

Jan. 20, 1942.

M. P. NEAL

2,270,329

CARTON SEALING MACHINE

Filed Sept. 5, 1940

4 Sheets-Sheet 1

Fig. 1.

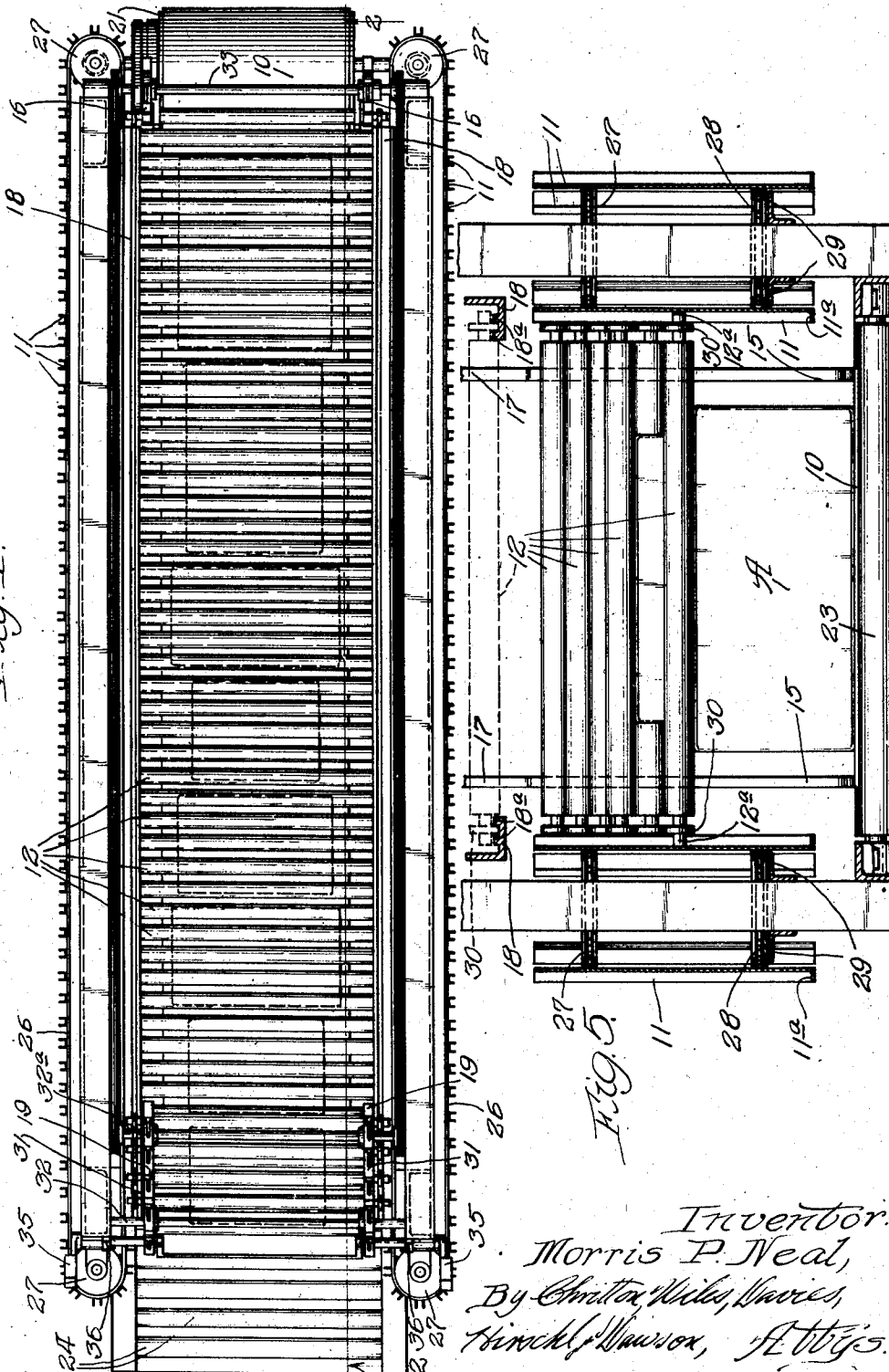


Fig. 5.

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Jan. 20, 1942.

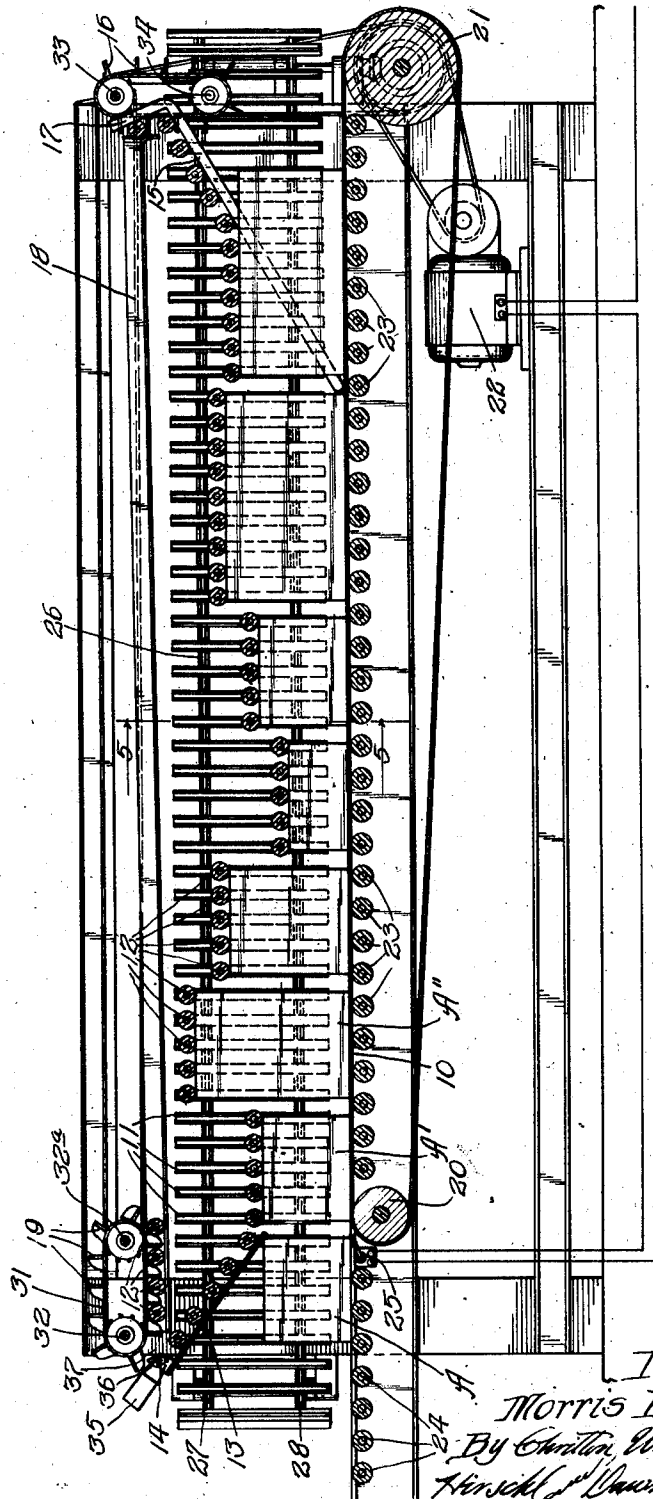
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4 Sheets-Sheet 2



Inventor:

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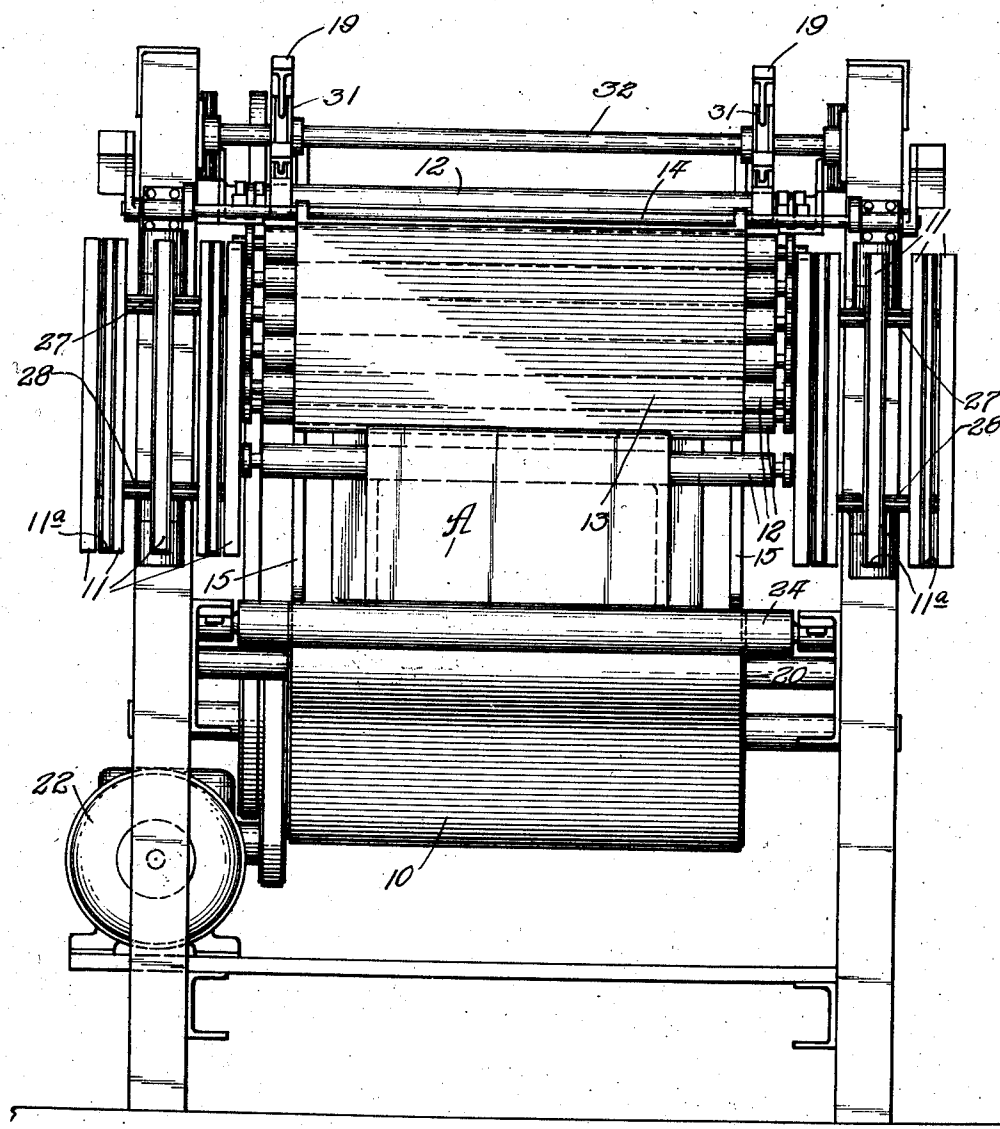
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Fig. 3.



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Fig. 4.

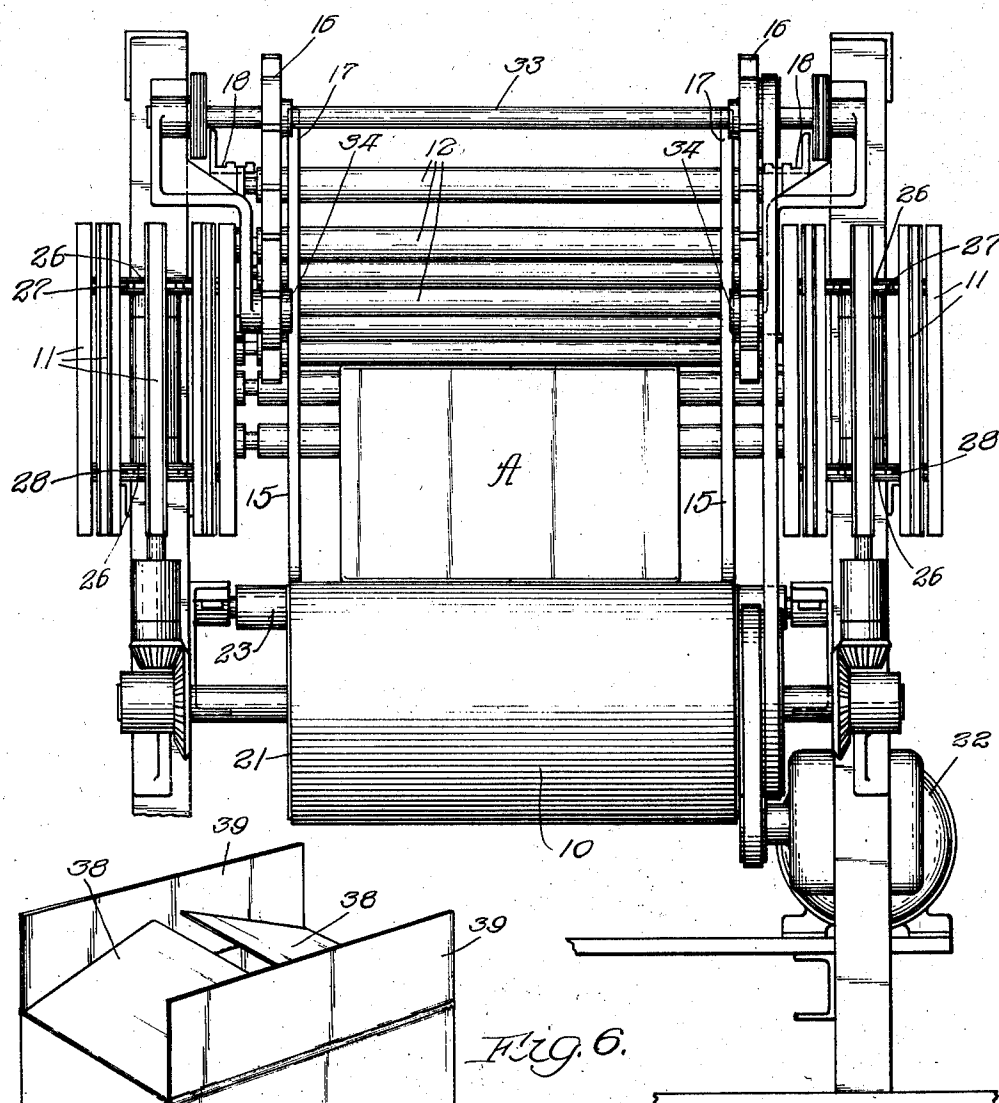


Fig. 6.

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UNITED STATES PATENT OFFICE

2,270,329

CARTON SEALING MACHINE

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Application September 5, 1940, Serial No. 355,505

21 Claims. (Cl. 93—6)

This invention relates to improvements in carton sealing machines and more especially to such apparatus for sealing the flaps of filled cartons and containers made of fibre board or similar material.

In the sealing of such cartons it is customary to coat the flaps with a suitable adhesive and then hold the same closed with suitable pressure until the adhesive sets or dries.

Machines of this type as heretofore made were adapted to handle cartons of only one height at one time. Some were provided with adjusting means to permit their use with cartons of different heights but only one height of carton could be accommodated when the machine was in one of its adjusted positions. Before a carton of another height could be sealed, more or less elaborate readjustment of the machine was required.

One of the particular features of my invention is the provision of a machine that can handle cartons of various heights at the same time without any adjustment or alteration of the machine whatsoever. That is, cartons of various heights (within limits) can be fed into the machine, one right after the other, and all will be effectually sealed.

My improved machine is relatively simple in construction, thus reducing production costs; and its operation is exceedingly simple and effective.

Other features and advantages of my invention will appear more fully as I proceed with my specification.

In that form of device embodying the features of my invention shown in the accompanying drawings, Fig. 1 is a top plan view; Fig. 2 is a view taken as indicated by the line 2 of Fig. 1; Fig. 3 is an end view of the receiving end; Fig. 4 is an end view of the discharge end; Fig. 5 is a view taken as indicated by the line 5 of Fig. 2; and Fig. 6 is a view in perspective of one of the cartons.

A brief preliminary general description of the construction and operation of the machine will be helpful. The cartons A, A', A'', etc. of various heights (within limits) are carried through the machine on the belt conveyor 10. At each side of the machine, traveling at the same rate as the belt conveyor carried on suitable chains, are the vertical channels or guides 11, each pair carrying a presser weight (roller 12), freely movable vertically in the guides.

At the front or receiving end of the machine these rollers are permitted to descend by gravity in the vertical guides 11 by the inclined plane or

apron 13 which is hinged at 14. The carton A lifts the free end of apron 13 sufficiently so that the carton moves under it, the end of the apron resting on the carton. As it does this, the rollers 12, as they leave the apron, rest on the top of the carton and move along with the carton, thus serving to press and hold the glued flaps together until the adhesive sets. Whatever the height of the carton, it will be seen that a number of presser rollers will be deposited upon the top of it as they leave the apron 13.

At the back or discharge end of the machine the rollers 12 are lifted from the cartons by the inclined strips 15 near their ends. The rollers ride up these strips 15 until they are just about to leave or actually leaving the upper ends of the vertical guides 11 when they are picked up by the fingers 16 of the vertical conveyor, synchronously driven, and raised until they engage the inclined strips 17 which remove them from the fingers 16 and deposit them upon the inclined runners 18 where they roll back by gravity to the front of the machine where they are engaged by fingers 19 of the horizontal feeder, also synchronously driven, and properly timed to be deposited, one in each pair of vertical guides 11 by which they are again moved forwardly resting on the apron 13 until discharged from the end thereof onto another carton.

The horizontal conveyor belt 10 is supported at its ends by suitable rollers 20 and 21 and driven in any suitable manner, as, for example, by the motor 22. The length of belt 10 through the machine is supported at suitable intervals by the supporting rollers 23. At the receiving end of the machine are provided suitable rollers 24 upon which the carton A can rest before being pushed into the machine. 25 indicates a spring trigger adapted to be engaged by the carton as it is pushed into the machine to close an electric switch (not shown) to start the motor 22 to drive the conveyor 10 and the conveyors 16 and 19, all of which are suitably connected by belts and suitably synchronized and timed to perform the functions herein described. When the carton clears the switch 25 it opens the switch and stops the machine until another carton is pushed into contact with it. It will be seen therefore that as one carton is fed into the machine, the conveyor will start and carry it forwardly until it clears the trigger 25. The machine will then stop and the carton will remain stationary with the rollers 12 resting on the flaps. If another carton is fed into the machine, the first one will be carried forwardly into the machine until the

second clears the trigger 25 and both will then remain in the machine. After the machine is filled it will be seen that for each new carton fed into the machine, another will be discharged therefrom. If desired, the trigger 25 can be depressed manually and operation of the machine continued until it is emptied of cartons.

The chains carrying the vertical channels or guides 11 are indicated by 26 and mounted on upper sprockets 27 and lower sprockets 28. The lower chains rest upon angle iron guides 29 to support the same.

The ends of the rollers 12 are reduced in diameter as indicated by 12a, and these reduced ends are mounted in the guides 11.

30 indicate rotatable collars or wheels on the reduced ends of the rollers 12 serving as anti-friction members to support the rollers 12 in the guides 18 on which the rollers roll by gravity from the rear end of the machine back to the front. 18a, 18a may serve as guide rails between which the wheels 30 operate. The horizontal feeders 19 are carried on chains mounted on sprockets on the shafts 32 and 32a. The vertical conveyor members 16 are mounted on chains carried on upper sprockets on the shaft 33 and on lower sprockets mounted on stub shafts 34, 34.

35 is a counterweight for the apron 13 to partially counterbalance the weight of said apron with the rollers thereon so that pressure of the free end of said apron on the carton will not be too great.

It will be seen that if a very low carton is fed into the machine directly behind and close to a very high one the apron as it leaves the high carton may swing freely downwardly until it strikes the low carton with the result that one or more rollers may drop rather heavily upon the lower carton. If this is found objectionable, the lower carton can be spaced some distance behind the higher carton by operating the machine a short time by manual movement of the trigger 25 until the high carton is moved some distance into the machine. The result of this will be to allow the apron 13 to swing downwardly to its limit where it is stopped by the stop 36 engaging the frame members 37. It will be seen that when this is done some rollers will fall in the space between the cartons. This, however, is not objectionable, as the lower ends of the vertical guides 11 are closed as indicated by 11a and the rollers will merely rest by their ends on the parts 11a and be carried toward the end of the machine until they are lifted upwardly by the strips 15. It will also be noted that, in a similar manner, if a high carton follows too closely behind a low one, the apron 13 will be lifted from the low carton before all the rollers have been deposited thereon with the result that some of the rollers will fall from the end of the apron onto the carton with some force. If this is found to be objectionable, the cartons can be sufficiently spaced to avoid this by manual operation of the trigger 25 as above described.

In Fig. 6 is shown a typical carton A with the flaps 38, 38 and 39, 39. The upper surfaces of the former, or the lower surfaces of the latter, or both, may be supplied with suitable adhesive before the carton is put into the sealing machine. The rollers 12, 12 rest on the flaps 38 until the adhesive sets.

While I have shown and described certain embodiments of my invention, it is to be under-

stood that it is capable of many modifications. Changes, therefore, in the construction and arrangement may be made without departing from the spirit and scope of the invention as disclosed in the appended claims, in which it is my intention to claim all novelty inherent in my invention as broadly as permissible, in view of the prior art.

What I claim as new and desire to secure by Letters Patent, is:

1. A machine of the character described, including: means for advancing a carton into the machine; a series of vertically movable pressure members; means for advancing said pressure members at the same rate as a carton, whereby said pressure members rest upon the flaps of said carton and apply pressure thereto; and means for returning the pressure members from the discharge end of the machine to the receiving end.

2. A machine of the character described, including: a horizontal conveyor adapted to carry cartons of different heights; a series of vertically movable pressure members; means for horizontally moving said pressure members at the same rate as the conveyor, said pressure members adapted to rest upon the flaps of containers on the horizontal conveyor, regardless of the height of said containers; and means for returning the pressure members from the discharge end of the machine to the receiving end.

3. A machine of the character described, including: a horizontal conveyor adapted to carry containers of various heights; a series of vertically movable pressure members; means for horizontally moving said pressure members at the same rate as the conveyor; means at the receiving end of the machine for depositing said pressure members upon the top of a container entering the machine; and means for returning the pressure members from the discharge end of the machine to the receiving end.

4. A machine of the character described, including: a horizontal conveyor adapted to carry containers of various heights; a series of vertically movable pressure members; means for horizontally moving said pressure members at the same rate as the conveyor; means at the receiving end of the machine for depositing said pressure members upon the top of a container entering the machine; means at the discharge end of the machine for lifting said pressure members from the top of said container; and means for returning the pressure members from the discharge end of the machine to the receiving end.

5. A machine as claimed in claim 1 with an inclined apron at the receiving end to support the vertically movable pressure members and deposit them upon the container.

6. A machine as claimed in claim 2 with an inclined apron at the receiving end to support the vertically movable pressure members and deposit them upon the container.

7. A machine as claimed in claim 3 with an inclined apron at the receiving end to support the vertically movable pressure members and deposit them upon the container.

8. A machine as claimed in claim 4 with an inclined apron at the receiving end to support the vertically movable pressure members and deposit them upon the container.

9. A machine as claimed in claim 1 with an inclined apron pivoted at one end with its free end adapted to rest upon a container entering

the machine and deposit the pressure members thereon.

10. A machine as claimed in claim 2 with an inclined apron pivoted at one end with its free end adapted to rest upon a container entering the machine and deposit the pressure members thereon.

11. A machine as claimed in claim 3 with an inclined apron pivoted at one end with its free end adapted to rest upon a container entering the machine and deposit the pressure members thereon.

12. A machine as claimed in claim 4 with an inclined apron pivoted at one end with its free end adapted to rest upon a container entering the machine and deposit the pressure members thereon.

13. A machine as claimed in claim 1 with means at the discharge end for lifting the pressure members from the cartons, said means including inclined rails at the sides of the machine.

14. A machine as claimed in claim 2 with means at the discharge end for lifting the pressure members from the cartons, said means including inclined rails at the sides of the machine.

15. A machine as claimed in claim 3 with means at the discharge end for lifting the pressure members from the cartons, said means including inclined rails at the sides of the machine.

16. A machine as claimed in claim 4 with means at the discharge end for lifting the pressure members from the cartons, said means including inclined rails at the sides of the machine.

17. A machine of the character described, including: means for advancing a carton into the machine; a series of disconnected vertically movable pressure members; and means for advancing said pressure members at the same rate as a carton, whereby said pressure members rest upon the flaps of said carton and apply pressure thereto.

18. A machine as claimed in claim 1 with a movable inclined apron at the receiving end to support the vertically movable pressure members and deposit them upon the container.

19. A machine as claimed in claim 2 with a movable inclined apron at the receiving end to support the vertically movable pressure members and deposit them upon the container.

20. A machine as claimed in claim 3 with a movable inclined apron at the receiving end to support the vertically movable pressure members and deposit them upon the container.

21. A machine as claimed in claim 4 with a movable inclined apron at the receiving end to support the vertically movable pressure members and deposit them upon the container.

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