Feb. 9, 1971 W. G. ROCKEFELLER 3,562,071

APPARATUS FOR AUTOMATICALLY ATTACHING A CARTON TO A DISPLAY CARD

Filed May 3, 1968 3 Sheets-Sheet 1

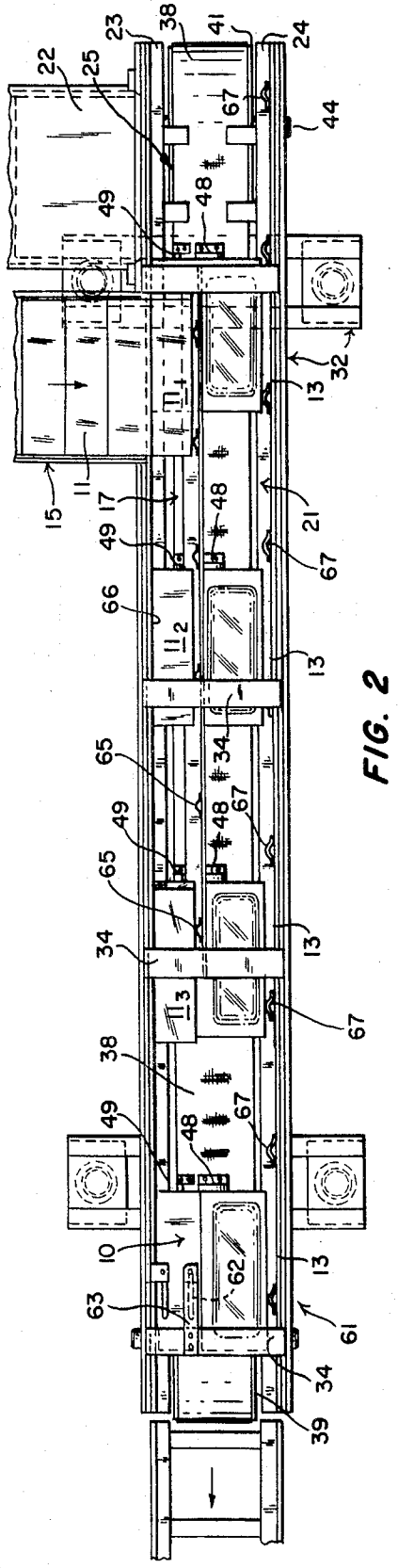


FIG. 2

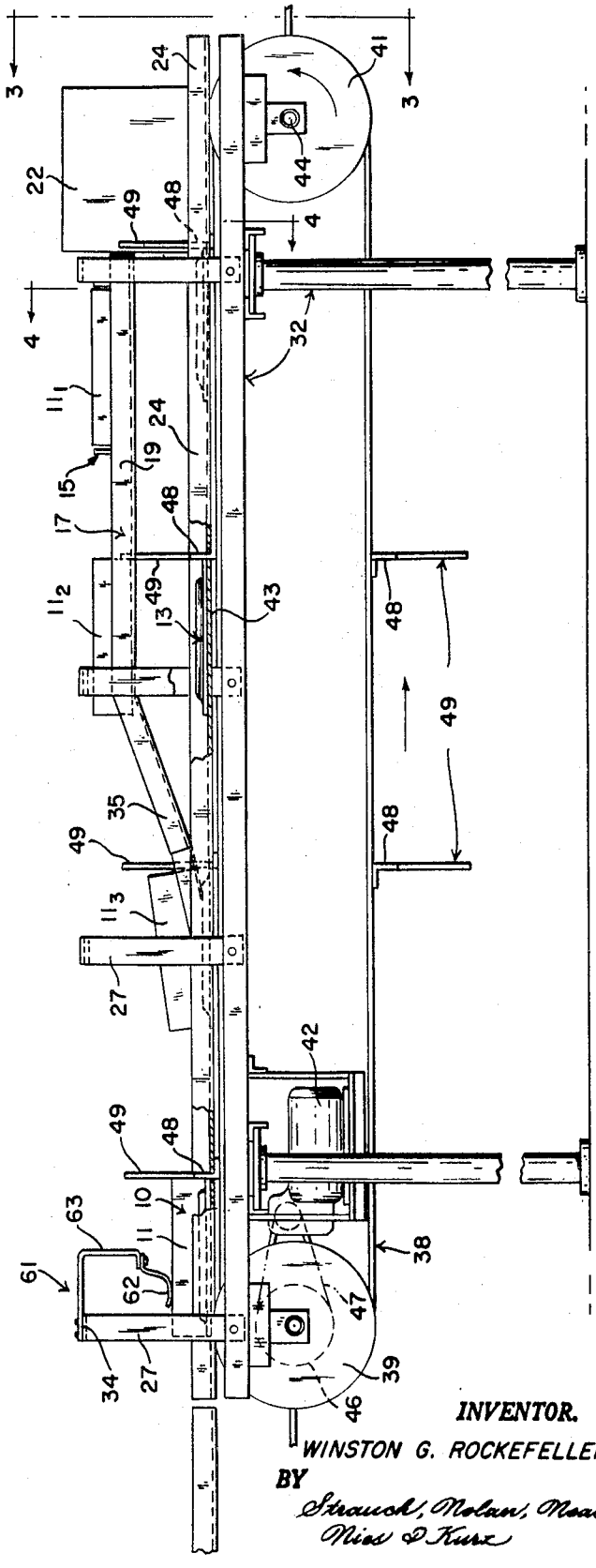


FIG. 1

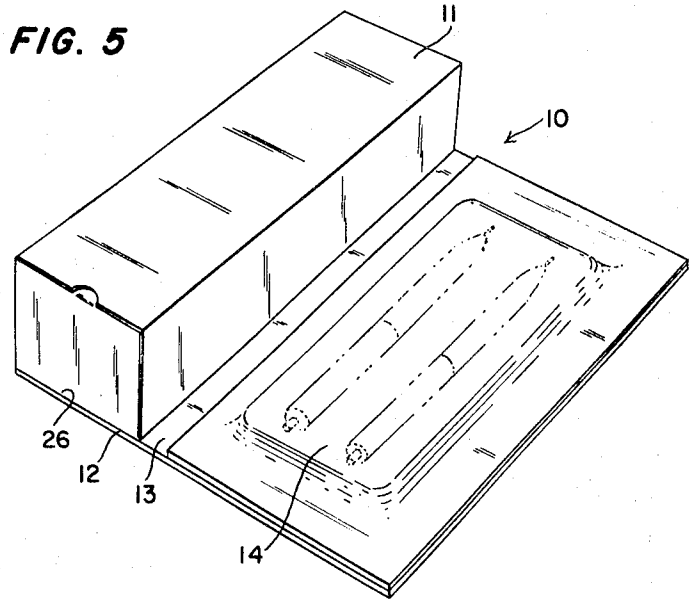
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FIG. 5



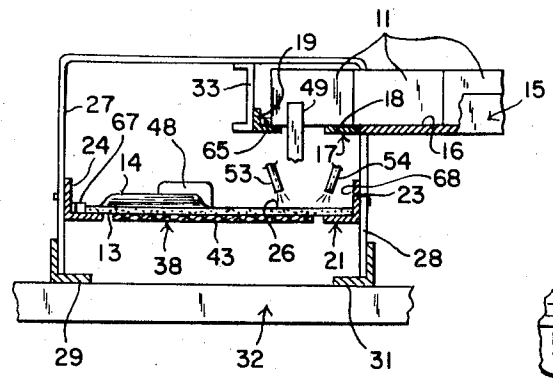


FIG. 4

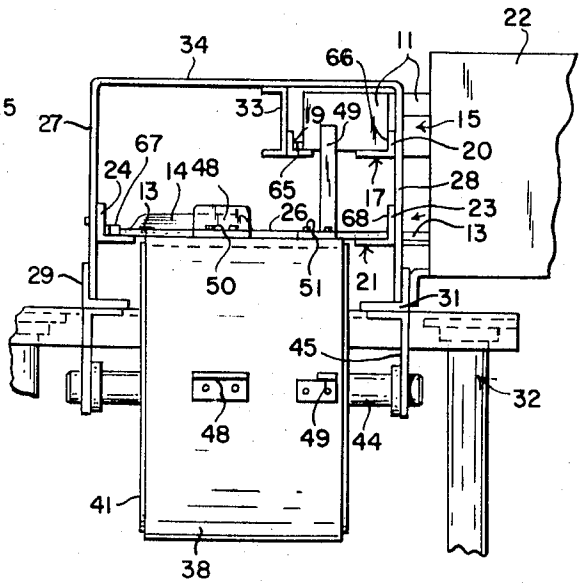


FIG. 3

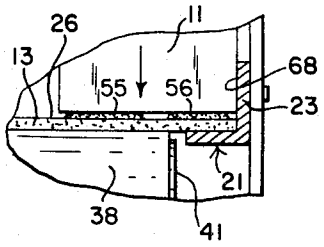


FIG. 3a

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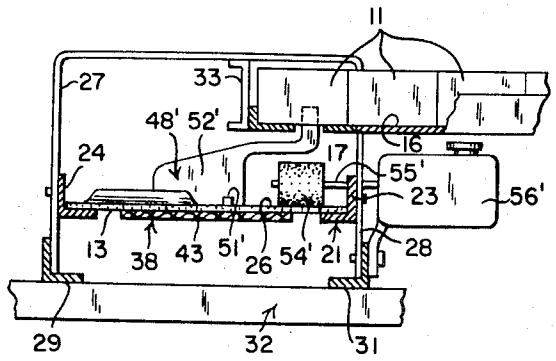


FIG. 6

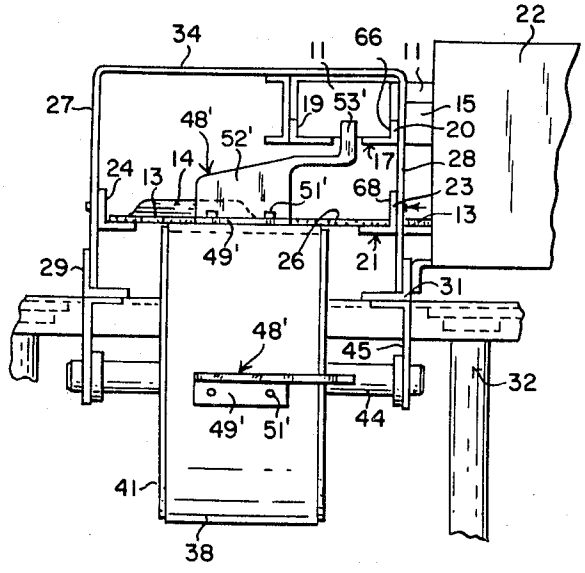


FIG. 7

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APPARATUS FOR AUTOMATICALLY ATTACHING A CARTON TO A DISPLAY CARD

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Int. Cl. B65c 9/02; B65g 57/11
U.S. Cl. 156—566 12 Claims

ABSTRACT OF THE DISCLOSURE

Cartons, such as rectangular toothpaste cartons, are automatically located and secured accurately in position upon display cards. The cartons and cards are laterally fed into separate slide guides in the apparatus at different levels, with the carton at the higher level, and associated cards and cartons are advanced longitudinally together in lateral registry along the guides in correct relative location for assembly, by moving conveyor finger means. One side of the carton and one side of the card engage sides of the guides that lie in a common vertical plane. The upper surface of each card is adhesive coated as it moves along the lower guide. The upper guide descends to deposit each moving carton in turn upon the upper adhesive coated surface of the moving card beneath it, and then as the assembly moves along the lower guide a spring presses the carton firmly against the card to insure a good bond in the moving assembly.

HISTORY AND SUMMARY OF INVENTION

It is known to attach tubular cartons of toothpaste or the like to printed display cards that may or may not also carry premium such as ball point pens enclosed in a plastic bubble. For example an assembly of this general type is disclosed in British Pat. No. 453,260.

However, applicant knows of no automatic apparatus whereby such cartons and cards may be speedily and accurately combined to final assembly, and it is the major object of the invention to provide such apparatus.

In the invention individual cartons and cards are located in desired relative position at different levels and are then brought together in both laterally and longitudinally registered assembly, and this is an important object. It is a further object of the invention to provide novel associated apparatus for accomplishing this, including upper and lower guideways that locate one side of the carton in vertical alignment with one edge of the associated card, means for simultaneously moving each carton and card pair at different levels and bringing them into assembly, and adhesive applicator means, all correlated to act and operate in synchronism.

BRIEF DESCRIPTION OF DRAWINGS

FIG. 1 is a side elevation showing apparatus for assemblying a carton and card according to a preferred embodiment of the invention;

FIG. 2 is a top plan view of the apparatus of FIG. 1;

FIG. 3 is an end view taken on line 3—3 of FIG. 1;

FIG. 3*a* is a fragmentary view showing the adhesive attachment of the carton to the card;

FIG. 4 is a section substantially on line 4—4 of FIG. 1;

FIG. 5 is a generally perspective view of the assembled carton and display card; and

FIGS. 6 and 7 are views like FIGS. 3 and 4 but showing further embodiments incorporating different carton and card moving fingers and different adhesive applying means.

PREFERRED EMBODIMENTS

FIG. 5 shows a completed assembly comprising carton 11, which for example contains a tube of toothpaste, attached by an adhesive joint indicated at 12 to the surface of a cardboard display card 13 carrying a premium 14. The apparatus of the invention facilitates speedy accurate attachment together of such cartons and display cards in continuous operations.

Referring to FIGS. 1–4 a series of cartons 11 are fed in succession into the apparatus. A suitable pusher or like feed means (not shown) may be provided. These cartons are disposed side by side in a row on a horizontal intake feed guide channel 15, and (FIG. 4) they slide along the surface 16 of the channel floor onto a longitudinally extending carton slide guide 17 defined by the projecting inner end 18 of the channel floor and an angle iron rail 19. Cartons 11 have their long dimensions extending longitudinally of the apparatus parallel to the direction they will move when on slide guide 17. Thus the cartons 11 enter the apparatus laterally at right angles to the direction they are to move along slide guide 17, and the parts are usually so dimensioned that only one carton 11 is advanced at a time onto guide 17.

The apparatus also comprises a card slide guide 21 that extends longitudinally parallel to carton slide guide 17. A magazine 22 contains a vertical stack of cards 13, and these cards are fed laterally into the apparatus one at a time from the stack in magazine 22 onto the slide guide 21 by suitable feed means (not shown). Guide 21 is at a lower level than guide 17, and as shown in FIG. 2, guide KG comprises a pair of parallel angle iron guide rails 23 and 24 that extend rearwardly of the carton feed inlet to provide a card feed inlet station designated at 25.

FIG. 3 shows a card 13 positioned at the card inlet station on guide 21. The card preferably already has the premium 14 attached thereto on the top surface.

The different levels of parallel guides 17 and 21 are shown in FIGS. 3 and 4, and these figures also show the lateral offset of guide 17 to be disposed exactly above the section 26 of the surface of card 13 onto which the carton is to be attached. Guides 17 and 21 are rigidly mounted on uprights 27 and 28 fixed to angles 29 and 31 forming part of a stationary base structure indicated at 32. The inner rail 19 of guide 17 is fixed to a longitudinal support 33 extending along the apparatus and suitably secured to the base, and at intervals the uprights 27 and 28 are joined by straps 34.

As shown in FIG. 1, carton slide guide 17 has an inclined portion 35 descending from the level of the horizontal carton inlet substantially to the level of the card guide 21 for a purpose to appear.

An endless conveyor belt 38 is supported on the base 32 on parallel axis pulleys 39 and 41. Pulley 39 is driven at a suitable speed from an electric motor unit 42. The upper flight 43 of belt 38 (FIG. 4) is horizontal and disposed at the level of card guide 21 and it moves longitudinally of the apparatus. Pulley 41 has an arbor 44 rotatably mounted on a base hanger 45, and pulley 39 is similarly mounted and has a sprocket 46 connected by drive chain 47 to motor unit 42.

Belt 38 has secured thereto finger means in the form of a series of equally longitudinally spaced pairs of rigid fingers 48 and 49 that project vertically upwardly at right angles to the top flight 43 as they move through the apparatus. Finger 48 has a foot 50 riveted to belt 38, and finger 49 has a foot 51 riveted to belt 38. The front surfaces of fingers 48 and 49 are coplanar at right angles to the direction of belt movement. While two separate laterally associated finger members 48 and 49 are shown, it is clear that the finger means could comprise a single finger member having its front face engaging both the

card and the carton. An advantage of two separate fingers is that under some circumstances each card and its associated carton could be fed with a desired longitudinal spacing factor. Finger **48** extends up through guide **21** to abut the rear end of a card **13** deposited on guide **21**, and finger **49** extends up through guide **17** to abut the rear end of a carton **11** deposited on guide **17**.

The invention includes correlated means for applying a liquid adhesive to card surface **26** so that when a carton **11** descending from upper guide **17** is deposited onto the card **13**, as will appear, the carton will lie on the sticky surface there. As shown in FIG. 4, a pair of adhesive discharge nozzles **53** and **54** are disposed to spray a layer of liquid adhesive onto the surface **26** of the moving card. Preferably, as shown in FIG. 3*a* these nozzles lay down strips **55** and **56** of adhesive to underlie the opposite longitudinal edges regions of the bottom of the carton **11** where it is most effective to secure the card and carton together when a downward push is executed on the carton.

In operation, belt **38** is continuously driven and upright fingers **48** and **49** are moved through the apparatus. As each pair of fingers **48** and **49** enters the upright phase, which is at the right hand end of the horizontal belt flight in FIG. 1, finger **48** abuts the end of a card **13** and starts moving horizontally to the left. When associated finger **49** reaches guide **17** it abuts the end of a carton **11**, and now the card **13** and the carton **11** directly above are moved at the same time by the associated pair of fingers. As the card passes nozzles **53** and **54** it receives wet adhesive on surface **26**.

The card and carton moved by the fingers continue together and at the inclined guide section **35** the carton descends to become deposited upon the adhesive coated top surface **26** of the card. As the carton descends the card guide **17** ends at inclined section **35** and the outer side of the carton is guided by the upright arm of lower guide rail **23**. There is no substantial relative movement between the carton and its underlying card as the two are brought together, the lower front corner of the carton first contacting the card near its leading edge and the carton gradually settling down onto the adhesive coated surface. FIGS. 1 and 2 show this mode of assembly with the changing carton positions indicated at 11_1, 11_2 and 11_3.

Now the combined card and carton assembly **10** enters a fixing station indicated at **61** where a depending spring finger **62** mounted on a bracket **63** attached to a strap **34** slidably engages and exerts a firm downward pressure on the moving carton that spreads the adhesive and insures a proper adhesive bond between the carton and card.

Beyond station **61**, the now complete assembly may move through a final adhesive drying device, or directly if the adhesive is quick drying, to a packing station.

Forwardly of guide surface **18** (to the left in FIG. 1), that side of guide **17** continues as an angle iron rail **20** similar to rail **19**. It will be noted that the upright arms of rails **20** and **23** lie in the same vertical plane, so that the outer side of carton **11** and the outer side edge of associated card **13** are accurately vertically aligned for assembly in that relation.

Preferably, as the cartons **11** are moved along guideway **17** they are biased laterally as by a series of springs **65** distributed longitudinally along the upright arm of rail **19** so that they slide along the vertical plane of the inner surface **66** of rail **20**. Similarly as cards **13** move along guideway **21** they are laterally biased as by a series of springs **67** distributed longitudinally along the upright arm of rail **24** so that they slide along the vertical plane **68** of rail **23**. Since these surfaces **66** and **68** are in the same plane, this lateral bias of the carton and card provides for their very accurate registration when they are brought together at the carton position 11_3 shown in FIG. 1. If desired a single upright panel may provide a common vertical planar surface against which the carton and card are biased at different levels.

By providing a common finger means pick-up for both the card and the carton to be attached thereto, the invention automatically correctly positions both of them for proper assembly and brings them together accurately regardless of small variations in the lateral feeding of each into the apparatus.

In some embodiments provision is made for laterally adjusting rails **19** and **24**, as this would enable the apparatus to be adapted to accommodate different sizes of cartons and cards.

FIGS. 6 and 7 show an optional form of the invention wherein only a single upright finger member on the belt moves both the carton and card together, and wherein a different form of adhesive application is provided.

Belt **38'** has secured thereto a series of equally spaced fingers **48'** that project vertically upwardly at right angles to the top flight **43** as they move through the apparatus. Each finger is preferably made from a single piece of metal and comprises a foot **49'** secured to belt **38** as by rivets **51'**, a centrally disposed card engaging portion **52'** and a laterally and upwardly extending carton engaging section **53'**. The card engaging section **52'** is adapted to extend up through guide **21** to abut the rear end of a card deposited on guide **21**, and the carton engaging section **53'** is adapted to extend up through guide **17** to abut the rear end of a carton deposited on guide **17**.

As belt **38** is continuously driven, upright fingers **48'** are moved through the apparatus. As each finger **48'** enters its upright phase, the lower portion **52'** of the finger abuts the end of a card **13** and starts moving it along guideway **21**. The upper portion **53'** of the finger enters guide **17** and abuts the end of a carton **11**, and now the card **13** and the carton **11** directly above are moved at the same time by the common finger **48'**.

The device for applying liquid adhesive to card surface **26** here comprises an adhesive applying roller **54'** mounted on a rotatable shaft **55'** that is preferably hollow to conduct liquid adhesive into the interior of the roller from a reservoir **56'**. Roller **54'** may be idly mounted and it turns when engaged by surface **26** of the card **13** moving beneath it to deposit a strip of wet adhesive on surface **26**.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiments are therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein.

What is claimed and desired to be secured by Letters Patent is:

1. Apparatus for attaching cartons to cards comprising means for positioning a carton and a card to be secured thereto in predetermined relative location at different levels, and means for moving both the carton and card together in a given direction and into assembly at the same level comprising a common feed means having separate positive engagement with both said carton and said card.

2. The apparatus defined in claim **1**, wherein said feed means comprises an endless belt, and upright finger means on said belt engage the ends of a respective carton and card at the different levels.

3. Apparatus for attaching cartons to cards comprising substantially horizontal longitudinal card guide means, longitudinal carton guide means extending parallel to and above said guide means, said guide means being disposed in predetermined relative location laterally thereof so that a carton on said carton guide means will be located in predetermined lateral position relative to a card on said card guide means, means for moving a carton and an associated card therebelow together along said guide means

in one direction comprising a drive member continually movable in said direction and having means for positively engaging both the carton and associated card to be assembled together, and means providing an inclined section on at least one of said guide means for bringing the moving card and carton into assembly with the carton upon a predetermined upper surface area of said card.

4. In the apparatus defined in claim **3**, means for feeding cards and cartons in separate succession to their respective guide means comprising means for feeding said cartons laterally onto said upper guide means, and means for feeding said cards from a vertical stack onto said lower guide means.

5. In the apparatus defined in claim **3**, said means for positively engaging said moving carton and associated card for moving the associated card and carton together comprising upright finger means on said drive member extending into said guide means to abut the corresponding ends of said associated card and carton.

6. In the apparatus defined in claim **5**, said drive member being an endless belt having a substantially horizontal top flight below said guide means, and there being a longitudinally spaced series of said finger means on said belt that extend upright from said top flight when moving said associated card and carton.

7. In the apparatus defined in claim **3**, means for applying adhesive to said upper surface area of a card moving on said card guide means prior to the time that the carton and card are brought together, so that said carton may be attached securely to said card.

8. In the apparatus defined in claim **7**, means for pressing the card and carton toward each other after they

have been brought into assembly to improve the adhesive bond therebetween.

9. In the apparatus defined in claim **8**, said pressing means comprising a spring acting downwardly and bearing slidably on the carton as the assembly moves along the guide means.

10. In the apparatus defined in claim **3**, said guide means each having one side disposed substantially in a common vertical plane whereby said carbon is positioned to be assembled adjacent one edge of the associated card.

11. In the apparatus defined in claim **3**, means for providing lateral registry of each moving card and carton to be attached together.

12. In the apparatus defined in claim **11**, said registry means including separate resilient means independently biasing the card and the carton laterally against common vertical plane guide surface means.

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U.S. Cl. X.R.

156—573; 198—35