

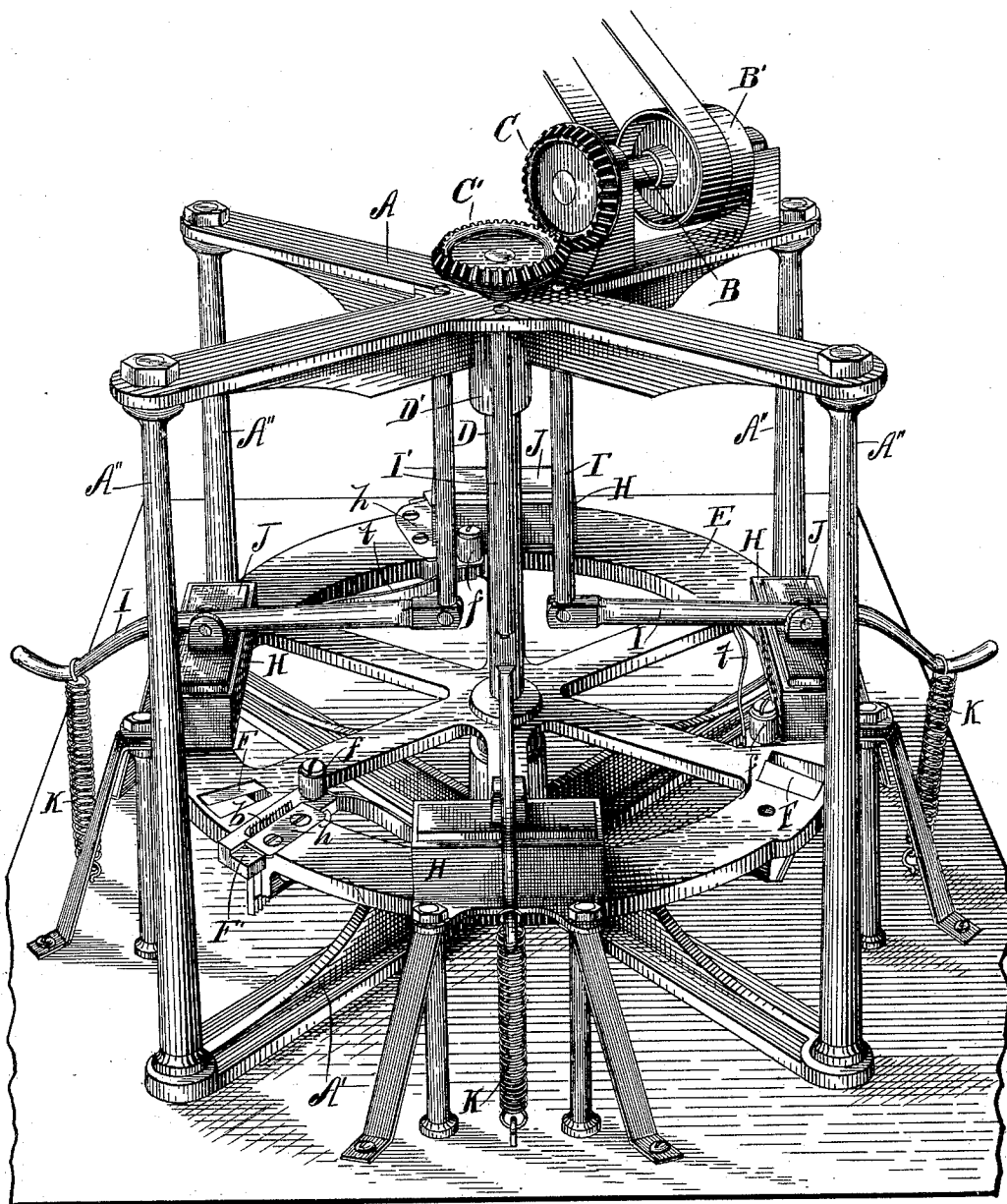
(No Model.)

3 Sheets—Sheet 1.

J. R. BATE.  
DEVICE FOR CUTTING EXCELSIOR.

No. 467,531.

Patented Jan. 26, 1892.



WITNESSES  
*E. J. Minton*  
*B. D. Wheeler*

Fig. 1

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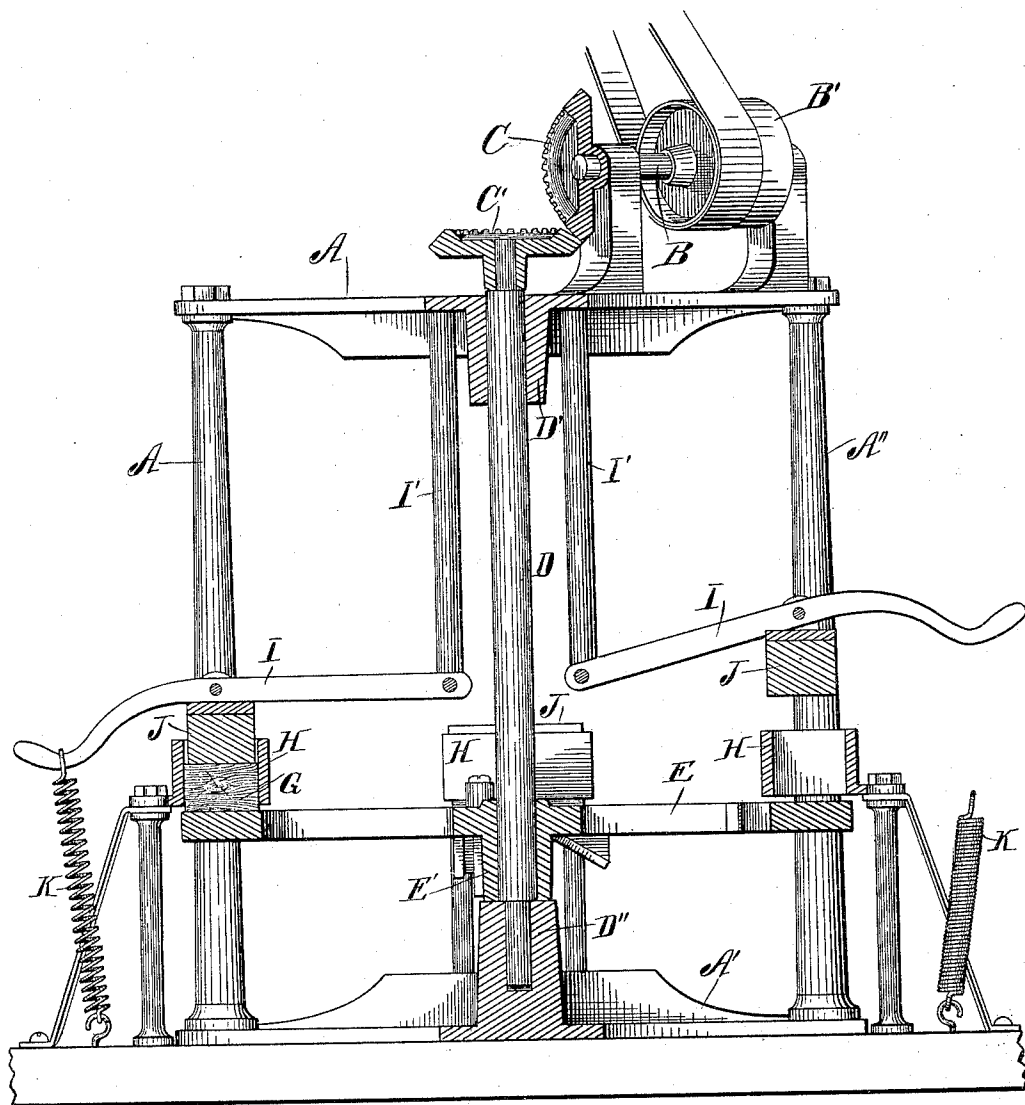
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*Fig. 2.*

WITNESSES

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(No Model.)

3 Sheets—Sheet 3.

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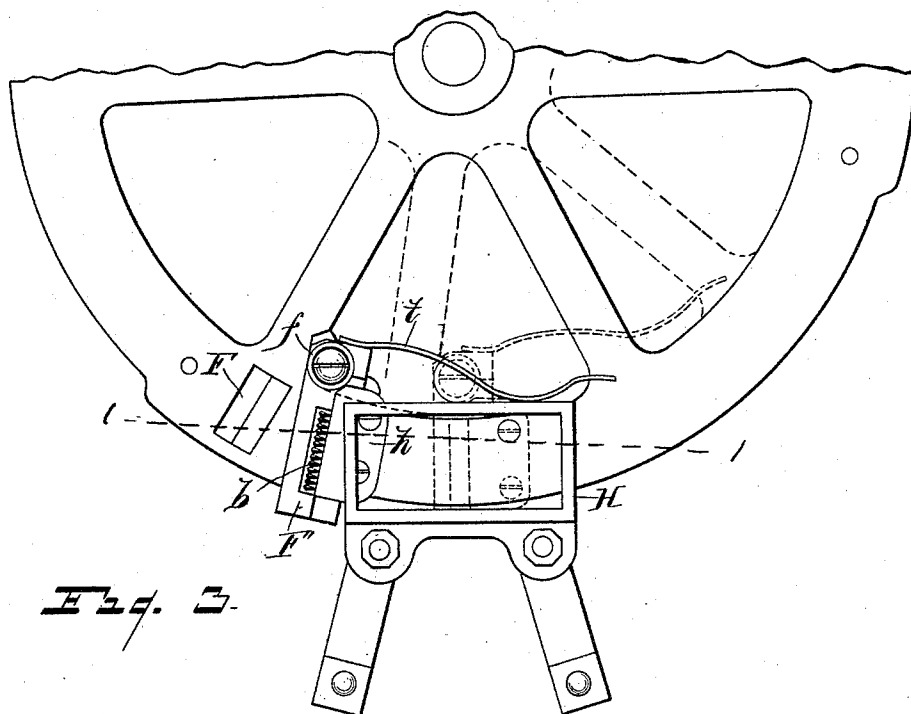


Fig. 3.

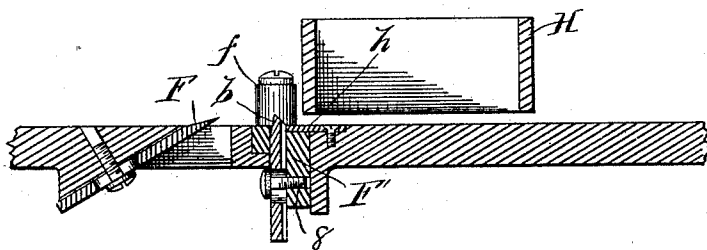


Fig. 4.

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# UNITED STATES PATENT OFFICE.

JAMES R. BATE, OF DETROIT, MICHIGAN.

## DEVICE FOR CUTTING EXCELSIOR.

SPECIFICATION forming part of Letters Patent No. 467,531, dated January 26, 1892.

Application filed December 26, 1890. Serial No. 375,783. (No-model.)

*To all whom it may concern:*

Be it known that I, JAMES R. BATE, a subject of the Queen of Great Britain, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Devices for Cutting Excelsior; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to new and useful improvements in machines known as "excelsior-cutters;" and it consists in a certain construction and arrangement of parts, as hereinafter fully set forth, the essential features of which being pointed out particularly in the claims.

The object of the invention is to provide means in connection with a revolving wheel or agent carrying the cutting spurs and knives whereby said spurs are adapted to reciprocate diametrically in said wheel when passing the fixed rests or receptacles that confine the blocks of wood from which the excelsior is cut, so that at that point the spurs are diverted from the arc of the circle described by the wheel and travel straight across the face of the block on a line with the grain of the wood, thereby (when the strands marked by the spurs cutting the under face of the block are cut therefrom by the knives) forming tough fibers of excelsior that extend the entire length of the block and straight with the grain thereof and obviating the cross-grain cut incident to machines in which the marking-spurs cross the face of the block on the arc of a circle. This object, as above set forth, is attained by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of a complete machine embodying my improved features. Fig. 2 is a central vertical cross-section through Fig. 1. Fig. 3 is an enlarged plan view of a portion of the wheel carrying the knife and spur and one of the boxes or receptacles that retain the blocks of wood from which the excelsior is cut. Fig. 4 is a section on dotted line 1 1 of Fig. 3.

Referring to the letters of reference, A and A' indicate an upper and an under spider whose radial arms are connected by the vertical column A'', which construction constitutes the supporting frame of the machine.

Mounted on one of the arms of the spider A is a horizontal shaft B, carrying the pulley B', through which power is conveyed to operate the machine. On the inner end of the shaft B is a beveled gear-wheel C, that meshes with a like gear C' on the upper end of the vertical shaft D, which is journaled in the depending sleeve D' of the spider A, the lower end of said shaft D being journaled in the central boss or stud D'' of the lower spider A', as clearly shown in Fig. 2.

E indicates a wheel or revolving agent adapted to revolve horizontally, that is mounted on the lower end of the shaft D, which passes through the hub E' of said wheel, the lower end of said hub bearing upon the upper end of the stud D'' of the spider A' of the frame.

The wheel E is provided with a series of knives F, whose edges extend slightly above the upper face of the wheel, each knife having a gang of marking-spurs b located in advance thereof, that cut into the face of the blocks and form the strands of excelsior that are removed by the knives F.

H indicates a series of boxes or receptacles that confine the blocks of wood G (see Fig. 2) from which the excelsior is cut. Said boxes are mounted on suitable supports to retain them fixedly in place independent of the wheel E and extend over the perimeter of the wheel slightly above the upper face thereof and in the track of the spurs and knives carried by said wheel, being of such size as to freely receive the blocks G at the top and to allow them to be fed through at the bottom.

I indicates a series of levers pivoted at their inner ends to the supporting-rods I', that depend from the upper spider A of the frame. Said levers extend transversely across the boxes H and are provided with the follower-blocks J, that are pivotally suspended therefrom, said followers being adapted to enter the boxes H and bear upon the block G therein, which features are common. The outer ends of the levers I curve down and outward and are adapted to receive the upper end of

the coiled springs K, the lower ends of which are secured to the base on which the machine is mounted. When the spring K is engaged with the outer end of the lever I, a strong downward tension is exerted on said lever, causing the follower J to bear upon the block G in the box H with such force as to hold said block down upon the face of the wheel E against the action of the knives F as the wheel revolves, the contraction of said spring keeping the follower in contact with the block G as said block is cut away, as shown at the left of Fig. 2. When the spring K is disengaged from the end of the lever I, said lever may be raised to withdraw the follower J from the box H, as shown at the right of Fig. 2, when another block may be placed in said box. It will be seen that the boxes H are rectangular in form, as are also the blocks G from which the excelsior is cut. Therefore, if the spurs *b* were fixed rigidly in the wheel E, as said wheel revolved said spurs would be carried across the face of the blocks G on the arc of the circle described by said wheel and the strands of excelsior marked by said spurs when cut from the block would be cross-grained and would break into short pieces, making an inferior quality of excelsior.

To provide for the spurs traveling straight across the face of the block G on a line parallel with the side thereof, the spurs *b* are removably and adjustably seated in a sliding chair F' let into the upper face of the wheel E, and which is secured therein by the removable plate *h*, that extends onto the upper face of said chair and under which said chair is adapted to slide endwise. Said spurs pass upward through said chair and are attached to the vertical arm 8 thereof. On the inner end of said chair is a friction-roller *f*, and bearing against said end of the chair is a spring *t*, that is secured to the wheel E, the tension of which normally holds said chair in its outermost position. The arrangement of parts is such that as the wheel E revolves the friction-roller *f* of the chair F' is brought in contact with the back face of the box H, the face of said box being straight. The roller is in consequence diverted from the arc of the circle of the wheel E and travels along the back face of the box H, causing the chair to slide inward on its bearings in said wheel, as

shown by dotted lines in Fig. 3. After the roller *f* passes the point between the center of the box H and the axis of the wheel E the action of the spring *t* will hold said roller still in contact with the back face of said box until it passes the end thereof, thereby sliding the chair outward to its normal position, by which means the spurs *b* are carried across the face of the block in the box H on a straight line, so that when the strands of excelsior marked by the spurs are cut from the face of the block by the knife F following said spurs, said strands will extend the entire length of the block, forming excelsior of superior quality.

It will be apparent that there may be any desired number of knives and spurs located in the wheel E, and that said wheel may stand vertically instead of horizontally, as shown, in which case the machine will occupy a much smaller floor-space, and the driving-pulley may be mounted on the end of the shaft D, thus obviating the use of the gears C C'.

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

1. In combination with the wheel E, the knife-blade located therein, the chair F', slidingly located in said wheel and below the upper face thereof, the cutting-spurs mounted on said chair, the plate *h*, secured to the wheel and bearing upon the upper face of the chair, the spring *t*, one end pressing said chair, the opposite end being made fast to said wheel, and the flat-faced receptacle H, located in the path of the friction-roller, as set forth.

2. In combination with the revolving agent carrying a knife-blade, the sliding chair L-shaped in cross-section, located in advance of said knife-blade, the spurs mounted on said chair, the friction-roller mounted thereon, the spring engaging with said chair, and block-retaining receptacle located over the revolving agent within the path of the friction-roller.

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

JAMES R. BATE.

Witnesses:

E. S. WHEELER,  
R. B. WHEELER.