W. F. SWATHEL.

Machine for Making Tooth-Picks.

No. 197,950. Patented Dec. 11, 1877

Fig. 1.

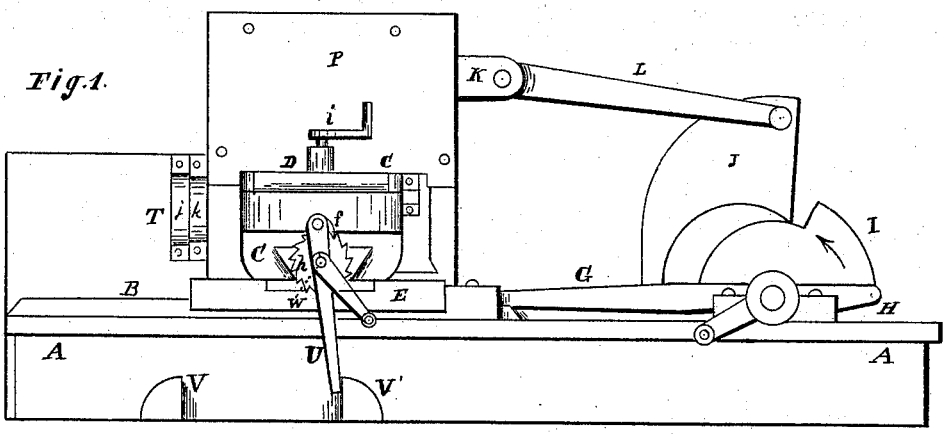



Fig. 6.




Fig. 2.

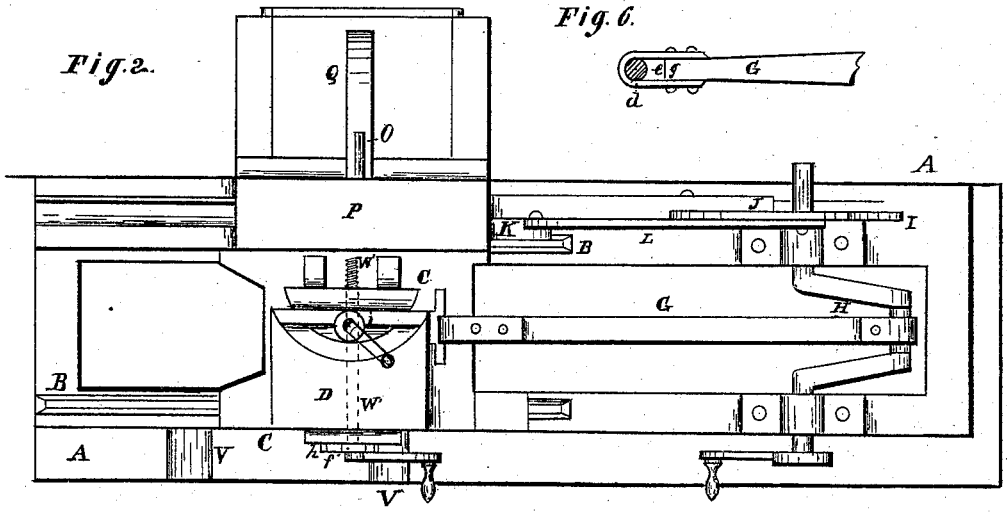



Fig. 4.

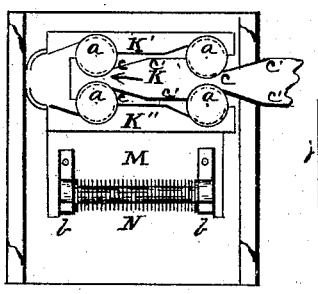



Fig. 3.

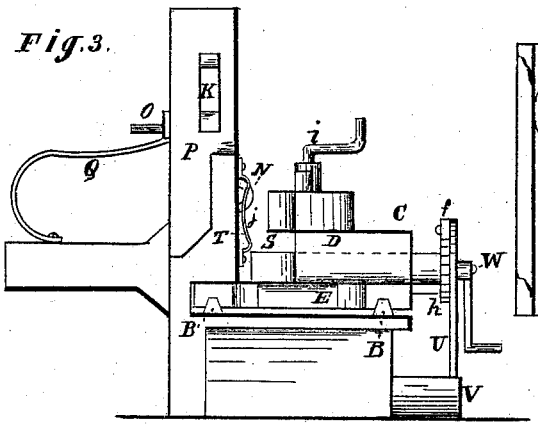
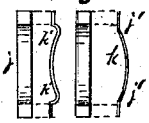



Fig. 5.

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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN MACHINES FOR MAKING TOOTH-PICKS.

Specification forming part of Letters Patent No. **197,950**, dated December 11, 1877; application filed July 13, 1877.

*To all whom it may concern:*

Be it known that I, WILBUR F. SWATHEL, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and Improved Machine for Making Tooth-Picks, &c.; and I do hereby declare that the following is a full, clear, and complete description thereof, reference being had to the accompanying drawings, making a part of the same.

The nature of my invention relates to a machine for making tooth-picks; and consists in the arrangement of a slide or head-block, in which the piece or bolt is held for making the article. This slide moves laterally in feeding the wood to rotary cutters for cutting the picks longitudinally. The said slide has a reciprocating movement over the ways, in shaving off the picks after being slit by the rotary cutters. The slide, by a certain lost motion of its connection with the crank, remains at rest during the time of splitting or slitting by the rotary cutter, and as soon as the cutters have effected this object, the lost motion is taken up, and the slide moved along to the knives for shaving off the picks, &c.

For a more complete description of the construction and operation of the said machine, reference may be had to the annexed drawings, in which—

Figure 1 is a side view. Fig. 2 is a plan view. Fig. 3 is an end view; and Figs. 4, 5, and 6 are detached sections.

Like letters of reference refer to like parts in the several views.

In the drawings, A represents the frame or bed of the operating parts. B are ways for the head-block C to slide upon. This head-block consists of the clamp-head D, for holding the wood or bolt, and the slide E. With these parts are connected certain devices, as hereinafter described. To the slide E is attached the connecting-rod G, which is attached to the crank H, Figs. 1 and 2.

Upon the crank-shaft is secured the cam I. By means of this cam acting upon the arm J motion is conveyed to the cam-slide K, which is connected to the arm J by the link L. Above this cam-slide K is a counter-slide, K′, and below is also another counter-slide, K″, both of which are alike; but the upper one is stationary, while the lower one is connected to the reciprocating slide-plate M of the rotary cutters N, as seen in Fig. 4, and moves up and down vertically with the cutters N, by the action of the cam-slide K and spring Q, Figs. 2, 3, and 4. Interposed between cam-slide K and the counter-slides K′ and K″ are anti-friction rollers *a*, as seen in Fig. 4. These rollers are provided with collars at each end, between which are placed the cam-slide and counter-slides referred to. These collars prevent the rollers from moving out of place laterally, and retain the slides in proper direction.

The rotary cutters N are mounted upon a shaft, which is journaled in the bearings *b b*, which bearings are fastened to the slide-plate M. From this plate M extends a wrist, O, through an oblong slot in the case P to the outside, as seen in Figs. 2 and 3. Connected with this wrist O is a spring, Q, with its lower end fastened to a projection of the frame, as seen in Fig. 3. This spring raises up the rotary cutters N as soon as the cam-slide recedes. By the action of this cam-slide, as it moves in the direction of the arrow, the plate M and rotary cutters N are forced down, and said cutters then cut through the face of the wood block or bolt S, which is fed up to them.

It will be observed in Fig. 4 that the width of the cam-slide increases from *c* to *c′*. This increase or widening of the cam-slide, as it moves between the rollers *a*, forces down the rotary cutters through the face of the block, and as the counter-slide K′ is stationary, the jointing of the cam-slide to the link L allows of an easy adjustment of the slide K to its various positions in its reciprocating movements. The said cam-slide returns from the direction of the arrow by the action of the spring Q, which raises up the rotary cutters, with the slide-plate M, to its original position. Thus, by the action of the slide-cam K, the rotary cutters are forced down through the block for splitting or slitting it for the series of picks, and as soon as this is effected the cutters are forced back by the action of the spring Q, as before mentioned.

At the time the rotary cutters are slitting the block for the picks, by the action of the cam I, transmitted to the slide-cam K by link L, the head-block is at rest. This rest or stoppage of the head-block is attained by a lost

motion of the connection of the rod G with the slide E, as follows: When the crank and the cam I are in the position shown in Figs. 1 and 2, the cam I is then upon the point of actuating the arm J, and transmitting motion to the slide-plate M and cutters N by the slide-cam K, as referred to. At this time the wrist *d* of the slide E is in the position shown in Fig. 6, which leaves a space, *e*, between the wrist *d* and the end *g* of the pitman G, while the crank and cam I are moving in the direction of the arrow, Fig. 1, and the rotary cutters are slitting through the block S, from top to bottom, Fig. 3. Then the pitman travels through the space *e*, from *d* to *g*, Fig. 6, without moving the slide E until the pitman end *g* is brought against the wrist *d*, which forces the head-block along, carrying the block S to the cutters T, a detached view of which is seen in Fig. 5. These cutters or knives are so arranged as to cut off the picks from the slitted block in the form of an ellipse on one side, while the rotary cutters have slit the block in parallel lines. This makes a pick with two parallel sides, and two sides forming an ellipse.

This lost motion, referred to in the connection of the pitman G with the slide E, is so arranged in relation to the movements of the cam I, and its connections with the slide-cam K, that these parts move all in concert from the movement of the crank-shaft.

As soon as the picks are shaved off by the knives T, the slide moves a little farther along, so as to bring the lever U, Figs. 1 and 3, against the stop V, which moves back the pawl over the ratchet-teeth, ready to act on the feed-screw. This lever is hung loosely upon the wrist W of the feed-screw W′. The upper end of the lever is provided with a pawl, *f*, which pawl actuates the ratchet-wheel *h*. To this ratchet-wheel is fixed the feed-screw W′, Fig. 2. This feed-screw is journaled in the slide E, directly under the clamp-head D. This screw passes through a nut connected with the clamp-head D. By this means the feed-screw will cause the clamp-head to slide upon its ways on the slide E to and from the rotary cutters, according to the turn of the screw W′.

The crank on the screw-shaft is for the purpose of withdrawing the clamp-head D from the rotary cutters, to insert a new block after a former one has been cut up into picks. The said blocks are secured to the clamp-head D by means of a set-screw, *i*, or other suitable devices, the block S being placed in a recess or cavity in the clamp-head, as seen in Fig. 2.

By means of the lever U and ratchet, in connection with the feed-screw W′, the block is fed up the thickness for the picks as they are consecutively shaved off, after being slit by the rotary cutter.

On the return of the head-block C from V to V′, Figs. 1 and 2, the lever U is brought in contact with the stop V′, which moves back the lever U, and moving forward correspondingly the pawl *f*, and thereby turning the ratchet-wheel *h*. This action of the stop V′ in moving back the lever U, and actuating the pawl and ratchet connected with the feed-screw W′, moves the clamp-head and block S therein the proper distance for the thickness of a pick to the rotary cutters, which, as before mentioned, slit the block; then it is moved to the knives T, when the part of the block which has been slit is shaved off into tooth-picks, &c.

By changing or giving a different shape and form to the knives T lamp-lighters may be made as well as tooth-picks.

By the described construction and arrangement, the several parts move in consecutive order, and in proper time in feeding, slitting, and shearing off the articles from the block.

The knives T are in two pieces, *j* and *k*, as seen in Fig. 5. The part *k* first acts on the block, and is in form the half of an ellipse. The other part, *j*, forms also an ellipse, with curved or bent ends, as seen in Figs. 3 and 5. The two knives are set one in advance of the other, for the purpose of shaving or cutting off the picks with the part *k* of the knife T, and shaving off the face of the block with the part *j* of said knife at the same time. The object is to cut the picks with two parallel sides and two elliptical or curved, terminating in pointed ends. This is done by first shaving off the face of the block, when secured in the clamp-head D, by moving the slide, along with the face of the block, in contact with the part *k*, which gives a curved or concave face to the wood, corresponding to the line *k′ k′* of the part *j*, and by the part *j* a face corresponding to the line *j′ j′*. Then the block is moved back and fed up to the rotary cutters, which cut into the face of the block in parallel slits, in the line of the grain, the thickness for the picks, after which the block is carried along to the part *k*, which, in shaving off the picks, leaves the face of the block curved or concave, which face is then shaved off by the part *j*, so as to curve outward, leaving the face of the block in the line *j′ j′*. The part *k* cuts off the picks inside of the line *j′ j′*, which leaves the face-line opposite to *j′ j′* also curved or elliptical. This makes the pick convex on two sides. The part *k* leaves the face of the block concave, and the picks or pieces cut off correspondingly convex, which forms one of the curved sides of the picks, and the other curved side is made by the part *j*, by changing or cutting the concave face of the block as left by the part *k* to a convex surface.

The cutters T may be used without the rotary cutters, in which case sheets of wood may be shaved or cut off from the block with both sides curved or convex, and then slit or cut up into picks.

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

1. The cam I, arm J, and link L, in combination with the slide-cam K, rollers *a*, and

counter-slides K′ K″, substantially as and for the purpose set forth.

2. The clamp-head D, having a lateral and reciprocating movement, in combination with the rotary cutters N and cutters T, substantially as and for the purpose set forth.

3. Rollers *a*, cam-slide K, and counter-slide K′, in combination with the counter-slide K″ and rotary cutters N, connected with the reciprocating slide M, substantially as and for the purpose specified.

4. The cutters T, consisting of the two pieces *j k*, constructed and arranged, in relation to each other and rotary cutters N, operating conjointly, substantially as described, and for the purpose set forth.

5. The spring Q, reciprocating slide M, and rotary cutters N, in combination with the head-block C, constructed and arranged to operate conjointly with the cutters T, substantially as and for the purpose set forth.

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