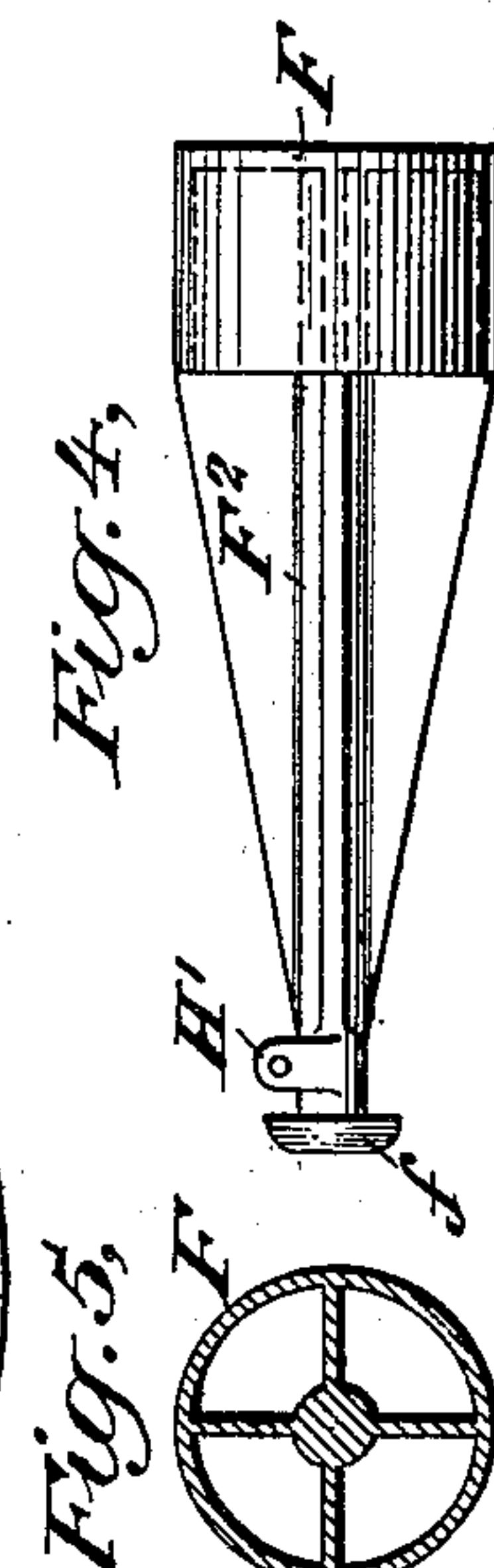
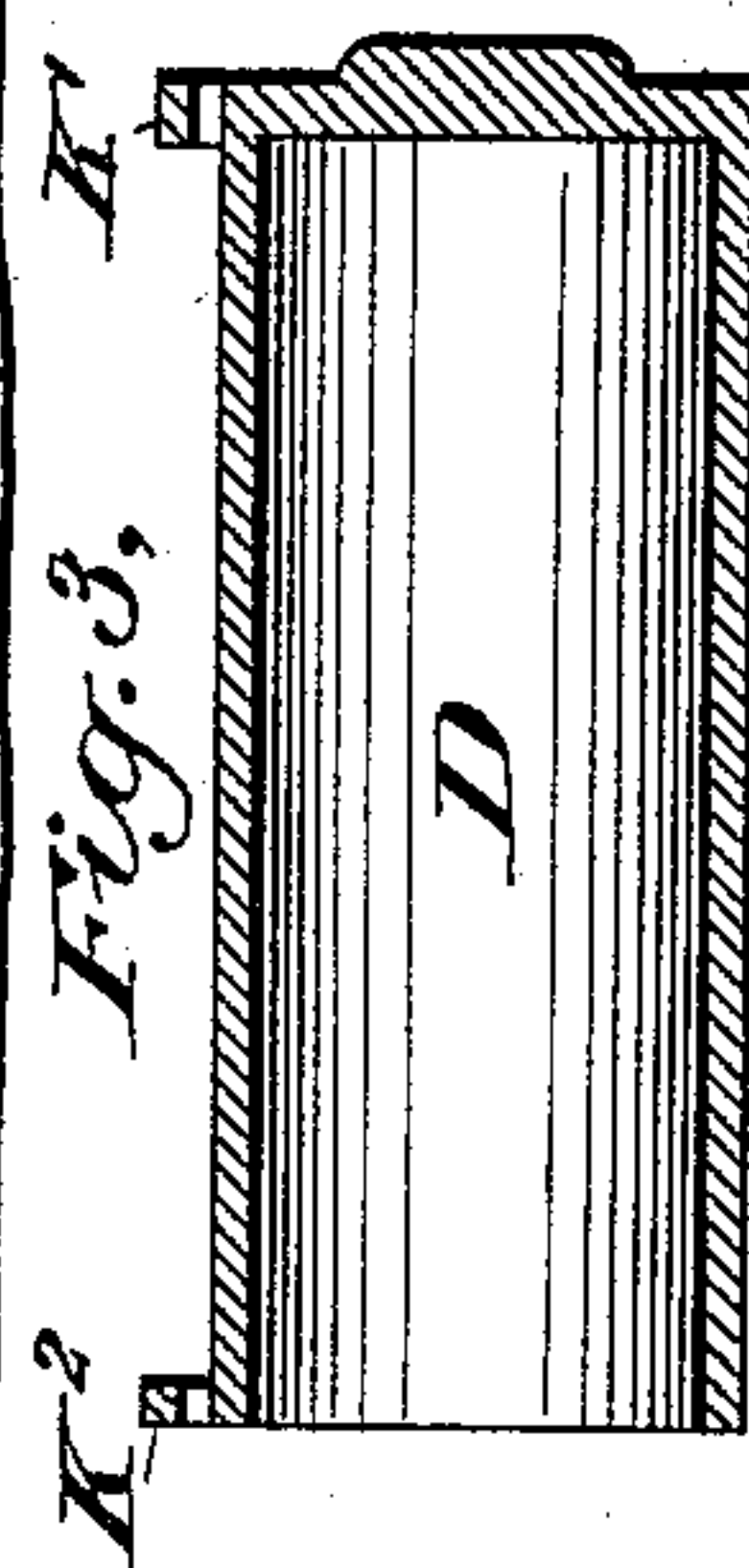
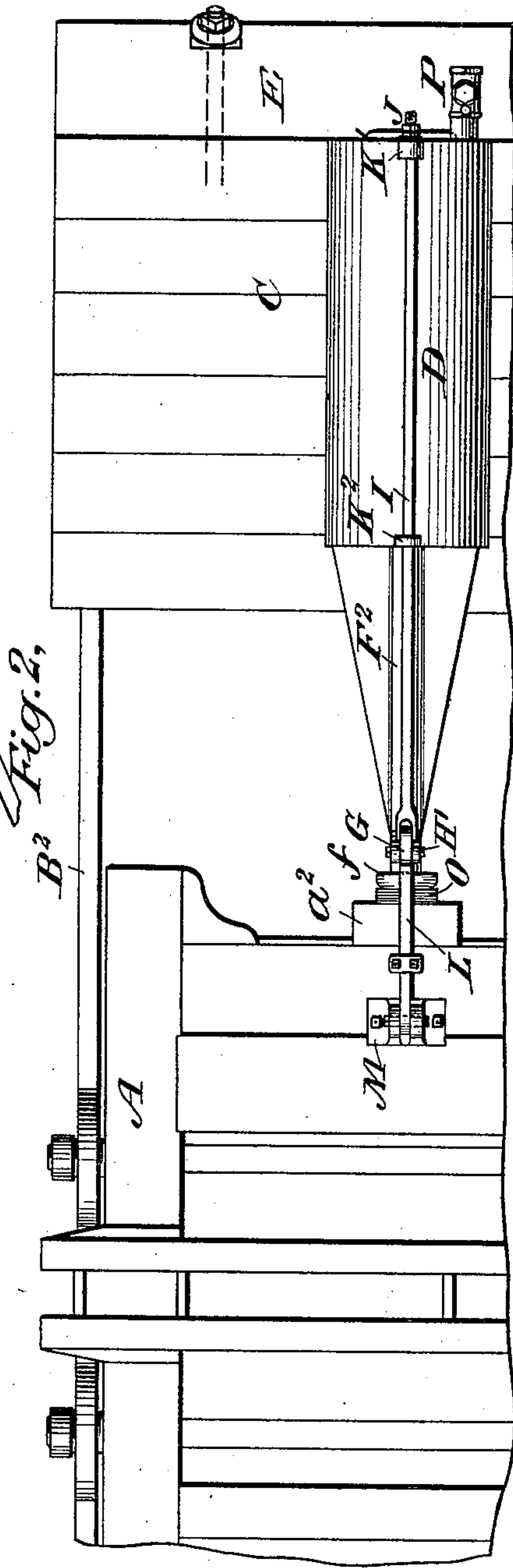
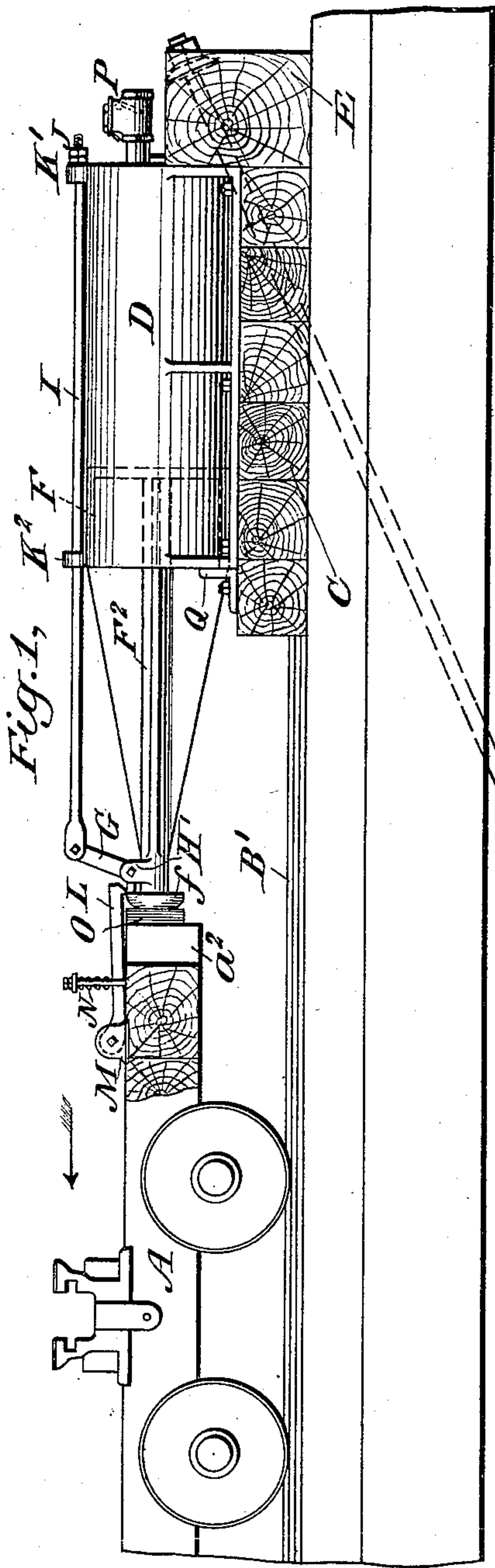


(No Model.)

E. E. THOMAS.
SAWMILL BUFFER.

No. 529,218.

Patented Nov. 13, 1894.



Witnesses:-
O. H. Haywood
J. E. Foster.

Inventor:
E. E. Thomas
J. N. M. Squire

UNITED STATES PATENT OFFICE.

EDWIN E. THOMAS, OF BAY CITY, MICHIGAN, ASSIGNOR TO MICHAEL GARLAND, OF SAME PLACE.

SAWMILL-BUFFER.

SPECIFICATION forming part of Letters Patent No. 529,218, dated November 13, 1894.

Application filed April 20, 1894. Serial No. 508,321. (No model.)

To all whom it may concern:

Be it known that I, EDWIN E. THOMAS, of Bay City, in the county of Bay and State of Michigan, have invented a certain new and useful Improvement in Sawmills; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

My present invention relates to buffing the carriage of a saw mill, in case of the operator losing control of the engine, or in the event of the carriage for any reason, "running away," as it is termed; and my invention consists in the combination, with an air cylinder; its piston; and the log-carriage, of means by which the recession of the checked-up carriage operates to positively restore the piston to the proper position for reuse; all as will be hereinafter fully explained, and as will be found more particularly pointed out, in the claim of this specification.

To enable those skilled in the art to which my invention relates to fully understand and practice the same, I will now proceed to more fully describe the constructions and operation of a saw mill carriage buffing mechanism made according to my improvement, referring by letters to the accompanying drawings which form part of this specification, and in which I have shown all the features of my invention carried out in the precise forms of devices, under which I have, so far, practiced the latter, though various modifications may, of course, be made in the details, without changing the novel principle of construction and mode of operation of the means herein shown and described.

In the drawings, Figure 1 is a view showing, in side elevation, my improved buffer device, and so much of a log-carriage (and the track on which it runs) as is necessary, in order to fully illustrate my invention. Fig. 2, is a partial top view of the parts seen in elevation at Fig. 1. Figs. 3, 4, and 5, are detail views showing, respectively, a vertical longitudinal, central section, of the air cylinder; a side view of the piston and its integral rod; and a cross-section of said piston.

In the several figures the same part will be

found always designated by the same letter of reference.

A is the truck-frame of part of an ordinary log-carriage, which runs, in the usual manner, upon the rails B' and B² of the track, and which is supposed to be driven, or impelled, by any one of the commonly employed means for such purposes, as for instance, a direct acting steam engine having its piston rod attached to the carriage; or twin engines, &c.

At a proper distance beyond the point to which the leading end of the carriage A is upposed to travel, in each direction—i. e., in, carrying the log under the action of the saw or saws, and during the jiggling of the carriage—I mount, in a permanent manner, an air-cylinder D, which is provided with a suitable piston F, the rod F² of which is about, or nearly, equal, in length, to the length of said cylinder. I have shown in the drawings, only one of these carriage-stopping air cylinders; and I have shown, at one end only of the track A, the latching-mechanism I employ to effectuate the return of the air-cylinder piston rod to its normal position, after the stopping, or checking, device may have been used; because, the buffing device and latch mechanism employed at the opposite ends of the log-carriage are exact duplicates, and, hence, an illustration and description of the devices which operate, at one end of the carriage, will suffice for both ends.

The air-cylinder D is, in the case shown, securely bolted to a supporting tier of beams C arranged close together, in a horizontal plane, and transversely of the carriage track, and is reinforced, endwise, by an abutting beam, or timber, E, which may be securely held in place by two, or more, tie-rods extending therefrom obliquely downward, to an anchorage, all as clearly shown (see Fig. 1) in the drawings.

The cylinder D is placed, it will be observed, in a horizontal position and in line with the direction of travel of the carriage, with its axis on a level with about the middle of the frame-work, or side beams of the truck A, and in line with the center of the truck widthwise of the latter, so that in the event of the carriage coming into contact with the outer end

of the piston rod F^2 (as shown at Figs. 1 and 2), the buffer head f will be acted upon directly by a rubber pad, or disk-like cushion O , that is secured to the outer face of the end beam, or cross-piece of the truck frame, or, preferably, to a block a^2 projecting therefrom.

I prefer to have the piston rod F^2 formed integrally with the hollow, or cup-shaped, piston F , and with radial webs (four, more, or less) running on tapers at their outer edges, from points coincident with the circumference of the piston F , to points coincident with the circumference of the outer end of the central core, or shaft-like portion of the piston rod; as this form, as clearly shown, results in a very strong and simple construction; though these details are, of course, not material to my invention.

L is a horizontally arranged latch bar pivoted, at its inner end, in a metallic stand M , bolted to the middle upper part of the end beam of the carriage, and held down on top of the truck-frame by a spiral spring N , suitably mounted over said latch bar, near its middle, all as clearly shown. This latch bar is adapted, at its outer end, to engage with the buffer head f of the piston rod, as clearly indicated in the drawings, whenever the end of the carriage (or its cushion O) shall come into contact with said buffer head f , and to remain in engagement therewith until the piston F shall have been forced clear into the cylinder D , and shall have been retracted to its original, or normal position, when the said latch bar will be automatically disengaged from said buffer head, by means which I will now explain.

I is a rod, or bar, arranged centrally, over the cylinder D , longitudinally thereof, and close to its uppermost part. Said rod is considerably longer, however, than the cylinder, as clearly shown, and is arranged to slide freely endwise, within perforated lugs K' and K^2 which project upwardly, respectively, from the outer and inner ends of the cylinder D , and said rod, at its inner end, is pivotally connected (see Fig. 1) to the upwardly projecting and longer arm of a bell-crank G , which at its angle, is fulcrumed in between the lugs H' of the inner end of piston rod F^2 ; the shorter arm of said bell-crank G moving (when the crank is oscillated) in a short arc, lying in a line approximately parallel with a vertical line drawn close to the back side of the disk-like buffer head f , with which the lip of the latch-bar L engages.

The outer end of the rod I is threaded and provided with a stop nut J , which may be set so as to come to a stop against the lug K' , and thus check the endwise movement of rod I , slightly before the piston rod F^2 shall have reached the end of its outward stroke. Hence, in completing its outward stroke, the slight further movement of the piston rod (after the nut J shall have come against the lug K') will operate to effectuate a slight oscillation, on its fulcrum, of the bell-crank G , which, in

turn, causes the shorter arm of said crank to lift the lipped end of latch bar L , and throw it out of engagement with the head f of said piston.

At Fig. 1, I have shown the parts in that relative position in which this tripping of the latch bar L has just been accomplished, so that the carriage A is free to travel off in the direction indicated by the arrow.

P is a check-valve opening inwardly, to permit a supply of atmospheric air to the cylinder D , to compensate for any leakage that may occur when the piston F may be forced in, severely compressing the contents of said cylinder, for the purpose of taking up the momentum of the carriage, and bringing it to a stop without injury to the machinery.

Q is a bracket-like stop, arranged as shown (see Fig. 1) and designed to prevent any casual, or accidental, movement of the piston F too far in that direction in which it would otherwise be free to move partially out of the cylinder D .

The general operation and effect of my improved buffing mechanism for a runaway carriage, may be thus explained. Supposing all the parts of the air cylinder buffer device to be in the positions, or condition, seen at Fig. 1; and supposing the carriage A to have gotten beyond the control of the sawyer, or attendant, and to be running away, toward the buffer device (that is, in a direction just opposite to that indicated by the arrow), when the cushioned end of the truck strikes the buffer head f , the initial concussive action of the carriage, coming into contact with the buffer pad, or spring, O , and the piston rod F^2 , with its piston F , will be forced in the direction which will cause the piston to compress the air contents of the cylinder D , thus creating an air cushion, or buffer, of gradually increasing resistive power, until the air shall have been so severely compressed, as to wholly overcome the momentum and inertia of the carriage and bring it to a stop. The compressed air in cylinder D will then force the carriage back in the direction indicated by the arrow, through the medium of the piston F , and its rod F^2 , acting as a motor against the contacting end of the log carriage; but at the time of the initial contact of the carriage with the buffer head f , as just above explained, the latch bar L has its outer, lipped, end forced downward by the spring N , into engagement with the buffer head f , and, hence, during the outward stroke of the piston, to restore the carriage, or aid in restoring it, to its normal position, the latch bar and buffer head will remain in engagement, and should the compressed air of cylinder D fail (from leakage, for instance) to expand sufficiently to force the piston F and the connected buffer head f , back (or clear out) to its former position, then the engagement of the carriage A with the head f through the medium of latch bar L will enable said carriage to pull on the piston rod until it shall have been returned to

its former position (ready for reuse), by which time the check nut J of rod I, having come into contact with lug K', the rod I will have been caused to slightly turn the bell crank G, which will have tripped, or lifted, the engaging end of latch bar L, and freed the buffer head f from the carriage mechanism. At the same time, this thus enforced, final, movement of the piston to its original position (notwithstanding a deficiency in the atmospheric contents of the cylinder) will have caused an additional supply of air to have entered the cylinder to perfect its air supply.

Of course, the buffer device shown might be made and worked without the means shown and described (or any other) for effectuating, or insuring, a perfect restoration of the piston of the air cylinder to its original position ready for a reuse, in case of an emergency; but I prefer to use this secondary, or supplemental feature of the improved mechanism shown.

In practice, I find that to insure the best results, the piston of the air buffer-cylinder, should have a stroke not less than two and a half feet (with a proportionate diameter of cylinder about such as shown), as in the case of a log carriage of usual weight, running at a good rate of speed, about this length of stroke is preferable to insure always a stoppage of a runaway carriage, without any injury to, or injurious strain upon, any of the parts of either the mill, or the buffing device, or mechanism.

I am aware, of course, of the fact that an air-cylinder has been used in one form, or an-

other, for the purpose of taking up the inertia of, or cushioning, a reciprocatory, or other moving device, as, for instance, in the cases of the use of dash pots in different contrivances, and in the cases of devices for checking up printing press beds, in which a piston is applied to the end of the bed that enters a cylinder filled with atmospheric air that is forced out through a small egress; the piston entirely leaving the cylinder; but in my log-carriage buffing device the piston is always retained within its cylinder, and the structural conditions are novel, and the device accomplishes results never before attained to.

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

In a log-carriage buffer mechanism, the combination with the carriage; an air cylinder; a piston working in said cylinder; and a piston-rod which projects outwardly from said piston, and is contacted by the end of said carriage, of means operating automatically to lock the buffing end of the carriage to the outer end of said piston-rod, when these parts come into contact, and to release said parts whenever the piston may have been drawn out, by the return movement of the carriage, to the proper position for a repetition of the buffing operation; substantially as set forth.

In witness whereof I have hereunto set my hand this 14th day of March, 1894.

EDWIN E. THOMAS.

In presence of—

MORRIS L. COURTRIGHT,
RICHARD A. MCKAY.