(No Model.) 2 Sheets—Sheet 1.

# J. PRATT.

## EXCELSIOR CUTTING MACHINE.

No. 463,200. Patented Nov. 17, 1891.

FIG. 1.

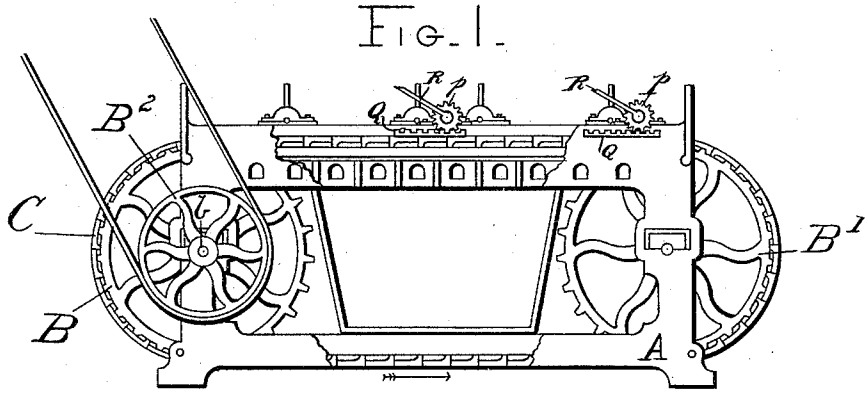



FIG. 2.

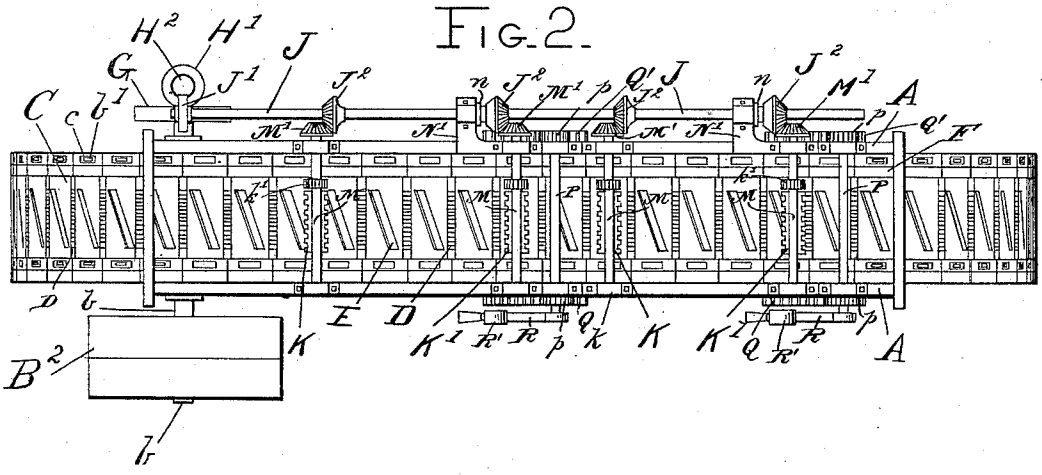
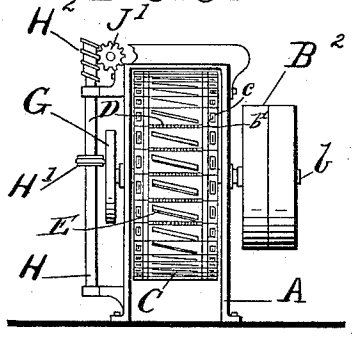



FIG. 3.




WITNESSES

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

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## EXCELSIOR CUTTING MACHINE.

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FIG. 4.

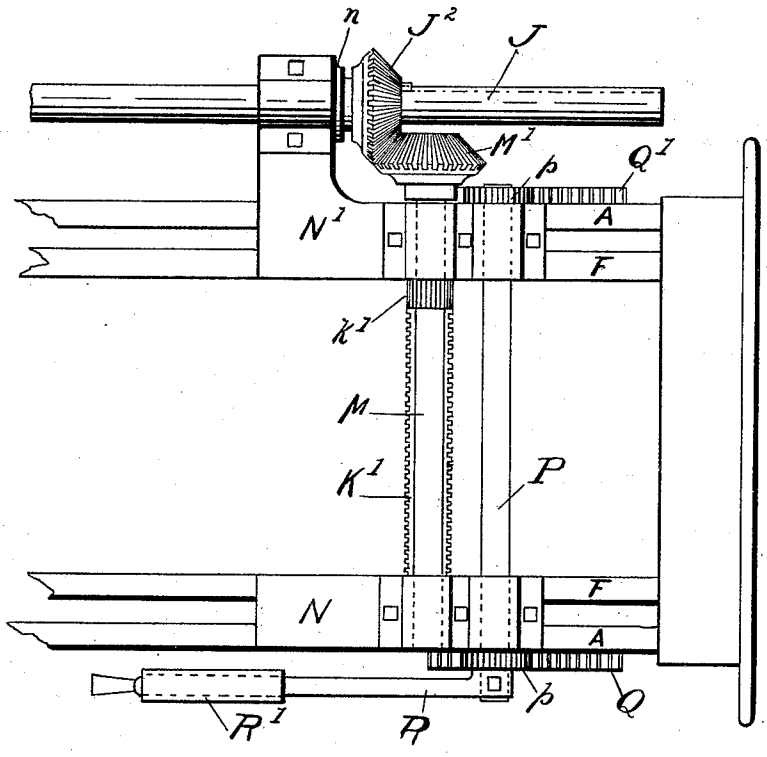



FIG. 5.

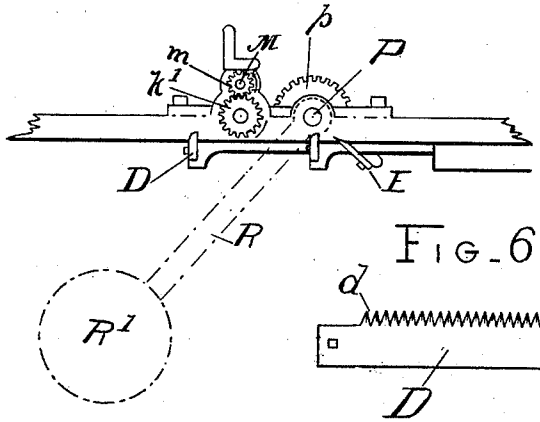
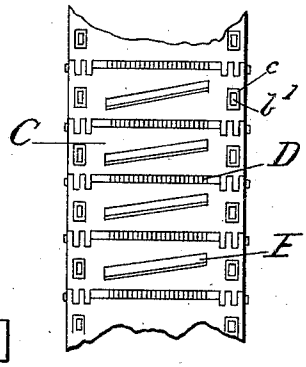



FIG. 6.




FIG. 7.

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# UNITED STATES PATENT OFFICE.

JOHN PRATT, OF CHATHAM, CANADA.

## EXCELSIOR-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 463,200, dated November 17, 1891.

Application filed November 3, 1890. Serial No. 370,198. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN PRATT, a subject of the Queen of Great Britain, residing at Chatham, county of Kent, Province of Ontario, Canada, have invented a certain new and useful Improvement in Excelsior-Cutting Machines; and I 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 pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention has for its object to provide novel means for cutting excelsior; and it consists in the features of construction and combination or arrangement of devices hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of a machine embodying my invention. Fig. 2 is a plan view. Fig. 3 is an end elevation. Fig. 4 is an enlarged plan view of a portion. Fig. 5 is a side elevation of an enlarged portion. Fig. 6 is a detail of the knife. Fig. 7 is a detail showing the manner of hinging the sections of the cutting-belt together.

In carrying out the invention, A represents the bed or frame of the machine. Journaled at each end is a set of sprocket-wheels B B′, the set B being on a shaft *b*, on which is located the band-wheel $B^2$, by means of which the machine is driven.

C is what may be termed the "cutting-belt." It is composed of sections hinged together, as shown in Fig. 6. In each section is an orifice, in which the sprocket *b′* on the sprocket-wheel enters. Thus the revolution of the sprocket-wheels B drives the cutting-belt. The sections of the belt are provided with a splitting-knife D and a cutting or shaving knife E. The splitting-knives are shaped, as shown in Fig. 7, with upward-projecting teeth *d*.

F is the bed or guides which support the cutting-belt while it is splitting and cutting the block.

G is a disk on the end of the shaft *b* opposite the band-wheels $B^2$.

H is an upright shaft journaled adjacent to the shaft *b* and having a friction roller or wheel H′, which bears on the face of the disk G, with the result that when the disk is revolved the frictional contact between the disk G and roller H′ revolves the shaft H.

J is a shaft extending the length of the machine at its upper edge and provided on its end with a gear J′, which meshes with the worm-gear $H^2$ on the upper end of the shaft H, the shaft J thus deriving its motion.

K K′ are the feed-rollers, there being two sets. The rollers K are journaled at *k* in a fixed bearing, while the rollers K′ are journaled in a movable bearing, as hereinafter described. Each roller K′ is provided with a pinion *k′*, which meshes with a corresponding pinion *m* on a shaft M, journaled above the feed-roller in the movable bearing. N N′ are the bearings in which the said rollers are journaled, one at each side of the machine. On the end of the shaft M is a beveled gear M′, which meshes with a corresponding gear $J^2$ on the shaft J. This gear is engaged to the shaft J by a feather-and-groove joint, so that it can slip freely along the shaft, but most revolve therewith. This gear $J^2$ is engaged to the movable bearing N by the collar *n*. Journaled also in the movable bearings N N′ is the counter-shaft P, provided on its ends with the pinions *p*. These pinions mesh in rack-bars Q Q′ on each side of the machine. The lever R is engaged to one end of the shaft P and is provided with the weight R′. Thus it will be seen that by throwing up the lever the pinions *p*, meshing in the rack-bars, will throw the roller K′ away from the roller K, thus widening the space between them. The block to be cut up is placed on the traveling bed between the feed-rollers, the weight R serving to keep the block tightly clamped between the rollers and the friction-disks G H′ and shafts H and J serving to revolve the feed-rollers and feed the block as it is cut away from the under side by the traveling bed. Now, the traveling bed being started, the splitting-knives D, provided with their upwardly-extending teeth or knives *d*, pass along the under side of the block and cut into or crease the same. Then the cutting or shaving knife E comes along and shaves off the under surface of the block, the shavings dropping down into a suitable receptacle beneath and composing the excelsior. Now, as will be seen, by adjusting the knife to a higher or lower position on the bed any de-

sired thickness of cut may be made and the size of the excelsior thus be graduated.

By the employment of the transverse shafts M and the pinions $m$ $k'$ of different diameter (see Fig. 5) the feed-rollers K′ are rotated at considerably less speed than the speed of the shaft J, which is an important feature in my machine for the proper feeding of the work toward the endless cutter-belt.

I have herein shown a cutting-knife and a splitting-knife upon each section of the traveling bed; but in practice I would prefer to provide one section with a splitting-knife and the next section with a cutting-knife, so that every other section has a splitting-knife and every other section a cutting-knife, although it is obvious that the number of splitting-knives and cutting-knives may be increased or diminished at will.

The advantages of this style of machine are numerous. In the first place the sections of the bed are interchangeable. In the next place the thickness of the cut may be varied and great speed can be obtained in cutting, since the bed is continuously in motion and continuously in operation. Then, also, two or more blocks may be placed in the machine at once, depending on the length of the machine, although of course, if desired, a small machine might be made with capacity for only one block at a time.

What I claim is—

1. The combination, in a machine for cutting excelsior, of a frame A, supporting wheels B B′, an endless traveling belt C, provided with attached splitting and cutting knives D and E, a pair of feed-rollers K K′, acting to advance the material toward the surface of the belt and each provided with a pinion $k'$, one of said rollers being mounted in bearings which are movable toward and from the other feed-roller, a single rotating drive-shaft having a series of bevel gear-wheels, a series of transverse shafts M, geared to the drive-shaft and provided with pinions $m$, engaging the pinions on the feed-rollers, and rack and pinion mechanism for reciprocating the movable bearings, substantially as described.

2. The combination, in a machine for cutting excelsior, of a frame A, supporting wheels B B′, a traveling belt C, provided with attached splitting and cutting knives D and E, a pair of rotating feed-rollers K K′, provided with pinions $k'$ and serving to advance the material toward the surface of the belt, one of said feed-rollers being journaled in bearings which are movable toward and from the other feed-roller, a single rotating drive-shaft J, provided with bevel gear-wheels, a series of transverse shafts geared to the drive-shaft and provided with pinions $m$, engaging the pinions on the feed-rollers, the racks Q, secured to the frame, the transverse shafts P, journaled in the movable bearings and having pinions $p$ engaging the racks, and means for turning the pinion-carrying shafts to reciprocate the movable bearings, substantially as described.

In testimony whereof I sign this specification in the presence of two witnesses.

JOHN PRATT.

Witnesses:
MARION A. REEVE,
W. H. CHAMBERLIN.