L. D. LEWIS.

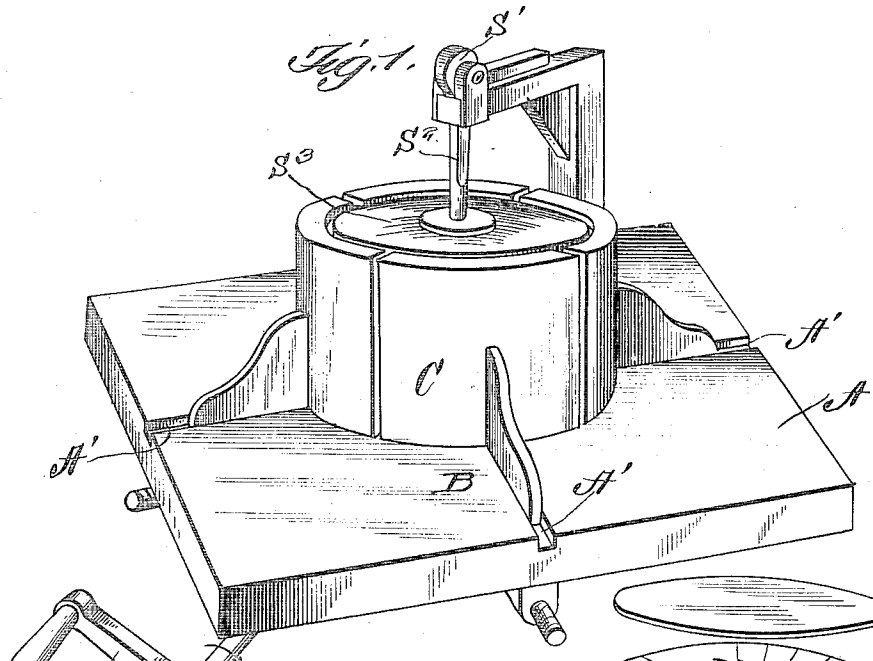
APPARATUS FOR MAKING BOXES.

APPLICATION FILED DEC. 26, 1908. RENEWED MAY 26, 1910.

971,455. Patented Sept. 27, 1910.

2 SHEETS—SHEET 1.

Fig. 1.



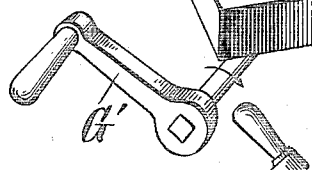


Fig. 7.

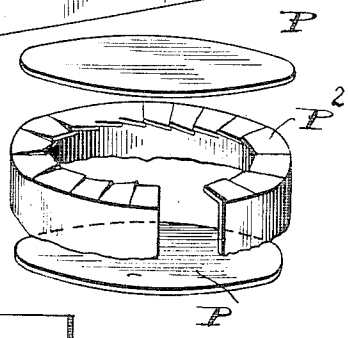
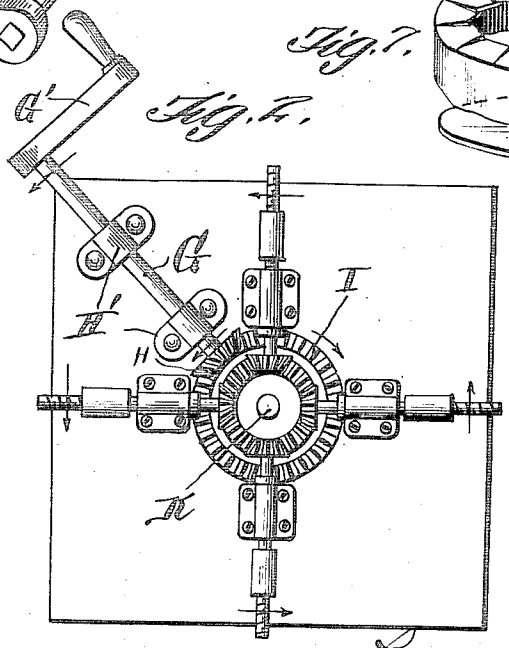


Fig. 4.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 3.

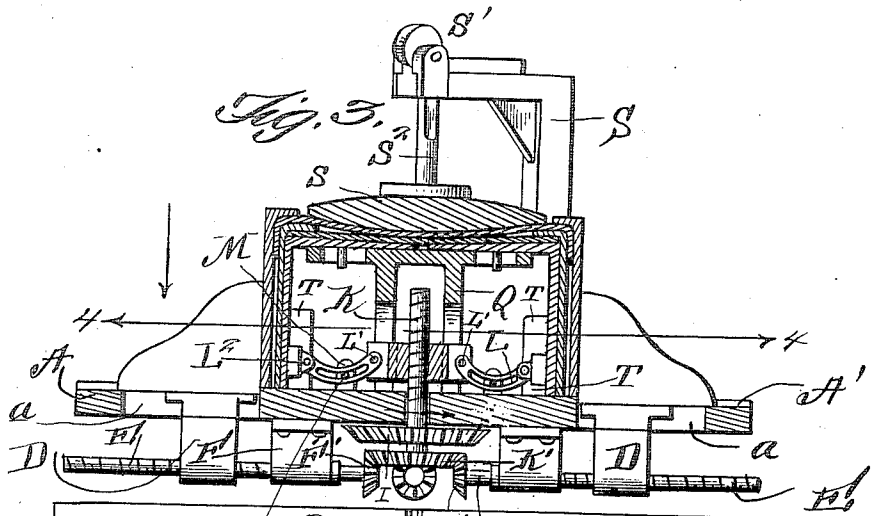

Fig. 4.

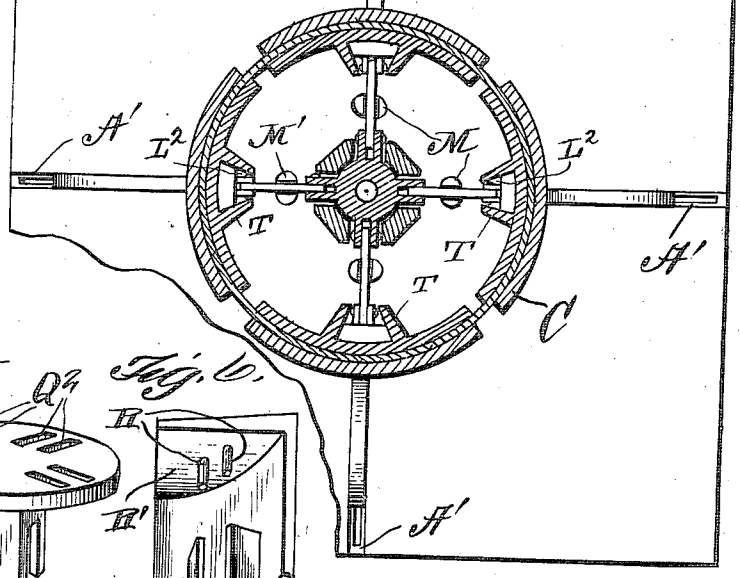

Fig. 5.

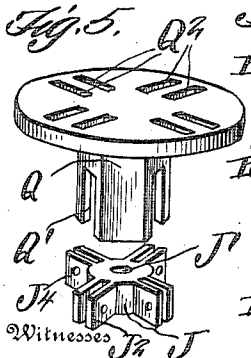

Fig. 6.

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APPARATUS FOR MAKING BOXES.

971,455. Specification of Letters Patent. Patented Sept. 27, 1910.

Application filed December 26, 1908, Serial No. 469,323. Renewed May 26, 1910. Serial No. 563,660.

To all whom it may concern:

Be it known that I, LORENZO D. LEWIS, a citizen of the United States, residing at Adams, in the county of Jefferson and State of New York, have invented certain new and useful Improvements in Apparatus for Making 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to new and useful improvements in apparatus for making boxes and covers, preferably of paper and fiber boards, and comprises various details of construction, combinations and arrangements of parts which will be hereinafter fully described and then specifically defined in the appended claims.

My invention is illustrated in the accompanying drawings, in which:—

Figure 1 is a perspective view of the apparatus. Fig. 2 is a bottom plan view. Fig. 3 is a vertical sectional view through the apparatus. Fig. 4 is a transverse sectional view. Figs. 5 and 6 are detail perspective views, and Fig. 7 is a detail view showing the parts of the cover disassembled.

Reference now being had to the details of the drawings by letter, A designates a table having radial recesses A′ formed in the upper surface thereof and each of said recesses is adapted to receive a wing B which projects from a curved expanding segment C, there being illustrated four of said segments which, when taken together, constitute a complete cylindrical form adapted to coöperate with a second series of clamping segments which will be presently described to hold the parts of the box or cover when fastened together. Each of said wings B has a plate D projecting from the bottom thereof through an elongated slot *a* formed in the table in the bottom of said recesses A′ and each of said plates D is provided with a transverse threaded aperture for the reception of a threaded shaft E. Said shafts E, there being one for each of the segments C, are similarly mounted and each has an unthreaded portion having a bearing in a plate F which is fastened to the under surface of the table in any suitable manner.

Referring to Fig. 2 of the drawings will be seen a shaft G journaled in bearings H′ upon the under surface of the table and the inner end of the shaft G has a bevel pinion H which is in mesh with a bevel gear wheel I mounted upon and fixed to rotate with a vertically disposed threaded shaft K. Said shaft has a second pinion wheel K′ fixed thereto and which is in mesh with the several bevel pinion wheels F′, one being fixed to each of the screw threaded shafts E whereby, when the pinion wheel K′ is rotated, a movement will be imparted to each of the shafts E for the purpose of moving the segment clamping members C toward or away from the centrally disposed shaft K. It will be noted that each of the clamping segments C has a flange at its upper end, each of which is inturned. In order to operate the shaft G, a crank handle G′, shown clearly in Figs. 1 and 2 of the drawings, is provided.

Mounted upon the upper surface of the table is a rack Q, a detail view of which is shown in Fig. 5 of the drawings. The standard of said rack is provided with slots Q′ and the top thereof is provided with the transversely disposed slots Q^2 which are arranged in pairs as shown and adapted to receive the lugs R projecting from the under surface of the tops R′ of the clamping segments R^2, whereby the latter may be guided as they are moved toward or away from the center of the apparatus. Lugs T project from the inner surface of said segments R^2 and serve to guide the blocks L^2.

Referring to Fig. 5 of the drawings will be seen a nut J having a centrally threaded aperture J′ adapted to receive said screw K and the wings J^2 which project radially from the nut J are recessed as at J^3 and provided with transverse apertures J^4. Links L are pivotally connected at their inner ends to pins L′ in the wings J^2 apertures and their outer ends are pivotally connected to blocks L^2 mounted between the lugs T. Rising from the table are the lugs M which are slotted as at M′ in their tops and in which said links are guided, each of the latter being provided with an elongated slot for the reception of a pin M^2 carried by each of the lugs M and the ends of said pins M^2 pass through said elongated slots, as shown clearly in Fig. 3 of the drawings.

Mounted upon the table is a gallows S, in the laterally projecting portion of which is pivotally mounted a cam lever S′ adapted to actuate a plunger S^2, the bottom of which has a circular disk S^3, the under surface of which is convexed in order to cause the top P for the cover, shown in Fig. 7 of the drawings, to be pushed down in contact with the disk P′ and fastened together, the adjacent faces of said cover and disk being adapted to be glued to the inturned flaps P^2 of the rim P^3.

In operation, in the making of covers or boxes, the rim shown in Fig. 7 of the drawings, which has been previously crimped in the manner shown, is inserted between the two sets of expanding clamping members and rests upon the upper surfaces of the inner series of clamping members R^2, a disk P′ first being placed upon the upper surfaces of the expanding segments R^2, after which the cover or top disk P is placed over the crimped edge of the portion which will form the rim, suitable adhesive material being interposed between the disk and the ends of the rim, after which the operator, by rotating the shaft G, will cause the outer series of the clamping segments C to be drawn together simultaneously with the expanding of the inner series of clamping segments, thus causing the ends of the rim to be clamped securely together and, by operating the cam lever, the two disks which form the top and bottom of the cover may be clamped and held against the opposite edges of the crimped rim and held in such clamping positions until the adhesive material is set, thus forming a cover with the upper surface slightly dished or concaved.

What I claim to be new and desire to secure by Letters Patent is:—

1. A box forming machine, comprising two series of expanding and contracting segments, means for moving each series simultaneously in opposite directions to clamp and hold the rim of a box cover, and mechanism for clamping and holding disks against the opposite sides of the flange of said rim, as set forth.

2. A box making apparatus, comprising a table, two series of expanding and contracting clamping segments, means for operating the same simultaneously in opposite directions, a follower mounted upon said table and adapted to clamp and hold disks against the rim of a box held by said clamping members, as set forth.

3. A box making apparatus, comprising a table, two series of concaved clamping segments mounted thereon, the outer series of said plates having inturned flanges, one about the upper end of each segment, means for moving said series of segment clamps simultaneously in opposite directions and adapted to clamp and hold the rim of a box cover, and a follower adapted to clamp and hold disks against the opposite sides of the inturned portions of the rim of a box cover, as set forth.

4. A box forming apparatus, comprising a table having slots therein, an inner and an outer series of segmental clamping plates, said outer series of plates having each a projection extending through a slot in the table, screws passing through threaded apertures in said projections, gear mechanism for operating said screws simultaneously, means actuated by said gear mechanism for moving the inner series of expanding segments simultaneously with the movements of the outer series in opposite directions, and means for clamping and holding disks against the flanges of the rims which latter are adapted to be clamped by said segments, as set forth.

5. A box forming apparatus, comprising a table having slots therein, an inner and an outer series of segmental clamping plates, said outer series of plates having each a projection extending through a slot in the table, screws passing through threaded apertures in said projections, a vertically mounted screw passing through said table, gear connections between said screws, a nut mounted upon said vertically disposed screw, pivotal link connections between the same and the inner series of expanding segments, a follower mounted above said expanding segments, and means for operating said follower, as set forth.

6. A box forming apparatus, comprising a table having slots therein, an inner and an outer series of segmental clamping plates, said outer series of plates having each a projection extending through a slot in the table, screws passing through threaded apertures in said projections, a vertically mounted screw passing through said table, gear connections between said screws, a nut mounted upon said vertically disposed screw, pivotal link connections between the same and the inner series of expanding segments, a crane mounted upon said table, a follower supported by said crane, and a cam lever adapted to actuate the stem of said follower, as set forth.

7. A box forming apparatus, comprising a table having slots therein, an inner and an outer series of segmental clamping plates, said outer series of plates having each a projection extending through a slot in the table, screws passing through threaded apertures in said projections, a vertically mounted screw passing through said table, gear connections between said screws, a nut mounted upon said vertically disposed screw and having laterally projecting wings, a rack rising from the table and provided with slots through which said wings pass, links pivotally connecting said wings with

said inner series of segment clamps, and a follower positioned above the two series of segmental clamps, as set forth.

8. A box forming apparatus, comprising a table having slots therein, an inner and an outer series of segmental clamping plates, said outer series of plates having each a projection extending through a slot in the table, screws passing through threaded apertures in said projections, a vertically mounted screw passing through said table, gear connections between said screws, a nut mounted upon said vertically disposed screw and having laterally projecting wings, a rack rising from the table and provided with slots through which said wings pass, the top of said rack having slots, pins projecting from the inturned ends of the inner series of clamping segments and passing through said slots, as set forth.

9. A box forming apparatus, comprising a table having slots therein, an inner and an outer series of segmental clamping plates, said outer series of plates having each a projection extending through a slot in the table, screws passing through threaded apertures in said projections, a vertically mounted screw passing through said table, gear connections between said screws, a nut mounted upon said vertically disposed screw and having laterally projecting wings, a rack rising from the table and provided with slots through which said wings pass, links pivotally connecting said wings with said inner series of segmental clamps, said links being curved and having elongated slots, lugs rising from the table, and pins carried by said lugs and passing through said slots of the links, as set forth.

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

LORENZO D. LEWIS.

Witnesses:
JOHN SINCLAIR,
T. F. SAUNDERS.