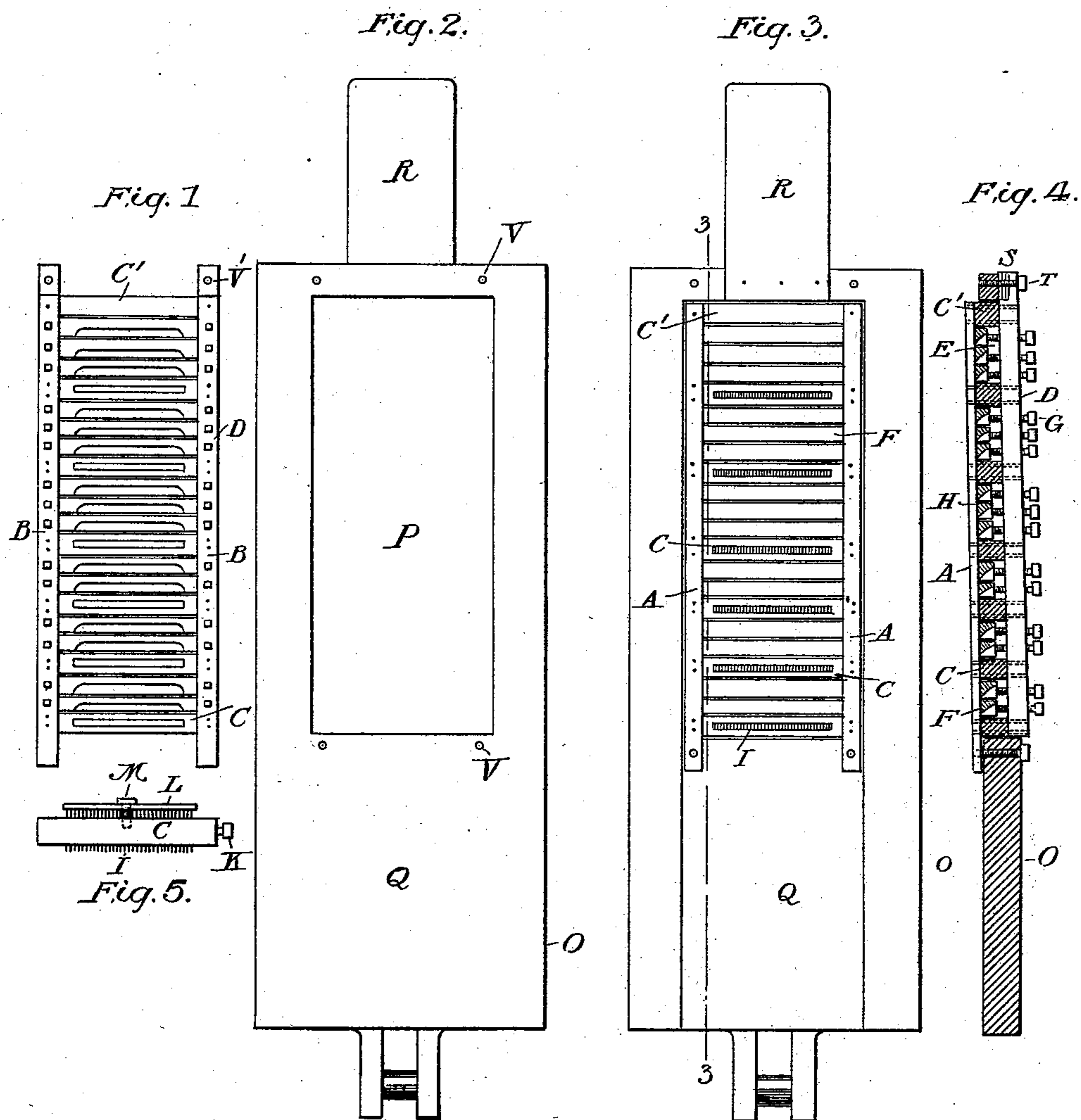


(No Model.)

C. G. SMITH.
EXCELSIOR CUTTING MACHINE.

No. 531,342.

Patented Dec. 25, 1894.



Witnesses:
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UNITED STATES PATENT OFFICE.

CHARLES G. SMITH, OF DETROIT, MICHIGAN.

EXCELSIOR-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 531,342, dated December 25, 1894.

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To all whom it may concern:

Be it known that I, CHARLES G. SMITH, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented an Improvement in Excelsior-Cutting Machines, of which the following is a specification:

My invention relates to improvements in that class of excelsior cutting machines in which a number of shaving knives are set in an adjustable frame; and it consists in placing any number of shaving knives and slitting knives in an adjustable frame or plate in such a manner that when fastened to the reciprocating frame or plate of an excelsior cutting machine each shaving knife will cut a shaving across the entire front surface of the block of wood to be cut at each stroke of the knife frame, this adjustable frame or plate being so constructed that it can be easily and securely fastened to the reciprocating frame or plate of an excelsior cutting machine by screws or bolts, or other suitable means.

The objects of my improvements are, first, to provide an adjustable frame for easily, securely and certainly holding a large number of shaving knives and slitting knives in such a manner as to allow each shaving knife to cut a large number of thin, narrow shavings across the entire front surface of the block of wood to be cut at each stroke of the knife frame; second, to provide means for easily, securely and certainly fastening this adjustable knife frame or plate, after the knives have been properly set and fastened into it, into the reciprocating frame or plate of an excelsior cutting machine in such a position that the edge of the top or upper knife in the adjustable frame extends forward toward the block of wood to be cut farther than the bottom knife a sufficient distance to allow each knife, between the top and bottom, to cut a shaving the required thickness as will be more fully explained hereinafter; third, to provide means for regulating or gaging the position of the adjustable knife frame in such a manner that the depth of the cut of all the shaving knives may be regulated by simply changing the position of the adjustable knife frame or plate in the reciprocating frame by means of adding to or taking from the thickness of the gage "S."

To illustrate: If twenty (20) shaving knives are placed with the front ends against a perpendicular surface allowing the edges of all the shaving knives to be in a direct line one above the other when brought into contact with the wood only the bottom knife will cut; but if the top of the adjustable knife frame is set one-fourth ($\frac{1}{4}$) of an inch farther forward toward the block of wood to be cut than the bottom of the adjustable frame, thus bringing the edge of the top knife the one-fourth ($\frac{1}{4}$) of an inch farther forward toward the block of wood to be cut than the bottom knife, the whole number of the shaving knives in the adjustable frame would cut the depth of one-fourth ($\frac{1}{4}$) inch, or twenty (20) shavings the one eightieth ($\frac{1}{80}$) part of an inch in thickness each.

The adjustable knife frame may be adjusted to cut any thickness of shavings desired by changing the thickness of the gage block S. This adjustable knife frame is removed from the reciprocating frame when it is necessary to change the shaving knives or scoring knives for sharpening, and is replaced by a duplicate adjustable knife frame which has been previously supplied with sharp knives and scorers. This not only requires the machine to stand still a much shorter time than if the knives had to be set and adjusted one by one while the machine is standing still, but the knife grinder, by having the adjustable knife frame in a more convenient position while changing and setting the knives, is enabled to do his work in a much shorter time and in a more accurate manner.

It is well understood by manufacturers that it is very desirable that all machinery be kept, as nearly as possible, in constant motion. Therefore the benefits of my present invention will be easily understood. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a rear view of the adjustable knife frame in elevation showing the back of the shaving knives and slitting knife boxes C, and friction or guide plate C', in position in the posts or frame of the adjustable frame with the set screws G for fastening the knives in position, and the rivets or bolts D for securing the front plates A—A and the rear plates B—B, and the ends of the slitting boxes

C, and the friction or guide plate C' together. Fig. 2 is a view of the reciprocating frame of an excelsior cutting machine in elevation without the adjustable knife frame or plate.

Fig. 3 is a view in elevation of the reciprocating frame of an excelsior cutting machine with the adjustable knife frame or plate in position. Fig. 4 is a sectional view on the line 3—3,—Fig. 3 in elevation of the adjustable knife frame in position in the reciprocating frame, showing the gage block S used for regulating the depth of the cut of all the knives in the adjustable knife plate. Fig. 5 is a view of the slitting knife box C set up with the slitting knives ready for use.

Similar letters of reference indicate similar parts throughout the several views.

Referring to letters of reference in the adjustable frame, A—A are the front plates.

B—B are the rear plates.

C is the slitting knife box.

C' is the friction or guide plate.

D—D are the bolts or rivets for securing the plates A—A and B—B firmly to the ends of the friction or guide plates C' or the slitting knife boxes C in such a manner as to leave the opening E into which the ends of the shaving knives F one or more in each opening are inserted.

G is the set screw through the rear plates B—B, by which the knives F are firmly held against the front plates A—A. The front plates A—A are provided with clearance plates H set in such a manner as to engage with the top or back of the shaving knives F and of sufficient thickness to hold the top or back of the knives away from the wood allowing only the edge of the knife to come in contact with the block of wood, thereby preventing unnecessary friction and allowing the edge of the knife to get a clear cut.

The slitting knife box C, or friction or guide plate C', being used for holding the slitting knives and as a friction plate without the slitting knives for the purpose of preventing the shaving knives from leading into the wood and cutting too deep. Only those which are desired to hold the slitting knives are provided with longitudinal slots and into which the slitting knives "I" are inserted. These slitting knives "I" are held in position by means of set screws K inserted in the ends of the slitting knife boxes C and the back plate L secured to the slitting knife box C by means of screws M.

O is the reciprocating frame.

P is the opening in the reciprocating frame in which the adjustable knife frame is set.

Q is the bottom friction or guide plate of the reciprocating frame.

R is the top friction or guide plate at the top of the reciprocating frame.

S is the gage block set at the top and between the adjustable frame and the reciprocating frame to gage the depth of the cut of all the knives.

U is the opening in the reciprocating frame.

U' is the opening in the adjustable frame for the cap screw or bolt used for fastening the adjustable frame to the reciprocating frame.

The top friction or guide plate R being set the one-fourth of an inch, more or less, farther forward toward the block of wood to be cut than the bottom friction or guide plate Q, against which the block of wood is pressed before the shaving knives F have taken the required amount from the block, thus bringing the top friction or guide plate against the surface of the block of wood when the knives have finished their cut thereby keeping a constant friction surface against the block of wood from the time the block of wood comes in contact with the bottom friction or guide plate Q until the reciprocating frame has made its entire downward stroke. This adjustable frame may be used in either a perpendicular or horizontal position, or in the rim of a rotary excelsior machine.

Modifications, in detail, may be resorted to without departing from the spirit of this invention or sacrificing any of its advantages.

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

1. In an excelsior cutting machine the combination of the posts A—A and B—B, the slitting knife boxes C, securely fastened together in such a manner as to form the opening for the reception of the shaving knives F, the posts B—B provided with the means for holding the ends of the shaving knives F in position and against the posts A—A substantially as described.

2. In the knife frame of the excelsior cutting machine the combination of the posts A—A and B—B, the slitting knife box C and the friction or guide plates C' securely fastened together and arranged to leave a space for the reception of the ends of the slitting knives F with the knives inserted in the spaces in the adjustable frame and the means to lock them against the posts A—A with the clearance plates H for holding the back or top of the knife away from the wood to be cut,—all substantially as described.

3. In an excelsior cutting machine the combination of the posts A—A and B—B, friction or guide plates C', slitting knife box C, clearance plates H, shaving knives F, set screw G, and the gage block S,—substantially as described.

4. In an excelsior cutting machine the combination of the posts A—A and B—B, friction or guide plates C', slitting knife boxes C, clearance plates H, shaving knives F, set screw G, gage block S, and the reciprocating frame O,—all substantially as described.

CHARLES G. SMITH.

Witnesses:

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GUY A. SMITH.