

(No Model.)

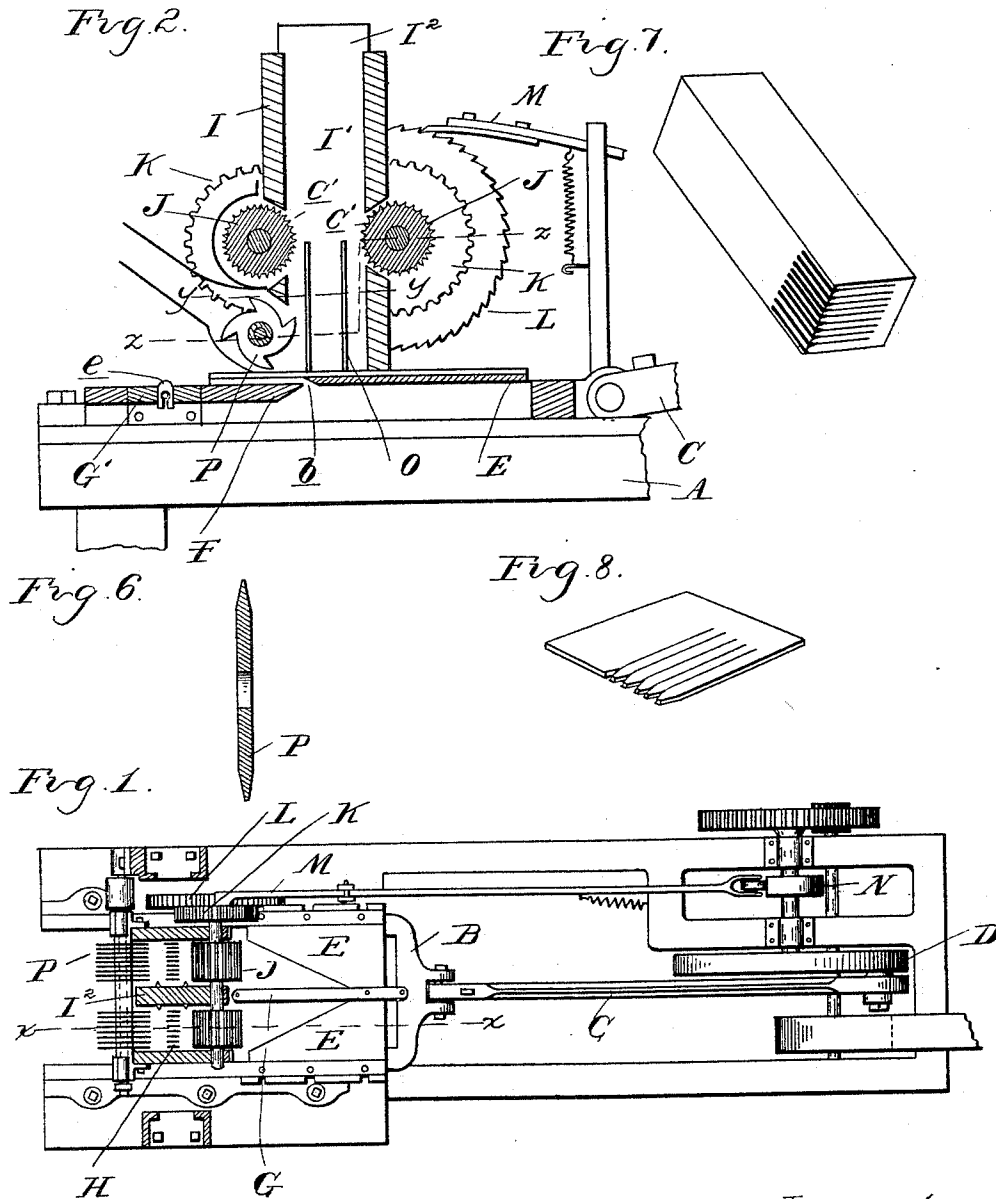
2 Sheets—Sheet 1.

P. BEER.

MACHINE FOR MAKING MATCH SPLINT CARDS.

No. 497,746.

Patented May 16, 1893.



Witnesses
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Thos. J. Harty

Inventor
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(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

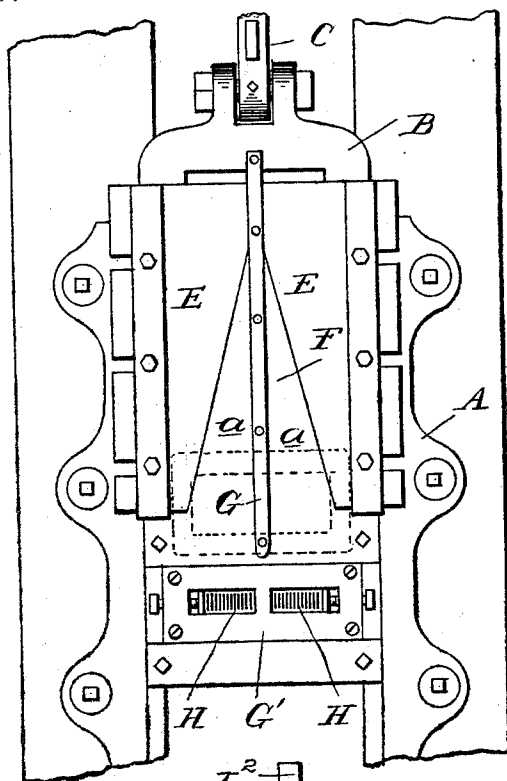


Fig. 5.

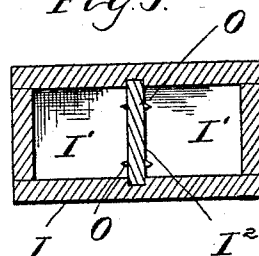
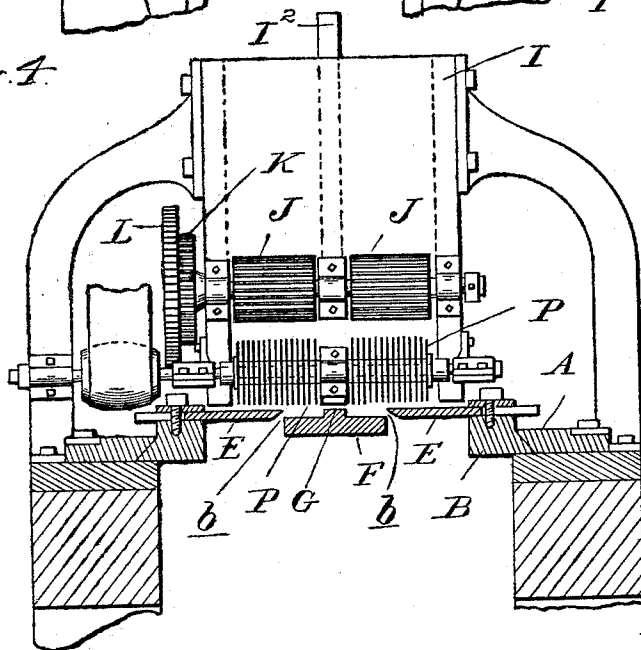


Fig. 4.



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UNITED STATES PATENT OFFICE.

PETER BEER, OF DETROIT, MICHIGAN.

MACHINE FOR MAKING MATCH-SPLINT CARDS.

SPECIFICATION forming part of Letters Patent No. 497,746, dated May 16, 1893.

Application filed June 1, 1892. Serial No. 435,197. (No model.)

To all whom it may concern:

Be it known that I, PETER BEER, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Machines for Making Match-Splint Cards, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to that class of match machines which are designed for the production of cards used in the manufacture of so-called match splint cards. In the present state of the art such cards are manufactured by slicing them off from blocks of wood, the cross section of which has the required dimensions of a so-called card. At the same time the machine which does this work contains devices for partially dividing the cards off into match splints and forming a tapering tip on the splints, whereby the cards leave the machine finished complete and ready for dipping. A machine of this kind has been devised by me heretofore and for which I have obtained Letters Patent No. 335,416, and my present invention is designed to form an improvement thereon.

This improvement consists in holding the blocks from which the cards are sliced off in a stationary receptacle and using a reciprocating slicer; further in a more simple and efficient feeding device for the blocks, and further in the peculiar construction and arrangement of the devices for dividing the cards into splints, and forming tapering tips on the splints, all as more fully hereinafter described and shown in the accompanying drawings, in which—

Figure 1 is a plan of my improved machine with the block holding receptacle in horizontal section, as indicated on line $z-z$ in Fig. 2. Fig. 2 is a vertical longitudinal section on line $x-x$ in Fig. 1. Fig. 3 is an enlarged plan of the reciprocating slicer with the block holding receptacle omitted. Fig. 4 is an elevation of the front end of the machine with the covering for the feed rolls and for revolving cutters taken away. Fig. 5 is a horizontal section of the block holding receptacle on line $y-y$ in Fig. 2. Fig. 6 is a cross section of one of the revolving cutters. Fig. 7 is a perspective view of a block operated upon by the

machine. Fig. 8 is an enlarged perspective view of one of the match splint cards made by the machine.

Upon a suitable supporting frame is mounted in horizontal guides A, the reciprocating slicer B, the movement of which is obtained in any suitable manner, as for instance by a pitman connection C with a revolving crank wheel D supported in bearings in one end of the frame. The reciprocating slicer is provided with two slicer knives E adjustably and removably secured in any suitable manner upon the frame of the slicer. The cutting edges a of the knives are presented obliquely to form a drawing cut with the bevel of the cutting edges formed on the under side of the knives. In front and between the cutting edges the slicer is provided with a face plate F which is in a plane parallel with the upper plane of the knives, but the thickness of a card (or match) below it, and suitable throats b are formed between the cutting edges of the knives and the face plate for the discharge of the cards sliced off by the knives. Upon the face plate is formed or secured between the two knives the longitudinal fence G, which extends between the knives and has its upper face preferably in the same plane with the upper faces of the knives. The front end of the face plate carries two knife-combs H H one for each slicer knife; these knife-combs are each composed of a series of small knives c provided with rounded cutting edges projecting above the face plate a distance about the thickness of a match. These knives c are spaced apart the thickness of a match and are preferably clamped within a detachable section G' of the face plate, whereby they may be readily adjusted and removed for sharpening when required. The object of these knife-combs is to divide the cards into match splints as will be seen more fully hereinafter.

Above the reciprocating slicer is stationarily mounted upon the frame, the block holding receptacle I which for this particular machine is provided with two vertical open ended compartments I' I' separated by the central partition I². Each of these compartments is of a cross-section to admit of placing into them the blanks from which the cards are cut, such a blank representing a square block

of wood, being shown in Fig. 7. The blocks placed in these compartments are fed intermittently to the slicer, which is adapted to freely reciprocate underneath, by mechanical feeding devices consisting of a pair of feed rolls J for each compartment. These feed rolls are placed upon the front and rear sides of the receptacle near the lower end thereof, suitable openings being formed for them in the walls of said receptacle. The front and rear rolls are respectively secured upon common shafts journaled in suitable bearings and revolved by two intermeshing gear wheels K which receive intermittent motion, through the feed wheel L which in turn is actuated by a feed pawl M which receives motion from a moving part of the machine, as for instance from a revolving cam N on the shaft of the crank wheel D. The feed rollers are corrugated or preferably have sharp spur teeth *c'* which cut slightly into the blocks in feeding them down upon the slicer.

The compartments have to be made somewhat of larger cross-section than the cross section of the blocks so as to permit the blocks to be readily placed into and freely fed downward to the knives and to permit also of a slight variation in the size of the blocks which cannot always be avoided. It becomes, however, necessary that the lower ends of the blocks should have no loose play within the compartments as it would result in poor work and to this end I form in the lower end of each of the compartments one or more vertical fins O, which project sufficiently from the inner face of the walls to cut sufficiently into the wooden blocks to hold the same firmly in position. The drawings show two such fins in each compartment projecting from the division wall I², they cut into the sides near the lower ends of the wooden blocks and crowd them against the opposite wall in each compartment thereby holding them firmly in place even if the blocks should slightly vary in cross section.

At the lower end of each compartment are placed a series of revolving cutters P, the object of which is to operate against the front side of the blocks as they are fed downward. These cutters are preferably constructed of a series of small disk cutters spaced apart between centers equal to the thickness of a match splint, the cutters near the outer edges being beveled as shown in Fig. 6, to cut V-shaped grooves in the block as shown in Fig. 7, to the depth about equal to the length of the dipping end of the matches.

The cutters for the two compartments are assembled upon a common arbor journaled in suitable bearings and provided with a pulley to which the power is applied for revolving the cutters. The feed rolls and cutters are preferably protected by an outer covering which in the case of the cutters is connected with a suction fan (not shown) to carry the débris away from the cutters as is a common practice in wood cutting machinery.

In practice the parts being arranged and constructed as shown and described they are intended to operate as follows: Suitable blocks for cutting the cards being inserted in the compartments and motion being imparted to the machine the cutters in revolving will cut V-shaped grooves into the lower end of the front faces of the blocks thereby forming what constitutes afterward the tapering tip of the match to which the chemical is applied. The slicer in reciprocating moves far enough to the rear to withdraw the knives E from underneath the block holding receptacle, and as soon as this occurs the feeding devices operate and feed the blocks in the receptacle down in contact against the face plate F. By the farther rearward movement of the slicer, the knife combs are drawn under the blocks and cut into the lower faces of the same up to within a small distance of the rear edge of the block. The cutter disks, and knives in the combs correspond with each other in number and relative position so that the knives of the combs enter the grooves made by the cutters. The slicer upon reversing has the lower faces of the blocks pressed against its face plate F by the feed rolls. The knives E being therefore at the higher plane will cut off from the lower end of each block a card, which cards pass through the throats in the slicer and drop underneath. The cards thus cut off have the thickness of a match and each card is partly divided off into splints with tapering tips formed on the free end of each individual match splint, whereby the cards may be readily dipped without having the tips stuck together. The individual splints in each card are just severed far enough to still hold them together firmly enough to permit of the cards being handled without breaking up and at the same time allow of readily separating them for use. The partition wall I² and fence G have the same lateral dimension, thus while the cards are cut off by the knives the inner lower edges of the blocks bear against the sides of the fence G and by this arrangement the knives are enabled to make a perfectly clean and complete cut.

The function of the fins in holding the blocks firmly in position while being operated upon is important for producing good work and I have found them much more efficient than the clamping devices formerly used by me for the purpose.

My machine may be constructed to have but one set of devices for making cards or it may be constructed to have more than the two sets shown combined in one machine and as such changes are simple and involve no invention I refer to them as obvious modifications of my invention. The combination of two sets of devices in the manner shown, I find, however, to be best for practical use.

What I claim as my invention is—

1. In a machine for making match splint cards, the combination of a reciprocating

10 slicer having a knife with an oblique cutting edge, a face plate on said slicer in front of said knife and upon a lower plane than the plane of the knife, a longitudinal fence upon
 5 said face plate, a receptacle stationarily mounted above the slicer and provided with two vertical compartments between which the fence moves and means for holding the block in said compartment and feeding it to
 10 the slicer, substantially as described.

2. In a machine for making match splint cards, the combination with a stationary frame, of a slicer adapted to reciprocate in horizontal guides in said frame and provided
 15 with a knife having an oblique cutting edge, a face plate on said slicer upon a lower plane than the knife, a knife comb in advance of the face plate, a fence on said face plate opposite to the cutting edge of the knife, a receptacle stationarily mounted upon the frame
 20 of the machine above the slicer and having two vertical open ended compartments, fixed means for holding and feeding the block and a revolving series of cutters adapted to operate against the face of the block, substan-
 25 tially as described.

3. In a machine for making match splint cards, the combination with the frame, of a slicer adapted to reciprocate in horizontal
 30 guides in said frame and having a knife provided with an oblique cutting edge, a face plate on said slicer upon a lower plane than the knife, a longitudinal fence upon said face plate, opposite to the cutting edge of the knife,

a knife comb on said face plate in front of
 35 the slicer knife and adapted to cut into the lower face of the block, a receptacle stationarily mounted upon the frame and having a vertical open ended compartment, a pair of
 40 intermittently operating feed rolls at the lower end of said compartment upon the front and rear side respectively, a series of revolving tapering cutters below the feed roll on the front side and one or more fixed fins
 45 interiorly of the compartment, substantially as described.

4. In a machine for making match splint cards, the combination with the frame, of the reciprocating slicer provided with the oblique
 50 knives E E and a face plate F, the longitudinal fence G between said slicer knives, the knife combs set in the face plate in front of the slicer knives, the receptacle I mounted on the frame above the slicer and divided into
 55 two compartments, the feed rolls J arranged in pairs for each compartment in front and rear thereof respectively, a series of revolving taper cutters P for each compartment and the fixed vertical fins O on the interior
 60 division wall between the compartments, substantially as described.

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

PETER BEER.

Witnesses:

M. B. O'DOGHERTY,
 N. L. LINDOP.