My invention relates to a pirn or cone holder adapted selectively to hold or support yarn carrying devices having either cylindrical or conical shells or tubes.

One well known type of holder is formed of a shank and a pair of oppositely bowed springs having their inner ends secured near the inner end of the shank and having their outer ends slidably engaging a slot in the adjacent portion of the shank. This type of holder is exemplified in such prior patents as 1,454,660 of May 8, 1923, issued to Tuttle, and 1,457,572 of June 5, 1923, issued to Hartnett. A holder of this type is useful for supporting a pirn having a cylindrical tube and for supporting a cone or other yarn carrying device having a conical tube. It has generally been the practice to remove the pirn holder and replace it with a holder having a conical contour.

In order to overcome this difficulty it has been proposed, as shown in U. S. Patent 2,437,100, issued to F. Lambach on March 2, 1948, to provide an auxiliary conical holder which could be passed over the bowed springs, so as to adapt the original holder for supporting a cone.

While the auxiliary holder referred to is operative, its structure and arrangement are complicated and expensive and it is difficult to apply and remove.

Furthermore, in prior structures of which I am aware, the holder was formed of wire which has a smooth and generally rounded surface with the result that, unless additional engaging means were provided, the pirn or cone tended to fall off the holder. This additional engaging means took the form of a member which pierced the cardboard tubes, as for example the toothed washer shown in Fig. 3 of the Lambach patent, or the ratchet 6 of the Patent 734,298, issued to Bates et al. on July 21, 1903. While such toothed means operated satisfactorily to hold the pirn or cone in place, it also damaged or destroyed the tube of the pirn or cone.

According to my invention, I provide an auxiliary holder for supporting cones but my auxiliary holder is so constructed and arranged as to be applied or removed without having to be passed over the bowed springs. Also my improved auxiliary holder is so constructed and designed that it will effectively hold the pirn or cone in place without the aid of any means which pierces or in any way damages the pirn or cone tube.

My auxiliary holder is furthermore designed for inexpensive manufacture and assembly as will be understood from the following specification and the accompanying drawings in which

Fig. 1 is a side elevational view of a holder embodying my invention.

Fig. 2 is a fragmentary enlarged section on line 2—2 on Fig. 1.

Fig. 3 is a sectional view taken on lines 3—3 on Fig. 1.

Fig. 4 is an end elevational view looking in the direction of line 4—4 on Fig. 1.

Fig. 5 is a vertical sectional view showing the manner in which a yarn carrying device having a conical tube is mounted, the tube and the yarn carried thereby being shown in broken lines.

A conventional holder of the type set forth includes a shank 10, connected rigidly at its inner end to one end of an arm 12, which forms part of a conventional creel. The shank is provided with a pair of oppositely disposed, bowed springs 14 which extend from a point near the inner end of the shank toward the outer or free end of the shank. The inner ends of the springs are secured in position by any suitable means such as a collar 16. The outer ends of the springs slidably engage corresponding ends of a through opening 18 provided near the other end of the shank.

The structure thus far described is useful for supporting a pirn having a cylindrical tube, in the manner shown in the above mentioned patents.

In order to provide improved means for adapting the conventional holder above described to the support of a cone, or other yarn carrying device, I use a first head 20 for supporting the large end of a conical cage embodying my invention and a second head 22 for supporting the small end of the cage. The cage itself is formed of relatively thin but relatively wide resilient members 24. In the illustrated embodiment, each strip 24 has its inner end portion 26 bent normal to the axis of the shaft and provided with a slot 28, for slidably engaging an ear or lug 30 on the washer 28.

According to my invention, the other or outer end of each of the strips 24 is rigidly secured to the outer head 22 by providing a recess 32 in the periphery of the head, placing the end of the strip in said recess and swedging the edges of the recess over the end of the strip as shown at 34 in Figs. 1 and 5. For this purpose, and in order to accommodate the wide strips 24, the exterior of the outer head 22 presents as many flat facets as there are strips. This can be readily seen from Fig. 4.
A cage constructed of the wide strips disclosed furnishes enough purchase so as to hold a conical tube in position without the aid of means which pierce or otherwise damage the relatively fragile tube. This is best observed in Figs. 2 and 4 from which it will be seen that the conical tube 36 engages each of the strips at two points A so that, if only three strips 24 are used, there will be a total of six points of contact which, together with the frictional engagement of the small end of the cage with the high ridges B on the head 22 are enough to hold the conical tube firmly in position but without in any way damaging the tube.

The conical cage of my invention is secured to the shank 10 by one or more set screws 38 which pass through threaded openings in the head 22 and engage recesses formed in the adjacent end of the shank. The set screws, preferably, also pass through the outer ends of the strips as shown in Fig. 4 more firmly to hold the strips in position.

In order to facilitate the task of applying my auxiliary holder to the shank when cones are to be used, and the task of removing the auxiliary holder when cylindrical bobbins are to be mounted on the bowed springs 14, I provide the inner head 20 and the outer head 22 with aligned U-shaped openings 40 which are large enough to admit the shank. In other words, when my auxiliary holder is to be used, it is merely necessary to lower the holder onto the shank 10 so as to cause the washer 26 and the head 22 to ride on the shank as clearly shown in Figs. 3 and 4. When the auxiliary holder is in this position, the set screws 38 are tightened. To remove the auxiliary holder, it is merely necessary to disengage the set screws and to lift the auxiliary holder off the shank. This is much easier than using a holder having apertured front and rear heads and forcing the apertured rear head to pass over and compress the bowed springs 14 every time the auxiliary holder is applied or removed. Also, repeated, extreme compression of the bowed springs 14, such as would necessarily take place every time the auxiliary holder is passed over these springs will, in time, reduce or destroy the resiliency of the springs 14. It will also be noted that the materials and the machine work involved in the manufacture of my auxiliary conical holder are appreciably less than those involved in the manufacture of any prior auxiliary holder of which I am aware.

While I have illustrated and described my improved holder as it would be used in connection with a conventional holder formed of a shank and bowed springs carried by said shank, it is to be understood that my holder is a self contained and fully operative device which can be used alone and independently of the bowed springs. For example, in a mill where only cones are used, the holder of my invention can be mounted on the shank 10 or its equivalent and the bowed springs 14 can be entirely omitted.

Also, it is within the scope of my invention to shape the strips 24 to form a resilient cylindrical core for mounting pins or other yarn carriers having cylindrical tubes. In other words my invention resides primarily in the provision of the openings 40 by means of which the holder can be lowered onto, or lifted from, a supporting shank, instead of being passed over, or having the shank threaded through the body of the holder, and, secondly, my invention resides in the manner in which the ends of the strips 24 engage and support the pin or cone without the use of teeth or other fastening means which can damage the pin or cone.

What I claim is:

1. A pin or cone holder including a support, spaced heads, elongated members, secured to, and connecting said heads, each of said heads having an opening leading from the periphery toward the center thereof, the openings in said heads being aligned and large enough to accommodate said support, and means for detachably securing at least one of said heads to said support.

2. The structure recited in claim 1 in which one of said heads is polygonal, there being recesses formed in the sides of said head for seating the adjacent ends of said elongated members, and in which the edges of said recesses are swaged over the ends of said members permanently to secure said members to said head.

3. The structure recited in claim 1 in which one of said heads is bigger than the other and in which said members form a conical cage like structure tapering from the vicinity of the bigger of said heads towards the smaller of said heads.

EDWARD J. McBRIDE.

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