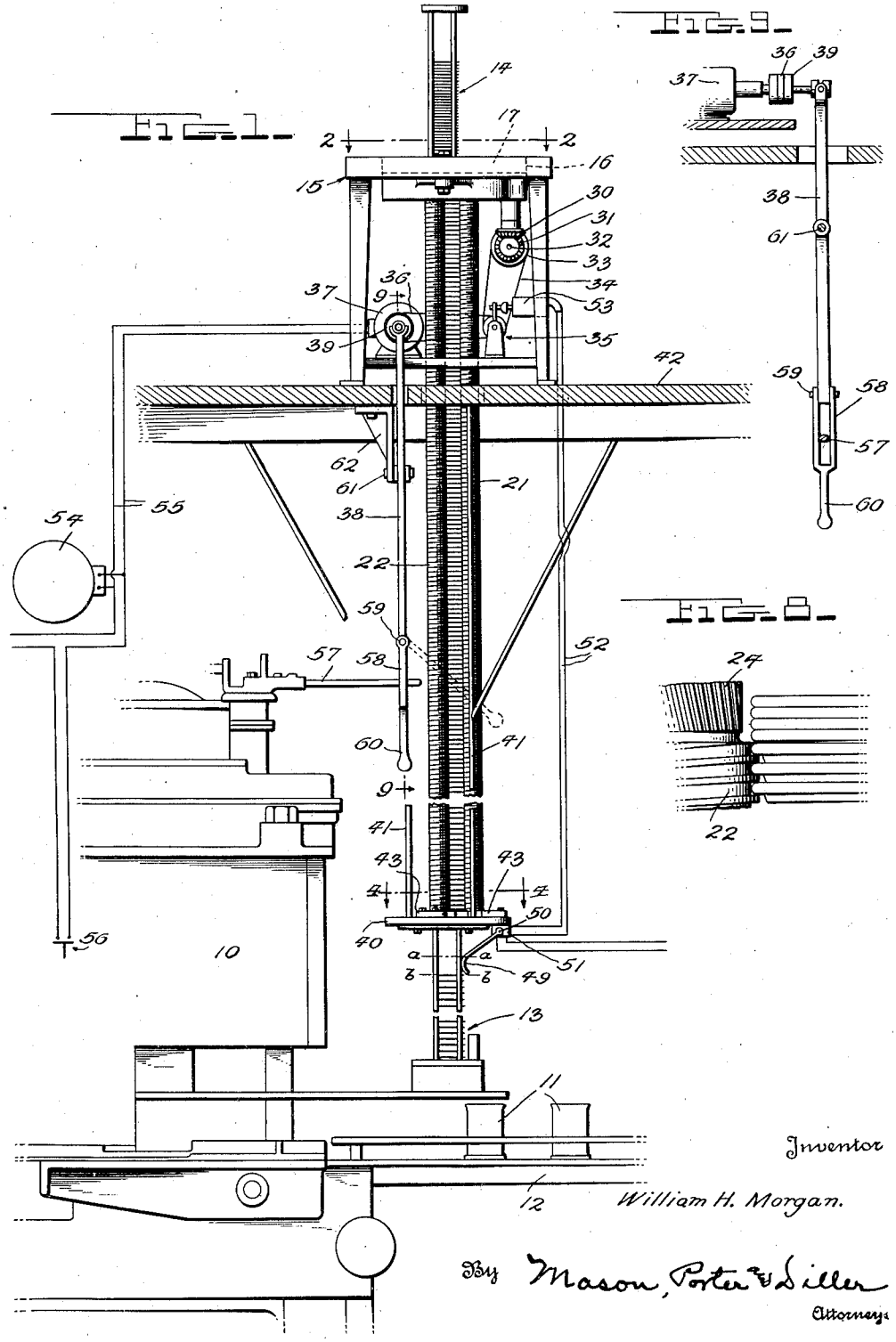
Aug. 23, 1949. W. H. MORGAN 2,479,955

CAN END FEEDING MECHANISM

Filed Feb. 23, 1945 3 Sheets-Sheet 1



Inventor

William H. Morgan.

By Mason, Porter & Miller

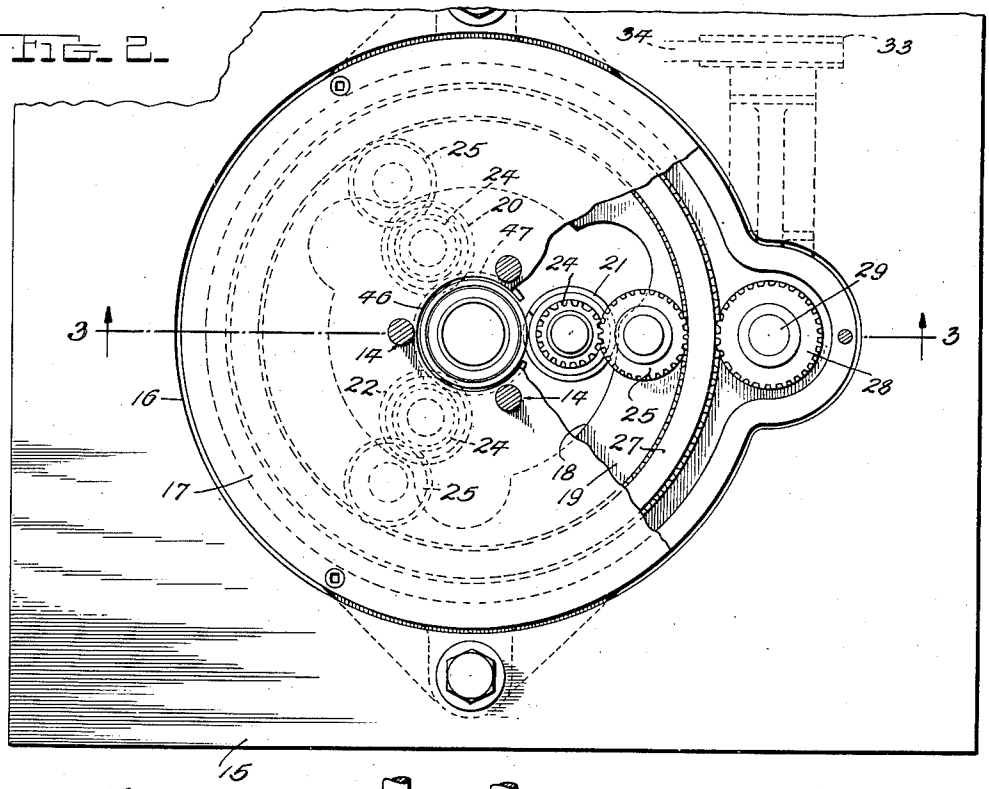
Attorneys

Aug. 23, 1949. W. H. MORGAN 2,479,955

CAN END FEEDING MECHANISM

Filed Feb. 23, 1945 3 Sheets-Sheet 2

FIG. 2.



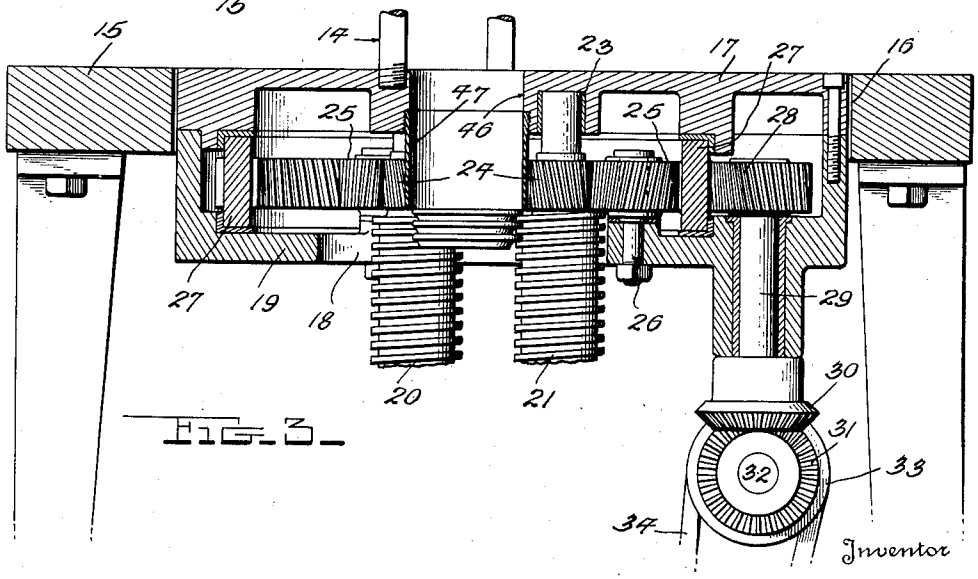


FIG. 3.

Inventor

William H. Morgan.

By Mason, Porter & Diller

Attorneys

Aug. 23, 1949. W. H. MORGAN 2,479,955

CAN END FEEDING MECHANISM

Filed Feb. 23, 1945 3 Sheets-Sheet 3

FIG. 4.

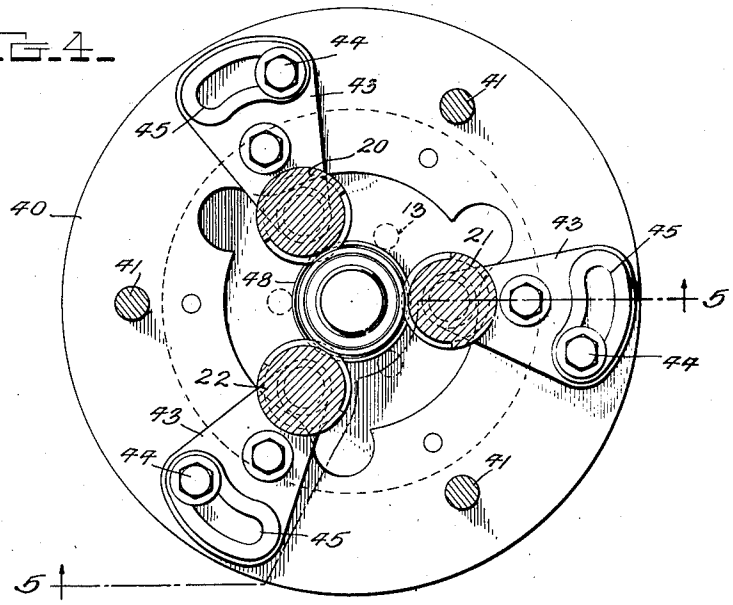
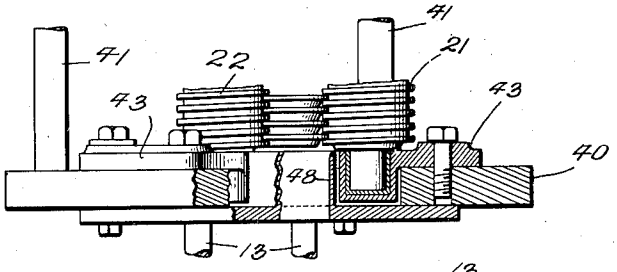


FIG. 5.



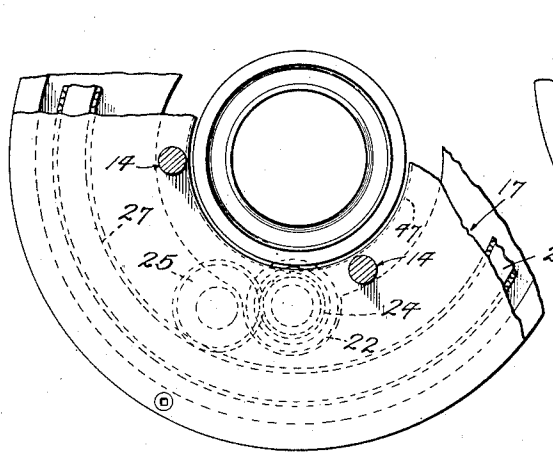


FIG. 6.

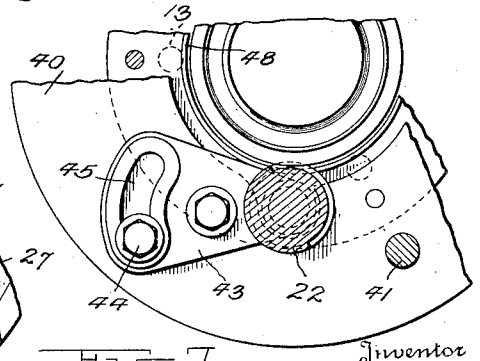


FIG. 7.

Inventor

William H. Morgan

By Mason, Porter & Diller

Attorneys

Patented Aug. 23, 1949

2,479,955

UNITED STATES PATENT OFFICE

2,479,955

CAN END FEEDING MECHANISM

William H. Morgan, New York, N. Y., assignor to Continental Can Company, Inc., New York, N. Y., a corporation of New York

Application February 23, 1945, Serial No. 579,389

2 Claims. (Cl. 113—114)

1

The invention relates to new and useful improvements in a can end feeding mechanism for a seaming machine, and more particularly to a machine for double seaming the ends to the can bodies.

It is a common expedient to provide a machine for double seaming ends to can bodies with a stack holder in which the ends are stacked one on another. The ends are removed from the bottom of the stack holder one at a time and in timing with the passing of can bodies into the double seaming machine. These machines are usually equipped with a mechanism whereby when the ends in the stack holder give out the machines stop and also with means whereby when there are no can bodies fed into the machine to have ends attached thereto, then the release of an end from the stack holder is prevented. A machine of this type is illustrated in the patent granted to A. L. Kronquest April 1, 1930, No. 1,752,912.

The can ends are placed in the stack holder at the upper end thereof by an operator. The capacity of the stack holder is such that in these high speed machines an operator must give very close attention in order to keep the stack holder supplied with can ends. If the ends in a stack holder give out, the machine is stopped and when the machine is used in a line which makes the can bodies and flanges them preparatory to the seaming of an end thereto, the whole line must be stopped and thus greatly handicaps production.

An object of the present invention is to provide a mechanical means for supplying can ends to the stack holder so as to maintain a constant supply therein.

A further object of the invention is to provide a mechanical means of the above type wherein the can end feeding means for supplying the stack holder, feeds the ends one at a time into the stack holder.

A still further object of the invention is to provide a can end feeding mechanism for supplying can ends to the stack holder wherein the speed of the can end feeding means is controlled by the height of the stack in the stack holder of the seaming machine.

A still further object of the invention is to provide a feeding means for feeding can ends one at a time into the stack holder of a seaming machine, which feeding means is capable of ready adjustment for feeding ends of different diameters.

These and other objects will in part be obvious

2

and will in part be hereinafter more fully described.

In the drawings, Figure 1 is a view in side elevation showing very diagrammatically a portion of a can end seaming mechanism, the stack holder therefor and the improved means for supplying the stack holder with can ends.

Figure 2 is a view partly in plan and partly in section with parts broken away on a line 2—2 of Figure 1.

Figure 3 is a sectional view on the line 3—3 of Figure 2.

Figure 4 is a sectional view on the line 4—4 of Figure 1.

Figure 5 is a view partly in side elevation and partly in section on a line 5—5 of Figure 4.

Figure 6 is a view of the can end feeding mechanism similar to Figure 2, but showing the devices as adjusted and reassembled for feeding can ends of a larger diameter.

Figure 7 is a view in plan similar to Figure 4 showing one of the can end feed screws adjusted for feeding can ends of a larger diameter.

Figure 8 is a side view showing a portion of one of the feed screws and the manner of stripping the can ends from the supply stack holder preparatory to the feeding of the ends to the stack holder of the seaming machine.

Figure 9 is a view partly in section and partly in side elevation showing the clutch shifting lever for connecting the train of mechanism operating the feed screws to the motor for operating the same.

The double seaming machine for joining the can ends to the can bodies is illustrated in part very diagrammatically at 10. The can bodies 11 are fed along a supporting table 12 into the machine one at a time. These can bodies are fed into the machine in spaced relation. In the machine of the patent to Kronquest supra, there are a plurality of seaming units which receive the can bodies and can ends and join the ends to the can bodies by a seaming operation usually referred to as a double seam. The ends are fed from the bottom end of a stack holder 13 by suitable devices which release the ends one at a time and in proper timing with the delivery of the can bodies to the seaming units. It is very common in the art to provide the seaming machine with a means whereby when the ends in the stack holder give out, the machine is stopped, and also to provide a means whereby if there is no can body to which an end can be attached, then the ends are not released from the stack. All of these features are well known in the art

and further description thereof will not be necessary. The present invention has to do with the supplying of can ends to the stack holder 13 of the seaming machine.

As shown in Figure 1 of the drawings, the can ends to be supplied to the seaming machine are placed in a supply stack holder 14. Preferably this stack holder is located on the floor above where the seaming machine is operated. The stack holder 14 is mounted on a supporting table 15. The table has an opening 16 therethrough in which opening is mounted a housing 17, which supports the stack holder 14. The stack holder is in the form of spaced rods with a ring plate at the upper end thereof. This is the usual type of stack holder. The housing 17 is made in two sections. The stack holder is mounted on the upper section. There is an opening 18 through the lower section 19 of the housing and three feed screws indicated at 20, 21 and 22 extends up through the opening and are journaled in bearings on the under side of the upper section of the housing 17. One of these bearings is indicated at 23. Each feed screw is provided with a gear 24 and associated with each gear 24 is a gear 25 mounted on a stud 26 attached to the lower housing member.

A ring gear 27 is mounted in the housing and the gear teeth on the inner face of this gear ring mesh with the three gears 25. The gear teeth on the outer face of the ring 27 are engaged by a gear wheel 28 carried by a shaft 29 mounted in a bearing in the under section 19 of the housing. At the lower end of the shaft 29 is a bevel gear 30 which meshes with the bevel gear 31 on a shaft 32. This shaft carries a belt wheel 33 over which a belt 34 runs. This belt 34 engages a belt wheel on a speed changing mechanism 35 which is of any suitable design. The speed changing mechanism is driven by a belt 36 running over a belt wheel 39 on the shaft of the motor 37. The motor shaft is connected to the belt wheel through a suitable clutch mechanism controlled manually by the clutch lever 38. Through the train of mechanism just described, the motor 37 rotates the feed screws 20, 21 and 22.

Mounted at the upper end of the stack holder 13 is a supporting plate 40. This supporting plate 40 is connected to the upper end of the stack holder 13 and it is further supported by rods 41 connected to the floor 42 of the upper room in which the stack holder 14 is located. The lower end of the feed screws are mounted in bearings carried by brackets 43 which are pivotally mounted on the supporting plate 40. These brackets are capable of being adjusted about their pivotal support and are secured in adjusted positions by bolts 44 passing through the slots 45 in the brackets.

The upper section of the housing 17 is provided with an opening 46 which is in alignment with the rods of the stack holder 14 so that the can ends placed in the stack holder 14 will pass by gravity through this opening 46 and also through a guide sleeve 47 and the lower end of the stacked can ends rest on the feed screws 20, 21 and 22. The threads on the feed screws will strip the ends one at a time from this upper stack holder and will carry them positively downward to the stack holder 13 and deliver the can ends one at a time to the stack holder 13. The supporting plate 40 is provided with a sleeve 48 which guides the can ends released by the feed screws into the stack holder 13.

The speed of rotation of the feed screws can be adjusted through the speed changing mechanism 35. These feed screws are so timed, relative to the speed of the can end seaming machine, that the stack holder 13 is preferably supplied with can ends up to a height indicated by the line *a*—*a*. The stack holder 14 which supplies the can ends to the feed screws may be made of considerably greater capacity than the stack holder 13. The operator's sole attention is given to the maintaining of this stack holder 14 well filled with can ends. The operation of feeding the ends to the stack holder 13 and from the stack holder 13 into the seaming machine is fully automatic.

It sometimes happens that the operator supplying ends for several seaming machines will permit the ends to give out in the stack holder 14, thus causing what might be called a slack feed of can ends by the feed screws. Under such conditions, the upper ends of the stacked ends in the stack holder 13 will drop, say to the line *b*—*b*. If this slack in the feed of the ends continues, then the ends will not be properly supplied to the seaming machine and the line will be stopped. In order to prevent this undesirable stopping of the seaming machine through a slack feed of ends to the stack holder 13, a control means is provided for increasing the speed of the feed screws so as to supply ends to take up the slackness in the feed. This control means includes an arm 49. This arm is pivoted at 50 and is spring pressed against the can ends in the stack holder. When the ends drop to the line *b*—*b*, the arm will swing inward and this will close a switch in the switch box 51, which switch closes a circuit 52 and this operates through a solenoid 53 to shift the speed change mechanism so as to increase the speed of rotation of the feed screws feeding the can ends. When the slack in the feed is taken up and the stack again returns to the line *a*—*a*, the arm will be forced to the right and the circuit broken so that the speed changing mechanism will drop back to normal operating speed.

When it is desired to adjust the can end feeding mechanism for ends of a different diameter, the bolts 44 are released and the brackets 43 swung from the position shown in Figure 4 to the position shown in Figure 7. Bearings at the upper ends of the feed screws must also be shifted. This is accomplished by removing the upper section of the housing 17 and replacing the same with a section wherein the bearings are properly spaced and wherein the stack holder is of proper dimensions for receiving ends of a larger diameter. The sleeve 47 will of course also have to be changed which can be readily done as it is attached to the upper section. The operating train of mechanism does not need any changes whatever when the feed screws are shifted from one position to another for adapting the end feeding mechanism for feeding ends of different diameters.

The motor for operating the seaming machine is indicated diagrammatically at 54 in Figure 1 of the drawings. The motor 37 and the motor 54 are both connected to the same circuit 55 and are controlled by a common switch 56. The motor 54 is connected to the operating means of the seaming machine through a suitable clutch mechanism (not shown) which is controlled by a clutch shifting lever 57. The clutch shifting lever 38 extends downwardly and is provided at its lower end with a forked section 58 which is pivoted at 59 to the main section of the clutch shifting lever 38. The

outer end of the clutch shifting lever **57** extends between the forks of the section **58**.

When it is desired to start the operation of the seaming machine, the switch **56** is closed so that current is fed to the motor **54** and it is at the same time fed to the motor **37** so that both motors are put into operation. It is assumed that at the starting of the motors the clutch shifting levers are positioned so that neither the seaming machine nor the feed screws are connected to their respective motors. The operator, by grasping the handle **60** of the clutch shifting lever **38**, can throw the clutch so as to connect the motor **37** to the belt wheel **39** and thus the feed screws are connected up to the motor for operation. This same movement of the clutch lever **38** will shift the clutch lever **57** by reason of the fact that the end of the lever extends between the forks **58**. Thus both the seaming mechanism and the feed screws are simultaneously connected up to their respective motors.

There are times when it is desirable to operate the feed screws before starting up the seaming machine, as for example as follows:

At the beginning of a day or of a run, and particularly where the machine has been adjusted for a different size can and can ends, the stack holder **13** may be without can ends, and it is desirable to fill this stack holder at least up to the line *b—b* or the line *a—a* before the seaming machine is set in operation. This may be accomplished by the operator grasping the handle **60** and turning the forked section about the pivot **59** so as to remove the connection between the forked section of the clutch shifting lever **38** and the clutch shifting lever **57** of the seaming machine. This position of the handle where it is disconnected from the clutch lever **57** is indicated in broken lines in Figure 1. When in this position, the clutch shifting lever **38** can be shifted to connect the feed screws to the motor **37** without starting the seaming mechanism. When the stack has been replenished in the manner described, the clutch lever **38** is shifted back to a position for disconnecting the clutch from the feed screws so that it can be again turned into the full-line position and connected up to the clutch shifting lever **57**. It is noted that the clutch shifting lever **38** is supported on a pivot shaft **61** carried by a bracket **62** depending from the floor **42**.

It is obvious that many changes in the details of construction may be made without departing from the spirit of the invention as set forth in the appended claims.

I claim:

1. A can end feeding mechanism for seaming machines comprising a stack holder associated with the seaming machine in which the can ends are stacked for delivery thereto, a second stack holder associated with said first-named stack holder, feed screws for delivering can ends one at a time from the second stack holder onto the stack in the first stack holder for maintaining a supply of can ends therein, a motor, a variable speed mechanism between the motor and the feed screws of the second stack holder, and means controlled by the stacked ends in the first-named stack holder for varying said speed-changing means so as to maintain the stacked ends in said first-named holder at a predetermined level.

2. A can end feeding mechanism for seaming machines comprising a holder associated with the seaming machine in which the can ends are stacked for delivery thereto, feed screws arranged above said can end holder and positioned so as to feed can ends one at a time into the upper end of said holder, a separate can end stack holder disposed at the upper ends of said feed screws for feeding can ends to the feed screws, and means controlled by the stacked ends in the holder associated with the seaming machine for varying the speed of the screws so as to maintain the stacked ends in said holder at a predetermined level.

WILLIAM H. MORGAN.

REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
931,003	Warme	Aug. 10, 1909
1,320,292	Taliaferro	Oct. 28, 1919
1,342,189	Stowe	June 1, 1920
1,475,469	Bach	Nov. 27, 1923
1,610,862	Kronquest	Dec. 14, 1926
1,739,153	Laxo et al.	Dec. 10, 1929
1,784,131	Cabot	Dec. 9, 1930
1,784,358	Jones	Dec. 9, 1930
2,061,589	Philp	Nov. 24, 1936
2,184,029	Wicklund	Dec. 19, 1939