

March 31, 1964

R. KOHN ET AL

3,127,127

WIRE CARRIER

Filed Aug. 20, 1962

2 Sheets-Sheet 1

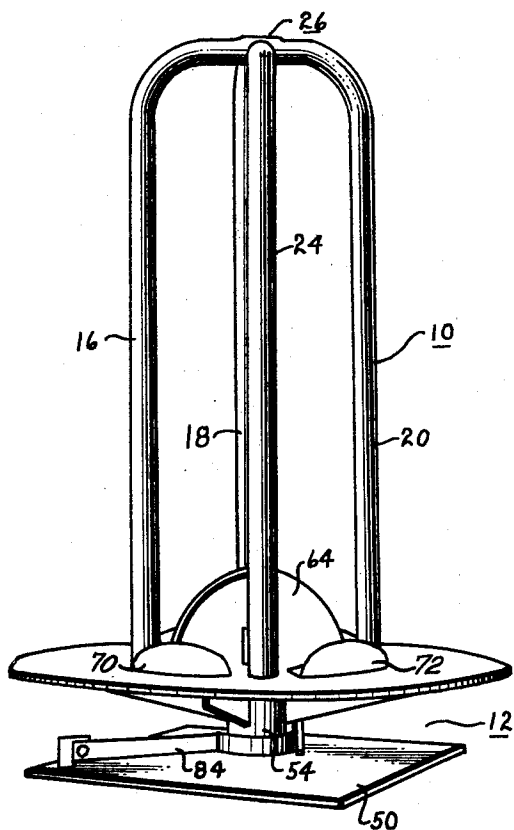


FIG. 1

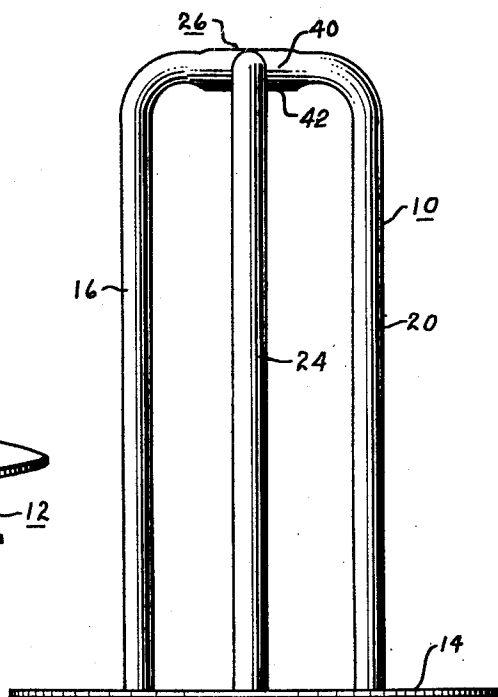


FIG. 2

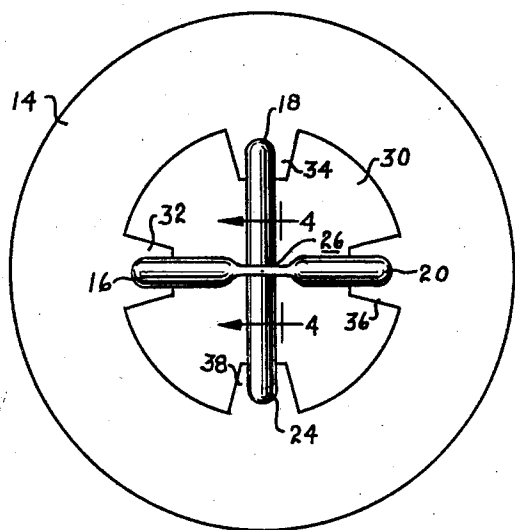


FIG. 3

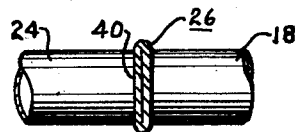


FIG. 4

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2 Sheets-Sheet 2

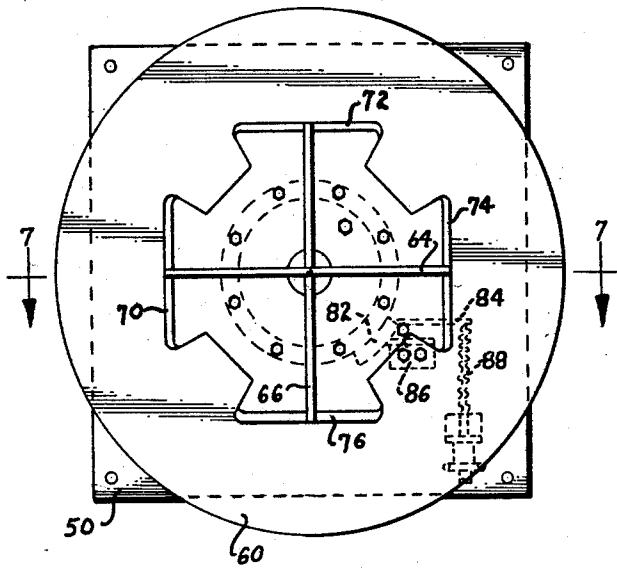


FIG. 5

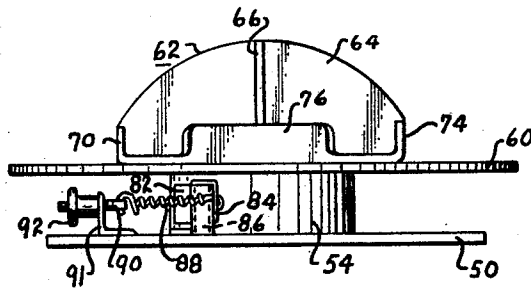


FIG. 6

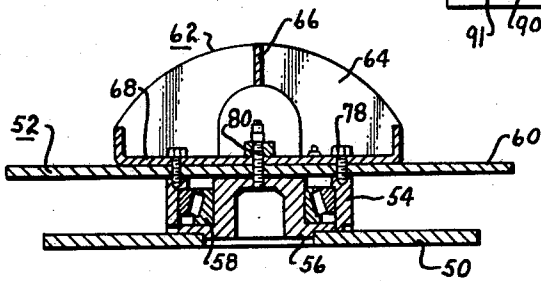


FIG. 7

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WIRE CARRIER

Robert Kohn and Mortimer C. Winski, Michigan City, Ind., assignors to Northern Indiana Steel Supply Co., Inc., Michigan City, Ind., a corporation of Indiana  
Filed Aug. 20, 1962, Ser. No. 218,011  
4 Claims. (Cl. 242-129)

The present invention relates to a wire carrier, and more particularly to a carrier for coils of wire for use primarily in winding and unwinding, transporting and storing the coils of wire.

The conventional carrier for coils of wire consists of a plurality of vertically positioned rods or pipes in spaced relation on a disc-shaped base, with the rods or pipes being joined together at the top by welding. In moving the loaded carriers from one place to another, a crane hooks the carriers at the top where the rods or pipes are joined together, thus placing the entire load of the carrier and coil on the welded joint between the upper ends of the rods or pipes. This often results in damage to the carriers, usually in fracturing the welded joints, or in serious distortion of the rods or pipes. It is therefore one of the principal objects of the invention to provide a carrier having a special construction which is substantially stronger and more rugged than the conventional carrier, particularly at the upper end, and which obtains this added strength and sturdiness without increasing the overall weight of the carrier.

Another object of the present invention is to provide carriers of the aforesaid type which can be readily nested with one another for shipping and storing when not in use, and which can be partially nested with one another when only a partial coil is on the inner carrier.

Still another object of the invention is to provide a relatively simple, easily fabricated wire carrier structure which can be removed from and reinserted in a coil of wire and from which the wire can be unwound vertically while the carrier is stationary, or horizontally while the carrier is rotated on a reel for handling coiled wire.

Another object of the invention is to provide a combination carrier and wire handling reel in which the carrier can be readily assembled in position by merely seating it on the reel, and in which the carrier will center itself on the reel in position and engagement to be driven thereby.

Further objects and advantages of the present invention will become apparent from the following description and accompanying drawings, wherein:

FIGURE 1 is a perspective view of a wire carrier and reel embodying the present invention;

FIGURE 2 is a side elevational view of the present wire carrier shown in FIGURE 1 removed from the reel;

FIGURE 3 is a top plan view of the wire carrier shown in FIGURE 2;

FIGURE 4 is a fragmentary vertical cross sectional view of the wire carrier, the section being taken on line 4-4 of FIGURE 3;

FIGURE 5 is a top plan view of the wire handling reel shown in FIGURE 1;

FIGURE 6 is a side elevational view of the reel shown in FIGURE 5; and

FIGURE 7 is a vertical cross sectional view of the reel shown in FIGURES 5 and 6, the section being taken on line 7-7 of FIGURE 5.

In the manufacturing from wire of such products as bolts, nails, screws, fences, clothes hangers and reinforced concrete wire mesh, the wire is wound on carriers, and these carriers are mounted on reels which feed the wire into fabricating machines for the various products. In conventional or standard pay-off reels, the wire is pulled from the carrier, either vertically, during which the

carrier remains stationary, or horizontally, during which the reel is rotated by the force applied to the wire by the fabricating machine. When the wire has been removed from the carrier, the carrier is removed from the reel and returned to the place where the wire is manufactured for receiving another coil of wire. The wire may be wound directly on a particular carrier where it remains until unwound, the original carrier remaining in the coil until the coil is unwound from the reel, or the wire may be wound on one carrier and the carrier removed from the coil, the coil shipped to the place where the wire products are fabricated, and another carrier reinserted in the coil ready for mounting on the pay-off reel. The present wire carrier is designed for either use and is particularly adapted for an indefinite number of operations of this type.

The carrier, reel combination shown in FIGURE 1 consists of a carrier 10 and reel 12, the carrier being shown in operating position on the reel after the wire has been removed therefrom. The carrier is constructed of steel plate and tube material and consists of a disc-shaped base plate 14 and four vertical tubular members 16, 18, 20 and 24 connected to one another at the top and center, the connecting structure being indicated by numeral 26. The lower ends of the tubular members are rigidly welded to the upper surface of base plate 14, forming a rigid structure therewith. The base plate is provided with a central opening 30 and four inwardly extending lugs 32, 34, 36 and 38 to which the lower ends of tubular members 16, 18, 20 and 24, respectively, are secured. These members form driving engagement means with the pay-off reel, as will be more fully explained hereinafter. In place of the disc-shaped base plate 14, the base may be fabricated from two or four members formed from tube or bar stock and welded together and to the lower ends of members 16, 18, 20 and 24.

One of the principal features of the present invention is structure 26 connecting the four tubular members. The tubular members 16 and 20 are formed of one tubular piece into the U-shaped configuration shown in FIGURE 2, which is flattened at the apex 26, thus forming a thin and broad, rigid element to which the upper ends of tubular members 18 and 24 are securely welded. The principal advantage of this structure is the greatly increased strength over the conventional unit for receiving a hook, chain or the like for lifting the carrier. It is seen, particularly from FIGURE 2, that as the hook is slipped beneath structure 26, the hook portion engages the lower edge 42 of vertically flattened portion 40, thus placing all of the strain resulting from lifting a loaded carrier onto the continuous tubular member structure formed by tubular members 16 and 20, and avoiding placing the strain on any welded joint between the four members. Since the flattened portion is substantially wider in the vertical direction and thus stronger than the individual tubular members, it is capable of supporting a substantially greater load than the unflattened tubular members alone.

The wire handling reel shown in FIGURES 1, 5, 6 and 7 is a non-powered unit, consisting of a base 50, carrier support 52 rotatably mounted on the base by hub 54 secured to the underside of the support, and axle member 56 and roller bearing 58 supported by axle member 56 and supporting hub 54. Support member 52 consists of a disc-shaped plate 60 on which is mounted a self centering drive cone 62, the latter having two intersecting arcuate plates 64 and 66 rigidly secured to a frame 68. The frame is provided with four outwardly projecting arms 70, 72, 74 and 76, integrally formed with frame 68 and welded to the respective cross members 64 and 66. The frame is secured to plate 60 and to hub 54 by a plurality of bolts 78 extending downwardly through the frame and by a center stud 80 extending downwardly through the frame plate into axle 56.

When the carrier is mounted on the reel, the spaces between lugs 32, 34, 36 and 38 receive arms 70, 72, 74 and 76, respectively, and the spaces between the arms receive lugs 32, 34, 36 and 38, respectively, thus providing a sturdy, dependable interlocking relationship between the carrier and the rotatable support of the reel. As the wire is pulled from the coil on the carrier, the support is rotated through the carrier by this interlocking relationship. In order to control the rotation of the coil and hence the tension on the wire being delivered therefrom, a braking mechanism is included, consisting of a brake shoe 82 frictionally engaging the external surface of hub 54 and supported by a lever 84 pivoted on support 86 and urged yieldably against the external surface of the hub by a spring 88. In order to vary the pressure of the brake shoe on the hub, an adjustment means consisting of a screw 90 extending through support 91 and having threaded on the free end a nut 92 forms one anchor for spring 88.

Another feature of the present invention, which renders the present carrier particularly versatile with respect to the manner in which it is used, is the slightly upward and inward taper given the four tubular members, 16, 18, 20 and 24, i.e. the lower ends of these members are spaced further from the axis of base plate 14 than the upper ends of the vertical portions of the tubular members. Thus the carrier can readily be slipped from the coil of wire after it has been wound thereon and reinserted whenever the coil is to be unwound.

The present carrier can be used to hold a coil of wire for vertical unwinding without the use of a reel, or may be used on the type of reel shown in the drawings, or on a power driven type disclosed and claimed in our co-pending application Serial No. 218,005, filed August 20, 1962.

While only one specific embodiment of the present invention has been described in detail herein, various changes may be made therein without departing from the scope of the invention.

We claim:

1. A wire carrier comprising a disc-shaped base plate having an opening in the center, four equally spaced lugs extending from said plate into said opening, four substantially vertical tubular members secured at the bottom to said lugs and being joined to one another at the top, said members sloping inwardly from the bottom to the top and having a substantially horizontal portion extending inwardly at the top, two opposite of said members being formed as one piece and being thin in the horizontal direction to form a vertical flattened portion and

the other opposite two of said members being joined by welding to opposite sides of said flattened portion, and the lower edge of said flattened portion extending below the lower surface of said other opposite two members.

2. A wire carrier comprising a plate-like base having an opening in the center, four substantially vertical tubular members secured at the bottom to said base and being joined to one another at the top and having a substantially horizontal portion extending inwardly at the top, two opposite sides of said members being formed as one piece and being broad in the vertical direction to form a flattened portion and the other two of said opposite members being joined by welding to opposite sides of said flattened portion, the lower edge of said flattened portion extending below the lower surface of said other two opposite members.

3. A wire carrier comprising a base having an opening in the center, four substantially vertical tubular members secured at the bottom to said base and being joined to one another at the top and having a substantially horizontal portion extending inwardly at the top, two opposite of said members being formed as one piece and being thin in the horizontal direction to form a vertical flattened portion and the other two of said opposite members being joined to opposite sides of said flattened portion.

4. In combination with a wire handling reel having a rotatable carrier support with a drive cone: a disc-shaped base plate having an opening in the center for receiving said drive cone, four equally spaced lugs extending from said plate into said opening forming an interlocking relationship with said cone, four substantially vertical tubular members secured at the bottom to said lugs and being joined to one another at the top, said members sloping inwardly from the bottom to the top and having a substantially horizontal portion extending inwardly at the top, two opposite of said members being formed as one piece and being thin in the horizontal direction to form a vertical flattened portion and the other opposite two of said members being joined by welding to opposite sides of said flattened portion, and the lower edge of said flattened portion extending below the lower surface of said other two opposite members.

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