APPARATUS AND METHOD FOR MAKING PHOTOGRAPHIC MOUNTS

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4 Claims. (Cl. 53—1)

The present invention relates to photographic mounts and particularly relates to photographic mounts which may be utilized for holding transparency or other photographic elements in position for projection or observation purposes.

It is among the objects of the present invention to provide a novel continuous system for manufacturing foldable photographic mounts at a high speed of production at low cost and with assurance that such mounts will be produced with uniformity and with means thereon to correctly locate and fix the position of the photographic element or transparency.

Still further objects and advantages will appear in the more detailed description set forth below. It being understood, however, that this more detailed description is given by way of illustration and explanation only and not by way of limitation, since various changes therein may be made by those skilled in the art without departing from the scope and spirit of the present invention.

In accomplishing the above objects a strip of cardboard is first trimmed to proper size and then is passed between a serrating or scoring roller which will fix a central fold line longitudinally along the axis of the strip, and the strip is then provided with two shear lines on a base folded on one side of the folder with several interrupted shear lines at one side and extending between the longitudinal shear lines.

In the final operation after the various shear lines have been formed on one side of the folder, the windows are die-cut so they will match and this will form a recess or receptacle within which a transparency may be slid with assurance that there will be correct register.

With the foregoing and other objects in view, the invention consists of the novel construction, combination and arrangement of parts as hereinbefore more specifically described, and illustrated in the accompanying drawings, wherein is shown an embodiment of the invention, but it is to be understood that changes, variations and modifications can be resorted to which fall within the scope of the claims hereunto appended.

In the drawings wherein like reference characters denote corresponding parts throughout the several views.

FIG. 1 is a top plan view of a mechanism for continuously forming foldable photographic mounts from a strip of cardboard taken from the line 1—1 of FIG. 2.

FIG. 2 is a side elevational view upon the line 2—2 of FIG. 1.

FIG. 3 is a side sectional view taken upon the line 3—3 of FIGS. 1 and 2, showing the central longitudinal scoring to give the central fold line.

FIG. 4 is a top perspective view showing the manner of forming the interrupted shear lines between the transverse shear lines.

FIG. 5 is a side elevational view of the continuous shearing mechanism, which is shown in small scale in the middle portion of FIG. 2, upon an enlarged scale as compared to FIG. 2.

FIG. 6 is an end elevational view taken from the line 6—6 of FIG. 5, showing the shearing circular blades.

FIG. 7 is a bottom plan view taken from the line 7—7 of FIG. 5, showing the shearing blades from below and upon an enlarged scale as compared to FIGS. 5 and 6.

FIG. 8 is a perspective plan view of the final foldable supply mount with the sheared portions on the sides thereof and on one of the folds of the folder, and upon an enlarged scale as compared to FIGS. 1 to 6.

FIG. 9 is a transverse sectional view taken upon the line 9—9 of FIG. 8, showing in perspective the effect of the longitudinal shearing accomplished by the apparatus of FIGS. 5 to 7.

FIG. 10 is a fragmentary top perspective view of the upper left-hand portion of the flat folder of FIG. 8, showing the position of the transparency when inserted therein and when fixed in position in respect to the window.

FIG. 11 is a transverse sectional view upon the line 11—11 of FIG. 8, showing the interrupted shear line.

Referring to FIGS. 8 to 10 there is shown a photographic mount A consisting of an upper window foldable section B connected by the fold line C to a lower foldable window section D.

As shown by C there will be a series of closely spaced perforations or score marks resulting, as is best illustrated in FIGS. 8 and 10.

The upper section B has a die-cut window E which matches the die-cut window F in the lower section D. The lower section D carries the longitudinal partial shear portions G and H which locate two opposite sides K of the transparency J.

The other edge L of the transparency J abuts the interrupted shear line M, N and P.

Referring to FIGS. 1 and 2, there is shown the successive operations and machine structures at Q in FIGS. 1 to 3 for forming the central score line C, the oblique rotary shearing between the circular knives R for forming the longitudinal partial shear portions G and H and the transverse interrupted through shearing arrangement S for forming the interrupted shear members M, N and P, and finally the window shears T for forming the windows F and E, and the final shear U for cutting the folders one from the other.

Referring first to the division for forming the score line, it consists of a fixed or rotatable wheel which is pressed down upon the serrated or ridged roller Y, which may also rotate. Desirably the roller X is held fixed and has a sharp edge 20 (see FIG. 3), which is carried on the shaft 21 having the stepped-down portion 22.

The shaft is held in a sleeve 23 between set screws 24, and it has an end knob 25 held in position by the set screw 26. The wheel or edge roller will be held in position on the reduced end portion 2 by the washer 27 and the bolt 28.

The arm 29 (see FIGS. 1 and 2) is attached to the knob 25, and it will press the edge 20 against the strip of paper Z, which has been previously trimmed and which is being fed into the successive mechanisms Q, R, S, T and U.

The strip Z will pass over the base plate 30 and under the spring fingers 31. Between the spring fingers 31 is a slot 32 where the longitudinal fold line C will be formed by the sharp edge 29 of the roller X.

The plate 30, with its side guide members 33, may be adjusted back and forth by the screw 34, having the handle 35.

The handle 35 will adjust the plate 30 so that the edge 20 is directly along the longitudinal axis and can press such axis down against the serrated or ridged roller Y, having the ridges or serrations 36. The ridge roller Y may turn while the edge roller may stand still in the preferred construction.

The ridge roller Y is held on the shaft 37, which is mounted in the carrier portion 38, held in position by the nuts 39 and 40. The bolts 41, fitting in the slot 42, will limit the amount of adjustment of the plate 30 and the side guides 33.
From the center scoring C the strip passes to the partial oblique shearing operation at R, where it is subjected from the lower side to the obliquely positioned beveled wheels 50.

These wheels 50 are mounted by the washers 58 and the bolts 52 upon the post members 53, which are adjustable through the openings 54 in the blocks 55. The position may be set and then fixed by the set screws 56. The block 55 in turn are mounted upon the transverse shaft 57 between the side standards 58, which are mounted by the turned flanges 59 and the bolts 60 upon the base 61.

The bar or rod 57 is flatted as indicated 62 in FIG. 5, and the set screws 63 will position the blocks 55 in the desired position.

The shear wheels 50, having the bevelled cutting edges 70, as shown in FIG. 7, are set at an oblique angle 71 (see FIG. 7) in respect to the direction of movement 72 to form the partial shear portions G and H, as shown in FIGS. 7, 8, 9 and 10.

It will be noted that there is a thin upturned edge 73 formed in FIG. 9, with a sloping inward cut portion 74 which acts both to stop the edges K of the transparency, as shown in FIG. 10, and also to lock it in position if need be by the resiliency of the upturned edge 73, which tends to prevent the two contacting edges K of the transparency J toward one another.

The cutting wheels project upwardly through the opening 75 in the table portion 76, as indicated in FIG. 6, with the side guide plates 77 constituting a continuation of the side guides 33 shown in FIG. 3.

The paper strip Z is pressed down against the oblique cutting edges 70 by means of the rollers 78, which are held by the shaft 79 in the blocks 80, which in turn are pivotedly mounted by the shaft 81.

The cross bar 82 carries the adjusting threaded rods 83, having the knurled hand turning member 84, which are locked in position by the lock nuts 85.

The lower end of the threaded rods at 86 act upon the top face 87 of the blocks 80 to press the rollers 78 against the strip Z and against the oblique edges 70 of said partial shearing rollers. The entire apparatus is mounted on the block 88, which is carried on the shaft 81.

In respect to the interrupted shearing mechanism S, window shearing mechanism T and the cut-off mechanism U, these are mounted, as indicated in small scale in FIGS. 1 and 2 and in large scale perspective in FIG. 4, on the block 100.

The block 100 has the end pivot blocks 101 carrying the transverse shaft 102, which has an upwardly extending connecting member 103. The connecting member 103 has the adjustable connection 106 to the oscillating or reciprocating member 105 on the crank 106.

The block 100 at its forward end carries the Z member 107 having the interrupted shearing blades 108, which are carried upon the downwardly projecting member 109 (see FIG. 2).

These blades will form the through shear cuts M, N and P, as indicated in FIGS. 8, 10 and 11.

Intermediate of the block are mounted the two block dies 110 which form the window shears T. These window shears T cooperate with the base block 111 having corresponding window shears openings 112.

The final shearing blade 113, forming part of the mechanism U, will cut off the photographic mounts one after another as indicated at 114, 115 and 116 and discharge them down a slide 117.

The blade is mounted upon a L member 118 held in position between the top flange 119 and the adjusting screw 120.

Referring to FIG. 4, it will be noted that the interrupted shearing blade 108, which is mounted in position by the screws 122, has three separated teeth 121, which will operate in conjunction with the openings 123 in the base plate 124 to enable a through shear cut, as indicated in FIG. 11 at N, with one side of the shear cut and corresponding bevel of the shear teeth 121 being fixed upwardly, as indicated at 125, which will act as a stop, as indicated at the edge L of the transparency in FIG. 10.

This entire apparatus will operate at a high speed to centrally score, partially shear and then interruptedly transverse, shear and finally die-cut the windows E and F and separate the mounts of FIG. 8 one after another.

While the apparatus herein described is a preferred form of the invention, it should be understood that the same may be altered in details and in relative arrangement of parts within the scope of the appended claims.

Having now particularly described and ascertained the nature of the invention, and in what manner the same is to be performed, what is claimed is:

1. A mechanism for forming foldable two-section photographic mounts having a central fold line consisting of a line of closely spaced through perforation and centrally located matching rectangular window openings in each section said mount having an inside face and an outside face and transversely extending obliquely upturned parallel cut featheredges extending toward each other from the inside face to serve as parallel guideways for a transparency, comprising in succession operating upon a longitudinally moving strip of paper stock means to form a central score line, an oblique longitudinal section to cut partially through and cast up an oblique longitudinal section to form and serve as a locator edge and transverse vertical interrupted shearing means to form interrupted shear portions to act as locators of the other edges of the transparency, window shear members to shear out matched windows on opposite sides of the two-section mount and a final shear for cutting the photographic mounts one from the other.

2. A method of continuously making folding mounts for rectangular transparencies from strip cardpaper stock, said mounts having a rectangular outline and being centrally divided by a central fold line, having a plurality of closely spaced through scorings into two window opening sections from which matching rectangular window openings with rounded covers having slightly lesser width and height than the transparencies have been die-cut, said mounts having an inside face and an outside face and the inside face of one of said mount sections having elevated portions along side the windows to center and guide the transparency in correct position in respect to the window, said method including intermittently and longitudinally feeding the strip stock, centrally linearly and axially applying spacing scorings by subjecting it to action of two sharp edges extending transversely of each section and pressed together on opposite sides thereof, throwing up said elevated portions by shearing the body of the stock, die cutting said window openings on each side of the scored central fold line and then transversely cutting the strip to separate the window mounts as separate units, said throwing up consisting of obliquely shearing partly into the inside face of one of said mount sections to form thrown up obliquely outwardly and inwardly extending featheredges spaced on each side and parallel to the sides of window openings and applying a series of spaced direct through shear cuts between said featheredges at one side of the window only leaving the other side of the window free to receive a transparency which is slid into position.

3. A machine for continuously making folding mounts for rectangular transparencies from strip cardpaper stock, said mounts having a rectangular outline and being centrally divided by a central fold line, having a plurality of closely spaced through scorings into two window opening sections from which matching rectangular window openings with rounded covers having slightly lesser width and height than the transparencies have been die-cut, said mounts having an inside face and an outside face and the inside face of one of said mount sections having elevated portions along side the windows to center and guide the transparency in correct position in respect to
the window, said machine of the type in which there is fed therethrough the strip paper stock, including a central scoring means having a turning ridged roller on one side with the ridges and axis extending transversely to the direction of feed on one side and with a sharp rotary edge cutter on the other side to form a series of spaced perforations extending entirely through the center of the stripped stock, means for throwing up elevated portions from the inside face of one of said sections on each side of said window, die cutters for cutting out said window openings on each side of the perforated fold line and transverse cutters to cut the strip to separate the window mounts as separate units.

4. The machine of claim 3, said means for throwing up consisting of obliquely positioned inclined bevelled edge cutting rolls pressed down into the inside face of the sections along one side of the scored fold line said rotary cutter being convergent opposite to the direction of the feed and divergent in the direction of the feed.

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