Nov. 15, 1927.

1,649,642

J. E. ZOMNIR

MACHINE FOR MAKING CARD MATCHES

Filed Oct. 6, 1925

2 Sheets-Sheet 1

Fig. 1.

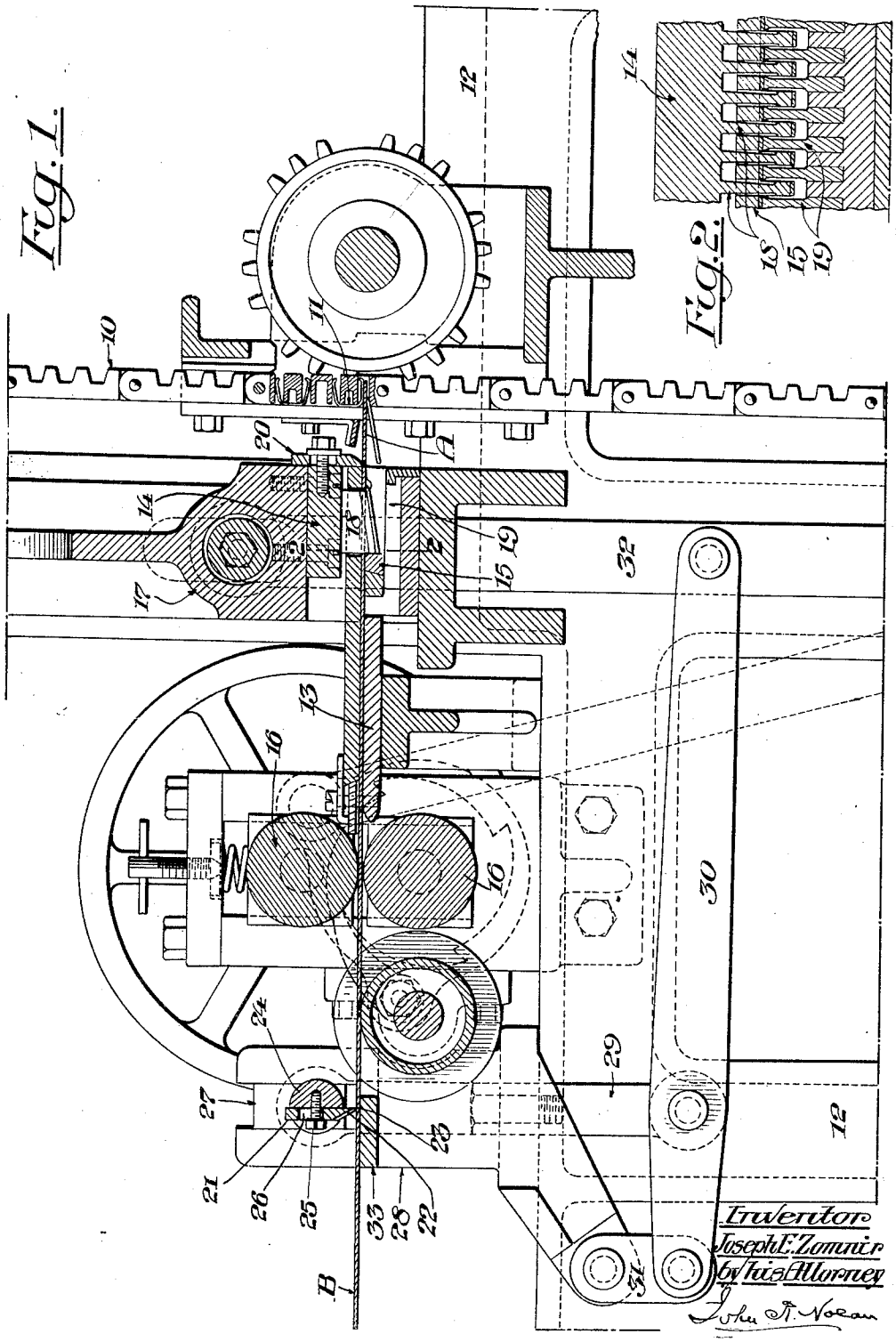

Fig. 2.

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Fig. 3.

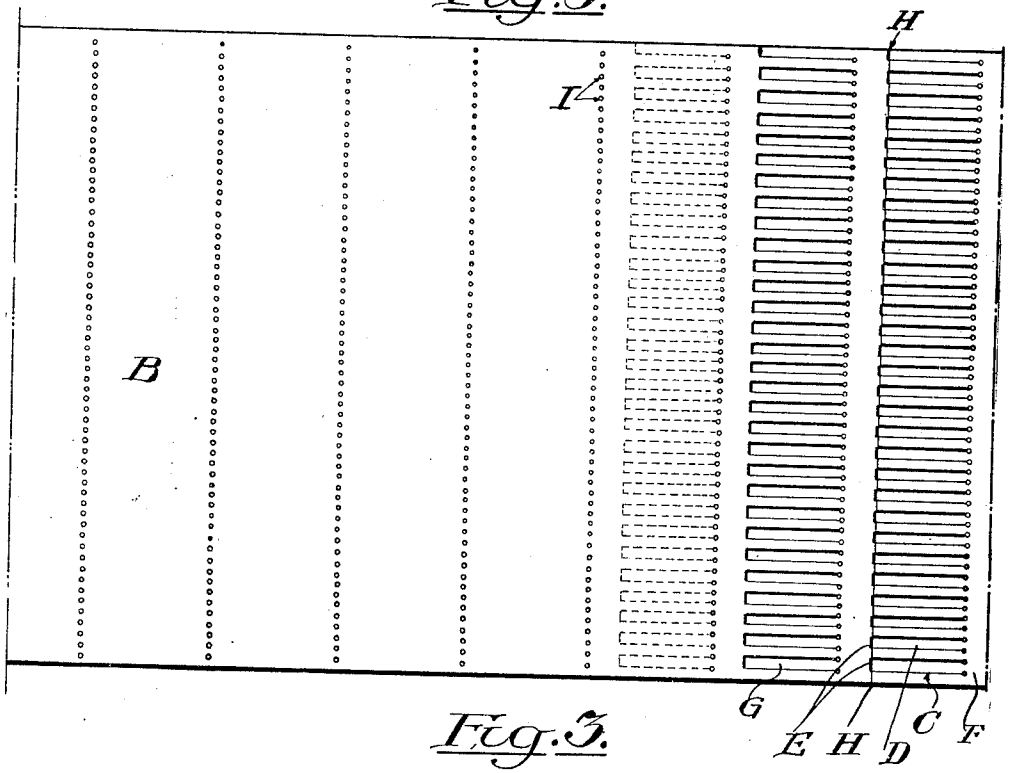


Fig. 5.

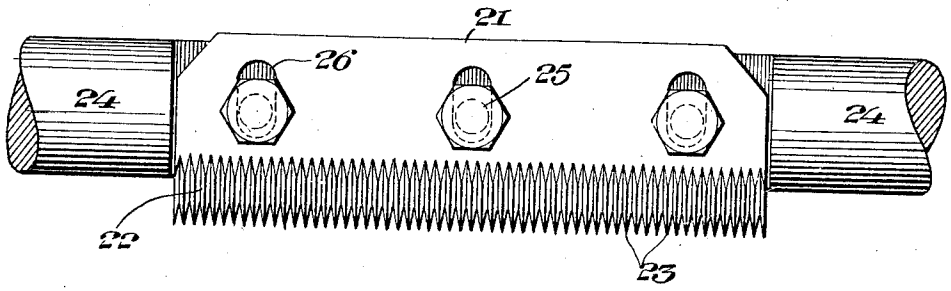
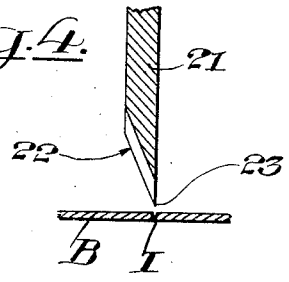


Fig. 4.



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UNITED STATES PATENT OFFICE.

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MACHINE FOR MAKING CARD MATCHES.

Application filed October 6, 1925. Serial No. 60,868.

This invention relates to machines whereby cards or strips of matches for use in the manufacture of match books are successively produced from a web of cardboard stock. Such machines include splint cutting devices by means of which the alternate splints of each card or strip, while they are being formed, are staggered or offset in relation to the others in a manner to separate the free ends of adjacent splints and permit the efficient application thereto of the paraffin and head compositions as the card or strip of splints is being transported through the match making path.

The object of the invention is to provide, in a match machine of the type mentioned, novel mechanism whereby transverse rows of perforations are formed at regular intervals in the web of stock preparatory to its passage to the splint cutting devices, the perforations of each row being so disposed in relation to the cutting devices that the respective splints, when formed, are provided at their basal edges with nicks or indentations that facilitate the easy and uniform manual tearing of the individual splints from the marginal portion of the card or strip without appreciably weakening their connection with such portion.

To this end, the invention comprises novel features of construction and combinations of parts which will be hereinafter described and claimed.

In the drawings—

Figure 1 is a longitudinal elevation of a portion of a match making machine equipped with perforating means embodying my invention, only so much of the machine being shown as is necessary to illustrate the invention.

Fig. 2 is a sectional detail of the splint cutting dies, as on the line 2—2 of Fig. 1.

Fig. 3 is an elevation of a vertically-reciprocative device for forming spaced-apart rows of perforations in the web of match material.

Fig. 4 is a transverse section of a portion of the said device, showing a piece of stock as perforated thereby.

Fig. 5 illustrates a piece of the stock as perforated and incised during its passage to the carrier of the match machine.

Referring to the drawings, 10 designates a portion of an intermittently movable endless carrier of a match machine, which carrier comprises a chain of links having therein spring clamps 11 which are adapted to receive cards or strips of splints A and carry them through the match making cycle.

12 designates the supporting frame on which is mounted a horizontal bed 13 between which and the receiving face of the carrier are interposed complemental upper and lower dies 14, 15, respectively. The web of match material, B, is intermittently advanced along the bed and between the dies by means of a pair of feed rolls 16.

The upper die, which is carried by a vertically reciprocative head 17, comprises a series of parallel cutter bars 18 extending longitudinally of the web and having inclined cutting edges; and the lower die, which is secured to the frame 12, comprises a row of spaced counterpart bars 19 arranged in parallelism with and in alternation with the bars 18, whereby during the reciprocation of the head 17 the bars thereof co-act with the stationary bars to incise the web longitudinally in parallel lines, as indicated at C in Fig. 5, and form alternate splint sections D which are severed at one end from the web as at E, and downwardly pressed or staggered by the inclined edges of the bars 18. The incisions terminate short of the leading end of the web to provide a marginal connecting portion F for the splints, which portion when the web is advanced to present a succeeding portion thereof to the dies, is entered into and gripped by the opposing clamps 11 of the carrier. When such succeeding portion is presented to the dies the web is again longitudinally incised on splint lines, as indicated at G, and at the same time it is severed on a line H across the outer ends of the previously incised portions by a vertically reciprocating transverse blade 20 carried by the upper die 14, thus leaving in the grasp of the carrier clamps the leading section of the web in the form of a card or strip of staggered splints having a common base or marginal portion, as seen in Fig. 1. The web-feeding and splint cutting mechanisms being old, require no detailed description herein.

In accordance with my invention I ar-

range in advance of the feed rolls 16 a vertically reciprocating member which is operative, in each dwell of the web, to form a transverse row of tapering perforations in the web, as indicated at I in Fig. 5. This member preferably comprises a steel plate 21 having one of its surfaces diagonally milled or grooved, as at 22, to provide a series of spaced apart tapering points 23 along the lower edge of the plate. The plate is adjustably secured to a bar 24 by means of bolts 25 passing through elongated openings 26 in the plate, the ends of which bar are provided with blocks 27 that are slidably mounted in vertical guide standards 28 at the respective sides of the supporting frame. These blocks are flexibly connected by means of links 29 with levers 30 which are hung at one end from the supporting frame by means of links 31 and are jointed at their opposite ends to the usual vertically-reciprocating bars 32 that operate the cutter head. Hence the perforating plate 21 is reciprocated concurrently with the cutter head. A backer bar 33 for the portion of the web pierced by the points 23 is supported on the frame.

By the described construction of the perforating plate the tapering points thereof can be readily sharpened, as occasion may require, and the plate can be vertically adjusted on its supporting bar to effect the requisite penetration of the points into the web.

The adjacent perforating points of the plate 21 are spaced apart correspondingly with the width of a match splint, and the series of points are in alinement with the longitudinal edges of the respective cutter bars. The space between two succeeding rows of perforations when formed in the web is equal to the width of a match card, and the position of the perforating points in relation to the splint cutting mechanism is such that each row of perforations defines the basal ends of each row of splints in the web during the descent of the die-head 17. Thus the corners of the basal ends of the descending cutter bars 18 carried by said head enter the respective opposing perforations in the web, which perforations not only prevent the extended tearing of the material beyond the ends of the cutting bars, but they form at the respective basal edges of the splints tapering nicks or indentations which facilitate the easy and uniform manual separation of the matches from the marginal portion of the card or strip, without weakening the connection of the splints with such marginal portion to such an extent as to interfere with the efficient impregnating and dipping operations.

I claim—

1. The combination with splint cutting mechanism and mechanism for feeding thereto a web of match stock, of means for forming transverse rows of perforations at regular intervals in the said web before the passage of the web to the cutting mechanism, the perforations of each row being so disposed in relation to the cutting mechanism as to produce indentations at the respective basal edges of the splints when the web is cut by the said cutting mechanism.

2. The combination with splint cutting mechanism and mechanism for feeding thereto a web of match stock, of means for forming transverse rows of tapering perforations at regular intervals in the said web before the passage of the web to the cutting mechanism, the perforations of each row being so disposed in relation to the cutting mechanism as to produce indentations at the respective basal edges of the splints when the web is cut by the said cutting mechanism.

3. The combination with splint-cutting mechanism and mechanism for feeding thereto a web of match stock, of a vertically reciprocating member in advance of the feeding mechanism, a perforating device supported by said member and adapted to form in the said web transverse rows of perforations at regular intervals, the perforations of each row being so disposed in relation to the cutting mechanism as to produce indentations at the respective basal edges of the splints when the web is cut by the said cutting mechanism.

4. The combination with splint-cutting mechanism and mechanism for feeding thereto a web of match stock, of a vertically reciprocating member, and a web perforating device supported thereon, said device comprising a plate having a face diagonally grooved to provide along the lower edge of the plate a series of spaced-apart tapering points adapted to form in the web transverse rows of perforations at regular intervals, preparatory to the passage of the perforated portions of the web to the splint-cutting mechanism, the perforations of each row being so disposed in relation to the cutting mechanism as to produce indentations at the respective basal edges of the splints when the web is cut by the said cutting mechanism.

Signed at Springfield in the county of Hampden and State of Massachusetts this 30th day of Sept., A. D. 1925.

JOSEPH E. ZOMNIR.