Oct. 20, 1953 O. H. WILLIAMSON 2,655,962

BOX HOLDING CLAMP

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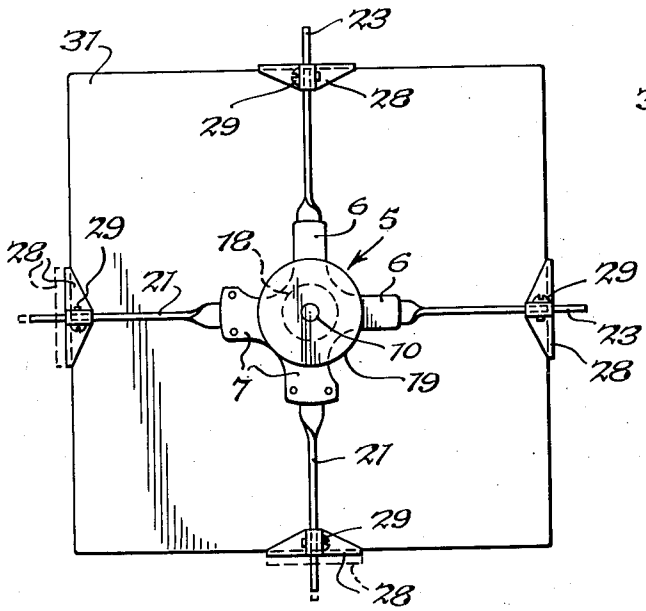


Fig. 1.

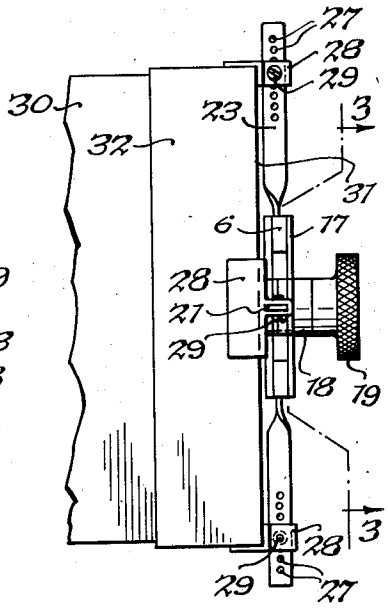


Fig. 2.

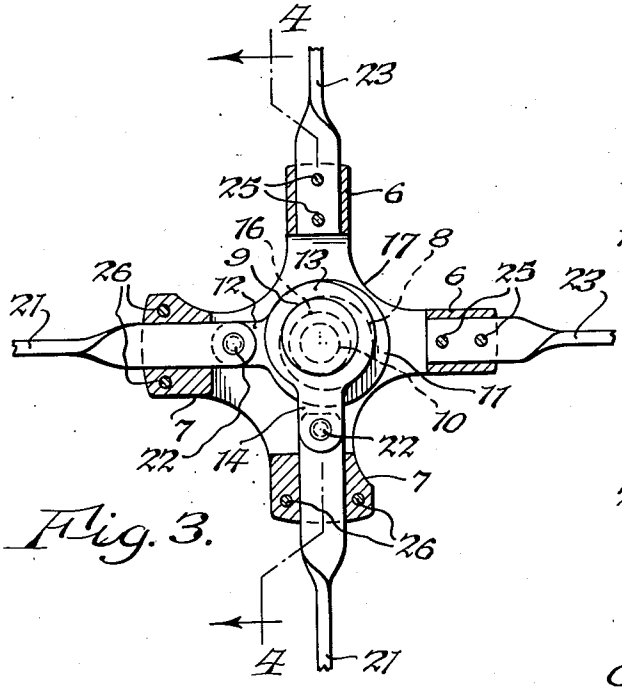


Fig. 3.

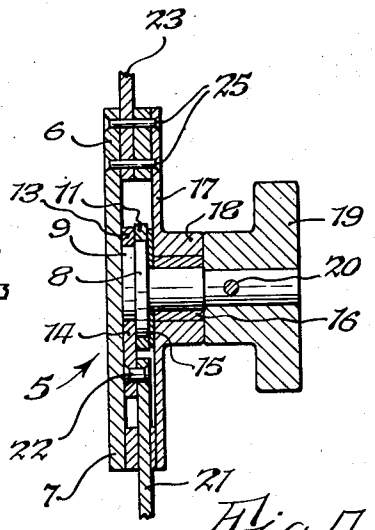


Fig. 4.

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BOX HOLDING CLAMP

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Application June 1, 1951, Serial No. 229,391

1 Claim. (Cl. 144—297)

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This invention relates to new and useful improvements in means for holding and clamping box sections in assembled condition and particularly seeks to provide a novel device for holding and clamping an assembled but unsecured paperboard box section which includes a sleeve and a cap provided with a plurality of flaps adapted to form a depending skirt when fastened into final position.

A large demand has arisen for paperboard boxes of the type which has a short cap with four free skirt-forming flaps fitting over a sleeve portion of the box.

Generally, paperboard boxes are assembled at the plant where the boxes are to be filled. The manual assembly of the box sections of the above-mentioned type is very slow and inefficient because it is difficult for a single operator to maintain the correct alignment of the skirted cap and sleeve and simultaneously hold the four flaps of the skirt in position prior to and during stitching or other fastening operations.

Therefore, it is an object of this invention to provide a novel box section holding device to secure the cap skirt in proper position and maintain the proper alignment of the cap and sleeve.

It is another object of this invention to provide a device of the character stated which can be used as a convenient handle by the operator in moving the box section from one position, such as at an assembly rack, to another position, such as at a stitching machine.

It is an additional object of this invention to provide a device of the character stated, including a pair of eccentrics having their axes disposed at right angles to each other, an associated pair of eccentric straps engaged thereon, a pair of radially disposed movable arms attached to the straps and provided with clamps, a pair of radially disposed stationary arms provided with clamps oppositely disposed with respect to the movable arms, and an operating handle connected to the eccentrics whereby turning of the handle effects radial movement of the movable arms to and from box clamping positions.

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 claim.

In the drawings,

Fig. 1 is a front end elevation of the box holder positioned on a box in accordance with this invention;

Fig. 2 is a side elevation thereof;

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Fig. 3 is a vertical section taken along line 3—3 of Fig. 2; and

Fig. 4 is a vertical section taken along line 4—4 of Fig. 3.

Referring to the drawings in detail, this invention as illustrated is embodied in a box holding clamp particularly adapted to clamp a cap skirt in proper position on a supporting sleeve and maintain proper alignment therebetween. A mounting spider generally indicated at 5 is provided with a pair of narrow radially extending lobes 6, 6 and a pair of wider radially extending lobes 7, 7 disposed in opposition to the lobes 6, 6, each lobe being provided with a longitudinal channel adapted to receive a clamping arm. Rotatably mounted on the spider center is a casting that includes a lower eccentric 9 in juxtaposition with the spider, an upper eccentric 8 coaxial with the eccentric 9 and in partial juxtaposition therewith and having its eccentricity disposed substantially at right angle to the lower eccentric 9, and a center shaft 10. Movably engaged about the upper eccentric 8 is an upper strap 11 provided with an extending lug 12. Similarly engaged about the lower eccentric 9 is a lower strap 13 provided with an extending lug 14 disposed at right angle to the lug 12. It will be noted that the pair of lugs 12 and 14 extend generally toward the pair of wide lobes 7, 7. A spacing washer 15 in juxtaposition with the upper eccentric and strap is positioned about the center shaft 10. A bushing 16 is positioned above the washer and around the center shaft. A plate 17 shaped to fit the spider and provided with a hub 18 is mounted over the spider with the hub fitting snugly around the bushing 16. A handle 19 is mounted on the extended portion of the center shaft 10 as by a set screw 20 and abuts against the bushing 16 and hub 18.

A pair of radially extending movable arms 21, 21 are pivotally attached to the lugs 12 and 14 as by rivets 22 and extend through the channels of the associated lobes 7, 7. It will be noted that one arm is attached underneath the lug 14 while the other arm is attached above the lug 12 so that the pair of arms extend in substantially the same plane although the lugs are one over the other. Another pair of radially extending stationary arms 23, 23 are firmly attached within the channels of the associated narrow lobes 6, 6 as by rivets 25. It will be noted that the rivets 25 also serve to attach the plate 17 to the lobes 6, 6. Additional rivets 26 are provided to attach the plate to the wide lobes 7, 7. A series of small holes 27 are provided at the end of each arm 21

and 23. A clamp member 28 is adjustably secured at the end of each arm as by a set screw 29 or other removable securing means within one of the holes 27.

A box section to be handled with the device herein described includes an inner sleeve 30 and a cap 31 provided with a plurality of flaps 32 forming a skirt. The box section must be assembled prior to use of the box holder herein described. A convenient semi-automatic box assembly rack that may be used in conjunction with this box holder is described and claimed in my copending application Ser. No. 228,440, filed May 26, 1951, now Patent No. 2,618,208.

The clamps 28 are adjusted so that they will fit easily over the box cap. After the operator places the box section holder over the cap he twists the handle 19 which causes rotation of the eccentrics 8 and 9 to pull the movable arms 21, 21 and clamps thereon toward the center and cause all four clamps to become engaged in clamping relationship with the cap skirt. The operator can, of course, control the degree of compression by controlling the arc of turn in the handle.

When the box holder is to be removed a simple reverse twist of the handle allows the easy removal thereof. If desirable the holder may be provided with a stop pin between the handle and plate to limit movement to a quarter turn.

Thus it will be seen that the invention herein disclosed provides a novel holding device including a plurality of arms with clamps thereon, a pair of eccentrics disposed at right angles to each other, a pair of straps engaged thereon with a pair of the arms attached thereto, and a handle firmly attached to said eccentrics whereby a turning of the handle in one direction will tighten the clamps about the skirt of a box cap assembled over an inner sleeve and in the opposite direction will release the clamps.

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 claim.

I claim:

A box-holding clamp comprising a mounting spider provided with a plurality of radially extending lobes having longitudinal channels therein, a pair of coaxial rotatable eccentrics mounted in said spider and disposed substantially at right angles to each other, a pair of straps engaged thereon, a pair of radially disposed movable arms attached to said straps and extending through associated channels of a first pair of said lobes, a pair of radially disposed stationary arms oppositely disposed with respect to said movable arms and firmly attached within associated channels of a second pair of said lobes, a clamp member adjustably attached to each said arm, and an operating handle positioned on the opposite side of said spider from said clamp members and connected to said eccentrics.

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