T. H. CLINGER.

BOX BOARD CUTTING AND SCORING MECHANISM.

APPLICATION FILED NOV. 10, 1911.

1,022,722. Patented Apr. 9, 1912.

FIG. 1.

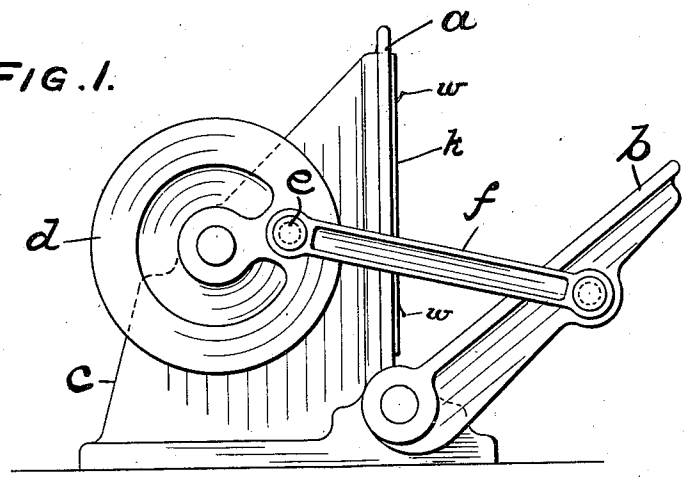


FIG. 2.

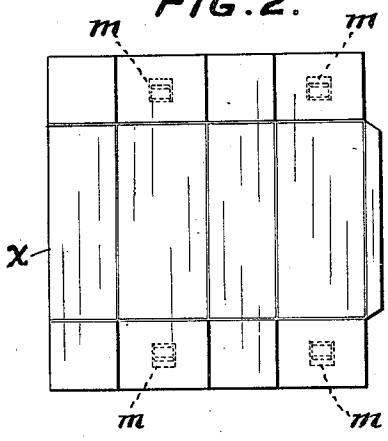


FIG. 3.

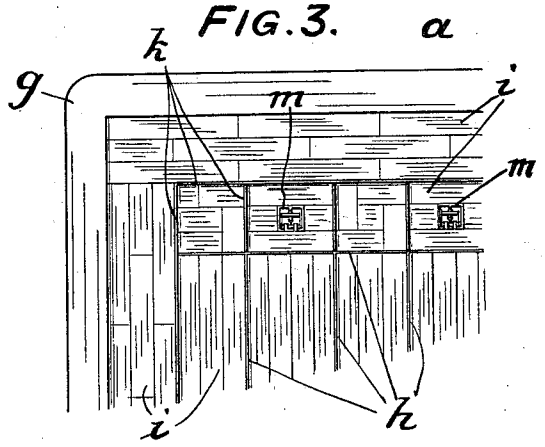


FIG. 4.

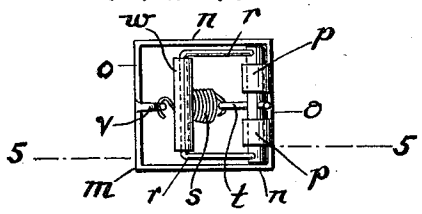
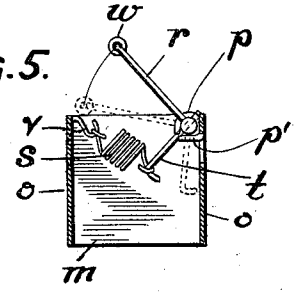


FIG. 5.



WITNESSES:

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BOX-BOARD CUTTING AND SCORING MECHANISM.

1,022,722. Specification of Letters Patent. Patented Apr. 9, 1912.

Application filed November 10, 1911. Serial No. 659,499.

To all whom it may concern:

Be it known that I, THOMAS HARVEY CLINGER, a citizen of the United States, residing at Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Box-Board Cutting and Scoring Mechanism, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to mechanism for scoring and cutting blanks for pasteboard boxes and particularly to that type thereof consisting of a built-up form holding the scoring blades and cutting knives and a reciprocating platen which presses the cardboard sheet against the form. In mechanism of this type, the form comprises a frame within which is inserted the cutting knives and scoring blades, which are held in their proper relative positions by means of a multiplicity of spacing blocks or "furniture." In the reciprocation of the platen against this form, the sheet of cardboard is pressed against the form, causing the scoring blades to indent the sheet to form lines along which the board is subsequently folded, and causing the cutting knives to cut the sheet along other lines. The adhesion between the blades and knives and the sheet would be such that the latter would adhere to the form when the platen is retracted (thereby rendering difficult the removal of the sheet from the form before the introduction of a fresh sheet) if no means were provided to automatically release the sheet. Such means have heretofore been provided, but have operated imperfectly and unsatisfactorily. For example, it has been customary to insert a considerable number of pieces of cork between, and projecting somewhat above, the spacers at various points throughout the form. This involves quite an expenditure of time by the "pressman." At the best, the release of the sheets by the elastic pressure of the cork pieces is uncertain, and it is frequently necessary to release the adhering sheets from the knives by hand, and not infrequently the hand or arm of the operator has been crushed in the attempt to remove the sheet in the short space of time occupied by the reciprocation of the platen from and toward the form.

The specific object of my invention is to provide means for automatically releasing the sheet from the form so constructed, first, that the form may be set up rapidly and will be ready for immediate use as soon as it reaches the pressman from the compositor; and second, that it will effect the release of the sheet from the form with absolute certainty.

The invention consists of the means hereinafter described, and illustrated in the accompanying drawings, in which—

Figure 1 is a side-elevation of one form of scoring and cutting mechanism to which my invention may be applied; Fig. 2 is a plan view of a blank showing the relative location of cutting knives and scoring blades and the automatic releasing devices; Fig. 3 is a plan view of part of the form as finally set up; Fig. 4 is a detail view, in plan, of one of the releasing devices; Fig. 5 is a vertical sectional view on line 5—5 Fig. 4.

a is the form, which in Fig. 1 is shown as secured in a vertical position upon the base *c*.

b is the reciprocating platen, which is shown as mounted on an axis so as to be capable of oscillating toward and from the form.

d is a fly-wheel carrying a crank-pin *e* connected by means of a rod *f* with the platen *b*, whereby the platen is oscillated toward and from the form.

g is the frame of the form *a*. Within this frame is inserted on edge the scoring blades *h* and cutting knives *k*, the same being held in their desired positions by means of a multitude of spacing blocks *i*.

m represent the box-board releasing devices which are located, preferably, in such position in the form that they will engage the box-board sheets near the four corners of the latter. These releasing devices also perform the function of spacers.

The construction of the releasing devices *m* is preferably as follows: *n n* represent the side walls and *o o* the end walls. One end wall is so stamped out as to leave projections *p* extending above its upper edge, which projections are bent around to form a part of the bearing for the axis of a yoke shaped lever *r*. The same end wall is also stamped out below its upper edge to form projections *p'*, which are also bent around to form the remainder of the bearing for the axis of the lever *r*. Extending through

the axle of lever r is an arm t the lower end of which is bent to form a hook to which is attached one end of a spring s. The other end of the spring is attached to a hook v projecting from the upper edge of the opposite end wall. The upper end of the arm t, which projects slightly beyond the axle of lever r, limits the extent to which the lever r is thrown out by the spring s. The cross-arm at the outer end of the lever r carries a freely revoluble sleeve or roller w.

The operation is as follows: When the platen recedes from the form a sheet of cardboard is deposited upon the slanting face thereof. When the platen moves against the form, the cardboard blank is pressed against the form, causing the knives k to cut the blank x along certain predetermined lines and the scoring blades h to score the blank along other predetermined lines, as illustrated in Fig. 2. In the latter part of the platen's movement toward the form, the levers r of the different releasing devices m are depressed against the action of the springs s. As the platen recedes, the springs s powerfully move out the levers r, thereby releasing the cut and scored blank from the knives and causing the blank to recede with the platen, whereupon the blank, which then lies loose upon the platen, may be readily removed and another sheet substituted.

Having now fully described my invention, what I claim and desire to protect by Letters Patent is:

1. In mechanism for cutting or scoring boxboard blanks, the combination with a platen, of a form comprising a frame, knives on edge within the frame, a multitude of spacing devices within the frame for positioning the knives; and releasing devices also within the frame and located between, and positioned by, certain of the spacing devices, each releasing device comprising a pivoted lever, a spring, below the edges of said knives, connected with said lever and adapted to normally project said lever substantially above the edges of said knives, whereby the lever is depressed against the action of its spring in the forward movement of the platen to permit the knives to act upon the blank and follows up the platen in its receding movement to release the blank from the knives.

2. In mechanism for cutting or scoring boxboard blanks, the combination with a platen, of a form comprising a frame, knives on edge within the frame, a multitude of spacing devices within the frame for positioning the knives; and releasing devices also within the frame each comprising end walls, a lever pivoted to one end wall, an arm secured to the pivot of the lever, and a spring connecting said arm with the other end wall.

3. In mechanism for cutting or scoring boxboard blanks, the combination with a platen, of a form comprising a frame, knives on edge within the frame and spacing devices within the frame for positioning the knives; certain of said spacing devices each comprising side and end walls, a two-armed lever, a bearing for the lever at the upper edge of one end wall, a hook carried by the other end wall, an arm secured to the pivot of the lever and adapted to limit the upward movement of the lever, a spring connecting said arm and hook, and a freely revoluble roller at the outer end of the lever.

In testimony of which invention, I have hereunto set my hand, at Philadelphia, on this 6th day of November, 1911.

THOMAS HARVEY CLINGER.

Witnesses:

M. M. HAMILTON,

A. J. MAGUIRE.