Dec. 25, 1951 E. J. DERDERIAN 2,579,803

CASE SEALING MACHINE

Filed Dec. 15, 1947 4 Sheets-Sheet 1

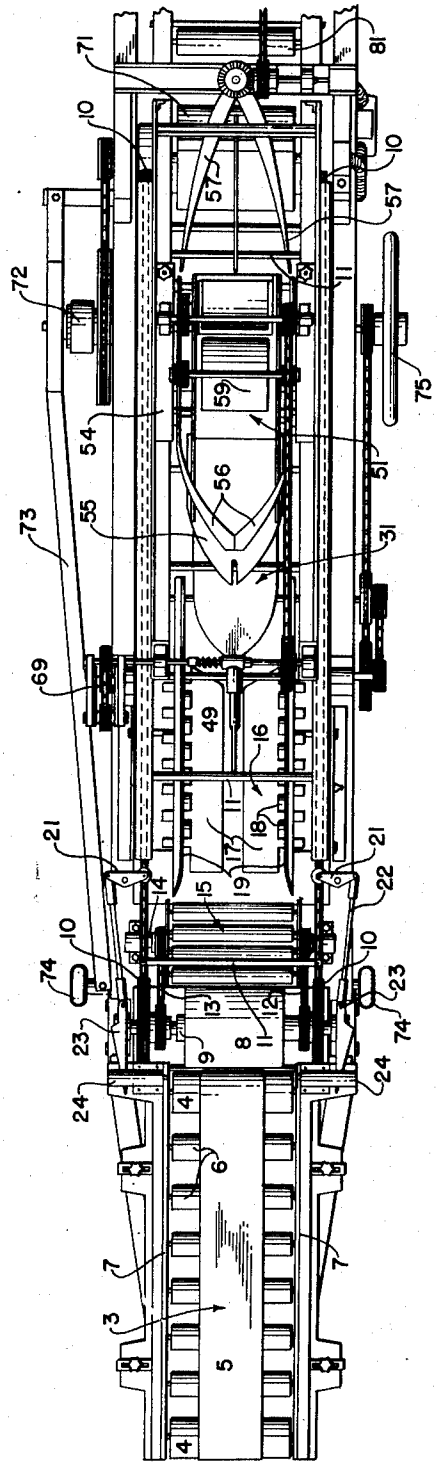


FIG. 1

INVENTOR.
EDWARD J. DERDERIAN
BY Lyon & Lyon
ATTORNEYS

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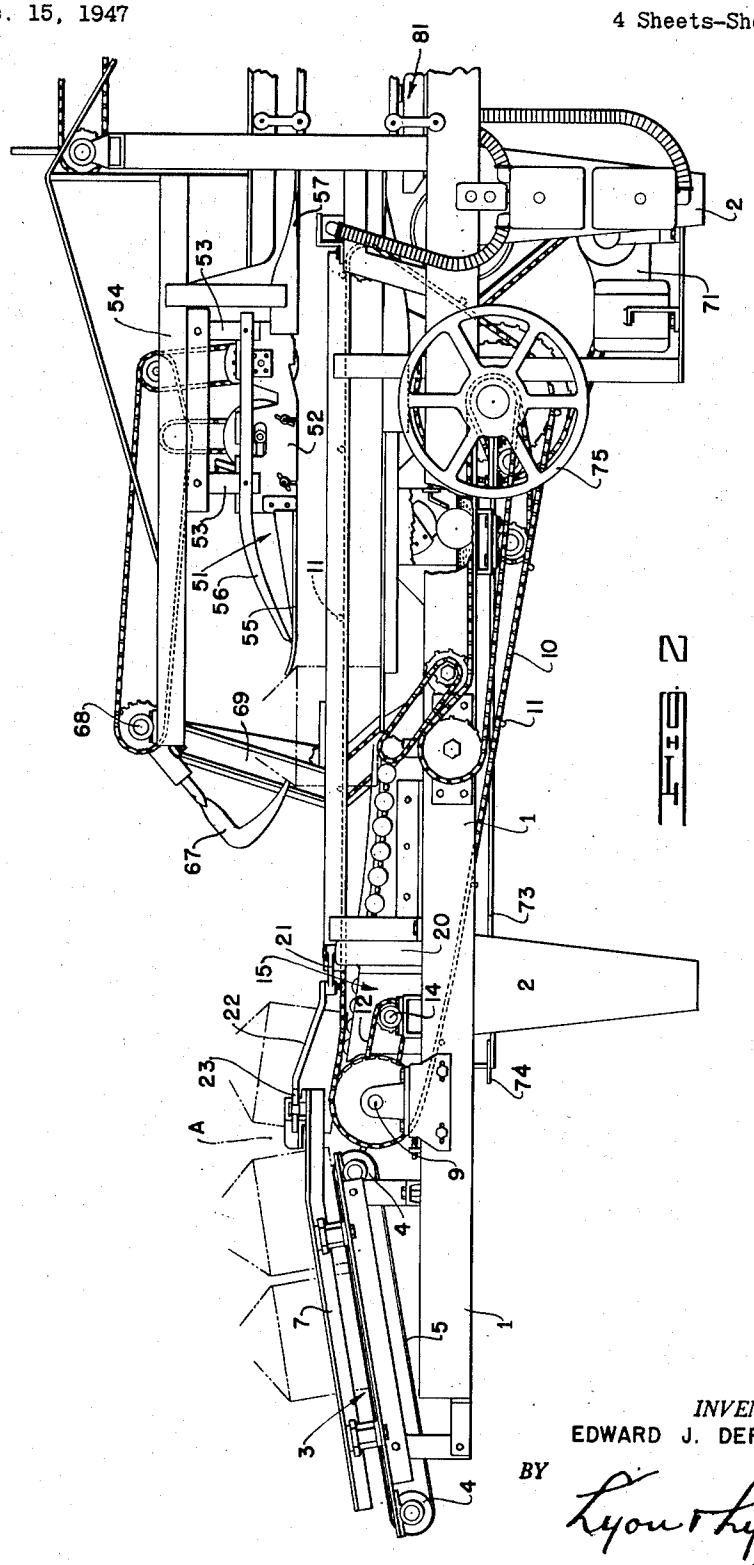


FIG. 2

INVENTOR.
EDWARD J. DERDERIAN
BY
Lyon & Lyon
ATTORNEYS

Dec. 25, 1951 E. J. DERDERIAN 2,579,803

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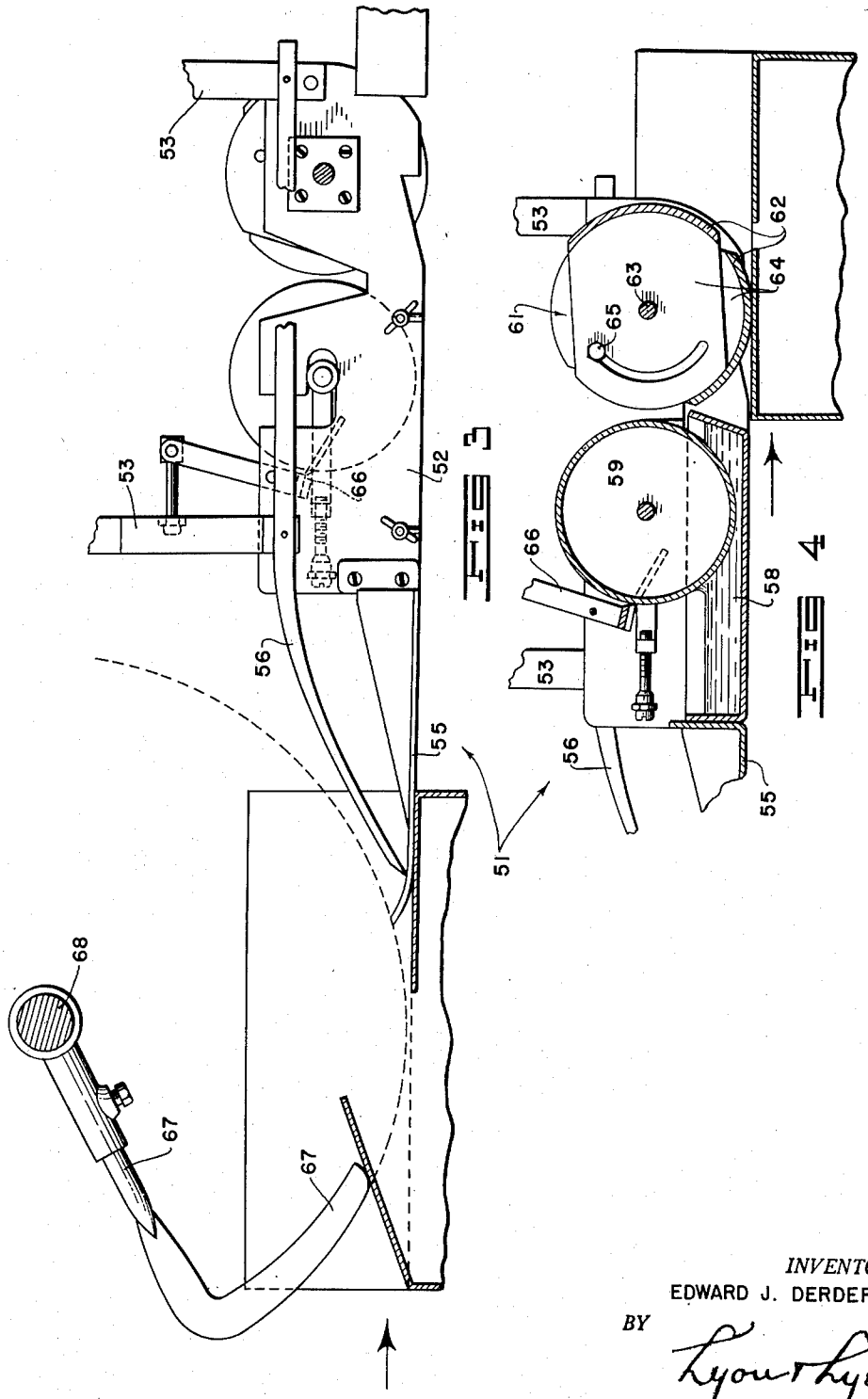


FIG. 5

FIG. 4

INVENTOR.
EDWARD J. DERDERIAN
BY Lyon & Lyon
ATTORNEYS

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CASE SEALING MACHINE

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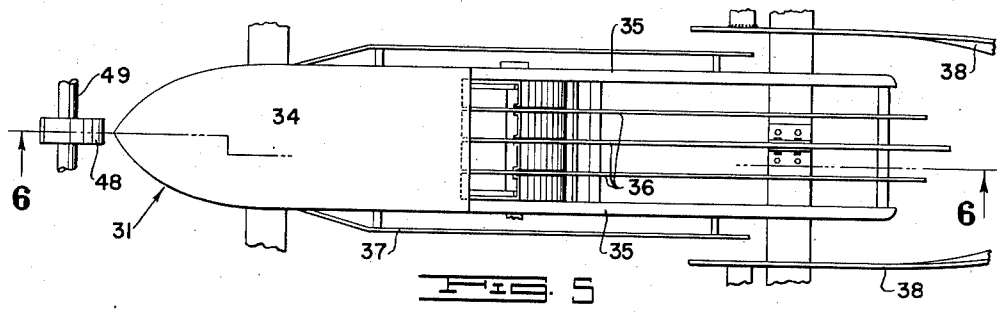


FIG. 5

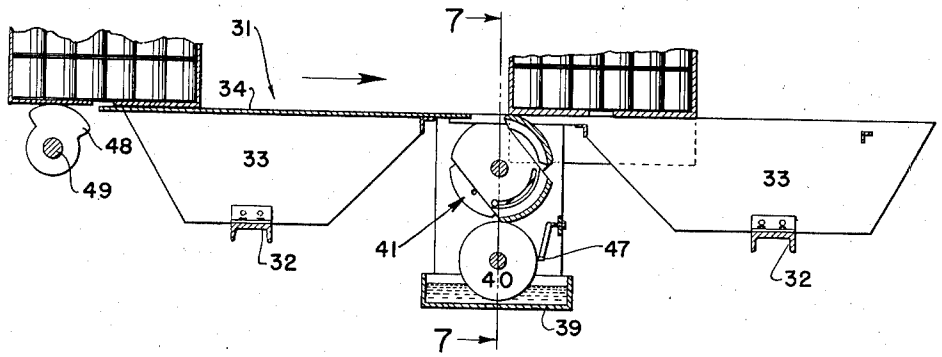


FIG. 6

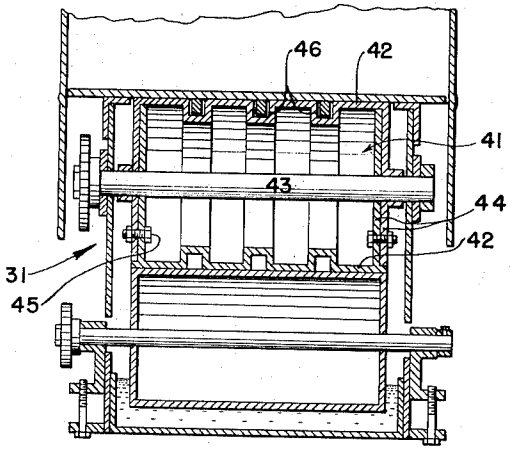


FIG. 7

INVENTOR.
EDWARD J. DERDERIAN
BY
Lyon & Lyon
ATTORNEYS

Patented Dec. 25, 1951

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UNITED STATES PATENT OFFICE

2,579,803

CASE SEALING MACHINE

Edward J. Derderian, Fresno, Calif., assignor to Elliott Manufacturing Company, Fresno, Calif., a corporation of California

Application December 15, 1947, Serial No. 791,898

4 Claims. (Cl. 53—145)

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My invention relates to case sealing machines, and included in the objects of my invention are:

First, to provide a case sealing machine which seals the top and bottom flaps of a fiber case after such case has been loaded with packages, cans, or cartons.

Second, to provide a machine of this character, the width of which is reduced to a minimum for the reason that the sealing operations are carried out, while the side flaps of the case are vertically disposed rather than horizontally disposed. Thus my machine may be installed in spaces too narrow for conventional case sealing machines.

Third, to provide a machine of this character which incorporates a novel means of supporting the contents of the case during the sealing operation.

Fourth, to provide a machine of this character which may be readily adjusted to handle cases of various size and which avoids application of glue or other sealing material on the contents of the case or on other surfaces where such material is not desired.

Fifth, to provide a machine of this character which is particularly efficient and dependable in its operation.

With the above and other objects in view which may appear hereinafter, reference is directed to the accompanying drawings, in which:

Figure 1 is a top or plan view of my machine, the case pressing apparatus employed subsequent to the application of the sealing material being shown fragmentarily.

Figure 2 is a side elevational view thereof.

Figure 3 is a fragmentary side view of the sealing unit employed to apply glue or adhesive to the upper flaps of a fiber case showing fragmentarily a fiber case as it enters the unit.

Figure 4 is a similar view of the upper case sealing unit shown partially in section and showing fragmentarily a fiber case during the application of adhesive.

Figure 5 is a plan view of the lower case sealing unit.

Figure 6 is a sectional view thereof taken through 6—6 of Figure 5 showing a case in the process of receiving an application of glue.

Figure 7 is a transverse sectional view through 7—7 of Figure 6.

My case sealing machine is mounted on a pair of longitudinally extending main frame members 1 which, in turn, are supported by legs or posts 2. The receiving end of a machine is provided with a delivery conveyor 3 which is inclined upwardly toward the discharge end of the machine. The delivery conveyor includes end rollers 4 around which extends a belt or webbing 5. Other rollers 6 may be provided between the end rollers 4. The conveyor is bordered on each side by a side rail 7. The pair of side rails are laterally adjustable to conform to the size of the case.

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Located beyond the discharge end of the delivery conveyor 3 is an accelerator drum 8. The drum 8 is mounted on a main shaft 9 which also carries a pair of sprocket wheels forming the receiving end of a pair of chain drive units 10. The chain drive units are connected by transversely disposed case pusher bars 11. These bars are separated from each other a distance in excess of the fiber cases to be handled by the machine. The pusher bars are adapted to move upwardly between the accelerator drum and the discharge end of the delivery conveyor 3. It is desirable that the accelerator drum rotate on the main shaft at a speed greater than the chain drive units 10. This is accomplished by means of chain drives 12 and 13 which connect the main shaft with a countershaft 14 and connect the countershaft 14 with the accelerator drum.

Located at the discharge side of the accelerator drum is a transfer roller unit 15 which slopes downwardly toward its discharge end. Beyond the transfer roller unit is a case squaring unit 16 comprising bottom plates 17 in which are set edge rollers 18, and guide rails 19 adapted to engage the lower sides of a case passing therebetween.

Supported on the main frame members 1 are posts 20 which carry levers 21 having arms which overhang the chain drive units 10 for periodic engagement by the pusher bars 11. The levers 21 are operatively connected by rods 22 to wedge cams 23 which, in turn, engage stop latches 24 located above the discharge end of the delivery conveyor 3. Adjacent fiber cases resting on the delivery conveyor and on the accelerator drum and transfer roller unit, as indicated by dotted lines in Figure 2, define a V space indicated by A. The stop latches 24 are so located that their operating ends may move into this space so as to retain the case on the delivery conveyor and permit the other case to be carried forward by the accelerator drum and then by a pusher bar.

The case squaring unit 16 delivers the cases to a bottom gluing unit 31. The bottom gluing unit is suspended between the main frame members by crossbars 32. Mounted on the crossbars are edgewise positioned plates 33. The plate adjacent the squaring unit 16 supports a horizon-

tally disposed deflector plate 34 which converges to a point at its leading or receiving end. Continuing from the sides of the deflector plate is a pair of side bars 35. Between the side bars are disposed retainer bars 36. Located at either side of the pointed receiving end of the deflector plate are flap deflector strips 37 curved so as to direct the lower side flaps of a fiber case from an essentially horizontal position to a vertical depending position along the sides of the bottom gluing unit. As the case passes the bottom gluing unit other strips 38 redirect the bottom side flaps to a horizontal position under the case.

Supported under the side bars 35 and retainer bars 36 is a pan or well 39 adapted to contain adhesive. Mounted above the well 39 so as to dip into the adhesive is a pickup roller 40. Located above the pickup roller is an adhesive applicator 41. The applicator 41 comprises a pair of semi-cylindrical segments 42 mounted on a common shaft 43 by means of radially directed end members 44. The end members of the two segments 42 overlie each other and are adapted to be connected for circumferential adjustment by means of bolts 45 operating in slots provided in the end members. The end members are adjustably secured to the shaft 43 by means of suitable set screws. The periphery of each segment 42 is provided with circumferential grooves 46 which receive the retainer bars 36 so that the periphery of each segment may engage the bottom end flaps of a carton resting on and passing over the retainer bars. The pickup roller 40 and applicator 41 are adapted to be driven by a suitable chain drive in timed relation to the movement of the chain drive units 10. The semi-cylindrical segments 42 are so adjusted that they contact the bottom end flaps of each case but avoid contact with the contents of the case which may be exposed between the end flaps. A doctor blade 47 engages the adhesive transfer roller to control the amount of adhesive or glue thereon.

Located immediately ahead of the deflector plate 34, and following the squaring unit is a cam member 48 mounted on a shaft 49. As shown in Figure 6, the cam member is timed to engage the trailing flap of each case to counteract the weight of the contents of the case and guide the flap on top of the deflector plate.

Located above the bottom gluing unit 31 is a top gluing unit 51. The top gluing unit includes a pair of side plates 52 to which are attached adjustable suspension straps 53 adapted to hang from a rigid top frame 54 suitably mounted over the main frame 1. The receiving end of the top gluing unit is provided with a top deflector plate 55 pointed at its receiving end to direct the top side flaps of a case from a substantially horizontal to a vertical upwardly directed position. The deflector plate 55 is aided by guide straps 56 which diverge from the pointed end of a deflector plate and curve upwardly along the side plates 52. Suitable refolding straps 57 engage the top side flaps after passing the guide straps 56 to return the side flaps to a horizontal position.

Secured between the side plates 52 is an adhesive container 58. An adhesive transfer roller 59 dips into the adhesive ends adapted to transfer a quantity of adhesive to an applicator 61. The applicator is essentially the same as the applicator 41, that is, the applicator 61 includes semi-cylindrical segments 62 supported on a shaft 63 by means of end members. The end members are arcuately adjustable by bolt and slot means 65. The transfer roller 59 is engaged by a suitable doctor blade 66.

It is essential that the top end flaps of the case be horizontal and pass under the top gluing unit. The leading flap offers no difficulty in this regard. The trailing flap, however, must be folded to a horizontal position, and this is accomplished by means of a kicker arm 67 in the form of a lever having an arcuate portion positioned so as to engage the trailing flap of each case as shown best in Figure 3. The kicker arm is driven in timed relation with the other parts of the machine by means of a shaft 68. This is accomplished in part by a jackknife or elbow drive unit 69 located at one side of the machine for connection to a further chain drive. The shaft 68 also serves as a means of supplying power to the transfer roller 59 and the adhesive applicator 61 of the top gluing unit.

The various chain drives or other drives employed to operate the various elements of my device are conventional in construction, and therefore need not be described in detail. A suitable motor unit 71 is suspended under the main frame and is connected to the various drives through a clutch 72. For convenience of control the clutch is operably provided with an elongated arm 73 connected to a crossbar having handles 74 located at opposite sides of the machine preferably adjacent the discharge end of the delivery conveyor.

In addition, a hand wheel 75 is provided which is operable independently of the motor drive so that the cases may be fed under manual control in order to facilitate timing and adjustment of the elements of the machine.

Operation of my case sealing machine is as follows: The previously loaded fiber cases are fed onto the delivery conveyor 3 from other conveyors not shown. The cases as they approach the top of the conveyor are momentarily restrained behind the stop latches 24. As the stop latches 24 are released, one case at a time moves onto the accelerator roller. The accelerator roller drives the case far enough to permit a pusher bar to engage the case and continue its movement through the machine. The case squaring unit 16 then functions to press the sides of the case and to assure proper alignment.

It should be pointed out that at this stage the four bottom and the four top flaps of the fiber case are merely folded in position and are without adhesive. The upper flaps, of course, tend to open partially. The lower flaps are held closed by the weight of the contents of the case.

Each case as it is urged through the squaring unit 16 moves onto the deflector plate 34 of the bottom gluing unit 31. The deflector plate directs the bottom side flaps of the case downwardly, and this downward movement is continued by the guide straps 56 until the bottom side flaps are in a vertical position. The bottom end flaps are maintained flat and ride from the plate 34 onto the retainer bars 36. As the bottom end flaps pass over the adhesive applicator the semi-cylindrical segments 42 engage the bottom end flaps and apply adhesive thereto.

By reason of their adjustment the segments 42 contact only the bottom end flaps. After adhesive or glue has been applied to the bottom end flaps the side flaps are returned to their initial folded position by the refolding strips 38.

During the application of adhesive to the lower end flaps adhesive is also applied to the upper end flaps of the fiber case. The upper side fla

of each case as it passes through the upper gluing unit are directed to the upwardly directed positions and the top end flaps are folded flatwise by means of the deflector plate **55** and the kicker arm **67**. In a manner similar to the operation of the lower gluing unit the segments **62** apply adhesive to the upper end flaps. After the application of adhesive the top side flaps are refolded. Each fiber case, after glue or adhesive has been applied to the end flaps and the side flaps returned to their folded position, is passed through a squaring and compressing unit **81** which continues from the sealing machine. The compressing unit may be conventional and therefore its receiving end only is illustrated fragmentarily.

Having fully described my invention, it is to be understood that I do not wish to be limited to the details herein set forth, but my invention is of the full scope of the appended claims.

I claim:

1. A gluing machine for loaded fiber cases having top and bottom sets of end and side flaps the combination of: a first upwardly inclined conveyor; a second conveyor having a downwardly inclined receiving end, said conveyors being so disposed that the confronting ends of adjacent cases define a V-slot as they pass between said conveyors; latch means operable in said V-slot to retain each case as it reaches the end of the first conveyor; propelling means including a series of spaced bars and drive means therefor for engaging and spacing cases on said second conveyor; an accelerator roller incorporated in the receiving end of said second conveyor for separating said cases as they leave said first conveyor to permit movement of said bars into engagement with said cases; means engaged by said propelling means for actuating said latches; means associated with said second conveyor for deflecting the side flaps of each case to vertical positions; and upper and lower gluing means operable to pass between said vertically disposed side flaps and engage the top and bottom end flaps of each carton.

2. A combination as set forth in claim 1, wherein: each of said gluing means includes applicators in the form of paired segmental segments mounted on a common shaft; means for effecting circumferential adjustment of said segments; and means for timing said segments relative to said propelling means whereby said segments engage said end flaps but clear the intervening portions of said cases and their contents.

3. A gluing machine for loaded fiber cases having top and bottom sets of end and side flaps; a first upwardly inclined conveyor; a second conveyor having a downwardly inclined receiving end, said conveyors being so disposed that the confronting ends of adjacent cases define a V-slot as they pass between said conveyors; latch means operable in said V-slot to retain each case as it reaches the end of the first conveyor; propelling means including a series of spaced bars and drive means therefor for engaging and spacing cases or said second conveyor; an accelerator roller incorporated in the receiving end of said second conveyor for separating said cases as they leave said first conveyor to permit movement of said bars into engagement with said cases; means engaged by said propelling means for actuating said latches; means associated with said second conveyor for deflecting the side flaps of each case to vertical positions; a lower gluing unit including longitudinally extending retainer bars for holding folded said bottom end flaps and retaining the contents of said case, a rotatable glue applicator having circumferential grooves clearing said bars and engaging the bottom end flaps exposed therebetween; an upper gluing unit, including means for urging and retaining said upper end flaps in folded position over said case; and a glue applicator adapted to roll on the surfaces of said end flaps.

4. A combination as set forth in claim 3, wherein: each glue applicator includes a pair of segmental portions, means for effecting circumferential adjustment of said portions whereby said applicators may be disposed to clear each case and its contents between said end flaps.

EDWARD J. DERDERIAN.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,615,631	Kimball et al.	Jan. 25, 1927
1,731,307	Huye	Oct. 15, 1929
1,987,500	Wild	Jan. 8, 1935
2,160,008	Van Buren	May 30, 1939
2,371,926	Schmitt	Mar. 20, 1945