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M101 M105 M4B M8D

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(58) Field of search
UK CL (Edition K) B8M MB3
INT CL[5] B65H

(54) Reel device

(57) A reel device comprises a housing having a guide for cable being unreeled from the housing. The guide frictionally grips the cable as it is unreeled. The housing is formed, Fig. 6, in two facing cup-shaped lattice parts 31, 32 with a telescoped hub 38. The guide comprises the rims 37 between which the cable passes. The injection moulded resilient plastics of the housing biases the rims towards each other. The hub is formed with a spigot 51 and socket 52 so that reels can be stacked spigot-in-socket. The outer lattice parts of the housing, with rims 6, may be folded aside, Fig. 11, and retained by integral clips 56, to allow winding. The cup-shaped members 31, 32 may be snap-fitted or welded to a separate hub. Alternatively, a cable reel may be fitted on the hub within the cup-shaped members of the device, and located axially by resilient fingers of the device (Fig. 4).

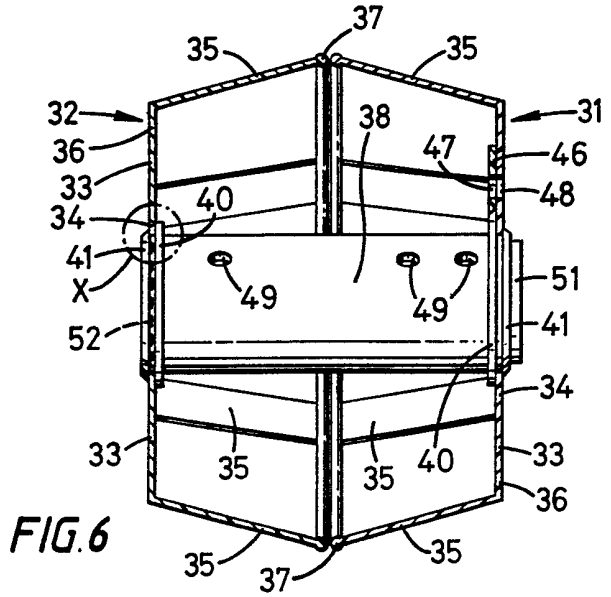

FIG.6

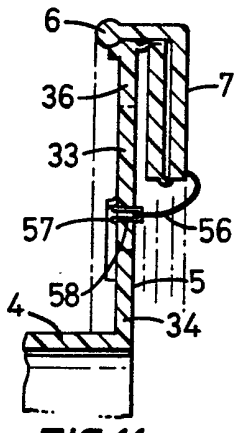

FIG.11

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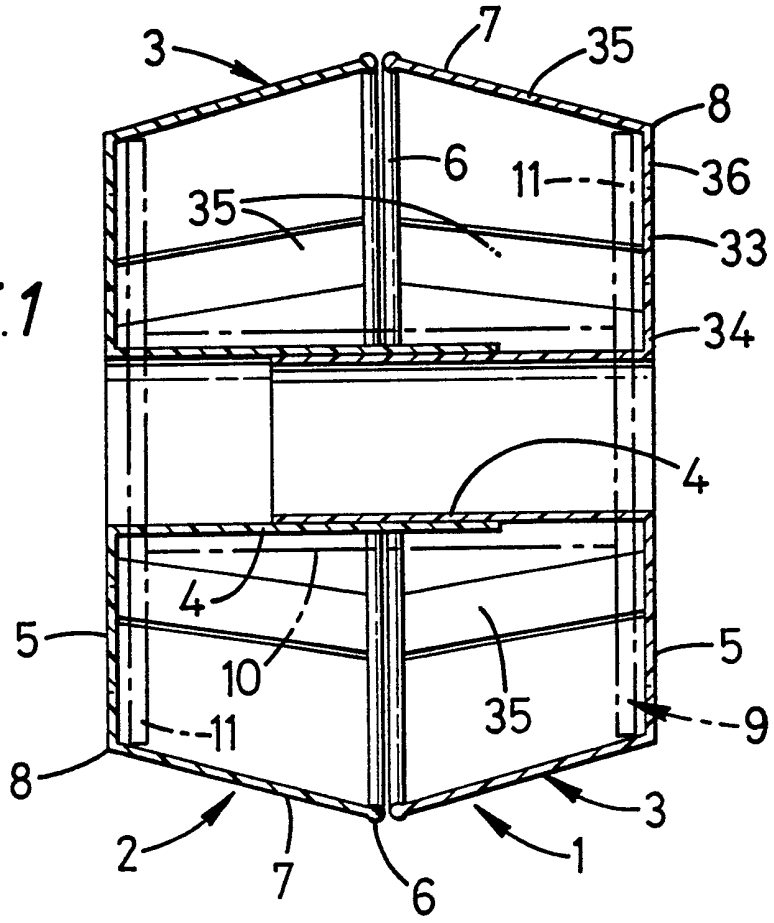

FIG.1

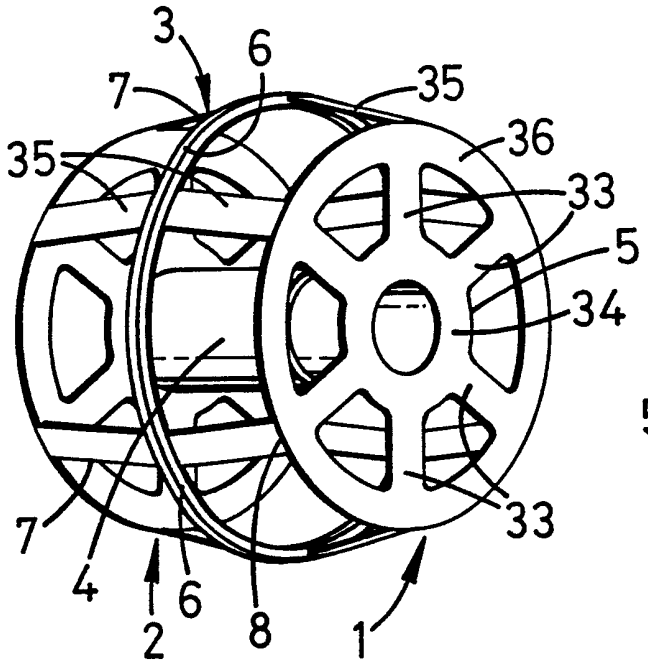

FIG.2

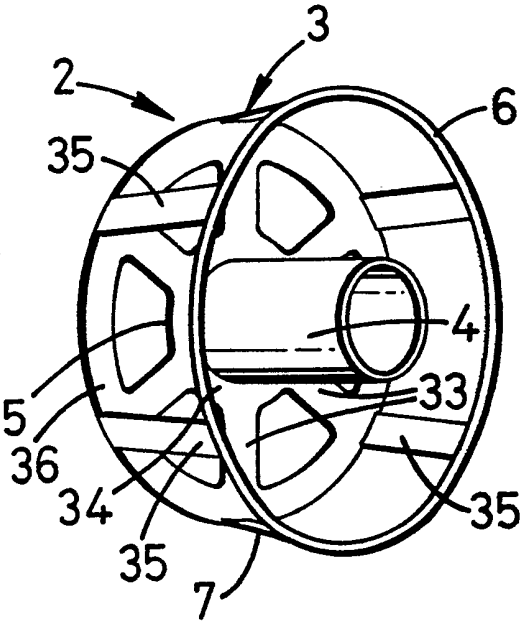

FIG.3

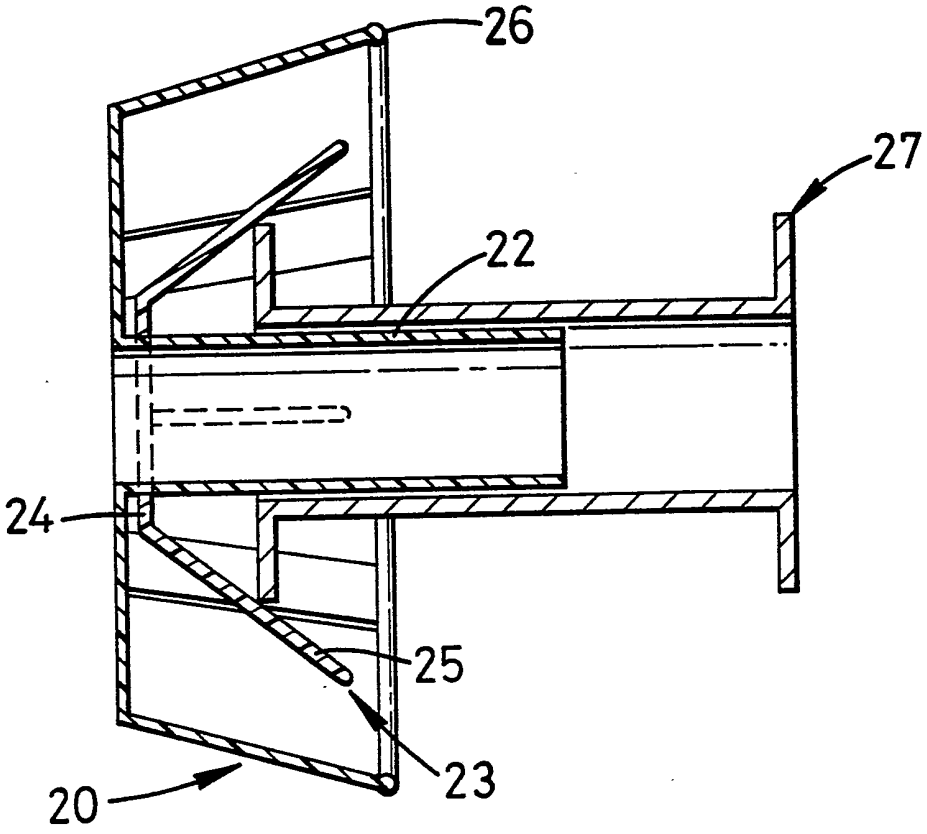

FIG.4

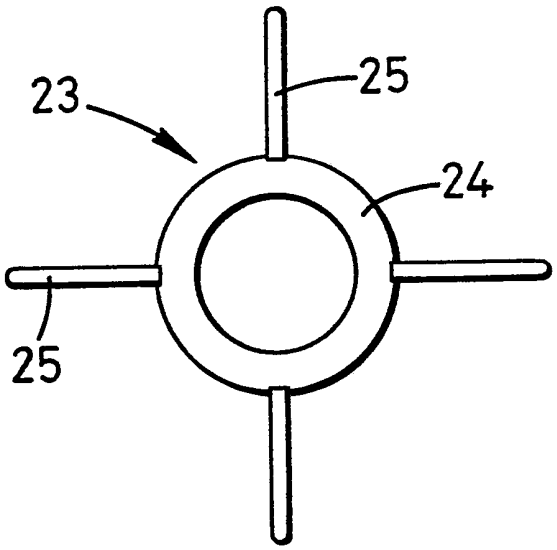

FIG.5

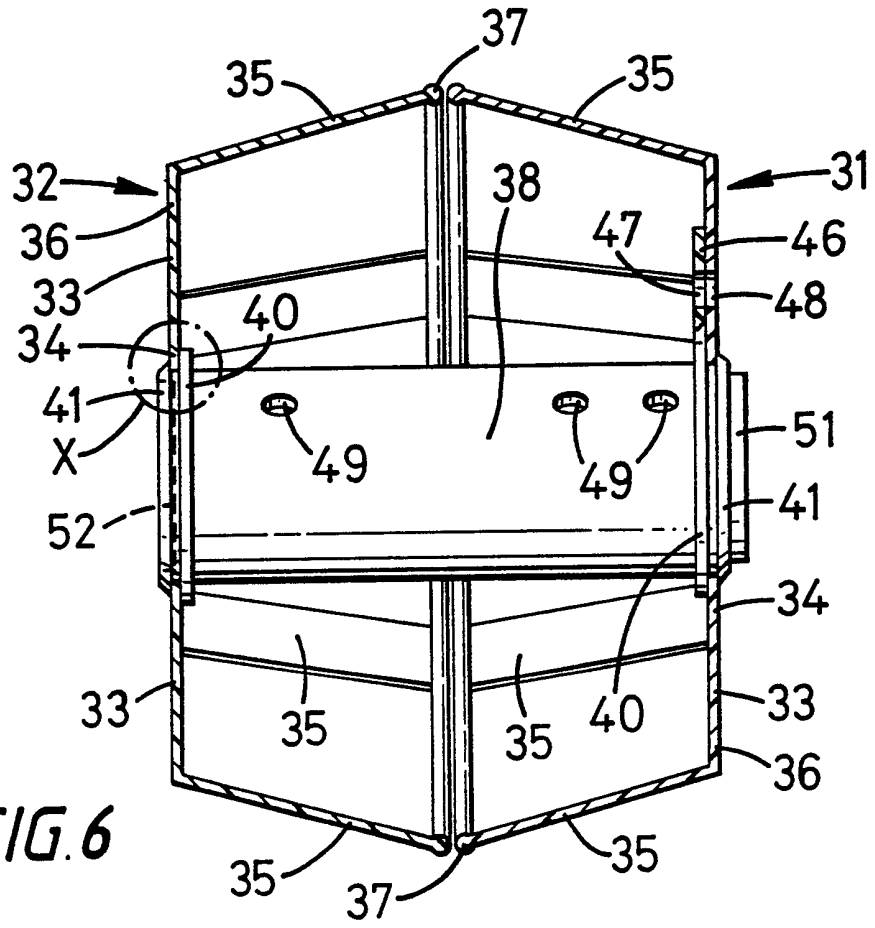

FIG.6

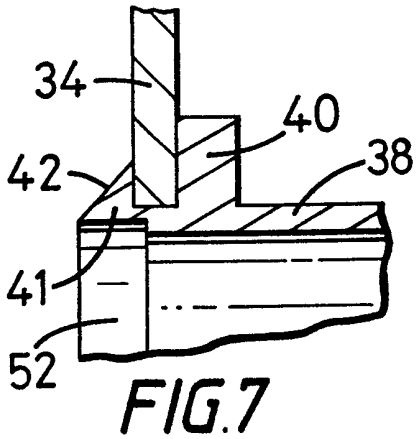

FIG.7

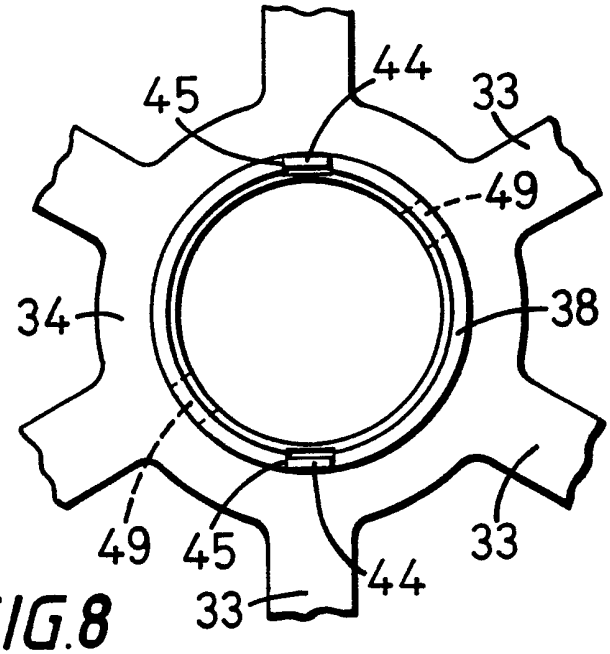

FIG.8

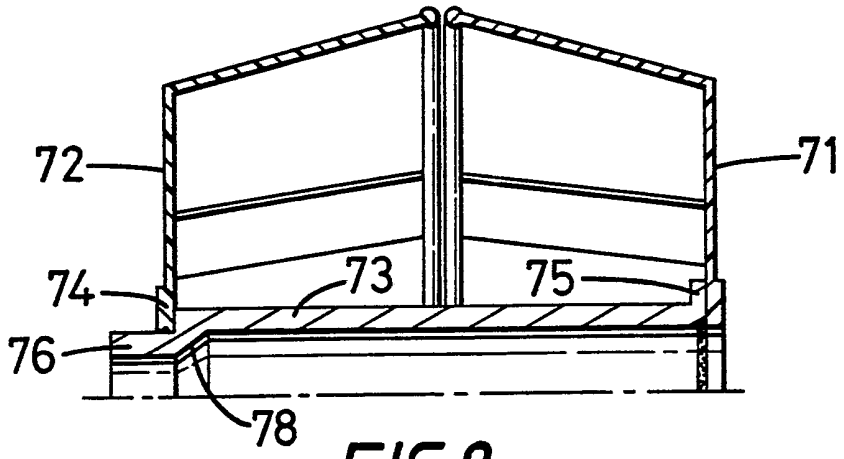

FIG.9

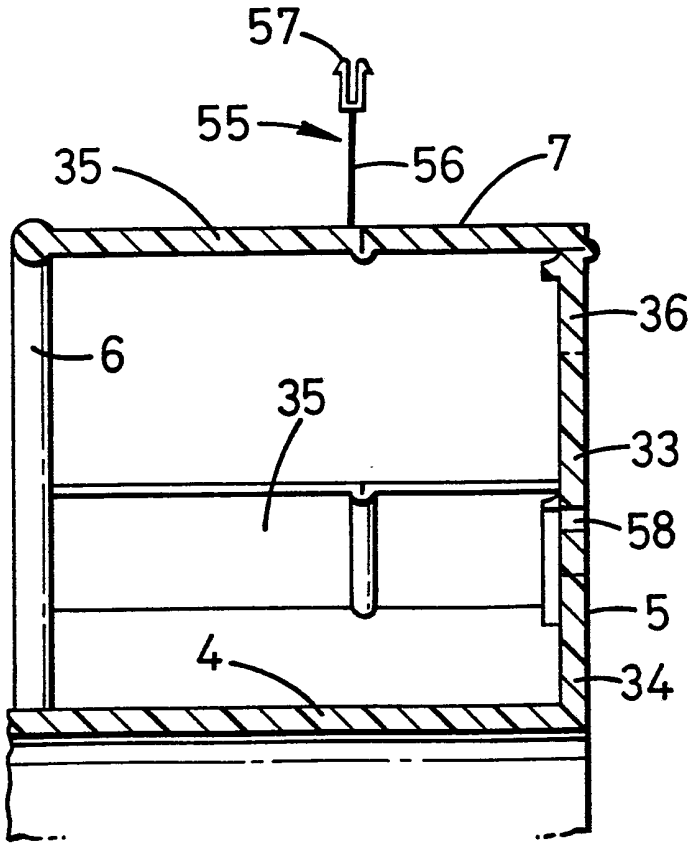

FIG.10

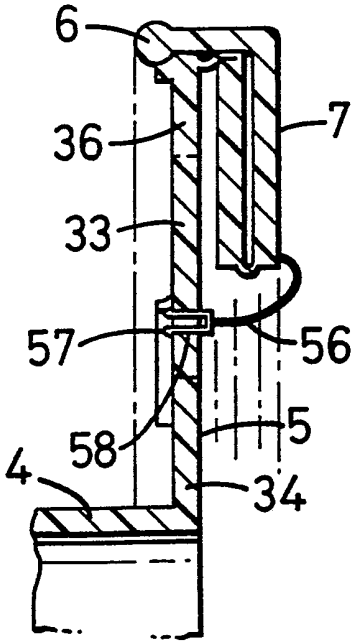

FIG.11

Reel Devices

This invention relates to reel devices for lengths of cable, rope, string and the like filamentary flexible material. The invention has particularly advantageous application to cable reels and the invention will be further described in this context.

Cable reels for the lower amperage cables, say up to 30 amps, are usually made from cardboard and have a central hollow core on which the cable is wound and two side cheeks which retain the wound cable on the core. Such cable reels have disadvantages. One is that as the cable is unreeled by pulling it off the reel as the reel rotates for example on a supporting pole passed through the core, it can be displaced over the side cheek of the reel and lock up the reel. Another is that if the reel becomes wet it can collapse and tear quite easily or become otherwise damaged.

One object of the invention is to provide a reel device which obviates the aforesaid disadvantages.

According to one aspect of the invention a reel device has a housing which provides a guide for a cable as it is unreeled out of the housing.

Advantageously the guide may also frictionally grip the cable as it is unreeled.

The housing is preferably moulded from plastics material. It may be designed to encase a conventional cable reel. Alternatively it may itself have a central core on which the cable is reeled directly.

In one embodiment the reel device has a housing formed in two facing cup or dish shaped parts, the rims of

the two cup or dish shaped parts providing the guide between which the cable passes as it is pulled from the reel.

Advantageously the rims of the two cup or dish shaped parts may come sufficiently close together to grip a cable between them. The gripping may be enhanced by the resilience of the material from which the cup or dish shaped parts are formed which permits the rims to move apart against a biasing force. The frictional gripping of the cable between the rims can be further improved by providing serrations on that surface portion of one or both rims over which the cable runs.

The cup or dish shaped parts may be in the form of an open lattice work to save on material costs. The two cup or dish shaped parts may each have an internal hub portion extending from the bottom of the cup or dish, the two hub portions fitting together for example telescopically to form a composite hub.

Alternatively the two cup or dish shaped parts may be fitted on to opposite ends of a single separately formed hub member. If the reel device is of plastics material, this may be achieved by a snap fitting arrangement between the cup or dished shaped parts and the hub.

In the case where the reel device is adapted to encase a conventional cable reel, the hub portions will extend into the reel core. In the case where the cable is reeled directly on to the reel device, the hub forms the reel core.

Another problem associated with reel devices is the difficulty of stacking them and it is another object of this

invention to provide a reel device which is readily stackable with a series of similar cable reels.

According to another aspect of the invention a reel device is provided with a hub having a spigot projecting from one end which is of a size that it can be inserted spigot and socket fashion into the opposite end of the hub of a similar reel device.

Embodiments of the invention will now be described by way of example with reference to the accompanying diagrammatic drawings in which:

Figure 1 is a cross-section of the reel device of a first embodiment,

Figure 2 shows a perspective view of the reel device of Figure 1,

Figure 3 shows a perspective view of one half of the reel device of Figure 1,

Figure 4 shows a cross-sectional view of one half of a reel device in accordance with a second embodiment,

Figure 5 shows a detail of the second embodiment,

Figure 6 is a sectional elevation of another embodiment of the invention,

Figure 7 is a sectional view of a detail within circle X of Figure 6,

Figure 8 is a partial side view of the reel device of Figure 6,

Figure 9 is a half-section of another embodiment of reel device in accordance with the invention, and

Figures 10 and 11 show scrap views of a further embodiment.

Referring to Figures 1 to 3, the reel device of the first embodiment comprises two housing halves 1 and 2 injection moulded from synthetic plastics material. Each housing half 1,2 has a cup or dish shaped part 3 (hereafter simply referred to as cup-shaped) of lattice form and an internal hub portion 4 extending centrally from the bottom 5 of the cup shaped part 3. Thus the lattice comprises spokes 33 extending radially from a central annulus 34 to peripheral ring 36 in the bottom 5 of the cup-shaped part 3 and strips 35 which extend from the peripheral ring 36 to the rim 6 of the cup-shaped part to form the side 7 of the cup-shaped part. To form a complete housing the hub portions 4 are telescoped together as seen in Figure 1 to form a composite hub. Means (not shown) are provided for locking the two hub portions 4 together so that they cannot easily be pulled apart. When the hub portions 4 are so fitted together the rims 6 of the two cup shaped parts 3 are sufficiently close together or even touching so that a cable passing between the rims 6 is gripped by the rims. Since the cup-shaped parts 3 are of plastics material they have some resilience and the strips 35 will tend to deflect or hinge resiliently about the junction 8 between the strips 35 and the peripheral ring 36.

In Figure 1 a cable reel 9 is shown in chain-dotted line within the housing provided by the reel device. The two hub portions 4 locate within the hollow core 10 of the reel 9 and the two side cheeks 11 are located parallel to the bottoms 5 of the two cup shaped parts 3.

Within reason it does not matter that the width of

the reel, i.e. the distance from cheek to cheek is not substantially the same as the width of the housing.

Instead of a reel being provided within the housing, the housing itself may provide the reel. In this case the cable would be wound directly on to the hub. To facilitate this winding of the cable, the winding machine can easily be provided with means which deflect the sides 7 of the cup shaped parts 3 to open up the entry to the hub. Alternatively, the sides 7 can be fitted to the bottoms 5 after winding the cable on to the hub. A still further alternative is shown in Figures 10 and 11.

Referring to Figures 10 and 11, the reel halves 1 and 2 are generally as shown in Figures 1 to 3 and the same reference numerals have been used to designate corresponding parts. Alternate ones of the strips 35 are provided with integrally moulded clips 55 comprising upstanding arms 56 with studs 57 at their free ends. The strips 35 are of such form that by pushing back the rims 6 the strips 35 fold upon themselves and are folded on to the outside of the bottom 5 of the cup-shaped part as shown in Figure 11. In this position the rim 6 locates in a complementarily shaped recess in the peripheral ring 36 and the studs 57 are snapped into holes 58 to retain the side 7 of the cup-shaped part in this position.

Thus with the reel-halves in the folded back position of Figure 11, the reel can be mounted on a conventional cable reeling machine without any modification of the machine. After the cable has been wound on the reel and the reel removed from the machine, the sides 7 can be

unclipped by pulling the studs 57 out of the holes 58 and will then automatically spring back to the position shown in Figure 10.

Referring now to Figures 4 and 5, this shows one half of an alternative reel device. This has two outer housing halves comprising cup shaped parts 20 similar to cup shaped parts 3 of Figures 1 to 3 and fitting together in exactly the same way through hub portions 22. Additionally, however, a cable guide 23 is associated with each housing half and is either freely slideable along the hub portion thereof or can be fixed to it. The cable guides 23 each comprise a central ring 24 which fits over the hub portion 22 and four resilient fingers 25 which are symmetrically disposed at 90° to each other around the ring. There may of course be more or less fingers. Each finger 25 extends towards the rim 26 of the cup shaped part 20 at an acute angle of say 45° to the axis of the hub portion 22.

The cable guides 23 enable cable reels such as 27 of different sizes to be held in the housing without sliding axially to and fro along the hub. Thus as the housing is fitted over a cable reel 27 with the cable guides 23 in position, the side cheeks of the reel 27 engage the fingers 25 of the cable guide 23 and the fingers 25 will become stressed by deflection and provide resistance to movement of the reel 27.

Referring to Figures 6 to 8, the reel device is similar in shape to that shown in Figure 1 and is formed from plastics material. The two cup-shaped parts 31 and 32 are again of lattice form each comprising spokes 33 which

extend from a central annulus 34 (Figure 8) to peripheral ring 36 in the bottom of the cup-shaped part to form the base of the cup device and strips 35 which extend from peripheral ring 36 to the rim 37.

In the embodiment of Figures 6 to 8 the cup-shaped parts 31 and 32 snap fit on to opposite ends of a single hub or core 38. The shaping of the ends of the core to achieve this can be seen in Figures 6 and 7. Thus adjacent each end of the core 38 a pair of ribs 40 and 41 extend around the core 38. The space between the ribs 40 and 41 is sufficient to accommodate the thickness of the annulus 34 of one or other of the cup-shaped parts 31 and 32. The outer surface 42 (see Figure 7) of the ribs 41 is ramped to facilitate the snap action. Thus as the annulus 34 of each cup-shaped part 31,32 is pushed on to the core 38, it rides along the ramp and becomes increasingly stressed until eventually it snaps into the groove between the ribs 40 and 41.

So that the cup-shaped parts 31,32 can be fitted on to the core 38 in a predetermined orientation and relative rotation between the core 38 and the cup-shaped parts 31 and 32 prevented, keys 44 (see Figure 8) on the annuli 34 locate in key slots 45 in each end of the core 38.

The core 38 is provided with an upstanding lug 46 which has a hole 47 through it. This enables cable to be wound on the core 38 without the cup-shaped parts 31,32 being fitted. The start end of the cable can be located through the hole 47. When the cup-shaped part 31 is fitted this hole 47 lines up with a hole 48 in one of the spokes

33. Alternatively or additionally one or more holes 49 may be provided in the core 38 itself.

To facilitate stacking of the reel devices, one end of the core 38 is extended to provide a spigot 51 and the other end is internally rebated to provide a socket 52. Thus to stack the reel devices, the spigot 51 of one reel device locates in the socket 52 of an adjacent one.

After all the cable has been run from the reel device or even initially it can be readily converted to form an extension lead. To effect this annuli 34 have to be freed from the core 38 to permit rotation of the cup-shaped parts 31 and 32 relatively to the core. Using a little excess force the keys 44 are designed to be snapped off. A handle device is then fitted within the core 38. The handle device which may be of plastics material has a U-shaped bracket from which a pair of short pins extend. The bracket fits within the core 38 and the pins snap into diametrically opposite holes adjacent one end of the core 38. The bracket may additionally have lugs which fit into the keyways 45 in the core 38.

A still further embodiment of reel device in accordance with the invention is shown in Figure 9. In this embodiment the two cup-shaped halves 71 and 72 are of the same general form as shown in Figures 6 to 8. The two halves are of identical shape so that either can be used as a left-hand or right-hand half.

The reel halves 71 and 72 are mounted on a hub 73 which is welded to the reel halves by high frequency welding. The hub 73 is shaped so that prior to welding it

can be inserted through a pre-coiled cable and through the reel half 72 by an inserting movement from the right as seen in Figure 12. This enables the reel to be used with modern cable reeling machinery in which a cable coil is pre-wound and then delivered to a box in which the hub 73 is passed through the coil and then the reel half 72 is fitted on to the hub.

High frequency welding is effected between the hub 73 and reel half 72 at the shoulder 74 on the hub and between the reel half 71 and the hub 73 at the flange 75 on the hub. The spigot 76 on the hub enables stacking of the reels in that this spigot 76 can be located in the opposite end of the hub 73 of an adjacent reel. Internally the diameter of the hub 73 reduces down to the diameter of the spigot 76 through sloping ramp 78. The ramp 78 facilitates the passage of a bar, e.g. a supporting bar, through the hub, in that the bar will ride along the ramp 78 and feed out of the other end of the hub 73.

CLAIMS

1. A reel device having a housing which provides a guide for a cable as it is unreeled out of the housing.

2. A reel device according to Claim 1, wherein the guide is arranged to frictionally grip the cable as the cable is unreeled.

3. A reel device according to Claim 1 or Claim 2, wherein the housing is formed in two facing cup-shaped parts and a hub extending internally between the cup-shaped parts, said guide comprising the rims of the cup-shaped parts between which the cable passes as it is pulled from the reel.

4. A reel device according to Claim 3, wherein the rims are sufficiently close together to frictionally grip the cable as it is pulled off the reel.

5. A reel device according to Claim 4, wherein the cup-shaped parts are sufficiently resilient to permit the rims to be moved apart against a biasing force.

6. A reel device according to any one of claims 3 to 5, wherein the cup-shaped parts are in the form of an open lattice work.

7. A reel device according to any one of claims 3 to 6, wherein each cup-shaped part comprises a side and a bottom, the side being foldable back behind the bottom and retained in that position.

8. A reel device according to claim 7, wherein the side is retained in the folded back position by retaining means integrally formed with the side.

9. A reel device according to claim 8, wherein the

retaining means comprises clips which locate in the bottom of the cup-shaped part when the side is in the folded back position.

10. A reel device according to any one of claims 3 to 9, wherein the side of each cup-shaped part comprises a plurality of resilient strips extending between the bottom of the cup-shaped part and the rim.

11. A reel device according to any one of claims 3 to 10, wherein the two cup-shaped parts each have an internal hub portion extending from the bottom of the cup-shaped part, and the two hub portions fit together to form a composite hub.

12. A reel device according to claim 11, wherein the hub portions interfit with each other telescopically.

13. A reel device according to any one of claims 3 to 10, wherein the two cup-shaped members are fitted to opposite ends of a separately formed hub member.

14. A reel device according to claim 13, wherein the cup-shaped members are snap-fitted to the hub member.

15. A reel device according to claim 13, wherein the cup-shaped parts are secured to the hub by high frequency welding.

16. A reel device according to any one of claims 3 to 15, wherein the hub has a spigot formation at one end and a socket formation at the other end, whereby the reel devices can be stacked one on the other with the spigot formation of one reel device locating in the socket formation of the other reel device.

17. A reel device according to any preceding claim and

adapted to receive a conventional cable reel on a hub of the reel device, wherein a cable guide is fitted adjacent each end of the hub and has resilient fingers extending towards the rims of the cup-shaped parts whereby the fingers restrain a conventional cable reel fitted on the hub against axial movement along the hub.

18. A reel device provided with a hub having a spigot projecting from one end which is of a size that it can be inserted spigot and socket fashion into the opposite end of a similar reel device.

19. A reel device substantially as hereinbefore described with reference to the accompanying drawings.

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