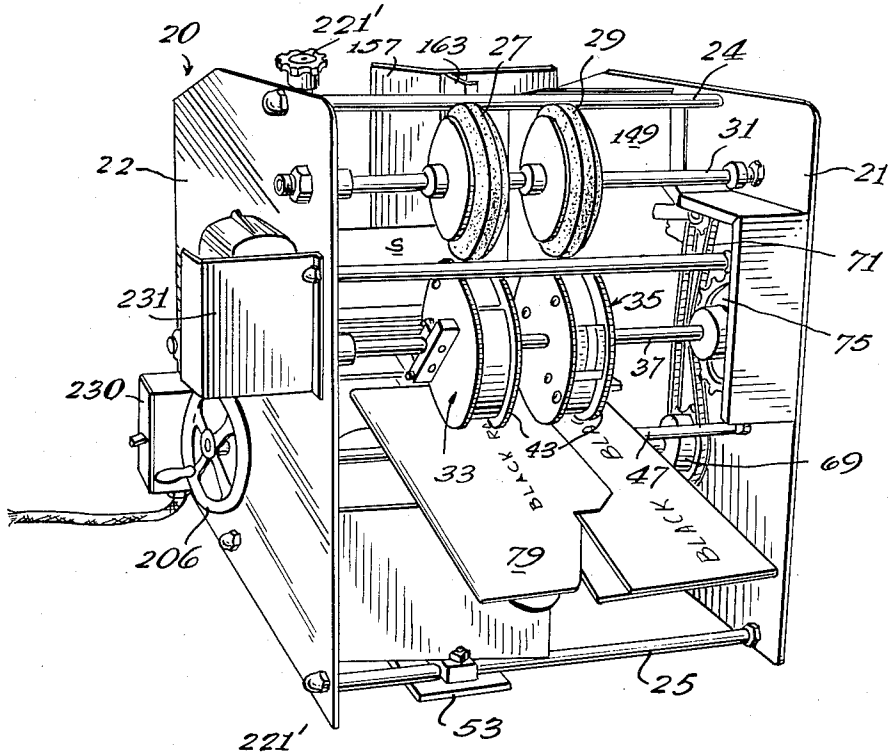
Feb. 21, 1956 J. G. McKAY 2,735,678

FOLDED CARTON FEEDING AND PRINTING DEVICE

Filed Sept. 18, 1953 6 Sheets-Sheet 1

Fig. 1.



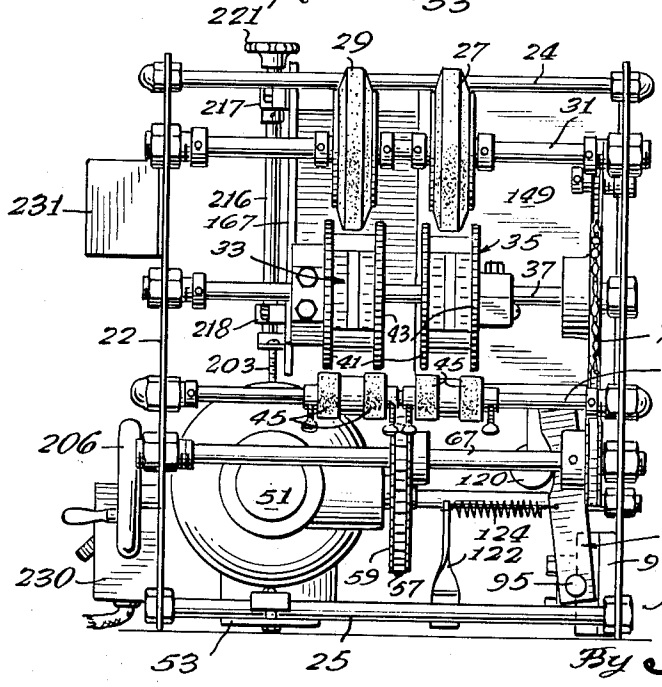


Fig. 2.

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Feb. 21, 1956 J. G. McKAY 2,735,678

FOLDED CARTON FEEDING AND PRINTING DEVICE

Filed Sept. 18, 1953 6 Sheets-Sheet 2

Fig. 3.

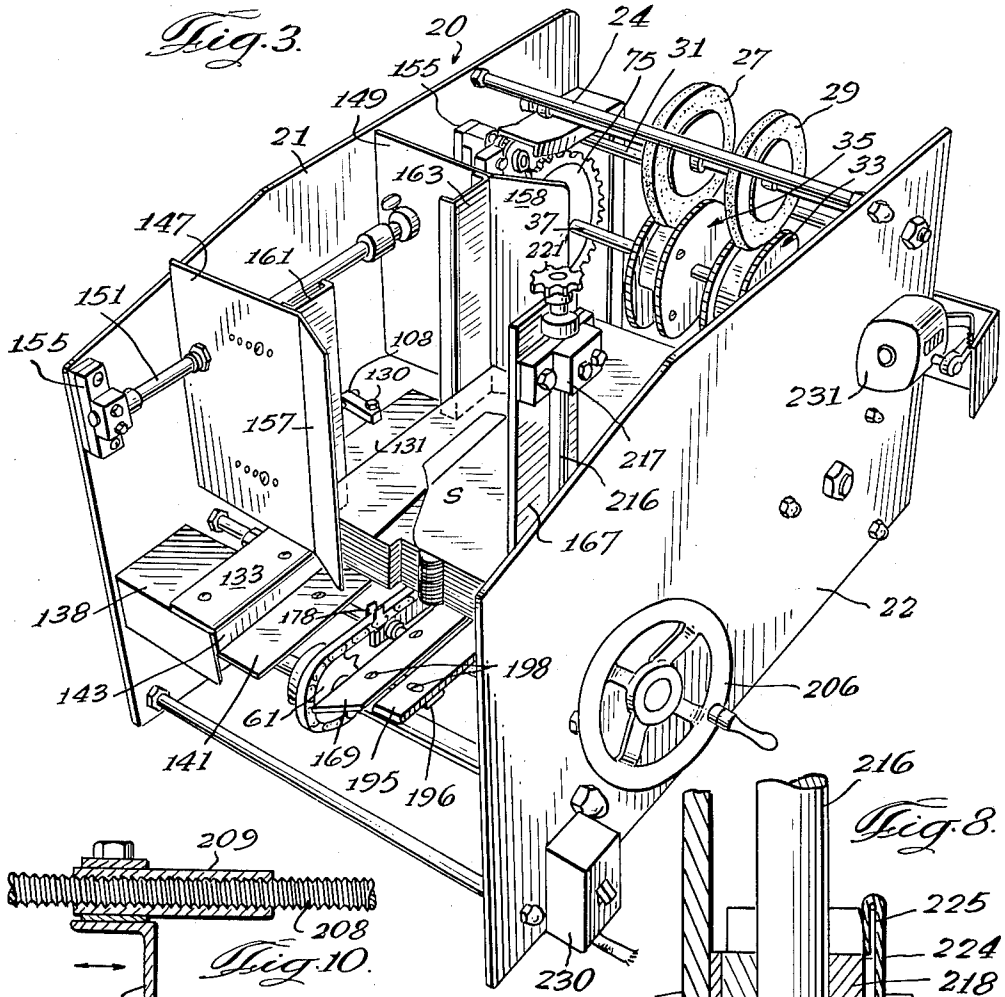


Fig. 8.

Fig. 10.

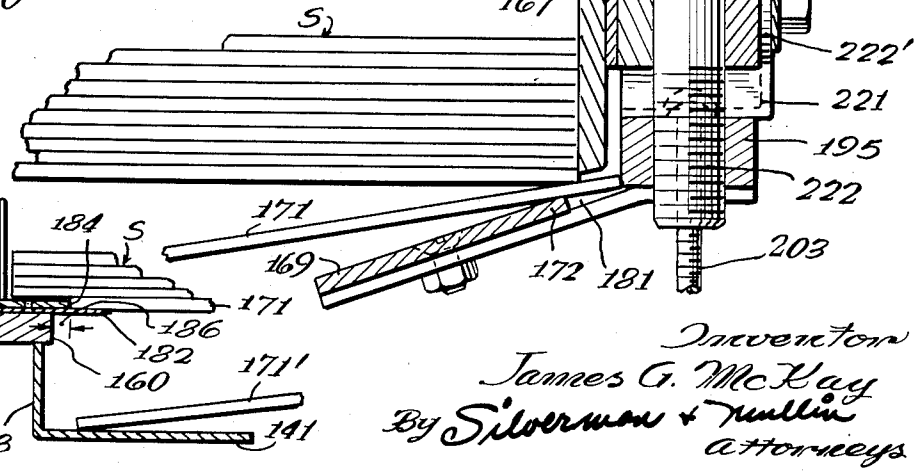


Fig. 9.

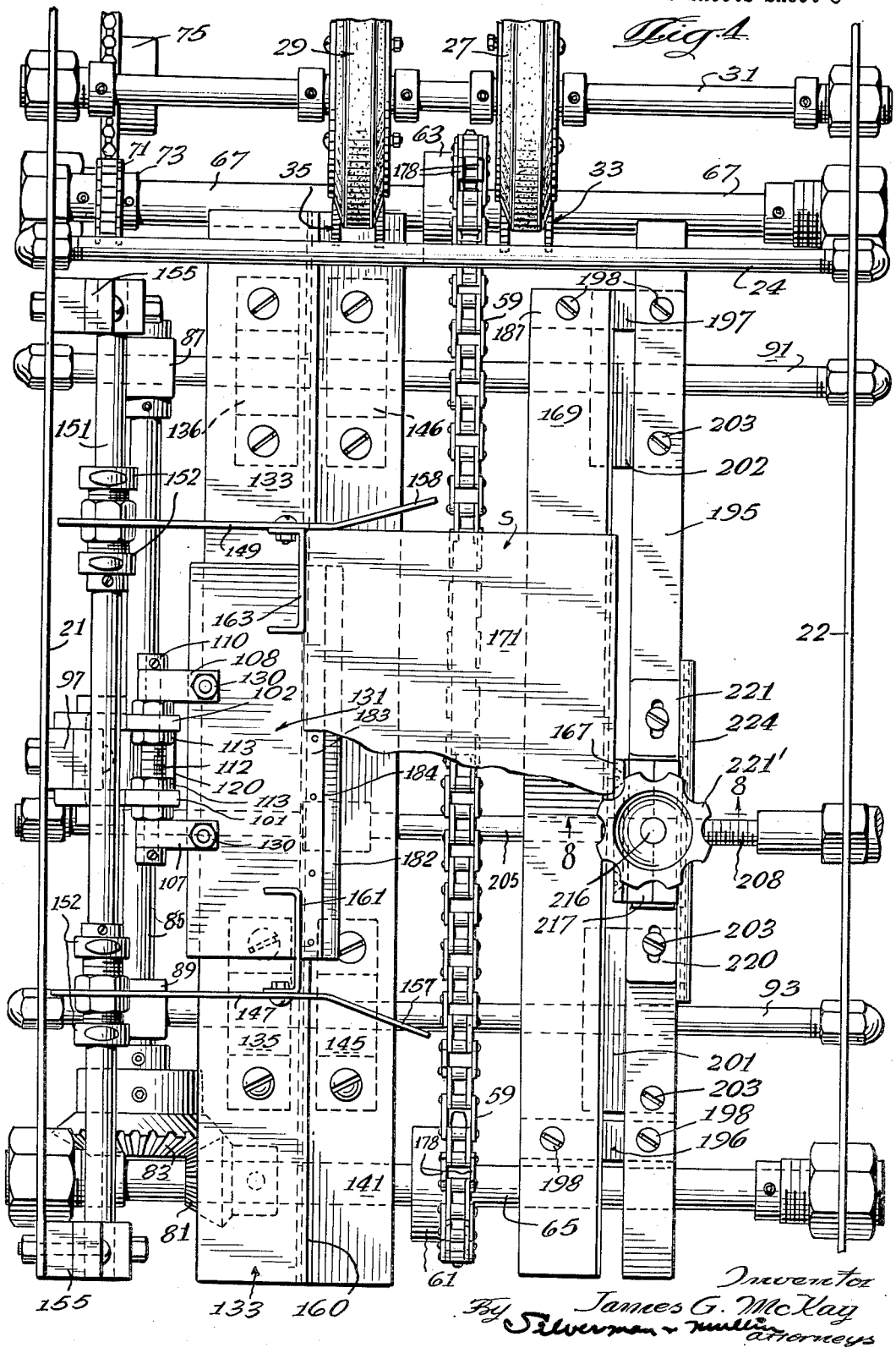
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FOLDED CARTON FEEDING AND PRINTING DEVICE

Filed Sept. 18, 1953 6 Sheets-Sheet 3

Fig. 4.



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Feb. 21, 1956 J. G. McKAY 2,735,678

FOLDED CARTON FEEDING AND PRINTING DEVICE

Filed Sept. 18, 1953 6 Sheets-Sheet 4

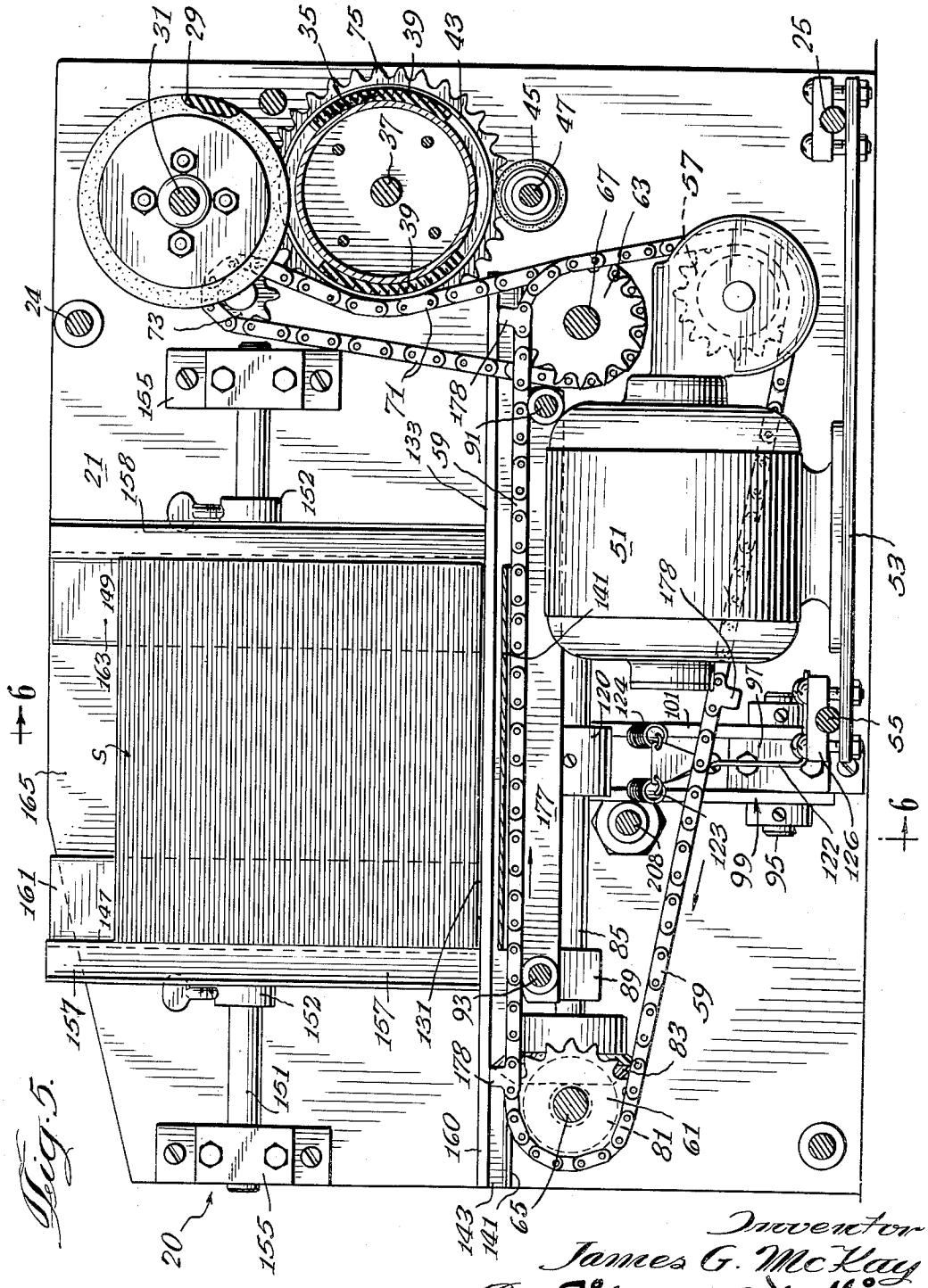


Fig. 5.

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Feb. 21, 1956 J. G. McKAY 2,735,678

FOLDED CARTON FEEDING AND PRINTING DEVICE

Filed Sept. 18, 1953 6 Sheets-Sheet 5

Fig. 6.

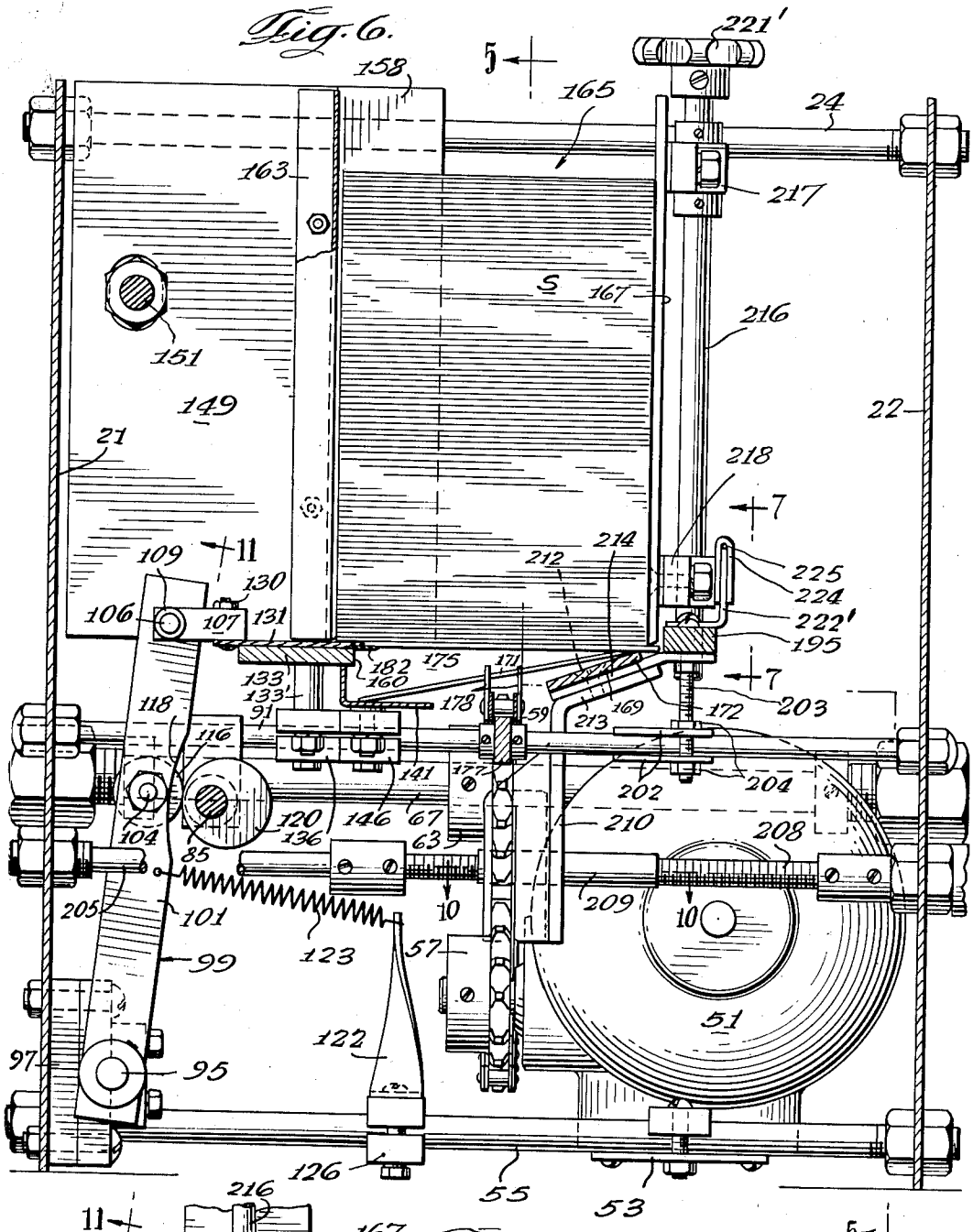


Fig. 7.

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Feb. 21, 1956 J. G. McKAY 2,735,678

FOLDED CARTON FEEDING AND PRINTING DEVICE

Filed Sept. 18, 1953 6 Sheets-Sheet 6

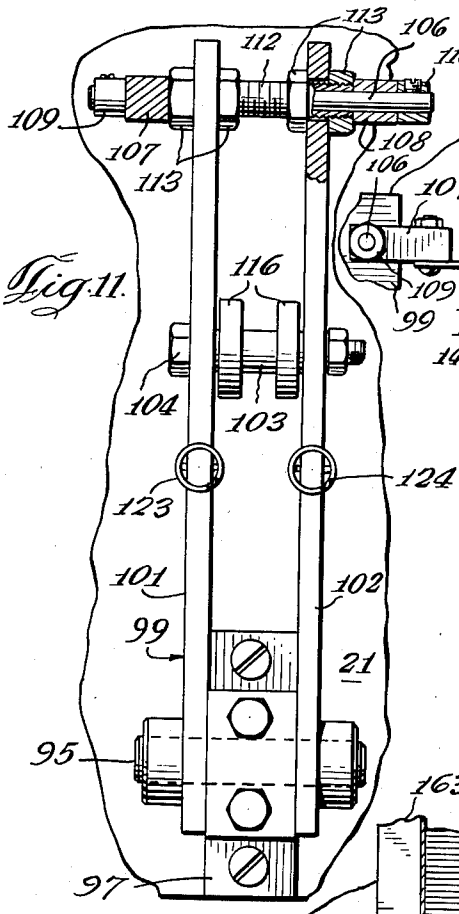


Fig. 11.

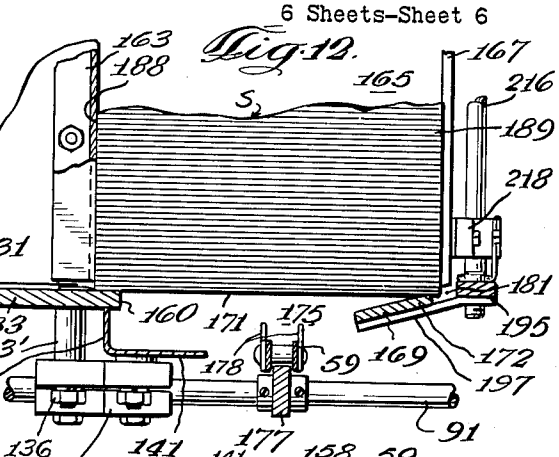


Fig. 12.

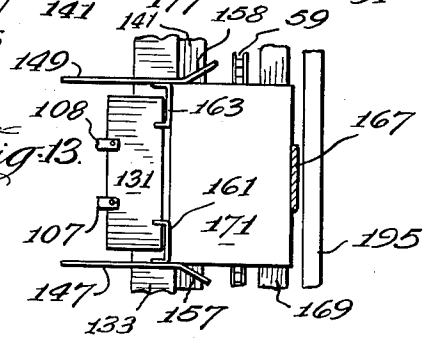


Fig. 13.

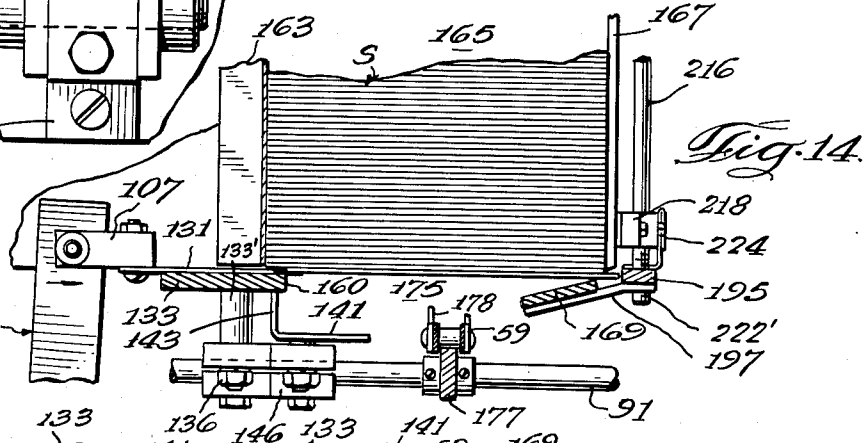


Fig. 14.

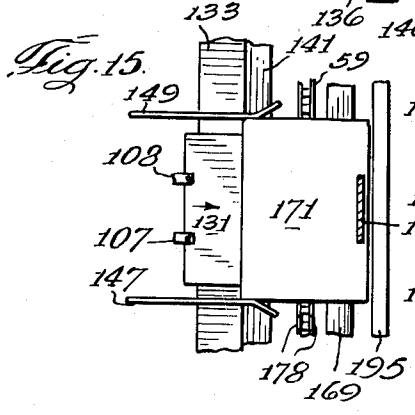


Fig. 15.

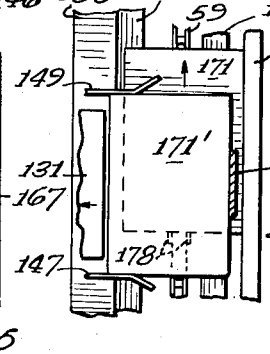


Fig. 16.

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United States Patent Office

2,735,678

Patented Feb. 21, 1956

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FOLDED CARTON FEEDING AND PRINTING DEVICE

James G. McKay, Chicago, Ill.

Application September 18, 1953, Serial No. 380,935

9 Claims. (Cl. 271—10)

This invention relates generally to folded carton feeding devices, and more particularly is concerned with apparatus whereby a stack of folded cartons may be inserted in a suitable magazine of the apparatus and the cartons stripped from the bottom of the stack and fed one after the other through printing means which discharges the carton from the apparatus.

In apparatuses of the particular type with which this application is concerned, there have been considerable problems because of the nature of the carton which is being handled. Specifically, such cartons have been of the type known as fold-up cartons. These are formed by die-cutting special shapes and gluing them together so that in order to use the same, all that the operator need do is unfold them, insert the commodity, and fold the flaps together. Especially in the case of ice-cream cartons, which are usually waxed, it is not easy to handle the cartons. They have a tendency to stick together, they are usually not perfectly uniform in thickness, and they are difficult to print and eject.

It is accordingly one of the primary objects of the invention to provide apparatus in which folded cartons of the type referred to above, namely, waxed cartons especially for use in packaging ice-cream, may be retained in a suitable magazine and dispensed to a printing mechanism also associated with the apparatus, one at a time.

A further object of the invention is to provide apparatus for feeding folded cartons which will act positively in stripping individual cartons one at a time from the carton stack, feeding the same forward into the printing portion of the apparatus.

Still a further object of the invention is to provide an apparatus for printing folded waxed cartons in which there is a well below the stack of cartons into which the cartons are arranged to be dropped one at a time, and from which well the cartons are enabled to be fed individually to the printing apparatus.

Still a further object of the invention is to provide a structure whereby a carton is pushed from the bottom of the stack to one side of the magazine and thereafter pivots about an edge of the carton to drop into a well free of the stack below the same.

Still a further object of the invention is to provide novel feeding means to direct the movement of the stripped single folded carton from the well into the printing device.

Further objects of the invention are the provision of novel means immediately adjustable for varying the size of the magazine and well so as to accommodate different sizes of cartons; to provide novel means for driving the carton from below the magazine along the well into the printing apparatus; to provide novel means for pushing the cartons to one side of the magazine and thereby stripping the same from the stack.

In connection with the last immediately-above-mentioned object, an important object of the invention is to provide a novel construction of pusher member which positively engages beneath the carton and carries the same over and beyond the lip or table supporting the cartons, whereby when the said pusher is retracted, the carton will freely fall into the well from whence it may be moved forwardly into the printing mechanism.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel features of construction, arrangement and a combination of parts hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportion, size and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

For the purpose of facilitating an understanding of this invention, there is illustrated in the accompanying drawings a preferred embodiment thereof, from an inspection of which, when considered in connection with the following description, this invention, its mode of construction, assembly and operation, and many of its advantages should be readily understood and appreciated.

Referring to the drawings in which the same characters of reference are employed to indicate corresponding or similar parts throughout the several figures of the drawings:

Fig. 1 is a perspective view of a carton printing machine from the top and front end thereof and showing a carton emerging from the machine after having been fed from the magazine into the printing mechanism and ejected therefrom.

Fig. 2 is a front elevational view of the device of Fig. 1.

Fig. 3 is a top perspective view of the device of Fig. 1 taken from the rear thereof.

Fig. 4 is a top plan view of a portion of the device of Fig. 1 with the stack of cartons partially broken away to show the details of construction of the device.

Fig. 5 is a sectional view taken through the device along the line **5—5** of Fig. 5 and in the indicated direction.

Fig. 6 is a sectional view taken through the machine along the line **6—6** of Fig. 5 and in the indicated direction.

Fig. 7 is a detailed fragmentary view taken generally of a portion of the device along the line **7—7** of Fig. 6 and in the indicated direction.

Fig. 8 is a sectional view on an enlarged scale showing a portion of the structure along the lines **8—8** of Fig. 4 and viewed in the indicated direction.

Fig. 9 is a detailed fragmentary sectional view showing the lip or table of the magazine off the edge of which the individual cartons are adapted to be pushed.

Fig. 10 is a sectional view taken through a portion of adjusting mechanism for the magazine generally along the line **10—10** of Fig. 6 and in the indicated direction.

Fig. 11 is a detailed front view in elevation of the carton-pushing rocker arm, taken generally from the plane defined by line **11—11** of Fig. 6 in the direction indicated.

Figs. 12 and 14 are diagrammatic sectional views taken through the magazine and showing two different stages of operation of the pusher member in stripping the individual cartons from the bottom of the stack.

Figs. 13, 15 and 16 are likewise semi-diagrammatic views but in plan showing the various stages of operation of the carton stripping pushing member.

Referring now to Figs. 1, 2 and 3 of the drawings, it will be seen that the invention is embodied in a carton printing apparatus designated generally by the reference character **20**. The said apparatus has side walls **21** and **22** which support all of the mechanisms and structure of the device. The said side walls **21** and **22** are held in spaced apart condition by means of suitable spacer bars or rods such as for example, **24** and **25**, and by other spacing bars which may serve as shafts for various parts

of the rotating mechanism. For example, the inking wheels 27 and 29 are mounted for rotation upon suitable journals carried by the spacer rod 31 connected between the side walls 21 and 22. The said inking wheels 27 and 29 engage and rotate with printing wheels 33 and 35 which are fixedly mounted to the shaft 37.

The structure of the inking wheels 27 and 29 and the printing wheels 33 and 35 may be as described in certain patents of the applicant as follows: United States Letters Patent 2,562,627, issued July 31, 1951, for "Adjustable Inking Device"; United States Letters Patent 2,634,676, issued April 14, 1953, for "Device for Printing Characters on Moving Packages"; and United States Letters Patent 2,607,293, issued August 19, 1952, for "Printing Wheel." Because of this it will be unnecessary to go into detail concerning the same. Suffice it to say that in the particular embodiment illustrated each of the printing wheels is provided with a resilient assemblage of type 39 which is engaged between side plates 41 and 43 so constructed and arranged as to frictionally hold the type assemblage 39 in place. Each of the side plates 41 and 43 is knurled, as in said Patent 2,607,293 and the knurled edges are arranged to engage resilient rubber rollers 45 mounted on the spacer shaft 47. Cartons are engaged between the spaced plates 41 and 43 and the resilient rubber rollers and ejected after being printed by the type assemblages 39.

As seen in Fig. 5, an electric motor 51 is mounted upon a suitable supporting structure 53 carried by the spacers 25 and 55. The motor 51 drives a sprocket wheel 57 which is connected by means of a sprocket chain 59 to drive the sprocket wheels 61 and 63. In Fig. 5 note that the wheels 61 and 63 are at opposite ends of the apparatus 20 and each drives a shaft. The wheel 61 rotates the shaft 65 and the wheel 63 rotates the shaft 67. The shaft 67 has a sprocketwheel 69 at one end thereof which is connected by means of a sprocket chain 71 to an ilder sprocket wheel 73 and to the large sprocket wheel 75 which is secured to the shaft 37 and drives the printing wheels 33 and 35.

It will be obvious from the above description that if the cartons such as shown at 79 will be fed between the rollers 45 and the side plates 41 and 43 of the printing wheels 33, 35 thereafter they will be drawn between the rollers and printing wheels, printed, and ejected as shown in Fig. 1.

Calling attention now to Fig. 4, the sprocket chain 59 in driving the wheel 61 and rotating shaft 65 rotates a bevel gear 81. The bevel gear 81 enmeshes with a second bevel gear 83, the axis of which intersects the axis of the shaft 65. The gear 83 is carried on an elongate shaft 85 which is arranged perpendicular to the shaft 65 and is suitably mounted on bearings 87 and 89. These bearings may be carried by the spacers 91 and 93 respectively. The second shaft 95 is suitably secured to the side wall 21 by means of clamping devices 97, and the said shaft 95 carries a rocker arm designated generally 99, pivotally mounted thereon.

As shown in Fig. 11 the rocker arm 99 consists of a pair of elongate side plates 101 and 102 having an intermediate roller member 103 secured thereto by a suitable bolt assembly 104, the said roller member 103 serving as a cam follower as will be described. At its upper end the rocker member 99 is provided with a shaft 106 which rotatably mounts a pair of forwardly extending arms 107 and 108. End collars 109 and 110 retain the structure in assembly, the side plates 101 and 102 being retained in spaced apart condition by means of suitable spacer 112. The spacer 112 extends through the ends of both of the side plates 101 and 102 and is screw-threaded and provided with suitable nuts 113.

Referring now to the roller member 103, it will be seen in Fig. 11 that the same is composed of two cam follower portions 116 which extend beyond the edges of the side plates 101 and 102. As clearly seen in Fig. 6, the said side plates are recessed as shown at 118 in order to provide good clearance for the said cam follower portions 116. To the shaft 85 there is fixedly secured an eccentric cam 120 which, during its rotation, is in engagement with the cam follower portions 116. A post 122 is securely fastened to the spacer member 55, and between the upper end of the post 122 and each of the side plates 101 and 102 there extends a coil spring. Thus there are two springs 123 and 124 as clearly shown in Fig. 5. The post 122 may consist merely of a metal member of L-shaped formation having one end secured to the block 126, which is clamped as shown in Fig. 5 to the spacer rod 55.

As seen in Fig. 6 the tension of the springs 123 and 124 tends to rotate the rocker arm 99 in a clockwise direction about its stub shaft 95 and thus retains the cam follower portions 116 in engagement with the cam 120. Obviously, as the motor 51 rotates the sprocket chain 59, the shaft 85 also will rotate the cam 120 with the result that the upper end of the rocker arm 99 will swing right and left as viewed in Fig. 6.

It is within the purview of the invention to provide a pitman connection between the shaft 85 and the rocker arm 99 in place of the cam, roller member, post and springs.

The forward ends of the members 107 and 108 are secured by suitable screws or bolts 130 to a rectangular pusher plate member 131. The said pusher plate member 131 is aranged to slide backward and forward over a platform 133. The platform 133 is formed of an elongate bar member suitably secured to the apparatus in fixed relationship to the side walls 21 and 22. For example, the bar 133 may be screwed to split clamps 135 and 136 as seen in Fig. 4. The split clamps in turn are attached to the spacer rods 93 and 91 respectively by means of bolts as illustrated. In Fig. 3 a safety shield 138 is shown covering the assemblage of the gears 81 and 83, the said shield being secured to the bar 133.

Spaced below the bar 133 which forms a table for a purpose presently to be explained, there is provided a ledge 141 which extends substantially coextensive with the bar along the length of the device. There is a vertically bent portion 143 integral with the ledge which connects with the lower surface of the bar 133. The ledge 141 is connected to the two spacer rods 93 and 91 in the same manner as the bar 133, that is, by split clamps 145 and 146 of the same construction as the clamps 135 and 136. Screws or bolts are used for fastening means.

A pair of vertically arranged sheet metal members 147 and 149 are located on opposite sides of the rocker arm 99 and its actuating mechanism, the said members being slidably mounted on the shaft 151 and retained in any adjusted position by means of a series of collars 152 and spacers capable of being fixed at any desired positions. The shaft 151 is secured to the side wall 21 by any suitable fastening means 155. The lower edges of the members 147 and 149 engage upon the upper surface of the bar 133 and are slidable therealong. The vertical edges of the members 147 and 149 are flared outwardly one from the other as shown at 157 and 158, the same extending over and beyond the edge of the bar 133, the said edge being designated 160 for explanation of the operation of the device. On the interior, that is the facing surfaces of the members 147 and 149 there are affixed a pair of channel shaped columns 161 and 163, the flat surfaces of the members 161 and 163 facing toward the edge 160 and being spaced therefrom.

The corners formed by the channel shaped members 161 and 163 and the outwardly flared members 157 and 158 define the magazine 165 of the device 20 along with a short vertical wall 167 positioned on the opposite side of the device adjacent the side plate 22. The bottom of the magazine is formed by the confined portion of the bar 133, and a downwardly slanted strip 169 which is parallel to and substantially coextensive with the bar

133. Note that bar 133 is supported on posts 133' connected to clamp 135 and 136. The stack S of cartons is confined between the vertical members forming the magazine, and the bottom carton 171 rests along one edge on the bar 133 and along the other edge on the corner 172 of the slanted member 169. There is provided, because of this construction an open well (see Fig. 12, with the pusher member 131 fully retracted) which is designated 175. This well 175 is actually a part of a trough which extends down the length of the machine and is formed by the ledge 141, the generally vertical side 143 with overhanging lip 160, and the outwardly flared side formed by the member 169. The sprocket chain 59 passes down this well or trough 175, being guided by a chain guide 177 in the form of an elongate flat bar member arranged on edge to engage within the opposed flanges of the links of the chain. The guide is supported on the spacer rods 93 and 91 by suitable collars held in place by thumb screws or the like.

The sprocket chain 59 is provided with three equally spaced dogs 178 which pass through the well without touching any of the stack S while the apparatus is in the condition shown in Fig. 12. This condition is such that the bottom carton 171 is substantially horizontal. It will be noted that the bottom edge of the wall 167 is spaced above the corner 172 of the member 169, and there is a space or throat 181 beyond the wall 167 into which a carton edge may slide.

The leading edge of the pusher member 131 is provided with a lower sharp knife blade 182 riveted to the bottom of the member 131 and preferably set into a slot 183 cut therefor in the member 131. This forms a shoulder 184 just back of the leading edge. The movement of the member 131 is sufficient to carry the shoulder a substantial distance beyond the edge 160.

When the pusher is actuated to slide forward on the bar 133, its knife blade 182 easily engages beneath the bottom carton 171, lifting same onto the knife blade. As the pusher member 131 continues forward, the shoulder 184 engages the edge of the carton 171 and commences to push the same forward. This continues, as shown in Fig. 14, until the edge of the carton has entered the space or throat 181, sliding upon the edge 172. Obviously, with only edge contact, the weight of the stack S upon the lower carton is negligible.

When the furthest extent has been reached, the pusher member 131 starts backward. When the knife blade 182 clears the edge 160, the space 186 permits the left hand edge of the carton 171 freely to drop down the well 175 as shown in Fig. 8. The left hand position of the carton 171 is as shown in Fig. 9, but it should be appreciated that by the time the pusher member 131 is in the condition illustrated in Fig. 9, the previous carton is on its way out of the well 175 or has already left same.

With the carton now deeper in the well 175, it is in the path of the dogs 178, and one of these positively engages the end thereof and drives it along the trough defined by the member 169, the ledge 141 and the flange 143 into the printing portion of the device. The carton is carried into the meeting of the printing wheels 33 and 35 and the rollers 45, at which point it is frictionally seized, imprinted and ejected as the carton 79 in Fig. 1.

The pusher member 131 and the dogs 178 are arranged to operate in synchronism, so that a carton is dropped into the well 175 immediately before a dog is due. This is done by proper adjustment of the cam 120 and its operating mechanism and the relative sizes of the various sprocket wheels and chains. Likewise, it is best to choose the sprocket chain and wheels operating the printing mechanism so that the speed with which the carton is moved forward along the well is substantially the same as or less than the circumferential speed of the printing wheels 33 and 35.

The forward ends of the member 169 and the ledge 141 may be formed to carry the cartons from the canted position in the well 175 adjacent the pusher member 131 to a horizontal position adjacent the meeting of the printing wheels and rollers. For example, at 187, the member 169 may have a twist, reverse to its slant as illustrated.

The structure heretofore described may be considered from a general standpoint as a magazine offset from the well or trough 175. Therefore the pusher member must operate to move the cartons one at a time to one side so that they will align with the well and drop in.

Attention is now invited to Figs. 12 through 16, in order to reiterate the manner in which the apparatus operates. In Fig. 12 the stack of cartons S is shown supported in the magazine 165 with the left hand edge of stack engaged upon the member 133. It will be appreciated that the left hand edge of the stack which has been designated 188 is fixed in this position throughout the operation of the device. It is therefore spaced rearwardly of the edge 160 of the member 133. As for the right hand edge of the stack S which has been designated 189, the same is coincident with the inner face of the narrow wall 167. This edge rests upon the corner 172 of the member 169. As previously explained, the well or trough 175 is normally clear and the sprocket chain 59 is free to pass therethrough without engagement of any of the cartons. The pusher member 131 is shown just about to engage beneath the left hand edge of the bottom-most carton 171. In Fig. 13 there is illustrated a top plan view of this condition.

In Fig. 14 the pusher member 131 has moved forward. Its knife blade 182 has engaged beneath the lower-most carton 171, and has lifted the same upon the knife blade and moved forward sufficiently so that the shoulder 184 engages against the left hand edge of said carton 171. The carton has been moved forward so that its right hand edge has now passed beneath the lower-most edge of the wall 167 into the space 181. This situation is illustrated in plan view in Fig. 15. The pusher member 131 continues to move forward until the condition is such as illustrated in Fig. 9. It is emphasized that the remainder of the stack S retains its original position within the magazine 165. Thereafter, the pusher member 131 begins its movement to the left as viewed in Figs. 14 and 16. There is substantially no frictional engagement between the knife blade 182 and left hand end of the carton 171, and hence, as the pusher member 131 retracts to the left, the carton 171 does not move. Since the original movement of the carton 171 to the right had carried the same beyond the edge 160 by the distance 186, when the leading edge of the knife blade 182 clears the left hand edge of the carton 171, the carton will drop down into the well 175 assuming the slanted position as shown in Figs. 8 and 9. In Fig. 9 the previous carton is illustrated at 171'. This condition is also illustrated in Fig. 6, and there it will be seen that the carton end is now directly in the path of a dog 178. Since the sprocket chain is moving continuously, the dog 178 engages behind the end of the slanted carton in the well or trough 175 and commences to move the same forward, as shown in Fig. 16. The carton passes down the length of the trough and into the printing mechanism from whence it is ejected.

As thus far described, no mention has been made of the adjustability of the width of the magazine 165 or the size of the space or throat 181. Apparatus is readily constructed with suitable permanent supports for the slanted bar member 169 and the said wall 167 without any adjusting means. I have found however that considerable flexibility is achieved if adjustments are provided for these structural elements of the device. Accordingly,

the description which follows will explain one manner in which such adjustments are readily achieved.

The ledge **141** extends considerably forward, to the right as viewed in Fig. 4, beyond the extent of the slanted member **169**. This provides for at least a partial leveling of the carton passing down the well **175** into the printing mechanism prior to the time the leading edge of the said carton engages the printing wheels. The elongate member **169** is supported from a strap **195** which is coextensive with the ledge **141**. Short angular strips **196** and **197** interconnect the said member **169** with the strap **195**, the said strip members **196** and **197** being secured by screws or other fastening means **198**. At **201** and **202** guide plates are secured to the strap **195** by means of elongate bolts **203** as perhaps best shown in Fig. 6. The said guide plates are clamped to the respective spacer rods **93** and **91** and are slidable therealong, the frictional engagement being adjustable by means of nuts **204** secured to the said bolts **203**. The member **169** and the strap **195** are in no other manner supported with the exception of the means presently to be described for moving the same toward or away from the side plates **22**.

A shaft **205** extends between the side plates **21** and **22**, being held in position by suitable nuts, spacers, etc., and being readily capable of manual rotation. A hand wheel **206** which is located outside of the side plate **22** is secured to said shaft and provides means for rotating the same. A portion of the said shaft as indicated at **208** is screw-threaded and has an elongate sleeve **209** which actually serves as a movable nut engaged thereon. To the said sleeve **209** there is clamped vertically extending support members such as for example **210**. The upper end of the members **210** are bent at an angle parallel with the bar member **169** and secured thereto by any suitable fastening means as shown at **212**. The upper bent portion of member **210** is designated **213** and it will be seen that there is an additional supporting member **214** sandwiched between the bent portion **213** and the slanted member **169**. The member **214** is also screwed to the strap member **195**.

The vertical short wall **167** is secured to a parallel elongate shaft **216**, the said shaft being journalled as at **217** and **218**, the journals being secured to the said wall **167**. Any suitable construction may be provided to prevent axial movement of the shaft **216** relative to the journals **217** and **218** while permitting rotation of the said shaft. To the top end of the shaft is secured a small hand wheel **221'** and the bottom end of the shaft is screw-threaded as shown at **222**, the bar or strap member **195** being provided with suitable threaded opening to receive the said screw-threaded portion **222**. Obviously, as the hand wheel **221'** is turned, the wall **167** will either be raised or lowered. I have had success by merely providing for frictional engagement between the bearings **217** and **218** and the shaft **216**, the axial movement of the said shaft being very little. In order to keep the wall **167** from turning with the shaft **216** I provide a member **224** consisting of a strip of metal folded upon itself and thereby providing an inner slot **225**. The member **224** is in any suitable manner secured to the lower journal **218**. On opposite sides of the journal I provide a pair of angle shaped brackets **220** and **221** secured to the strap **195** and having one arm **222** of each engaged and slidable up and down in the recess or slot **225**.

It will be seen that as the hand wheel **206** is turned, it will rotate the shaft **205**, thereby turning the screw-threaded portion **208**. The threaded sleeve **209** will therefore move axially along the said screw-threaded portion **208**. This will carry the support members **210** backward or forward, increasing or decreasing the width of the well **175**. Simultaneously, the entire assembly comprising the member **169**, the strap **195**, the short wall **167** and its associated shaft **216** and the fastening means thereof are moved right or left as viewed in Fig. 6. This will obviously change the width of the magazine **165**. By rotating the hand wheel **221'** it is possible to make the slight adjustments necessary in the height of the bottom edge of the wall **167** above the corner **172** of the slanted member **169**. In effect, this changes the dimension of the space or throat **181** to accommodate various thicknesses of different types of folded cartons.

It will be appreciated that the motor **51** is electrically energized. Its connections are not shown in the drawing since the same are conventional although there has been illustrated a switch at **230** for starting and stopping the same. The mechanism illustrated at **231** is a counter for determining the number of cartons which have been imprinted and passed through the machine. Many other refinements are not referred to and may be added to the equipment for purposes of safety, embellishment and functions additional to those provided by the invention herein.

It should be appreciated that the length of the magazine may be adjusted by changing the positions of the plate members **147** and **149**, and that the width may be adjusted as just described above. This provides substantially universal adjustment for the apparatus and enables its use to be flexible and substantially foolproof.

It is believed that this invention, its mode of construction and assembly, and many of its advantages should be readily understood from the foregoing without further description, and it should also be manifest that while a preferred embodiment of the invention has been shown and described for illustrative purposes, the specific details are nevertheless capable of wide variation within the purview of this invention as defined in the appended claims.

What it is desired to secure by Letters Patent of the United States is:

1. In apparatus for supporting a stack of flat articles such as folded cartons, stripping a single article from the bottom of the stack and ejecting same from said apparatus, said apparatus comprising a magazine having a stack of articles therein, means defining a well offset from said stack and having supporting means on opposite sides thereof carrying the said stack, a reciprocating pusher adapted to move at least partially across said well from one of said sides to engage the edge of the bottom-most article and push same off the first supporting means to move same into alignment with the well whereby to cause said article to rotate about the other supporting means downward into said well, a conveyor chain in said well for carrying articles out of said well in a direction perpendicular to the line of movement of said pusher and normally clearing the bottom-most member when supported, and drive means for driving the pusher and chain in synchronism, the herein invention which comprises: said second supporting means including a slanted wall of said well engaging an edge of the bottom-most article at substantially the same level as said first supporting means, said magazine including a vertical wall having its bottom edge spaced above said slanted wall whereby to form therewith a throat to receive the edge of said article when pushed as aforesaid and the slanted wall continuing beyond said wall to enable said movement, the vertical width of said throat being substantially less than the thickness of two articles but greater than the thickness of one article, and means for adjusting the width of the throat for enabling said apparatus to be used with different thicknesses of articles.

2. A structure as claimed in claim 1 in which the means for adjusting the width of the throat comprises a vertically adjustable mounting for said vertical wall.

3. Apparatus for supporting a stack of folded cartons, stripping the cartons off the bottom of the stack one at a time, and printing and ejecting the same from the apparatus for presentation to a printing mechanism, a trough having an outwardly flared side and a generally vertical opposite side and stationed with an end thereof adjacent the printing mechanism, a conveyor chain in the bottom of the trough and means driving the same to carry any

articles in the trough to the said printing mechanism, a table above and to one side of the trough and having a lip overhanging the trough, a pair of spaced apart vertically extending corner-forming structures engaged upon the table at a position spaced from the printing mechanism, a vertical wall at said position but on the opposite side of the well from said structures having its bottom end spaced above the outwardly flared side of the trough, the vertical wall and corner-forming structures defining a magazine for said stack of cartons offset from the trough, with the bottom of the stack supported upon said lip and the upper edge of said outwardly flared side clear of said chain, a reciprocating pusher member slidable upon said table in a direction perpendicular to the movement of the chain, means driving said pusher member, said pusher member being arranged so that its leading edge passes beyond said lip and over the trough in one of its movements and being of a dimension to engage the bottom-most carton, push same toward and over the trough with the leading edge of the carton passing beneath and beyond the bottom end of the wall, whereby the engaged edge of the carton will drop into the trough tilting the carton down into the path of said chain, said vertical wall being adjustable to vary the distance of the bottom end thereof above the outwardly flared side of the trough.

4. Apparatus for supporting a stack of folded cartons, stripping the cartons off the bottom of the stack one at a time, and printing and ejecting the same from the apparatus for presentation to a printing mechanism, a trough having an outwardly flared side and a generally vertical opposite side and stationed with an end thereof adjacent the printing mechanism, a conveyor chain in the bottom of the trough and means driving the same to carry any articles in the trough to the said printing mechanism, a table above and to one side of the trough and having a lip overhanging the trough, a pair of spaced apart vertically extending corner-forming structures engaged upon the table at a position spaced from the printing mechanism, a vertical wall at said position but on the opposite side of the well from said structures having its bottom end spaced above the outwardly flared side of the trough, the vertical wall and corner-forming structures defining a magazine for said stack of cartons offset from the trough, with the bottom of the stack supported upon said lip and the upper edge of said outwardly flared side clear of said chain, a reciprocating pusher member slidable upon said table in a direction perpendicular to the movement of the chain, means driving said pusher member, said pusher member being arranged so that its leading edge passes beyond said lip and over the trough in one of its movements and being of a dimension to engage the bottom-most carton, push same toward and over the trough with the leading edge of the carton passing beneath and beyond the bottom end of the wall, whereby the engaged edge of the carton will drop into the trough tilting the carton down into the path of said chain and means for moving the vertical wall and flared side to increase or decrease the width of the trough.

5. Apparatus for supporting a stack of folded cartons, stripping the cartons off the bottom of the stack one at a time, and printing and ejecting the same from the apparatus for presentation to a printing mechanism, a trough having an outwardly flared side and a generally vertical opposite side and stationed with an end thereof adjacent the printing mechanism, a conveyor chain in the bottom of the trough and means driving the same to carry any articles in the trough to the said printing mechanism, a table above and to one side of the trough and having a lip overhanging the trough, a pair of spaced apart vertically extending corner-forming structures engaged upon the table at a position spaced from the printing mechanism, a vertical wall at said position but on the opposite side of the well from said structures having its bottom end spaced above the outwardly flared side of the trough, the vertical wall and corner-forming structures defining a magazine for said stack of cartons offset from the trough, with the bottom of the stack supported upon said lip and the upper edge of said outwardly flared side clear of said chain, a reciprocating pusher member slidable upon said table in a direction perpendicular to the movement of the chain, means driving said pusher member, said pusher member being arranged so that its leading edge passes beyond said lip and over the trough in one of its movements and being of a dimension to engage the bottom-most carton, push same toward and over the trough with the leading edge of the carton passing beneath and beyond the bottom end of the wall, whereby the engaged edge of the carton will drop into the trough tilting the carton down into the path of said chain, an elongate support member parallel with said table but on the opposite side of the trough, slidable guides on said support member and ways therefor on the apparatus enabling same to move perpendicular to the line of movement of the chain, a threaded member secured to the said support member, rotatable screw mounting said threaded member whereby rotation of said screw will move said support member, said flared side of the trough being secured to said support member.

6. Apparatus for supporting a stack of folded cartons, stripping the cartons off the bottom of the stack one at a time, and printing and ejecting the same from the apparatus for presentation to a printing mechanism, a trough having an outwardly flared side and a generally vertical opposite side and stationed with an end thereof adjacent the printing mechanism, a conveyor chain in the bottom of the trough and means driving the same to carry any articles in the trough to the said printing mechanism, a table above and to one side of the trough and having a lip overhanging the trough, a pair of spaced apart vertically extending corner-forming structures engaged upon the table at a position spaced from the printing mechanism, a vertical wall at said position but on the opposite side of the well from said structures having its bottom end spaced above the outwardly flared side of the trough, the vertical wall and corner-forming structures defining a magazine for said stack of cartons offset from the trough, with the bottom of the stack supported upon said lip and the upper edge of said outwardly flared side clear of said chain, a reciprocating pusher member slidable upon said table in a direction perpendicular to the movement of the chain, means driving said pusher member, said pusher member being arranged so that its leading edge passes beyond said lip and over the trough in one of its movements and being of a dimension to engage the bottom-most carton, push same toward and over the trough with the leading edge of the carton passing beneath and beyond the bottom end of the wall, whereby the engaged edge of the carton will drop into the trough tilting the carton down into the path of said chain, an elongate support member parallel with said table but on the opposite side of the trough, slidable guides on said support member and ways therefor on the apparatus enabling same to move perpendicular to the line of movement of the chain, a threaded member secured to the said support member, a rotatable screw mounting said threaded member whereby rotation of said screw will move said support member, said flared side of the trough being secured to said support member and said vertical wall being secured to said support member, whereby rotation of said screw will vary the size of the magazine and the trough.

7. Apparatus for supporting a stack of folded cartons, stripping the cartons off the bottom of the stack one at a time, and printing and ejecting the same from the apparatus for presentation to a printing mechanism, a trough having an outwardly flared side and a generally vertical opposite side and stationed with an end thereof adjacent the printing mechanism, a conveyor chain in the bottom of the trough and means driving the same to carry any articles in the trough to the said printing

mechanism, a table above and to one side of the trough and having a lip overhanging the trough, a pair of spaced apart vertically extending corner-forming structures engaged upon the table at a position spaced from the printing mechanism, a vertical wall at said position but on the opposite side of the well from said structures having its bottom end spaced above the outwardly flared side of the trough, the vertical wall and corner-forming structures defining a magazine for said stack of cartons offset from the trough, with the bottom of the stack supported upon said lip and the upper edge of said outwardly flared side clear of said chain, a reciprocating pusher member slidable upon said table in a direction perpendicular to the movement of the chain, means driving said pusher member, said pusher member being arranged so that its leading edge passes beyond said lip and over the trough in one of its movements and being of a dimension to engage the bottom-most carton, push same toward and over the trough with the leading edge of the carton passing beneath and beyond the bottom end of the wall, whereby the engaged edge of the carton will drop into the trough tilting the carton down into the path of said chain, an elongate support member parallel with said table but on the opposite side of the trough, slidable guides on said support member and ways therefor on the apparatus enabling same to move perpendicular to the line of movement of the chain, a threaded member secured to the said support member, a rotatable screw mounting said threaded member whereby rotation of said screw will move said support member, said flared side of the trough being secured to said support member, a vertically adjustable bar connected with said elongate support member, and said vertical wall being secured to the said vertically adjustable bar for movement therewith.

8. In an article feeding machine in which a stack of articles is supported along one edge upon a table lip and the bottom-most article is arranged to be pushed off the table, pusher means comprising a planar member moving parallel with the table and having a leading edge engaging the bottom-most article, said leading edge being formed with a sharp protruding blade on the bottom thereof, said blade adapted to engage beneath the bottom-most article to lift same upon the blade, the planar member forming a shoulder at the base of the blade to engage the edge of said article, and said pusher means being movable to carry the shoulder beyond the lip so that when the pusher means is retracted the edge of the said article will slide off the blade and be free to fall below the level of the table.

9. Apparatus for supporting a stack of folded cartons, stripping the cartons off the bottom of the stack one at a time, and ejecting the same from the apparatus for presentation to a printing mechanism, a trough having an outwardly flared side and a generally vertical opposite side and stationed with an end thereof adjacent said printing mechanism, a conveyor chain in the bottom of the trough and means driving the same to carry any articles in the trough to the said printing mechanism, a table above and to one side of the trough and having a lip overhanging the trough, a pair of spaced apart vertically extending corner-forming structures engaged upon the table at a position spaced from the printing mechanism, a vertical wall at said position but on the opposite side of the trough from said structures having its bottom end spaced above the outwardly flared side of the trough, the vertical wall and corner-forming structures defining a magazine for said stack of cartons offset from the trough, with the bottom of the stack supported upon said lip and the upper edge of said outwardly flared side clear of said chain, a reciprocating pusher member slidable upon said table in a direction perpendicular to the movement of the chain, means driving said pusher member, said pusher member being arranged so that its leading edge passes beyond said lip and over the trough in one of its movements and being of a dimension to engage the bottom-most carton, push same toward and over the trough with the leading edge of the carton passing beneath and beyond the bottom end of the wall, whereby the engaged edge of the carton will drop into the trough tilting the carton down into the path of said chain, the leading edge of the pusher member being provided with means retaining support of the bottom-most carton after the pushed edge has passed the said lip, comprising a knife blade on the bottom of the pusher member extending outwardly therefrom and adapted to pass beneath the said bottom-most carton, and a shoulder to limit movement of said carton upon the blade.

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