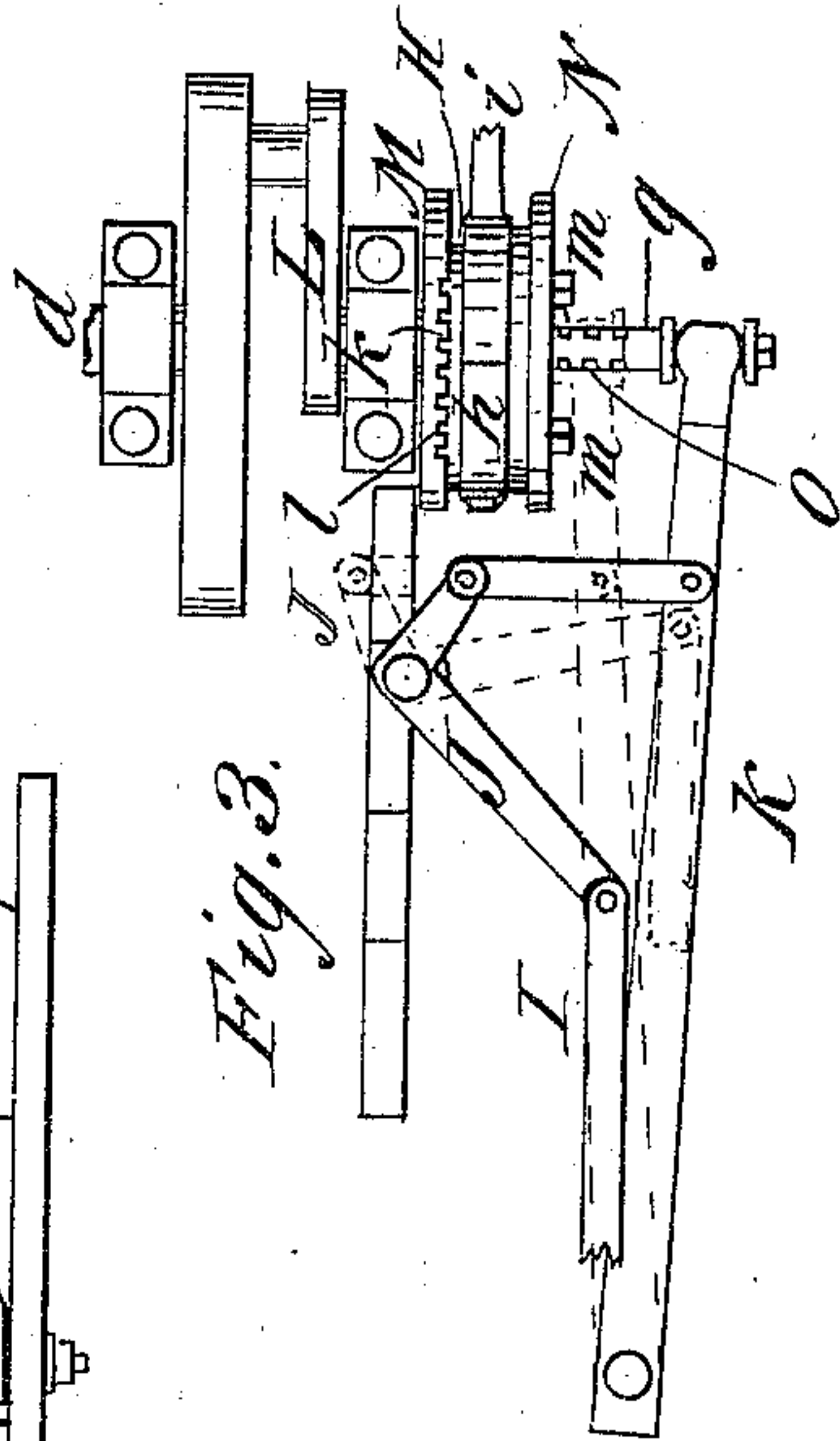


Fig. 3.



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UNITED STATES PATENT OFFICE.

JAMES ANDREW STOUT, OF BELLEVILLE, ILLINOIS, ASSIGNOR TO THE HARRISON MACHINE WORKS, OF SAME PLACE.

VALVE-GEAR.

SPECIFICATION forming part of Letters Patent No. 310,743, dated January 13, 1885.

Application filed April 11, 1884. (No model.)

To all whom it may concern:

Be it known that I, JAMES A. STOUT, of Belleville, in the county of St. Clair and State of Illinois, have invented certain new and useful Improvements in Valve-Gear for Traction-Engines, of which the following is a full, clear, and exact description.

As valve-motions of traction and many other engines are ordinarily constructed, it is necessary for the engineer to manipulate three different handles or levers in order to run the engine. Thus the engineer, standing on the platform, usually controls with his left hand the steering apparatus, and also uses the same hand to move the throttle-valve for stopping and starting the engine, while with his right hand he controls the reversing-lever, which should not be thrown until the throttle-valve has been manipulated to shut off steam. Occasionally it is necessary to guide or steer the engine and close the throttle-valve at the same time. To accomplish all these movements—that is, to guide or steer the engine to operate or close the throttle-valve and to reverse the engine—requires considerable practice or experience and celerity with the means heretofore in use for the purpose, so as to avoid accidents and breakage of the engine, and it is no easy matter for the engineer with his two hands to control the three movements hereinbefore named. Accidents, in fact, frequently occur when making sudden turns or approaching dangerous places, owing to the engineer's inability to quickly stop, guide, and reverse the engine.

One part of my invention consists in novel combinations of mechanisms, whereby the engineer has to control but two instead of three levers or handles to give the three movements named, and whereby the mechanism for the purpose is greatly simplified.

My invention also has for its object and consists in novel means for simplifying the mechanism necessary to control the movement of the engine-valve and to reverse the engine. The link-motion and two eccentrics ordinarily used for the purpose is a difficult piece of mechanism to make and keep in order, altogether unsuitable to a machine used on farms

and generally controlled by inexperienced men, with but poor facilities for repair. My invention in this connection dispenses with one of the eccentrics, its strap, and connecting-rod, also the link and link-block, with its rock-shaft and connections.

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

Figure 1 represents a side elevation of a traction-engine embodying my invention. Fig. 2 is a side view of the valve mechanism and reversing-gear, together with the engine-cylinder and main crank with their connections, and Fig. 3 is a plan view of the same in part. Figs. 4, 5, 6, and 7 are detail views upon a larger scale, mainly of certain means used to throw the eccentric, which operates the main valve of the engine.

A indicates the engine-cylinder; B, its steam-chest; C, the throttle-valve; *b*, the piston-rod; D, the main-crank, and *c* the pitman connecting said rod and crank for giving rotary motion to the engine-shaft *d*.

E represents the reversing-lever of the engine, of ordinary construction, and arranged to move over a notched arc, F, either forward or backward, according to the direction in which it is required to drive the engine. When said lever is engaged with either one of the two extreme notches in the arc, the engine will be driven forward or backward, as the case may be, but when engaged with the middle notch the engine will be stopped. It may also, if desired, be adjusted into other positions. Upon this lever E is a pin, *e*, with or from which a rod, G, capable of being controlled by hand, is made to engage or disengage, as required. This rod is connected with an arm or lever, *f*, on the stem of the throttle-valve, that is of circular form and constructed to work in a chamber of like form, and is made with four ports arranged so that free passage for the steam is afforded through the valve to run the engine forward or backward, when the reversing-lever E, having the rod G connected to it, is in either of its extreme positions shown by full and dotted lines in

Fig. 2, but so that steam is shut off by said valve when the reversing-lever is in the middle notch of the arc F and the eccentric H is on the center and gives no motion to the slide-valve of the engine.

To the lever E is also connected a bar, I, which in its turn is joined to an elbow-lever, J, that is attached to a shifting-lever, K, that throws a return-pin, *g*, in or out, as herein-
 10 after described. The eccentric H is connected with the slide-valve of the engine by the usual strap, *h*, and rod *i*. It should be noticed that the rod G may be lifted from engagement with the reversing-lever E for opening and closing
 15 the throttle-valve independently of the reversing-lever when desired.

L is the return-crank connected in the usual manner with the wrist-pin of the main crank or balance crank-head D of the engine. Con-
 20 nected with this return-crank, on the same spindle or shaft as it, and so as to virtually form part of it, is a plate, M, having a series of parallel grooves, *k*, in its face, which is next adjacent to the valve-eccentric H, that
 25 is provided on its face next contiguous to said plate with a corresponding series of tongues or teeth, *l*, arranged to fit or slide within the grooves *k*.

N is an outer plate secured by bolts *m m* to
 30 the inner plate, M, and serving to hold the eccentric and other parts in position, said bolts passing through slots *n n* in the eccentric to provide for the movement of said eccentric backward or forward between the
 35 plates, as guided by the tongues and grooves *k l*, to shift the engine-valve according to the direction in which it is required to run the engine. The longitudinally-sliding return-pin
 40 *g* that passes through the plates M N and eccentric H may be of rectangular form where it penetrates said parts, and is made with a series of oblique cogs or teeth, *o o*, of any
 45 suitable shape on two of its opposite sides, which teeth engage with similarly oblique grooves *s s* in the opposite walls of a slot, *t*, in the eccentric and in line with the tongues *l* thereon. With this simple mechanism, ac-
 50 cordingly as the lever K is shifted by the movement forward or backward of the reversing-lever E, will the pin *g* be forced in or out, and the eccentric H be thrown, as re-
 quired, to change the motion of the engine.

Having thus described my invention, what

I claim as new, and desire to secure by Letters Patent, is—

1. In combination with the main-valve re-
 55 versing-lever E, the rod G, for controlling the throttle-valve connected with the reversing-lever, so as to admit of its engagement with and disengagement therefrom, whereby said
 60 rod G may either be operated automatically in concert with the reversing-lever E or independently thereof, essentially as described.

2. The combination, with the main crank D, the return-crank L, and the plate M, on the
 65 same spindle or shaft as said crank L, provided with a series of parallel grooves, *k*, in its face, of the valve-eccentric H, provided with a series of tongues or teeth, *l*, adapted to slide within grooves *k*, and an outer plate
 70 connected with the plate M for holding the eccentric H in engagement therewith, substantially as set forth.

3. The combination, with the main crank D, the return-crank L, and the grooved plate M, on
 75 the same spindle-shaft therewith, of the valve-eccentric H, provided with tongues for engaging the grooves of plate M, and with slots *n*, the outer plate, N, and the bolts *m*, passing through said plate and slots *n* into the plate
 80 M, substantially as set forth.

4. The combination, with the main crank D, the return-crank L, plate M, on the same spin-
 85 dle therewith, and the outer plate, N, of the valve-eccentric H, held to slide between said plates, and provided with an oblique-grooved slot at one side of its center, and the pin *g*, passing through the plates and eccentric and
 90 provided with oblique teeth for engaging the teeth of the eccentric H and sliding it between the plates, substantially as set forth.

5. The combination, with the main crank D, the return-crank L, and the guide-plates L M,
 95 of the valve-eccentric H, held to slide between said plates, and provided with the slot *t* and oblique grooves *s*, the obliquely-toothed pin *g*, passing through plates N M, and slot *t* of
 100 valve-eccentric H, the pivoted laterally-swinging shifting-lever K, the reversing-lever E, the connecting-rod I, and the rod G for oper-
 ating the throttle adapted to be operated by the reversing-lever, substantially as set forth.

JAMES ANDREW STOUT.

Witnesses:

HENRY SPRING,
 L. HARRISON.