(No Model.)

3 Sheets—Sheet 1.

A. E. HOFFMAN.

FEED MECHANISM FOR SAW MILL CARRIAGES.

No. 370,944. Patented Oct. 4, 1887.

Fig. 1.

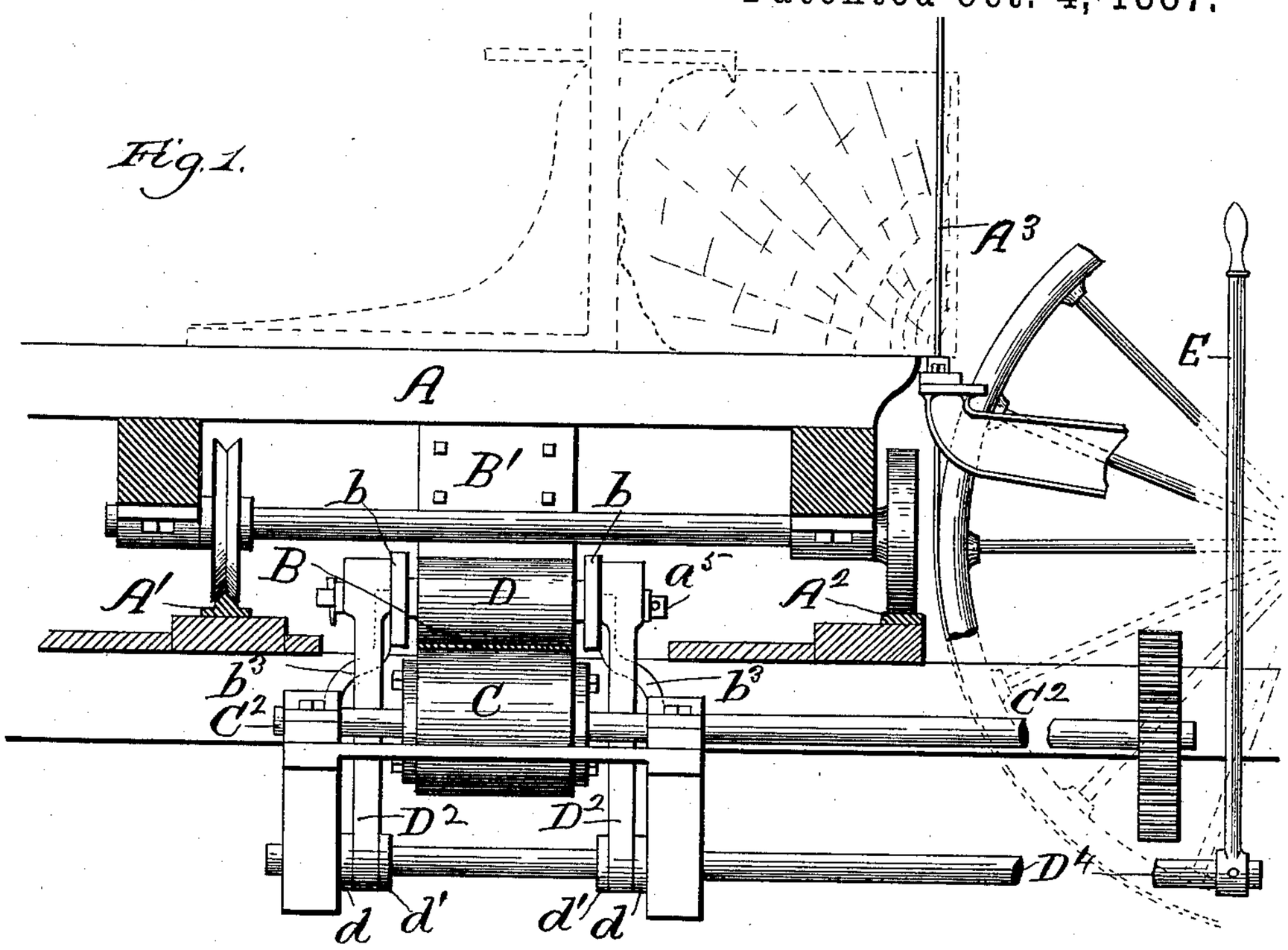


Fig. 2.

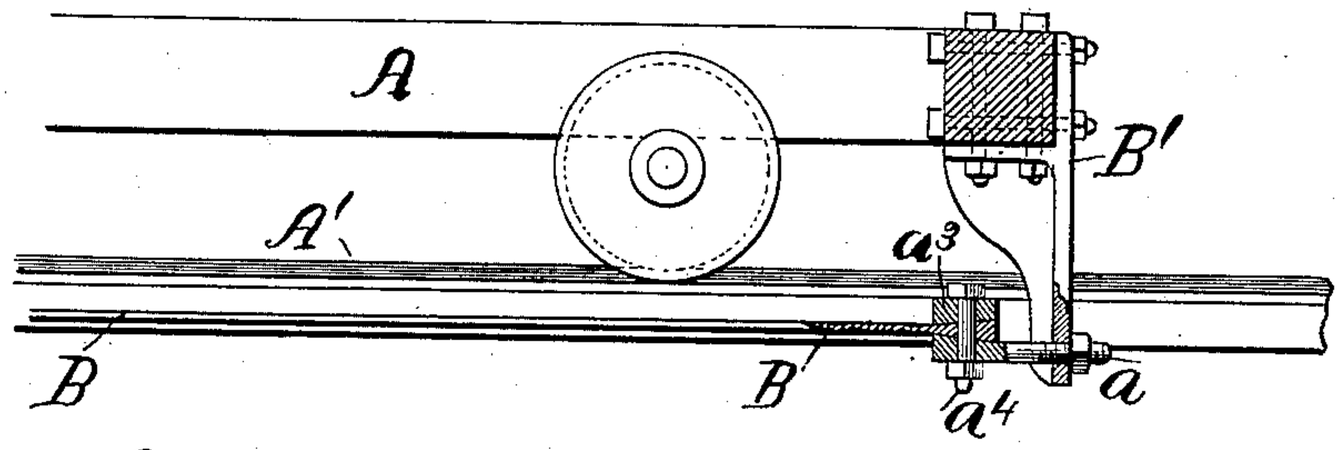


Fig. 3.

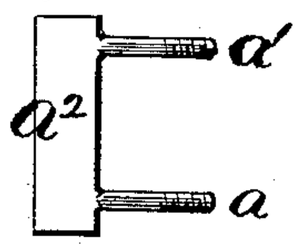
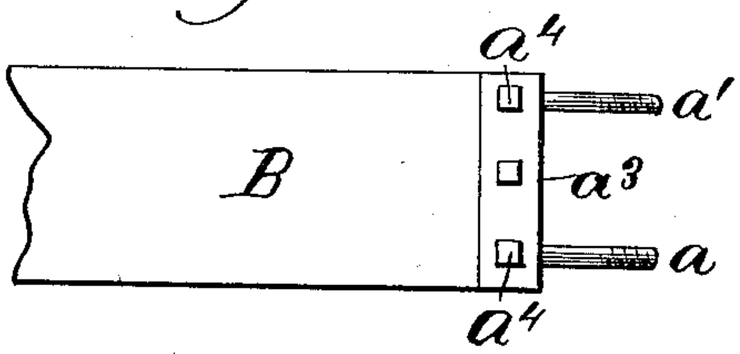


Fig. 4.



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(No Model.) 3 Sheets—Sheet 2.

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FEED MECHANISM FOR SAW MILL CARRIAGES.

No. 370,944. Patented Oct. 4, 1887.

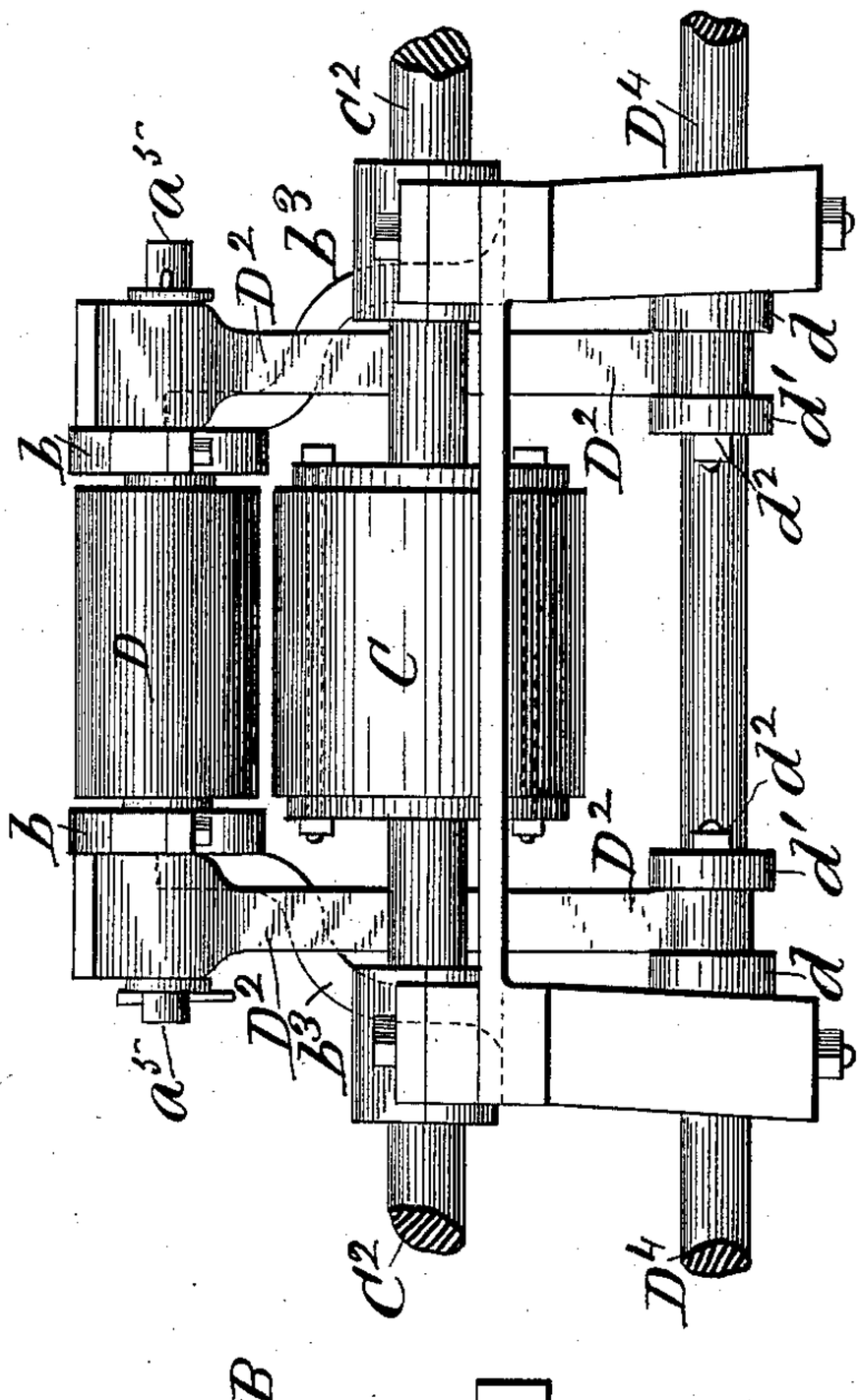

Fig. 6.

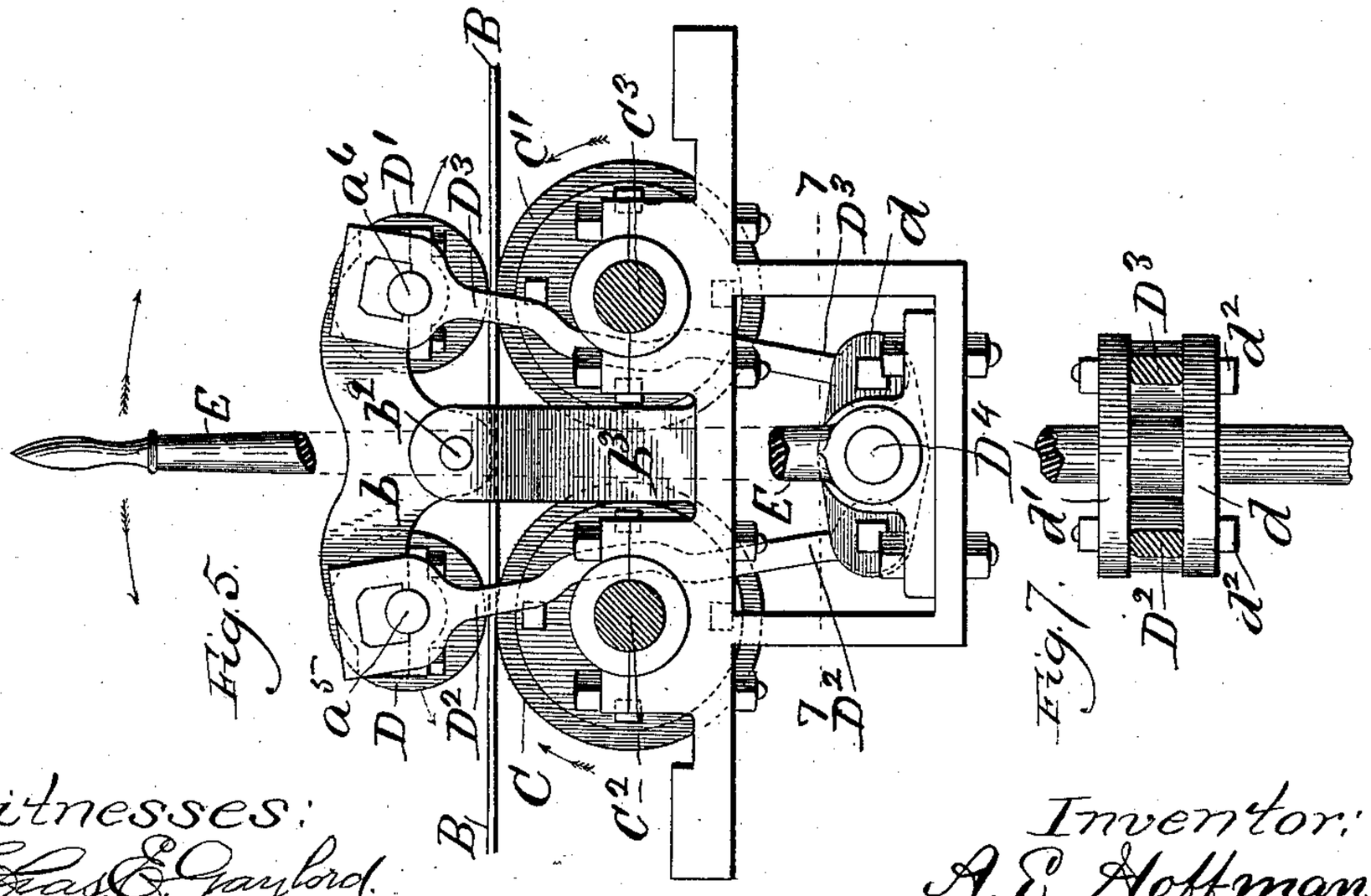

Fig. 5.

Fig. 7.

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(No Model.) 3 Sheets—Sheet 3.

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FEED MECHANISM FOR SAW MILL CARRIAGES.

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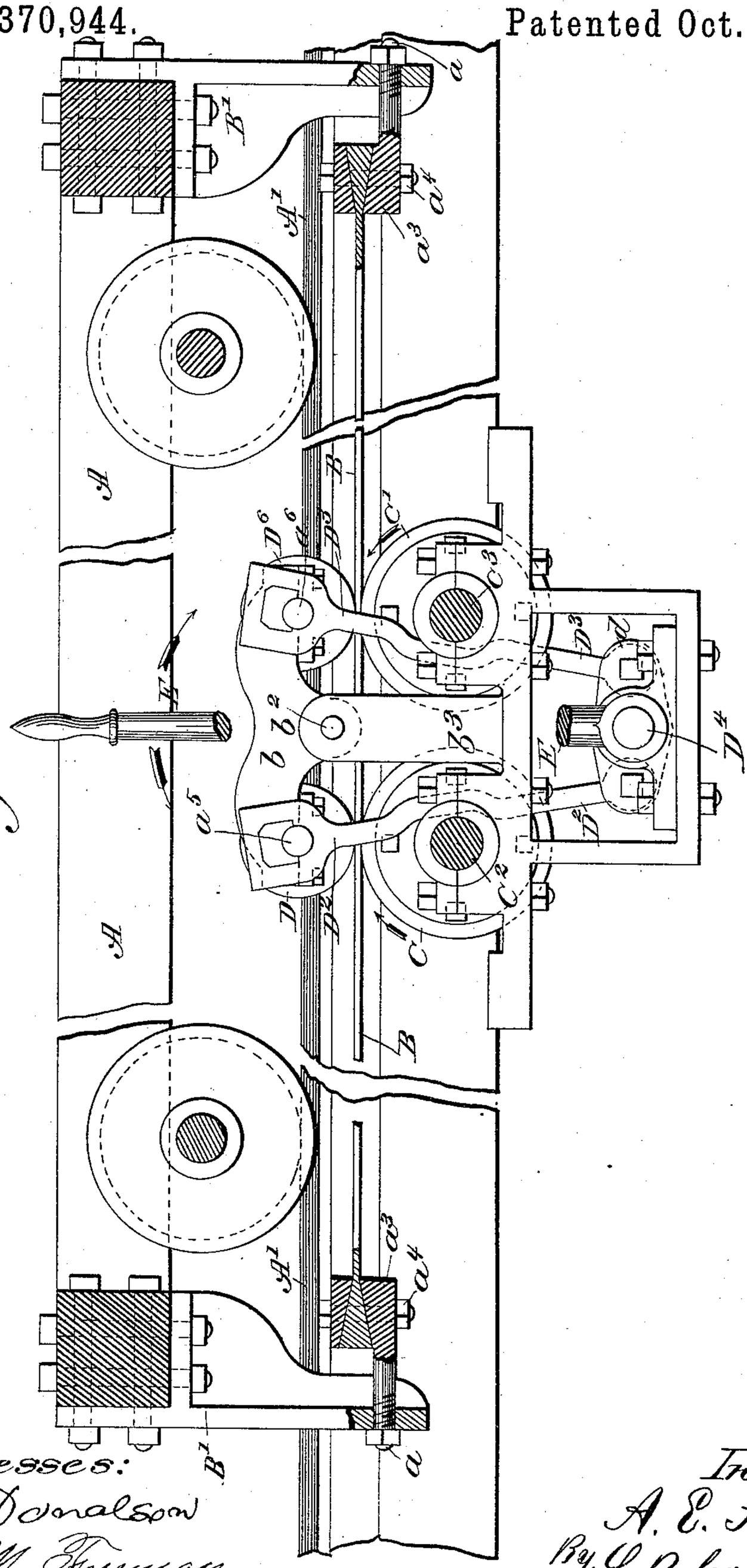

Fig. 8.

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UNITED STATES PATENT OFFICE.

ANDREW E. HOFFMAN, OF FORT WAYNE, INDIANA.

FEED MECHANISM FOR SAW-MILL CARRIAGES.

SPECIFICATION forming part of Letters Patent No. 370,944, dated October 4, 1887.

Application filed December 21, 1886. Serial No. 222,152. (No model.)

To all whom it may concern:

Be it known that I, ANDREW E. HOFFMAN, of Fort Wayne, county of Allen, and State of Indiana, have invented certain new and useful Improvements in Feed Mechanisms for Saw-Mill Carriages, of which the following is a full, clear, and exact description, that will enable others to make and use the same, reference being had to the accompanying drawings, forming a part of this specification.

This invention relates to means for imparting the required reciprocating movement to the log-carriage in feeding the log to the saw.

The object of this invention is to provide a device or devices of this character which will prevent the frictional or gripping surfaces from heating and wearing, and at the same time have a more direct and positive application than the mechanism ordinarily employed, whereby the movement of the carriage is not only under complete control of the operator, but the speed or feed of the same may be instantly varied or reversed, as circumstances may require.

A still further object is to provide a device that will dispense with the use of the objectionable rack-bar and pinion, or the rope and drum ordinarily employed in feeding up and gigging back the log-carriage, and at the same time provide a variable friction-feed for saw-mill or other reciprocating carriages used in the manufacture of lumber.

The various devices heretofore employed possess objectionable features, as the rack and pinion are liable to and do often break when subjected to a sudden strain in reversing the carriage, and heavy friction wheels or drums, when rope friction is employed, absorb too much of the power, and also impart a heavy shock and sudden jar that soon wears out the mechanism.

Figure 1 is an end elevation and partial section of a log-carriage embodying my improved features and showing the position of these parts relative to the log and saw. Fig. 2 is a broken-away longitudinal section of the carriage and track, showing a part of my improvement. Fig. 3 is a detail showing a clamping device employed in securing and adjusting the strip or ribbon to the saw or log-carriage; Fig. 4, a plan of the strip or ribbon and the means for attaching the same. Fig. 5 is an end elevation and partial section of a friction device embodying my improved features; Fig. 6, a side elevation of the same; and Fig. 7, a transverse section in the plane 7, Fig. 5. Fig. 8 is a vertical longitudinal section of the device.

The device is illustrated as applied to a band-saw mill; but it is obvious that my improved feature may be employed in connection with the log-carriage of any style of saw-mill without reference to any particular class, and may be applied, also, to any machine embodying a reciprocating carriage or bed.

In the drawings, A represents the log-carriage, which is of the ordinary construction; A' A^2, the tracks upon which the same moves, and A^3 the saw, the relative position of the log and head-block being indicated in dotted lines.

Underneath the carriage, and running parallel with the same, is located the friction-ribbon B, (see Fig. 2,) which is rigidly secured and supported at each end relative to the carriage by means of the brackets B′, bolted to the transverse framing-timbers. The lower ends of the brackets B′ are provided with holes, through which the threaded ends of the horizontal tightening-bolts a a' are inserted. The opposite ends of these bolts are connected by the flat rectangular head a^2. (See Fig. 3.) This head presents a beveled surface to the under side and end of the ribbon B, which is thickened and beveled on both sides, as shown in Fig. 2. The beveled clamping-plate a^3 is placed on top of the ribbon, and the whole tightly secured together by means of the vertical bolts a^4, which, together with the wedge-shaped end of the ribbon, prevents all possibility of slipping, increases the holding-ground, and relieves said bolts of the greater part of the strain.

In addition to securing the ends of the ribbon B to the brackets B′, the bolts a a' also serve to maintain the desired tension. Both ends of the ribbon B are secured to the ends of the log-carriage in the same manner. The description, therefore, will answer for both. The width of the friction-ribbon will be ordinarily about ten inches, so as to present a large frictional surface. This dimension, how-

ever, may be varied in accordance with the weight of the carriage or other circumstances.

The friction gripping device, supported in a stationary frame and located under the bed of the log-carriage, will now be described.

The companion friction-drums C C′ are mounted upon the shafts C^2 C^3, which are provided with suitable journal-bearings in the frame-work, as shown. These drums are placed below and adapted to have an intermittent frictional contact with the under side of the ribbon B. Any suitable means may be employed for transmitting the required motion from the motive power to the shafts C C^3, the drums revolving in opposite directions relative to each other, as indicated by the arrows. Above and in the same plane with the drums C C′ are placed the friction-rollers D D′, mounted on the shafts a^5 a^6, which in turn are journaled in the upper ends of the connecting-rods D^2 D^3. These rollers are connected by means of the rocker-arms *b b′*, which have the central pivot or rocking bearing, b^2, in the standards b^3.

It will be understood that the rocker-arms are located at each end of the rollers, as shown in Fig. 6.

The connecting-rods are four in number, and are placed opposite each other.

The rock-shaft D^4 is journaled in the lower part of the frame-work, below the friction-drums, (see Figs. 1, 5, and 6,) and has the lower end of the operating-lever E rigidly mounted on the outer projecting end of the same, as illustrated in Fig. 1. On the rock-shaft D^4 and inside of the frame-work are rigidly mounted the rocker-plates *d d′*, which are somewhat elongated and project laterally from said shaft in order to receive the lower ends of the rods connecting said plates with the rocker-arms *b b′*. The lower ends of said rods are secured to the plates *d d′* by means of the pivot-bolts d^2, as shown in Fig. 7. By this construction and arrangement it will be observed that when the operating-lever is in the vertical central position shown in Fig. 5 the log-carriage is stationary, as there is no pressure on the ribbon or friction propelling-strip B, lying between the friction-drums and rollers. Now a slight movement of the handle end of the lever E to the right causes a rolling movement of the rock-shaft D^4 in the same direction, thereby tipping and lowering the ends of the rocker-plates *d d′* on the same side, and imparting a corresponding movement to the rocker-arms *b b′* through the medium of the connecting-rods. This operation has the effect of bringing down the friction-roller D′ on top of and compressing the ribbon B between the rolling bodies, thus moving the carriage in one direction, while shifting the operating-lever to the left has the opposite effect. Only a slight movement of the operating-lever is required to put on or relax the gripping pressure.

This device has also the advantage of being a slip friction, so that the speed of the log-carriage can be varied at any time by a proper manipulation of the hand-operating lever, no matter what the maximum speed of the friction-drums may be. The friction-drum "gigging" back the carrige will be run at a higher speed than the companion drum feeding the log; but both friction-drums may be run at a higher rate of speed than that at which the carriage will be ordinarily propelled, so that an instantaneous advantage can be taken, when circumstances are favorable, to save valuable time by increasing the travel of the carriage through the medium of the operating-lever. For instance, suppose the log to be in position and the carriage at some distance from the saw. The operator is enabled by this arrangement to "shoot" the carriage forward at a high speed and instantly slow down to the proper feed as the saw enters the log.

By having a ribbon of steel or other suitable material inserted between the rolling friction-bodies, as described, the tractive power and adhesion of the contacting surfaces are greatly increased over that of the ordinary friction devices, wherein rolling bodies have direct contact. The wear is less on account of the drums having contact with the flat surface of the traction-ribbon, and heating is prevented, as the contacting surface of the ribbon is continually changing.

The carriage is under complete control of the operator, and can be instantly stopped or reversed. There can be no lost motion; therefore the carriage will instantly respond to the slightest movement of the operating-lever, and will reverse without a sudden jerk or jar.

I do not confine myself to the exact construction and arrangement shown and described, but may vary the same without departing from the spirit of my invention, which consists, mainly, in the feature of passing a flat traction-surface between round revolving bodies in transmitting motion by frictional contact.

A rope of wire or hemp rove back and forth a number of times may be attached to the carriage as a substitute for the metallic ribbon or strip, in which case the friction-drums might be grooved for the lay of the rope or cable; or a bar or series of bars or rods might be used. The ribbon or strip of metal is preferred, however, as it affords the greatest amount of frictional surface and is more positive and rigid, yet possessing sufficient flexibility to conform to any unevenness or irregularity in the mechanism.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. As a means for transmitting a reciprocating movement to log-carriages, the combination, with the carriage, of a traction-ribbon placed underneath and secured to the respective ends of said carriage, companion driving-drums bearing against the under side of said ribbon and rotating in opposite directions relative to each other, and the adjustable clamping-rollers located above and adapted to have alternate frictional contact with said ribbon

in a line with said frictional driving-drums, substantially as and for the purpose set forth.

2. In a frictional device for transmitting motion to log-carriages, the combination, with a log-carriage, of the traction-ribbon B, the friction-drums C C′, rotating in opposite directions, the rollers D D′, the rocker-arms *b b′*, the connecting-rods D^2 D^3, the rocker-plates *d d′*, the rock-shaft D^4, and the operating-lever E, substantially as set forth.

3. The combination, with a log-carriage, of a frictional traction-ribbon, the ends whereof are secured to the respective ends of said carriage, the friction driving-drums placed underneath said ribbon and rotating in opposite directions, the friction clamping-rollers arranged above said ribbon, and the means described for alternately throwing said rollers into a clamping position relative to the driving-drums, whereby the traction-ribbon is clamped between the same and a reciprocating movement imparted to the log-carriage, as set forth.

4. The combination, with the log-carriage, of the brackets B′, the traction-ribbon B, the tightening-bolts *a a′*, provided with the rectangular head a^2, the clamping-plate a^3, and the bolts a^4, whereby said ribbon is secured in position relative to said carriage, as set forth.

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