Sept. 4, 1973 H. L. SHUGART 3,756,894

REEL CAPPING APPARATUS

Filed May 3, 1971 4 Sheets-Sheet 1

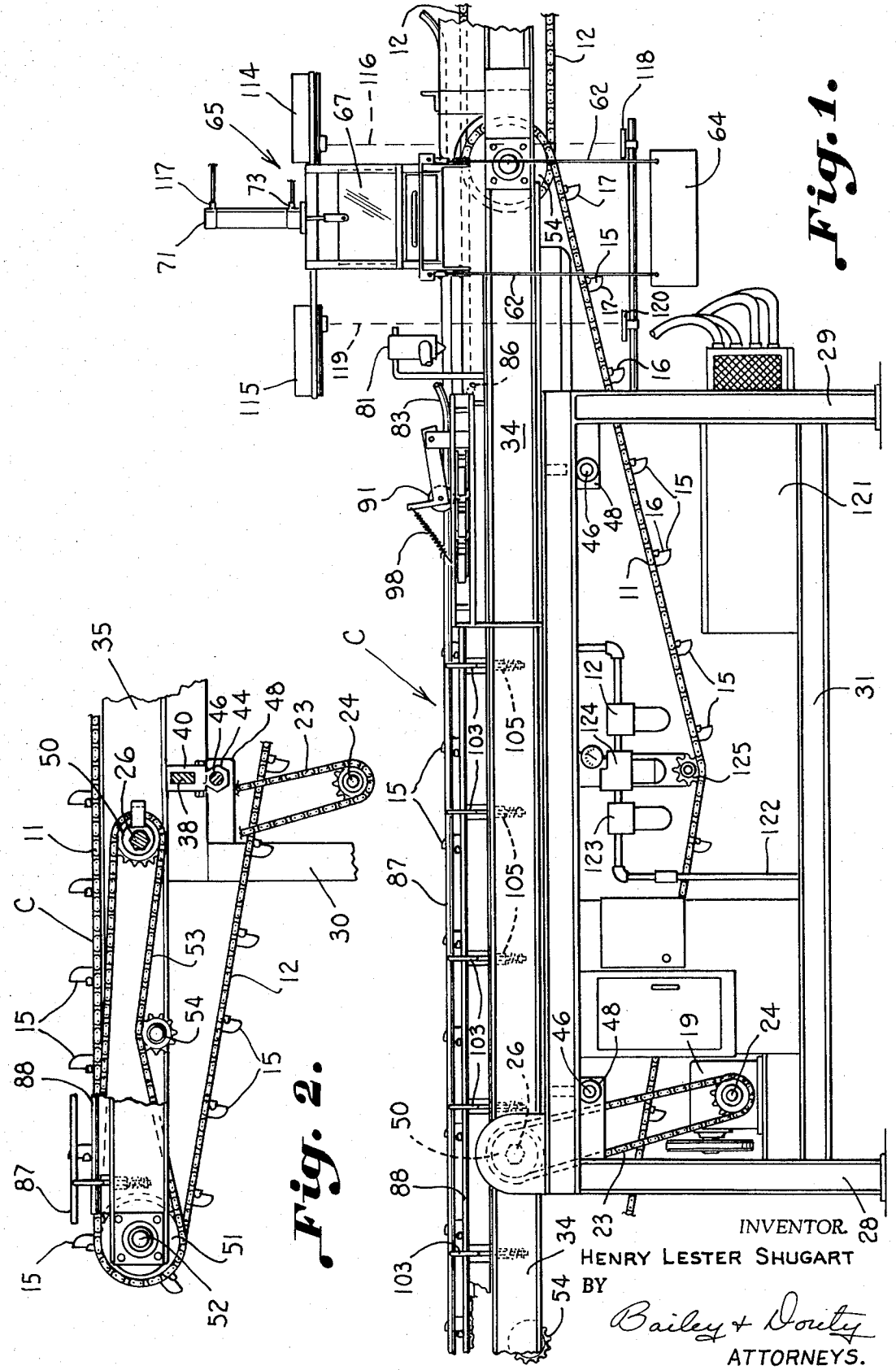


Fig. 1.

Fig. 2.

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REEL CAPPING APPARATUS

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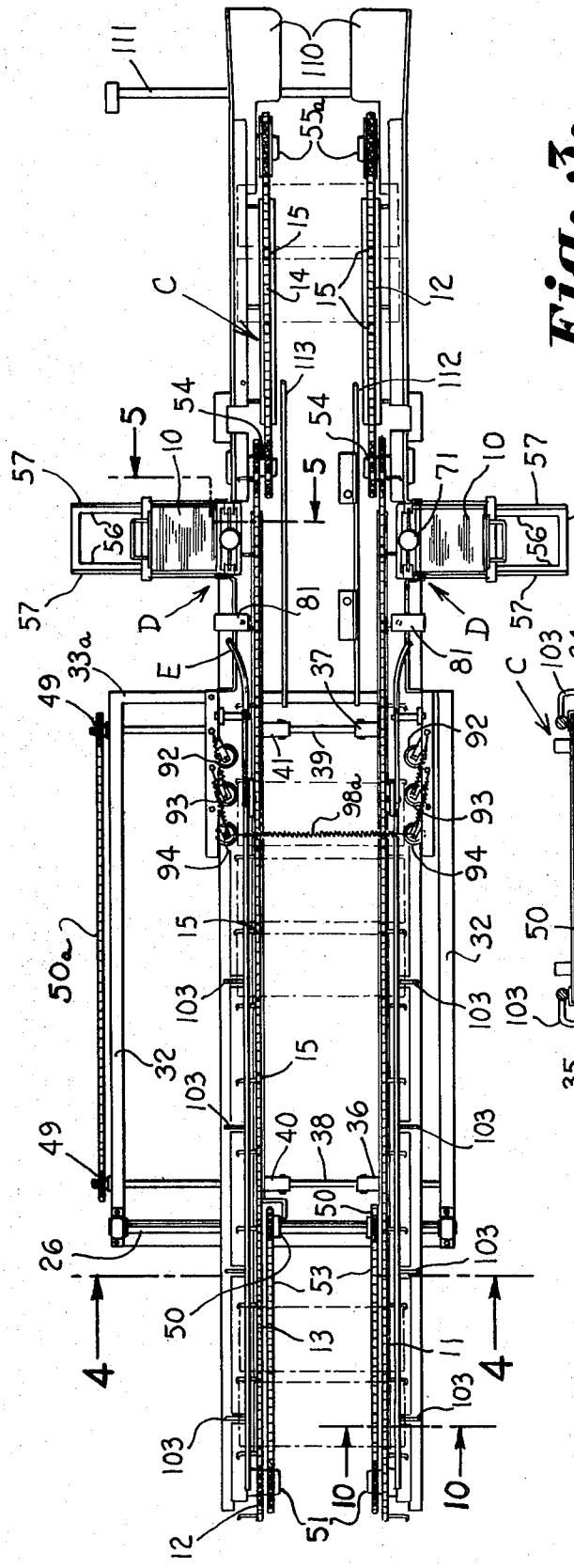


Fig. 3.

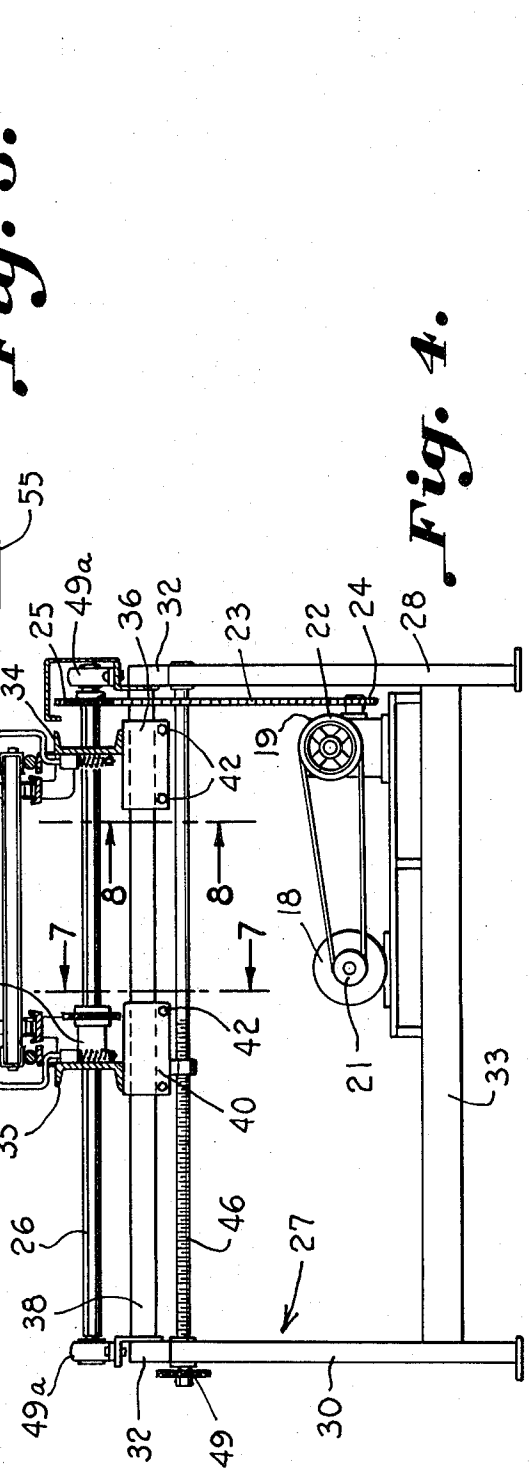


Fig. 4.

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REEL CAPPING APPARATUS

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Fig. 5.

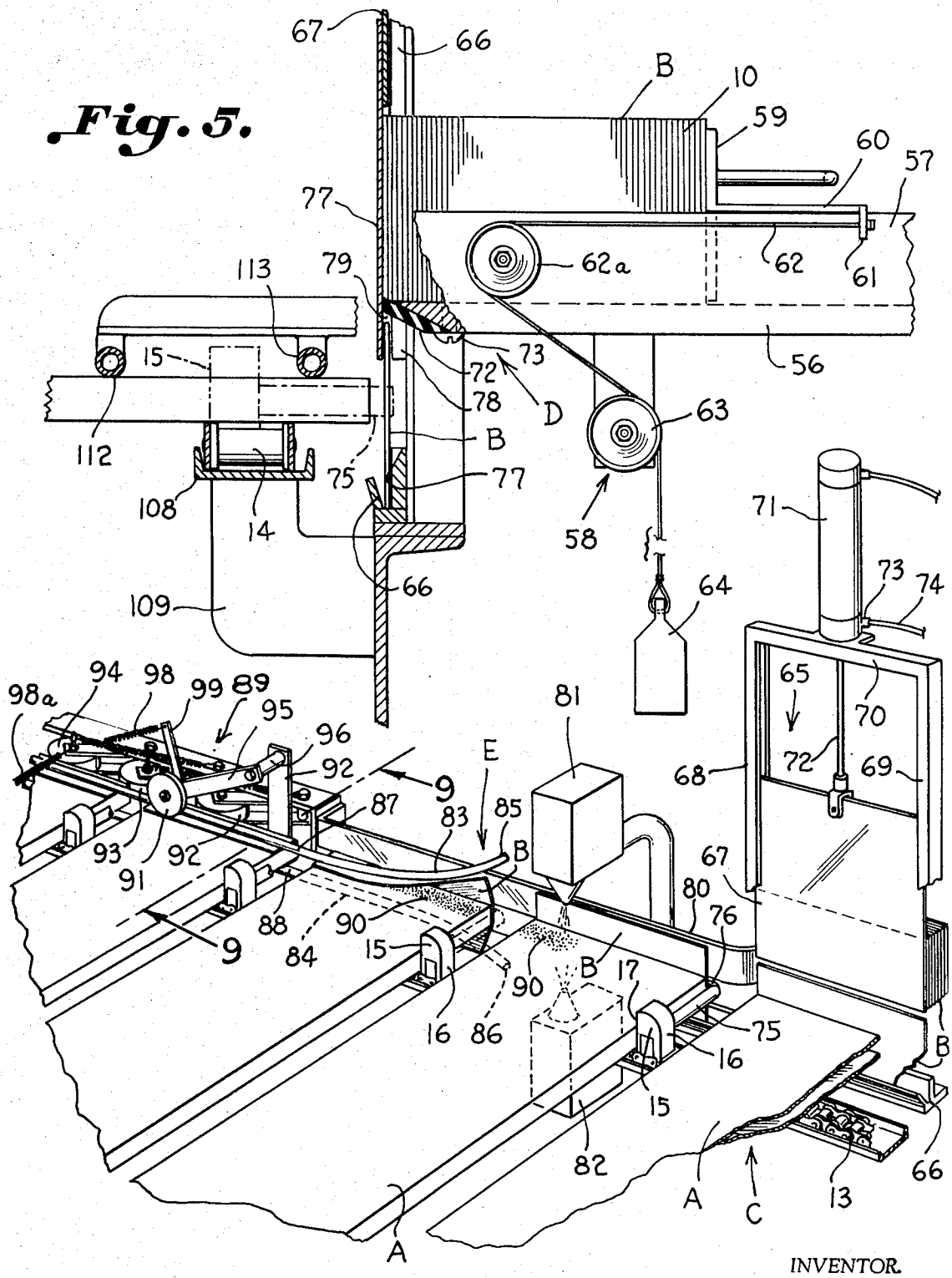


Fig. 6.

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REEL CAPPING APPARATUS

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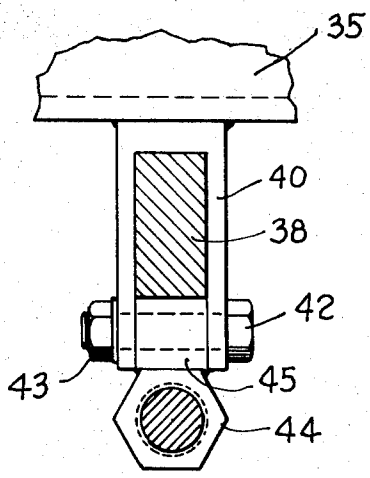


Fig. 7.

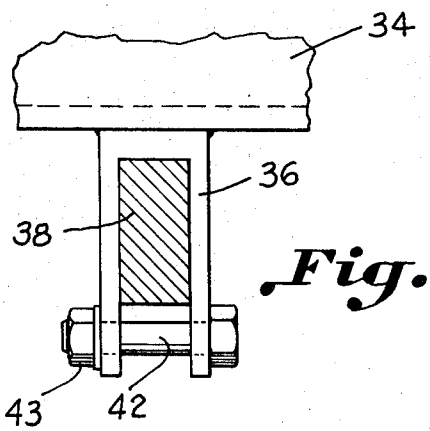


Fig. 8.

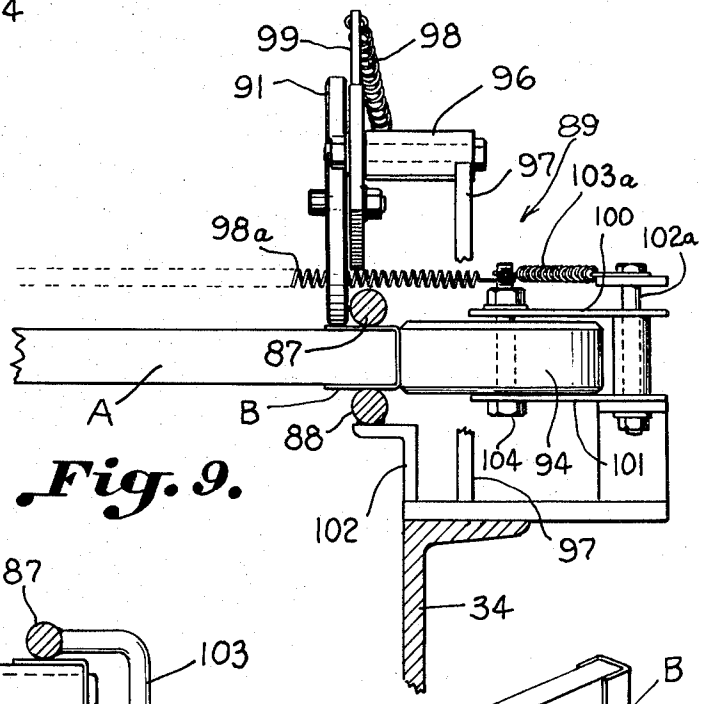


Fig. 9.

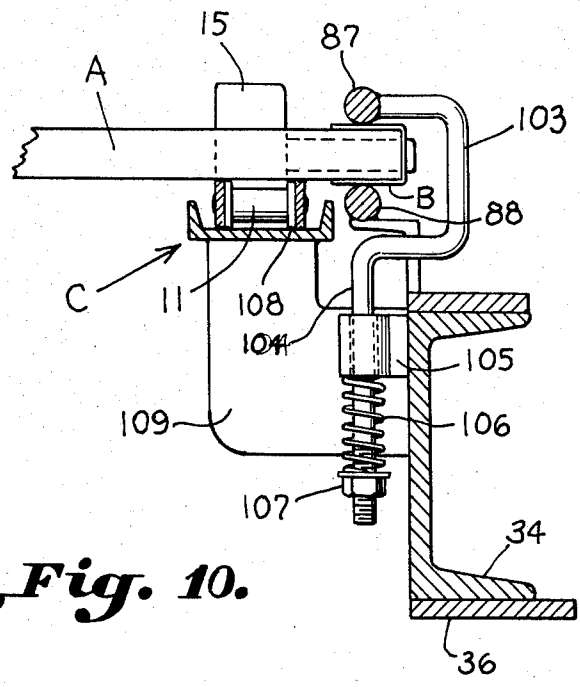


Fig. 10.

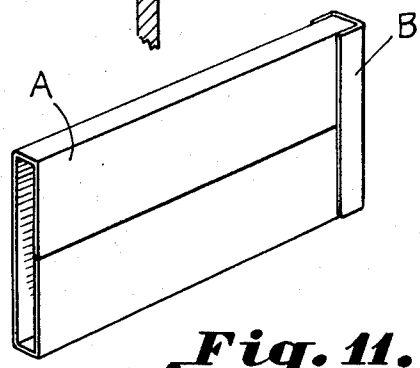


Fig. 11.

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3,756,894

REEL CAPPING APPARATUS

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Filed May 3, 1971, Ser. No. 139,691
Int. Cl. B31b 13/60
U.S. Cl. 156—443 12 Claims

ABSTRACT OF THE DISCLOSURE

An apparatus for placing caps on the end of elongated members which includes a conveyor means for feeding the elongated members in succession past a supply of blanks. A blank and the elongated member is shifted by the conveyor means into a folding mechanism which folds the blanks over the ends of the elongated member. Adhesive is applied between the blanks and the elongated member and pressure is exerted on the blank for a predetermined length of time so as to allow the adhesive to dry. The conveyor mechanism can be shifted laterally to accomodate different lengths of elongated members.

This invention relates to apparatus for placing caps on the end of elongated members, and more particularly to an apparatus which folds cardboard blanks over the ends of the elongated members for producing reels upon which cloth and the like can be wound.

Bolts of cloth are normally sold on reels which are formed from an elongated cardboard member that is folded to define a rectangular shaped member. Heretofore, these elongated cardboard members were secured together by folding rectangular shaped blanks over the ends of the elongated member and stapling such together with metal staples. The caps or blanks carried on the end of the elongated members normally have in formative indicia printed thereon; for example to identify the manufacturer of the cloth, the color of the cloth, the length of the cloth, etc. One problem with such reels is that they are very slow to assemble since the elongated members have to be folded from a scored cardboard blank and held in the folded position while being stapled. The use of metal staples in assembling the reels is relatively slow and the operators of the stapling mechanism have been injured by the staples sticking in their hands during the stapling operation. If the staples are not applied properly they can also produce a sharpt edge which can tear the cloth wound on the reel.

Accordingly, it is an important object of the present invention to provide an apparatus for placing caps on the end of elongated members for producing a reel upon which cloth can be placed.

Another important object of the present invention is to provide an apparatus which automatically folds a blank over the ends of elongated members.

Another important object of the present invention is to provide an apparatus which can be adjusted laterally for accommodating various sizes of elongated members upon which blanks are folded over the end for defining reels.

Still another important object of the present invention is to provide an apparatus which moves elongated members in succession past a supply of blanks for positioning the blank adjacent the end of the elongated member, and moving such into a folding mechanism which automatically folds the blank over the ends of the elongated member after glue has been applied for securing such together.

Another important object of the present invention is to provide a simple apparatus which includes a pair of vertical spaced rods which are curved towards an elongated member carried on a conveyor means for folding a blank over the end of the elongated member.

The construction designed to carry out the invention will be hereinafter described, together with other features thereof.

The invention will be more readily understood from a reading of the following specification, and by reference to the accompanying drawings forming a part thereof, wherein an example of the invention is shown and wherein:

FIG. 1 is a side elevation of a portion of the apparatus provided for folding blanks over the end of elongated members,

FIG. 2 is a side elevation, with parts broken away for clarity, showing the left-hand end of the apparatus illustrated in FIG. 1,

FIG. 3 is a plan view of the entire apparatus illustrated in FIGS. 1 and 2,

FIG. 4 is a cross-sectional view taken along line **4—4** of FIG. 3,

FIG. 5 is a cross-sectional view illustrating the blank feeding mechanism and a portion of the conveyor means taken along line **5—5** of FIG. 3,

FIG. 6 is a fragmentary perspective view illustrating the blank feeding mechanism, the folding apparatus, and a portion of the conveyor means,

FIG. 7 is a cross-sectional view taken along the line **7—7** of FIG. 4 illustrating a portion of the apparatus for shifting the conveyor mechanism laterally,

FIG. 8 is a cross-sectional view taken along the line **8—8** of FIG. 4,

FIG. 9 is a cross-sectional view taken along the line **9—9** of FIG. 6 illustrating a mechanism for maintaining the blank in a folded position under pressure while the glue dries,

FIG. 10 is a cross-sectional view taken along the line **10—10** of FIG. 3 illustrating a portion of the mechanism for maintaining the blank in a folded position under pressure for a predetermined period of time, and

FIG. 11 is a perspective view illustrating an elongated member with a blank folded over one end thereof.

The drawings illustrate an apparatus for placing caps on the end of elongated members A. There is provided a supply of elongated members A and a supply of blanks B which are to be folded over the ends of the elongated members A. A conveyor means C is provided for feeding the elongated members A in succession past the supply of blanks B. Means D is provided for positioning a blank B adjacent the end of each of the elongated members A as the elongated member passes the supply of blanks B. Means E is provided for folding the blanks B positioned adjacent the end of the elongated member A over the end of the elongated member A. The folded blanks B are fastened to the elongated members A by a fastening means such as glue. Thus, the blanks when folded over the end of the elongated members A, define caps producing a reel upon which cloth and the like can be rolled.

The elongated member A in one particular application is formed from a rectangular cardboard sheet that is scored so that it can be folded to produce a rectangular member which is approximately 23½" long, 8" wide and ¾" thick. The folded member is illustrated in FIG. 11. It is to be understood, of course, that various types and sizes of elongated members can be utilized.

The blanks B are formed from a relatively thin cardboard and are approximately 8" long and 3" wide. These blanks are prescored so that they can readily be folded over the end of the elongated members A.

A conveyor means C is provided for feeding the folded elongated members A in succession pass a supply **10** of blanks B. The conveyor means includes a pair of laterally spaced rotating chain mechanisms, each of which includes a pair of endless chains **11** and **12** and **13** and **14**,

respectively. The laterally spaced endless chain members 12 and 14 are provided for delivering the elongated members A adjacent the supply of blanks B, and the endless chain members 11 and 13 are provided for delivering the completed reels to a receptacle carried at the left-hand end of the conveyor, such as shown in FIGS. 2 and 3. It is, of course, understood that instead of using a pair of chains for each chain mechanism a single elongated chain could be used. A plurality of lugs 15 are carried on the chain and have a leading vertical surface 16 and a curved trailing surface 17. This is to facilitate in placing the folded elongated members A between the lugs on the conveyor means C. When an operator is used to feed the apparatus he first folds the elongated members A into a rectangular shape and then deposits such between opposed spaced lugs 15 carried on the endless chain. The curved rear surface 17 of the lugs 15 aids in positioning the elongated members between spaced lugs. The vertical surface 16 of the lugs then pushes the elongated members along as the conveyor chains 11 through 14 are rotated. It is essential that the movement of the chains 11 and 12 be synchronized with the movement of the chains 13 and 14. This is accomplished by driving all of the chains from a single electric motor 18. The electric motor, in turn, drives a reduction gear box 19 by means of a belt 20 which passes around pulleys 21 and 22 carried on the electric motor 18 and the gear box 19, respectively. The entire conveyor means C is driven through a chain 23 which is coupled between an output shaft 24 of the gear box 19 and a sprocket 25 carried on a hexagonal shaft 26.

The conveyor means C is supported on a substantially rectangular stand, generally designated by the reference character 27, which includes four vertical posts, two of which 28 and 29, are carried on one side of the apparatus and another pair which includes post 30 are located on the other side of the apparatus directly opposite the posts 28 and 29. A side brace 31 connects the lower end of posts 28 and 29, and an upper side brace 32 connects the upper ends of the posts 28 and 29. A similar side brace connects the vertical posts on the opposite side of the apparatus.

Suitable cross-braces, such as brace 33 connecting the lower end of the vertical post 28 to the lower end of the vertical post 30 are provided for adding rigidity to the stand. An upper brace 33*a* connects the upper end of post 29 to the post carried opposite thereto on the other side. The stand may be constructed of any suitable material, such as channel iron, as long as it is rigid and strong enough to support the conveyor system. Other suitable braces which are not shown for purposes of clarity may be utilized to support items such as the electric motor 18 and the gear box 19.

The conveyor system is supported on a pair of laterally spaced channel members 34 and 35 which extend the entire length of the apparatus as best illustrated in FIGS. 1 through 4. The channel member 34 is, in turn, supported on a pair of longitudinally spaced sleeve members 36 and 37. The sleeve members 36 and 37 have a cross-brace 38 and 39, respectively, threaded therethrough. The cross-braces 38 and 39 are carried between the opposed upper side braces 32 and are secured thereto by any suitable means, such as by welding. The channel member 35 is carried on a pair of sleeves 40 and 41 which are supported in sliding relationship on the cross-braces 38 and 39. The sleeves 36, 37, 40 and 41 are constructed of a U-shaped member having a pair of bolts 42 passing through the lower portion thereof with a nut 43 threaded on the end thereof, so that they define a substantially rectangular opening through which the respective cross-braces 38 and 39 pass. The construction of the sleeves are best shown in FIGS. 7 and 8. An enlarged nut 44 having an upwardly projecting collar 45 integral therewith, with a bore extending therethrough, through which a bolt 42 passes is provided for aiding in shifting the sleeve members 40 and 41 laterally in order to vary the spacing between the spaced channel members 34 and 35.

A pair of threaded shafts 46 and 47, which are journalled in plates 48 carried on opposite sides of the frame, extends through the nut 44 so that by rotating the threaded shafts 46 and 47 the lateral position of the channel member 35 and the components carried thereon can be shifted relative to the other side of the conveyor system. The threaded shafts 46 and 47 have sprockets 49 carried on the ends thereof with an endless chain 50*a* extending therearound. The end of shafts 46 and 47 are provided for accommodating a lug wrench so that by rotating either of the shafts 46 or 47 with the lug wrench such will cause both of the shafts to rotate simultaneously so that the channel member 35 can be shifted laterally uniformly.

As previously mentioned, all of the conveyor chains 11 through 14 are driven off of the output shaft 24 of the gear box 19 so that the movement of them will be synchronized. The rotation of the output shaft 24 of the gear box causes the hexagonal shaft 26 to be rotated through the chain 23. The hexagonal shaft 26 is journalled in bearing members 49*a* which are, in turn, supported on the spaced upper braces 32. A sprocket 50 carried on the hexagonal shaft 26 rotates a double sprocket 51 journalled in a bearing member 52 on the end of the conveyor mechanism by means of a chain 53 wrapped therearound. An idler roller 54 is suitably mounted on the channel member 35 so that it can be moved vertically in order to maintain the proper tension in the chain 53. The endless chain 12 is looped around the double sprocket 51 so that it is rotated by the sprocket as the hexagonal shaft 26 is rotated. The other end of the endless chain 12 is looped around another double sprocket 54 carried adjacent the supply 10 of blanks. The endless chain 14 is also looped around the double sprocket 54 to be driven thereby. The other end of the endless chain 14 passes around an idler sprocket 55*a*.

The endless chains 11 and 12 are driven through identical mechanism as the endless chains 13 and 14 therefore like reference characters will be utilized for like components, such as the sprockets and drive chains 53. The sprocket 50 is rotatably attached to the channel member 35 so that it can slide along the hexagonal shaft 26 in order to permit the conveyor mechanisms to be shifted laterally to accommodate different lengths of elongated members A.

The means D for positioning a blank B adjacent the end of an elongated member A as the enlongated member A passes by the supply of blanks 10 on the conveyor means C includes a horizontal hopper 55. The horizontal hopper 55 which is best shown in FIGS. 3, 5 and 6 includes a rectangular U-shaped holder constructed of angle-iron so that the horizontal flanges 56 of the angle-iron supports the blanks 10 and the vertical flanges 57 maintain the blanks B in alignment. The inner end of the hopper 55 is open so that the blanks can be dispensed from the hopper by apparatus disclosed below. A weight mechanism generally designated by the reference character 58, is provided for pushing the blanks B to the open inner end of the hopper and includes a slidable vertical plate 59 which presses against the last blank B in the stack. Pressure is maintained on the stack of blanks B by means of the pulley arrangement so that they can be dispensed properly from the hopper 55. The pulley arrangement includes a horizontal arm 60 having one end integral with the vertical plate 59 and the other end turned downwardly in the form of a flange 61. A cable 62 is secured to the downwardly turned flange 61 and passes around a free rotating wheel 62 back over another freely rotating wheel 63 and has a weight 64 attached to the lower end thereof. The weight 64 causes a predetermined pressure to be supplied to the stack of cards so that they will always be forced to the left, as shown in FIG. 5. A Guillotine type of dispensing blade 65 is carried adjacent the inner end of the hopper 55 for feed-

ing the blanks in succession from the hopper into a V-shape grooved guide means **66**. The dispensing mechanism **65** includes a vertical rectangular blade **67** which is carried in a pair of spaced vertical channel members **68** and **69** that are joined at the top by a channel member **70**. The blade **67** is allowed to ride freely up and down within the channel members **68** and **69**. A pneumatic cylinder **71** is carried on the channel member **70** and has a rod **72** extending therefrom, which is attached to the blade **67**. The pneumatic cylinder **71** is a double acting cylinder so that when such is activated it causes the blade **67** to move downwardly to engage the innermost blank B for pushing the blank from the stack of blanks beyond a rubber retaining finger **72** into the V-shaped guide means **66**. Pressurized air is then supplied to the bottom port **73** through line **74** connected thereto for raising the blade **67** back to its initial position. The retaining finger **72** aids in supporting the innermost card so as to prevent the card from dropping from the stack into the V-shaped groove without being pushed by the blade **67**. The finger **72** is secured to the bottom of the hopper by a screw **73**. Normally, a pair of fingers are utilized and spaced on opposite sides of the hopper. The V-shaped guide means **66**, as best shown in FIG. 6, extends from adjacent the supply of blanks **10** and terminates directly in front of the folding means E.

While the elongated members A are being shifted past the supply of blanks B, an outwardly extending arm **75** carried by the lugs **15** engages the blank B for moving the blanks while positioned closely adjacent the end of the elongated member along with the elongated member. The outwardly extending arm **75** has a relatively thin flange **76** attached to the end thereof which extends forward for aiding in holding the blank B closely adjacent the end of the elongated member in a vertical position. It is also noted from reviewing FIG. 5 that the V-shaped guide member **66**, rather than being a true V has a substantially vertical surface **77** against which the lower end of the card rests for aiding in positioning such in the vertical position. The lower end of the dispensing mechanism **65** has an inner plate **77** which extends below the hopper **56** which co-operates with a space member **78** to define a groove **79** in which the upper end of the blank rides as it is propelled along the V-shaped guide means **66**. After the blank B is shifted beyond the hopper an elongated rail **80** carried in alignment with the V-shaped groove **66** aids in holding the blank B in the upright position until the blank B reaches the folding mechanism E.

While the elongated member A and the blank B are traveling between the blank storage members **10** and the folding mechanism E glue is deposited on the elongated member adjacent its edge on both the top and bottom of the elongated member from containers **81** and **82**, respectively. The glue is a thermosetting glue that is heated and applied to the top and bottom side of the elongated member A under pressure through a nozzle **82**. The mechanism for activating the pneumatic cylinder **71** and the glue dispensers **81** and **82** will be described below. After the glue has been deposited on the elongated member A, it is shifted with the blank B into the folding mechanism.

The means E for folding the blank B over the ends of the elongated member A includes a pair of vertically spaced rods defining an upper and lower rod **83** and **84**, respectively, which are carried adjacent the conveyor means C with the chain **13** upon which the elongated member is supported being located between the upper and lower rods **83** and **84**, respectively. The upper rod **83** has an end portion **85** which curves downwardly and inwardly towards the elongated member A carried on the conveyor mans C. The lower rod has an end portion which is curved upwardly and inwardly towards the elongated member A carried on the conveyor means C. The rods **83** and **84** have an elongated main body portion, which are carried closely adjacent the elongated member A for maintaining pressure on the folded blank as it is shifted along conveyor means C.

As the blank is shifted into the folding mechanism E the curved end portion **85** of the upper rod **83** engages the leading edge of the blank above the elongated member and bends the portion of the blank B projecting above the elongated member downwardly over the end of the elongated member, such as illustrated in FIG. 6. Simultaneously the end portion **86** of the lower rod **84** engages the bottom portion of the blank B bending it over the underside of the elongated member to define a cap.

The elongated member A with the blank B folded over the end then passes to a roller mechanism, generally designated by the reference character **89**, which applies pressure on the folded blank while the glue **90** is setting. The roller **91** exerts pressure on the portion of the blank folded over the top of the end of the elongated member while the rollers **92** through **94** apply pressure to the end of the folded blank B.

The roller **91** is carried on an arm **95** which has its upper end journalled on a post **96** supported on a bracket **97**. A spring **98** connected between the frame and the upwardly extending arm, which has its lower end connected to the arm **95**, pulls the roller downward so that it will exert pressure on the folded blank. The rollers **92** through **94** are also spring biased inwardly for exerting pressure on the ends of the folded blank. As best seen in FIGS. 6 and 9, the rollers **92** and **94** are carried between a pair of spaced arms **100** and **101** which have their other ends pivotally supported on a bolt **102***a* suitably mounted on the frame of the conveyor mechanism. A spring **103***a* extends between a bolt **104** upon which the roller **94** is allowed to rotate and the bolt **102***a* for pulling the roller into engagement with the end of the longated member as is illustrated in FIG. 9. The arrangement of the springs and bracket for supporting the rollers **91** through **94** can be of any suitable conventional construction as long as they apply pressure to the surfaces of the folded blanks B. It is, also, noted that a spring **98***a* extends between opposed roller **94** for pulling such towards each other.

The elongated main body portion **88** of the lower rod, as is best illustrated in FIG. 9, is supported on an angle member **102** which is, in turn, supported on the channel **34**. The main body portion **87** of the elongated upper rod **83** as is best illustrated in FIG. 10, is welded to a hook-shaped member **103** which has a shank portion **104** which is threaded through a sleeve **105**, carried on the side of the channel member **34**. A spring **106** is positioned thereon between a threaded nut carried on the end of the shank portion and the sleeve **105** for spring biasing the elongated main body portion **87** of the rod downwardly against the portion of the blank B folded over the upper end of the elongated member A. The hook-shaped members **103** are positioned along the conveyor system as is best illustrated in FIG. 3, from the roller mechanism **89** to the end of the conveyor.

As is also best illustrated in FIGS. 5, 6 and 10, the chains **11** through **14** ride in a channel **108** that is suitably supported on a bracket **109** extending outwardly from the channel members **34** and **35**.

As illustrated in FIG. 3, the folded elongated members A are inserted on the end of the conveyor system between successive lugs **15**. A stack of elongated members A, while waiting to be placed on the conveyor means C, can be placed on the outwardly extending arms **110**. The right-hand end of the conveyor system is supported on a horizontal portion **111** of a brace extending upwardly from the floor. As the elongated members A are fed along the right-hand end of the conveyor they pass under a pair of spaced fixed elongated rods **112** and **113** which hold them flush on the conveyor while the elongated members A pass beyond the supply **10** of blanks B into the folding mechanism E. As is noted in FIG. 3 the rods **112** and **113** terminate adjacent the folding mechanism E.

A pair of photoelectric cells **114** and **115** are provided for activating the pneumatic cylinder **71** and the glue dispensers **81** and **82**, respectively. When the elongated mem-

ber A which is passing down the conveyor, breaks the light beam **116** of the photocell **114** such causes a solenoid valve to be closed. This allows compressed air from any suitable supply to be fed to the upper port **117** of the pneumatic cylinder **71** which, in turn, causes the blade **67** to move from its raised position to its lower position to push a blank B from the supply of blanks **10** down into the V-shaped member **66**. When the light beam **116** coming out of photocell **114** is allowed to again reflect from the reflecting plate **118** such causes the solenoid valve to again open, allowing air to enter the lower port **73** of the pneumatic cylinder **71** to raise the blade **67**. At the end of this cycle of operation a blank B should be positioned closely adjacent the end of the elongated member A, such as illustrated in FIG. 6. As the elongated member A and the blank B move down the conveyor system a light beam **119** which is being emitted from photocell **115**, is broken to energize another solenoid valve (not shown) to cause compressed air to force the glue out of the glue dispensers **81** and **82** for depositing glue on the elongated member. Normally, the glue is deposited for a predetermined length of time so that it will stop adjacent the trailing edge of the elongated member A. The light beam **119** being emitted from the photocell **115** is reflected back to the photocell by a reflective paint **120** positioned below the conveyor. The glue box which includes a heater **121**, as well as the photoelectric cells and the controls of such are conventional items, therefore, the details are not discussed for purpose of clarity. Any suitable wiring system could be utilized as long as the photocell **114** operates the solenoid valve associated with the pneumatic valve **71** and the photoelectric cell **115** activates a solenoid valve, which in turn, operates the glue dispensing mechanism **81** and **82**.

In FIG. 1 a compressed air line **122** is illustrated having conventional components, such as filters **123** and a pressure regulator **124** interposed therein. Positioned directly below the pressure regulator **124** is a tension adjusting sprocket **125** which can be shifted vertically so as to vary the tension in the conveyor chain **11**.

It is to be understood that the mechanism dispensing the blanks B and the conveyor system C for moving the elongated members and the card from right to left, as well as various other components are duplicated on opposite sides of the apparatus so that the blanks B can be folded over both ends of the elongated member simultaneously.

It is, also, to be understood that instead of using the extension on the right-hand side of the drawing illustrated in FIG. 3, which is provided for feeding the folded elongated members A past the supply **10** blanks, the elongated members could be positioned in a vertical hopper and fed directly between the lugs carried on the chains **11** and **13**.

Briefly summarizing the operation of the apparatus, folded elongated members A are centered on the conveyor system C between successive lugs **15** and fed past the supply of blanks B. As the elongated members A pass the supply blanks B a blank is deposited closely adjacent each end of the elongated member. The elongated member with the blanks positioned closely adjacent its ends is then shifted past the glue dispensers **81** and **82**, which sprays glue **90** on both sides of the elongated member. The elongated member and the blanks B are then fed through the folding mechanism E which folds the blanks B over the ends of the elongated member A. Pressure is applied to the fold blank as it travels the length of the conveyor for giving the glue time to set.

While a preferred embodiment of the invention has been described using specific terms, such description is for illustrative purposes only, and it is to be understood that changes and variations may be made without departing from the spirit or scope of the following claims.

What is claimed is:

1. Apparatus for placing caps on the end of elongated members comprising: a supply of elongated members, a supply of blanks, conveyor means for feeding said elongated members in succession past said supply of blanks, means for positioning a blank adjacent the end of each of said elongated members as said elongated members pass said supply of blanks with a portion of said blank extending above said elongated member and a portion of said blank extending below said elongated member, a blank gripping means for holding said blank adjacent the end of an elongated member as said blank and elongated member are shifted by said conveyor means, camming means for progressively longitudinally folding said portions of said blank extending above and below said elongated member onto said elongated member, and means for fastening said folded blank to the end of said elongated members for defining caps as said elongated members are passed on said conveyor means in succession.

2. The apparatus as set forth in claim **1**, wherein said elongated members are reels, said reels being a folded rectangular shaped member, and said blanks being a rectangular card that is folded over the end of said reel for securing said reel together.

3. The apparatus as set forth in claim **1**, wherein said camming means includes: a pair of vertically spaced rods defining an upper and lower rod carried adjacent said conveyor means with said conveyor means being carried between said spaced rods, said upper rod having an end portion curved downwardly and inwardly towards said elongated members carried on said conveyor means, and said lower rod having an end portion curved upwardly and inwardly towards said elongated members carried on said conveyor means, and means for feeding said blank with said elongated member into engagement with said end portions of said rods for folding said blank over the end of said elongated member.

4. The apparatus as set forth in claim **3**, wherein said rods have an elongated body portion integral with a respective end portion, and said elongated main body portions being carried closely adjacent said elongated member carried on said conveyor means for maintaining pressure on said blank while folded over said elongated member.

5. The apparatus as set forth in claim **1**, wherein said means for fastening said folded blank to said end of said elongated member includes adhesive carried between said folded blank and said end of said elongated member for securing said blank to said elongated member.

6. The apparatus as set forth in claim **1**, wherein said conveyor means includes a pair of laterally spaced rotating chain mechanisms, lugs carried on said chains for engaging and feeding said elongated members in succession, and means for laterally varying the space between said rotating chain mechanisms for accommodating elongated members of different lengths.

7. An apparatus for assembling reels comprising an elongated member, a blank, means for positioning said blank adjacent an end of said elongated member, a folding device, including elongated upper and lower members, said upper member having an end portion curved downwardly and inwardly towards said elongated member, said lower member having an end portion curved upwardly and inwardly towards said elongated member, means for feeding said elongated member and said blank between said upper and lower members so that said blank engages said end portion of said upper and lower members for folding said blank progressively longitudinally around the end of said elongated member and maintaining said blank in folded position, and adhesive applicator means for supplying adhesive prior to folding for securing said blank to said elongated member while said blank is thus maintained in folded position, whereby said blank folded around the end of said elongated member defines a reel.

8. The apparatus as set forth in claim **7**, wherein said means for feeding said elongated member and said blank between said upper and lower members includes, a con-

veyor having a lug for engaging said elongated member and an outwardly extending arm for engaging said blanks for feeding said elongated member and said blank together between said upper and lower members.

9. The apparatus as set forth in claim **7**, wherein said means for securing said blank to said elongated member includes adhesive carried between said elongated member and said blank, and means for applying pressure to said blank for a predetermined period of time while folded over the end of said elongated member so as to allow said adhesive sufficient time to set for securing said blank to said elongated member.

10. The apparatus as set forth in claim **9**, wherein said means for applying pressure to said blank includes a spring biased elongated rod and pressure rollers which engage said blank when folded around the end of said elongated member.

11. The apparatus as set forth in claim **7**, wherein said means for positioning said blank adjacent an end of said elongated member includes, a guide carried adjacent said end of said elongated member, a supply of blanks, and means for delivering a blank from said supply of

blanks to said guide each time an elongated member is positioned adjacent said guide.

12. The apparatus as set forth in claim **11**, wherein said means for delivering a blank to said guide from said supply of blanks includes a movable blade, and means for actuating said movable blade responsive to said elongated member being positioned adjacent said guide.

References Cited

UNITED STATES PATENTS

2,324,572	7/1943	Frederick et al.	93—39.1 R
3,590,700	7/1971	Paxton et al.	93—55
2,799,210	7/1957	Gazette	93—55.1 X
2,548,527	4/1951	Goff	156—556

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