# PATENT SPECIFICATION

**657,606**

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COMPLETE SPECIFICATION

## Thread Reel

I, EDUARD MINTA, a German citizen, of Steinhorst, Hannover, Germany, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The present invention relates to a thread reel of the class comprising assembled mating components.

Thread reels must comply with several requirements; they must be of accurate dimensions, ensure smooth running, resist climatic temperature differences, and have sufficient strength to withstand the high tensile and bending stresses set up by the pressure of the thread when the thread is wound on to the reel; to save transport costs, thread reels should also have the lowest possible weight; also it must be possible to incise or notch the reel in such a way that the incision for the end of the thread can be made without difficulty, while at the same time a certain resilient action is required to hold the end of the thread in the incision.

Heretofore, thread reels have usually been made of wood, for example, of birch wood, with the result that reeling machines are equipped for wooden reels.

Nevertheless, certain disadvantages attach to the use of wooden reels. When reels are made by turning, or by milling, that is to say, by the use of cutting tools, there is great wastage of material, the mass of which is greater than that of the finished reel, thus involving a squandering of material. If clean surfaces are to be obtained, the cutting tools must be continuously kept sharp, which necessitates frequent exchange and replacement of tools.

The use of synthetic thermoplastic material for the manufacture of thread reels avoids the disadvantages peculiar to wood. Reels made of synthetic materials are insensitive to damp and to climatic temperature differences and do not undergo deformations that could impair accuracy of running; their surfaces are smoother than those of even carefully machined wooden reels.

Production in a press mould or injection mould ensures not only accuracy of shape but also such uniformity of the products that the rejection of reels during winding, which has hitherto been unavoidable when using wooden reels, is practically eliminated. A further point is that the considerable wastage of material which is characteristic of the manufacture of wooden reels is eliminated. In addition, synthetic materials may be dyed any desired colour before moulding, so that an additional dyeing operation which is unavoidable when making coloured wooden reels may be dispensed with.

The above mentioned advantages derived from the use of plastically mouldable synthetic materials for the production of reels would be counterbalanced by disadvantages, when synthetic materials were merely to be used instead of wood and made in the same solid shapes as conventional wooden reels.

Reels of known synthetic material so made are heavier than wooden reels.

The invention avoids the aforesaid disadvantages and results in economy in the costs of raw material and labour, as well as the avoidance of rejects.

A thread reel according to the invention comprises assembled components mated in a plane containing the longitudinal axis of the reel and each formed as an open hollow shell moulded from thermoplastic material and having thin walls, the components being moulded with interengageable means and being of such flexibility as to be receptive of a self-closing incision for securing the loose end of the thread, and, when mated, remain mated, due to the natural resi-


[*Price 2/-*]



Revised price 2s 3d.

liency of the material, thus forming a strong reel body.

Suitable thermoplastic synthetic materials are polystyrene, polyethylene, cellulose acetate and cellulose ethers.

An embodiment of the invention is illustrated in the accompanying drawing, in which:—

Figure 1 shows one component of a two-part reel; and Figure 2 shows a section along the line II—II of Figure 1 viewed from the right.

As illustrated, the thread reel consists of identical halves, of which only one is illustrated in Figure 1, viewed from the middle plane. The assembled reel is a thin-walled hollow body having a middle cylindrical part or barrel 1 interposed between two flanges 2 and 3 of arch form in cross-section, which at their outer edges merge into end walls 4 and 5, in which are located hub bores 6 and 7.

As can be seen from Figure 2, each half of the reel extends over 180°. In the region of the flanges 2, 3, are stiffening ribs 8, which are substantially at right angles to the plane of junction of the components, and which may also, as is indicated in broken lines at $8^1$, extend over the entire internal length of the reel.

Near the points where the cylindrical part or barrel 1 merges into the flanges 2 and 3, there are provided stiffenings 9, which carry holes 10 or pins 11. The diameters of the holes 10 and of the pins 11 are such that, when two complementary reel halves such as the half shown in Figure 1 are joined together, the pins fit and remain tightly therein due to the natural resiliency of the material, thereby ensuring that the halves will hold together to form a strong reel body.

Preferably, the two pins 11 on the one hand and the two holes 10 on the other hand are, as shown in Figure 1, diagonally opposite one another. Thus, for the production of a thread reel completely identical reel halves may be used, so that the two-part reel may be manufactured in a single mould.

The moulding of the half reel body is effected in manner known *per se* for pressing or injection moulding.

If particularly strict requirements are imposed in respect of the nature of the surface, the reels may subsequently be polished in a polishing machine.

The moulded material is easily incised. The incised material is so elastic that, just as with a wooden reel, the incision 12 may be made in any desired manner.

As the result of investigation it has been found that it is possible, while ensuring great strength, to make a reel moulded from polystyrene or polythene with such thin walls that it is about 50% lighter than the conventional wooden reel of the same external shape and dimensions. This factor is of decisive importance, particularly where freight charges are concerned. It is to be understood, however, that this invention is not limited to the production of reels which would secure a saving of weight of the order above indicated, and the expression "thin walls" is to be understood as including walls of such thinness that by the use of the thermoplastic materials above mentioned a substantial reduction in the weight of the reel is secured as contrasted with a conventional wooden reel of the same external shape and dimensions.

The production of synthetic material reels in moulds also makes it possible to impress in the body of the reel, particularly in its end faces, without an additional operation, the name of the manufacturer, a factory or a trade mark, or an indication of quality, thickness of thread or the like, in intaglio or in relief. The sticking on of printed circular labels may thus be dispensed with.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A thread reel comprising assembled components mated in a plane containing the longitudinal axis of the reel and each formed as an open hollow shell moulded from thermoplastic material and having thin walls, the components being moulded with interengageable means and being of such flexibility as to be receptive of a self-closing incision for securing the loose end of the thread, and, when mated, to remain mated, due to the natural resiliency of the material, thereby forming a strong reel body.

2. A thread reel as claimed in claim 1 moulded from polystyrene.

3. A thread reel as claimed in claim 1 moulded from polythene.

4. A thread reel as claimed in any of the preceding claims the components of which are provided with internal stiffening ribs.

5. A thread reel as claimed in claim 4 in which the stiffening ribs extend from end wall to end wall of the reel.

6. A thread reel as claimed in claim 4 in which the stiffening ribs are substantially at right angles to the plane of junction of the components.

7. A thread reel as claimed in claim 1 formed with hollow flanges of arch

liency of the material, thus forming a strong reel body.

Suitable thermoplastic synthetic materials are polystyrene, polyethylene, cellulose acetate and cellulose ethers.

An embodiment of the invention is illustrated in the accompanying drawing, in which:—

Figure 1 shows one component of a two-part reel; and Figure 2 shows a section along the line II—II of Figure 1 viewed from the right.

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4. A thread reel as claimed in any of the preceding claims the components of which are provided with internal stiffening ribs.

5. A thread reel as claimed in claim 4 in which the stiffening ribs extend from end wall to end wall of the reel.

6. A thread reel as claimed in claim 4 in which the stiffening ribs are substantially at right angles to the plane of junction of the components.

7. A thread reel as claimed in claim 1 formed with hollow flanges of arch

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section.

8. A moulded thread reel component as described with reference to the accompanying drawing.

Dated this 7th day of September, 1949.
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