United States Patent [19]

Abler et al.

[11] **3,713,651**

[45] **Jan. 30, 1973**

[54] **JOGGER ASSEMBLY FOR CARTON BLANK STACKER**

[75] Inventors: **Norman C. Abler**, Menomonee Falls; **Peter Zernov**, Wauwatosa, both of Wis.

[73] Assignee: **Zerand Corporation**, New Berlin, Wis.

[22] Filed: **Feb. 1, 1971**

[21] Appl. No.: **111,564**

[52] **U.S. Cl.** **271/89**

[51] **Int. Cl.** **B65h 31/34**

[58] **Field of Search** ..... 271/88–89; 214/6 H, 6 D, 6 S

[56] **References Cited**

UNITED STATES PATENTS

3,580,402 5/1971 Tolf ..... 214/6 H

3,106,302 10/1963 Mandonas ..... 271/88 X

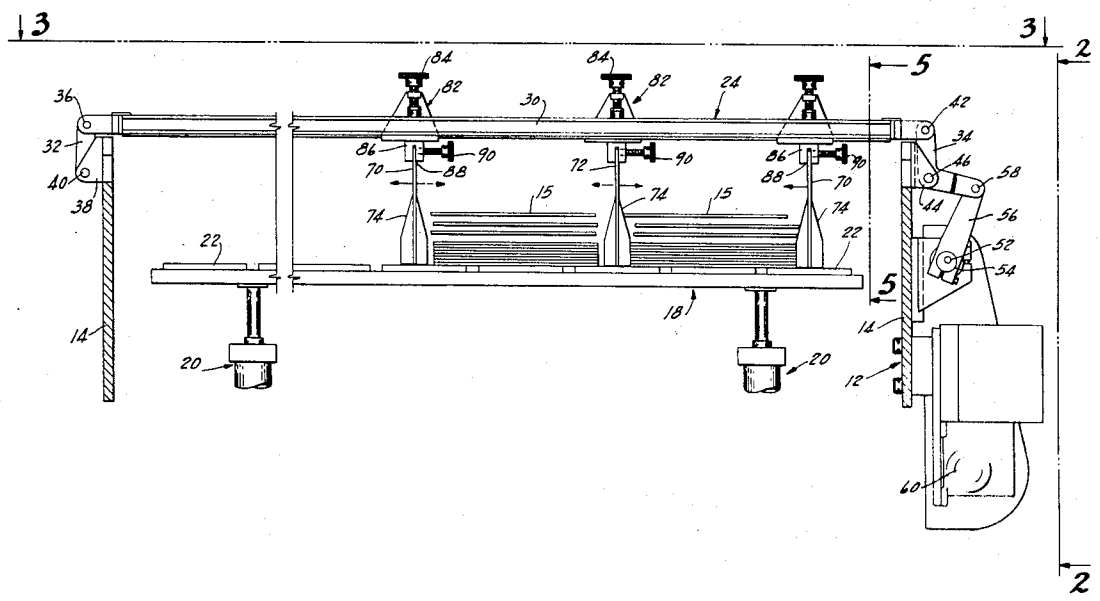
Primary Examiner—Edward A. Sroka

Attorney—James E. Nilles

[57] **ABSTRACT**

A carton blank jogger assembly for a carton blank stacker including a number of jogger plates alternately secured to parallel cross bars which are oscillated in equal but opposite directions to jog each alternate stack of carton blanks on each reversal of motion of said cross bars. A tooling block is secured to the lower edge of each jogger plate in a position to guide and jog the carton blanks into stacks. Each tooling block has an upper beveled guide surface and an inner jogging surface which conforms to the configuration of the blank being stacked.

6 Claims, 5 Drawing Figures



PATENTED JAN 30 1973

3,713,651

SHEET 1 OF 2

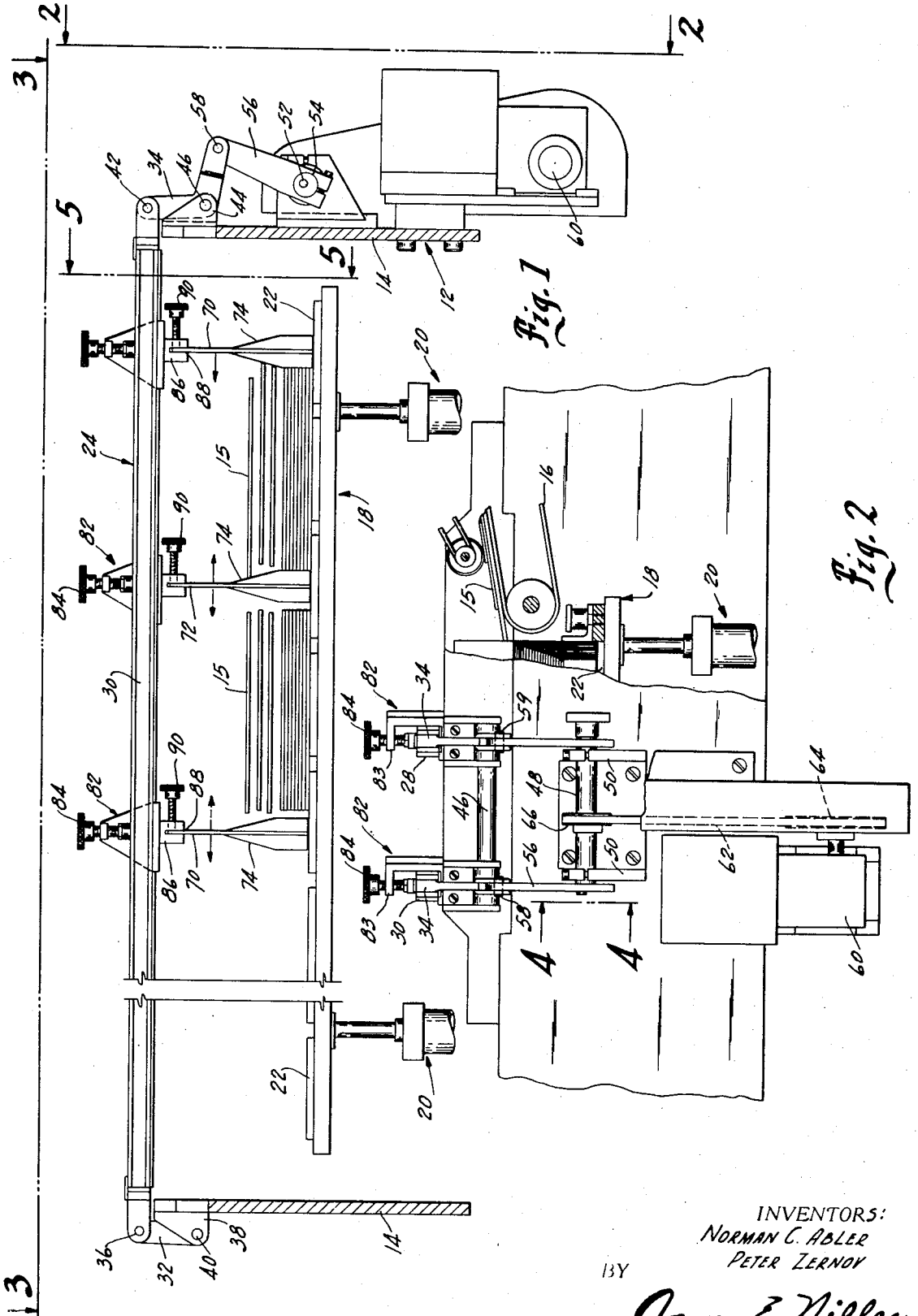


Fig. 1

Fig. 2

INVENTORS:
NORMAN C. ABLER
PETER ZERNOV

BY

James E. Nilles

ATTORNEY

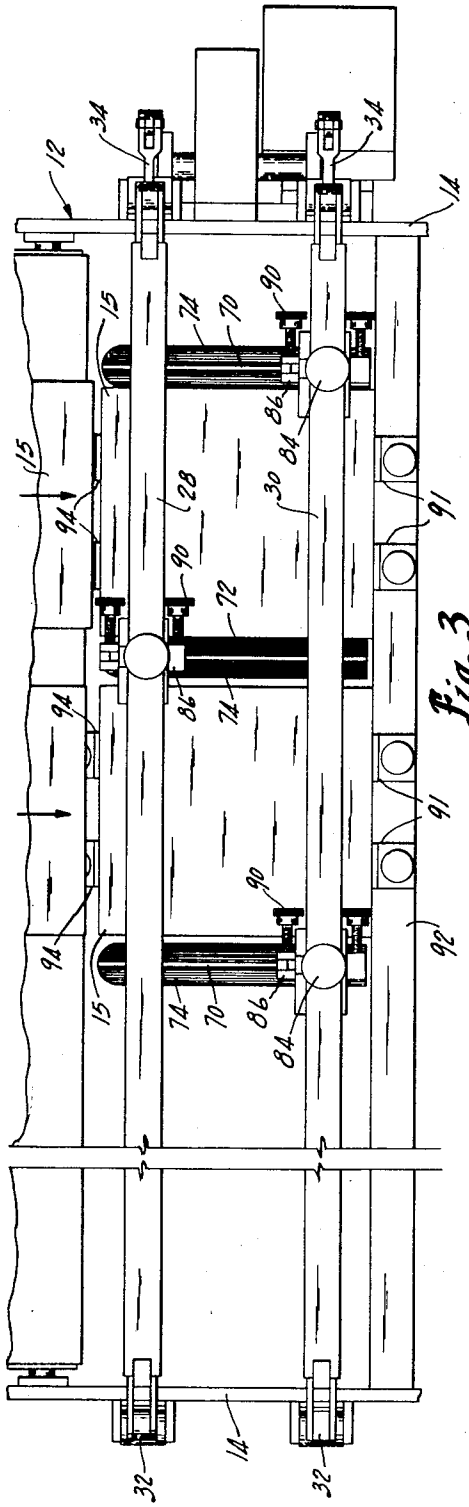


Fig. 3

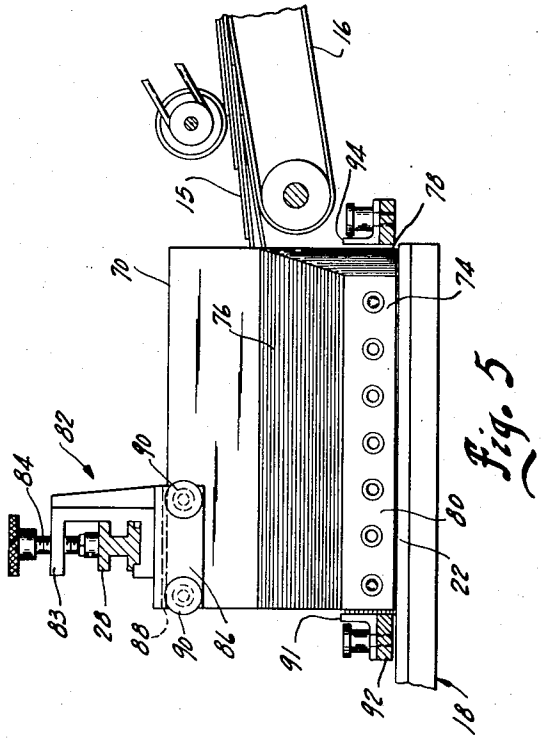


Fig. 5

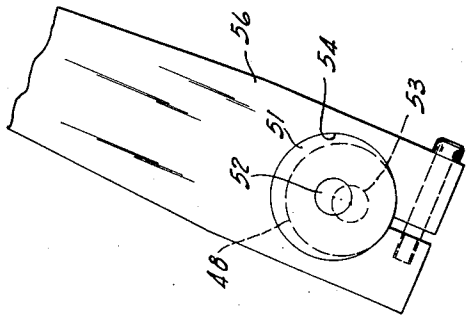


Fig. 4

INVENTORS:
NORMAN C. ADLER
PETER ZERNOV

BY: James E. Nilles
ATTORNEY

JOGGER ASSEMBLY FOR CARTON BLANK STACKER

BACKGROUND OF THE INVENTION

A jogging type stacker of the type contemplated herein is positioned at the end of a conveyor wherein a multiple stream or file of carton blanks are being conveyed in a shingled relation to the stacker. The stacker is similar to the stacker shown in application Ser. No. 94,481, filed Dec. 2, 1970, now U.S. Pat. No: 3,667,751 issued June 1, 1972, wherein the carton blanks are fed to the stacker and are jogged into stacks by plates which move transversely to the direction of motion of the blanks. It is generally well known that the files of carton blanks when deposited on the conveyors often become misaligned or that the files stray from the original centerlines on the conveyor jamming the stacker. In order for the files to enter the jogger plates without jamming, the blanks must be realigned on the original centerlines and in straight files as they enter the stacker. Most efforts to alleviate the problem of alignment of the files have been achieved by providing aligning devices on the conveyors. Accuracy of alignment required for this type of stacker is also critical due to the use of plates which extend in a parallel spaced relation to the edges of the files and are moved toward and away from each other to align the blanks. The distance between the plates is substantially the same as the width of the blanks. If the file or any of the blanks in the file are misaligned when they enter the stacker, they will engage the edge of the jogger plate. If the blanks twist in the file, they will jam the stacker.

SUMMARY OF THE INVENTION

The stacker of the present invention is provided with an improved jogger plate assembly which allows for greater file to jogger misalignment as well as carton blank misalignment without jamming the stacker. This is accomplished by providing tooling blocks on the lower portions of the jogger plates which have an inner configuration which conforms to the configuration of the edges of the carton blanks. The carton blanks enter the jogger assembly in the space between the plates and drop down onto the carton blank tooling blocks which are then used to jog the blanks into the stack. Since the spacing between the plates is increased to allow for the tooling blocks, greater clearance is provided at the point where the carton blanks enter the jogger assembly.

The jugger assembly of this invention also reduces the number of plates required to jog the stacks into alignment. This is achieved by providing tooling blocks on the lower edge of both sides of the plates and mounting each alternate plate on a different cross bar so that alternate files are jogged by each reversal of motion of the jogger bars. In this connection, where two or more files of blanks are being conveyed into the stacker, each of the jogger plates located between two files of carton blanks is used to alternately jog the blanks on each side of the jogger plate.

A novel clamp is also provided to support the jogger plates in the stacker. This clamp provides for three dimensional adjustment of the jogger plates to accommodate the variations in carton blank width and elevator height. In this regard, the stacker is set up by raising the elevator to its upper position. The clamps are moved to align the plates with the edges of the files and then tightened. This is done progressively from one side to the other with allowance being made for the movement of the plates during the jogging action. The clamps are then loosened for vertical height adjustment. The plates are allowed to rest on the elevator and then the clamp is tightened. Little or no space will then exist below the plates into which the carton blanks can migrate.

Further objects and advantages of this invention will become apparent when read in connection with the accompanying drawings.

THE DRAWINGS

FIG. 1 is a front elevation view showing the jogger plate assembly on a stacker;

FIG. 2 is a side view in elevation of the jogger plate assembly with a portion broken away to show the infeed conveyor;

FIG. 3 is a top view of the jogger plate assembly partially broken away showing two files of carton blanks moving into the spaces between the jogger plates;

FIG. 4 is an enlarged view taken on line 4—4 of FIG. 2 showing the eccentric shaft mounting for the jogger plates; and

FIG. 5 is a view taken on line 5—5 of FIG. 3 showing one of the jogger plates positioned at the end of a conveyor and resting on the surface of the elevator.

DESCRIPTION OF THE INVENTION

A jogging type stacker of the type contemplated herein generally includes a frame **12** having a pair of side plates **14** positioned at the end of an infeed conveyor **16**. An elevator **18** having a platform **22** is supported for vertical movement on a pair of hydraulic piston and cylinder assemblies **20**. As the carton blanks **15** accumulate on the elevator **18**, a stack height sensing device is used to slowly lower the elevator **18** by actuating the hydraulic piston and cylinder assemblies **20** as the stacks of carton blanks **15** grow on the top of the platform **22** of the elevator **18**. The operation of a stacker of this type is generally understood in the art and is more fully disclosed in copending application, Ser. No. 112,558 filed Feb. 4, 1971.

JOGGER ASSEMBLY

In accordance with the invention, a jogger plate assembly **24** is used to jog the carton blanks **15** as they are fed from the conveyor **16** onto the elevator **18** into stacks on the platform **22** of the elevator. Referring to FIGS. **1** through **3**, the jogger assembly **24** generally includes a pair of cross bars **28** and **30** which are mounted for oscillatory movement on links **32** at one end and a bell crank **34** at the other end. In this regard, the links **32** are pivotally connected to the cross bars by pins **36** and to a side wall bracket **38** by pins **40**. The bell cranks **34** are pivotally connected to the cross bars **28** and **30** by pins **42** and are pivotally supported on the side walls **14** by means of brackets **44** and pivot pins **46**.

Means are provided to oscillate the cross bars **28** and **30** in equal and opposite directions to jog the alternate files of carton blanks **15** on each reversal of motion of the cross bars **28** and **30**. Such means is in the form of an eccentric shaft **48** (FIG. 2) having offset eccentric

drive pins 52 and 53 at each end. The shaft 48 is mounted for rotation in a shaft bearing bracket 50 provided on side plate 14. The eccentric shaft 48 is connected to one of the bell cranks 34 by means of a link 56 having an aperture 54 at one end. The pin 52 is positioned in a bearing 51 provided in the aperture 54. The other end of the link 56 is pivotally connected to the bell crank 34 by a pin 58. The eccentric shaft 48 is connected to the other bell crank 34 by means of a link 57 having an aperture (not shown) at one end. The pin 53 at the other end of the shaft 48 is positioned in the aperture in link 57. The other end of the link 57 is pivotally connected to the bell crank 34 by a pin 59. Referring to FIG. 4, it will be noted that the eccentric pins 52 and 53 are diametrically offset from the center of shaft 48 an equal amount to provide equal and opposite motion to the cross bars 28 and 30. The shaft 48 is driven by means of a motor 60 and a belt 62 reaved around drive sheave 64 on the motor and driven sheave 66 on the shaft 48.

JOGGING PLATES

The carton blanks 15 are jogged into stacks on the elevator 18 by means of jogging plates 70 on cross bar 30 and jogging plates 72 on cross bar 28. Means are provided on each jogging plate for guiding and jogging the carton blanks into stacks. Such means is in the form of a pair of tooling blocks 74 on the lower edges of the jogging plates. In this regard, the tooling blocks 74 each have an inwardly beveled upper edge 76 and in inwardly beveled front edge 78 to guide the blanks into stacks. The inner surface 80 of each tooling block 74 is used to jog the blanks and is shown as being flat to conform to the edge of the carton blank 15 being stacked. It should be understood that the inner surface can be contoured to conform to irregular shaped edges on the carton blank to provide a greater degree of evenness in stacking the carton blanks 15.

Means are provided for mounting the jogging plates 70 and 72 on the cross bars 28 and 30. Such means is in the form of a clamp 82 which includes a C-shaped bracket 83 and a manually settable hand screw 84 on the top. A plate 86 having a slot 88 is secured to the bottom of the bracket 83. A pair of hand screws 90 are threadedly mounted in the plate 86 for movement into slot 88. The upper edge of a jogging plate 70 or 72 is inserted into the slot 88 and is retained in the slot 88 by turning the hand screws 90.

The clamps 82 provide for the transverse adjustment of the jogger plates 70 and 72 with respect to the edges of the files and for longitudinal and vertical adjustment of the jogger plates with respect to the elevator 18. In this regard, on assembly, the elevator 18 is brought up to its upper position and the jogger plates 70 and 72 are allowed to rest on the elevator 18 before the screws 90 are tightened. Migration of carton blanks 15 under the plates 70 and 72 is thereby prevented.

Means are provided on the frame 12 to limit the forward motion of the carton blanks 15 as they enter the stacker. Such means as seen in FIGS. 1 and 5 are in the form of a number of stop plates or brackets 90 mounted on a fixed bar 92. Similar stop plates 94 are provided along the rear edge of the carton blanks 15.

OPERATION

In operation, alternate files of carton blanks 15 are jogged into a stack on each reversal of motion of the cross bars 28 and 30. In this regard, it should be noted that the jogger plates 70 are secured to the cross bar 30 and the jogger plates 72 to the cross bar 28. In FIGS. 1 and 3, the cross bar 28 is shown moved all the way to the right with the tooling block 74 on plate 72 in engagement with the edge of the carton blanks 15 on the right. The cross bar 30 is shown moved all the way to the left with the tooling block 74 on the plate 70 in engagement with the other edge of the carton blanks 15 on the right. The right hand file is thus jogged into a stack by the tooling blocks 74. It should also be noted that the carton blanks 15 entering the jogging assembly are entering in the space between the plates 70 and 72 with considerable clearance provided on each edge of the carton blanks 15. On reversal of motion of the cross bars 28 and 30, the plate 72 on cross bar 28 will move to the left moving the tooling block 74 on the other side of the plate 72 into engagement with the edge of the file of carton blanks 15 on the left in FIGS. 1 and 3. The cross bar 30 will move to the right moving the jogging plate 70 on the left into engagement with the other edge of the file of carton blanks 15 on the left. As the carton blanks 15 drop into the space between the jogger plates 70 and 72 above the tooling blocks 74 as seen in FIG. 1, they will be jogged into stacks between the tooling blocks. A greater misalignment of a carton blank or of the file of carton blanks can be accommodated due to the increased width between the jogger plates 70 and 72 above the tooling blocks 74.

It should also be noted that the carton blanks 15 will move a considerable distance into the space between the jogger plates 70 and 72 before the blanks 15 drop between the tooling block 74. A greater length of the edge of each blank will be engaged by the tooling block 74 on initial impact. This eliminates the possibility of the blanks being skewed on impact where only the leading edge is engaged as in previous devices.

RESUME

The jogging assembly disclosed herein eliminates to a considerable extent the necessity for aligning the files and carton blanks as they are fed to a stacker. Set up time is also reduced by using a novel clamp to support the jogger plates in the assembly. The jogging plates can also be quickly converted to accommodate irregular shaped edges on the carton blanks by replacing the tooling blocks with blocks having a corresponding configuration. The number of jogging plates has been reduced by mounting each alternate jogger plate on one cross bar and the other jogger plate on the other cross bar. This reduces the number of jogger plates to one more than the number of files to be jogged. The space between the jogger plates at the point of entry of the carton blanks into the jogger assembly has been increased by locating the tooling blocks below the conveyor thereby allowing for a greater amount of misalignment of the files into the stacker. This space is at least equal to the widths of the blanks plus the width of the tooling blocks located on each jogger plate.

We claim:

1. A jogging assembly for a carton blank stacker having a conveyor for conveying the carton blanks to the assembly, said assembly comprising,

a pair of cross bars mounted on the stacker for oscillatory motion in a parallel spaced relation,

means for oscillating said cross bars,

a number of jogger plates equal to one more than the number of files of carton blanks to be stacked, each jogger plate including means having a downwardly and inwardly inclined edge for guiding said blanks into stacks,

each alternate jogger plate being mounted on one of the cross bars and the other jogger plate being mounted on the other cross bar,

whereby each alternate file of carton blanks is jogged on each reversal of motion of said cross bars.

2. The assembly according to claim 1 wherein,

said means comprising a detachable tooling block including means conforming to the shape of the edges of said blanks for jogging said blanks into stacks.

3. The assembly according to claim 2 including means for adjustably securing said jogger plates to said cross bars to compensate for variations in height and width of the carton blanks.

4. In a carton blank stacker having an elevator positioned to receive carton blanks being conveyed in a shingled relation in multiple files on a conveyor, a carton blank jogging apparatus for jogging said blanks into stacks on the elevator, said apparatus comprising,

a frame including a pair of side plates mounted in a parallel relation to each end of the elevator,

a pair of cross bars supported for oscillatory motion on said plates,

a number of jogger plates equal to one more than the number of files to be stacked,

first means for supporting each alternate jogger plate on one of said cross bars,

second means for supporting the remaining plates on the other of said cross bars, means including a downwardly and inwardly inclined surface secured to the lower edge of each of said plates for jogging said blanks into stacks, and

means for oscillating said cross bars in opposite directions to job alternate files on each reversal of motion of said bars.

5. The stacker according to claim 4 wherein said jogging means comprises a tooling block secured to the lower edge of each jogger plate and having an inner jogging surface conforming to the configuration of the edges of said blanks.

6. The stacker according to claim 5 wherein said tooling blocks are located below the level of the conveyor, the distance between the jogger plates at the point of entry of the blanks into said assembly being at least equal to the sum of the width of one of said blanks and the thickness of each of said tooling blocks which are mounted on the lower edges of said jogger plates.

* * * * *