No. 613,397. Patented Nov. 1, 1898.

R. SANSON, JR.

CARDBOARD CUTTING AND INDENTING DEVICE.

(Application filed Dec. 28, 1897.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

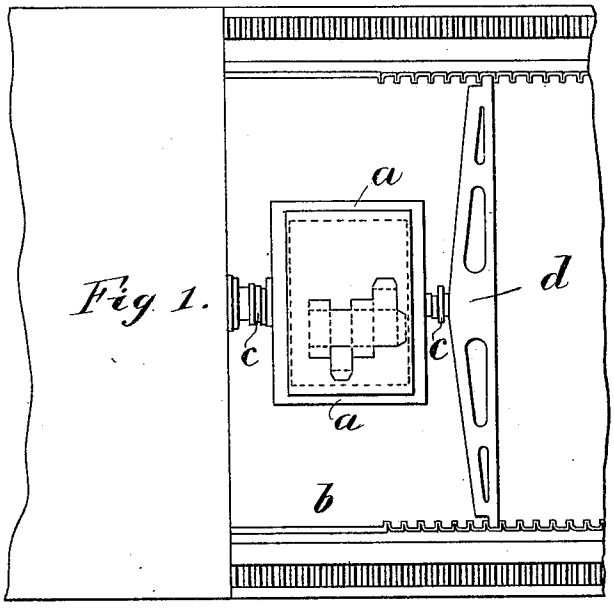


Fig. 4.

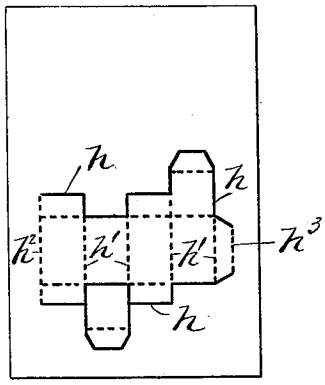


Fig. 5.

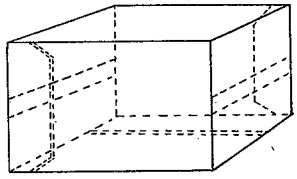


Fig. 6.

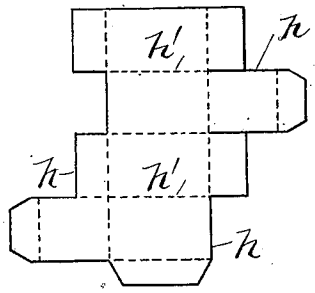
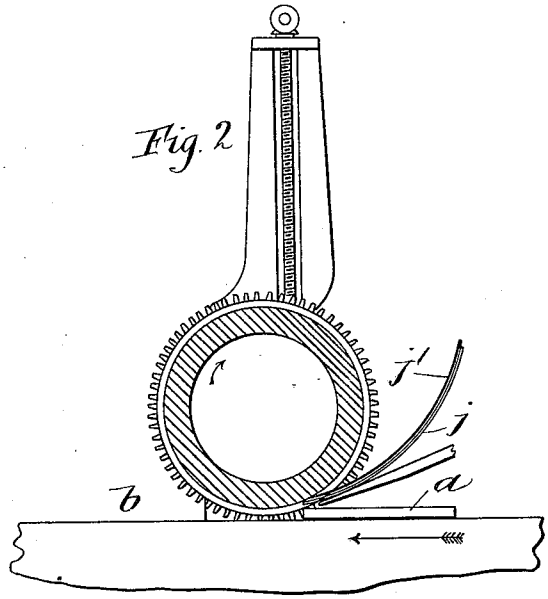


Fig. 2



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R. SANSON, JR.

CARDBOARD CUTTING AND INDENTING DEVICE.

(Application filed Dec. 28, 1897.)

(No Model.) 2 Sheets—Sheet 2.

Fig. 3.

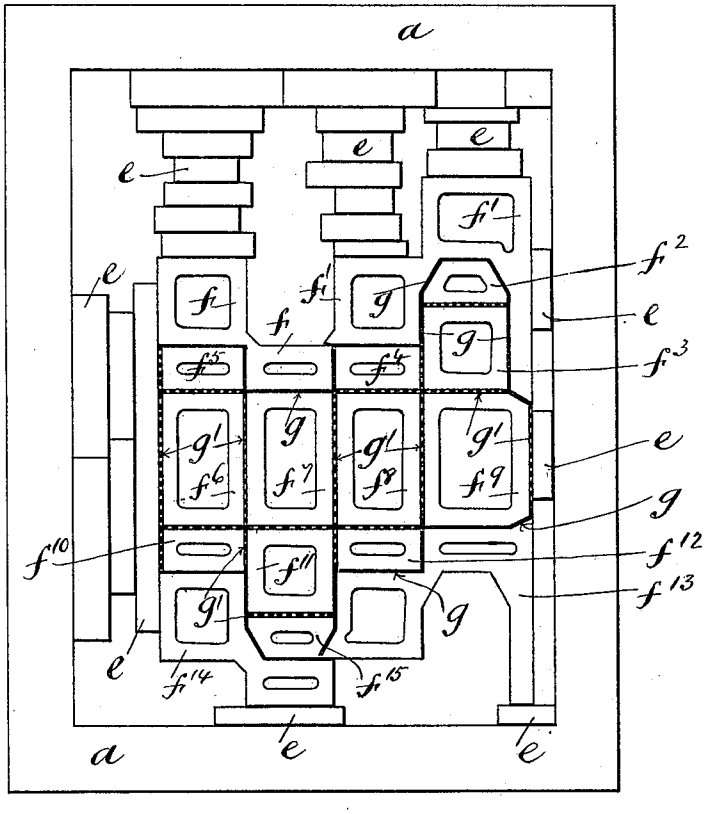

Fig. 7.

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UNITED STATES PATENT OFFICE.

ROBERT SANSON, JR., OF EDINBURGH, SCOTLAND.

CARDBOARD CUTTING AND INDENTING DEVICE.

SPECIFICATION forming part of Letters Patent No. 613,397, dated November 1, 1898.

Application filed December 28, 1897. Serial No. 663,846. (No model.)

To all whom it may concern:

Be it known that I, ROBERT SANSON, Jr., printer, a subject of the Queen of Great Britain, and a resident of the city of Edinburgh, Scotland, have invented certain new and useful improvements in cutting out and grooving or indenting cardboard, millboard, paper, thin wood, and other materials from which to form boxes and other articles, (patented in Great Britain, No. 7,259, March 20, 1897,) of which the following is a specification.

This invention relates to an improved mode of cutting out and grooving or indenting cardboard, millboard, paper, thin wood, and other materials from which to form boxes and other articles.

In this invention the cutting and grooving or indenting of the material is performed at one operation and in a novel manner.

In carrying out my invention for, say, making cardboard blanks for fancy boxes I set up in a suitable frame a number of cutting-blades, which may be straight or curved, according to the shape of the blank to be cut. Arranged also in the frame, if it is also desired to groove the cardboard, are grooving knives or strips. These grooving knives or strips are set up in the frame at a slightly lower level, corresponding to the depth of the grooves desired, than that of the cutting-blades.

Preferably, instead of making an actual groove in the material I make indentations or partial perforations at the parts of the material to be bent or folded by means of serrated or toothed knives or strips, which are arranged at a lower level than that of the cutting-blades.

The frame, with its knives properly fixed therein, is placed upon a traveling table of any well-known and suitable construction and the cardboard or other material from which the blank is to be cut is properly set on top of the frame. The table is then caused to travel underneath a pressure roller or cylinder of any well-known and suitable construction and the cardboard is subjected to a pressure sufficiently heavy to cause the knives to cut and (or) indent the material in the proper manner. Mechanism of any well-known construction may be provided for catching the cardboard sheet after being cut and delivering it onto a table or other place. Ordinary grip-and-fly mechanism may be used for this purpose.

Instead of using a traveling table and a stationary pressure-roller, a stationary table and traveling pressure-roller may be used.

In some cases it may be desirable to arrange the frame with its knives on a stationary table and use a vertically-moving stamp head or platen to give the proper pressure when cutting the material.

The cutting-blades and also the indenting or grooving blades can at any time be taken out of the frame and rearranged therein so as to cut a different pattern-blank.

The cutting and grooving blades may be made of any desired shape or shapes to suit the different classes of work.

Sets of knives of different sizes and shapes may be kept in stock, and when desired suitable knives from the sets may be picked out and arranged in the frame so as to cut any desired shape of blank.

The knives when properly set up in a frame may be kept permanently in position by filling up the spaces around the knives with lead or other metal or material, so as to make the whole frame with the knives therein one solid casting or block.

In order to cause the cardboard or other material to fly or lift up off the knives when cut, india-rubber, cork, or other resilient cushions may be arranged in the spaces between the knives.

Uncut pieces are preferably left at the corners or slides of the blank to prevent it falling out of the sheet when cut.

It is possible with this invention to cut or indent or cut and indent longitudinally and transversely at the one operation.

In order that my said invention may be properly understood, I have hereunto appended two explanatory sheets of drawings, which show, by way of example, a convenient mode of carrying my invention into effect or practice.

Referring to the drawings, Figure 1 is a partial plan view of the traveling carriage of an ordinary printing-machine. Fig. 2 is a partly-sectioned side view of the same. Fig. 3 is a plan view of the form or frame with the cutting and grooving or indenting knives fitted

therein. Fig. 4 is a view of a sheet of paper A as it appears after being cut and grooved. Fig. 5 is a perspective view of a cardboard box, and Fig. 6 is a view of a blank. Fig. 7 is a side view of a portion of a cutting-knife and of an indenting-knife.

The frame or form a is held in place on the bed of the carriage b by means of furniture c and the usual printer's sidestick d. Secured firmly in place within the form a by means of furniture e are a number of separate blocks or pieces f f' f^2 f^3 f^4 f^5 f^6 f^7 f^8 f^9 f^{10} f^{11} f^{12} f^{13} f^{14} f^{15}, preferably made of cast metal and shaped so as to suit the pattern of blank to be cut from the cardboard or other sheet. The knives g for cutting and the knives g' for indenting or grooving are fitted between the blocks or pieces, as shown at Fig. 3. The cutting-knives are preferably made of thin steel or brass strips having sharp beveled cutting edges, while the grooving or indenting knives are preferably made from steel or brass strips having sharp serrated or toothed edges. The knives rest upon the bed of the carriage in a vertical position and are held in place by the blocks f aforesaid.

In the cardboard sheet shown at Fig. 4 the heavy black lines h indicate the parts cut through, while the dotted lines h' indicate the parts merely indented or grooved. Either of the sides h^2 h^3 may be, as shown, merely grooved or indented for the purpose of retaining the blank in position in the sheet, so that it can be flied easily. These parts h^2 h^3 can be subsequently cut by a guillotine-knife.

In order that they may only partially cut through the cardboard at the places where it is to be merely grooved, the grooving-knives are made or set a little lower than the other knives. (See Fig. 7.)

The sheets from which the blanks are to be cut are passed into the machine in the manner shown at Fig. 2, and when the carriage is traveled in the direction of the arrow the roller i, owing to its teeth meshing with the rack-teeth of the carriage, is revolved in the direction of the arrow. The combined movement of the carriage and roller presses the sheet j upon the knives in the form or frame and as a consequence cuts and indents it according to the pattern desired.

j' is a backing-sheet.

The blank when cut is of the shape shown at Fig. 6 and when folded up makes a box such as shown at Fig. 5.

Any well-known and suitable arrangement of traveling table or carriage and stationary revolving roller mechanism or of stationary table and revolving and traveling roller mechanism can be used.

The blocks and the knives can be so shaped and arranged as to cut and (or) indent paper or cardboard sheets to any desired pattern of blank.

The blades have preferably a big bevel on one side and a slight bevel on the other.

A backing-sheet may be used when cutting out the blank, or the cylinder may be padded with paper, lead, or other soft material.

It will be seen that when the blank is cut it is not (or may not be) entirely separated from the sheet, two sides h^2 h^3 being grooved or indented, but not cut. These uncut sides hold the blank to the sheet for further treatment or for convenience of handling. At the proper time sides h^2 h^3 can be cut by any suitable apparatus, as a guillotine-knife.

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

The combination in mechanism for cutting and indenting cardboard to form blanks of a frame, cutting-knives arranged therein to cut the blank from said sheet except on two opposite sides, and toothed indenting-knives in position to indent but not separate said opposite sides simultaneously with the cutting, whereby the blank is left attached to the sheet on opposite sides, as set forth.

Signed at Glasgow, Scotland, this 11th day of December, A. D. 1897.

ROBERT SANSON, JR.

Witnesses:
H. D. FITZPATRICK,
WILLIAM GALL.