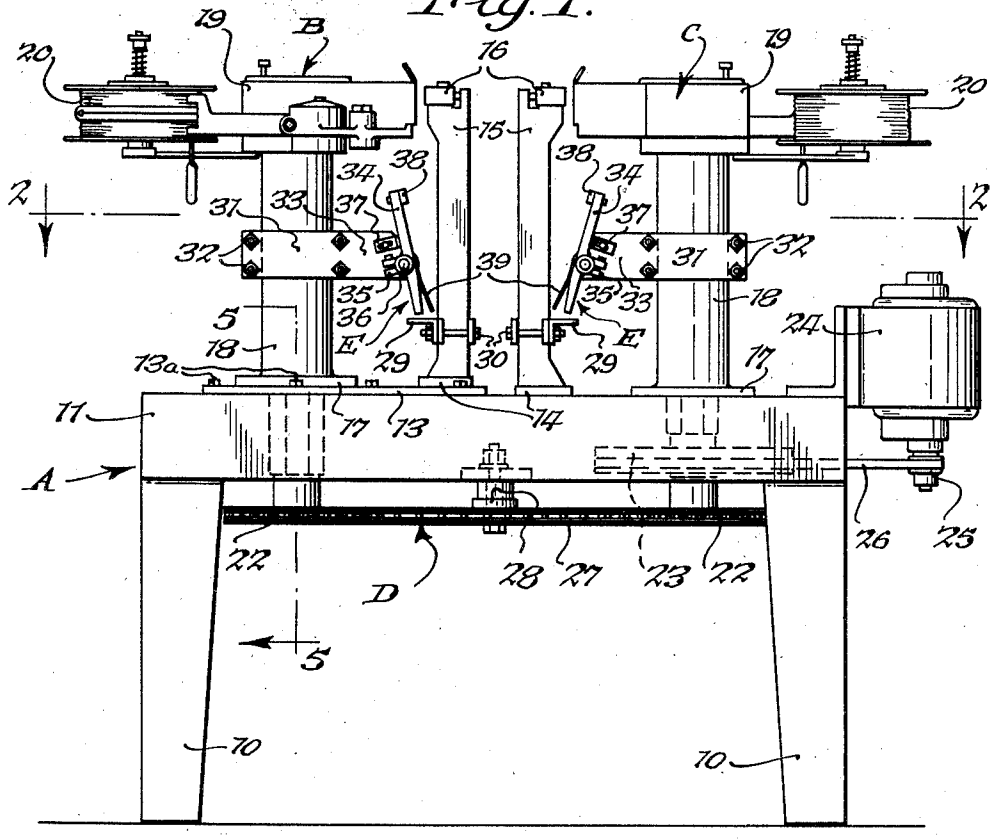
June 30, 1953 O. H. WILLIAMSON 2,643,378

BOX ASSEMBLING MACHINE

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Fig. 1.



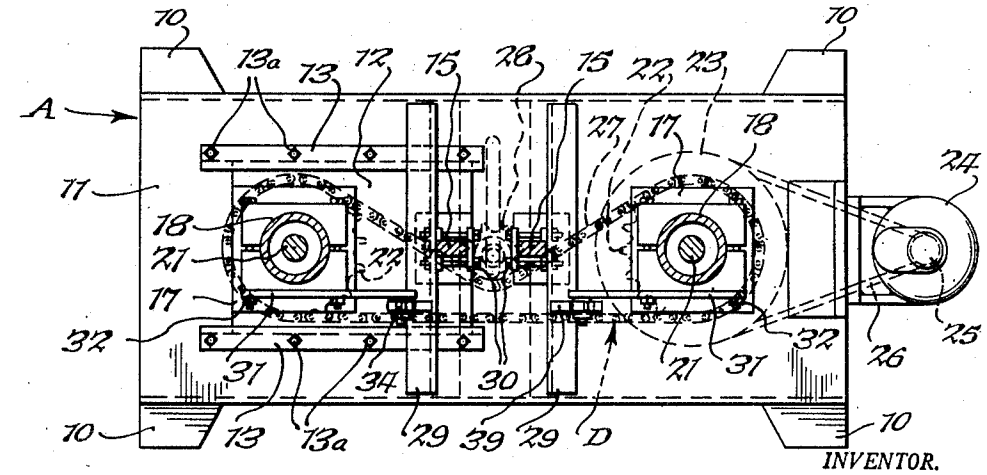


Fig. 2.

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BOX ASSEMBLING MACHINE

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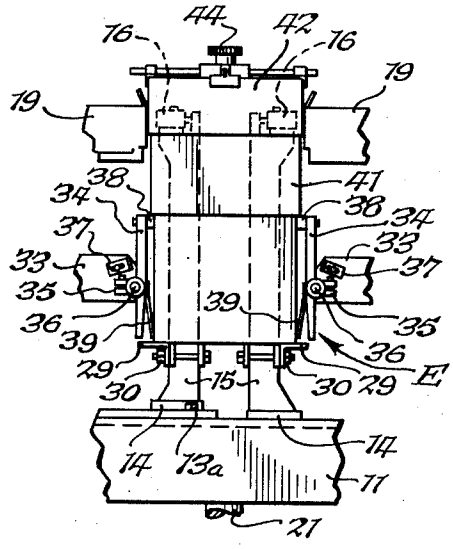


Fig. 3.

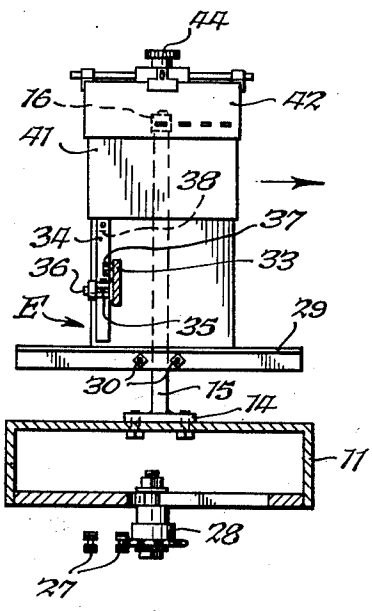


Fig. 4.

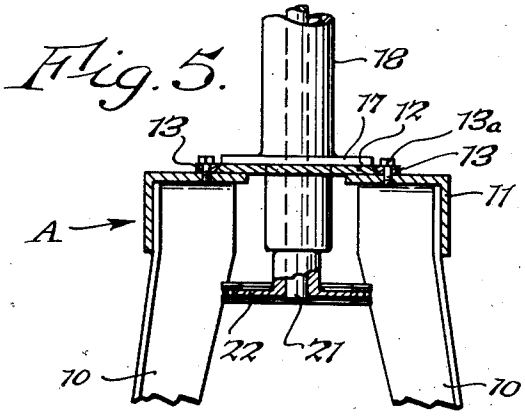


Fig. 5.

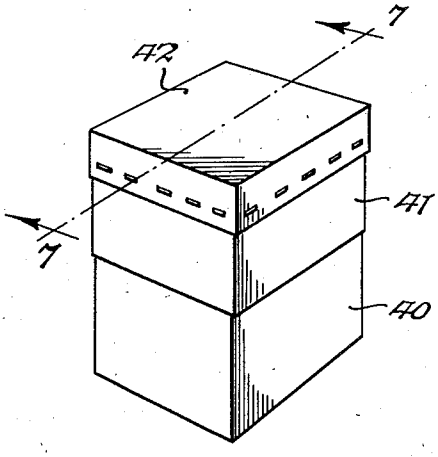


Fig. 6.

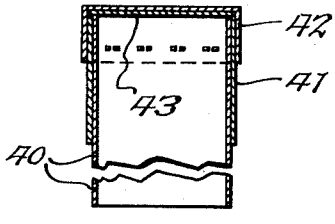


Fig. 7.

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UNITED STATES PATENT OFFICE

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BOX ASSEMBLING MACHINE

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Application May 11, 1951, Serial No. 225,861

2 Claims. (Cl. 1—11)

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This invention relates to new and useful improvements in means for assembling paperboard boxes and particularly seeks to provide novel apparatus for aligning and stitching a semi-assembled box section comprising inner and outer telescoping sleeves, a cap, and in some cases an inner end pad.

A large demand has arisen for a paperboard box which includes a section comprising a long inner telescoping sleeve, a shorter outer telescoping sleeve, a cap and sometimes an inner end pad.

Generally, paperboard boxes are assembled at the plant where the boxes are being filled. The manual assembly of the section described above is very slow because the telescoping relationship and the invisibility of much of the surface of the component parts makes it difficult to determine when the parts are in correct alignment and thus ready for stitching.

Therefore, it is an object of this invention to provide a box section assembling machine having novel devices to aid the assembly and alignment of the above described box section.

It is another object of this invention to provide a machine of the character stated which will align component parts of the box section described above simultaneously with placement of the semi-assembled section in position for stitching.

It is an additional object of this invention to provide a machine of the character stated, including horizontal supporting rails to support the inner telescoping sleeve and guide abutments to support the outer telescoping sleeve in correct alignment with each other.

With these and other objects in view, the nature of which will be more apparent, the invention will be more fully understood by reference to the drawings, the accompanying detailed description, and the appended claims.

In the drawings,

Fig. 1 is a front elevation of the dual head stitcher constructed in accordance with this invention;

Fig. 2 is a horizontal section taken along line 2—2 of Fig. 1;

Fig. 3 is a fragmentary front elevation showing a box section in position;

Fig. 4 is a fragmentary side elevation, partly in section, of the features shown in Fig. 3;

Fig. 5 is a vertical section taken along line 5—5 of Fig. 1;

Fig. 6 is a perspective view of a completely assembled box section; and

Fig. 7 is a vertical section taken along line 7—7 of Fig. 6.

Referring to the drawings in detail, this invention as illustrated is embodied in a box section assembling machine particularly adapted to

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properly align the component parts of a telescoping paperboard box section immediately prior to stitching and includes a workbench A, a movable stitching unit B vertically mounted adjacent one end of the workbench, a stationary stitching unit C vertically mounted adjacent the other end of the workbench, a common drive mechanism D horizontally mounted underneath the workbench for driving both stitching units, and an aligning assembly E mounted on each stitching unit. The details of the stitching heads per se do not form a part of this invention but are generally included in order to illustrate the application of the present invention.

The workbench A comprises a plurality of leg supports 10 and a table 11 mounted thereon. A laterally movable mounting plate 12 is fastened adjacent one end of the table by a pair of spaced parallel clamping bars 13, the latter being releasably attached to the table by a plurality of bolts 13a. The edges of the plate 12 are beveled to fit with corresponding beveled edges of the bars 13 for effective clamping purposes. It is, of course, understood that the table 10 is properly slotted to permit lateral movement of the plate 12 and its associated stitching unit B.

The movable stitching unit B is securely mounted on the movable plate 12. A small mounting plate 14 is firmly attached to the plate 12 toward the center of the table 11. Vertically mounted on the small plate 14 is a clincher post 15 provided at the upper end with a clincher 16. The stitching unit B includes a base plate 17 firmly attached adjacent one end of the plate 12 and which supports a post 18 provided at its upper end with a stitching head 19 and wire reel 20, the head 19 being operatively positioned with respect to the clincher 16. Within the post 18 is a long drive shaft 21 which extends from the head 19 above through the table 11 below and carries on its lower end a sprocket 22.

The stationary stitching assembly C is a duplicate of the above described movable one B, and the corresponding parts have been numbered the same. The drive shaft of the stationary assembly C carries a pulley 23 spaced parallel and somewhat above the sprocket 22. However, the stationary assembly is securely attached to the table 11 whereas the movable assembly is carried by the movable plate 12, as hereinbefore described. It will also be noted that the stitching units are positioned in opposed cooperative relationship to each other with the clincher posts adjacent each other.

It is, of course, obvious that various sizes of containers may be handled on this machine by adjusting the position of the movable stitching unit B.

The common drive mechanism D includes a motor 24 mounted on one end of the table 11 and

provided with a pulley 25. A belt 26 transmits the power from the pulley 25 to the pulley 23, the latter turning the drive shaft and sprocket of the stationary unit C. A sprocket chain 27 is connected between the pair of sprockets 22, 22 and thus power is transmitted from the drive shaft of the stationary unit to the drive shaft of the movable unit. An adjustable idler 28 is adjustably mounted beneath the table 11 to take up any slack in the sprocket chain caused by moving the movable unit B.

The aligning assembly E includes a pair of duplicate units to correspond to the pair of stitching units B and C, but for convenience only one will be here described. A vertically adjustable horizontal supporting rail 29 is attached to the clincher post 15 by bolts 30. A vertically adjustable collar clamp 31 is mounted on the post 18 by bolts 32 in a plane above the supporting rail 29 and is provided with an arm 33 extending toward the clincher post 15. A finger 34 is pivotally attached intermediate its ends to the end of the arm 33 as at 35 to a pivot shaft 36. An adjustable abutment 37 is attached to the arm 33 just behind the finger and above the pivot point to limit the pivotal arc. An adjustable guide abutment 38 is attached to the upper inner end of the finger 34 and a leaf spring 39 is carried adjacent the lower inner half thereof.

The box section to be assembled and stitched on the apparatus herein described includes a long inner telescoping sleeve 40, a somewhat shorter outer telescoping sleeve 41, a cap 42, and if desired, an inner end pad 43. These component parts are roughly assembled in the proper order before reaching the stitcher and may be provided with a holder 44 to maintain the proper positions of the cap flaps and to effect a convenient device for the operator to handle the box section.

Thus when a box section reaches the stitcher the component parts are in the proper order but not aligned or fitted together snugly. In this condition the semi-assembled section is placed open end down over the pair of clincher posts 15, 15 until the lower edges of the sleeve 40 rest on the supporting rails 29, 29. The supporting rails have been adjusted so that the stitching will occur at a point somewhat below the box end toward the lower cap flap edges as shown in Fig. 4, and consequently the end panels of the box section do not rest on the clinchers 16, 16. As the inner sleeve 40 passes the fingers 34, 34 it contacts the respective springs 39, 39 and the springs force the fingers to pivot so that the respective guide abutments 38, 38 are forced inwardly against the inner sleeve, as shown in Fig. 3. Then a downward push is given to the box section to move the outer sleeve 41 downwardly into abutting engagement with the abutments 38, 38 and to move the cap 42 downwardly to its proper position preparatory to the actual stitching operations. Since the inner pad 43 extends over the side wall ends of both telescoping sleeves 40 and 41 but lies within the cap 42, the end pad also will be in its proper position. It will be appreciated that this apparatus automatically effects the alignment of the parts substantially simultaneously with placing the box section on the stitcher, whereas before considerable time and effort were consumed in manually aligning the section parts prior to the stitching operation.

After the box section is properly aligned it is passed through the dual head stitcher, then raised, turned 90°, lowered, and again passed through to complete stitching of all four sides.

Thus it will be seen that the invention herein disclosed provides apparatus including horizontal supporting rails and guide abutments that quickly and efficiently aligns, in preparation for stitching, a paperboard box section, comprising a long, inner, telescoping sleeve, a shorter, outer, telescoping sleeve, a cap, and an inner end pad.

It is, of course, to be understood that various details of arrangements and proportions of parts may be modified within the scope of the appended claims.

I claim:

1. In a machine for assembling and fastening a box section having one open end and including a relatively long inner sleeve, a relatively short outer sleeve and a cap wherein is provided a pair of spaced vertically disposed clincher posts over which said box section is placed and a stitching head cooperatively associated with each of said posts; the combination of vertically adjustable means carried by said clincher posts to support the lower edges of said inner sleeve whereby to properly position the capped end of said box section in stitching alignment with said stitching heads, and vertically adjustable abutment means carried by said stitching heads and overlying said support means, said abutment means being movable into and out of alignment with opposed lower edges of said outer sleeve to establish proper axial relation thereof with respect to said inner sleeve and being actuated by contact with said inner sleeve.

2. In a machine for assembling and fastening a box section having one open end and including a relatively long inner sleeve, a relatively short outer sleeve and a cap wherein is provided a pair of spaced vertically disposed clincher posts over which said box section is placed and a stitching head cooperatively associated with each of said posts, the combination of vertically adjustable means carried by said clincher posts to support the lower edges of said inner sleeve whereby to properly position the capped end of said box section in stitching alignment with said stitching heads, and vertically adjustable abutment means carried by said stitching heads and overlying said support means and each including a finger pivotally attached intermediate its ends to the associated stitching head and having an upwardly extending abutment portion and a downwardly extending movement-imparting portion contactable by an associated portion of said inner sleeve as the said box section is positioned over said clincher posts whereby to move said upwardly extending abutment portion into alignment with an associated lower edge of said outer sleeve to thereby establish proper axial relation thereof with respect to said inner sleeve.

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