

(No Model.)

3 Sheets—Sheet 1.

J. J. ENDRES.

GRIP ATTACHMENT FOR RAILWAY CARS.

No. 312,711.

Patented Feb. 24, 1885.

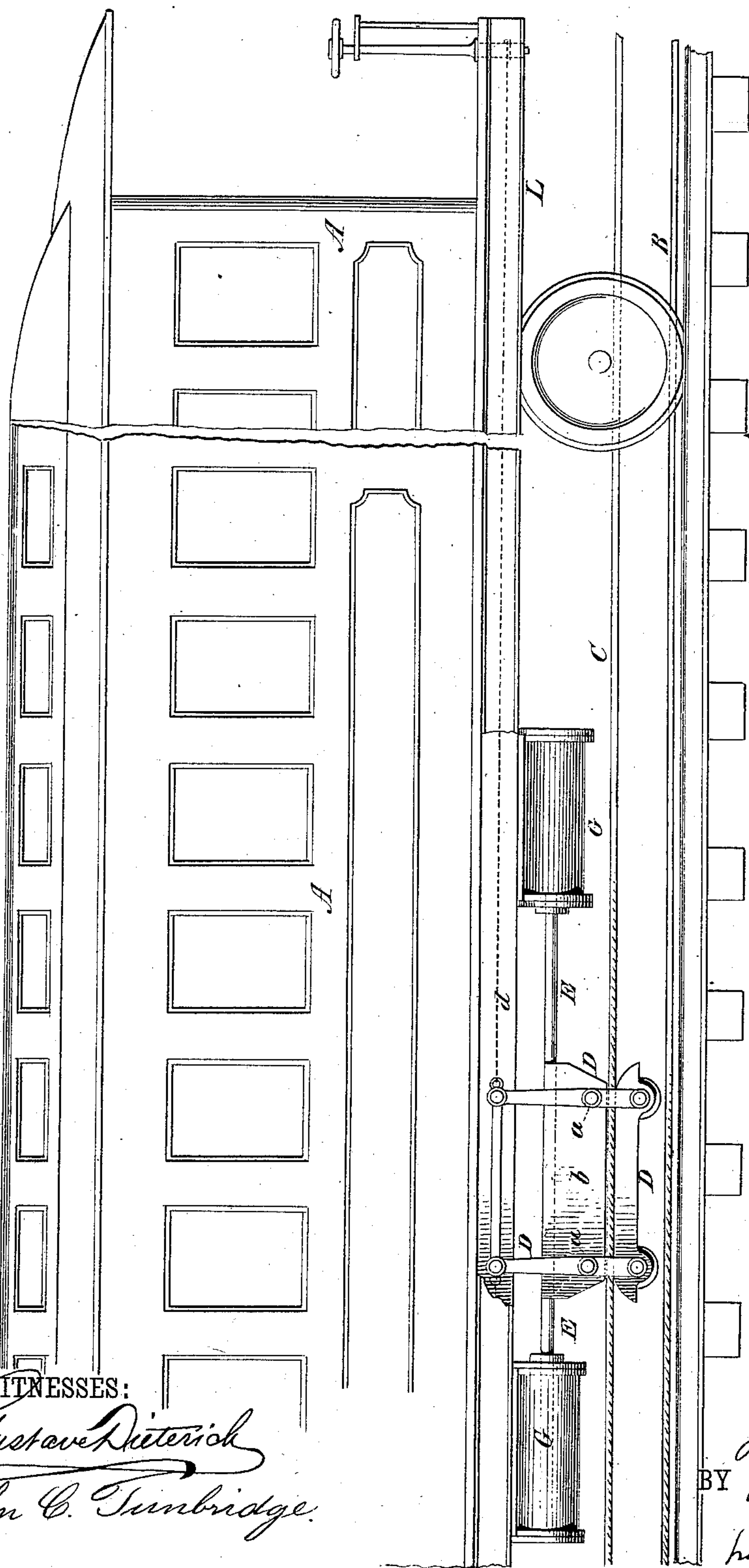


Fig. 1.

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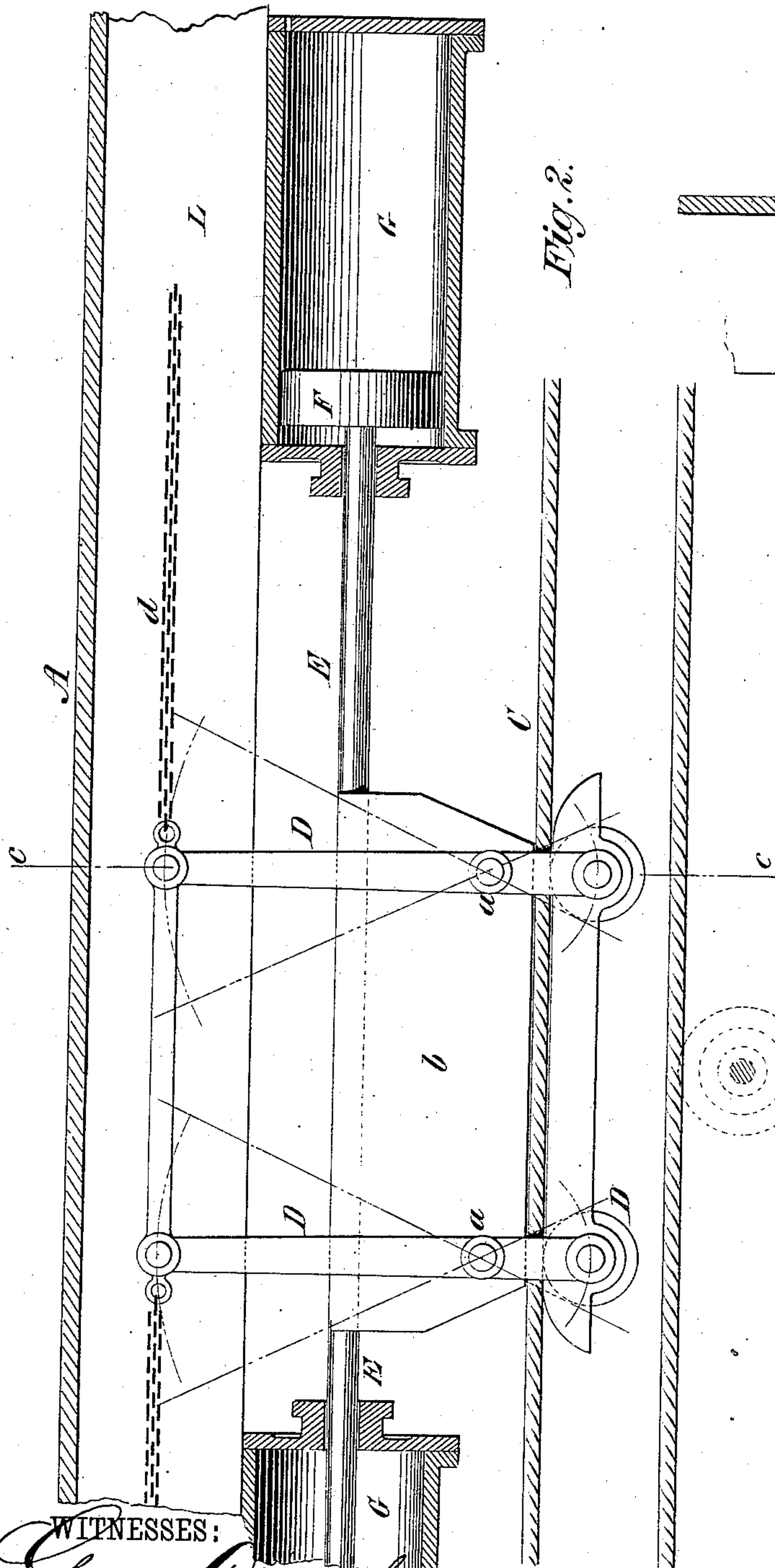
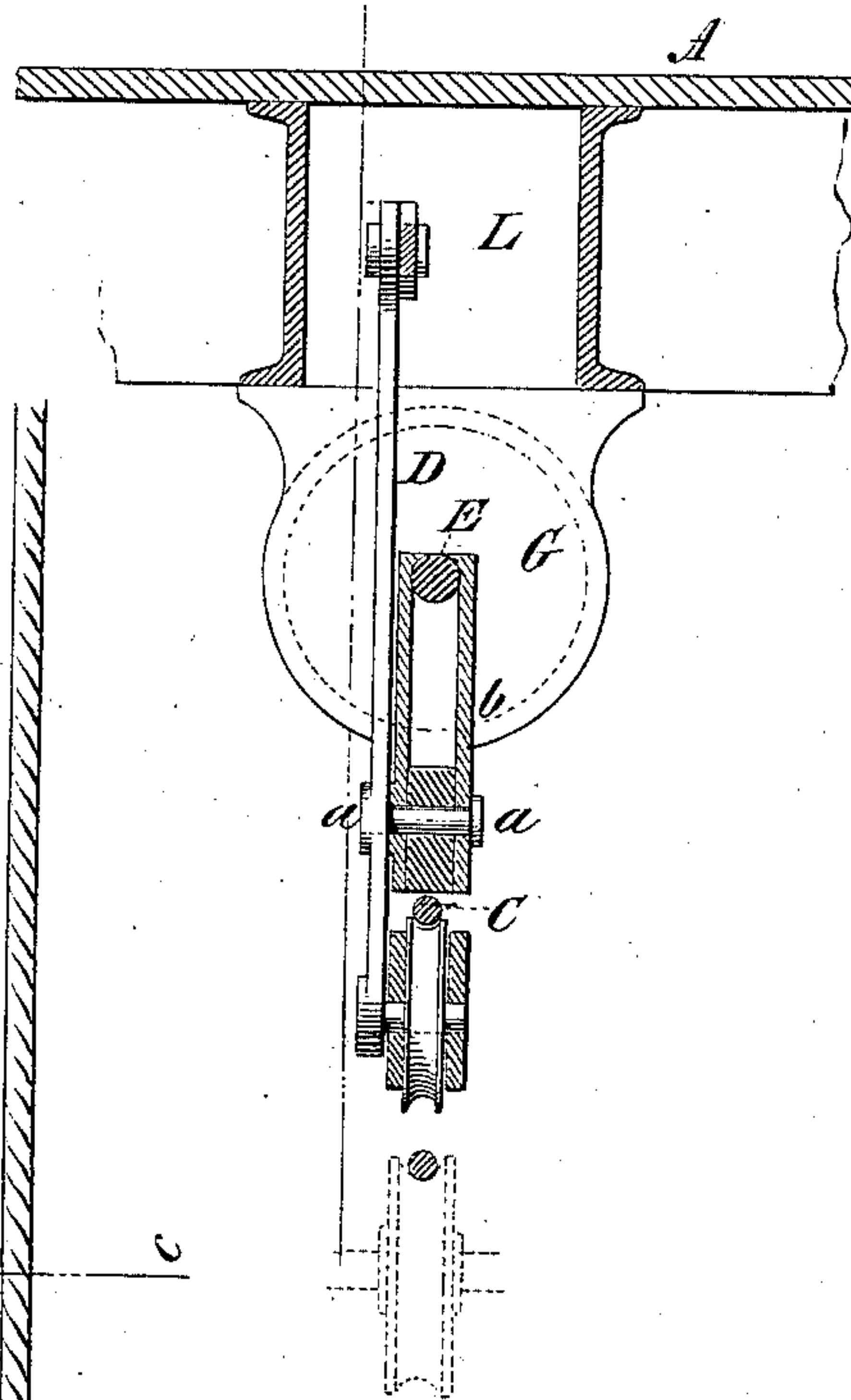


Fig. 3.



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Fig. 4.

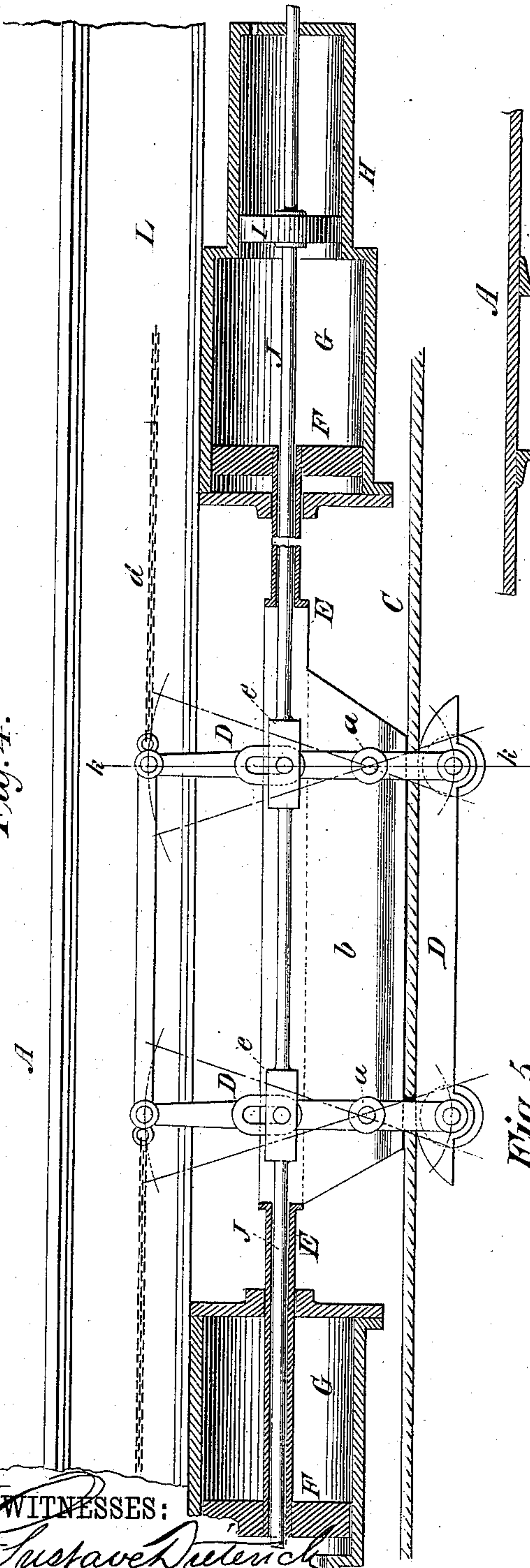


Fig. 5.

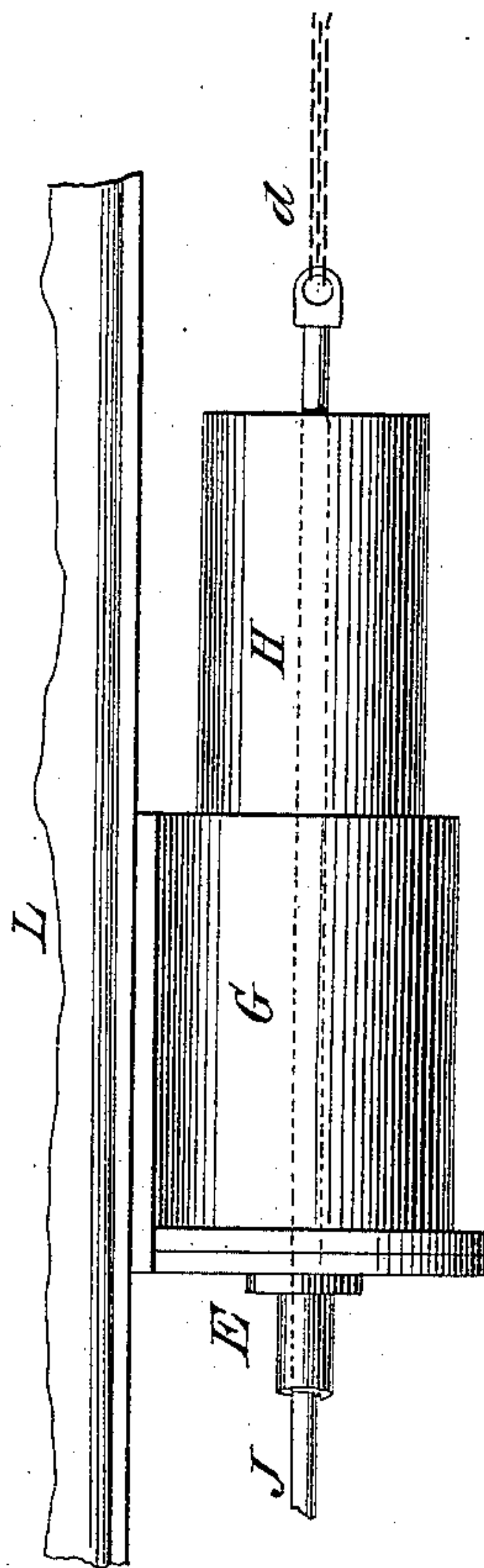
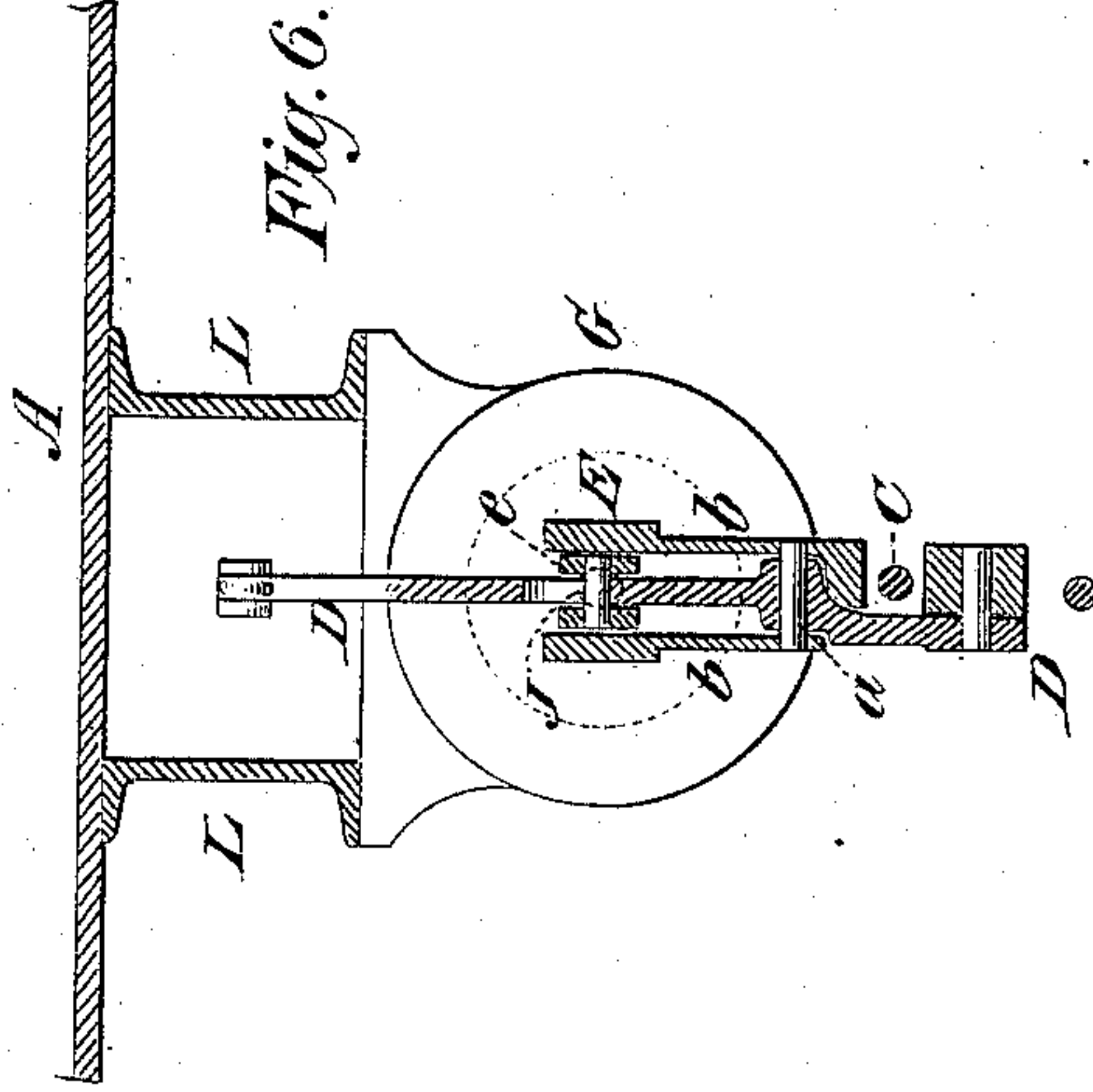


Fig. 6.



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UNITED STATES PATENT OFFICE.

JOHN J. ENDRES, OF HOBOKEN, NEW JERSEY.

GRIP ATTACHMENT FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 312,711, dated February 24, 1885.

Application filed December 26, 1883. (No model.)

To all whom it may concern:

Be it known that I, JOHN J. ENDRES, a resident of Hoboken, in the county of Hudson and State of New Jersey, have invented an Improved Grip Attachment for Railway-Cars, of which the following is a full, clear, and exact description, reference being made to the accompanying drawings, in which—

Figure 1 is a side view of a railway-car having my improved grip attachment. Fig. 2 is a sectional side view, on an enlarged scale, of the attachment; Fig. 3, a cross-section on the line *c c*, Fig. 2; Fig. 4, a side view, partly in section, of a modification of the attachment; Fig. 5, a detailed side view of the cylinder that is shown in Fig. 4, and Fig. 6 a cross-section on the line *k k*, Fig. 4.

The object of this invention is to devise means by which railway-cars can be conveniently coupled to and uncoupled from continuously-moving belts, chains, or ropes.

The difficulty which at present is experienced in the employment of grip attachments, and which this invention seeks to overcome, is caused, principally, by the fact that the rope or chain travels at great speed, and that if the car is promptly coupled to such a traveling rope or chain it will from a stationary condition be suddenly jerked into motion that corresponds in speed with that of the rope or chain. The result of such a sudden change from the stationary to the rapidly-moving condition must be and is in every way annoying to the occupants of the car, and injurious to the mechanism employed, and the like difficulty is experienced, to a less degree however, when the car is uncoupled from the traveling rope or chain. These difficulties I overcome by connecting the grip attachment with pistons which travel in cylinders, in combination with an independent set of plungers, all arranged in such a manner that air-cushions in front of the pistons will be utilized to render the starting movement of the car gradual instead of sudden.

Other details of improvement will be more fully specified in connection with the description of the drawings.

In Figs. 1, 2, and 3 of the drawings the letter A represents a railway-car resting on rails B, and C is the traveling rope or chain by which this car is to be propelled. D is the

grip attachment, which is of suitable kind, and I desire it to be understood that so far as the gripping of the rope is concerned nothing in the grip attachment is part of the present invention. The grip attachment D is pivoted at *a* to a plate, *b*, which is rigidly attached to a piston-rod, E. The ends of this piston-rod carry plungers F F, which move in cylinders G G, which cylinders are attached to the bottom or other part of the car A, so as to be immovable thereon. Thus the grip attachment is not pivoted to the body of the car, but to the piston-rod E, which is suspended in the cylinders G. The plate *b* may be readily dispensed with and the grip-arms directly pivoted to the rod E.

Fig. 2 shows in full lines the position of the grip when it is not in engagement with the chain or rope C. The grip-arms in this position are vertical; but they are connected with chains that go to the end platforms of the car, so that they may be inclined into either of the positions which are indicated by the dotted inclined lines in Fig. 2, in which positions the rope C will be grasped. Whenever, by drawing one of these chains *d*, the grip is made to engage the chain C, which travels with the proper speed, the chain will take the grip along with it; but this will not at first make the car move along, for the first forward movement of the grip will result in pushing the rod E forward, and with it the front plunger, F, in the front cylinder, G, within which said plunger will compress the air and meet with continued resistance the more the air is being compressed, and when the air-cushion thus formed is of sufficient force to allow the weight of the car to be now overcome by the force that presses against the air-cushion the car will begin to move. It will be readily seen that this arrangement results in starting the car very gradually and gently, until finally it shares in the speed of the chain C. When the motion of the car is to be arrested, the attendant lets go the front chain, *d*, and the said air-cushion in front of the plunger F will then at once exert itself in endeavoring to push its plunger F back again, and in thus gradually releasing the car from connection with the chain, and in likewise gradually arresting the motion of the car, instead of suddenly. Each cylinder G may have slight air-escape openings at either end; or it

may be provided with valves that are under the control of the brakeman, and that can be opened or closed at proper times without in any way interfering with the principle of this invention, which consists, chiefly, in the use of the air-cylinders and the plungers therein, in connection with the grip that is suspended from the plunger-rod. The mechanism may be connected, if desired, also with the car-brakes, without requiring much inventive genius in establishing connection between the brakes and the rod E, in such a manner that, whenever the rod E is moved backward by the expanding air-cushion, the brake will be applied, and whenever the rod E is moved forward to compress the air in front the brake will be taken off.

The modification which is shown in Figs. 4, 5, and 6 consists in adding to the mechanism which is shown in Figs. 1, 2, and 3 means for also tightening the grip on the rope C—that is to say, I have found in practice that considerable difficulty is experienced in the endeavor to simply engage the grip with the rapidly-traveling rope C. Such rope may travel with a speed exceeding ten miles an hour, and represents, therefore, a considerable amount of force, which the attendant, in his endeavor to couple the grip to such a traveling rope, will for the time being have to overcome, and unless special and complex mechanism is employed the inherent force of the traveling rope will frequently overcome the power of the attendant and throw the grip back violently into a position of disengagement.

The arrangement shown in Figs. 4, 5, and 6 utilizes the air-cushions, which I have already described, as means for tightening the grip. To this end I append to the outer end of each cylinder G a smaller cylinder, H, which is open to the cylinder G, with which it connects, as in Fig. 4. Within the cylinder H is contained a piston or plunger, I, which is mounted upon a rod, J, that connects at *e* with the grip-arms, such grip-arms being pivoted at *a* to the plate or extension *b*, which is rigidly fastened to the rod E, that carries the plungers F within the cylinders G. Now, when the

attendant, by drawing on the front chain, *d*, which connects either with the grip-arms, as shown in Fig. 4, or directly with the rod J, as shown in Fig. 5, tilts the grip-arms so as to start an engagement with the rope, be the same ever so slight, the first result will be a slight forward movement of the front plunger, F, and this will cause the front piston, I, to also travel forward and to pull on the grip-rods above the pivots thereof, until finally they have been inclined to the full biting position. After this the plunger F may continue to move forward and compress the air against the back of the piston I for the purposes hereinbefore already fully stated; but such motion will no longer, after engagement between the grip and the rope C has once been fully established, interfere with such engagement.

The cylinders G G, which I have stated are attached to the bottom of the car, are by preference attached, as in Figs. 3 and 6, to longitudinal iron beams L L, which extend under the bottom of the car from end to end, and which serve to strengthen the bottom at its weakest part, and to adapt it to suspend the straining-grip attachment and yet support the load that may be placed upon the bottom inside the car. These beams may also serve as bumpers at their extreme ends.

Suitable cross-braces may be placed between the beams L, if desired.

I claim nothing shown and described in Patents No. 257,121 and No. 262,633.

I claim—

1. The combination of the grip attachment D with the rod E, plungers F, cylinders G, rod J, pistons I, and cylinders H, substantially as and for the purpose described.

2. The combination of the car A and longitudinal beams L L, which are attached to the bottom of the car and extend from end to end thereof, with the cylinders G, plungers F, rod E, and grip attachment D, substantially as herein shown and described.

JOHN J. ENDRES.

Witnesses:

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WILLY G. E. SCHULTZ.