

Feb. 20, 1945.

F. FOX

2,369,958

FOLDABLE REEL FOR NARROW FABRICS

Filed April 23, 1942

2 Sheets-Sheet 1

Fig. 3.

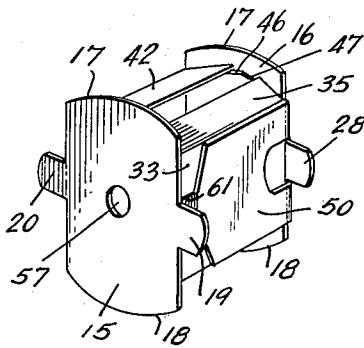


Fig. 2.

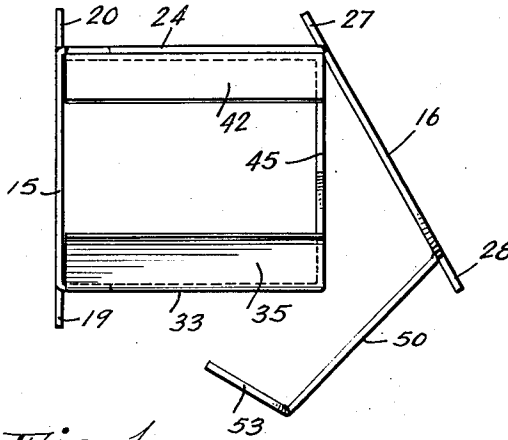


Fig. 1.

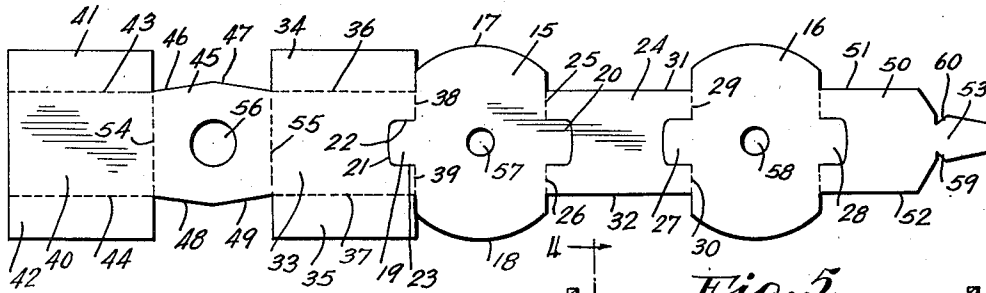


Fig. 4.

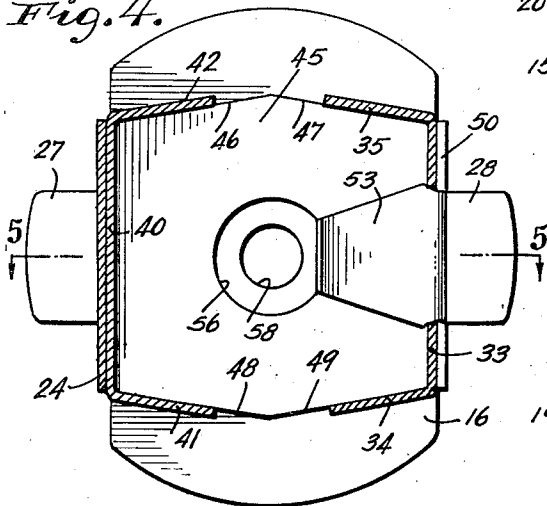
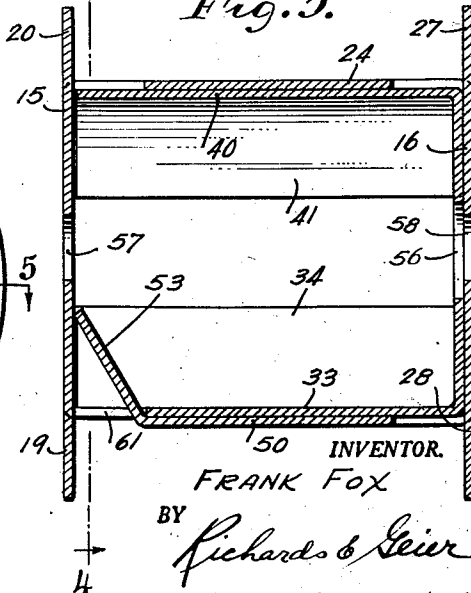


Fig. 5.



INVENTOR.
FRANK FOX
BY
Richard & Seier
ATTORNEYS

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Fig. 7.

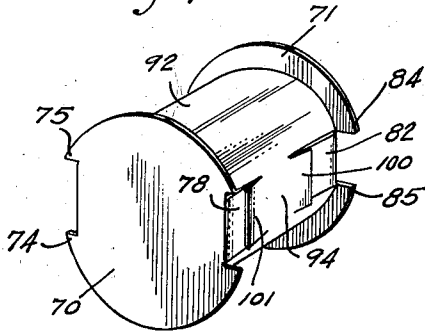


Fig. 8.

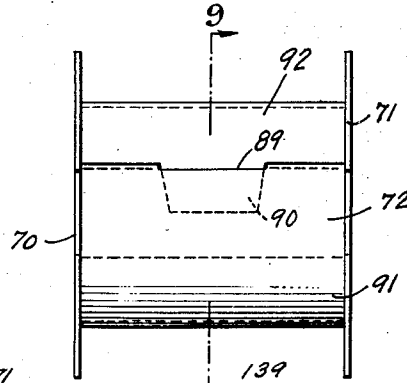


Fig. 6.

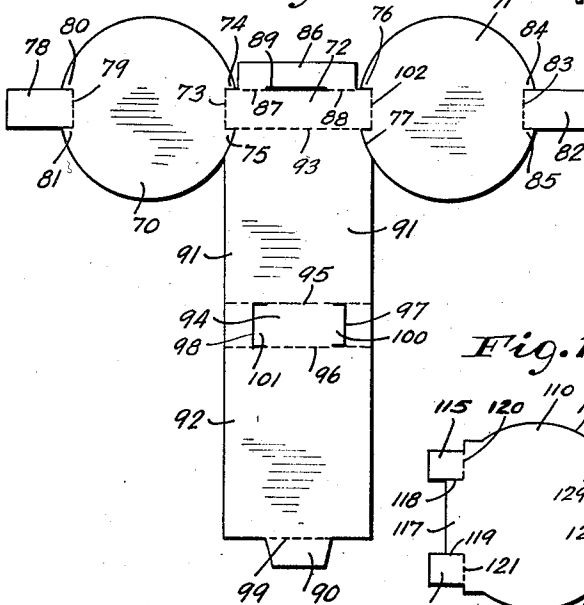


Fig. 11.

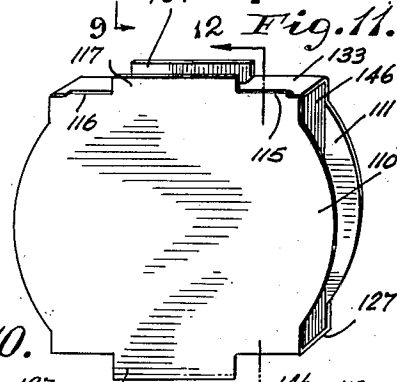


Fig. 10.

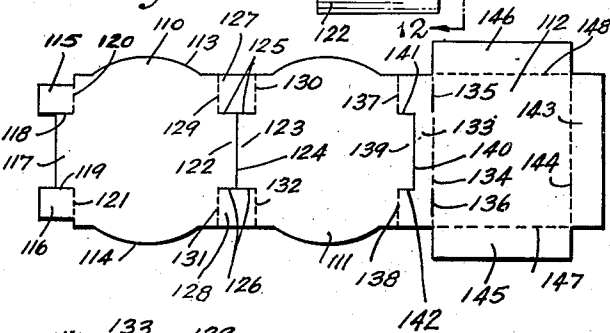


Fig. 9.

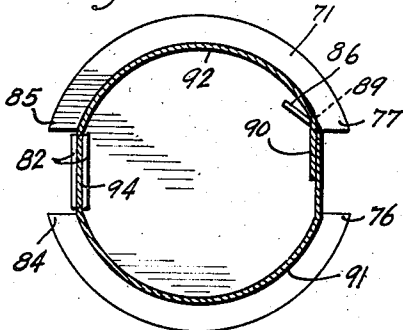
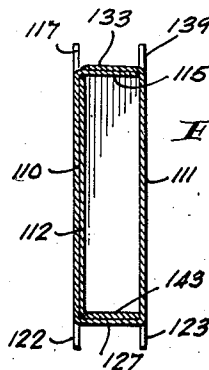


Fig. 12.



INVENTOR.
FRANK FOX

BY

Richards & Seier
ATTORNEYS

UNITED STATES PATENT OFFICE

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FOLDABLE REEL FOR NARROW FABRICS

Frank Fox, New York, N. Y., assignor of one-half to Juliann Whitehill Funke, Pelham Manor, N. Y.

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2 Claims. (Cl. 242—70)

This invention relates to reels and refers more particularly to spools or reels used as carriers for narrow fabrics, ribbons, yarns and the like.

An object of the present invention is the provision of a spool or reel which is light in weight and which has the form of a flat blank when not in use, so that it can be conveniently shipped or transported at low cost.

Another object is the provision of a spool or reel consisting of a flat substantially two-dimensional blank which can be easily folded or set up by the user to provide sturdy supporting surfaces for the object to be wound.

Other objects of the present invention will become apparent in the course of the following specification.

In accomplishing the objects of the present invention it was found most satisfactory to provide a reel which is folded from a blank made of cardboard, heavy paper or the like. The blank is so formed that after its folding some of the sides of the reel have projections for guiding the object to be wound. Some of the side surfaces of the reel may be strengthened by various edges or inwardly folded portions to provide sufficient resistance and to prevent a collapse of the reel during the winding. The blank carries tongues which are of such form that they provide a firm and sturdy connection with the other parts of the reel after it is properly folded and set up.

The invention will appear more clearly from the following detailed description when taken in connection with the accompanying drawings showing, by way of example, preferred embodiments of the inventive idea.

In the drawings:

Figure 1 is a plan view of a die cut cardboard or paper blank which is adapted to form a reel.

Figure 2 shows in side elevation the reel as it is being folded.

Figure 3 is a perspective view illustrating the folded reel.

Figure 4 is a section through the reel along the line 4—4 of Figure 5.

Figure 5 is a section through the reel along the line 5—5 of Figure 4.

Figure 6 is a plan view of a differently formed blank.

Figure 7 is a perspective view illustrating a reel made from the blank shown in Figure 6.

Figure 8 shows the same reel in side elevation.

Figure 9 is a section along the line 9—9 of Figure 8.

Figure 10 is a plan view of yet another reel blank.

Figure 11 shows the reel formed from the blank of Figure 10.

Figure 12 is a section along the line 12—12 of Figure 11.

The reel shown in Figures 2 to 5 of the drawings is made of a die cut flat blank or sheet of paper, cardboard or any other suitable material, which is shown in Figure 1 and which includes outer end portions 15 and 16, similar to each other in form. Each of these portions has two opposed curved edges 17 and 18. The end portion 15 has projections 19 and 20, while the end portion 16 is provided with similar projections 27 and 28. The projection 19 is separated from the portion 33 of the blank along three lines 21, 22 and 23. The end portion 15 has a central opening 57, while the end portion 16 is provided with a similar central opening 58.

The end portions 15 and 16 are joined by an outer side portion 24. The outer end portion 15 is folded in relation to the outer side portion 24 along the lines 25 and 26 which extend on both sides of the projection 20. Similarly, the outer end portion 16 is folded in relation to the outer side portion 24 along the lines 29 and 30 situated on opposite sides of the projection 27. The outer side portion 24 is substantially rectangular in form and has straight parallel edges 31 and 32.

An inner side portion 33 which is substantially rectangular in form, is situated on the blank on the other side of the portion 15 and is provided on opposite sides with flaps 34 and 35 bent in relation to the side portion 33 along lines 36 and 37, respectively. The flaps 34 and 35 are severed from the end portion 15 which is bent in relation to the side portion 33 along short lines 38 and 39 situated on opposite sides of the projection 19.

A similar inner side portion 40 constitutes one end of the blank and is provided with flaps 41 and 42 bent in relation to the portion 40 along the lines 43 and 44, respectively.

The two inner side portions 33 and 40 are joined by an inner end portion 45 having sides 46 to 49 which extend at an angle to each other and which form stops or abutments for the flaps 42, 35, 41 and 34, respectively. The end portion 45 is provided with a central opening 56 and is separated from the inner side portion 40 along the folding line 54, while the folding line 55 separates the inner end portion 45 from the inner side portion 33.

The other end of the elongated blank is constituted by an outer side portion 50 having straight edges 51 and 52 and terminating in a

tongue 53 having angular projections 59 and 60 and converging side edges.

The folding of the reel is illustrated in Figure 2. The outer end portions 15 and 16 are bent in relation to the outer side portion 24 along the lines 25, 26, 29 and 30, and the inner side portion 33 is bent in relation to the end portion 15 along the lines 38 and 39. The inner side portion 40 and the inner end portion 45 are bent along the lines 54 and 55. Then the inner side portion 40 is brought into engagement with the outer side portion 24, and the flaps 34, 35, 41 and 42 are bent inwardly along the lines 36, 37, 43 and 44, respectively, until the flap 34 rests against the edge 49, while the flaps 35, 41 and 42 rest against the edges 47, 48 and 46, respectively, as indicated in Figure 2, of the drawings. Thereupon the outer end portion 16 is placed over the inner end portion 45, the outer side portion 50 is placed over the inner side portion 33 and the tongue 53 is inserted into the opening 61 limited by the lines 21 to 23 and formed when the projection 19 is moved away from the inner side portion 33 (Fig. 5).

The folding and the setting up of the reel is then completed. The projections 19, 20, 27, and 28 of the reel serve as convenient guides for the winding of a ribbon or the like. The openings 56, 57 and 58 make it possible to place the reel conveniently upon a shaft or spindle. Two outer side walls 24 and 50 of the reel are reinforced by inner side walls 40 and 33, respectively, so that the ribbon may be wound with considerable force without damaging the reel. The other two sides of the reel are formed by flaps 34, 35 and 41, 42 which are held at a convenient angle by engagement with the angularly extending edges 46 to 49 of the inner end portion 45. This engagement is sufficient to prevent the flaps from being pushed inwardly during the winding, while the angular position of the flaps facilitates the winding to a considerable extent.

Obviously, the edges of the inner end portion 45 may be provided with slots or recesses receiving these flaps, or other means may be provided for connecting the flaps with the inner end portion.

The tongue 53 has projecting portions 59 and 60 which engage the edges of the opening 61 and thus provide a firm and permanent connection.

It is thus apparent that the applicant has provided a novel and inexpensive reel or spool for ribbons and the like which may be shipped in the form of flat sheets, which is light in weight and sturdy in construction, and which may serve as a convenient substitute for metal, wooden and artificial resin spools now in use.

The blank shown in Figure 6 includes two end portions 70 and 71 which are substantially circular in form and which are joined by a substantially rectangular strip 72. The strip 72 is bent in relation to the circular end portion 70 along a line 73 which is situated within the circumference of the portion 70. The adjacent corners of the strip 72 are cut off from the portion 70, so that two angular projections 75 and 74 are formed in the portion 70 as soon as the folding along the line 73 takes place. The end portion 71 is provided with similar projecting ends 76 and 77 and is separated from the strip 72 along the folding line 102.

The end portion 70 carries a comparatively small tongue 78 which is bent along an inner line 79 in relation to the portion 70 so that the latter contains projections 80 and 81. A similar tongue

82 is separated from the end portion 71 along a line of folding 83 so that projections 84 and 85 are formed in the end portion 71.

The side strip 72 extending between the end portions 70 and 71 is connected to a comparatively short tongue 86 along the folding lines 87 and 88 situated on both sides of a narrow slot 89 which is adapted to receive a tongue 90.

The side surface of the reel is constituted by two portions 91 and 92, the portion 91 being folded at an angle to the strip 72 along the line 93. Another strip 94 is separated from the side portions 91 and 92 along the folding lines 95 and 96, respectively.

The strip 94 includes a slot 97 enclosing a flap 100 and adapted to receive the tongue 82 of the end portion 71. Another slot 98 encloses a flap 101 and is adapted to receive the tongue 78 of the end portion 70. The tongue 90 is bent in relation to the side portion 92 along the folding line 99.

To fold a reel from this blank, the side portions 70 and 71 are bent in relation to the strip 72 along the lines 73 and 102, whereupon the side portions 91 and 92 are bent along the lines 93, 95, 96 and 99 and the tongue 90 is inserted into the slot 89 of the flap 86 which is bent along the lines 87 and 88. Finally, the tongues 78 and 82 are inserted into the slots 98 and 97, respectively.

This reel has the advantage that the side portions 91 and 92 are substantially cylindrical in form so that the winding of a ribbon is considerably facilitated.

The reel shown in Figures 10, 11 and 12 of the drawings consists of a blank having the two outer side portions 110 and 111 and an inner side portion 112. The outer side portion 110 has two curved edges 113 and 114 as well as tongues 115 and 116 situated on both sides of a projecting part 117 of the side portion 110 and separated therefrom along lines 118 and 119. The tongues 115 and 116 are bent in relation to the side portion 110 along lines 120 and 121, respectively.

A similar projecting part 122 is provided on the opposite side of the side portion 110 and in the blank is situated close to a projecting part 123 of the side portion 111. The two projecting parts 122 and 123 are cut from the blank along lines 124, 125 and 126, so that they extend on opposite sides of an opening when the blank is folded.

A narrow side portion interconnecting the two end portions 110 and 111 is formed by two webs 127 and 128. The web 127 may be bent in relation to the end portions 110 and 111 along the lines 129 and 130, respectively, while the web 128 is bent in relation to these end portions along the lines 131 and 132.

The inner end portion 112 is joined to the outer end portion 111 by an outer side portion 133 which is separated from the inner end portion 112 along the folding line 134 having two narrow slots 135 and 136 for the insertion of tongues 115 and 116, respectively. The outer side portion 133 is separated from the outer end portion 111 by folding lines 137 and 138 situated on opposite sides of a projecting part 139 which is cut out of the blank along lines 140, 141 and 142, and which constitutes a part of the outer end portion 111.

The inner end portion 112 is provided with a flap 143 which constitutes an inner side portion when the blank is folded and which is separated from the portion 112 along a folding line 144. Flaps 145 and 146 are separated from the inner

end portion 112 along folding lines 147 and 148, respectively, and constitute outer side portions when the blank is folded.

The blank shown in Figure 10 is folded along the lines 120, 121, 129 to 132, 137, 138, 134, 144, 147 and 148, whereupon the outer end portion 110 is placed over the inner end portion 112 and the tongues 115 and 116 are inserted into the slots 135 and 136, respectively. The flap 143 serves as an inner side portion engaging an outer side portion which is constituted by the webs 127 and 128, while the flaps 145 and 146 constitute outer side portions extending between the end portions 110 and 111.

The projections 117, 122, 123 and 139 serve as convenient guides for the winding of a narrow fabric or yarn upon this reel. This construction is particularly suitable for reels having narrow sides and used for the winding of narrow ribbons or the like.

It is apparent that the specific illustrations shown above have been given by way of illustration and not by way of limitation and that the structures described above are subject to wide variations and modifications without departing from the scope or intent of the invention, all of which variations and modifications are to be included within the scope of the present invention.

What is claimed is:

1. A reel made from an elongated blank, said blank when folded comprising two outer end portions extending in parallel planes, each of said outer end portions having two outwardly extend-

ing projecting parts situated on opposite sides of the outer end portion for guiding an article to be wound upon the reel; at least one inner end portion, two inner side portions situated opposite each other, flaps carried by said inner side portions on opposite sides thereof and constituting two reel sides which extend between said inner side portions, said flaps engaging said inner end portion to increase the resistance of the side when an article is wound thereon, an outer side portion covering one of said inner side portions, and another outer side portion covering the other one of said inner side portions and carrying a tongue having angular edges and extending into a slot formed in said other inner side portion, whereby the folded portions of the blank are held in place.

2. A reel made from an elongated blank, said blank when folded comprising outer end portions, at least one inner end portion, side portions extending between the outer end portions, and flaps carried by said side portions, said flaps constituting some of the sides of the reel and engaging said inner end portion to increase the resistance of the sides when an article is wound thereon, at least one of said portions carrying a tongue, at least one other of said portions having a slot formed therein and receiving said tongue to hold in place the folded portions of the blank, said outer end portions carrying outwardly extending projecting parts for guiding an article to be wound upon said side portions.

FRANK FOX.