

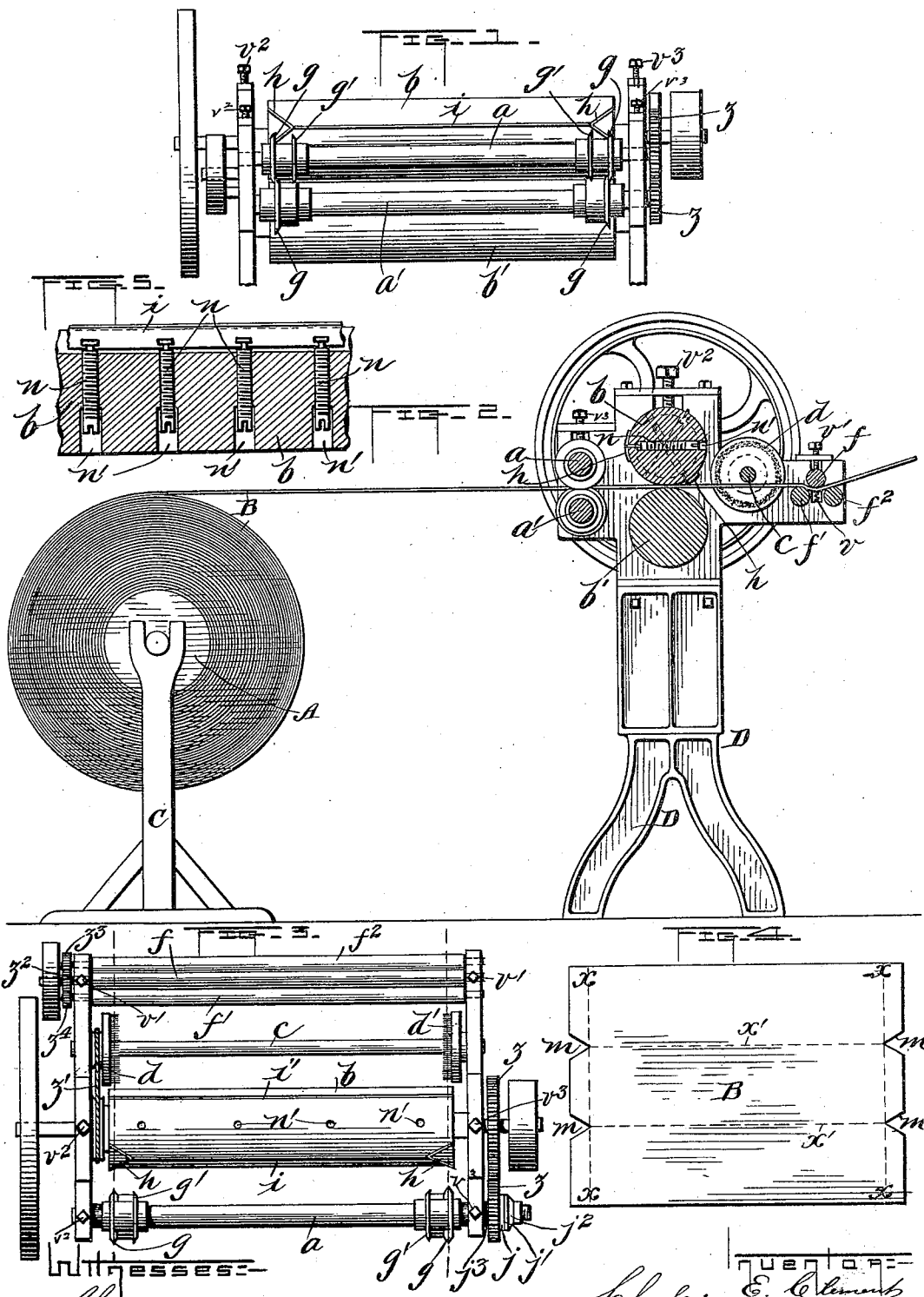
(No Model.)

C. E. CLEMENT.

MACHINE FOR MAKING BLANKS FOR PAPER BOXES.

No. 512,278.

Patented Jan. 9, 1894.



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UNITED STATES PATENT OFFICE.

CHARLES E. CLEMENT, OF NASHUA, NEW HAMPSHIRE, ASSIGNOR OF TWO-THIRDS TO WILLIAM H. CAMPBELL AND FRANK E. DAVIS, OF SAME PLACE.

MACHINE FOR MAKING BLANKS FOR PAPER BOXES.

SPECIFICATION forming part of Letters Patent No. 512,278, dated January 9, 1894.

Application filed August 15, 1892. Serial No. 443,156. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. CLEMENT, a citizen of the United States, residing at Nashua, in the county of Hillsborough and State of New Hampshire, have invented certain new and useful Improvements in Machines for Making Blanks for Paper Boxes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to machines for scoring and notching strawboard-material, or the like, for blanks for making boxes as it passes from rolls; and it consists in a combination of a pair of trimming and scoring rolls, each roll carrying trimming blades, and one roll a scoring blade, and a pair of rolls, one of them carrying notching cutters, scoring blades and a dividing cutter.

It also consists, in combination with the two pairs of rolls, of a shaft carrying brushes or equivalent means for insuring the removal of V-shaped pieces which are cut out of the straw board to form the spaced notches in its edges.

It also consists in a novel construction and arrangement of the scoring and dividing cutters in the roll carrying the notching cutters, whereby the scoring and dividing cutters can be adjusted as required, the former to score at different depths, and the latter to cut through different thicknesses of straw board.

It also consists in certain other novel constructions, combinations and arrangements of parts, as will be hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a front elevation of my improved machine. Fig. 2 is a vertical longitudinal section of the same, taken at right angles to the rolls thereof. Fig. 3 is a plan view of the machine, and Fig. 4 is a diagram showing a separated blank, trimmed, scored and notched, ready to be formed into a paper box. Fig. 5 is a detail view showing the manner of securing and adjusting the blades *i*.

In the drawings, A represents a roller upon which the fibrous material, B, to be trimmed, scored and notched, and divided into blanks,

is wound at the mill, and from which it is fed through my improved machine.

The material employed may be any kind of board, but, preferably, I adopt straw board, lined or faced with white paper, and its width is about one half inch greater than the blanks which are to be formed from it. This roll has the bearings of its revolving shaft placed in standards C arranged in rear of the machine.

D represents standards for supporting trimming and scoring rolls *a a'*, a scoring and notching roller *b*, a supporting roller *b'*, a shaft *c*, carrying brushes *d d'*; rollers *f f' f''*, and the necessary gearing for operating the parts. The trimming and scoring rolls *a a'*, are provided with circular trimming cutters *g*; and the roller *a* is also provided with scoring cutters *g'*, which score or crease the straw board longitudinally in the direction of its movement, as indicated by the dotted lines *x, x*; the scoring and notching roller *b* is provided on its periphery, at its ends, with spaced V-shaped cutters *h*, which cut V-shaped pieces out of the straw board and thereby form spaced V-shaped notches *m* in both edges of the straw board, as indicated in Fig. 4.

Longitudinally of the roll *b*, narrow scoring and dividing blades *i i'* are provided; the scoring blades *i*, extending from the apexes of one set of V-cutters at one end of the roll to the apexes of another set of V-cutters at the other end of the roll; and the dividing blade *i'*, extending from end to end of the roll. These blades are set in radial grooves of the roll, and their shanks or blunt edges abut against and are connected with the heads of the set screws *n*, which are inserted through holes *n'* of the roll and suitably connected to the cutters. By means of the blades *i*, scores are cut transversely of the straw board as indicated at *x'* in Fig. 4; and by means of the dividing blades *i'*, the straw board is cut into blank sections of proper length for forming boxes. If the straw board is thick, and it is desired to have the blades *i* make deeper scores, and the blades *i'* cut through such straw board, it can be effected by turning the screws forward, slightly, and thereby forcing out the cutters to a little greater extent; or, if the straw board is thin, and it is desired to make shallower scores with the blades *i*, and

less depth of cut with the blades i' , the screws can be turned back and caused to draw the cutters slightly into the grooves and thereby lessen the depth of scoring and cutting. It is intended that the V-shaped cutters shall cut entirely through the straw board, and the scoring cutters to only cut partly through the same; but it is found, at times, that the V-shaped pieces of straw-board are not always separated from the straw board blanks, and often pass along, hanging to the straw board blanks; therefore, in order to effect their perfect separation, the brushes, or equivalent suitable means $d d'$, on the shaft C, are provided forward of the rolls $b b'$, so that the edges of the blanks, as they pass along in contact with the brushes, shall be subjected to the revolving action of the brushes, and thus any V-shaped pieces that hang to the blank, after passing beyond the rollers, will be removed. The brushes first strike downward and then upward against the edges of the blank, and thus the removal of the V-shaped pieces is rendered more certain. It is also found that, as the straw board receives an objectionable curvature from being rolled upon cores in the process of manufacture, and it is important to restore the straw board blanks formed from the straw board, to nearly a flat form, and to accomplish this the nest of three rollers, $f, f' f^2$, is provided forward of the other portions of the mechanism, and as the blank passes over the two rollers $f' f^2$, and under the roller f , it is depressed by the said roller f , and by this means the curvature previously existing is removed, and the straw board blanks pass off in nearly a flat form, as illustrated in Fig. 2. The roller f is placed on springs v , at its ends, and it is held down by set screws v' and thus it can be adjusted for straw boards of different thicknesses. Set screws v^2, v^3 , are also provided for adjusting the feed and scoring rolls. The rolls are revolved in the proper direction by means of gear wheels, and belt and pulley gearing. The wheels $z z$ connect the shafts of the trimming and scoring rolls $a a'$, and scoring and notching roll b ; and the belt z' the shafts of the scoring, notching and dividing roll b and brushes $d d'$, while the shape-restoring rolls $f, f' f^2$ are connected by the gears z^2, z^3, z^4 , said rolls being driven by a pulley on the

shaft of the upper roll, which pulley may be driven by a belt from a pulley on the brush shaft, or located at any other point. The contact of the scoring rolls a and a' and the cutting and notching rolls b and b' with the paper or wood is sufficient to feed the paper through the machine while the same is in motion.

If desired, the upper feeding, trimming and scoring roll may have a driving gear wheel formed with a collar j , and a buffer j' may be applied between the collar and a clamp collar j^2 . The gear wheel abuts against a shoulder j^3 of the shaft. By this construction the gear wheel can be held to its shaft by frictional bind, and by loosening the nut, left free to revolve on the shaft.

What I claim as my invention is—

1. In a machine for making paper box blanks, the combination with a pair of trimming and scoring rolls, each roll being provided with a trimming blade, and one with a scoring blade, of a supporting roll, and a roll provided with cross scoring, notching and cutting blades, said last mentioned roll being connected with one of the trimming and scoring rolls, whereby they act in unison, substantially as described.

2. In a machine for making paper box blanks, the combination with a roll provided with notching blades, of a shaft arranged forward of the said roll and provided with inwardly projecting circular brushes adapted to contact with the edges of the board and remove notched portions, substantially as described.

3. In a machine for making paper box blanks, a scoring, cutting and notching roll having radial grooves in its surface and transverse holes in the roll, blades arranged in the grooves and set screws arranged in the holes, the shanks of the blades resting upon and connected with the heads of said set screws, whereby the blades are held in place and are adjusted by turning the screws, substantially as described.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

CHARLES E. CLEMENT.

Witnesses:

JAMES H. DUNLAP,
H. B. ATHERTON.