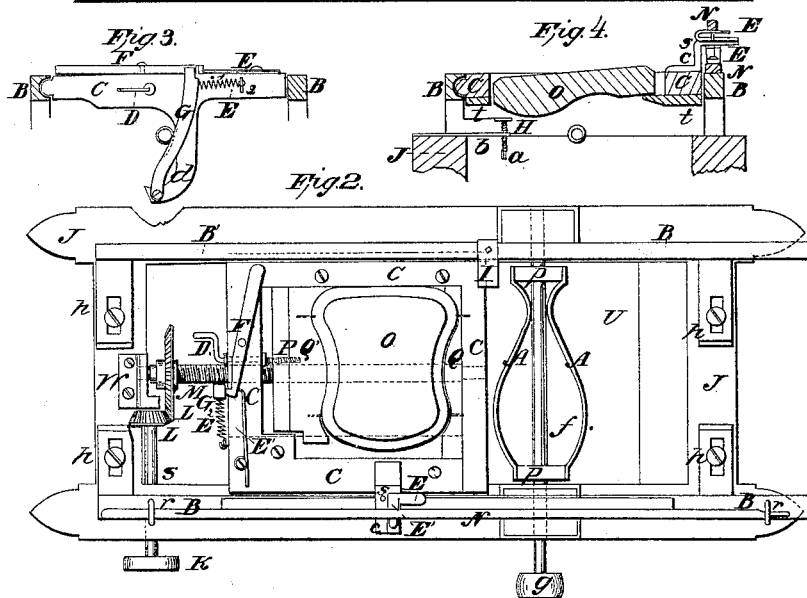


N^o 50,955,

Fig.1.



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EZRA RANSOM, OF FLINT, MICHIGAN.

IMPROVEMENT IN MACHINES FOR MAKING CHAIR-SEATS.

Specification forming part of Letters Patent No. 50,955, dated November 14, 1865.

To all whom it may concern:

Be it known that I, EZRA RANSOM, of Flint, in the county of Genesee and State of Michigan, have invented a new and useful Improvement in Machines for Making Chair-Seats; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side view of a machine made according to my invention. Fig. 2 is a plan view thereof. Fig. 3 is a sectional view of part of the machine, taken on the line *x* of Fig. 1. Fig. 4 is a sectional view taken on the line *y* of Fig. 1.

Similar letters of reference indicate like parts.

This invention has for its object the cutting out or hollowing the wooden bottoms of chair-seats by machinery which is automatic in its movements, the wooden blank being moved forward by the revolution of a screw-thread shaft and sectional nut, the latter being fast on the carriage which supports the wooden blank, and being disengaged from the said shaft by means of the movement of the carriage itself.

The letter J designates the frame which supports the machinery to be described.

B B' designate two ways, which are placed on the top of the frame, and are adjustable laterally thereon by means of their slotted arms *h*, which extend inwardly along the end pieces of the frame, as seen in Fig. 2. One of the ways is grooved along its inner face, as seen in Figs. 3 and 4, and the other is plain.

C designates a carriage, which travels along said ways, one of its sides having a tongue, which projects into the groove of the way B', and the other side being supported on the opposite way, B, by means of a bracket, *c*, extending therefrom over said way, said brackets carrying two springs, E¹ E², one of which is secured to the top of the bracket, and the other to its lower side, so that the free end of the latter rests on the top of a pattern, N', fixed on the top of the way B', and the other projects upward against a pattern, N, secured adjustably over the pattern N' by means of screw-bolts *r r*, whose ends are hooked over said pattern N. It results from this construc-

tion that when the carriage is moved toward the right the bracket *c*, with its springs E E¹, which are its bearing-surfaces, is compelled to conform to the path marked out for it by the patterns N N'. The carriage C has wooden pieces *t t*, secured beneath its sides, one of which is made wide, so as to uphold the back part of the wooden blank O which is to be operated upon.

Q is a wooden piece bolted by screw-bolts to the inner face of the forward part of the carriage, and Q' is a wooden piece fixed to the front of a metallic follower, P, by means of which the chair-seat *o* is clamped in the carriage. The follower is advanced and withdrawn by means of a screw-rod, D, whose outer end is, in this example, formed into the shape of a crank, for convenience in handling.

A stop, I, is placed on the way B', for the purpose of stopping the movement of the carriage, as hereinafter explained, and it is adjustable thereon, being in the form of a clamp, which is fastened on the said way by a set-screw.

F is a lever, pivoted on the back part of the carriage C, its inner end, which has a hook thereon, being pressed toward the left by a spring, E', so as to hook upon the upper end of a sectional nut, G, when the latter is brought within its reach. The sectional nut G is seen most plainly in Fig. 3. It is pivoted to the lower end of an arm, *d*, hanging downward from the back end of the carriage C, and extends upward on the right-hand side of the screw-shaft M, its upper end reaching above the level of the carriage, so that it can be engaged by the hooked end of the lever F. It is pulled away from the screw-shaft by a spring, E², a stop, I, being fixed on the end of the carriage to limit its backward movement. The forward end of the screw-shaft is supported in a cross-piece, V, extending from side to side of the frame J, and its rear end runs in a bearing, W, placed on the rear end of the frame. A bevel-gear, L, on the hinder end of the shaft, engages with another bevel-gear, L, on a driving-shaft, S, whose outer end carries a band-pulley, K.

A A are revolving cutters, secured to collars *pp*, which are fixed on a shaft, *f*, that revolves in bearings in the frame J. One end of the shaft *f* extends beyond the frame and

carries a band-pulley, *g*, by which the knives are revolved. *H* is a strip of metal, sustained on the inside of the frame beneath the front of the seat to be cut by means of two screw-rods, *a*, which work in brackets *b b*, extending from the frame. It can be adjusted to different heights.

It will be observed that the carriage *C* is capable of supporting seats of different forms, their back ends being supported on one of the wooden rests *t*. (Seen in Fig. 4.)

The patterns *N N'* determine the form of the cut made by the knives, the depth of the cut being regulated by the thickness of the pattern *N'*.

The front of the seat is made to rest on the step *H* while it is being adjusted in the carriage.

When the seat is properly adjusted for the depth of cut required it is secured in the carriage by means of the screw *D* and follower *P*.

The wooden blocks *Q Q'*, which are in immediate contact with the sides of the seat, should have sharp points extending therefrom to engage the seat and assist in holding it steady when passing over the knives.

The spring *E*, which rests on the lower part, *N'*, is governed, as to the degree of compression that can be given to it, by the screw-rod *s*, which screws down through the bracket *c*, its point coming in contact with the free end of the spring, so as to prevent its further compression when they meet each other. The rod *s* is to be adjusted so as to fix the adjacent side of the carriage at the proper height for the depth of cut to be made on the seat, and the screw-rods *r r*, which hold the upper pattern, *N*, are then screwed down so as to bring that pattern snugly upon the upper spring, *E*⁴. The sectional nut *G* being brought up against the screw-shaft *M*, it will be locked in that position by the locking-lever *F*, whose spring *E'* presses it continually toward the head of the nut, and the revolution of the shaft will then cause the carriage *C* to move over the knives. When the carriage has moved so far as to bring the outer end of the locking-lever against the adjustable stop *I* the said lever will be disengaged from the head of the nut *G*, whose spring *E*² will then draw it out of engagement with the screw-shaft. The screw-bolts *r r*, or one of them, being now partially raised, the lower spring, *E*, will raise the carriage *C* so that the knives will not hit the seat when the carriage is drawn backward over the ways.

One of the objects in having the upper spring, *E*⁴, as a bearing for the upper pattern, *N*, instead of having a solid surface for it to rest upon, is that the upper spring is designed to be the stronger, and it will therefore compress the lower spring, *E*, without itself being compressed, so that when the upper pattern is brought down upon the upper spring hard enough to compress it a trifle the lower spring will be compressed sufficiently to bring it against the end of the set-screw *s* while the carriage is passing forward between the ways *B B'*.

Another object is to provide against injurious results to the work if a variation exists between the two parallel patterns. In such a case the upper spring, *E*⁴, being the stronger, will force the lower spring to conform to the pattern without leaving its support against the set-screw. By this means the carriage *C* is prevented from vibrating, in consequence of any such variation between the patterns, and the execution of the work will be effected in a satisfactory manner. This set-screw *s* can be used, to a certain extent, in governing the depth of the cut on the back end of the seat in case the lower pattern should not be exactly the right thickness.

The sectional nut *G* is part of a circle described from the center of the groove made in the way *B'*, and is therefore concentric with a circle described from the same point and passing through the center of the feed-screw shaft *M*. Therefore the rise and fall of the carriage on the pattern cannot disengage the nut from the feed-shaft.

The knives may be of any suitable form, and may be changed by removing one set from the collar *p* and bolting on another set.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

In a machine for making chair-seats, the arrangement consisting of the parallel formers *N N'*, actuating vertically one side of the carriage *C* upon the axis formed in the sideway *B*, the carriage motion being derived from a feed-screw, *M*, traversing in the sectional nut *G*, which is released by the contact of the lever *F* with the adjustable stop *I*, as described and represented.

EZRA RANSOM.

Witnesses:

N. HYDE,

EDMUND D. BARLOW.