

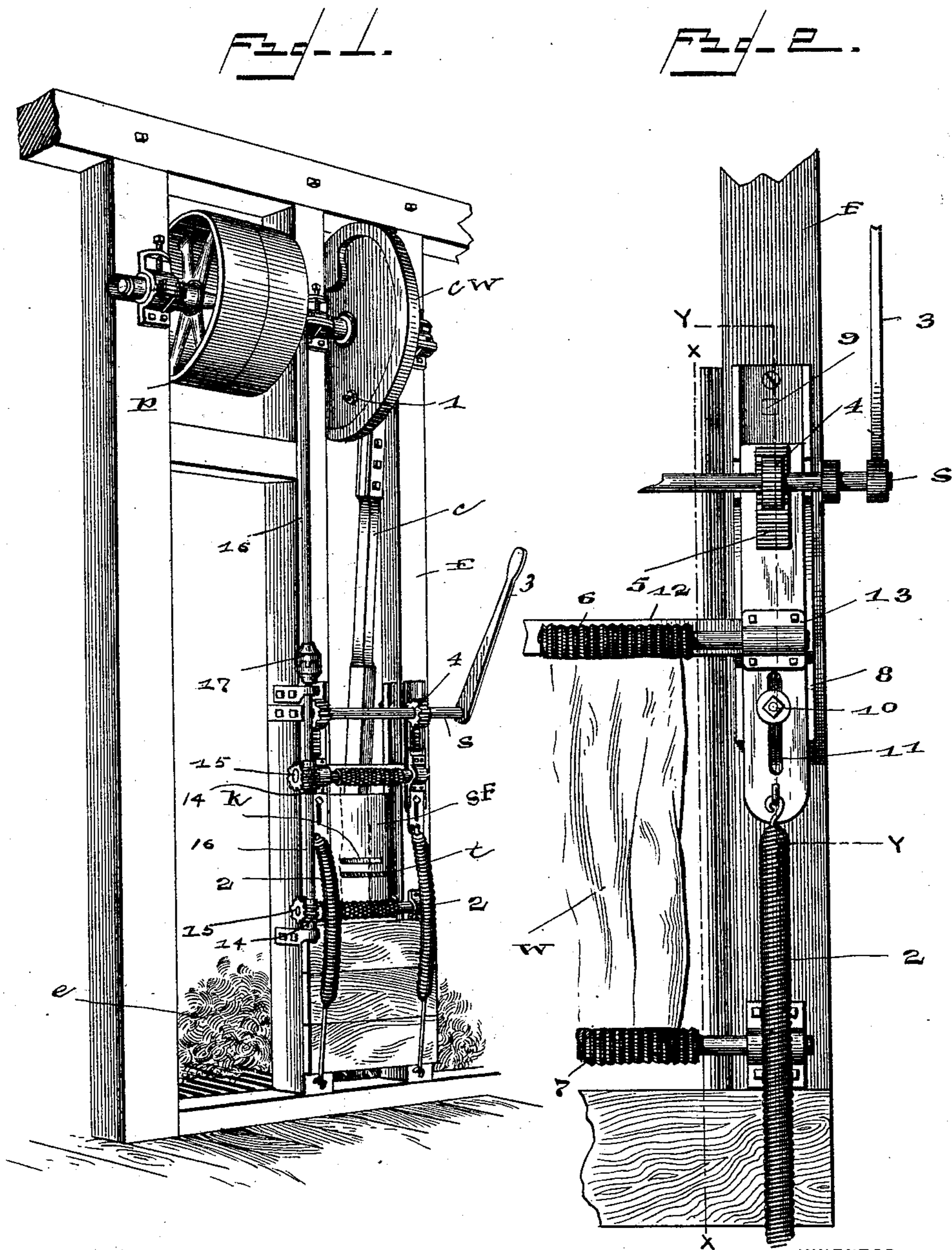
(No Model.)

2 Sheets—Sheet 1.

J. B. JOHNSON.
EXCELSIOR MACHINE.

No. 452,553.

Patented May 19, 1891.



WITNESSES:

H. D. Neely.
C. B. Griffith.

INVENTOR
Jesse B. Johnson.
BY
C. D. Jacobs.
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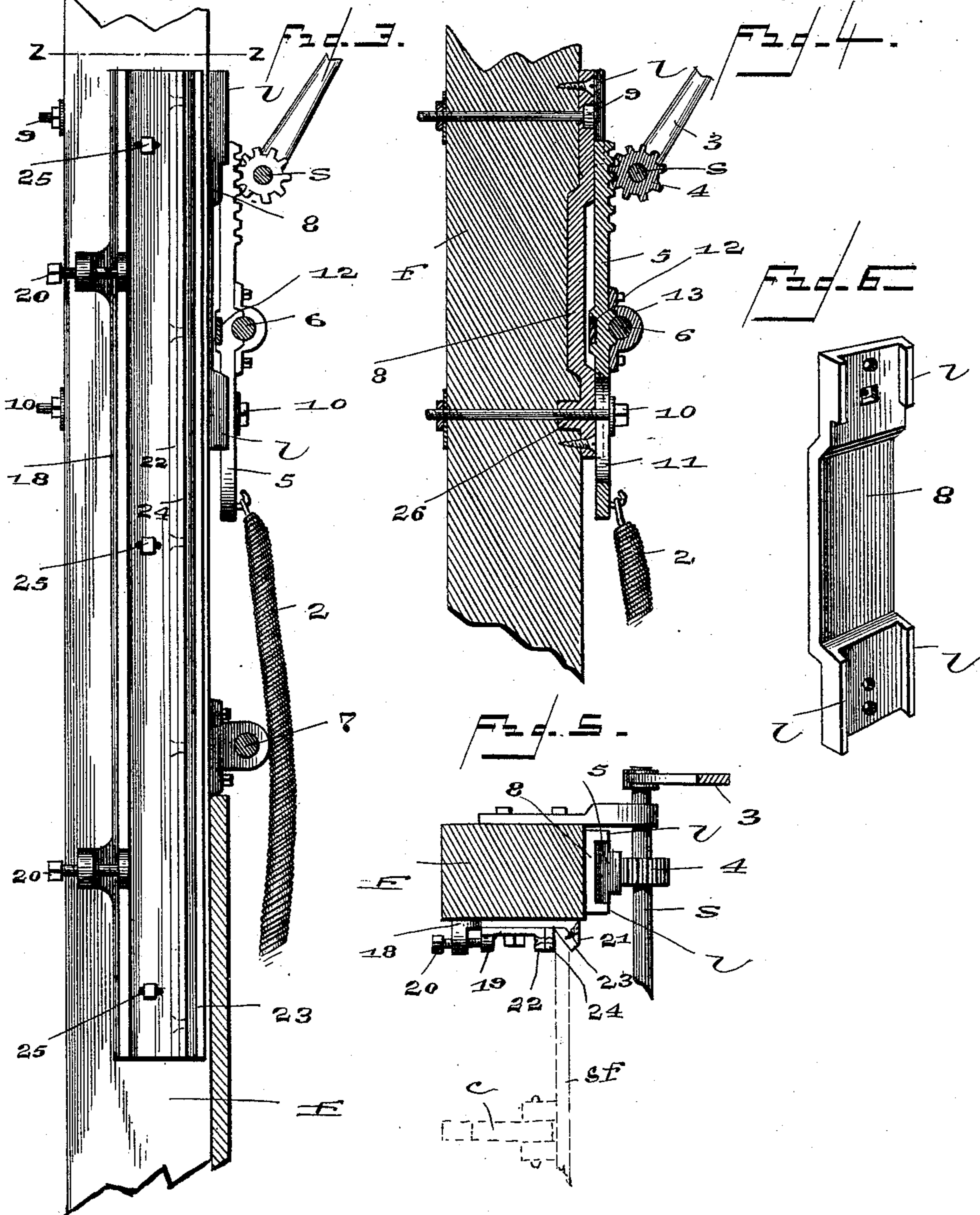
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UNITED STATES PATENT OFFICE.

JESSE B. JOHNSON, OF INDIANAPOLIS, INDIANA.

EXCELSIOR-MACHINE.

SPECIFICATION forming part of Letters Patent No. 452,553, dated May 19, 1891.

Application filed July 11, 1890. Serial No. 358,461. (No model.)

To all whom it may concern:

Be it known that I, JESSE B. JOHNSON, of Indianapolis, county of Marion, and State of Indiana, have invented certain new and useful Improvements in Excelsior-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which like letters and figures refer to like parts.

My invention relates to the construction of machines for making excelsior or curled wooden fibers for stuffing mattresses, pillows, and furniture, and will be understood from the following description.

In the drawings, Figure 1 is a perspective view of the machine. Fig. 2 is an enlarged detail front view of the movable slide and its connections. Fig. 3 is a sectional view on the line xx , Fig. 2. Fig. 4 is a section on the line yy , Fig. 2. Fig. 5 is a section on the line zz , Fig. 3. Fig. 6 is a perspective view of the bed-plate of the lifting-slide.

Heretofore in machines of this class the sliding frame carrying the shaft of the upper corrugated roll that holds the block of wood in place has had a bearing directly against a smooth bed-plate of iron, which has been secured to the uprights by ordinary screws or bolts; but these soon become loose in their sockets by the constant operation of the machine, and the whole structure becomes racked and loose and soon becomes inoperative. Instead, therefore, of the smooth bed-plate I provide a bed-plate of the peculiar construction shown in Figs. 4 and 6, wherein the slide has bearings only upon its ends and moving between lugs 1, as shown, and a boss 26 is also provided at the lower end of the bed-plate to give a longer bearing for the bolt which secures it to the upright, this feature being shown in Fig. 4 of the drawings, and in addition the bed-plate is secured to the upright by wood-screws above and below, and also by a bolt 9, which passes through such upright, its head being countersunk in the bed-plate. This constitutes one feature of my invention, the next being the manner of providing a wooden backing for the sliding frame and the mechanism for adjusting the

same, so as to keep them tight and take up any looseness occasioned by wear.

The third feature of my invention is in providing springs 2 on each of the sliding plates 5, whereby the normal tension of the spring tends to hold the upper corrugated roll down closely upon the wood.

In detail the machine is composed of a frame-work f , in the upper part of which is a shaft mounted in bearings on the uprights 60 carrying driving-pulleys p and a crank-wheel cw , and to the latter, at 1, is pivoted a connecting-rod c , whose lower end is attached to the back of the sliding frame $s f$ through openings, in which are shown the toothed scoring-blade t and the shaving-blade k .

w is a block of wood upon which the knives operate, and which is cut into sections of about two feet long, linn or basswood being preferred for this purpose. This block is held between the corrugated rollers 6 and 7, the upper one of which has a bearing in boxings 13, connected to the sliding plate 5, whose upper end is provided with a short rackbar, whose teeth engage with those of pinions 4, mounted on the shaft s , having the crank 3, this shaft having bearings in arms bolted to the frame-work, as shown in Figs. 1 and 2. The sliding plate 5 has a vertical movement upon the bed-plate 8, which is provided with lugs 1, as shown in Fig. 6, the central part of this bed-plate being recessed to fit into a corresponding recess in the frame, so that the bearings of the slide 5 are only upon the upper and lower ends of the bed-plate 8. The lower end of this slide-plate 5 is slotted at 11, and a bolt 10 passes through this and the bed-plate into the frame-work, and the length of slot determines the limit of movement of the slide-plate. To the lower ends of these plates 8 are connected springs 2, whose tension normally operates to hold the upper corrugated roll 6 against the top of the block of wood w , whose lower end rests upon the corrugated roll 7, the latter having bearings in boxings connected to the uprights of the frame.

On the ends of the axles of the corrugated rolls 6 and 7 are mounted pinions 15, which engage with worms 14, connected to the rod 16, having a central clutch 17, and at the other

end of this rod is a similar worm which engages with a pinion mounted on the driving-shaft. This upper pinion and the worm are not shown in the drawings, but are precisely like the corresponding parts numbered 14 and 15 below. The object of this particular mechanism is to feed the wood gradually and directly to the knives, for as the main shaft revolves it operates the rod 16 and the worms 14, which are made right and left, thus revolving the shafts of the rolls 6 and 7 in opposite directions, gradually feeding the wood to the knives *t* and *k*. As the crank-wheel *ew* revolves, the connecting-rod *c* is reciprocated and the knives descend along the line of the grain of the block, thus scoring it with the teeth *t* to a sufficient depth, and the blade *k*, following, shaves off the projections formed by the scores of the teeth, throwing down the fiber in fine curls *e*, as shown at the bottom in Fig. 1.

When the block has been shaved as close as it will bear and it is desired to replace it with another, the operator pulls down upon the handle 3 and revolves the pinions 4, which, by means of its engagement with the rack-bar, lifts the slide 5 and the corrugated roll 6, removing it from contact with the block, which is then removed and another block is set in place upon the corrugated roll 7. The operator then releases his hold upon the crank 3, when the tension of the springs 2 draws the sliding plate 5 down, bringing the upper corrugated roll 6 in contact with the upper end of the block, and the reciprocating movement of the knives proceeds until the new block has been worked up.

On the insides of the uprights are fastened stationary metal bed-plates 18, in which are set auxiliary plates 19, having projections on the outer edge threaded to receive set-screws 20, which pass through lugs in the plate 18, as shown in Fig. 5. This interior auxiliary plate is intended to work against a wooden backing 24, screwed to the flange 22, formed integral with the plate 19, and the sliding frame *sf* rests directly against the wooden back 24 and against a similar wooden back 23, set at an angle and held against a flange 21, formed on the plate 18, the object being to furnish a wooden backing on both sides of the sliding frame to prevent the racking of the machine and permit its adjustment by means of the auxiliary plate 19 and the set-screw 20 as the wood wears away. The plate 19 is held in place by bolts 25, which pass through slots in such plate and through plate 18 into the upright, and by loosening these bolts it will allow the adjustment of the plate 19 by set-screws 20.

For greater strength the slide-plates 5 are thickened at the point where the bearing of the roll 6 is made, and the two plates 5 are connected by a cross-piece 12, as shown in Figs. 1 and 4, and the recess in the bearing-plate 8 affords room for the movement of the

projecting parts of the plate 5 and the cross-bar at their point of connection.

The lugs 1, formed on the ends of the bed-plate, have another function. They prevent any lateral movement of the sliding plate 5 and in many of the machines constructed this lateral movement has been found very objectionable, for it prevents any positive cut upon the wood, and, instead of producing the peculiar curled fiber called "excelsior," nothing but trash and worthless stuff comes from the block. I prevent this lateral movement by placing lugs or flanges 1 upon the sides of the bed-plate, thus insuring the vertical movement of the slide-plate, making a direct cut upon the wood, and producing a superior product.

I am aware that wooden backings have been used against the slide-frame which carries the knives; but I believe all these have been arranged with the ends of the fiber abutting against the surface of the plate. This construction is objectionable, for when the fibers are so placed it wears away the slide-frame, which soon gets loose, and the objectionable lateral motion mentioned in the preceding paragraph takes place, and the result is that instead of excelsior nothing but trash and worthless material is produced by the machine. I avoid this difficulty by setting my wooden backings in such position that the grain of the wood is vertical and lengthwise with the sliding frame.

I am further aware that weights have been used to hold the upper corrugated roll upon the end of the block; but they are not steady and positive in their operation and cannot be relied upon at all times. I have therefore substituted the coiled springs 2 for such weights, and the result has been a marked improvement in the operation of the machine and a considerable increase in the amount of product produced from a given quantity of wood.

What I claim as my invention, and desire to secure by Letters Patent, is the following:

1. In an excelsior-machine, a frame-work, driving mechanism carried therein, reciprocating knives connected to the driving mechanism, a pair of corrugated rolls for holding the block of wood, the upper roll connected to a sliding plate, a pair of springs connected to such sliding plate for holding the upper roll in contact with the wood, the sliding plate moving vertically upon a recessed bed-plate having lugs to prevent any lateral movement of the slide, and crank-and-gear mechanism connected to such sliding plate for lifting the same, all combined substantially as shown and described.

2. In an excelsior-machine, a frame-work, driving mechanism carried in bearings thereon, a vertically-reciprocating slide-frame carrying scoring and shaving knives connected to such driving mechanism, a pair of corrugated rolls for gripping and feeding the wood to

the knives, the lower one journaled in boxings on the frame-work, the upper one journaled in bearings on a sliding plate, and springs connected to such plate for holding the upper roll in contact with the wood, such sliding plate moving vertically in recessed bed-plates let into the frame-work and provided with lugs for preventing the lateral movement of the slide, all combined substantially as shown and described.

3. In an excelsior-machine, the bed-plate 8, its central portion recessed and let into the upright of the frame, its ends provided with lugs, in combination with a sliding plate 5 and an upper corrugated roll journaled therein, substantially as shown and described.

4. In an excelsior-machine, the sliding plate 5, having a rack-bar at its upper end and a slot 11 at its lower end, secured to the upright of the frame, such plate sliding upon a bed-plate 8, having its central part set back, and lugs 1 upon its upper and lower ends, and having a boss 26, in combination with springs 2, connected to the sliding plate, substantially as shown and described.

5. In an excelsior-machine, a frame-work, plates connected to the sides thereof, auxil-

iary plates adjustably connected to such side plates, wooden backings connected to lugs, one to the adjustable plate and the other to the stationary plate, and set with the grain of the wood vertically and at such a distance as to permit the passage of the knives between such wooden backings, all combined substantially as shown and described.

6. In an excelsior-machine, a frame-work, driving mechanism carried thereon, a vertically-reciprocating slide-frame carrying scoring and shaving knives connected to such driving mechanism, such slide-frame provided with wooden backings, the grain of the wood being vertical on either side, metal plates connected to the sides of the frame-work, and means for adjusting the same to compensate for the wear of the parts during the operation of the machine, all combined substantially as shown and described.

In witness whereof I have hereunto set my hand this 5th day of July, 1890.

JESSE B. JOHNSON.

Witnesses:

E. B. GRIFFITH,
H. D. NEALY.