

(No Model.)

4 Sheets—Sheet 1.

E. FISCHER.
RESAWING MACHINE.

No. 411,098.

Patented Sept. 17, 1889.

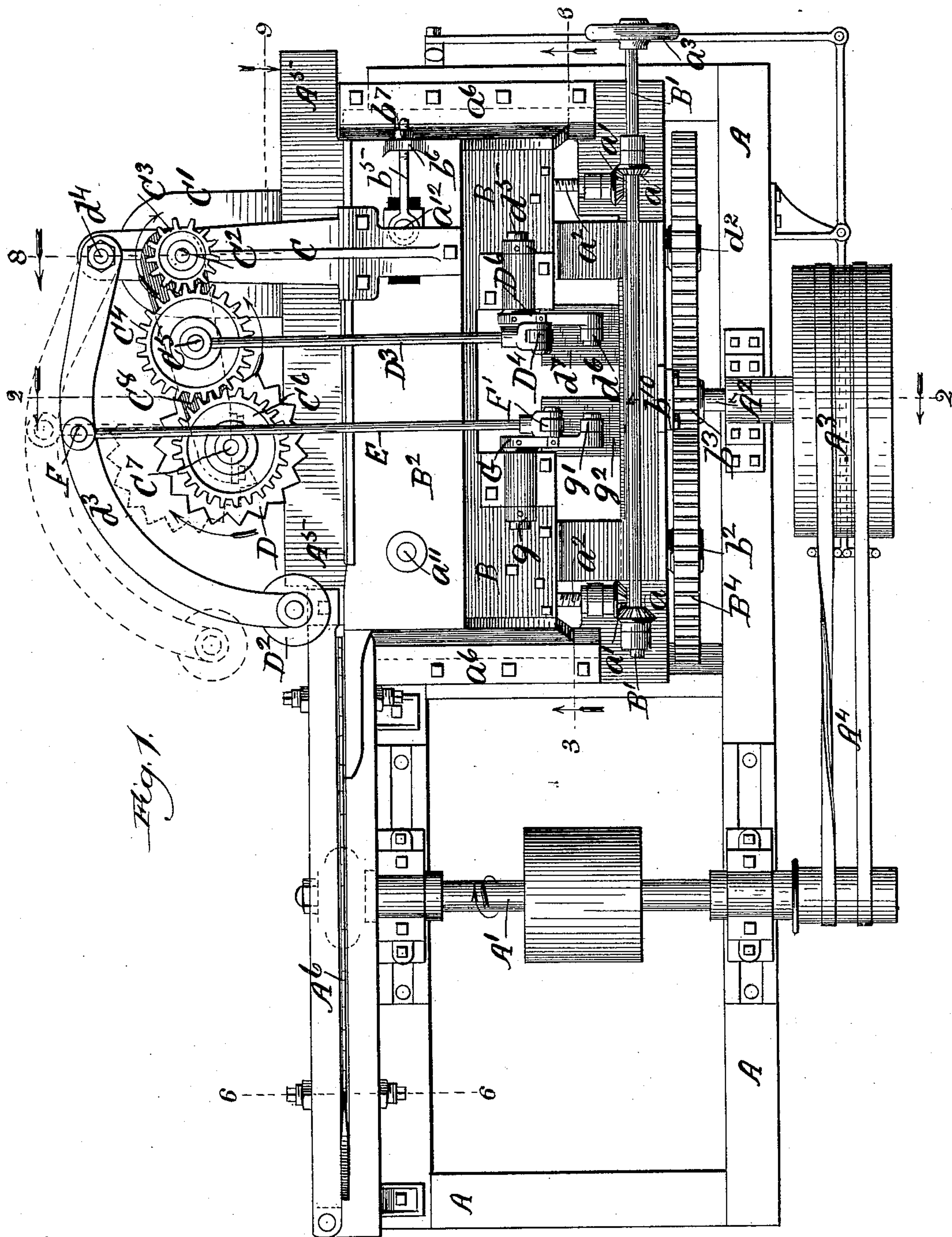


Fig. 1.

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Inventor:

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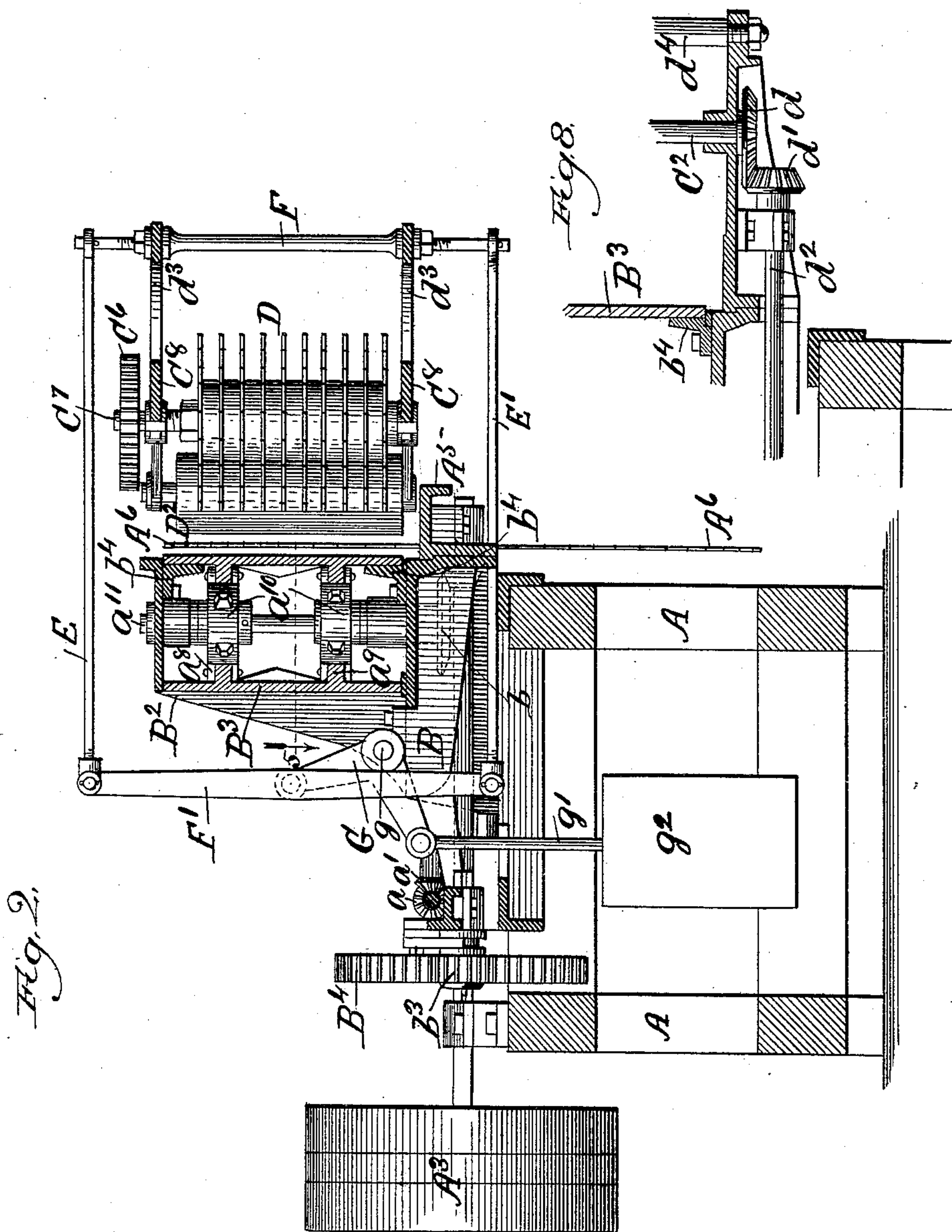
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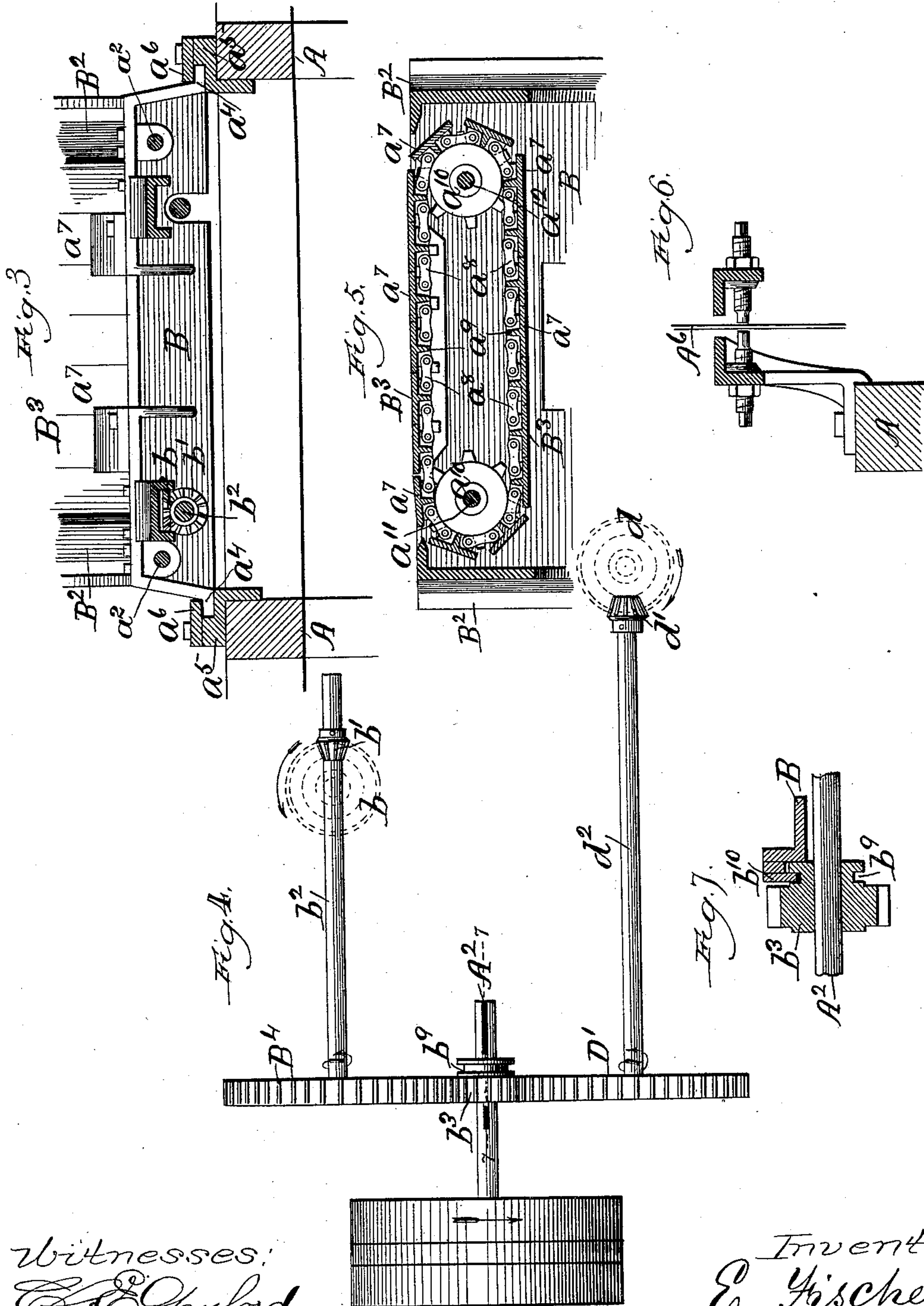
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4 Sheets—Sheet 3.

E. FISCHER.
RESAWING MACHINE.

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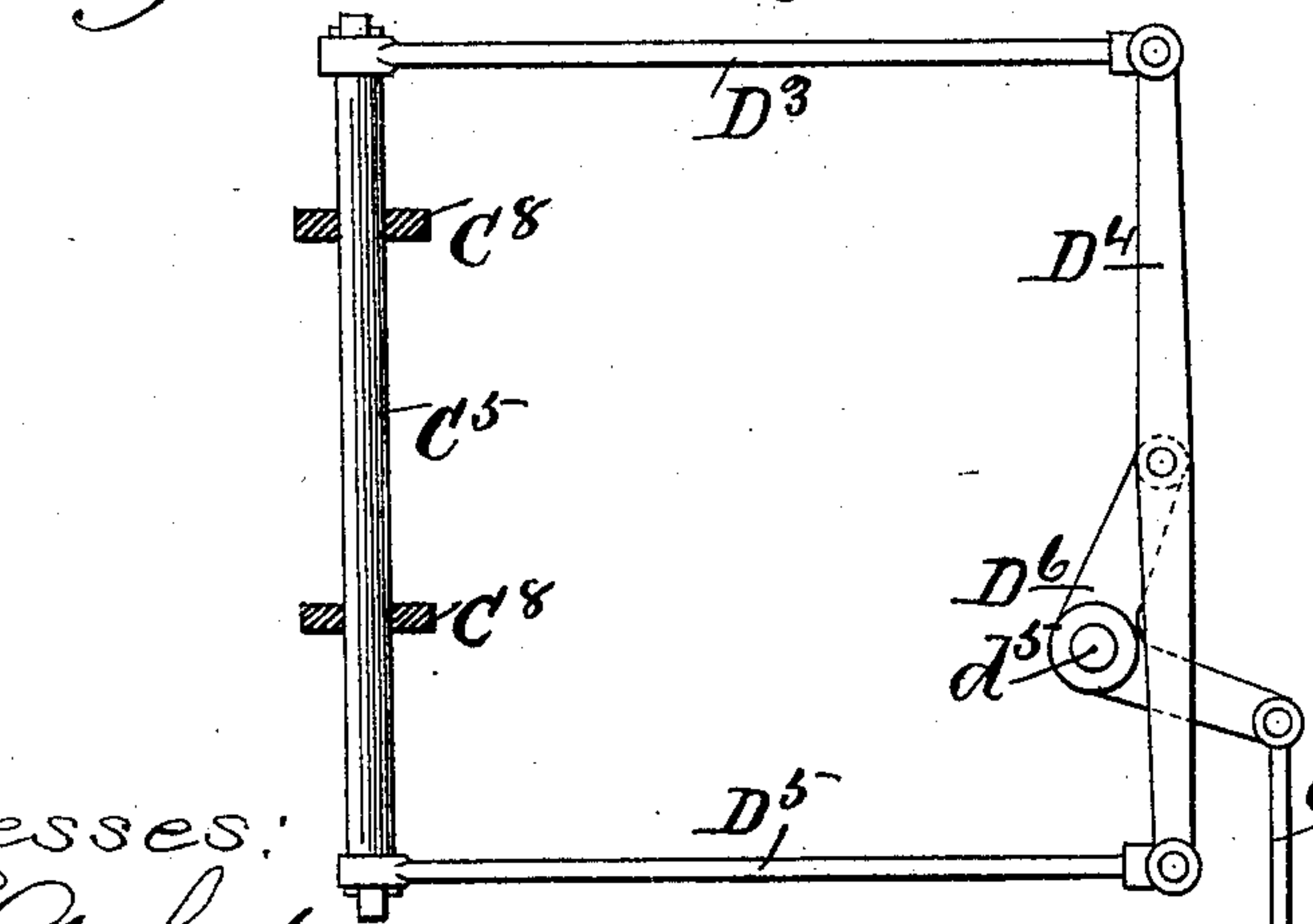
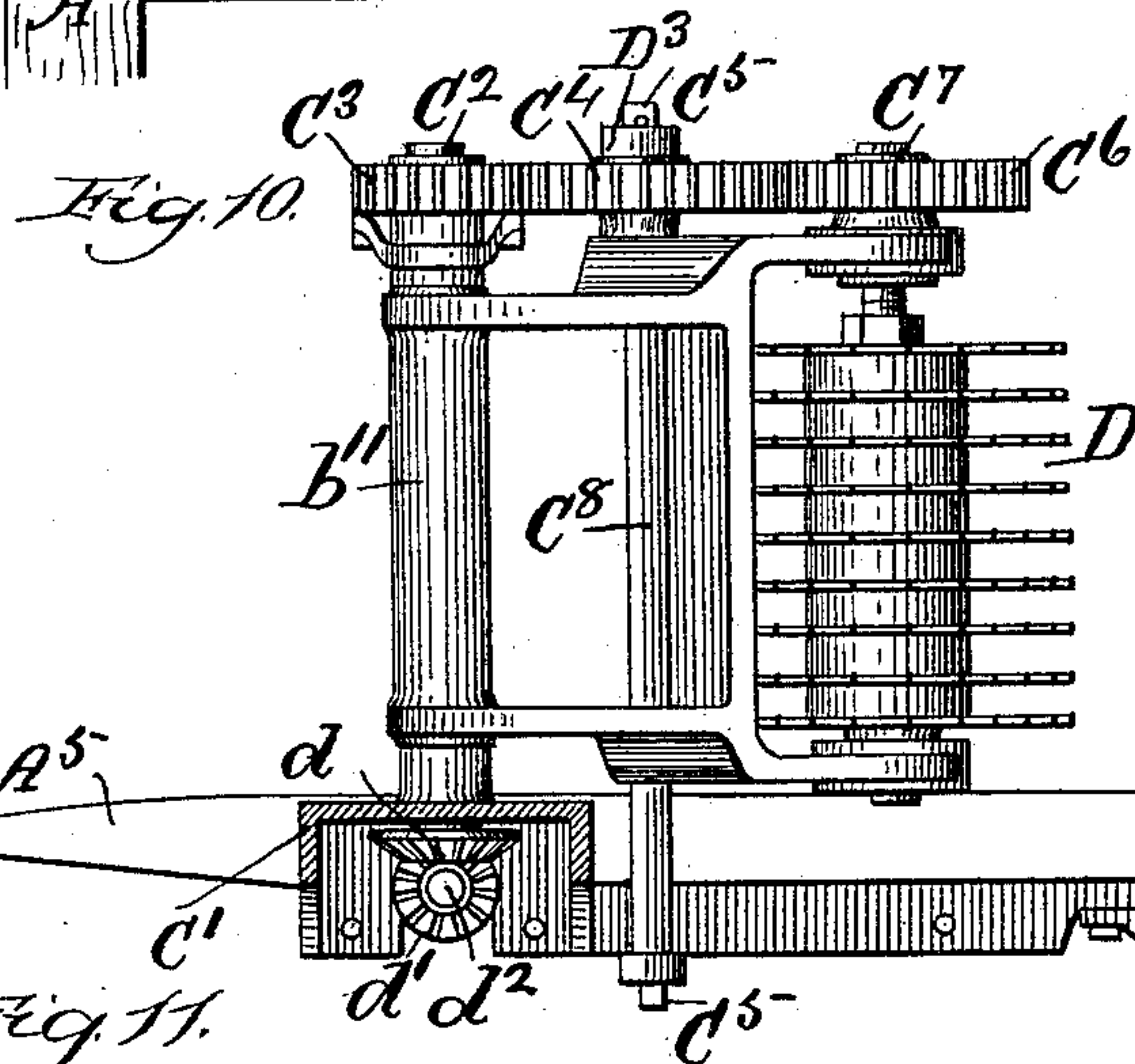
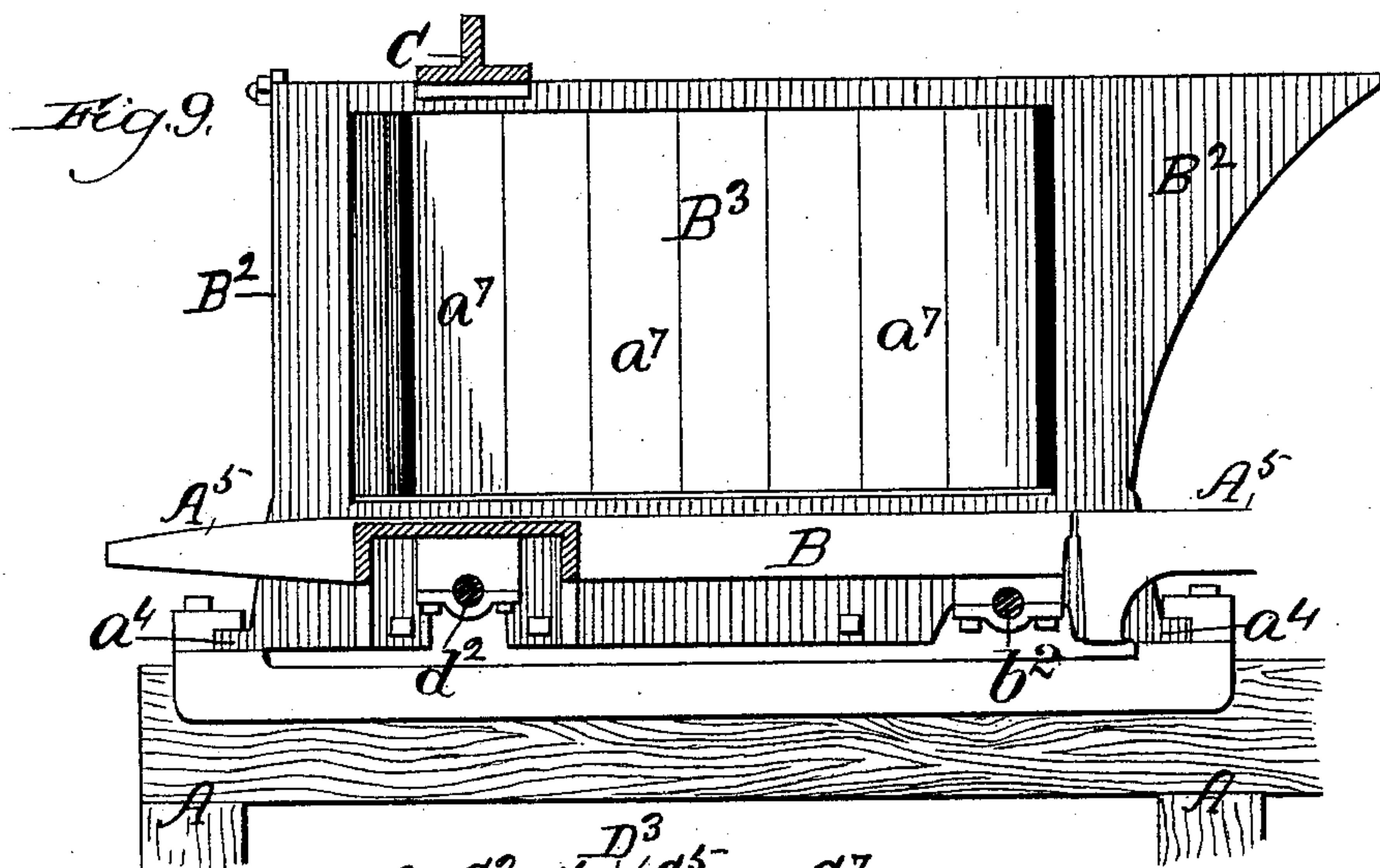
(No Model.)

4 Sheets—Sheet 4.

E. FISCHER.
RESAWING MACHINE.

No. 411,098.

Patented Sept. 17, 1889.



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UNITED STATES PATENT OFFICE.

ENGELBERT FISCHER, OF CHICAGO, ILLINOIS.

RESAWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 411,098, dated September 17, 1889.

Application filed June 5, 1888. Serial No. 276,086. (No model.)

To all whom it may concern:

Be it known that I, ENGELBERT FISCHER, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in a Resawing-Machine, 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.

The object of this invention is to provide a machine of an improved character for resawing lumber—such as boards and slabs—that has before been through the ordinary mill.

The nature of the invention consists, more especially, in providing a resawing-machine with an automatic feeding and clamping mechanism that will readily adjust itself to the thickness and irregularity of the material and produce a board of a uniform thickness.

Figure 1 is a plan of a resawing-machine embodying my improved features; Fig. 2, a vertical transverse section in the plane 2, Fig. 1; Fig. 3, a broken-away longitudinal section in the plane 3, Fig. 1; Fig. 4, a detached plan of the means employed to transmit motion to the feed mechanism; Fig. 5, a horizontal section of the endless lag feed-chain and the inclosing-box frame; Fig. 6, a sectional detail in plane 6, Fig. 1; Fig. 7, a sectional detail in plane 7, Figs. 1 and 4; Fig. 8, a broken-away transverse section in plane 8, Fig. 1; Fig. 9, a vertical section in plane 9, Fig. 1, showing the endless lag-chain from the feed side; Fig. 10, an elevation of the toothed feed-roller and parts looking from the outside; and Fig. 11 is a detached detail of the tension mechanism of the toothed feed-roller.

In the drawings, A represents the different parts of the main supporting-frame; A', the saw and driving-shaft; A², counter-shaft for driving feed mechanism; A³, the usual system of pulleys mounted on said counter-shaft; A⁴, belt for transmitting motion from the saw or driving-shaft; A⁵, the feed-table, and A⁶ the saw.

The carriage or adjustable box-frame B (see Figs. 1, 2, 3, 5, and 9) has a transverse sliding movement on the main frame and at right angles to the saw. This adjustment is accomplished through the medium of the

hand-shaft B', having beveled pinions *a* mounted thereon, and which engage with corresponding pinions *a'*, mounted on the adjacent ends of the screw-shafts *a*², arranged at right angles to the hand-shaft B', as shown in Fig. 1. The screw-shafts *a*² have a suitable threaded engagement with the under side of the carriage or box frame B. The hand-wheel *a*³ provides means for rotating the hand-shaft on which the same is mounted, the carriage being moved up nearer to or farther away from the line of the saw, in accordance with the direction in which said hand-shaft is rotated, and thereby gaging or setting the machine to saw boards of the required thickness. The lower angular edges *a*⁴ (see Fig. 3) of the carriage or box frame B rest upon the ledge part of the angle bed-plates *a*⁵, secured to the transverse part of the main frame. The cap-plates *a*⁶ are bolted on the highest part of the angle-plates *a*⁵ and project over the horizontal edge of the carriage-frame, thereby forming grooves in which said carriage-frame moves.

The box part B² of the carriage B extends upward from the front side of said carriage and forms an integral part thereof. This box part is open on its two sides, (see Figs. 3 and 9,) showing the endless lag-chain B³. The ends and top of the box are inclosed, the carriage-base forming the bottom.

The endless lag feed-chain B³ consists of a number of rectangular metal lag-plates *a*⁷, arranged vertically and placed edge to edge, as shown in Figs. 2, 3, 5 and 9. The lag-plates are pivotally connected with relation to each other by means of a series of links *a*⁸, pivoted at each end to the lugs *a*⁹, formed on the inner sides of the lags, as shown in Figs. 2 and 5, whereby a flexible adjustment is provided for. This lag-chain is carried or travels on the four sprocket-pulleys *a*¹⁰, two of which are mounted on the vertical shafts *a*¹¹, journaled in the box part B² of the carriage-frame. *a*¹¹ is the driving-shaft and *a*¹² the carrying-shaft. The shaft *a*¹¹ is provided on the lower projecting end with the pinion *b*, engaging with the companion pinion *b'*, mounted on and near the inner end of the horizontal shaft *b*², as shown in Fig. 3, and indicated by dotted lines in Fig. 2, and shown in full and dotted lines in Fig. 4. A gear-wheel B⁴ is

mounted on the outer end of the shaft b^2 , which in turn engages with the pinion b^3 , mounted on the counter-shaft A^2 . By this arrangement the required motion is transmitted to the lag feed-chain.

The box-frame B^2 is provided on the inner side, top, and bottom adjacent to the feed-table with the angle-bars or guides b^4 b^4 , as shown in Fig. 2. The respective ends of the lag-plates bear against the companion angle-bars, which form a rigid backing for the same in the line of travel on the feed side, and prevent the lateral pressure of the material being sawed from throwing the lag feed-chain out of a true line with reference to the path of the saw. By this means the lag feed also presents a true unyielding surface against a lateral pressure from the feed side.

The vertical carrying-shaft a^{12} is provided on each end with the horizontal bolt or bolts b^5 , (see Fig. 1,) the loop ends of which engage with the respective upper and lower ends of said shaft, while the screw-threaded ends pass through the lugs b^6 , formed on the upper and under sides of the box-frame and receive the clamping-nut b^7 , whereby the proper tension on the lag feed-chain may be maintained. The pinion b^3 is feathered on the counter-shaft A^2 , and is provided in the hub with the annular groove b^9 , for the engagement of the catch or locking part b^{10} of the carriage-box frame, as shown in Figs. 4 and 7. This provides for the pinion b^3 , the gear-wheels flanking the same, and the shafts on which they are mounted and following the movement of the carriage.

Fig. 6 illustrates steady-pins for the saw; but as nothing particularly new or novel is presented a detailed description of the same is omitted.

The construction, arrangement, and operation of the feed-roller mechanism will now be described.

The inner end of the bracket-arm C is rigidly secured to the top of the box-frame and projects laterally in a horizontal plane therefrom, as shown in Fig. 1. The lower companion bracket-arm C' projects outwardly from and forms a part of the feed-table A^5 , the latter being bolted rigidly to the carriage or box frame and moving therewith. The ends of the vertical shaft C^2 are provided with suitable journal-bearings in the bracket-arms C C' . The upper end of the shaft C^2 has the pinion C^3 rigidly mounted thereon, which engages with the idler gear-wheel C^4 , loosely mounted on the stationary shaft C^5 , and in turn engages with the gear-wheel C^6 , rigidly mounted on the upper end of the feed-roller shaft C^7 , as shown in Figs. 1 and 10.

The double bifurcated swinging bracket C^8 (see Fig. 10) has the sleeve or hollow shaft b^{11} formed on the pivot end of the same, said sleeve being loosely mounted on the shaft C^2 , which forms a pivot for the lateral swing of the opposite end of the bracket C^8 , in which the shaft C^7 is journaled. The toothed feed-

roller D is rigidly mounted on the shaft C^7 . The lower end of the shaft C^2 is provided with the pinion d , engaging with the companion pinion d' , mounted on the inner end of the horizontal shaft d^2 , as shown in Figs. 4, 8, and 10.

The gear-wheel D' is mounted on the outer end of the shaft d^2 , and engages with the pinion b^3 , mounted on the counter-shaft A^2 . This arrangement serves to transmit and impart the required rotary motion to the toothed feed-roller D .

The rear ends of the curved companion arms d^3 d^3 are pivoted on the stationary shaft d^4 , near the upper and lower ends of the same. (See Figs. 1 and 8.) The presser-roller D^2 is placed between and journaled in the opposite or front ends of the swinging arms d^3 d^3 . This presser-roller is located in advance of the toothed feed-roller, and bears against the lumber just in front of the saw, as shown in Fig. 1, and serves to hold the material firmly against the lag-box frame and in line with the saw. The toothed feed-roller has also the functions of a presser-roller. The dotted lines in Fig. 1 show the outward movement of the feed and presser rollers, and the limit of the swing or throw of the same will be in accordance with the thickness of the material passing through, as the machine will take in any thickness—say from one up to ten inches—as provided for in the construction.

The means employed for retaining the feed and presser rollers in their normal position and maintaining the required tension on the same will next be described.

One end of the upper horizontal connecting-rod D^3 is attached to the upper end of the stationary shaft C^5 , (see Figs. 1 and 11,) which is rigidly supported in the bifurcated bracket C^8 , as shown in Figs. 10 and 11. The opposite end of the rod D^3 is rigidly secured to the upper end of the vertical lever D^4 . The lower connecting-rod D^5 (see Fig. 11) is in like manner secured to the respective lower ends of the stationary shaft C^5 and the vertical lever D^4 . The angular or bell crank D^6 is mounted at its central point on the horizontal shaft d^5 , (see Fig. 1,) journaled in the carriage-box frame. The normal upper end of said crank is pivoted to the longitudinal center of the lever D^4 , and the lower end is pivoted to the upper end of the weight-rod d^6 , to the lower end of which in turn is suspended the weight d^7 . (Shown in Fig. 1.) This arrangement permits of the feed-roller being forced back by the insertion of the material, and the same made to follow automatically any variation in thickness or rough irregularities, such as knots in slabs.

The upper and lower companion connecting-rods E E' are attached at their outer ends (see Fig. 2) to the upper and lower ends of the stationary shaft F , rigidly secured near the longitudinal central part of the swinging arms d^3 d^3 , as shown in Fig. 1. The opposite ends of the rods E E' are respectively at-

tached to the upper and lower ends of the lever F' .

The angular crank G is mounted at its central point on its horizontal shaft g , journaled in the carriage-box frame, the upper end of said crank being pivoted to the longitudinal center of the lever F' , and the lower end pivoted to the upper end of the weight-rod g' , having the weight g^2 suspended therefrom. This arrangement provides the required tension and automatic adjustment for the presser-roller D^2 .

This construction and arrangement provides an automatic feed mechanism having powerful gripping-surfaces whereby any material, no matter how rough or irregular, will be drawn through and always rigidly held in line with the saw. It is also possible to use a thinner saw, thereby obviating wide kerfing and thus gaining the advantage of saving in lumber.

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

1. In a resawing-machine, the combination, with the main frame, of the carriage-box frame adjustably mounted thereon and provided with the lower angular edges $a^4 a^4$, the angle bed-plates $a^5 a^5$, the cap-plates $a^6 a^6$, the screw-shafts having a threaded engagement with the under side of said box-frame, the pinions mounted on said screw-shafts, the hand operating-shaft, and the pinions mounted thereon and which engage with the companion pinions on the screw-shafts, substantially as and for the purpose set forth.

2. In a resawing-machine, the combination, with the main frame, of the adjustable car-

riage-box frame mounted thereon, the vertical shafts $a^{11} a^{12}$, journaled thereon, the sprocket-pulleys mounted on said shafts, the lag feed-chain carried by said pulleys, the pinion b , mounted on the lower end of the shaft a^{11} , the pinion b' , the horizontal shaft b^2 , the gear-wheel B^4 , the pinion b^3 , and the counter-shaft A^2 , substantially as and for the purpose set forth.

3. In a resawing-machine, the combination, with the rotating toothed feed-roller arranged vertically and yielding laterally, of the bifurcated swinging bracket-arm in which said feed-roller is journaled, the lag feed-chain moving in a vertical plane, said toothed roller and feed-chain being located upon and pressing against opposite sides of the material in the line of the saw, and the carrying-shafts upon which said lag-chain is mounted, substantially as and for the purpose set forth.

4. In a resawing-machine, the combination of the lag feed-chain consisting of a number of rectangular plates arranged vertically and hinged together, as described, the vertical shafts and sprocket-wheels upon which said lag-feed is mounted, the toothed feed-roller, the laterally-swinging bifurcated bracket-arm in which said feed-roller is mounted, the presser-roller located in advance of and on the same side with the feed-roller, the curved swinging arms $d^3 d^3$, and the stationary shaft upon which the rear ends of said curved arms are pivoted, substantially as and for the purpose set forth.

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