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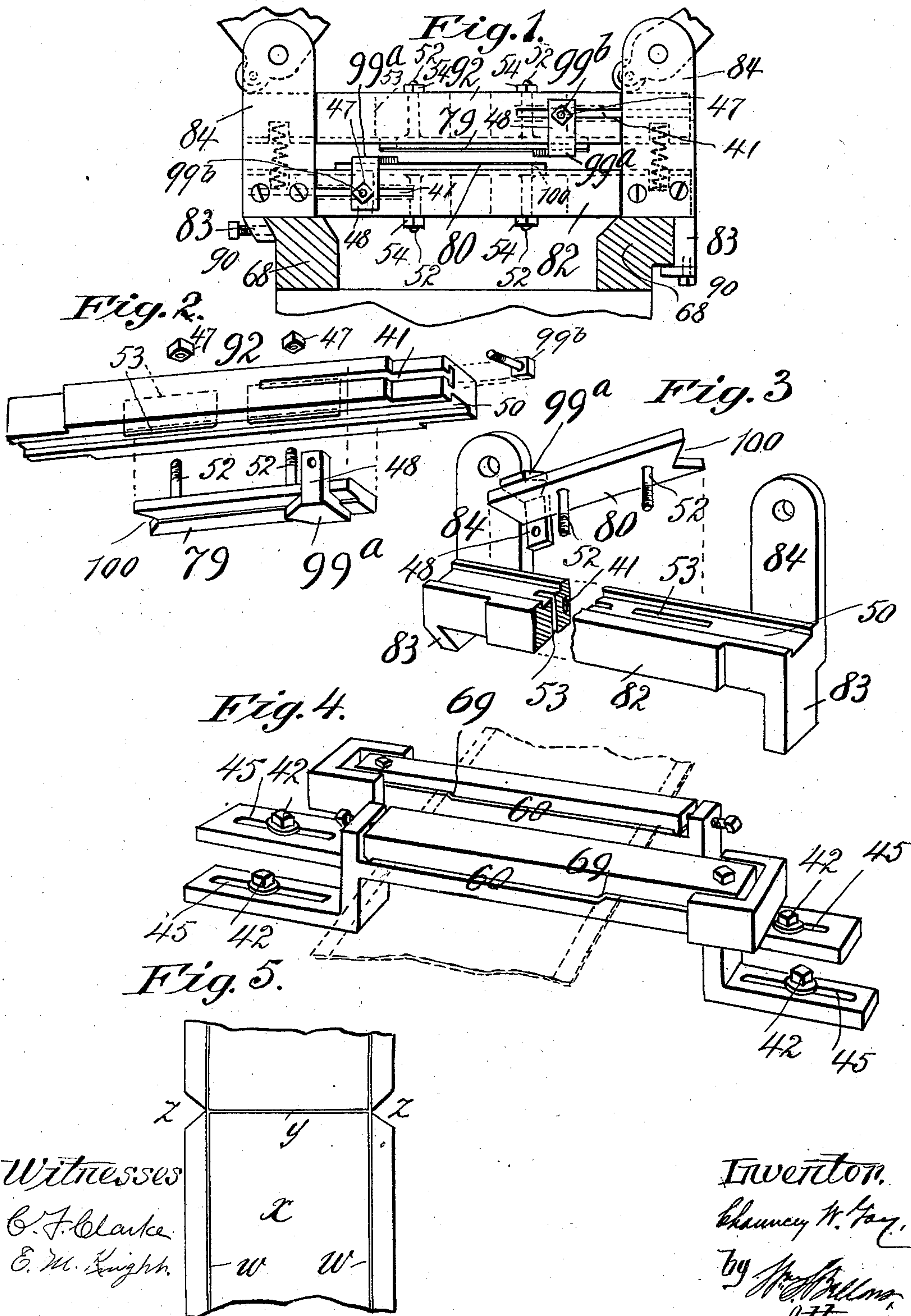
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C. W. GAY.

CREASING OR SCORING AND MITERING MECHANISM FOR PAPER BOX MACHINERY.

(Application filed Oct. 18, 1900.)

(No Model.)



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CREASING OR SCORING AND MITERING MECHANISM FOR PAPER-BOX MACHINERY.

SPECIFICATION forming part of Letters Patent No. 702,365, dated June 10, 1902.

Application filed October 18, 1900. Serial No. 33,471. (No model.)

To all whom it may concern:

Be it known that I, CHAUNCEY W. GAY, a citizen of the United States of America, and a resident of West Springfield, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Creasing or Scoring and Mitering Mechanism for Paper - Box Machinery, of which the following is a full, clear, and exact description.

In Letters Patent of the United States issued to me March 27, 1900, No. 645,950, is described mechanism for imparting both longitudinally and transversely to a strip of cardboard or other suitable stock for the production of a paper-box blank step-like creases or scorings, and also for cutting out at one margin of the strip at the line of the transverse step-like crease a triangular or other shaped portion of the "stock" or "mitering," as termed, to make provision for the proper construction of the box at the junction of the bottom with the sides. In such patented machine the strip is first drawn between the device for imparting the step-shaped longitudinal crease, which consists of separated stationary die - walls having a space between them approximately as wide as the thickness of the stock and as long as or longer than the width of the stock, which space is of step form, the step or offset thereof being near one edge of the stock, and in the use of said machine the strip is next drawn through and left momentarily subject to the action of a series of the transverse creasing and scoring and mitering die devices, each set of which series comprises upper and lower die members having transversely-arranged dies or blades of step form, and the one thereof being movable toward and away from the other, and each set of the series of die devices having at the end thereof corresponding to the edge of the stock or strip a male mitering-die provided to the one member and a female mitering-die provided to the other or coacting die member of such set. The devices of the said machine are suitable and adequate for the scoring and mitering of a blank such as required for the description of the box illustrated in said patent, it being possible only, however, to perform by said appliances the mitering at but one edge of the blank and to longitudinally

score or crease along and adjacent to but one edge.

The object of the present invention is to render the longitudinal scoring device capable of scoring in at least two lines parallel with the edges of the blank, and, moreover, to have the lines of scoring as occasion may require at any suitable distance from each other, and, furthermore, to render the cross-creasing and mitering or marginally-operating dies not only capable of simultaneously transversely creasing and mitering or otherwise preparing the blank at the opposite edges of the blank at the ends of the lines of transverse creasing, but adjustable, so that the marginally-operating dies will perform their operations at variably-distant points of separation to accord with strips of the cardboard-stock, which may be wider or narrower according to the widths of the blanks to be produced with miterings, incisions, or recesses at the opposite edges thereof.

Another object of the invention is to so construct the combined transverse scoring and mitering or marginally-operating devices that the end portion of each transverse creasing-die member of the set constitutes also one member of the set of marginally-operating dies.

The invention consists in the improved longitudinal adjustable creasing devices, in the combined transverse creasing and double-mitering or marginally-operating devices, and in the combination of the one with the other, all substantially as hereinafter described, and set forth in the claims.

In the drawings, Figure 1 is a cross-sectional view of the supporting-framing of the portion of a paper - blank - making machine such as illustrated in the aforementioned patent and an elevation of one of the sets of the combined transverse creasing or scoring and corner cutting or mitering mechanisms, of which in the said machine it is understood there are several adjustably arranged nearer to or farther from each other, as the size of the blank and the spacing of the cross-scoring requires. Fig. 2 is a perspective view of the upper supporting-bar or die-carrier for the one male mitering-die and one member of the step - formed creasing - die member or blade, one end of which constitutes the fe-

male die for the mitering to be performed at such end, said die members being shown as separated from the carrier therefor. Fig. 3 is a similar view in perspective, showing the stationary die-support and the other creasing and mitering dies as separated from such support. Fig. 4 is a perspective view of the compound and adjustable mechanism for scoring on two longitudinal lines, which lines may be more or less distant from each other as required. Fig. 5 is a plan view of the portion of a blank, showing the two lines of longitudinal scoring or creasing, a line of cross scoring or creasing, and miterings at the edges of the blank coincident with the ends of the cross-crease.

68 68 represent opposite side rails or suitably-substantial members of the horizontal framing on which are supported the longitudinal-scoring-die mechanism and the series of combined transverse scorers and miterers, but one set thereof being here shown, as the duplicates thereof are deemed unnecessary of illustration.

Each transverse scorer comprises stationary and movable dies, the said parts which come into proximity being comprised in hardened-steel plates or blades 79 and 80.

The base of the scoring attachment or device comprises transverse bar 82, which forms a part of a casting having the depending clamp-lugs 83 83 to engage the support-bars 68 68 at the opposite sides of the machine-frame and the upstanding pairs of cheeks 84 84, between which the bar or die carrier 92 for the movable creasing and mitering die members is arranged to move to close against springs 51 and to open with the reaction of said springs. Each base or die support 82 has, in addition to the engagement-lugs 83, the confining or clamping screws or bolts 90, whereby the position of the set of dies along the horizontal machine-frame may be variably adjustable as required.

The upper side of the base or support 82 receives adjustably in and along the groove or trough 50 thereof the flat hardened-steel plate 80, which in cross-section is of a step form to match with and correspond to the face of the other and coacting die-plate 79, which is carried by the movable die-carrier 92, and which step formation for the plate 79 is clearly shown in the perspective view, Fig. 2. The said die-plate 79 is similarly fitted in a groove 50 in the under side of die-carrier 92.

Each die-plate has the rigidly-affixed screw rods or studs 52 52, which play in the elongated slots 53 in the die carriers or supports, clamping-nuts 54 being provided at the ends of the said threaded studs which protrude beyond the opposite surfaces of the respective carriers.

The mitering or corner-cutting dies 99^a are duplicated and arranged toward opposite ends of the supporting-bars or die-carriers 82 and 92, being formed angular or L-shaped, so that the dies proper rest the one over and

the other under the scoring-plates 80 and 79, while the vertical extension 48 lies against the vertical face of the respective carrier-bar and is held in its adjustable confinement by the clamping-nut 47, which screws on the threaded end of the bolt 99^b, the head of which bolt has a sliding engagement in the T-shaped slot 47 of the carrier-bar, while its shank protrudes laterally through the slot and through and beyond a perforation in the angular member 48 of the mitering-die.

It will be perceived that the end of each scoring or creasing die-plate 79 and 80 opposite that which is overlaid by the triangular mitering-die 99^a has a V-shaped cut 100, corresponding to the V shape of the mitering-die overlying the non-recessed end of the respectively-opposite creasing-die. It will also be perceived that the creasing-dies and the mitering-dies are independently adjustable and have therefor individual confining means, as described, and so, if it is desired to cross crease or score and miter a strip having a width less than the distance between the vertical members 48 48 of the L-shaped mitering-dies when in their relations shown in Fig. 1 the said mitering-dies are adjusted toward each other to conform to the width of the narrow blank to be mitered, and the scoring-plates are then both correspondingly adjusted, so that the end of the lower plate, which has the V-shaped cut therein, will be brought to a matching position under the upper mitering-die, and so that the end of the upper plate, which has also the V-shaped cut therein, will assume a corresponding relation to the other mitering-die carrier on the lower support 82.

It is to be understood that both the cross-scoring plates or blades may be adjusted in relation to each other independently of the mitering-dies, and hence it is easy in preparing the machine to work upon any width of stock to first set the mitering - dies at the proper distance apart and then correspondingly adjust the scoring-plates to match the mitering-dies. In the operation one mitering-die cuts upwardly and the other downwardly.

As shown in Fig. 4, the means for imparting the longitudinal scorings to the strip consist in providing duplicated longitudinal scoring-dies 60, each with the opening there-through of a step shape, the step being indicated at 69 and the thickness or width of the opening being approximately the same as the thickness of the cardboard being worked, each of the said separate and duplicated longitudinal scoring devices having slotted base-feet, as indicated at 45, receiving the clamping-bolts 42, whereby the positions of the said dies may be changed on the supporting part of the frame therefor, so that the jogs or steps 69 may be farther from or nearer to each other to impart the crease to the stock being drawn through both of said dies on lines which are at the proper distance apart, as may be required for any given work.

In Fig. 5, x represents the portion of a cardboard blank, y indicating a transverse score or crease, $w w$ indicating longitudinal scores or creases, and $z z$ indicating the miterings or angular cut-out portions for the corners of the boxes.

It is to be understood that the relative position of the cross creasing or scoring dies or series thereof and the double longitudinal creasing-dies may be substantially the same as shown in the aforesaid patent, the longitudinal creasing-dies being in advance, as the paper is fed, of the cross creasing and mitering dies, and substantially the same or any suitable stock-feeding mechanism is to be used, and also the same means for operating the movable die-carrier 92 for each of the series of such sets of dies as described in said patent may advantageously be employed.

It is almost needless to say that in lieu of specifically V-shaped dies for making miter-cuts dies for operating at the edge or edges of the blank, which are at right angles to the cross-creases, may be employed.

Having now described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a paper-box-blank-making machine, the combination with cross-scoring devices comprising plates or blades arranged for coaction as described, of a die for marginally operating on the blank, which is adjustable crosswise of the machine, and having its fellow die formed by a part of one of the cross-scoring blades.

2. In a paper-box-blank-making machine, a pair of coacting scoring plates or blades and supports on which they are endwise adjustable, opposite ends of the blades being V cuts, of two dies for marginally operating on the blank, also adjustable on said supports, independently of said plates, and in the line of the length of the latter, all arranged to have matching positions to transversely score and marginally miter blanks of different widths, substantially as described.

3. In a blank-making mechanism, the combination with the die-carriers 82, 92, each having thereon endwise-adjustable scoring-plates, and opposite ends thereof constituting marginally-operating die members; and means for confining said plates in their adjustments; of the die members 99^a overlying opposite end portions of the scoring-plates, and each said member 99^a coacting with a die-forming end of the relatively opposite scoring-plate, and having an angular extension overlying the face of its respective die-carrier; and having means engaged therewith for confining it

in its adjusted position relatively to the length of the die-carrier.

4. The one die-carrier having a slot; and a die plate or blade, having its end formed V shape, provided with a threaded stud or bolt playing in and along said slot, and having a confining-nut therefor; combined with a second die support or carrier having a slot; and a mitering-die provided with a threaded stud playing in and along said slot, and having a confining-nut therefor.

5. The combination with the die supports or carriers having the longitudinal slots 53 and 41; the creasing-die plates, or blades, 79 and 80, having their opposite ends constructed with V-shaped recesses 100, and having the threaded studs extending through the slots 53, and having the confining-nuts 47; of the mitering-dies 99^a, having the angular extensions 48, arranged to overlie opposite end portions of the die-plates 79, 80; screw studs or bolts, playing in and through the slots 47, and engaging the die extensions, and confining-nuts 99^b therefor, substantially as described and shown.

6. In a paper-box-blank-making machine, the duplicated devices for scoring the strip longitudinally each consisting of separated stationary die-walls having the space between each set stepped, and the step in the one device being opposite the location of the step in the other device.

7. In a paper-box machine, the duplicated devices for scoring the strip longitudinally each consisting of separate stationary die-walls having the space between each set stepped, the step in the one device being opposite the location of the step in the other device, and each device being bodily adjustable crosswise of the line of feed of the stock there-through, substantially as described.

8. In a paper-box-blank-making machine, cross-scoring devices comprising plates or blades arranged for coaction as described, of a mitering-die which is adjustable crosswise of the machine, and having its fellow die formed as a part of one of the cross-scoring blades, combined with the pair of longitudinal scorers each comprising separated die-walls having the space between them stepped, the step of the one being opposite that of the other, and each device being bodily adjustable crosswise, for the purpose set forth.

Signed by me at Springfield, Massachusetts.
CHAUNCEY W. GAY.

Witnesses:

WM. S. BELLOWS,
E. M. KNIGHT.