United States Patent [19]

Hottendorf

[11] **3,804,402**

[45] **Apr. 16, 1974**

[54] **FEEDING MECHANISM FOR PAPERBOARD CONTAINER HANDLING MACHINE**

[75] Inventor: **William J. Hottendorf,** Los Altos Hills, Calif.

[73] Assignee: **Ametek, Inc.,** New York, N.Y.

[22] Filed: **Apr. 14, 1972**

[21] Appl. No.: **244,224**

Related U.S. Application Data

[63] Continuation of Ser. No. 78,483, Oct. 6, 1970, abandoned.

[52] **U.S. Cl.** **271/139,** 271/144, 271/171

[51] **Int. Cl.** **B65h 5/16**

[58] **Field of Search** 271/139, 144, 131, 165, 271/171, 132–138, 140–143

[56] **References Cited**

UNITED STATES PATENTS

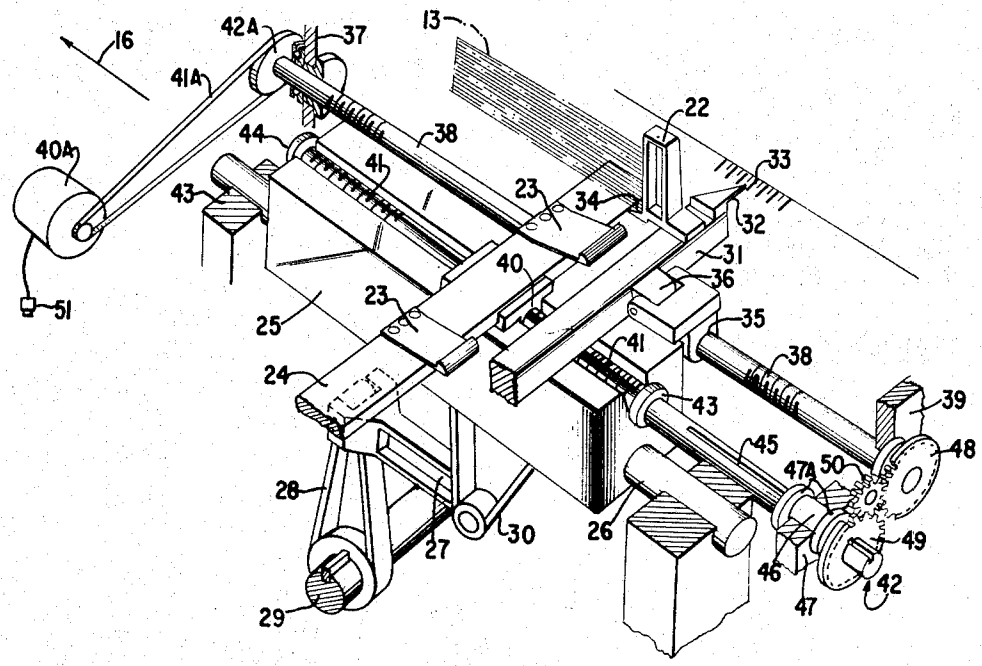
3,006,276	10/1961	Deslauriers et al.	271/139 X
3,653,654	4/1972	Carlsson	271/144
324,195	8/1885	Walker	271/139

Primary Examiner—Evon C. Blunk
Assistant Examiner—Bruce H. Stoner, Jr.
Attorney, Agent, or Firm—Smythe & Moore

[57] **ABSTRACT**

An adjustable paperboard sheet hopper backstop means and a sheet moving kicker means adjustable relative to said backstop with an adjusting means for moving the backstop in accordance with sheet width and, at the same time, moving the reciprocable slide carrying the kicker relative to the backstop means so that the backstop and kicker can be adjusted while the machine is being operated and without use of tools.

3 Claims, 3 Drawing Figures



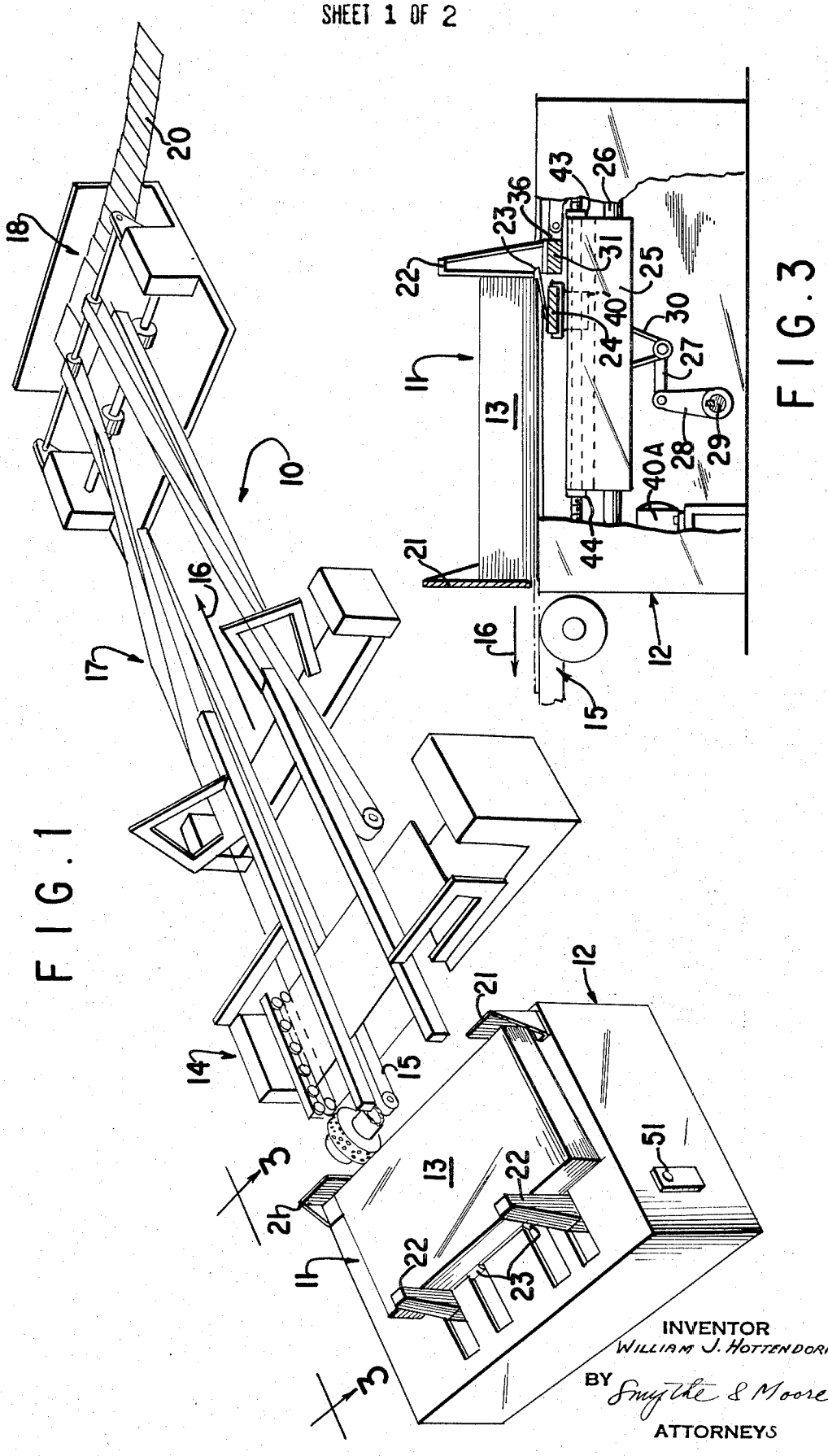
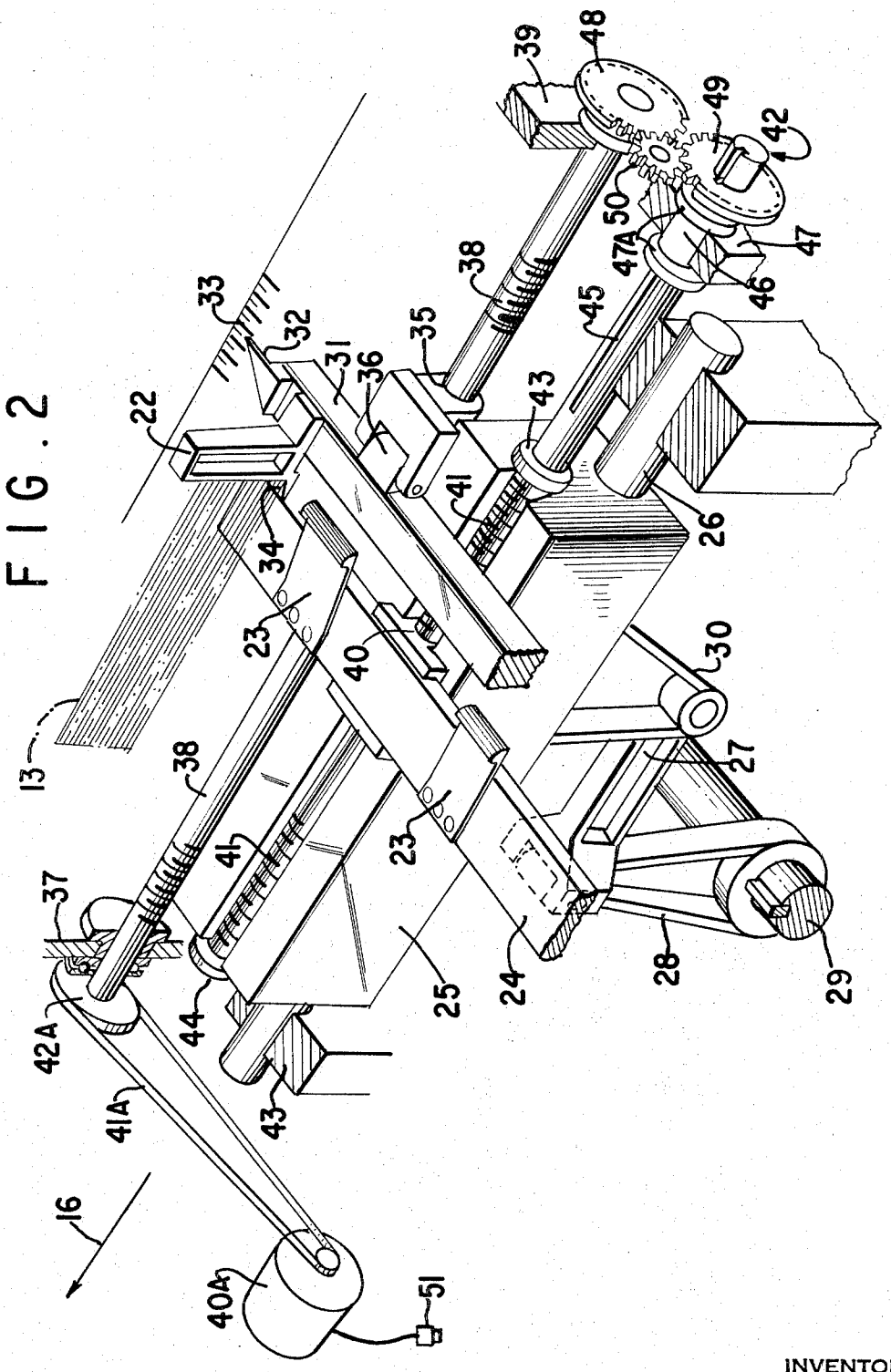


FIG. 1

FIG. 3

INVENTOR
WILLIAM J. HOTTENDORF
BY Smythe & Moore
ATTORNEYS

FIG. 2



INVENTOR
WILLIAM J. HOTTENDORF
BY Smythe & Moore
ATTORNEYS

FEEDING MECHANISM FOR PAPERBOARD CONTAINER HANDLING MACHINE

This is a continuation of U.S. Pat. application Ser. No. 78,483, filed Oct. 6, 1970, now abandoned.

This invention relates to paperboard box making and handling machines and especially to the mechanism for feeding sheets of varying widths or sizes thereto.

Paperboard box making machines for production of corrugated boxes must perform various operations on sheets of different dimensions depending upon the size of the box to be made. It takes considerable time to reset the present machines when a change is made from one size to another. Also, it is desirable to make corrective adjustments when needed and while the machine is running. Present machines require considerable time and labor to make the aforementioned changes.

One of the objects of the invention is to provide a paperboard sheet handling machine which is readily adjustable to operate on various size of sheets.

Another of the objects of the invention is to provide an adjustable sheet feeding arrangement which is simple and easy to adjust even while the machine is in operation.

A still further object of the invention is to provide for adjustment of the stacking and feeding parts relative to the machine and each other without use of tools.

In one aspect of the invention, the backstops or one of the sheet edge positioning means is movable relative to the frame of the machine to accommodate the width of sheet to be treated. At the same time, the kicker or reciprocable sheet movers or advancers can be adjusted so as to maintain the required position relative to the backstop means. The two adjusting means can be connected with a single power driven means, such as an electric motor, that can be activated by the operator.

These and other objects, features and advatages of the invention will become apparent from the following description and drawings which are merely exemplary.

In the drawings:

FIG. 1 is a schematic perspective of one type of machine with which the invention can be used;

FIG. 2 is a fragmentary perspective, partly in section, showing one of the elements of the adjustment means, two being normally employed; and

FIG. 3 is a broken sectional view taken in the direction 3—3 of FIG. 1. The present invention will be described in conjunction with a gluer-folder paperboard box forming machine but it can be used on other types of box making and handling machines wherein a sheet is to be moved from a stack of sheets or position, and the machine must be able to be adjusted for different size boxes or sheet blanks.

A gluer-folder is generally indicated at **10** (FIG. 1) wherein hopper **11** is mounted on frame **12.** Sheets **13** are moved from the bottom of the stack of sheets towards a gluing station **14,** a sheet being moved by conveyor **15** as is known in the art. The conveying means carries the sheet in the direction **16** and through the folding station **17** while the various folds are made, the folded and then glued flat box being delivered to the station **18.** Sheets **20** can then be delivered to a stacker or other delivery point.

The hopper **13** has forward edge positioning elements **21** which can be fixed to the frame **12** as desired.

Adjustable backstops **22** position the rear edge of sheets **13.**

There are backstop and kickers on both sides of the machine, and only one will be described at this point.

Reciprocable kicker or sheet moving plates or sheet delivering elements **23** are mounted on kicker bar **24** (FIGS. **2, 3**) carried on reciprocable slide **25.** Reciprocable slide **25** is reciprocated on knocker or kicker shaft **26** by arms **27, 28** driven by oscillating shaft **29** which is connected to the driving mechanism for the particular machine arranged to deliver sheets at predetermined times. Bracket **30** connects the reciprocating means to slide **25.**

Adjustment of the backstops will first be described. Backstop **22** is mounted on backstop support **31** which can have a width of sheet indicator **32** which cooperates with scale **33.** The forward edge **34** of the backstop has a conventional surface for cooperation with the edges of the sheet to be moved.

The distance from the forward face of backstop **22** to front positioning elements **21** must be adjusted in accordance with the width of sheet **13.** Backstop bar **31** is connected to a precision nut arrangement **35** which is connected by bracket **36** to backstop support **31.** Support bracket **37** holds one end of screw shaft **38,** the other end thereof being journaled in bracket **39.** Brackets **37** and **39** are suitably held on the frame or a portion **12** of the machine.

Screw **38** can be driven by motor **40A** which is connected by belt **41A** to motor **40A** and pulley **42A.**

The kicker slide **25** has a precision nut **40** engageable by screw threads **41** of screw shaft **42.** Screw shaft **42** is positioned longitudinally in the kicker slide **25** by thrust collars **43** and **44.** Screw shaft **42** has an elongated keyway **45** therein which slidably engages with a key (not shown) in gear **49.** Journal **46** is held in position in frame member **47** by thrust collars **47A.** Gear **48** on screw **38** is connected to gear **49** by an intermediate pinion **50.**

Rotation of screw **38** by motor **40A** is transmitted to screw shaft **42** through the gears **48, 49, 50** and thence to precision nut **40** which will longitudinally position kicker bar **24** on slide **25.**

Inasmuch as slide **25** reciprocates to move sheets from the stack into the machine, shaft **42** must reciprocate relative to bearing **46** which is made possible by the sliding of shaft **42** in the bearing **46.**

Thus, it should be apparent that when it is desired to position backstops **22,** such can be accomplished by merely pressing a control button **51** to operate motor **40A.** Such will cause screw **38** to rotate and longitudinally position the backstop **22,** and at the same time, screw shaft **42** is rotated so as to likewise position kicker bar **24** relative to backstop **22.** When the machine is set into operation, slide **25** will reciprocate back and forth because of the sliding relation of screw shaft **42** in journal **46.** Also, adjustment is possible while the machine is running and slide **25** is reciprocating because of the sliding movement between the parts.

It should be apparent that variations in details of construction can be made without departing from the spirit of the invention except as defined in the appended claims.

What is claimed is:

1. In a feed mechanism for a paperboard machine, the combination including hopper means for receiving sheets, adjustable backstop means for said hopper for positioning sheets of varying sizes in said hopper means, reciprocating kicker slide means reciprocably mounted on said machine, first rotatable screw thread shaft means associated with said kicker slide means, kicker means adjustably mounted on said first screw thread shaft means of said kicker slide means, and adjusting means associated with said backstop means and said kicker means for movement of the same, including a second rotatable screw thread shaft means associated with said backstop means and interconnected by gearing means with said first rotatable screw thread shaft means, for adjustably moving said backstop means relative to said hopper means for adjustably and simultaneously moving said kicker means on said slide means.

2. A machine as claimed in claim 1 wherein the screw thread means for moving the kicker means is slidable relative to the machine so that the slide means can reciprocate.

3. A machine as claimed in claim 1 wherein the interconnected screw thread shafts are connected to a motor for rotating the same.

* * * * *