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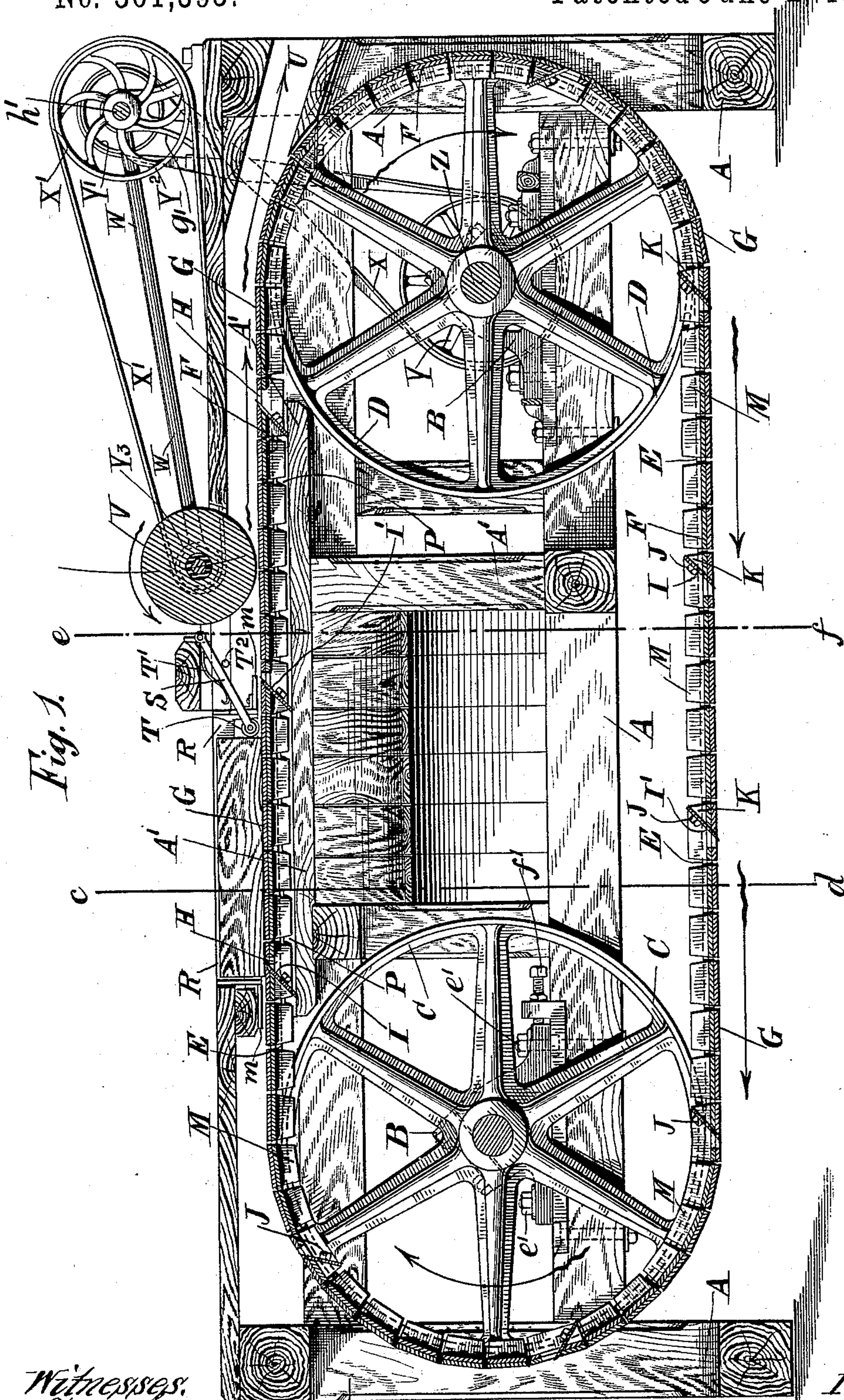
4 Sheets—Sheet 1.

C. HASS.

MACHINE FOR MANUFACTURE OF EXCELSIOR.

No. 561,393.

Patented June 2, 1896.



Witnesses:
Thos. A. Green
Robert Everett

Inventor:
Caesar Hass.
By Janus L. Norris, Att'y.

(No Model.)

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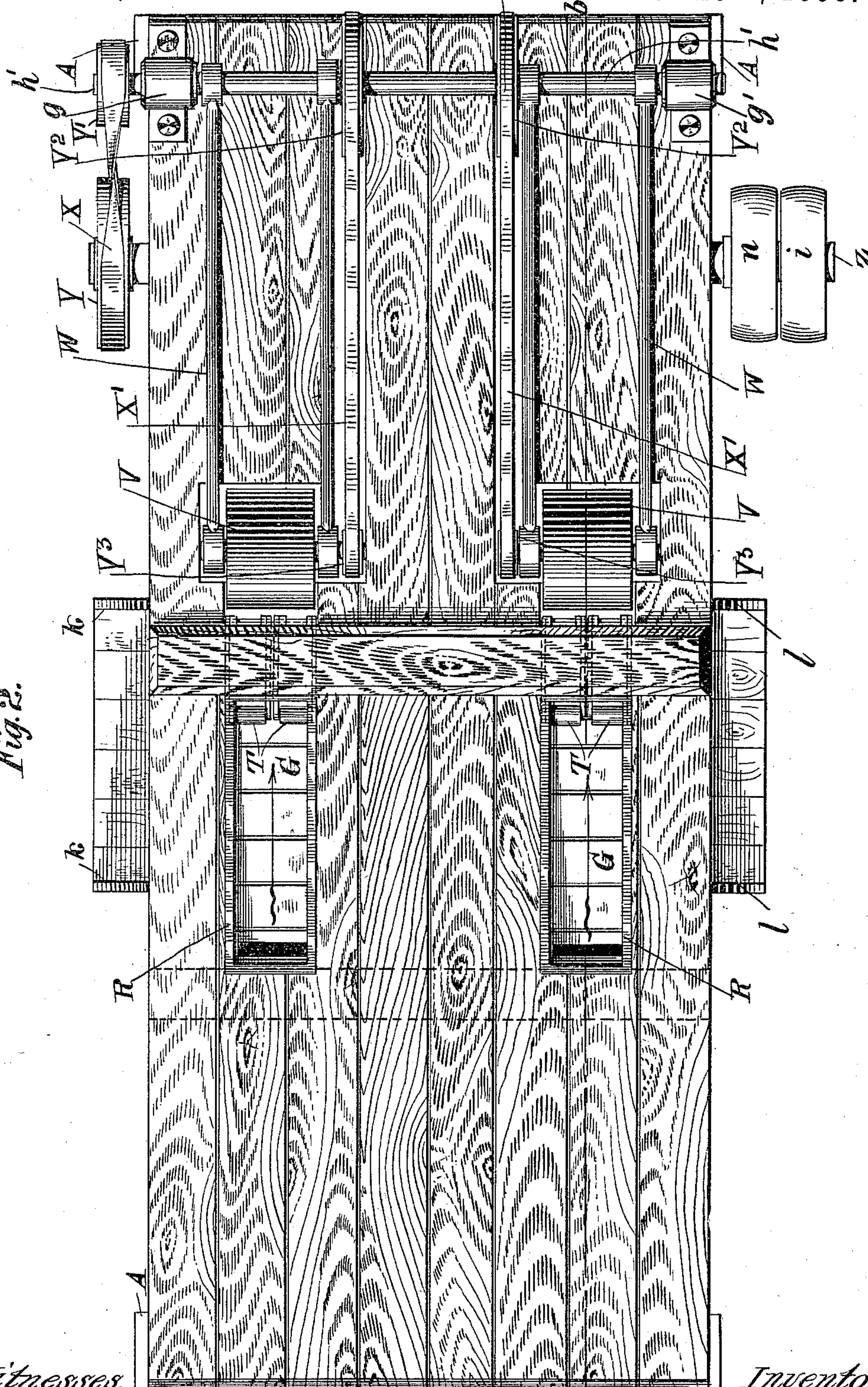
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Fig. 2.



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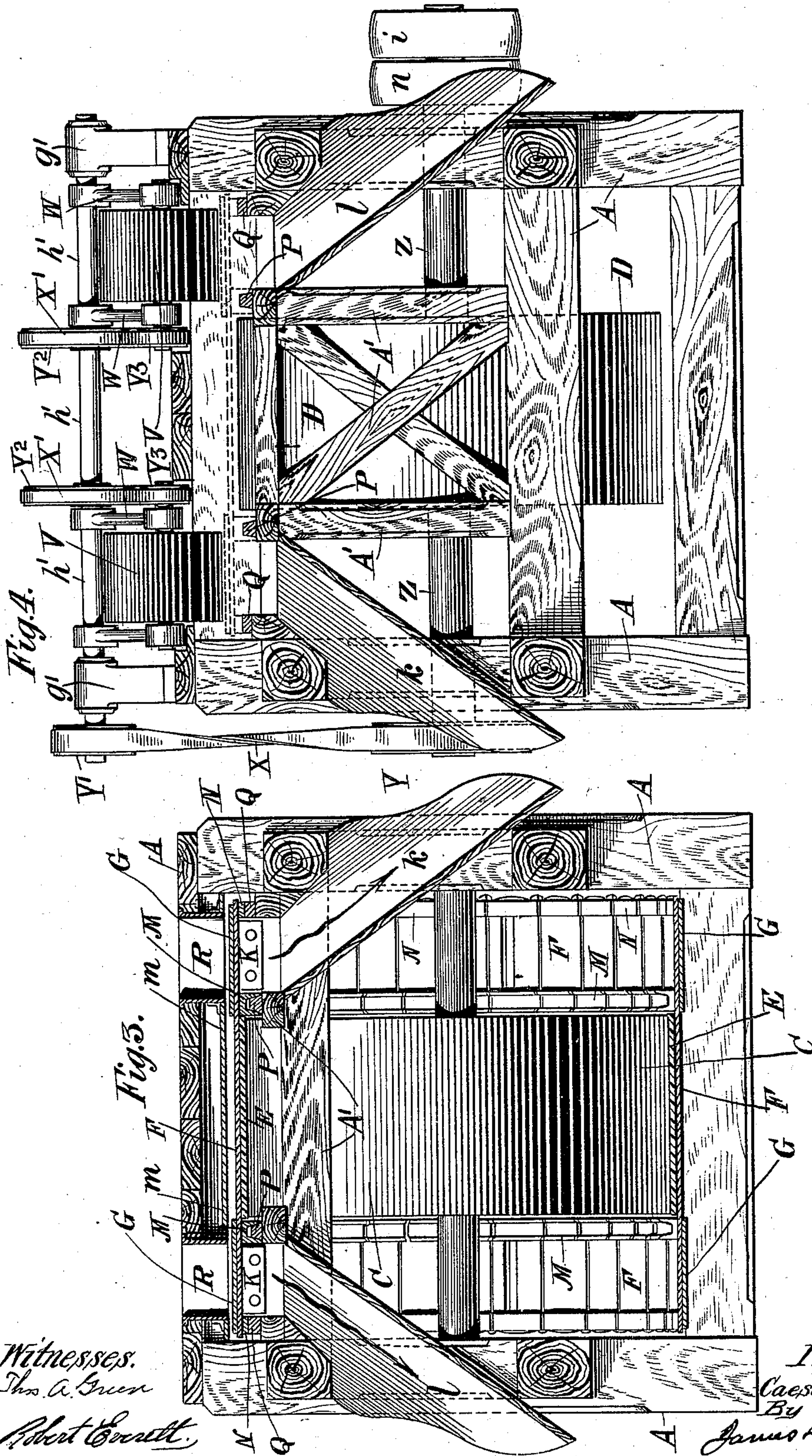
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C. HASS.
MACHINE FOR MANUFACTURE OF EXCELSIOR.

No. 561,393.

Patented June 2, 1896.



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(No Model.)

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C. HASS.
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Fig. 5.

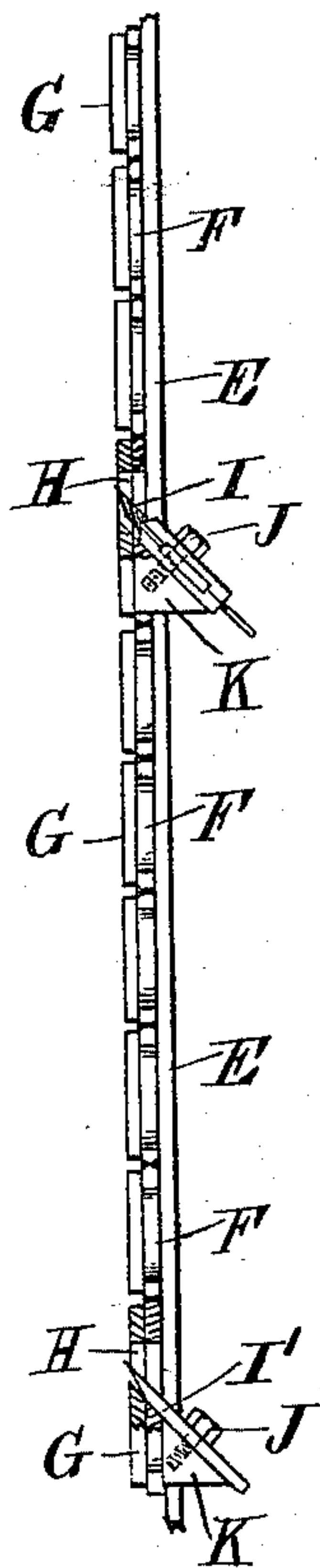


Fig. 6.

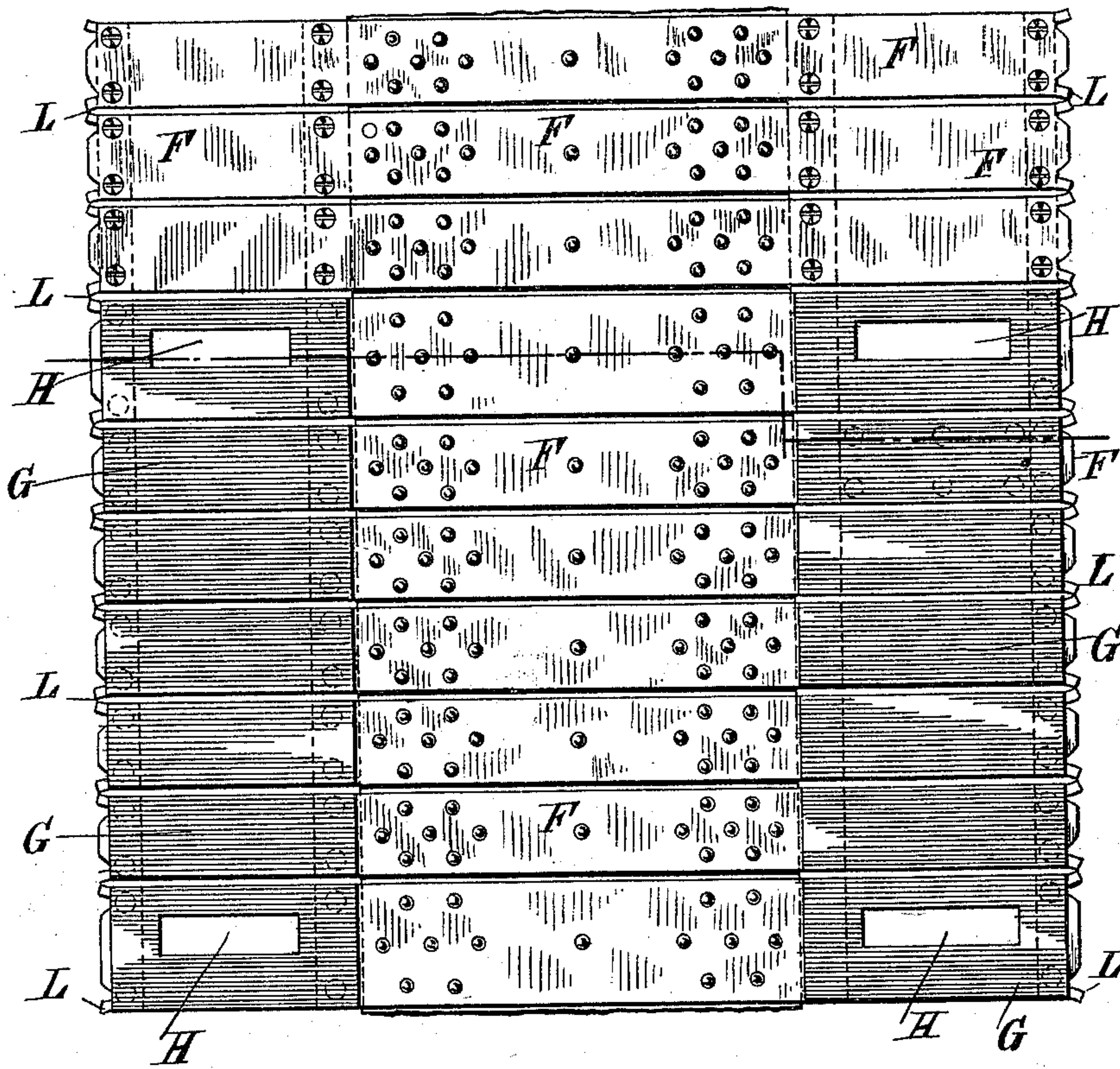
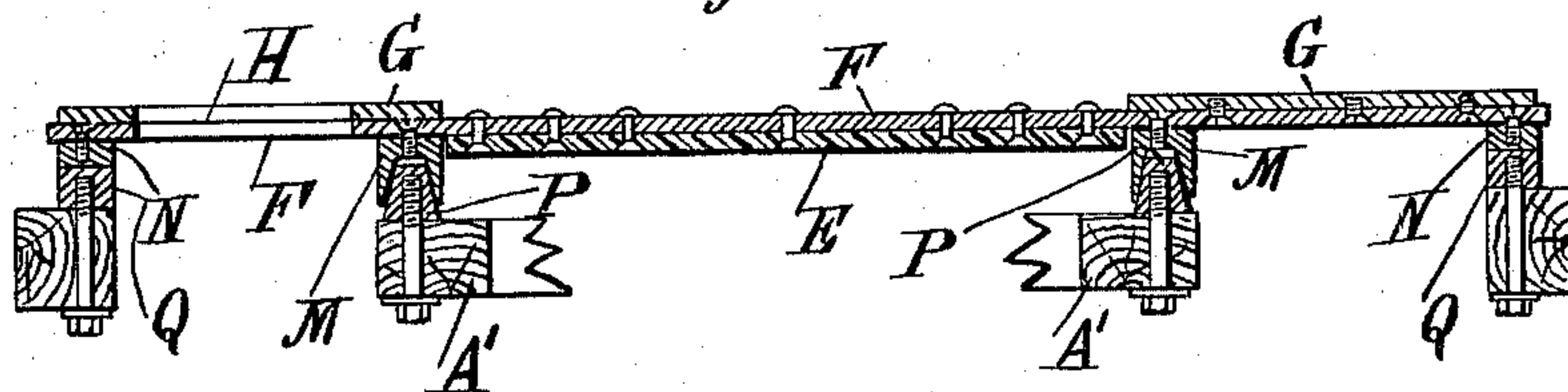


Fig. 7.



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UNITED STATES PATENT OFFICE.

CÆSAR HASS, OF LONDON, ENGLAND.

MACHINE FOR MANUFACTURE OF EXCELSIOR.

SPECIFICATION forming part of Letters Patent No. 561,393, dated June 2, 1896.

Application filed May 25, 1895. Serial No. 550,703. (No model.) Patented in England April 3, 1895, No. 6,892.

To all whom it may concern:

Be it known that I, CÆSAR HASS, a citizen of the United States of America, and a resident of 261 Burdett Road, Limehouse, London, England, have invented certain new and useful Improvements in and Connected with Machines for the Manufacture of Excelsior or Similar Products, (patented in Great Britain, No. 6,892, dated April 3, 1895,) of which the following is a specification.

The object of my invention is improvements in and connected with machines for the manufacture of wood wool (excelsior) or similar product, such as wood fiber, used for the manufacture of paper-pulp; also for manufacturing matches and match-splints and the like, whereby greater efficiency of action of the machine is insured and a larger quantity of material produced.

The main features of my invention are constructing a continuous row of metal slats riveted to a broad band arranged over pulleys in such a manner that on a straight line each slat will support its neighbor edgewise and thus in conjunction with the slides form a complete solid table to give sufficient resistance to the pressure of the knives against the wood; providing a small roller suspended by a frame for each piece of wood which is being worked to rest against such roller, which is put so near the working surface that when the piece of wood is cut down to a residue of about half an inch the roller will be forced up by the wood and the latter be thrown out of the machine automatically, the roller returning to its working position by a spring; providing a knife-cleaner placed as close as possible to the part where the wood is cut, such knife-cleaner consisting of a wheel of wood or other material softer than iron, and is driven at a far greater speed than the knives, but in the same direction, and will thus, by coming in contact with the latter, clean them from any chips which might remain thereon.

My invention will be clearly understood from the following description, reference being had to the annexed drawings, in which—

Figure 1 is a longitudinal sectional view of a machine through the line *a b* of Fig. 2. Fig. 2 is a plan of the machine. Figs. 3 and 4 are sections looking toward either end of

the machine through the lines *c d* and *e f* of Fig. 1, respectively. Fig. 5 is an edge view, on an enlarged scale, of a portion of the broad band, having affixed thereto the metal slats and plates and showing a multiple grooving-tool and a plain-edged knife in position. Fig. 6 is a plan, also on an enlarged scale, of some of the metal slats and plates, showing the position they occupy one with the other and with three plates removed to show the construction of the corners of the metal slats. Fig. 7 is a section on line *g h* of Fig. 6, showing the band, metal slats, plates, and guides combined.

A is a framing, to which is affixed, in suitable bearings B, pulleys CD, carrying an endless band E, to which are attached, by rivets or otherwise, metal slats F F, each slat being of greater length than the width of the endless band E, and arranged next each other around the band E, but with a narrow space between each. On each slat F, and preferably at those parts outside the endless band E, I affix, by screw-rivets or otherwise, steel or hard-metal plates G, these being of such a degree of hardness as to withstand for a length of time the friction created when the machine is at work, and these plates G, being attached to the slats F by screw-rivets or similar appliances, as at Fig. 6, can, when worn down, be easily renewed without destroying or interfering with the slats F.

Certain slats F and plates G, preferably at equal distances apart, are provided with holes or slots H, Figs. 5, 6, and 7, for containing the groovers or scorers I and knives I' used for grooving or scoring and cutting the wood under operation, said groovers or scorers and knives being adjustable as to depth or angle of cut by a screw-pin J, which engages with a projecting portion K, attached to the under part of the slat, through which the hole H is cut.

The groovers or scorers I, which may be of any construction, but preferably of the form described in the specification of my application for United States Patent, filed May 25, 1895, under Serial No. 550,704, are arranged alternately, so that the wood under operation is first grooved or scored by the groovers or scorers to the depth and width required, according to the nature of the product required, and in the case of grooving the wood the re-

maintaining projecting parts between the grooves are cut off by the knife following, so as to make the wood flat or comparatively flat on the operative surface ready for the next grooving-tool to act upon it; but in the case of simply scoring the wood the width required the knife would slice off to the desired depth the whole surface of the wood to produce the wood wool (excelsior) or other product, or each groover or scorer and knife may be combined in one article, as is well known.

The metal slats *F* are formed with projecting corners *L* for each one to be in touch with its neighbor at those points only when they are in a straight line. Thus they will support each other and by their conjunction with the plates form a solid band sufficient to form resistance to the action of the groovers and knives when at work and so prevent great strain upon the machine. In the event of any of the slats not touching its neighbor a simple knock by a hammer at the projecting corner will force it into contact with its neighbor.

On the under or inner side of the slats *F* and outside the edges of the belt *E*, I affix segments *M*, having an opening lengthwise somewhat of *U* shape, and at about the outside edge of the slats I affix other segments *N*, these being of flat shape; but they may have the *U*-shaped opening lengthwise. These segments are in close proximity to each other endwise and form guides all around the inner side of the slats, and being angled-faced at their ends can partake of the circular shape of the pulleys *C D* when passing around them.

The guides *M N* run upon tracks *P Q*, the tracks *P* being arranged on each side on an inner framework *A'* of the machine and the tracks *Q* upon the outer framework *A* of the machine, the working surface of the tracks being in line with the upper edge of the pulleys *C D*, so as to form a solid table for the cutting to be effected on, and by the shape of the guide *M* and track *P* all side motion of the band is obviated, and consequently the cutters are always in the proper line and position for working.

Adjacent to the hoppers or feed-entries *R* of the machine is a hinged frame *S*, carrying rollers *T T* or other appliance, against which one end or ends of the piece or pieces of wood under operation abuts, and when a piece of wood is cut down by the knives to about one-half inch in thickness, or just below the center line of the roller *T*, the knives acting on the wood meeting with no resistance force the piece of wood under the roller, and carrying it along to the end of the machine automatically ejects it through the opening *U* clear of the machine, a fresh piece or pieces of wood taking its place, to be acted upon by the groovers or scorers and knives following. The rollers are kept to their working position by suitably-arranged springs *T'* and limited in their downward movement by the stop *T''* or other device.

The roller-frames, instead of being hinged, as shown, may be arranged perpendicular or otherwise and in other frames, so as to be slid up by the wood when sufficiently cut down, the rollers returning to their working position by springs. I also arrange as near as possible to the place where the wood is cut a knife-cleaner *V*, which consists of a roller or wheel of wood or other material softer than the knives or cutters, said roller or wheel *V* being arranged on a hinged frame *W*, and by gearing or belting *X X'* and pulleys *Y Y' Y'' Y'''* driven from the main driving-axle *Z* to a far greater speed than the knives' motion, but in the same direction, so that it will, by coming in contact with the knives, clean them from any chips or other debris which might remain thereon.

The pulley-bearings *B* are so arranged as to be adjustable for taking up any slack of the endless band, and preferably by the means shown in Fig. 1, by simply loosening the nuts *e e* and shifting the bearing by moving the screw *f*.

g' g' are bearings for the axle *h'*, carrying the knife-cleaner frames *W* and pulleys.

The pulleys *C D* are driven at one side of the machine from belting attached to a fast pulley *i*, fixed on the axle *Z* of the large pulley *D*.

n is the loose pulley.

The machine is fed through the openings or hoppers *R* by hand or other means of pressure with pieces of wood to a given size between the pulleys above the tracks, and the operator holding the top piece or pieces of wood down to give sufficient resistance to the knives, which cut the bottom piece of wood from underneath, or a number of pieces of wood may be arranged one above the other to create weight to give the necessary resistance. In the first instance just mentioned the blocks of wood when cut to a thin strip would be automatically discharged, as heretofore described; but if one, two, or more blocks are placed upon the block being cut then said latter-named block would be entirely eaten up and there would be no need for the roller *T*. The product—wood wool, excelsior, or the like—is guided to outside of the machine by chutes *k l*, which are arranged directly under the cutting portion of the machine and with their upper edges at or near the inside tracks and their lower edges outside of the machine, so that the material as it is cut is prevented from falling on the band and thus interfering with the action of the machine.

m is a metal plate having openings corresponding to the hoppers *R* and arranged above the knife-band to give steadiness to the wood and prevent it being moved sidewise from its position during the working of the knives.

Should occasion require, such as when working hard wood, that extra stability be given to the band, another set of guides may be affixed to the upper or outer portion of the band or plates to run on tracks arranged under the

top of the machine, for which provision is made by extra holes in the band or plates.

By the improvements herein set forth wood wool (excelsior) or similar product of any degree of thickness and width can be produced in a rapid and comparatively inexpensive manner.

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

1. In an excelsior-cutting machine, the combination with a suitable supporting-frame carrying a journaled pulley at each end, of an endless, flexible belt traveling over said pulleys, a plurality of independent cutters carried by said belt, a work-table provided with a feed-opening which communicates with the cutters, a chute leading from the feed-opening to the rear of the machine, a forwardly-extending, movable arm projecting downward within the feed-opening, and rollers journaled upon the free end of said arm and acting upon the block being cut to allow the same to be automatically discharged after it has been cut to a thin strip, substantially as described.

2. In an excelsior-cutting machine, the combination with a suitable supporting-frame carrying a pulley near each end, an endless flexible belt traveling over said pulleys, a plurality of independent cutters carried by said belt, a work-table provided with a feed-opening which communicates with the cutters, a chute leading from the feed-opening to the rear of the machine, a forwardly-extending spring-pressed pivoted arm projecting downward within the feed-opening, rollers journaled upon the free end of said arm, and a stop for limiting the downward movement of said arm, substantially as described.

3. In a wood-cutting machine, the combination with a suitable frame carrying sheaves or pulleys, of an endless belt traveling over said pulleys, a plurality of slats transversely mounted upon the belt and projecting beyond each side thereof, grooved guides mounted upon and carried by the under side of the slats, trackways for the guides, and a series of independent cutters carried by the opposite ends of the slats, substantially as described.

4. In a wood-cutting machine, the combination with a suitable supporting-frame, of a pair of pulleys journaled upon said frame, an endless belt traveling over said pulleys, a plurality of cutters carried by the belt, a work-table mounted over the belt and provided with feed-openings which communicate with the cutters, a forwardly-extending hinged arm projecting downward within the feed-opening, and a roller mounted upon the end of said arm and acting upon the block being cut so as to automatically discharge the same after it has been cut to a thin strip, as and for the purpose described.

5. In a wood-cutting machine, the combination with a suitable supporting-frame, of a pair of revolving pulleys journaled upon said

frame, an endless belt traveling over said pulleys, a plurality of independent cutters carried by said belt, a transverse shaft mounted above one of said pulleys, arms freely connected to said shaft, a cleaning-roller mounted to rotate upon a shaft carried by said arms and acting upon the cutters, substantially as described.

6. In a wood-cutting machine, the combination with a suitable supporting-frame, of a pair of pulleys journaled upon said frame, means for rotating the pulleys, an endless belt traveling over said pulleys, a plurality of independent cutters carried by the belt, a transverse shaft mounted upon the supporting-frame above the pulleys, forwardly-extending arms freely mounted upon said shaft, a cleaning-roller carried by a shaft which is journaled upon the forward end of said arms, and gearing intermediate one of the pulley-shafts, transverse shaft, and roller-cleaning shaft, for operating the cleaning-roller at a greater speed than the endless belt, substantially as described.

7. In an excelsior-cutting machine, the combination with a suitable supporting-frame, of a pair of pulleys journaled near each end of said frame, an endless flexible belt traveling over said pulleys, a plurality of independent cutters carried by the belt, a feed-table having openings therein, an arm or arms arranged over said table and terminating over one of said openings, a cleaning-roller journaled upon said arm or arms and extending downward within said latter-named opening and resting upon the endless belt, and means for revolving said cleaning-roller, substantially as described.

8. In an excelsior-cutting machine, the combination with a suitable supporting-frame, of a pair of pulleys journaled near each end of said frame, an endless flexible belt traveling over said pulleys, a plurality of independent cutters carried by the belt, a feed-table mounted over the belt and provided with feed and roller openings, one arranged in front of the other, a forwardly-extending hinged arm projecting into the feed-opening, a roller or rollers journaled upon the free end of said arm, an arm or arms arranged over said table in rear of the aforesaid arm, and extending to the roller-opening, a cleaning-roller journaled upon said arm or arms and resting upon the traveling belt, and suitable gearing for rotating the cleaning-roller at a greater speed than the traveling belt, substantially as described.

9. In an excelsior-cutting machine, the combination with an upright frame, of an endless belt traveling over pulleys journaled in said frame, a series of transversely-arranged parallel slats secured to said belt and projecting beyond each side thereof, a plurality of cutting-knives carried by the slats, grooved guide-blocks mounted upon the under side of the slats and traveling upon a trackway on the machine-frame, a work-table covering the

endless belt, feed-openings in said table, an inclined discharge-chute on either side of the machine leading from below the feed-openings, forwardly-extending spring-pressed
5 hinged arms projecting into the feed-openings and carrying rollers at their free ends which act upon the end of the block being cut, a stop for limiting the downward movement of said arms, and a chute or chutes leading from

the feed-openings to the rear end of the machine, substantially as described.

In witness whereof I have hereto signed my name, in the presence of two subscribing witnesses, this 6th day of May, 1895.

CÆSAR HASS.

Witnesses:

RICHARD CORE GARDNER,
JANE S. RIDGWAY.