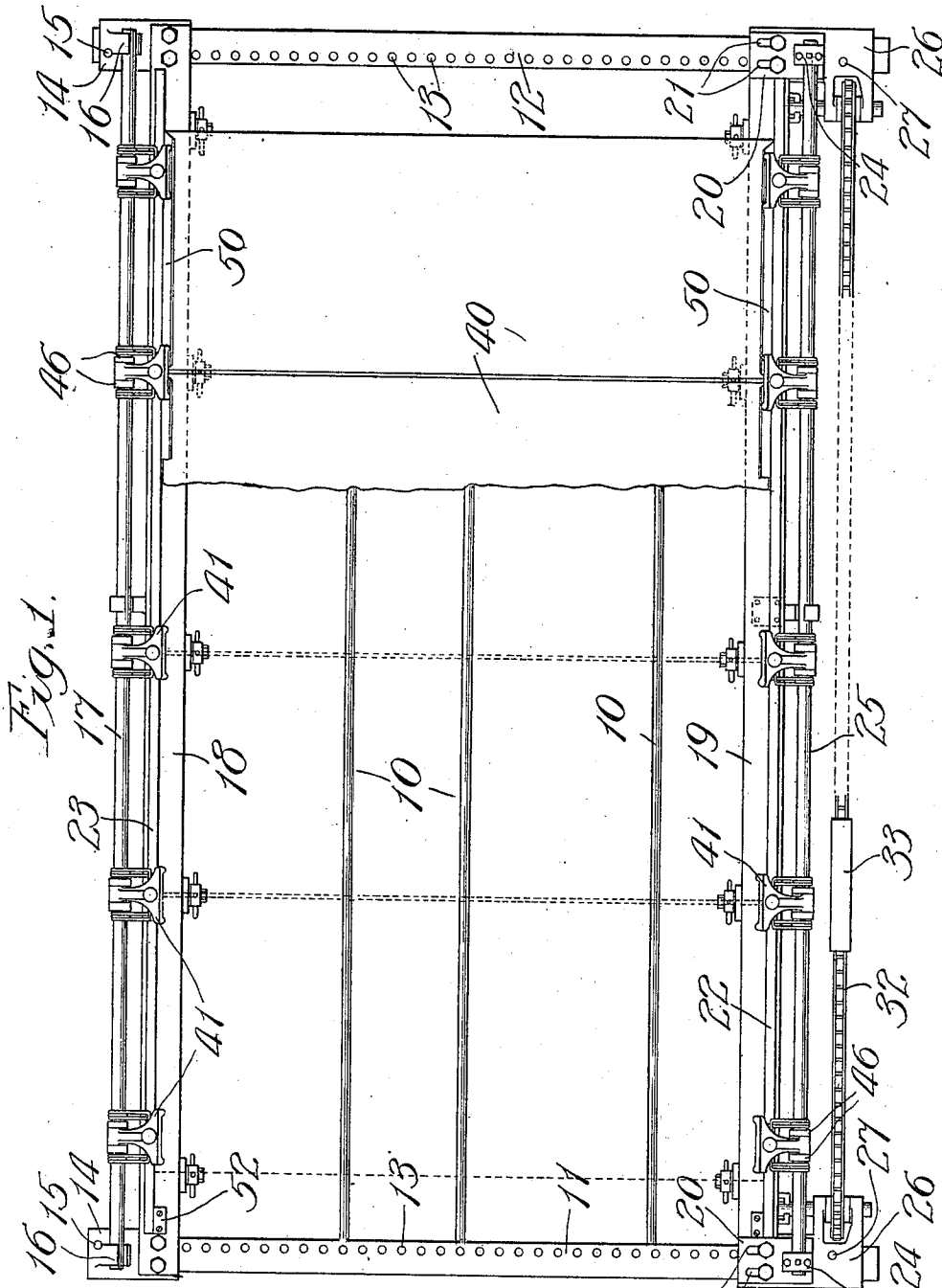


E. E. FLORA.
BOX MATERIAL ASSEMBLING APPARATUS.
APPLICATION FILED JUNE 9, 1910.

995,667.

Patented June 20, 1911.

4 SHEETS-SHEET 1.



Witnesses:
E. E. Flora
Chas. A. Buell

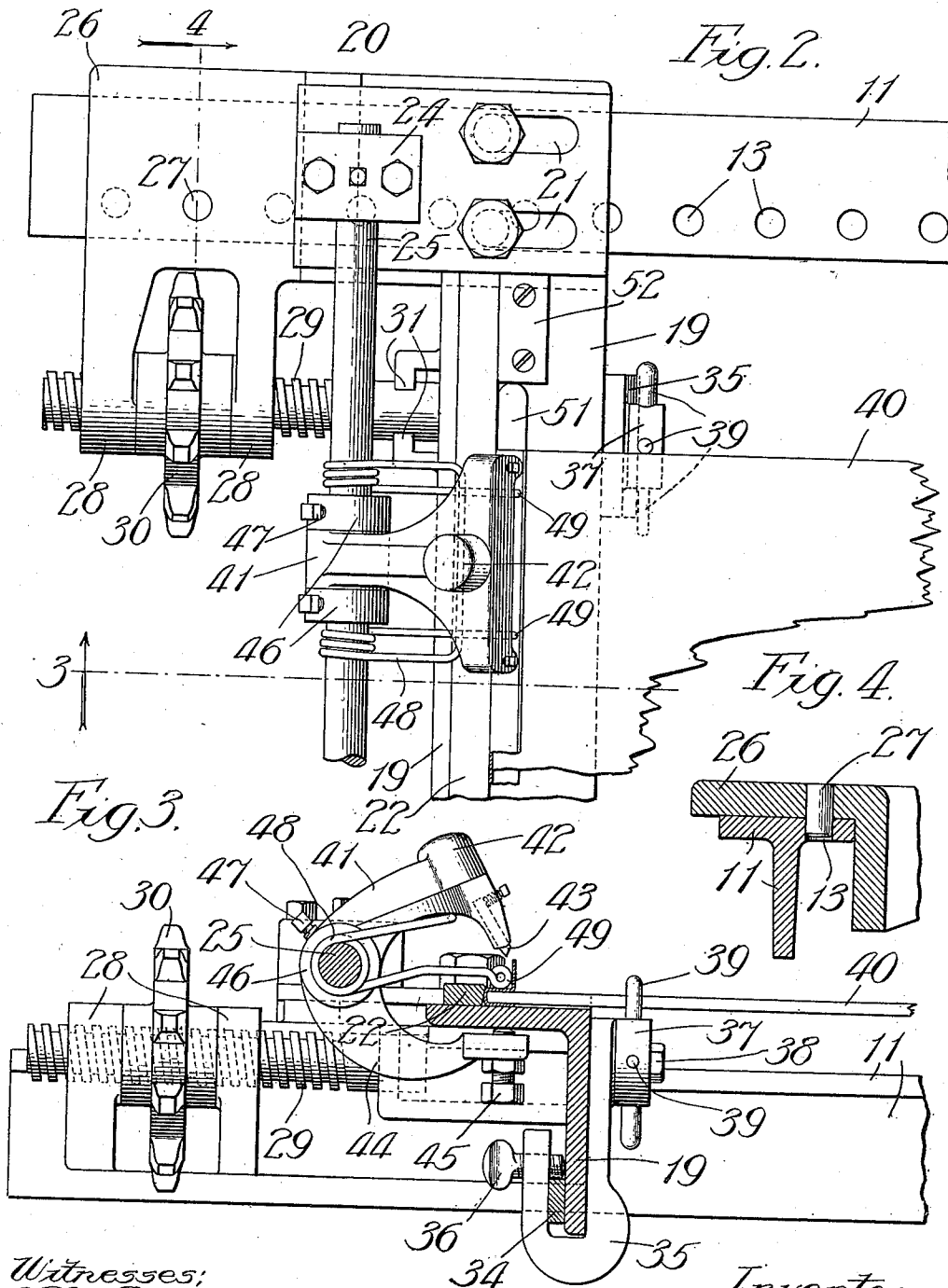
Inventor:
E. E. Flora
By D. W. Smith, Secy, Christian & Miles
Attys.

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4 SHEETS-SHEET 2.



Witnesses:

Edw. J. Lloyd
Chas. H. Bull

Inventor:

Ellsworth E. Flora
Dydenworth & Co., Christman & Wills
Attys.

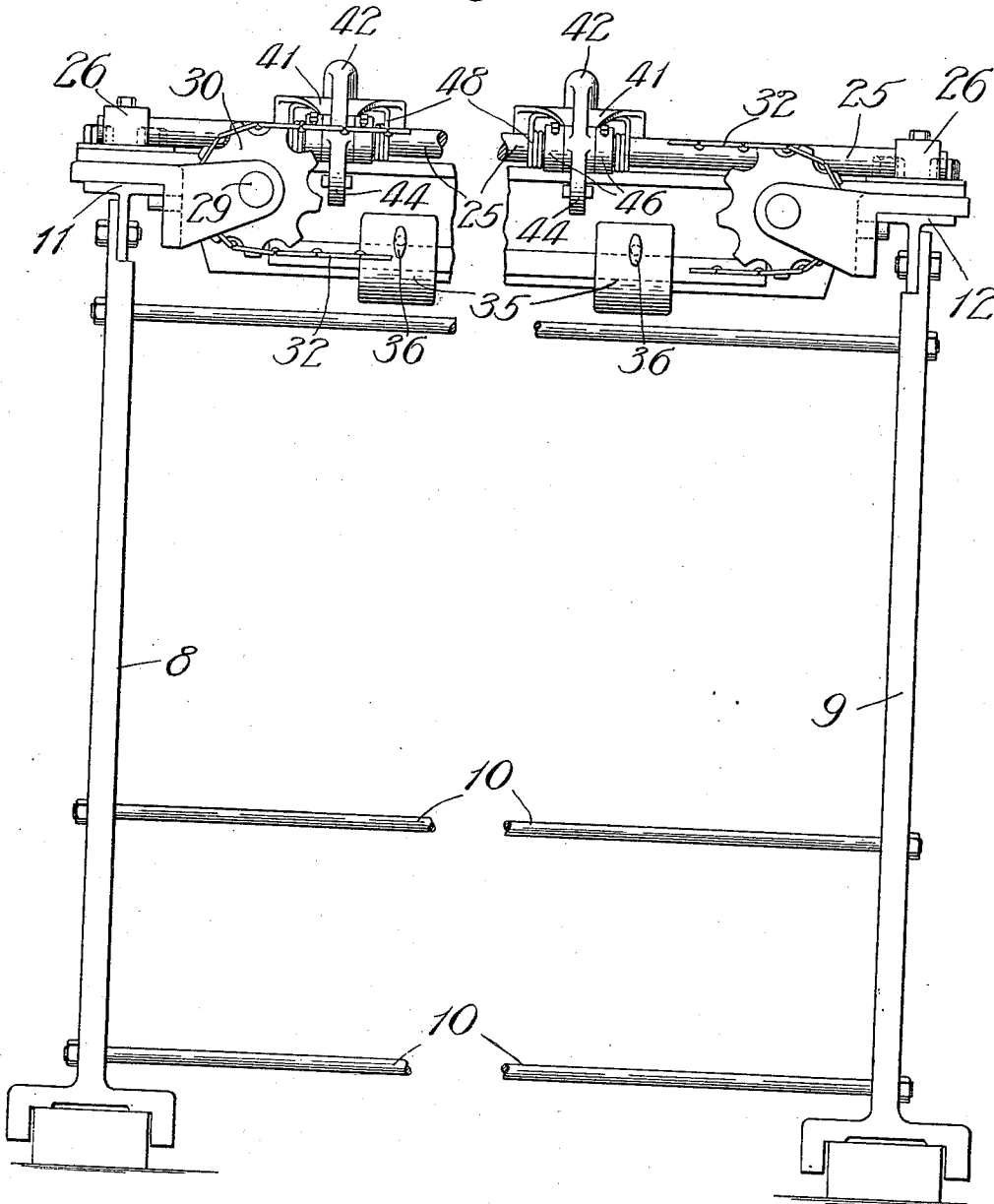
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4 SHEETS—SHEET 3.

Fig. 5



Witnesses:
Ed. J. Chafford,
Chas. H. Buell.

Inventor:
Ellsworth E. Flora,
By *Dymally, Lee, Crittenden & Wills,*
Attys. #

995,667.

4 SHEETS—SHEET 4.



Witnesses:

Wm. Lloyd.

Chas. H. Buell

Inventor.

Ellsworth E. Flora.

By Dymenforth, Lee, Carleton & Mills,
Attys. #

UNITED STATES PATENT OFFICE.

ELLSWORTH E. FLORA, OF CHICAGO, ILLINOIS, ASSIGNOR TO SIMPLEX METAL BOUND BOX COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF NEW JERSEY.

BOX-MATERIAL-ASSEMBLING APPARATUS.

995,667.

Specification of Letters Patent. Patented June 20, 1911.

Application filed June 9, 1910. Serial No. 566,037.

To all whom it may concern:

Be it known that I, ELLSWORTH E. FLORA, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Box-Material-Assembling Apparatus, of which the following is a specification.

My invention relates to an improved apparatus for assembling and fastening together, or preliminarily joining, sheet-material and binding-strips, and has been devised for use, more especially, in the manufacture, of metal-bound boxes of the general type shown, for example, in Reissue Patent No. 12,800, granted to me May 26, 1908.

In the manufacture of metal-bound boxes of the type referred to a blank is first formed consisting, say, of four sheets, or sheet-sections, of box-stock, of the proper dimensions to form the top, bottom and sides, but not the ends, of the box, the sheet-sections being secured together in properly spaced relation, by means of metal binding-strips, of the full length of the blank, having trough-shaped sections to receive the sheet edges, and flanges to abut against and secure the box-ends when the blank is folded. At the spaces between sheet-sections (where the box-corners occur) the strips are initially notched, or cut away, to permit their being bent as required.

My object is to provide a setting-up table of generally improved construction by means of which the operation of positioning the sheet, or assembling the sheet-sections, in suitably spaced relation, and placing the metal binding-strips thereon may be quickly and accurately performed.

In the drawings—Figure 1 is a top plan view of my improved setting-up table showing a broken section of a box-blank assembled thereon; Fig. 2, an enlarged, broken plan-view of that part of the table at the lower left-hand corner of Fig. 1; Figs. 3 and 4, broken sections taken, respectively, on lines 3 and 4, in Fig. 2; Fig. 5, a broken front elevation, and Fig. 6, an end elevation of the table; and Fig. 7, a fragmentary view of a metal-bound box-blank with a part broken away to expose one of the indentations, in the binding-strip, which serve to hold the parts of the blank in assembled relation.

The table is formed with end-frames 8 and 9 held together by tie-rods 10 and carrying horizontal parallel top-rails 11 and 12 which are T-shaped in cross-section. The said top-rails are provided with coincident series of perforations 13 as shown.

14, 14 are companion blocks resting upon the rails 11, 12 and capable of being slid thereon and secured at perforations 13 by means of pins, or bolts, 15. The blocks are formed with attaching-ears 16 for a rod or shaft 17; and firmly fastened at opposite ends to the blocks is a bar 18 presenting a flat upper face.

19 is an angle-bar extending parallel with the bar 18 (which is of the same shape in cross-section) and rigidly secured at opposite ends to blocks 20. The blocks 20 have elongated openings 21 through them at which they are loosely bolted to the rails 11, 12, whereby they are slidably mounted upon the said rails to shift back and forth a distance limited by the length of the slots 21. Secured upon the bar 19 is a longitudinally extending strip 22 forming a stop, and the bar 18 is provided with a similar longitudinally-extending stop 23. Fastened to the heads 20 are attaching lugs 24 for the opposite ends of a rod or shaft 25. Secured upon the end-portions of the rails 11 and 12 adjacent to the blocks 20 are blocks 26 fastened in place by means of pins 27 engaging perforations 13 in the said rails. The blocks 26 are bifurcated to present forks 28 having bearing-openings for screw-shafts 29; and surrounding the said screw-shafts between the parts 28 are sprocket-nuts 30. The inner ends of the screw-shafts 29 are secured to bracket-extensions 31 on the bar 19 and held thereby against rotation. The two sprocket-nuts 30 are connected by a chain 32 which, in the position shown, is equipped with a hand-hold 33 which may be a ferrule, or short length of rubber hose firmly embracing the upper length of the chain. Movement of the chain in one direction turns the sprocket-nuts and causes the screw-shafts 29 to travel and move the bar 19, blocks 20 and all parts carried thereby in the direction of the bar 18, the distance of travel being limited, of course, by the length of the slots 21. Movement of the chain in the opposite direction retracts the said parts to initial position.

Each of the bars 18 and 19 is equipped with a longitudinally-extending strip 34 (as shown in Fig. 3) forming a shoulder. Extending around the under edges of the bars 18 and 19 are brackets, or frames, 35 of the form shown in Fig. 3, which may be adjusted along the bars and fastened in adjusted position by means of thumb-screws 36 extending over the shoulders 34. The frames 35 carry disks 37 fastened in place by screws 38. Each disk 37 has a series of four radially-extending lugs or pins 39, those of each series being of different diameters. The disks 37 may be turned upon the screws 38 and fastened thereby firmly in adjusted position. The radially-extending pins operate as spacers between the edges of sheets 40 of box-stock.

In order that the edges of the box-stock shall overlap when the box-blank is bent to form the four sides of a box, the edges of the box-stock in the formation of the blank should be spaced apart a distance approximating the thickness of box-stock employed. The spacer-pins 39 are provided of different diameters conforming to different thicknesses of box-stock.

On each of the rods or shafts 17 and 25 is a series of five rocking punch-frames 41, each having an upper arm, presenting a head 42 and a pair of sockets to receive punches 43, and a lower arm 44 carrying a set-screw 45. Each punch-frame is pivotally mounted between its arms on the shaft and held thereon in adjusted position by means of collars 46, equipped with set-screws 47. Curled around the shafts, just beyond the collars 46, are stirrup-springs 48 passing under the upper arms 41 and terminating at opposite ends in eyes 49 resting normally upon the bars 18, 19 just in advance of the stops 22, 23. The springs 48 are weak but capable of holding the punch-frames in elevated position, as indicated in Fig. 3, wherein the set-screws 45 abut against the under sides of the bars.

In operation the frames 35 are first adjusted along the bars 18, 19, in coincident positions, according to the dimensions of the box-stock, and the bar 18 with the heads 14 is adjusted toward or away from the bar 19 as required by the length of the box-stock. The disks 37 are turned to cause the pins of desired diameter to extend vertically upward above the plane of the bars 18, 19. The punch-frames are also positioned each with its punches on opposite sides of the spacer-pins 39. At the commencement of an operation a sheet-metal binding-strip 50, cut and shaped as indicated, is placed upon the bar 18 under the ends 49 of the springs 48 against the stop 23, and the sheets of box-stock are then inserted into the trough-section of the said strip at opposite sides of the spacer-pins. The second metal binding-strip

50 is placed upon the bar 19, and slid under the ends 49 of the springs 48 against the stops 22, as indicated most plainly in Fig. 3, the springs thus operating to hold the strip flat against the bar 19. At the same time the adjacent end-edge of the sheet 40 rests upon the inner edge-portion of the bar 19. The operator then shifts the chain 33 to cause the bar 19 and attendant parts to move in the direction of the bar 18 and cause the binding-strip thereon, at its trough-section, to move over and receive the adjacent edge of the box-stock and crowd it into the troughs of the strips. The operator then, with a mallet, or the like, taps each of the punch-frame heads 42, causing the punches to be driven to indent the strips into the box-stock and fasten them thereto. The chain 32 is then shifted in the opposite direction to that stated and the blank is taken from the table for further operations.

The binding-strips are usually provided with sealing-extensions 51; and fastened upon the bars 18, 19 are stops 52 against which the ends of the said sealing-extensions are caused to contact when the strips are placed in the apparatus to insure their being properly positioned.

While I prefer to construct my improvements throughout as shown and described, they may be variously modified in the matter of details of construction, without departing from the spirit of my invention as defined by the claims.

What I regard as new and desire to secure by Letters Patent is—

1. In a setting-up table for metal-bound box-blanks, the combination of relatively-movable positioning-supports for the trough-shaped metal binding-strips, means for holding the box-stock with its edges in engaging position with the binding strips positioned on said supports, means for causing said supports to approach one toward the other and thereby force the stock at its edges into said strips, and means for positioning and holding the box-stock sections in spaced relation during said operation, comprising a plurality of sets of spacer-lugs, the lugs of each set being movable into and out of operative position.

2. In a setting-up table for metal-bound box-blanks, the combination of relatively-movable positioning-supports for the trough-shaped metal binding-strips, means for holding the box-stock with its edges in engaging position with the binding strips positioned on said supports, means for causing said supports to approach one toward the other and thereby force the stock at its edges into said strips, and means for positioning and holding the box-stock sections in spaced relation during said operation, comprising rotary heads each equipped with radially-extending spacing-lugs of different dimen-

sions, the heads being rotatable to move its spacer-lugs into and out of operative position.

3. In a setting-up table for metal-bound box-blanks, the combination of relatively-movable positioning-supports for the trough-shaped metal binding-strips, means for holding the box-stock with its edges in engaging position with the binding strips positioned on said supports, means for causing said supports to approach one toward the other and thereby force the stock at its edges into said strips, and spacers for the box-stock sections relatively adjustable longitudinally of the supports.

4. In a setting-up table for metal-bound box-blanks, the combination of relatively-movable positioning-supports for the trough-shaped metal binding-strips, means for holding the box-stock with its edges in engaging position with the binding strips positioned on said supports, means for causing said supports to approach one toward the other and thereby force the stock at its edges into said strips and a plurality of normally raised punches on each support adapted to be separately struck down to indent the strips into the box-stock.

5. In a setting-up table for metal-bound box-blanks, the combination of relatively-

movable positioning-supports for the trough-shaped metal binding-strips, means for holding the box-stock with its edges in engaging position with the binding strips positioned on said supports, means for causing said supports to approach one toward the other and thereby force the stock at its edges into said strips, and means for indenting the strips to fasten them to the stock, comprising punch-holders equipped with punches and relatively adjustable longitudinally of the supports.

6. In a setting-up table for metal-bound box-blanks, the combination of relatively-movable positioning-supports for the trough-shaped metal binding-strips, means for holding the box-stock with its edges in engaging position with the binding strips positioned on said supports, means for causing said supports to approach one toward the other and thereby force the stock at its edges into said strips and means for indenting the strips to fasten them to the stock, comprising spring-raised, vibratory punch-frames mounted upon the said supports and relatively adjustable thereon.

ELLSWORTH E. FLORA.

In presence of—

L. HEISLAR.

R. SCHAEFER.