Aug. 19, 1958 B. J. ANDERSON 2,848,220

DIAPER FOLDING MACHINES

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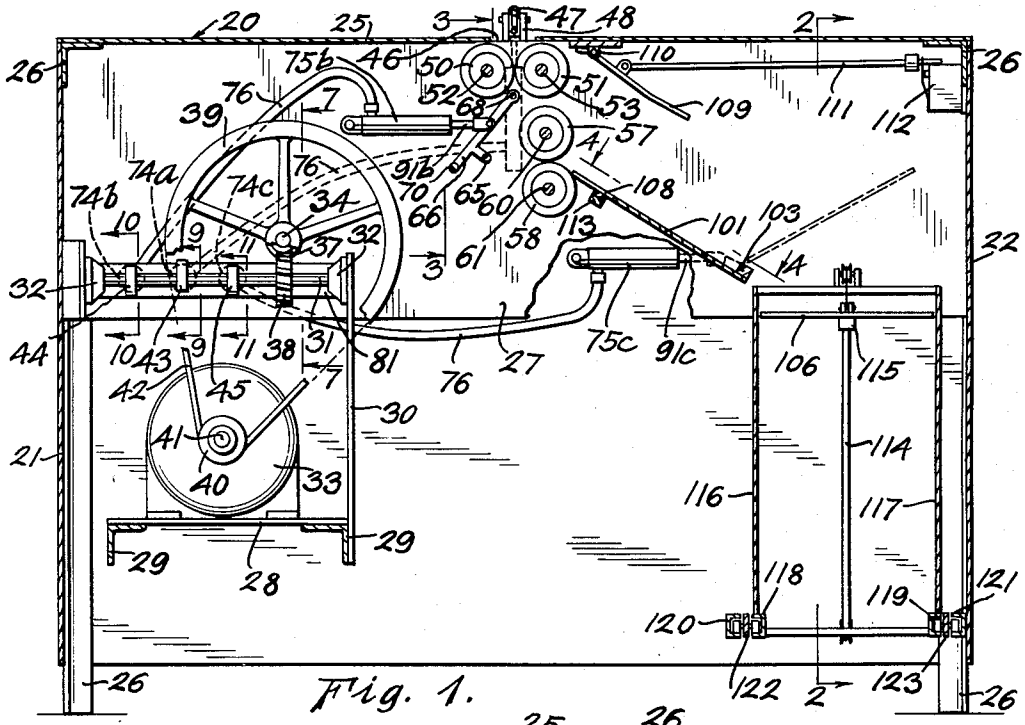


Fig. 1.

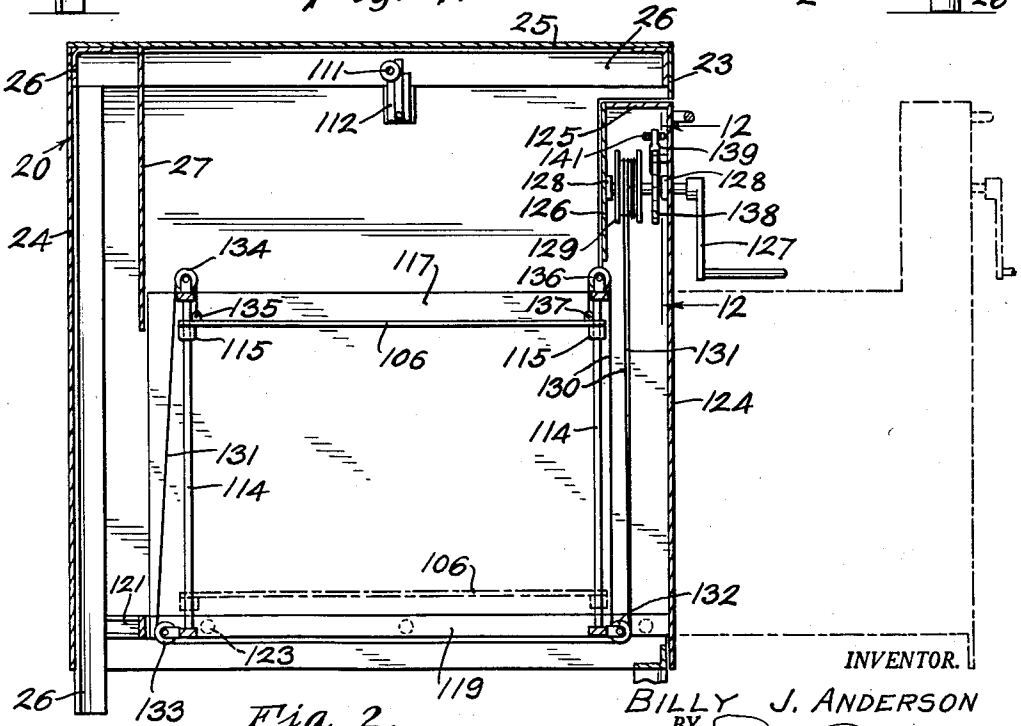


Fig. 2.

INVENTOR.
BILLY J. ANDERSON
BY
ATTORNEY

Aug. 19, 1958 B. J. ANDERSON 2,848,220

DIAPER FOLDING MACHINES

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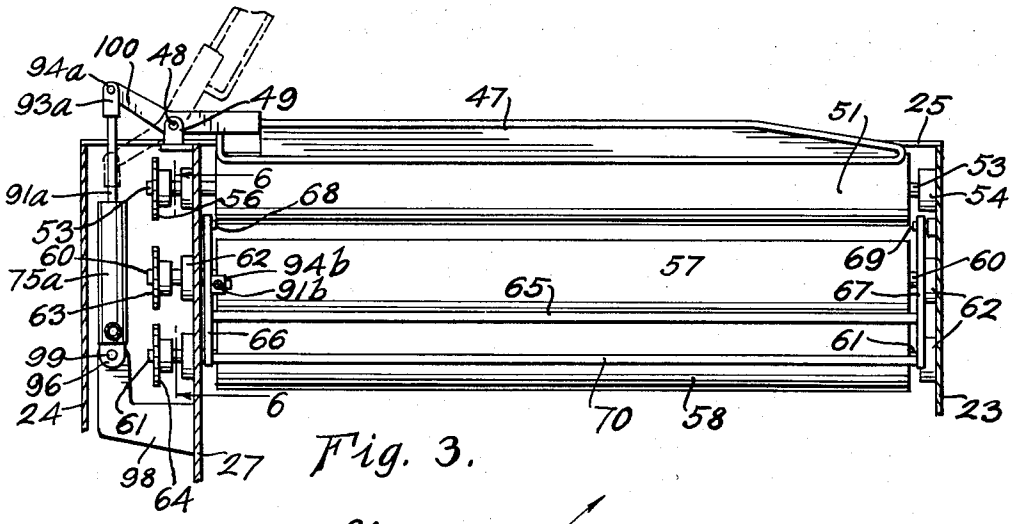


Fig. 3.

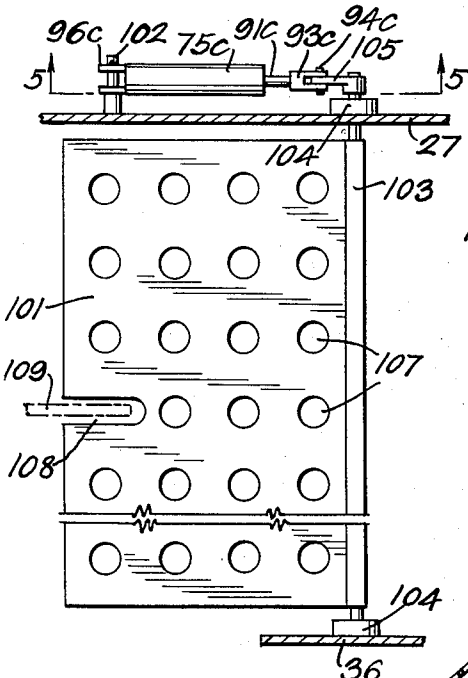


Fig. 4.

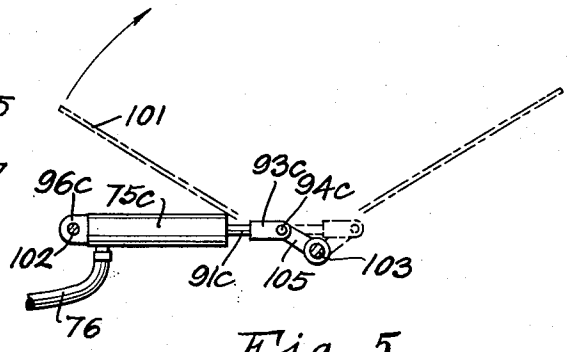


Fig. 5.

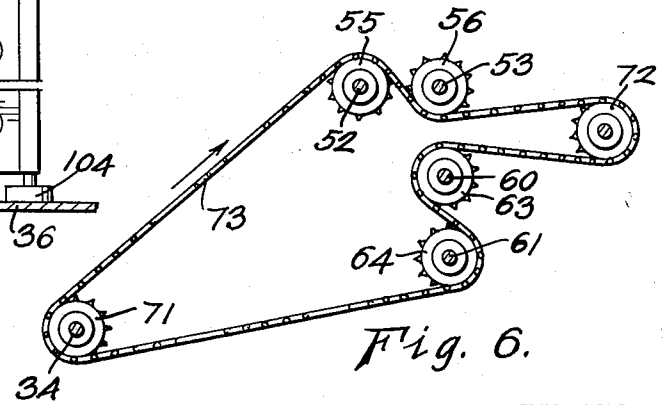


Fig. 6.

INVENTOR.
BILLY J. ANDERSON
BY
Edmund L. Spangler, Jr.
ATTORNEY

Aug. 19, 1958 B. J. ANDERSON 2,848,220

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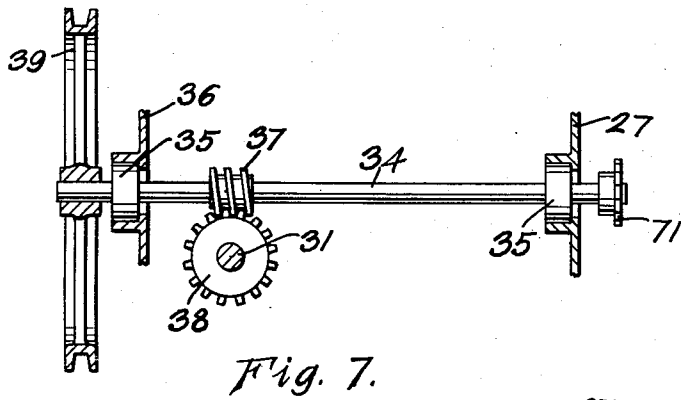


Fig. 7.

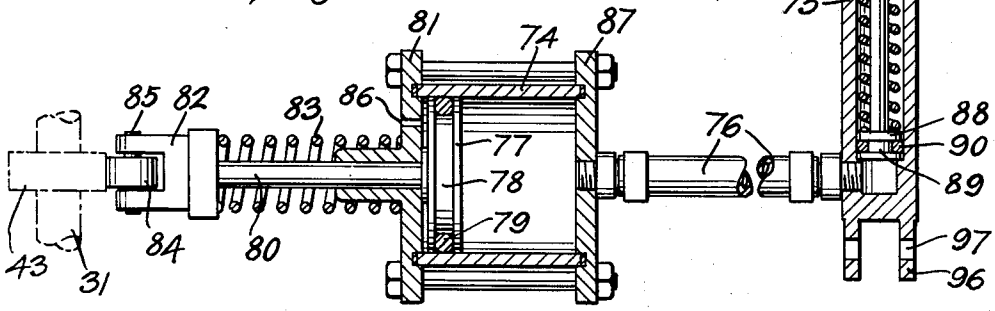


Fig. 8.

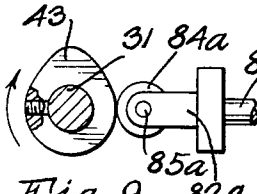


Fig. 9.

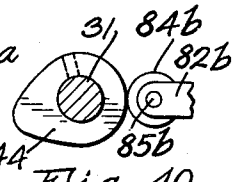


Fig. 10.

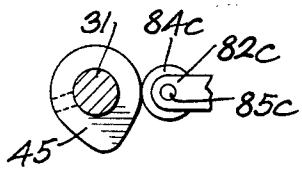


Fig. 11.

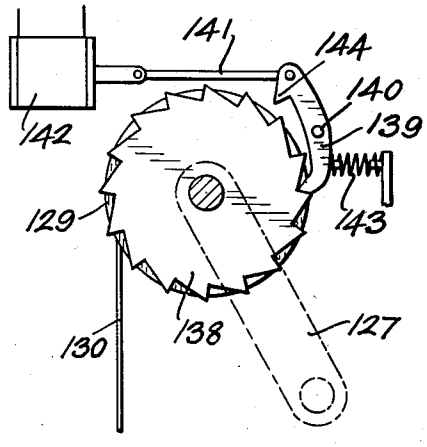


Fig. 12.

INVENTOR.
BILLY J. ANDERSON
BY
Edmund Ludwig Jr.
ATTORNEY

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DIAPER FOLDING MACHINES

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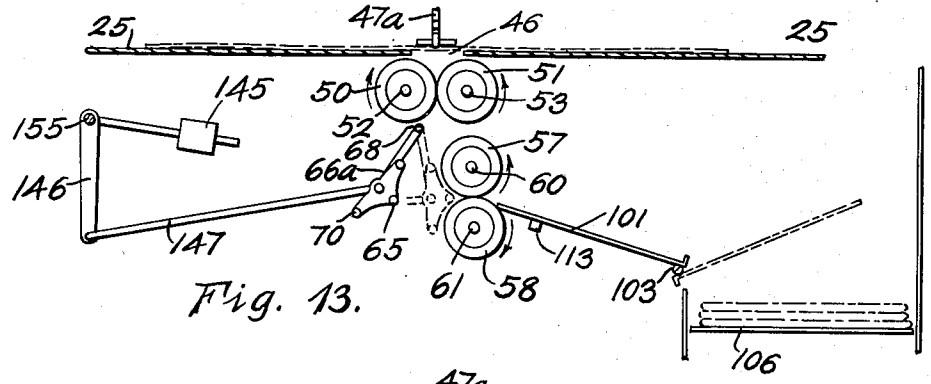


Fig. 13.

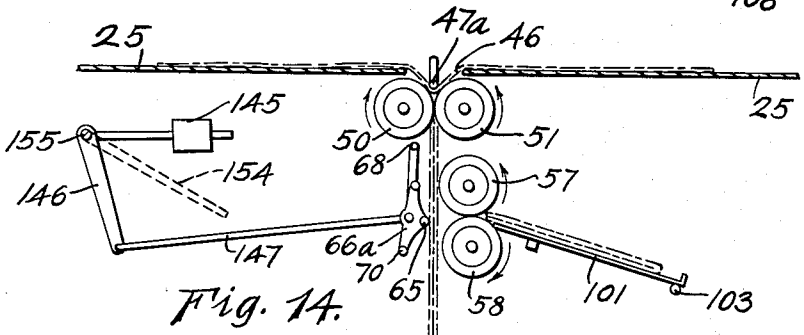


Fig. 14.

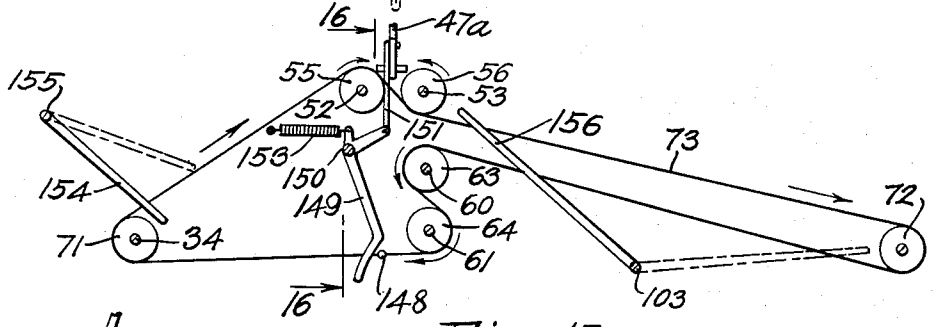


Fig. 15.

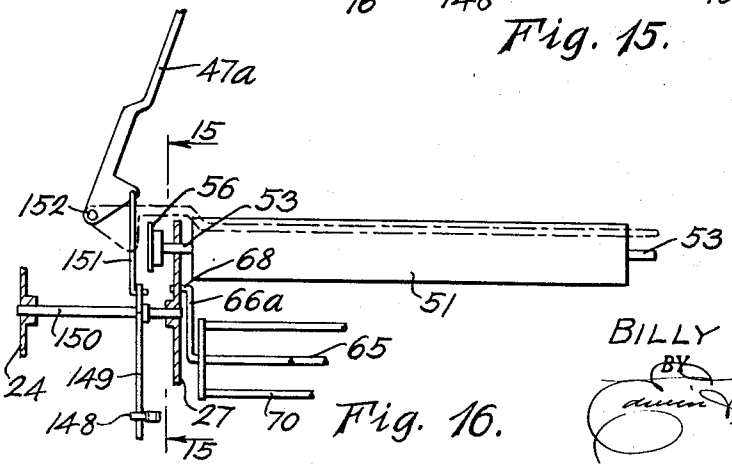


Fig. 16.

INVENTOR.
BILLY J. ANDERSON
BY
ATTORNEY

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2,848,220

DIAPER FOLDING MACHINES

Billy J. Anderson, Denver, Colo.

Application May 10, 1956, Serial No. 584,047

10 Claims. (Cl. 270—84)

This invention relates to folding machines, and more particularly, to machines for folding cloth articles such as diapers and the like.

Many mothers prefer to employ the services of a diaper laundry rather than take care of the diapers by themselves. Excellent diaper services have, therefore, become widely distributed throughout the United States. A laundry which furnishes a diaper service is, however, faced with several problems which make efficient and low-cost handling of the diapers quite difficult.

Perhaps the most inefficient step in the laundering of diapers is that of folding them after they are washed and dried. Several factors contribute to making the folding operation a difficult one. The first of these is the fact that diapers vary considerably in size. Some diapers are cut larger than others by the manufacturer and all diapers shrink a great deal after repeated washings in very hot water. This, of course, makes hand-folding difficult and it is especially difficult to design and construct a machine for folding diapers which will handle the wide variation in sizes.

A second factor is that the great majority of diapers are made of gauze which is so lightweight that folding by either hand or machine is troublesome. Another complicating factor is that some mothers prefer their diapers folded in quarters; whereas, others prefer thirds.

The shape of the diapers is also subject to a great deal of variation. Some manufacturers make square diapers and others make rectangular ones. After repeated launderings, however, both the square and rectangular ones shrink unevenly and are likely to assume a wide variety of distorted shapes.

It is, therefore, the principal object of the present invention to provide a diaper folding machine which eliminates the need for hand-folding and thus results in a considerable saving in time, effort and expense in connection with the operation of a diaper laundry or the like.

Another object of the invention is to provide a folding machine which will accommodate any of the wide variety of sizes and shapes of diapers and fold them either into quarters or thirds according to the wishes of the customer.

Additional objects of the invention are to provide a folding machine which is relatively simple, compact, fast, and substantially foolproof in operation.

Other objects will be in part apparent and in part pointed out specifically hereinafter in connection with the description of the drawing which follows, and in which:

Figure 1 is a front elevation in section showing the working parts of the diaper folding machine of the present invention, certain parts thereof having been broken away to better show the construction;

Figure 2 is a side elevation in section taken along line 2—2 of Figure 1;

Figure 3 is a section taken along line 3—3 of Figure 1;

Figure 4 is a section taken along line 4—4 of Figure 1;

Figure 5 is a section taken along line 5—5 of Figure 4;

Figure 6 is a section taken along line 6—6 of Figure 3;

Figure 7 is a section taken along line 7—7 of Figure 1;

Figure 8 is an enlarged diametrical section showing one of the main hydraulic cylinders and one of the operating cylinders connected thereto;

Figure 9 is a section taken along line 9—9 of Figure 1;

Figure 10 is a section taken along line 10—10 of Figure 1;

Figure 11 is a section taken along line 11—11 of Figure 1;

Figure 12 is a section taken along line 12—12 of Figure 2;

Figure 13 is a front elevation in section similar to Figure 1 showing a slightly modified form of the diaper folding machine of the present invention, which is designed for mechanical rather than hydraulic operation;

Figure 14 is a view similar to Figure 13 illustrating the manner in which a diaper is folded into quarters in the folding machine;

Figure 15 is a diagrammatic representation showing the chain drive and actuating means of the folding machine; and,

Figure 16 is a section taken along line 16—16 of Figure 15.

Referring now in particular to Figures 1 and 2 of the drawing, it will be seen that the operating parts of the diaper folding machine of the present invention are enclosed in a housing indicated in a general way by numeral 20. The housing is provided with left end wall 21, right end wall 22, front wall 23, rear wall 24 and a top 25. The walls and top of the housing are attached to a suitable structural frame members 26. A partial wall 27 is attached to the end walls and top of the housing in spaced parallel relation to the rear wall thereof. A motor supporting plate 28 is supported on frame members 29 between front and rear walls 23 and 24 of the housing. A partial plate 30 is attached to the motor supporting plate 28 in spaced parallel relation to left end wall 21 of the housing. A cam shaft 31 is journaled for rotation within bearings 32 carried by the partial plate 30 and left end wall 21, respectively. An electric motor 33 is attached to motor supporting plate 28 beneath the cam shaft.

Drive shaft 34 is journaled for rotation within bearings 35 (shown only in Figure 7) which are mounted on partial wall 27 and bracket 36 shown in Figures 4 and 7. Drive shaft 34 is arranged at right angles to cam shaft 31 and is operatively connected thereto by worm 37 which meshes with worm gear 38 carried by the cam shaft. Drive shaft 34 carries a pulley 39 which is interconnected to pulley 40 on the motor shaft 41 by V-belt 42. Thus the motor operates through drive shaft 34 to effect rotation of cam shaft 31 which carries cams 43, 44 and 45 which will be described in detail in connection with Figures 8 through 11, inclusive.

In connection with Figures 1, 3, 13 and 14, it will be seen that the top of the housing is provided with a transverse opening 46 over which the diaper to be folded is laid. Arm 47 is mounted for pivotal movement on pivot pin 48 carried by bracket 49 attached to partial wall 27 of the housing. Arm 47 in its inoperative position, shown by dotted lines in Figure 3, extends upwardly from the rear edge of the folding machine and permits a diaper to be laid on the top in position to cover opening 46 therein. The operative position of arm 47 is that shown in full lines in Figure 3. The operative position places the arm within opening 46 in the top of the housing and acts to force a diaper laid thereon down between a pair of rollers 50 and 51 journaled for rotation beneath said opening. These rollers are preferably rubber covered and contain shafts 52 and 53 which rotate in spaced parallel

relation within bearings 54 mounted on partial wall 27 and front wall 23. Sprocket gear 55 is carried on the rear end of shaft 52 and sprocket gear 56 is carried on the rear end of shaft 52 and sprocket gear 56 is carried on the rear end of shaft 53. Rollers 50 and 51 are arranged side-by-side in contacting relation and place the first fold in a diaper forced therebetwen by arm 47. A second pair of rollers 57 and 58 are mounted in contacting relation one above the other beneath the first pair of rollers and in substantial alignment vertically with roller 51 thereof. Rollers 57 and 58 are carried on shafts 60 and 61, respectively, which are journaled for rotation within bearings 62 carried by front wall 23 and partial wall 27. Sprocket wheel 63 is carried on the rear end of shaft 60 and sprocket wheel 64 on the rear end of shaft 61. Rollers 57 and 58 are also preferably rubber covered and they receive the once-folded diaper from the first pair of rollers 50 and 51 and place the second fold therein. The diaper is forced between the second pair of rollers by rod 65 which moves from the full line position shown in Figures 1 and 13 into the dotted line position shown in Figure 13. Rod 65 is mounted between pivot arms 66 and 67, shown most clearly in Figures 1 and 3, which are attached to partial plate 27 and front wall 23 for pivotal movement about pivots 68 and 69. A second rod 70 is carried on the lower ends of pivot arms 66 and 67 in position to prevent rod 65 from being caught between rollers 57 and 58.

Now in connection with Figures 6 and 7, it will be seen that the inner end of the drive shaft 34 is also provided with a sprocket gear 71. A sprocket gear idler 72 is positioned between and to the right of sprocket gears 56 and 63. All the aforementioned sprocket gears are aligned to be interconnected with sprocket chain 73 which effects rotation thereof. The sprocket chain extends from sprocket gear 71 over the top of gear 55, underneath gear 56 and around the idler 72, thence over gear 63, under gear 64 and back to gear 71. Thus, clockwise rotation of gear 71 will cause roller 50 to turn clockwise, roller 51 counter-clockwise, roller 57 counter-clockwise and roller 58 clockwise. The directions of rotation of the sprocket gears and rollers are clearly indicated by arrows in Figures 13 through 15, inclusive. These rollers operate continuously as long as the motor is in operation.

As cam shaft 31 rotates each of the cams 43, 44 and 45 operate successively to actuate the three different operations which constitute the complete folding cycle. All of the cams actuate identical hydraulic mechanisms, one of which has been illustrated in Figure 8. Each of the hydraulic mechanisms comprises a main hydraulic cylinder 74 connected to an operating hydraulic cylinder 75 by a flexible hydraulic fluid conduit 76. The main piston 77 is of conventional design having a peripheral groove 78 provided with an O-ring seal 79. The main piston rod 80 projects through head 81 of the main cylinder and is mounted for reciprocation therein. A bifurcated connector 82 is mounted on the projecting end of the main piston rod and a compression spring 83 is mounted between the connector and common head 81 of the main cylinders to urge the piston into retracted position against the cam. The bifurcated connector is provided with a roller 84 carried on a pin 85. Roller 84 is in contact with the cam and the cam acts to move the piston in the main cylinder against the action of compression spring 83 thus forcing hydraulic fluid from the main cylinder into the operating cylinder. Bleed openings 86 are provided in common head 81 of the main cylinders that air might be taken in and exhausted therefrom. Each of the three main cylinders 74*a*, 74*b* and 74*c* have common heads 81 and 87, and are in alignment with their respective cams as shown by dotted lines in Figure 1.

The operating cylinder 75 has a considerably reduced cross section so that the piston 88 thereof will have a greater stroke in response to movement of the main piston. The operating piston is likewise provided with a peripheral groove 89 containing an O-ring seal 90. The piston rod 91 of the operating cylinder projects through head 92 thereof and is also provided with a bifurcated connector 93 having a pin 94. Compression spring 95 mounted within the operating cylinder between piston 88 and head 92 acts to retract the piston rod 91 to its initial or inoperative position shown in Figure 8. In the particular construction shown, the operating cylinder is provided with a bifurcated end 96 having openings 97 therein to receive a pivot pin.

In Figures 9, 10 and 11, it will be noted that as the cam shaft 31 rotates, cams 43, 44 and 45 will successively act against their respective hydraulic mechanisms, designated by letters "*a*," "*b*" and "*c*," respectively, to accomplish one of the three operations in the folding cycle. Each of the cams is displaced angularly on cam shaft 31 with respect to the others although all the cams in the particular form illustrated have substantially the same shape. The first of the cams to operate during the folding cycle is cam 43 of Figure 9. It is the middle cam shown in Figure 1 and the operating cylinder associated therewith 75*a* is indicated by dotted lines beneath arm 47 which it controls.

Figure 3 also shows the operating cylinder 75*a* which is connected to cam 43 and which is used to effect movement of arm 47. The bifurcated end 96 of the operating cylinder is attached to bracket 98 by pin 99 and the bracket is mounted on partial wall 27. The bifurcated end 93*a* of the piston rod 91*a* is attached to lever arm 100 by pin 94*a*. Rotation of cam 43 against roller 84*a* (Figure 9) causes the piston rod 91*a* to extend from the dotted line position to the full line position of Figure 3 and acts through the lever arm 100 to lower arm 47 from the dotted line position to the full line position shown therein. This, of course, causes a diaper which is positioned over opening 46 in the top of the housing to be forced down between rollers 50 and 51. After cam 43 has actuated arm 47, the compression springs associated with the main and operating cylinders return the pistons to their original or inoperative positions.

Following actuation of arm 47, cam 44 acts against roller 84*b* (Figure 10) to operate cylinder 75*b* (Figure 1) and move rod 65 against the diaper and force it between rollers 57 and 58. The bifurcated connector 94*b* is pivotally attached to pivot arm 66. Extension of piston rod 91*b* effects movement of the rod 65 into the dotted line position shown in Figure 13. Operating cylinder 75*b* operates in time-delay relation to operating cylinder 75*a* and functions at the moment the diaper passes from between rollers 50 and 51. Figure 14 of the drawing shows rod 65 moving into position against the diaper to force it into rollers 57 and 58 as it leaves rollers 50 and 51. Here again, the compression springs return the pistons of the master and operating cylinders to their original positions.

The final operation in the folding cycle is accomplished by means of cam 45 (Figure 11) which moves against roller 84*c* to extend piston rod 91*c* of operating cylinder 75*c* which is operatively connected to tray 101 mounted for pivotal movement about rod 103 attached to its lower edge. Figure 1 shows the relation of cylinder 75*c* to the remaining operating parts of the folding machine of the present invention; whereas, Figure 5 shows the operation of the tray in detail.

Specifically in connection with Figures 4 and 5, it will be seen that operating cylinder 75*c* is pivotally attached by its bifurcated end 96*c* to a pin 102 which is, in turn, affixed to partial wall 27. The tray 101 is mounted for pivotal movement on a rod 103 attached to the lower edge thereof and mounted for pivotal movement in bearing 104 attached to partial wall 27 and bracket 36. The rear end of rod 103 is provided with a lever arm 105 which is attached to the bifurcated connector 93*c* of piston rod 91*c* by pin 94*c*. Cam 45 causes the piston rod 91*c* to move from the full line position of Figure 5 to the

dotted line position and flop the tray **101** over to dump the diaper laying thereon (shown in Figure 14) onto tray **106**, shown most clearly in Figures 1 and 2. The tray **101** is provided with a plurality of openings **107** which act to retain the diaper in the correct position on the tray as it is being flopped over. Tray **101** also contains a notch **108** in its rear edge positioned to pass switch arm **109**, which will be seen in Figure 1, as the tray moves through its arcuate path. Switch arm **109** will pass through the notch without being moved by the tray unless a diaper is laying thereon. If, however, a diaper is laying on the tray **101** it will actuate the switch arm **109** which is pivotally attached to the top of the housing by connector **110** and will act through link **111** pivotally connected thereto to close microswitch **112**.

A stop **113** is shown in Figure 1 attached to partial wall **27** in position to retain tray **101** in correct relation to rollers **57** and **58** so that a diaper being discharged from between said rollers will move onto the tray. Of course, operating cylinder **75***c* operates in time-delay relation to that of operating cylinder **75***b* and will flop over tray **101** as soon as the diaper has been released from between the rollers. The position of the diaper just prior to being flopped over is shown by dotted lines in Figure 14.

Figures 1 and 2 show the tray **106** mounted for vertical slidable movement on guide rods **114** which pass through bushings **115** mounted in opposite ends of the plate. The guide rods and tray are positioned between drawer walls **116** and **117** which are provided with movable channels **118** and **119** along their lower edges. Fixed channels **120** and **121** are arranged in opposed relation to the movable channels **118** and **119**, respectively, and roller assemblies **122** and **123** interconnect the opposed channels and provide means for sliding the tray **106** and the drawer walls **116** and **117** from the front of the housing, as shown by dotted lines in Figure 2, so that the diapers stacked on the tray may be easily removed. Partial front wall **124**, partial wall **125** and wall **126** are mounted for movement with the drawer, as shown in Figure 2. Wall **126** and partial wall **124** lie in spaced parallel relation and crank **127** is mounted for rotation therebetween on bushings **128**. A reel **129** is mounted on the crank between walls **126** and **124**, as shown. Two cables **130** and **131** are wound on the reel and pass downwardly between wall **124** and rod **114** and around pulley **132** carried on the bottom front edge of the drawer. Cable **131** passes from pulley **132** to the rear edge of the drawer, around pulley **133**, and upward around pulley **134** on the top rear edge of the drawer to connector **135** on top of the tray **106**. The other cable **130** passes around pulley **132**, upward over pulley **136** on the top front edge of the drawer to connector **137** on the tray.

With reference now to Figures 2 and 12, it will be noted that the crank **127** is also provided with a ratchet wheel **138** which is engaged by a ratchet pawl **139**. The ratchet pawl is mounted for pivotal movement on a pin **140** and is attached to a link **141** interconnecting the ratchet pawl with solenoid **142**. Compression spring **143** urges the ratchet pawl into engagement with the ratchet wheel. Solenoid **142** is electrically connected to microswitch **112**. Upon closing of the microswitch **112** by movement of a diaper laying on tray **101** against switch arm **109**, the circuit is closed and solenoid **142** is actuated to pull on link **141** to release ratchet pawl **139**. Finger **144** on the ratchet pawl prevents the ratchet wheel from turning more than one notch. As soon as the diaper passes switch arm **109**, the microswitch opens breaking the circuit through the solenoid and compression spring **143** returns the ratchet pawl **139** into engagement with the ratchet wheel. The ratchet wheel, however, by turning one notch has acted through the reel, cables and pulleys to lower tray **106** by an amount approximately equal to the thickness of the diaper just added to the pile. Thus, the top of the pile of diapers remains substantially in the same horizontal plane even though the pile becomes successively thicker. After the drawer has become full and the pile of diapers removed therefrom by sliding the drawer out of the front of the housing, crank **127** can be turned to raise tray **106** back up to the top of the drawer preparatory to folding another stack. The ratchet pawl will slip past the teeth of the ratchet wheel when the tray is raised. A counter (not shown) can easily be connected into the electrical circuit including the microswitch and solenoid to count the number of diapers that are being stacked.

A slightly modified form of the diaper folding machine in the present invention is illustrated in Figures 13 through 16, inclusive, and the basic difference lies in the fact that the three operations of the folding cycle are initiated by mechanical means rather than by hydraulic means as in the machine of Figures 1 through 12, inclusive. The basic elements of the mechanical folding machine remain the same and have, accordingly, been designated by the same reference characters. Also, the folding cycle remains exactly the same and the diagrammatic representations of Figures 13 through 15, inclusive, have already been used to describe the operation of the hydraulic machine in the various operations of the folding cycle. Hence, the description of the four figures illustrating the mechanical modification will be confined to pointing out the few slight differences in structure.

In connection with Figures 13 and 14 it will be noted that a counterweight **145** attached to one end of a bell-crank lever **146** is used to return rod **165** to its inoperative position by pulling on link **147** connected therebetween. Pivot arm **66***a* is shown slightly modified although the change is of no consequence. The position and construction of the rollers and sprocket gears is exactly the same with the single exception of idler **72** which is moved farther away from the remaining sprocket gears.

Specifically, in connection with Figures 15 and 16, it will be seen that sprocket chain **73** is provided with a single actuating member **148** attached to one link of the sprocket chain. The sprocket chain operates to rotate the sprocket gears and rollers in exactly the same manner and same direction as that of the hydraulic machine. In this instance, however, actuating member **148** carried by the sprocket chain is used to initiate each of the three aforementioned operations which comprise the folding cycle. The actuating member **148** carried by the sprocket chain will move to the left in Figure 15 and engage bell-crank lever **149** which is mounted for pivotal movement on pin **150**. The bell-crank lever is attached to link **151** which, in turn, is attached to arm **47***a* and will act upon movement of the bell-crank lever to pivot the arm around pivot **152** downwardly through opening **46** in the top of the housing. As the actuating member moves on past the bell-crank lever, tension spring **153** will act to return the bell-crank lever, link and arm **47***a* to its original elevated position shown in full lines in Figure 16. The action of the arm **47***a* forcing the diaper into rollers **50** and **51** is clearly shown in Figure 14.

As the actuating member **148** moves around sprocket gear **71** it engages lever arm **154** which is attached to shaft **155**. Bell-crank lever **146** is also attached to shaft **155** and the movement of lever arm **154** from the full line position of Figure 15 to the dotted line position will act through the bell-crank lever **146** to move rod **65** from the full line position shown in Figure 13 to the dotted line position. This movement of rod **65** forces the diaper in between rollers **57** and **58**. As the actuating member **148** moves on beneath lever arm **154**, the counterweight **155** returns the bell-crank lever, rod **65** and lever arm **154** to their original positions. Thereafter, actuating member **148** passes over the top of sprocket gear **55** and underneath sprocket gear **56**; whereupon, it engages lever **156** and carries it from the full line position of Figure 15 to the dotted line position. Lever **156** is mounted on rod **103** which is attached to the lower end of tray **101**, as aforementioned. Move-

ment of lever **156**, therefore, causes the tray **101** to flip over from the full line position shown in Figure 13 to the dotted line position. This action dumps the diaper discharged from between rollers **57** and **58** on to the pile supported on tray **106**. Actuating member **148** continues to move around idler **72**; whereupon, it again engages arm **156** as it moves to the left and returns the lever arm and tray from the dotted line position of Figures 13 and 15 to the full line position. This completes the folding cycle.

It will become apparent from an examination of Figures 13 and 14, and also of Figure 1, that positioning of the diaper on the top of the housing with approximately one-half thereof on either side of opening **46** will cause the diaper to be folded in fourths. On the other hand, positioning the diaper so that one-third thereof lies on one side of the opening and two-thirds on the other will cause the diaper to be folded in thirds. Furthermore, positioning the right end or left edge of the diaper on a fixed reference line on top of the housing will fold all diapers so that they are of equal width regardless of their original length.

From the foregoing description of the diaper folding machine of the present invention it will be seen that the many useful objects for which it was designed have been achieved. Although the invention has been described in connection with the specific structural features shown in the accompanying drawing, I realize that many modifications within the scope of the invention may occur to those skilled in the art and it is my intention that the invention be limited only insofar as said limitations are specifically set forth in the appended claims; and, therefore, I claim:

1. A folding machine comprising: a supporting surface having a slot therein sized to pass an article to be folded; a first pair of feed rollers mounted for rotation in side-by-side contacting relation beneath the slot and in alignment therewith, said first pair of rollers providing means for placing a first fold in an article to be folded placed therebetween; a second pair of feed rollers mounted for rotation one above the other in contacting relation beneath one of the rollers of the first pair, said second pair of rollers providing means for placing a second fold in a once-folded article passing from between the first pair of rollers; drive means operatively connected to the rollers for effecting continuous rotation thereof; a first and second cam operatively connected to the drive means for continuous rotational movement; a first and second hydraulic cylinder operatively connected to the first and second cams, respectively, for intermittent movement, said second hydraulic cylinder operating in time-delay relation to said first cylinder; a first arm operatively connected to the first hydraulic cylinder for intermittent pivotal movement between an inoperative position above the supporting surface to an operating position within the slot whereby an article to be folded lying across the slot will be inserted between the first pair of rollers; a second arm operatively connected to the second hydraulic cylinder for movement in time-delay relation to said first arm between an inoperative position in spaced relation to the second pair of rollers whereby a once-folded article passing from the first pair of rollers can move between said second arm and second pair of rollers and an operative position whereby said once-folded article is inserted between said second pair of rollers.

2. A folding machine comprising: a supporting surface having a slot therein sized to pass an article to be folded; a first pair of feed rollers mounted for rotation in side-by-side contacting relation beneath the slot and in alignment therewith, said first pair of rollers providing means for placing a first fold in an article to be folded placed therebetween; a second pair of feed rollers mounted for rotation one above the other in contacting relation beneath one of the rollers of the first pair, said second pair of rollers providing means for placing a second fold in a once-folded article passing from between the first pair of rollers; a tray positioned to receive the twice-folded article from the second pair of rollers, said tray being mounted for pivotal movement to discharge said twice-folded article into a receiving compartment; drive means operatively connected to the rollers for effecting continuous rotation thereof; first, second and third cams operatively connected to the drive means for continuous rotation; first, second and third hydraulic cylinders connected to the first, second and third cams respectively, for intermittent operation, the second hydraulic cylinder operating in time-delay relation to the first, and the third hydraulic cylinder operating in time-delay relation to the second; a first arm connected to the first hydraulic cylinder for intermittent movement between an inoperative position above the supporting surface and an operative position within the slot whereby an article to be folded lying across said slot will be inserted between the first pair of rollers; a second arm connected to the second hydraulic cylinder for movement in time-delay relation to the first arm between an inoperative position to receive a once-folded article from between the first pair of rollers and an operative position whereby said once-folded article is inserted between the second pair of rollers; and, a link operatively interconnecting the tray and the third hydraulic cylinder whereby said tray will pivot to discharge the twice-folded article in time-delay relation to operation of the second arm.

3. A device in accordance with claim 2 in which: the receiving compartment is provided with a second tray arranged to receive the twice-folded articles from the pivotally mounted tray; and in which, a ratchet mechanism actuated by movement of the pivotally mounted tray is operatively connected to the second tray to effect lowering thereof by an amount approximately equal to the thickness of the twice-folded article upon each actuation of said pivotally mounted tray in order to maintain the top of the stack of twice-folded articles substantially constant.

4. A device in accordance with claim 3 in which the receiving compartment and second tray are mounted beneath the supporting surface for slidable drawer-like movement to enable the stack of twice-folded articles to be removed therefrom.

5. A folding machine comprising: a supporting surface having a slot therein sized to pass an article to be folded; a first pair of feed rollers mounted for rotation in side-by-side contacting relation beneath the slot and in alignment therewith, said first pair of rollers providing means for placing a first fold in an article to be folded placed therebetween; a second pair of feed rollers mounted for rotation one above the other in contacting relation beneath one of the rollers of the first pair, said second pair of rollers providing means for placing a second fold in a once-folded article passing from between the first pair of rollers; drive means operatively connected to the rollers for effecting continuous rotation thereof; a first arm mounted for pivotal movement between an inoperative position above the supporting surface and an operative position within the slot whereby an article to be folded placed over the slot will be moved between the first pair of rollers; a second arm mounted for oscillatory movement between an inoperative position in spaced parallel relation to the second pair of rollers whereby a once-folded article passing from the first pair of rollers will move between said second arm and second pair of rollers and an operative position in which said once-folded article will be placed between said second pair of rollers; and, feed control means operatively interconnecting the drive means with the first and second arms to effect intermittent movement thereof, the movement of said second arm being in time-delayed relation to the movement of said first arm, said feed control means including a first hydraulic cylinder

connected to the first arm, a second hydraulic cylinder connected to the second arm, a first cam operatively interconnecting the drive means and the first hydraulic cylinder to effect intermittent actuation thereof in a manner to move the first arm between its operative and inoperative positions, and a second cam operatively interconnecting the drive means and the second hydraulic cylinder to effect actuation thereof in a manner to move the second arm between its operative and inoperative positions in time-delay relation to the movement of said first arm.

6. A device in accordance with claim 5 in which: a tray is positioned to receive the twice-folded articles from the second pair of rollers, said tray is mounted for pivotal movement about an axis lying in spaced parallel relation to the rollers, and said tray is movable between an inoperative position in which the twice-folded articles are deposited thereon and an operative position in which said tray discharges said article into a receiving compartment; and, said feed control means includes a third hydraulic cylinder connected to the tray to effect pivotal movement thereof and third cam operatively interconnecting the drive means and third hydraulic cylinder to effect actuation thereof in time-delay relation to operation of the second hydraulic cylinder.

7. A folding machine comprising: a supporting surface having a slot therein sized to pass an article to be folded; a first pair of feed rollers mounted for rotation in side-by-side contacting relation beneath the slot and in alignment therewith, said first pair of rollers providing means for placing a first fold in an article to be folded inserted therebetween; a second pair of feed rollers mounted for rotation one above the other in contacting relation and beneath one of the rollers of the first pair thereof, said second pair of rollers providing means for placing a second fold in a once-folded article passing from the first pair of rollers; a motor, chain means interconnecting the motor and the rollers to effect rotation thereof in a direction to move the article to be folded downwardly between the first pair of rollers and, thereafter, laterally between the second pair of rollers; a first arm mounted for pivotal movement between an inoperative position above the supporting surface and an operative position within the slot whereby an article to be folded lying across said slot will be moved in between the first pair of rollers; a second arm mounted for oscillatory movement between an inoperative position in spaced parallel relation to the second pair of rollers and an operative position whereby the once-folded article passing from between the first pair of rollers will be moved in between the second pair of rollers by said second arm; an actuating member carried by the chain means; a first link mechanism operatively connected to the first arm and positioned to engage the actuating member for effecting intermittent movement of said first arm between its operative and inoperative positions; and, a second link mechanism operatively connected to the second arm and positioned to engage the actuating member in time-delay relation to the engagement of said actuating member and first link mechanism for effecting movement of said arm between its operative and inoperative positions as the once-folded article passes from between the first pair of rollers.

8. A device in accordance with claim 7 in which; a tray is mounted for pivotal movement about a pivot axis parallel to the rollers and spaced therefrom, said tray being positioned to receive the twice-folded articles from the second pair of rollers, and said tray being movable to a second position whereby said twice-folded articles lying thereon will be discharged into a receiving compartment, the actuating member being arranged to engage said tray and move it from article-receiving to article-discharging position after engaging the second link mechanism and, thereafter, again engaging said tray to return it to article-receiving position.

9. In a folding machine, a first pair of rollers mounted for rotation in parallel contacting relation, said rollers being adapted to place a first fold in a foldable article placed therebetween, a second pair of rollers mounted for rotation in parallel relation to said first pair thereof, said second pair being positioned to receive the once-folded article from said first pair of rollers and place a second fold therein parallel to the first; drive means operatively associated with both the first and second pairs of rollers to effect rotation thereof including chain means interconnecting the drive means and the rollers; an actuating member carried by the chain means; a first feed means operatively connected to the drive means for intermittently forcing an article to be folded into the first pair of rollers which comprises a first arm mounted for movement against the first pair of rollers to insert the article to be folded therebetween, and a first link mechanism operatively interconnecting said first arm and the actuating member to effect intermittent operation thereof; and, a second feed means operatively connected to the drive means for intermittently forcing the once-folded article into the second pair of rollers, which comprises a second arm mounted for movement against the second pair of rollers and second link mechanism operatively interconnecting the actuating member and second arm to effect operation thereof in time-delay relation to actuation of the first arm.

10. In a folding machine, a first pair of rollers mounted for rotation in parallel contacting relation, said rollers being adapted to place a first fold in a foldable article placed therebetween; a second pair of rollers mounted for rotation in parallel relation to said first pair thereof, said second pair being positioned to receive the once-folded article from said first pair of rollers and place a second fold therein parallel to the first; drive means operatively associated with both the first and second pair of rollers to effect rotation thereof; a first feed means operatively connected to the drive means for intermittently forcing an article to be folded into the first pair of rollers, said first feed means comprising a first arm mounted for movement against a first pair of rollers, and a first hydraulic actuating means operatively interconnecting the drive means and said first arm for effecting intermittent movement thereof against said first pair of rollers, said first hydraulic actuating means comprising a first cam operatively connected to the drive means for continuous rotation, and a first hydraulic cylinder operatively interconnecting the first arm and said cam for intermittent operation; and, a second feed means operatively connected to the drive means for intermittently forcing the once-folded article into the second pair of rollers, said second feed means comprising a second arm mounted for movement against the second pair of rollers, and a second hydraulic actuating means operatively interconnecting the drive means and said second arm for effecting movement thereof against said second pair of rollers, said second hydraulic actuating means comprising a second cam operatively connected to the drive means for continuous rotation and a second hydraulic cylinder operatively interconnected the second arm and said second cam for operation in time-delay relation to actuation of said first arm.

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