

(No Model.)

2 Sheets—Sheet 1.

E. F. EDGAR.
MECHANICAL MOVEMENT.

No. 555,235.

Patented Feb. 25, 1896.

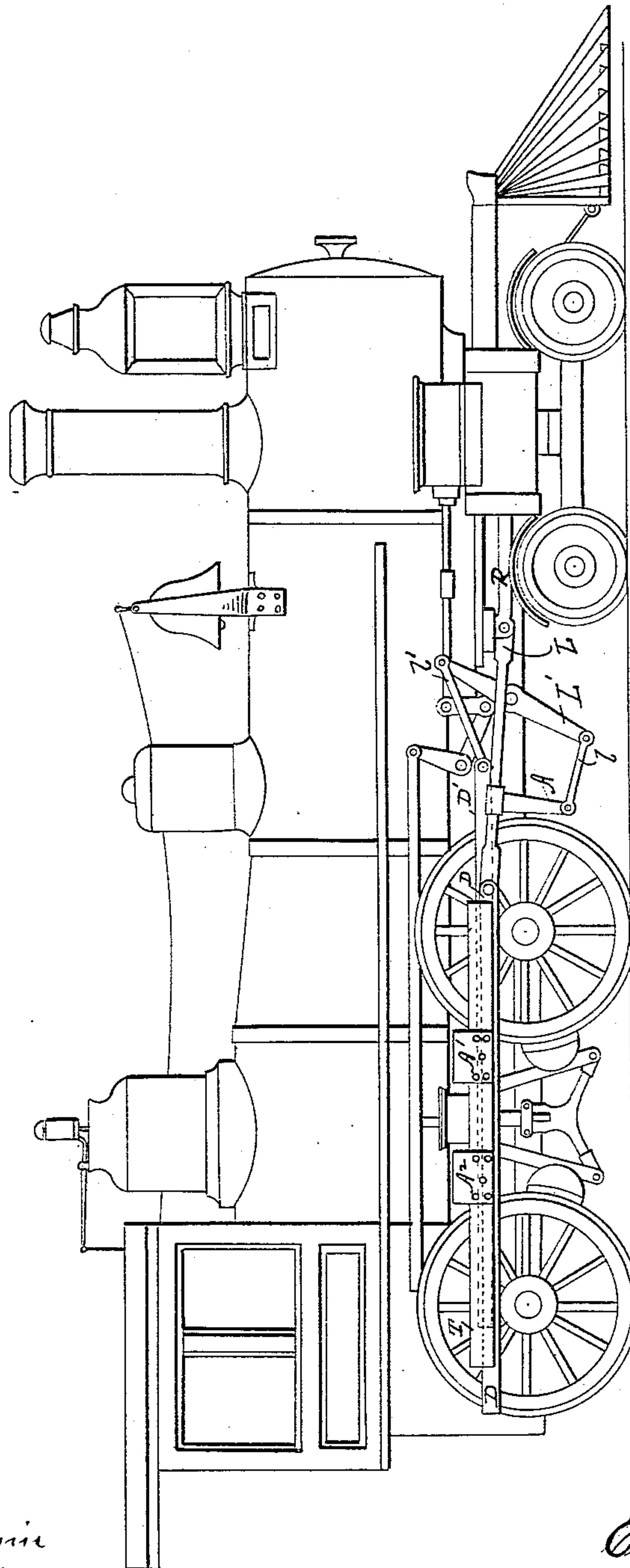


Fig. 1.

WITNESSES:

C. W. Benjamin
J. B. Smiley

INVENTOR

Ellis F. Edgar
BY R. G. Minter
his ATTORNEY

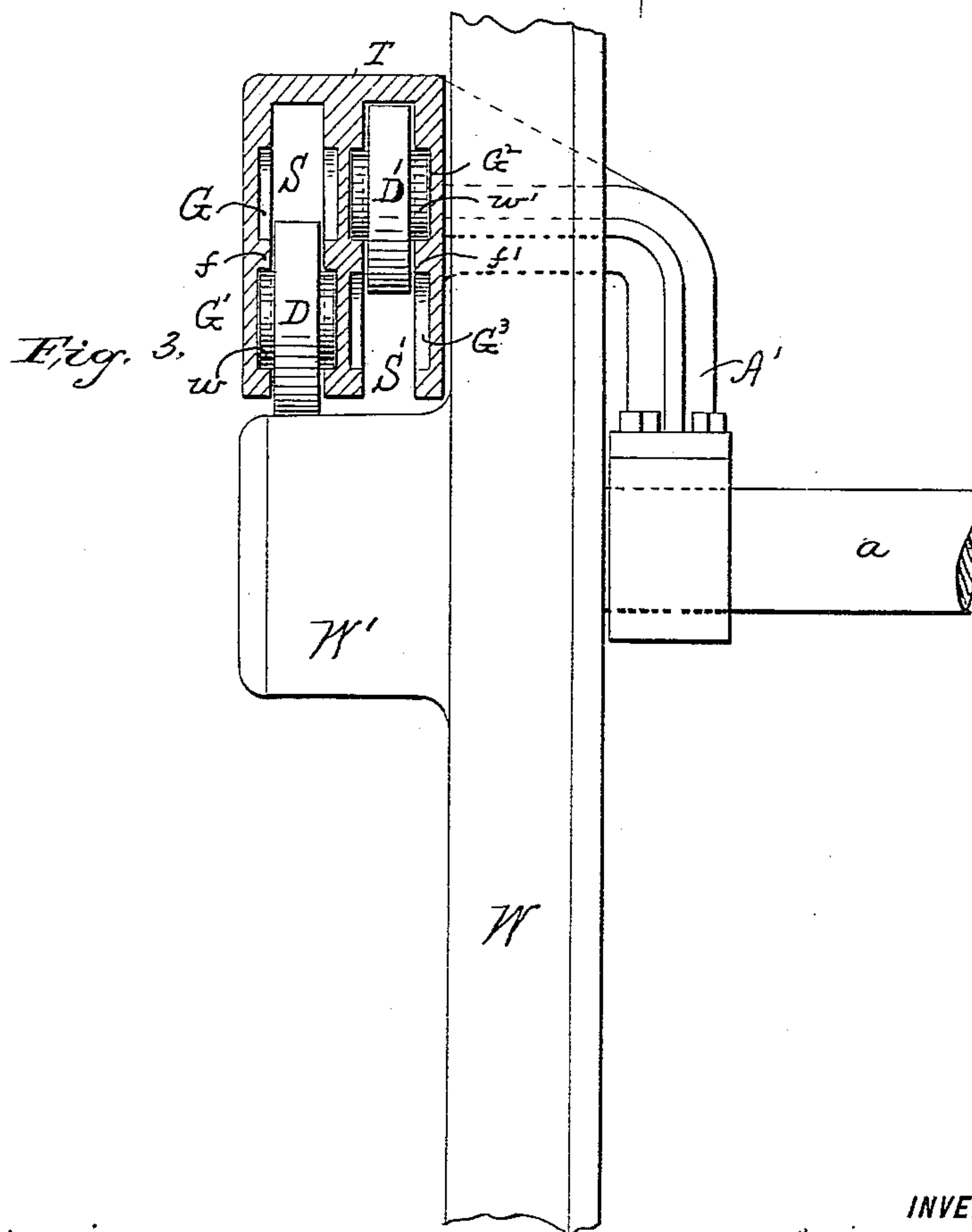
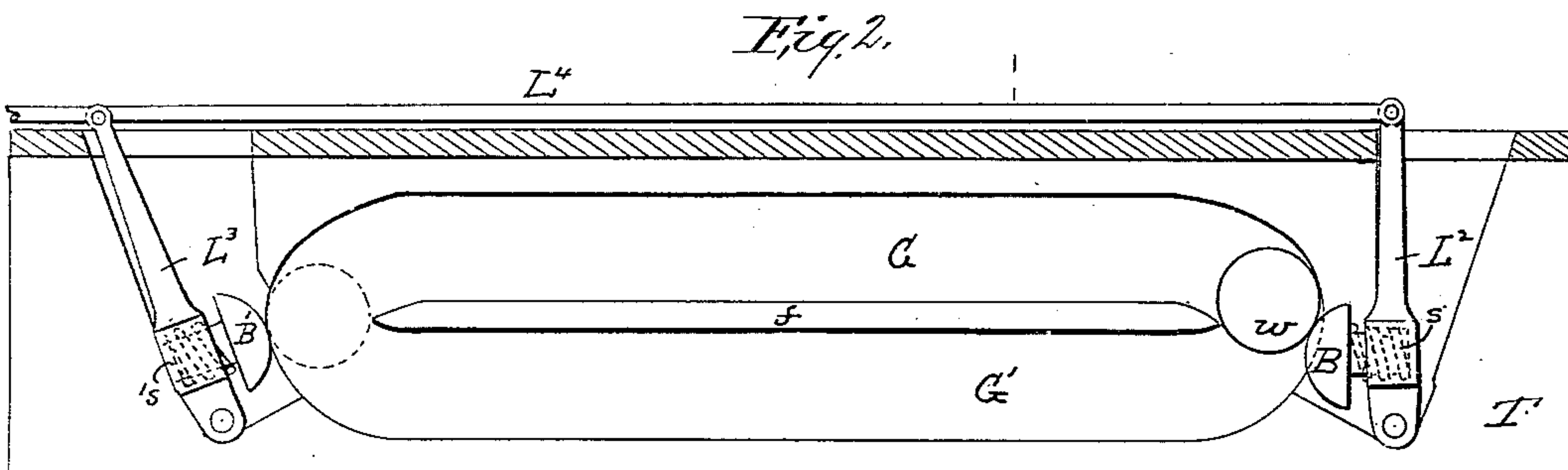
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UNITED STATES PATENT OFFICE.

ELLIS F. EDGAR, OF WOODBRIDGE, NEW JERSEY.

MECHANICAL MOVEMENT.

SPECIFICATION forming part of Letters Patent No. 555,235, dated February 25, 1896.

Application filed August 31, 1894. Serial No. 521,775. (No model.)

To all whom it may concern:

Be it known that I, ELLIS F. EDGAR, a citizen of the United States of America, and a resident of Woodbridge, in the county of Middlesex and State of New Jersey, have invented a certain new and useful Improvement in Mechanical Movements, of which the following is a specification, reference being had to the accompanying drawings, forming part of the same, in which—

Figure 1 is a side elevation of a locomotive to which my invention has been applied. Fig. 2 is a vertical sectional view of one of the ways; and Fig. 3 is an end elevation, partly in section, of the wheel, the driving-bars, and the ways.

My invention relates to mechanical movements; and it consists primarily in mechanism by means of which I am enabled to obtain a continuous application of power at a given point.

It is well known that in the ordinary forms of engine wherein a reciprocating motion is converted into a rotary motion, especially if the rotary motion is to be communicated to a wheel resting upon a track, a road, or in the water, the resulting action is uneven if the power is applied by means of a crank, and the purpose of my invention is to enable me to always apply the power at a given point.

In the drawings, W is the driving-wheel of a locomotive, and secured to it is a friction-wheel W'. This wheel need not be a part of the driving-wheel, provided it be so secured to it as to rotate with it, nor need it be a friction-wheel. A toothed gear would also answer my purpose. Suspended in line with (here over) the wheel W' are two driving-bars D D', each so arranged that when it is at its lowest limit of movement it will bear upon the friction-wheel W'. Then by providing for the alternate forward and backward movement of these bars and for their alternate engagements with the periphery of the wheel W', I am enabled to accomplish the result at which I aim.

In this device the reciprocating movement of the bars is accomplished by connecting one of them, D, to the piston-rod R, by the link-bar L, and connecting the other bar, D', to the same link-bar (it might be to an independent link-bar) by means of an arm A, a link l, leading to a pivoted lever L', and a further link, l', connecting lever L' and bar D'.

As is manifest, a forward movement of the piston will draw forward link L and bar D, and at the same time advance arm A and the lower end of lever L' and drive back the upper end of said lever and link l' and bar D'.

Secured to some fixed part, preferably the axle a, are arms A' A², which carry the ways or tracks T for the attachments by which the driving-bars are forced into or out of engagement with the wheel W'. These ways consist of two slots S S', a little longer than the piston-stroke, in each interior side wall of which there is a double groove G G', (and G² G³,) of the length of the stroke, but joined at the ends to form a continuous pathway for a wheel w, (or w',) and I prefer to use two sets of these ways, one near each end of its extreme positions, for each of the bars D and D'. Said bars D and D' are provided with wheels or rollers w w', which extend beyond on each side and are arranged to travel in the respective grooves G G' and G² G³. I also prefer to provide two spring-supports, one at each end of the double grooves G G', &c., consisting of a pivoted lever L² (and L³) and a buffer B, (and B',) supported by a spring s, (and s',) both connected to a lever L⁴, which leads to the reversing-lever of the engine. They are so arranged that when advanced toward the groove the buffer will extend into the groove (cut away for that purpose) just at or below the horizontal center of the double groove, and the lever L⁴ is so proportioned that when the buffer at one end is advanced the other will be withdrawn.

The operation is as follows: When the piston starts forward, the wheels w are in the lower part of the double groove. Its fin or rib f through wheel w holds bar D down upon wheel W', and the forward motion of the bar causes the wheel W' and therefore W also to revolve. At the same time wheels w' were in the upper part of their grooves, running backward upon the fin f' and of course holding bar D' out of engagement with wheel W' during the backward movement of said bar. The piston having reached the limit of its forward stroke, starts back, bar D being lifted and run back and bar D' brought into engagement and drawn forward, the result being that there is a continuous application of power to revolve the wheel W in one direction, always acting at the same point with relation to the center. The engine may be

readily reversed by reversing the movement of the piston at any time when it is not at the limit of a stroke. When running slow, the throw of the piston might not carry the wheels w or w' over center—that is, above the end of the fin f or f' —and it is to provide for this emergency that I have devised the buffers. In their forward or backward movement, driven by the piston through the connections, the wheels w or w' , compressing its spring, would force back the buffer, but it at once returns and carries the wheel up a little or holds it up if it has been carried there, as seen at w , Fig. 2, so that it is ready to move back along the upper part of its track. At the end where it should come down no buffer is needed, (indeed in rapid action none is needed anywhere,) for the weight of the bar and wheel is sufficient to carry it down. (See dotted line, Fig. 2.) When the engine is reversed, then the wheels need, of course, to rise and fall at the reverse ends to those where such movements previously took place, and as the movement of the reversing-lever also caused the buffers to change their positions this reverse action is properly insured.

There is a further provision for insuring that the rollers shall mount into the upper way of the grooves, in that the curves of the extreme ends of said grooves are so described that a plane passing horizontally through the extreme points of such boundaries of the grooves will lie above the plane of the farthest extremities of the fin or rib separating the upper from the lower portion of the groove, the result of which is that when the motion of either bar has drawn its rollers to the extreme limit of their movement in the groove (either way) the center of the rollers, impinging upon the extreme end of the groove, will lie above the plane of the extreme end of the fin or rib adjacent, and as the end begins its reverse movement the roller will readily take the desired course.

I do not limit myself to the exact form of mechanism described, as modifications within the spirit of the invention will readily suggest themselves.

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

1. The combination with a power-driven part, of two driving-bars independent of each other, a link connecting one bar directly to the said power-driven part, a pivoted lever, a connection from said lever (on one side of its pivot) to the second driving-bar, a connection linking said pivoted lever (on the opposite side of its pivot) to the said power-driven part, a body to be driven, a gear connected to said body so as to rotate with it, and means for alternately engaging one of the said bars and said gear and disengaging the other bar all combined to operate substantially as set forth.

2. The combination with a power-driven part, of two driving-bars independent of each other, a link connecting one bar directly to

the said power-driven part, a pivoted lever, a connection from said pivoted lever (on one side of its pivot) to the second driving-bar a connection linking said pivoted lever (on the opposite side of its pivot) to the said power-driven part, a body to be driven, a gear connected to said body so as to rotate with it, rollers connected to said bars and extending laterally beyond them, and double-grooved ways, extending in the pathway of said rollers, all combined to operate substantially as set forth.

3. The combination of a way provided with a double groove, a guide adapted to move in said groove, means, substantially as described, for moving the guide in the groove, and a spring-buffer at the extremity of the groove adapted to carry the guide over center, substantially as set forth.

4. The combination of a way provided with a double groove, a guide adapted to move in said groove, means, substantially as described, for moving the guide in the groove, a spring-buffer at each extremity of said groove, supported on levers and a connection substantially as set forth, whereby the buffers will be alternately advanced or retracted, all substantially as set forth.

5. The combination with a power-driven part, of two driving-bars, both located on the same side of the axle of the body to be driven, a link connecting one bar directly to the said power-driven part, a pivoted lever, a connection from said lever (on one side of its pivot) to the second driving-bar, a connection linking said pivoted lever (on the opposite side of its pivot) to the said power-driven part, a body to be driven, a gear connected to said body so as to rotate with it, and means for alternately engaging one of said bars and said gear and disengaging the other bar, all combined to operate, substantially as set forth.

6. The combination with a power-driven part, of two driving-bars, each provided with ways having a double groove, substantially as set forth, and guides connected respectively to said bars and adapted to move in said respective grooves, a body to be driven, a gear connected to said body and adapted to be engaged by said bars respectively when its guide is in one part of said groove and disengaged therefrom, when it is in the other part of said groove, a spring-buffer at each end of each of said grooves, supported on a lever, and a connection substantially as set forth, whereby the buffer will be alternately advanced and retracted, all substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 28th day of August, 1894.

E. F. EDGAR.

Witnesses:

W. B. VERMILYA,
A. G. N. VERMILYA.