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MAIL BAGSDESCRIPTION

5 The invention relates to improved bags and sacks, methods of making same and parts therefore.

Bags and sacks (hereinafter referred to simply as bags) are used for many purposes, and the invention is particularly concerned with an improved form of mail bag.

10 BACKGROUND ART

Mail bags are well known and are used to store mail as it is carried e.g. from a collection point to a sorting office and between sorting offices. In use in sorting offices the mail bags are supported open in a frame so that mail may be readily thrown into them. To achieve this it is the practice to provide each mail bag with a plurality of (usually four) metal D-rings at equi-spaced locations along the edges of the mouth of the bag which are engaged by hooks in the frame. The D-rings are attached to mail bags by being stitched into a fold midway along the length of a swathe of fabric (which to provide adequate strength has usually been formed by pre-folding and pre-stitching) the two ends of the swathe being located on either side of the top edge of the bag (with the D-ring substantially in the plain of that edge) and stitched onto the fabric of the bag.

To ensure that the mouth of the bag tends to stay open whilst it is in the frame (particularly when it is relatively empty) the edge of the mouth of the bag - to which the D-rings are attached - is usually provided with a stitched in rope or cord which, whilst being sufficiently flexible to allow the bag to be closed, acts to hold the mouth open whilst the bag is held by the hooks in the frame. This rope or cord is usually located in a top hem provided for the fabric of the mail bag as the bag is being made up.

Thus it will be seen that the manufacture of a mail bag necessarily includes a number of steps which need to be performed before the bag can be made up. These may be summarized as follows:-

Manufacture of the D-ring supports;

1. Slitting the fabric into appropriate width swathes,
2. Folding over the edges of the swathes and stitching along the side edges of the swathe,
3. Cutting the swathes to length and at the same time heat sealing the ends of the cut lengths, and
4. Folding the cut swathes over the straight arm of the D-ring and stitching across the swathe to hold the D-ring in position,

Thereafter the manufacture of a mail bag requires the further steps of:-

6. Cutting the bag fabric to the correct length (it is assumed that it is provided at the correct width),
7. Accurately folding and stitching the cut fabric to provide a top hem at the mouth and side and bottom seams of the bag,
8. Fitting a rope or cord into the hem formed at the bag mouth, and
9. Locating the free ends of the fabric of the D-ring support to either side of the top of the bag mouth and then stitching those free ends onto the fabric of the bag,

Thus it will be seen that the manufacture of a complete mail bag takes, on the above analysis, nine separate operations - and it is to be noted that this analysis does not include the folding, stacking and transportation of the part made bag and D-ring supports, between operatives performing each of the noted operations.

It will be seen from the above the known type of bag is that it is costly to produce - in terms both of materials (bag fabric, rope or cord, metal D-rings and the additional fabric required to form the swathes holding the D-rings on the mail bag) and of operations required to make up the bag.

Again, the known mail bags which include a rope or cord, D-rings and additional fabric required to hold the D-rings in position are significantly heavier than might otherwise be the case making the cost of transporting the mail bag greater than might otherwise be the case (whether filled or unfilled) particularly when it is being transported as air cargo.

A first object of this invention is the provision of a new form of mail bag which alleviates and/or overcomes these drawbacks.

A second object of the invention is to provide a support for a mail bag which may be readily attached to the mail bag at a desired location to enable the bag to be supported and which is of significantly less weight than the known, D-ring supports, used at present.

A third object of the invention is to provide a method of making mail bags which is significantly less costly - in terms both of the material used and the number of operations required - than is the case with the known mail bags.

SUMMARY OF THE INVENTION

In one aspect the invention provides a mail bag having support means adjacent the mouth thereof, said support means comprising a number of elongate parts

fixed to the fabric of the bag with their longitudinal axes generally parallel to the edge of the mouth of the bag, the support means further comprising four attachment members attached to or formed integrally with 5 said elongate ^{part or} parts by means of which in use the bag may be supported.

Desirably the elongate parts are resilient and said attachment members are formed integrally partway along the lengths of said elongate parts to extend generally 10 orthogonally of the longitudinal axes of said elongate parts.

The elongate parts are preferably generally flat with said attachment members are formed on edges thereof.

There may be provided four elongate parts, the 15 length of each being substantially equal to or less than one quarter of the length of the edge of the mouth of the bag and the attachment members may be formed substantially at the midpoints of the elongate parts.

Alternatively there may be provided two elongate 20 parts the length of each being substantially equal to or less than one half of the length of the edge of the mouth of the bag, each said elongate part being foldable substantially at it's midpoint and having a pair of attachment members formed at respective locations 25 substantially midway between the ends thereof and said midpoint.

The attachment members are, advantageously, apertured to receive hooks by means of which the bag may be supported.

In one embodiment the elongate parts are attached 30 to the fabric of the bag by locating them within a hem formed at the mouth of the bag and with the attachment members passing through respective apertures in the fabric of the hem.

35 In other embodiments each elongate part is directly fixed to the fabric of the bag. Each elongate part

may be sewn onto the fabric of the bag.

The elongate parts and the attachment members associated therewith are desirably formed integrally of a moulded plastics material. The elongate parts and the
5 attachment members associated therewith may be of moulded polypropelene and the fabric of the bags is woven polypropelene.

In a second aspect the invention provides moulded plastics support means for a mail bag as defined above,
10 said means comprising a number of elongate parts attachable to the fabric of the bag adjacent the mouth of the bag and formed integrally with attachment members at one or more locations along the length thereof to extend generally orthogonally of the axes of the elongate^{part or} parts.

15 The elongate parts may be generally flat and said attachment members be apertured and formed substantially at the midpoint of a longitudinal edge thereof to extend generally normally away therefrom and the elongate parts are preferably of a moulded plastics material such that
20 they may be sewn onto the fabric of a mail bag.

The elongate parts may alternatively be generally flat and foldable substantially at their midpoints and said attachment members be apertured and formed at respective locations substantially midway between the ends thereof and
25 said midpoint on a longitudinal edge thereof to extend generally normally away therefrom and the elongate parts are preferably of a moulded plastics material such that they may be sewn onto the fabric of a mail bag.

A third aspect of the invention provides a method of making a mail bag using support means defined above
30 including the steps of folding and stitching edges of the piece of fabric to form a bag and fixing said elongate parts to the fabric of the bag adjacent the mouth thereof such that the attachment members extend above the mouth of
35 the bag.

The method may include the steps of locating the

elongate parts adjacent and parallel to a folded edge of a piece of fabric with their longitudinal axes substantially aligned, stitching elongate parts to the folded edge of fabric and folding the fabric and stitching other edges thereof so as to form a bag with the attachment members extending above the mouth of the bag.

The method preferably also includes the step of using fabric adapted to indicate the locations at which the elongate parts are to be located. A fabric may be used which has stripes of different colours woven thereinto, the spacing of the stripes being in substance the same as the length of the elongate members to be fixed to the fabric in making the mail bag.

EMBODIMENTS OF THE INVENTION

The above and other aspects, features and advantages of the invention will become apparent from the following description of an embodiment of the invention made with reference to the accompanying drawings, in which:-

Figure 1 shows at A and B respectively side and end views of an elongate member forming part of support means embodying the invention,

Figure 2 illustrates at A a stage in the method embodying the invention of making a mail bag and at B a completed mail bag,

Figure 3 illustrates a mail bag made in accordance with the invention supported in a frame, and

Figure 4 illustrates at A and B alternatives to the embodiments described with reference to Figures 1 to 3

With reference now to Figures 1 and 2, which show at 10 a part of support means embodying the invention to comprise an elongate part 12 of length P, height Q and thickness R. On one edge of part 12, substantially at its midpoint there is provided a member 14 of height S and thickness T. In this embodiment of the support the height S and thickness T of member 14 are respectively greater than

the height Q and thickness R of the elongate part 12 of support 10.

Member 14 is generally of the D-shape shown and the corners 16 where it meets the elongate part 12 are 5 radiussed to increase the strength of support 10.

The elongate part 12 and member 14 are moulded in one piece from polypropelene.

The elongate part 12 may be provided with upper and lower edges which run parallel to the longitudinal axis 10 L of the part 12 or, preferably, be provided running at slight, upwardly extending angles A (not more than 3°) to that axis as shown in Figure 1A.

Figure 2A illustrates a stage in the manufacture of a mail bag in accordance with one embodiment of the 15 invention and shows four elongate members correctly positioned for attachment to a piece of woven polypropelene fabric being made up into a mail bag.

The piece of fabric 20 is provided at the desired width W which will, when the bag is made up, be 20 substantially equal to the length of the edge of the bag mouth. It will be noted that the polypropelene material as provided has woven thereinto a series of stripes 22 running along its length.

The arrangement of the stripes 22 - which are 25 preferably provided by weaving polypropelene of a different colour into the main body of the fabric piece 20, are positioned generally as shown.

It will be noted that an outer pair of stripes 22' are spaced a short distance in from the outer edges 24 of the fabric piece 20 and that there are a further six 30 stripes 22" arranged in three pairs running the length of the fabric. The spacing of the pairs of stripes 22" one from the other, and of those pairs of stripes from the outermost stripes 22' is substantially the same, or very 35 slightly greater, than the dimension P of the elongate part 12.

To make the mail bag in accordance with the invention the piece of fabric 20 is first cut to length D as shown. Thereafter the top edge 26 is folded as indicated and the elongate members 12 are positioned on 5 that folded top edge as shown. The stripes 22 provided in the fabric enable the accurate positioning of the elongate parts 12 in the locations at which they are to be fixed to the fabric piece 20. The operative then simply stitches across the fold 26 - as indicated at 28 - to form a hem for 10 the bag mouth and at the same time stitches through the relatively soft elongate parts 12 to hold them on the fabric piece 20.

It will be seen that the length P of the elongate part 12 is just less than a quarter of the length of the 15 width W of fabric 20, thereby enabling the piece of fabric 20 to be folded about it's centre line (shown dotted at 30) to bring the opposed side edges 24 - and the the two halves 32' and 32" of the bottom edge 32 - of the piece of fabric 20 into register one with the other.

20 After the fabric piece 20 has been folded in this way the operative grasps the two edges 24 and folds them back until they are in register with the outermost lines 22' woven into the fabric piece 20. He or she then simple machine stitches down the length D of the fabric piece to 25 form the side seam of the mail bag.

Thereafter the mail bag is completed by folding the two halves 36' and 36" of the bottom edge up and stitching across the bottom of the fabric piece 20 to form the completed bag as illustrated in Figure 2B.

To prevent the fabric edges fraying when the mail 30 bag is in use these edges may - before the elongate parts 12 are attached to the piece of cloth 20 - be heat treated in a known manner. Alternatively, they may be tack hemmed or reinforced with strips of the same or another fabric if 35 desired.

Figure 3 shows a mail bag 40 made in accordance

with the above described method in use supported in a square frame 42 by means of hooks 44 at the corners of the frame. Each hook 44 passes through a respective one of the four members 14 of the bag. It will be seen that the four
5 elongate parts 12 of the support means are forced to adopt the position shown and that their natural resilience acts to hold the mouth of the mail bag 40 open.

It will be appreciated that there are many modifications which may be made to the arrangements so far
10 described without departing from the scope of the invention and some of these are illustrated in Figure 4.

Figure 4A illustrates a modified form elongate part 50 substantially twice the length of the elongate parts 12 described above. The elongate part 50 is formed
15 at it's midpoint with a portion of reduced thickness 52 which divides the elongate part 50 into two halves 50' and 50" as shown.

The elongate part 50 is foldable about it's midpoint 52 and each half 50' and 50" of it is formed - at
20 a location midway between it's free end and the midpoint of the elongate part 50 - with a attachment member 14 as described above. It will be appreciated that an elongate part 50 such as shown in Figure 4A may be used in place of two of the elongate members described with reference to
25 Figures 1 to 3 in the manufacture of a mail bag - the two halves 50' and 50" of the elongate part 50 being able rotate relative to one another about the portion of reduced thickness 52 - and tend to hold the mouth of the mail bag open whilst it is supported in the frame 42.

It will further be appreciated that the four
30 elongate memberers described with reference to Figures 1 to 3 may if desired be replaced by a single elongate part substantially four times as long as the elongate parts 12 - being separated by three portions of reduced thickness
35 dividing the elongate part into four quarters - each of which is formed - at it's midpoint with a attachment member

14 as described above.

The particular form of the elongate part may be varied if desired from that shown - the length P, height Q and thickness R of the elongate part 12 may be altered as 5 desired as may the height S and thickness T of the attachment member 14 - providing always that the elongate part acts when attached to the mail bag in the manner described with reference to Figure 3.

Again the manner in which the elongate part is 10 attached to the fabric of the mail bag may be varied.

A modified way of attaching an elongate part of different form to those already described is illustrated in Figure 4B which shows support means 60 to comprise an elongate part 62 of rod-like form and having a attachment 15 member 64 formed half way along it's length to extend in a plane including the axis of the elongate part 62.

The fabric of the piece of cloth to form the mail bag is pierced at 66 by a slot the length of which is in substance the same as the dimension of the attachment 20 member 64 measured along the length of the elongate part 62.

To attach the elongate part 62 to the fabric of the mail bag it is placed on the fabric and the attachment member 64 passed through slot 66, thereafter the outer edge 25 68 of the fabric is folded over the elongate part 62 and stitched onto the main part 70 of the fabric to form a hem in which the elongate part 62 is located - the slot 66 through which the attachment member 64 extends being at the upper edge of the bag.

The method of attaching an elongate part to a 30 mail bag described with reference to Figure 4B is not of course limited to form of elongate part therein described - the same method of attachment may, if desired be used for the elongate parts described with reference to the earlier 35 described Figures.

It will be seen that other variations to the

described arrangements may be made without departing from the scope of the invention.

The attachment member and elongate parts may be separable, or be formed separately and thereafter fixedly
5 attached one to the other. They may be of dimensions and materials other than those specifically described - particularly if the fabric from which the mail bag is woven is different (e.g. canvas) and requires that the degree of support to be given by the support means is greater (or
10 less) than that required to satisfactorily support the bag in a frame and hold open the mouth of the mail bag whilst it is in the frame.

Although described as being of polypropelene - a material which may simply be stitched through by a
15 commercial sewing machine - it will be appreciated that the material of the support means and in particular of the elongate part thereof may be of any material and may be pre-formed with holes through which a thread may be passed in a stitching operation to attach the elongate part to the
20 piece of cloth to form the mail bag.

Again, although the preferred methods of attaching the support means to the piece of cloth forming the mail bag are those described it will be appreciated that any other suitable method (welding, glueing, pinning
25 or rivetting) may be employed without departing from the scope of this invention.

INDUSTRIAL APPLICABILITY

It will be seen from the foregoing that mail bags embodying the present invention are more simply made than mail bags presently known to us in that they simply
30 require;-

1. That the fabric for forming the bags be cut to length,
2. That the top edge of the cut fabric length
35 be folded and the elongate parts of the support means be accurately positioned (with the aid of the stripes pre-

formed in the fabric), and

3. That the top, side and bottom edges of the fabric piece be stitched to form the bag, with the elongate parts in position.

5 It will be appreciated that the number of operations required to make a bag in accordance with the present invention is reduced compared with the number of operations required to make a mail bag of traditional form - leading to a significant saving in the cost of making the
10 bag.

Furthermore it will be noted that the arrangement described provides that relatively lightweight polypropelene supports means are used and that these are fixed directly onto the fabric of the mail bag without the
15 need for additional fabric. For this reason the weight of a mail bag embodying the present invention is substantially less (approximately one half) the weight of a mail bag made of the same fabric material but using the traditional metal D-rings held in position by swathes of fabric stitched onto
20 the upper edge of the bag - and including a rope or cord passed through an upper hem of the bag.

For this reason bags made in accordance with the present invention have significant cost advantages over traditionally made bags when being transported - either
25 filled or empty - especially as air cargo.



CLAIMS

1. A mail bag having support means adjacent the mouth thereof, said support means comprising a number of elongate parts fixed to the fabric of the bag with their longitudinal axes generally parallel to the edge of the mouth of the bag, the support means further comprising four attachment members attached to or formed integrally with said elongate ^{part or} parts by means of which in use the bag may be supported.

2. A mail bag as claimed in claim 1, wherein said elongate parts are resilient and wherein said attachment members are formed integrally partway along the lengths of said elongate parts to extend generally orthogonally of the longitudinal axes of said elongate parts.

3. A mail bag as claimed in claim 2, wherein the elongate parts are generally flat and said attachment members are formed on edges thereof.

4. A mail bag as claimed in any one of claims 1 to 3, wherein there are provided four elongate parts, the length of each being substantially equal to or less than one quarter of the length of the edge of the mouth of the bag and wherein attachment members are formed substantially at the midpoints of the elongate parts.

5. A mail bag as claimed in claim 2 or claim 3, wherein there are provided two elongate parts the length of each being substantially equal to or less than one half of the length of the edge of the mouth of the bag, each said elongate part being foldable substantially at its midpoint and having a pair of attachment members formed at respective locations substantially midway between the ends thereof and said midpoint.

6. A mail bag as claimed in any one of claims 1 to 5, wherein the attachment members are apertured to receive hooks by means of which the bag may be supported.

7. A mail bag as claimed in any one of claims 1



to 6, wherein the elongate parts are attached to the fabric of the bag by locating them within a hem formed at the mouth of the bag and with the attachment members passing through respective apertures in the fabric of the hem.

8. A mail bag as claimed any one of claims 1 to 6, wherein each elongate part is directly fixed to the fabric of the bag.

9. A mail bag as claimed claims 8, wherein each elongate part is sewn onto the fabric of the bag.

10. A mail bag as claimed in any one of the preceding claims, wherein the elongate parts and the attachment members associated therewith are formed integrally of a moulded plastics material.

11. A mail bag as claimed in any one of the preceding claims, wherein the elongate parts and the attachment members associated therewith are of moulded polypropylene and the fabric of the bags is woven polypropylene.

12. Moulded plastics support means for a mail bag as claimed in claim 1, said means comprising a number of elongate parts attachable to the fabric of the bag adjacent the mouth of the bag and formed integrally with attachment members at one or more locations along the length thereof to extend generally orthogonally of the axes of the elongate ^{part or} parts.

13. Support means as claimed in claim 12, wherein the elongate parts are generally flat and said attachment members are apertured and formed substantially at the midpoint of a longitudinal edge thereof to extend generally normally away therefrom and wherein the elongate parts are of a moulded plastics material such that they may be sewn onto the fabric of a mail bag.

14. Support means as claimed in claim 12, wherein the elongate parts are generally flat and foldable substantially at their midpoints, and said attachment



members are apertured and formed at respective locations substantially midway between the ends thereof and said midpoint on a longitudinal edge thereof to extend generally normally away therefrom, and wherein the elongate parts are of a moulded plastics material such that they may be sewn onto the fabric of a mail bag.

15. A method of making a mail bag using support means as claimed in any one of claims 12, 13 and 14, including the steps of folding and stitching edges of the piece of fabric to form a bag and fixing said elongate parts to the fabric of the bag adjacent the mouth thereof such that the attachment members extend above the mouth of the bag.

16. A method of making a mail bag using support means as claimed in any one of claims 12 to 14, comprising the steps of locating the elongate parts adjacent and parallel to a folded edge of a piece of fabric with their longitudinal axes substantially aligned, stitching elongate parts to the folded edge of fabric and folding the fabric and stitching other edges thereof so as to form a bag with the attachment members extending above the mouth of the bag.

17. A method of making a mail bag as claimed in any one of claims 15 or claim 16, which includes the step of using fabric adapted to indicate the locations at which the elongate parts are to be located.

18. A method as claimed in claim 17 wherein a fabric is used which has stripes of different colours woven thereinto, the spacing of the stripes being in substance the same as the length of the elongate members to be fixed to the fabric in making the mail bag.

19. A mail bag as claimed in claim 1 and substantially as herein described with reference to Figures 2 and 3 of the accompanying drawings

20. Support means for a mail bag as claimed in claim 12 and substantially as herein described with



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reference to Figures 1 and 4 of the accompanying drawings

21. A method of making a mail bag as claimed in claim 15 and substantially as herein described.
