

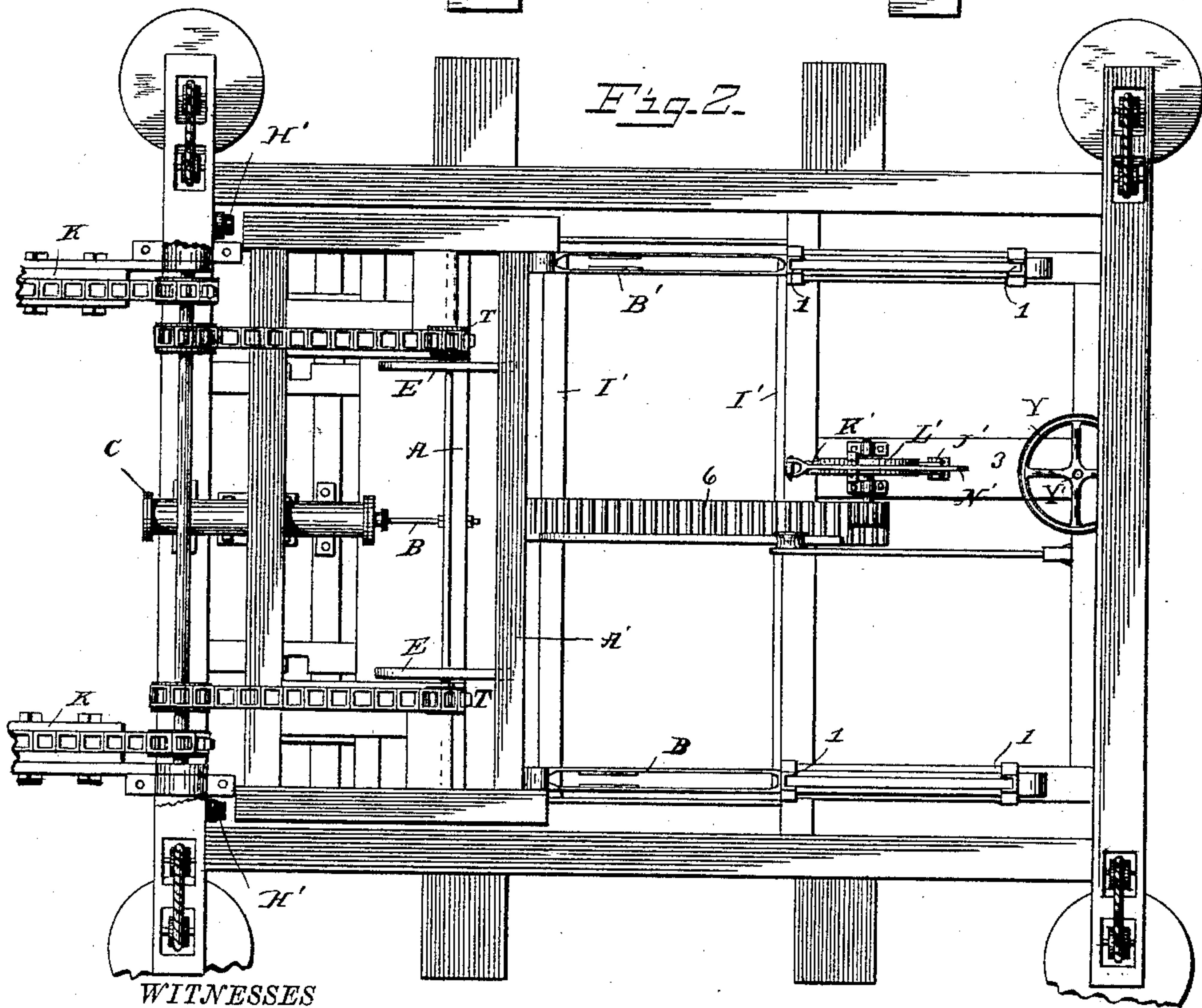
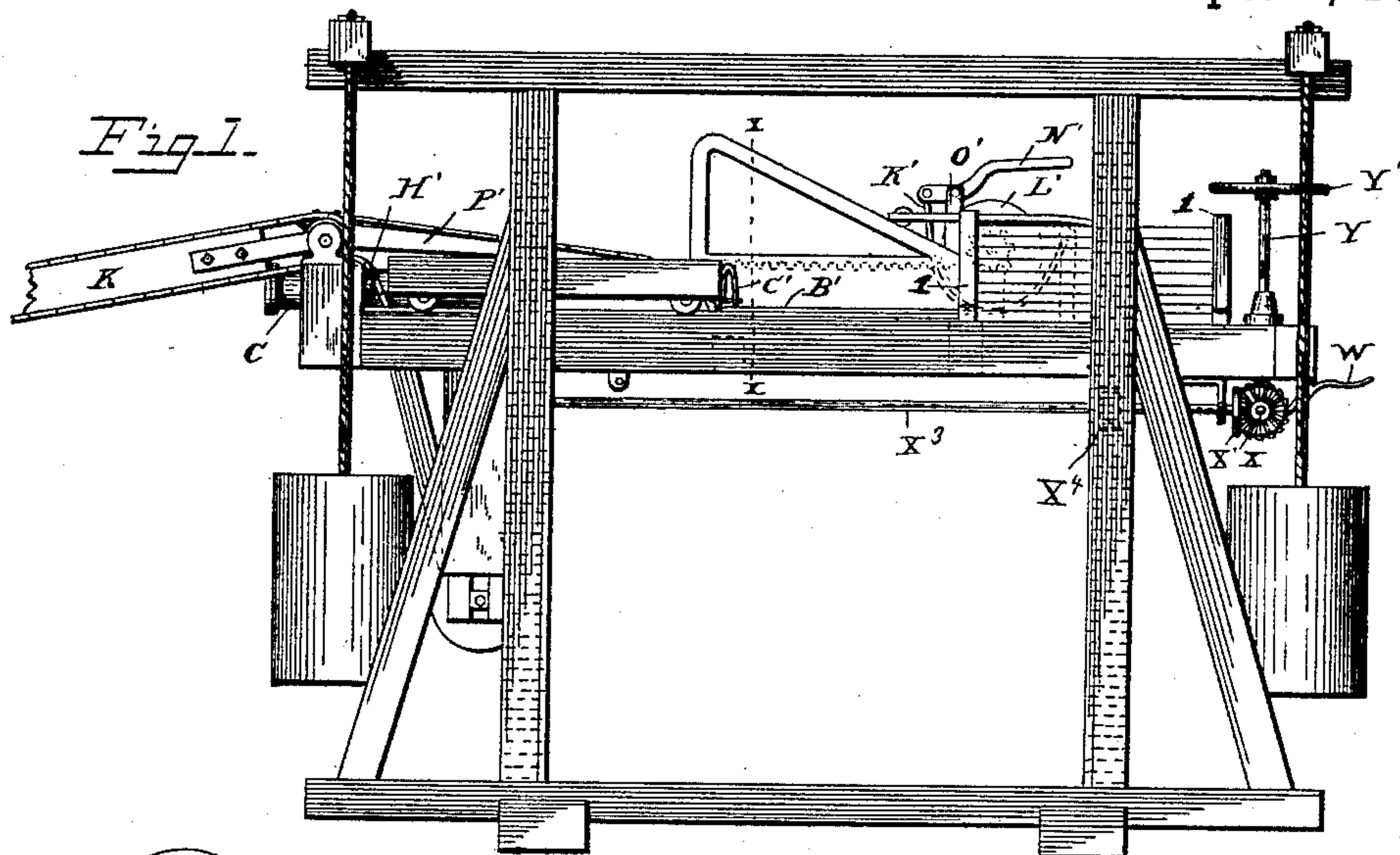
(No Model.)

4 Sheets—Sheet 1.

W. T. SMITH.
LUMBER STACKER.

No. 348,591.

Patented Sept. 7, 1886.



WITNESSES

N. A. Allen
Edwin L. Bradford

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Wm. T. Smith
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his Attorneys

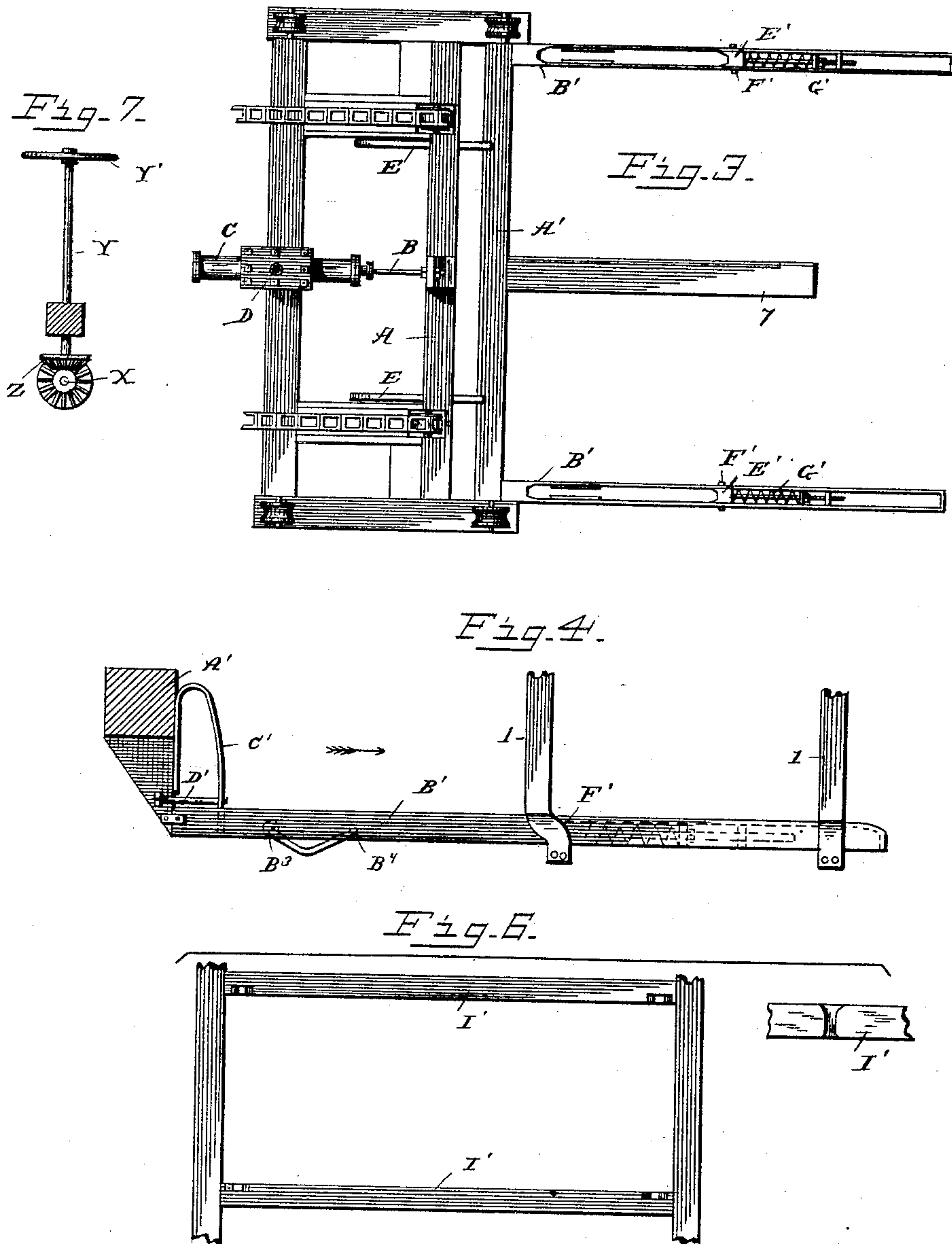
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4 Sheets—Sheet 2.

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Fig. 5.

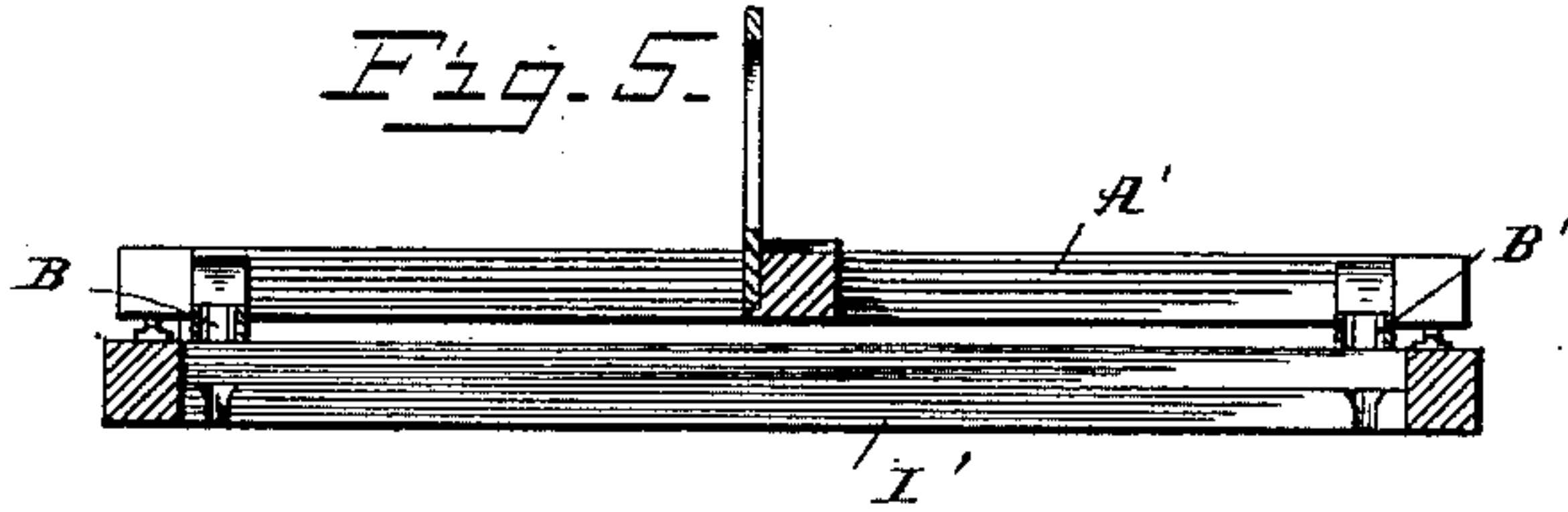


Fig. 8.

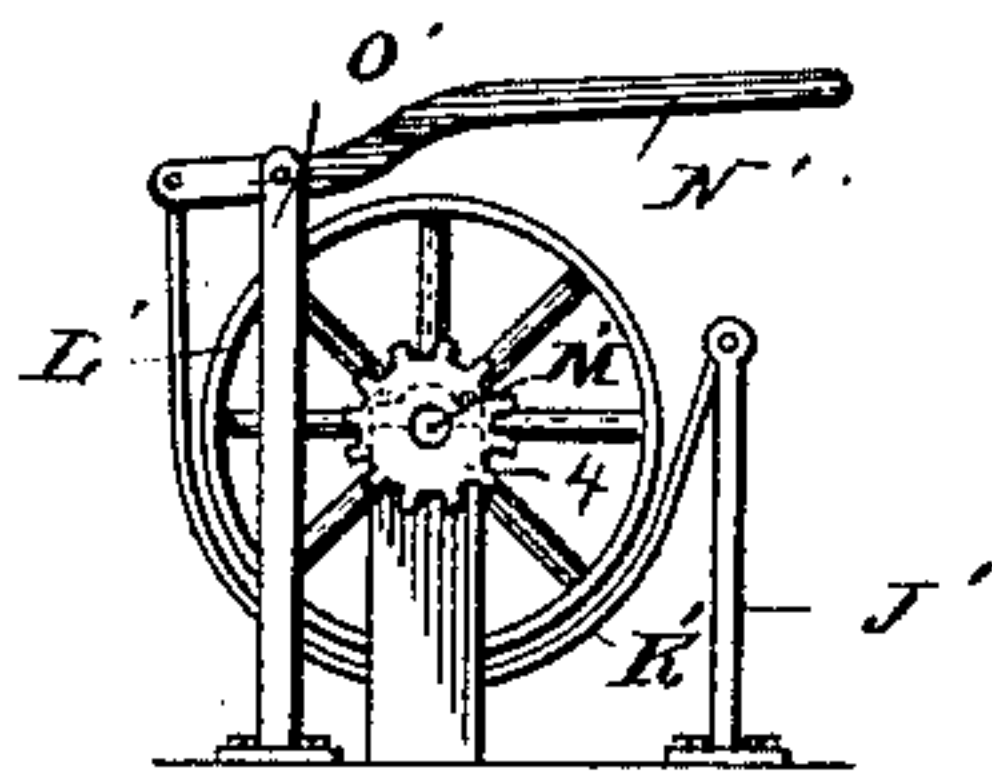


Fig. 11.

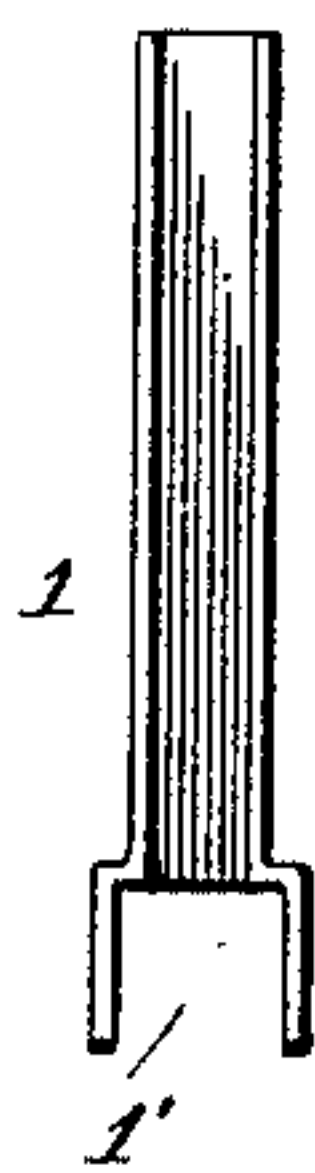


Fig. 12.

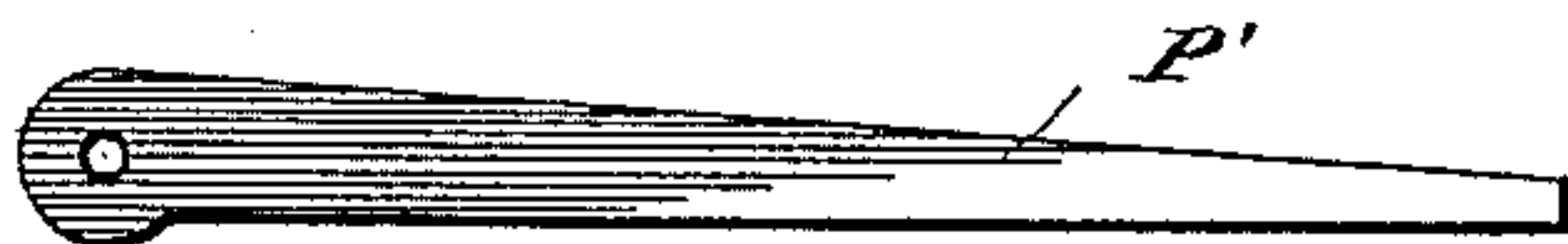
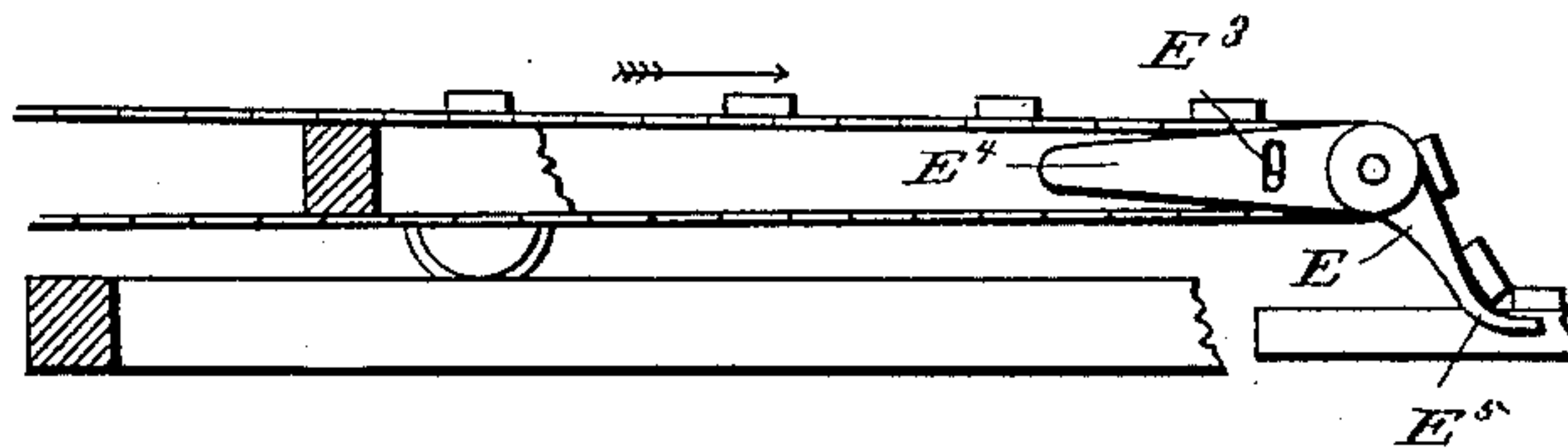


Fig. 13.



Fig. 14.



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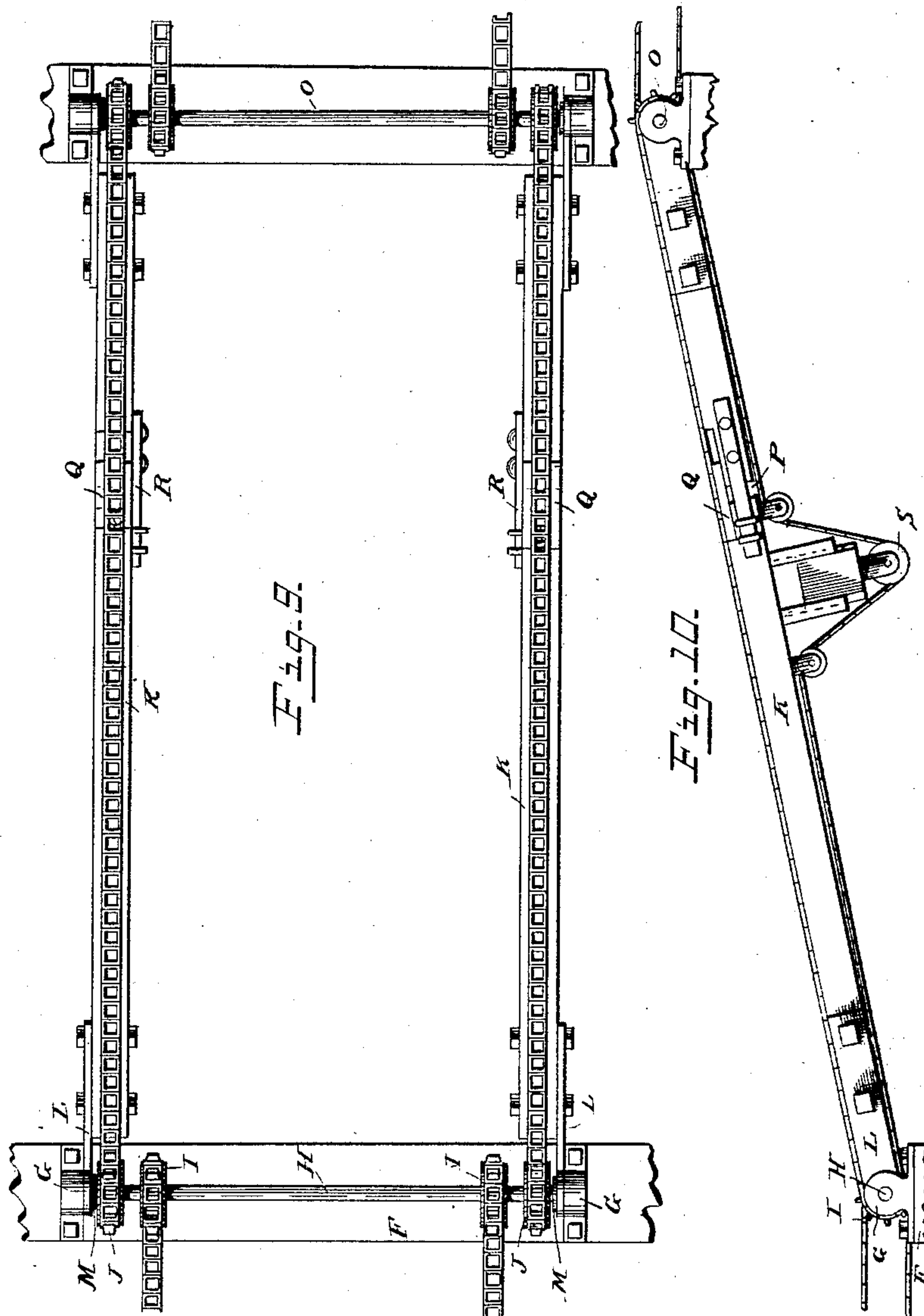
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4 Sheets—Sheet 4.

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UNITED STATES PATENT OFFICE.

WILLIAM T. SMITH, OF BOZEMAN, ALABAMA.

LUMBER-STACKER.

SPECIFICATION forming part of Letters Patent No. 348,591, dated September 7, 1886.

Application filed March 15, 1886. Serial No. 195,351. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM T. SMITH, a citizen of the United States, residing at Bozeman, in the county of Autauga and State of Alabama, have invented certain new and useful Improvements in Lumber-Stackers, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to certain new and useful improvements in machines for elevating and stacking lumber, and it is specially designed as an improvement on the machines for which I received Letters Patent, dated
15 September 9, 1884, numbered 304,760, and January 6, 1885, and numbered 310,232, respectively; and it has for its objects, first, to improve the construction of the means for conveying the lumber from the trimming-machine to the stacker; second, to provide means
20 whereby the movable carriage can be instantly stopped, should it be desired, notwithstanding the pressure of the motive agent in the cylinder; third, to provide auxiliary means for lowering the traveling frame, instead of, as
25 heretofore, depending upon the weight of the machine itself; and, fourth, to do away with the grasping-fingers heretofore employed for seizing and dragging across the boards the strips which are interposed between each suc-
30 cessive layer, and to substitute therefor the bars or rods shown in Figs. 3 and 4.

In the accompanying drawings, forming a part of this specification, and on which similar letters of reference indicate the same or corresponding features, Figure 1 represents a side elevation of my improved machine, showing a portion of the elevating-chains which extend to the trimming-machine. Fig. 2 is a
40 plan view thereof, with the upper front beam of the main frame of the stacker, or that beam nearest the trimming-machine, broken away. Fig. 3 is a detached enlarged inverted plan view of the movable carriage, showing the hollow rods for conveying the strips attached thereto. Fig. 4 is a side elevation of one of
45 said bars, shown extending through the pockets which hold the strips, showing also the connection with the movable carriage and the spring attached thereto. Fig. 5 is a transverse sectional view taken on the line $x x$ of Fig. 1. Fig. 6 is a detached view of the frame

through which the strips fall and also a detail view of the configuration of the slot. Fig. 7 is a detached view of the hand-wheel for lowering the traveling frame. Fig. 8 is a detached
55 view of the brake wheel and lever. Fig. 9 is a plan view of the elevating frame and chains for conducting the boards from the trimming-machine to the stacker. Fig. 10 is a side elevation of the same. Fig. 11 is a detail front
60 view of one of the pockets for holding the spacing strips. Fig. 12 is an enlarged detached view of one of the ways upon which the chains pass over the movable carriage, and Fig. 13 is
65 a cross-sectional view thereof; Fig. 14, a longitudinal vertical sectional view of a portion of the supporting-platform and traveling carriage, showing one of the depositing-levers in side elevation.
70

The main frame of my machine is the same as that set forth in Letters Patent No. 304,760, and within it slides vertically the traveling frame having supporting-chains and counterbalancing-weights. The rear portion of this
75 frame is provided with two or more oppositely-disposed vertical pockets, 1, which receive and hold the spacing-strips, which are placed between each successive layer of lumber. The extreme lower end of these pockets, looking
80 toward the front of the machine, is cut away, as more clearly seen in Fig. 12, so as to admit of the entrance of the strip-carrier, to be presently described.

To the beam A of the movable carriage is
85 secured one end of a piston-rod, B, working in a cylinder, C, which is supplied with steam through the port D, as seen in Fig. 3, any suitable pipe connecting the cylinder with a steam-generator, and all of which is fully described
90 in Letters Patent No. 310,232, granted to me January 6, 1885. At a convenient point on the carriage, and in close proximity to the axes of the rollers over which the endless chains pass, are pivotally mounted depositing-
95 levers E, the upper members of which are slotted at E^3 , and through which are passed bolts for the purpose of controlling the oscillating or tilting motion of the said levers. The upper arms or members, E^1 , of the levers are of
100 greater specific gravity than their opposite ends, whereby the latter ends are normally held in such position with relation to the successive layers of boards as to clear the upper sur-

face of the same. The members E⁵ of the levers stand in an inclined position of such an angle as to cause the boards to slide down upon the same under the influence of gravity as they pass from the chains upon the levers. These levers therefore conduct the boards to and upon the strips upon which they are to be laid.

The letter F, as seen in Fig. 9, refers to one end of the trimming-table, the same being provided with journal-boxes G, in which is mounted a shaft, H, provided with sprocket-wheels I, over which pass sprocket-chains coming from the trimming-machine, and with sprocket-wheels J, over which pass sprocket-chains extending to the movable carriage of the stacker. The beams K are loosely mounted upon the shaft H by means of the plates L, securely fastened to them, the said plates having bushings M, which form bearings for the shaft. The upper ends of the beams K are similarly mounted upon the shaft O, situated upon one end of the traveling frame.

As seen in Fig. 10, the beams K are severed at P, being firmly held together by the plate Q, secured to one of the beams and sliding within a cut-out portion on the other beam, and by a plate, R, secured to this second beam and sliding within brackets on the first beam. My reason for making this joint in the beams is because as the traveling frame of the stacker rises the distance between the trimming-table and the said frame is increased, and by making an extensible joint like that just described I can regulate the length of the beams the distance required, the chains being always kept tight by reason of the idler S.

Instead of having my endless chain to extend up to and over the pulleys T, (seen in Fig. 2,) I find it more convenient to let the chain turn upon the shaft O, and provide that shaft with further pulleys and use other chains to convey the lumber from this shaft to the levers E, whence it is deposited upon the spacing-strips of the pile beneath, being laid upon a truck run under the machine, as described in Letters Patent 304,760, already alluded to.

In the machines previously made I trusted to the weight of the traveling frame and the movable carriage to lower the same, when the detent W, (seen in Fig. 1,) which engages a pinion on one of the elevating-shafts was released; but I find in practice that it is better to lower the machine gradually, and for this purpose have provided a shaft, Y, having a hand-wheel, Y', and a miter-pinion, Z, which engages a miter-wheel on one of the elevating-shafts, as more clearly seen in Fig. 7; so that to lower the machine, I release the detent and then turn the hand-wheel, which, through its shaft, imparts motion to the pinion, and through it to the miter-wheel on the shaft X, which causes the frame to descend at such speed as the operator desires. This takes place because the pinions on the shaft X mesh with pinions on the shaft X³, which latter have pinions X⁴ meshing with racks X⁵, (shown in

dotted lines in Fig. 1,) as more fully set forth in Patent No. 304,760, of which see Fig. 3.

As heretofore constructed the bar A', at or near those points where the partially-hollow rods or bars B' are joined, was constructed with fingers which would, when pressed against the strips in the pockets by the movement of the carriage in that direction, grasp a strip and draw it across the pile of lumber. The difficulty I encountered in this construction was that the fingers would sometimes lose their hold before the strip would be drawn the whole way across, and it would sometimes occur that they would fail to grasp the strip at all. In order to remedy this, I have done away with these fingers and have substituted in their stead the bars B', (shown in Figs. 3 and 4,) and I attach them by means of bolts or in any other convenient manner to the cross-pice A' of the traveling carriage. These bars extend from the carriage to and through the rear pockets 1, as also through the pockets nearest the carriage, slots 1' being formed for this purpose, as seen in Fig. 12. One portion of these bars is always through and between these pockets, and the strips called the "spacing-strips," and shown in Fig. 1, are placed within the pockets by hand and upon the bars B', which serve as a bottom for the pocket. Each bar is provided with a sliding block, E', supported by a pin, F', which travels in slots formed in the sides of the bar. A spiral spring, G', serves to force the block E' normally toward the carriage, while the rod shown within the spring serves to support the spring. To the carriage-beam A' are secured springs C', the free ends of which stand within the hollow of the bars B', while a pin, D', acts to guide the spring more perfectly as it yields back and forth.

Now, let it be supposed that the carriage is moved in the direction of the arrow shown in Fig. 4 until the springs C' reach the first pockets, 1. When this takes place, the springs are gradually compressed, and the space between the springs and the blocks E' lengthens sufficiently to allow the strips resting immediately upon the bars B' to drop into the bars. The carriage is then drawn back and the strip drawn from within the pockets by each bar B', and held between the springs G' and the blocks E'. When the pins F' reach the forward pockets 1, the springs G' are compressed, and the distance between the springs C' and the blocks E' lengthens, and hence the strips drop from within the bars B'. Each bar B' is provided with two pivoted curved arms, B³, the free ends of which rest upon a stud, B⁴. When the strips within the bars B' are free at the end next to the blocks E', that end drops upon the pile of lumber beneath before the end next to the strip C' drops, in order to insure the proper delivery of the strip upon the boards beneath the arms B³, between which the adjacent portion of the strip passes until it falls down upon the boards beneath it. These arms, therefore, serve to pre-

vent the strips from being laid more or less obliquely across the pile. This I find to work without fail in practice, and is preferable to my old form of construction for the reasons previously mentioned.

The beams, (indicated by the letter I', Fig. 2,) which constitute the cross-pieces of the traveling frame, are slotted, as seen in Fig. 6, so that should the strips fall a little out of line after they leave their carrying-rods they will be guided by the slots in the traveling frame so as to assume their proper position on the lumber. The number of pockets and carrying-rods and the slots just mentioned may be varied to suit circumstances and the size of the machine. As seen in dotted lines in Fig. 1, one of these beams is lower than the other, and they are found to work better in practice when constructed in this manner.

As seen in Fig. 1, I provide the forward portion of the carriage traveling frame with rubber or other elastic material H', so as to prevent any violent jar by reason of the contact of the movable carriage with the frame of the machine.

As seen in Figs. 1 and 2, and more especially in Fig. 8, I mount upon a standard, J', secured to the traveling frame, one end of a sheet-metal band, K', said band loosely encircling the pulley L', mounted upon the shaft M', its other end being attached to the shorter arm of a lever, N', secured to the standard O'. The shaft M', as well as the standards J' and O', is mounted upon a beam, 3, which forms a part of the vertically-traveling frame. The pinion 4, carried by the shaft N', meshes with a rack-bar, 6, carried by a beam, 7, (see Figs. 2 and 3,) of the carriage A'. When the carriage moves back and forth, it causes the pulley L' to revolve. When, however, it is desired to stop the machine without shutting off the steam, the operator depresses the longer arm of the lever N', which brings the band K' into such close frictional contact with the pulley that the power of the steam is insufficient to draw the carriage back. On releasing the pressure upon the lever, the pulley rotates in the direction in which it was going previous to its stoppage.

As observed in Fig. 1, I provide ways P', of which Fig. 13 is a cross-sectional view, the same being mounted loosely upon the shaft O at one end, their other ends traveling upon the top edge of the movable carriage. I find that in conveying heavy timbers the endless chain at this point would sag to such an extent as to interfere with the working of the machine, and I have therefore devised this plan, so that should the timbers be heavier than usual the chains will slide in the grooves on the ways, as seen in Fig. 13, and the working of the machine will in no wise be interfered with.

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

1. In a lumber-stacker, the combination, with a movable carriage, of the bars con-

structed to receive and lay the spacing-strips, and the depositing-levers to deposit the boards on the strips.

2. In a lumber-stacker, the combination, with the movable carriage provided with partially-hollow rods or bars and depositing-levers, of chains or belts mounted to feed the lumber to the depositing-levers.

3. In a lumber-stacker, the combination, with a movable carriage, of partially-hollow rods, sliding blocks within the said rods, and springs to keep said blocks normally pressed against the spacing-strips.

4. In a lumber-stacker, the combination, with a movable carriage provided on its rear cross-piece with springs, of the hollow rods having sliding blocks therein, and springs to keep said blocks normally pressed against the spacing-strips.

5. In a lumber-stacker, the combination, with the movable carriage provided on its rear cross-piece with springs, of the hollow rods having sliding blocks therein, and the springs to keep said blocks normally pressed against the spacing-strips.

6. In a lumber-stacker, the combination, with the extensible elevator-frame, the shafts provided with sprocket-wheels mounted therein, and the sprocket-chains passing over said wheels, of the movable carriage provided with sprocket-wheels and chains, and constructed to receive the lumber from the elevator-frame and deposit it in layers.

7. In a lumber-stacker, the combination, with the traveling frame, of the elevator-frame having one end resting on the traveling frame, the shafts, provided with sprocket-wheels mounted therein and the sprocket-chains passing over said wheels, said elevator-frame being capable of extension longitudinally, so that as the traveling frame rises the elevator-frame accommodates itself to the height of the frame.

8. In a lumber-stacker, the combination, with the movable carriage provided with rods constructed to receive and lay the spacing-strips and to deposit the boards thereon, and means to actuate it, of the extensible elevator-frame having endless chains to conduct the boards to the movable carriage.

9. In a lumber-stacker, the combination, with the movable carriage provided with shafts having sprocket wheels, and the chains passing over said wheels, of the guides having one end loosely mounted upon said shafts and extending under said chains, so as to prevent them from sagging when heavy lumber is being carried.

10. In a lumber-stacker, the combination, with the movable carriage provided with rods constructed to receive and lay the spacing-strips, and means to actuate the carriage, of the traveling frame provided at one end with bumpers against which said carriage impinges, and its central cross-piece provided with slots to conduct and guide the spacing-strips after they leave the rods.

11. The combination, with a movable car-

riage provided with a rack-bar, of a brake-wheel having a pinion on its shaft which engages with said rack, a band encircling the wheel, and a lever by which the band is brought
5 in contact with the wheel.

12. In a lumber-stacker, the combination, with the main frame thereof, of the traveling frame provided with shafts having intergear-
ing pinions and adapted to move vertically
10 in the main frame, and the counterbalancing-weights and chains attached to said latter

frame, of the shaft provided with a hand-wheel and a miter-pinion, the latter engaging with a miter-wheel on one of the elevating-shafts, whereby the machine may be gradually low-
15 ered by the turning of the hand-wheel.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM T. SMITH.

Witnesses:

ROBINSON WHITE,
EDWIN L. BRADFORD.