

J. C. HEBDEN.
 JACK SPOOL.
 APPLICATION FILED NOV. 18, 1910.

1,062,005.

Patented May 20, 1913.

2 SHEETS—SHEET 1.

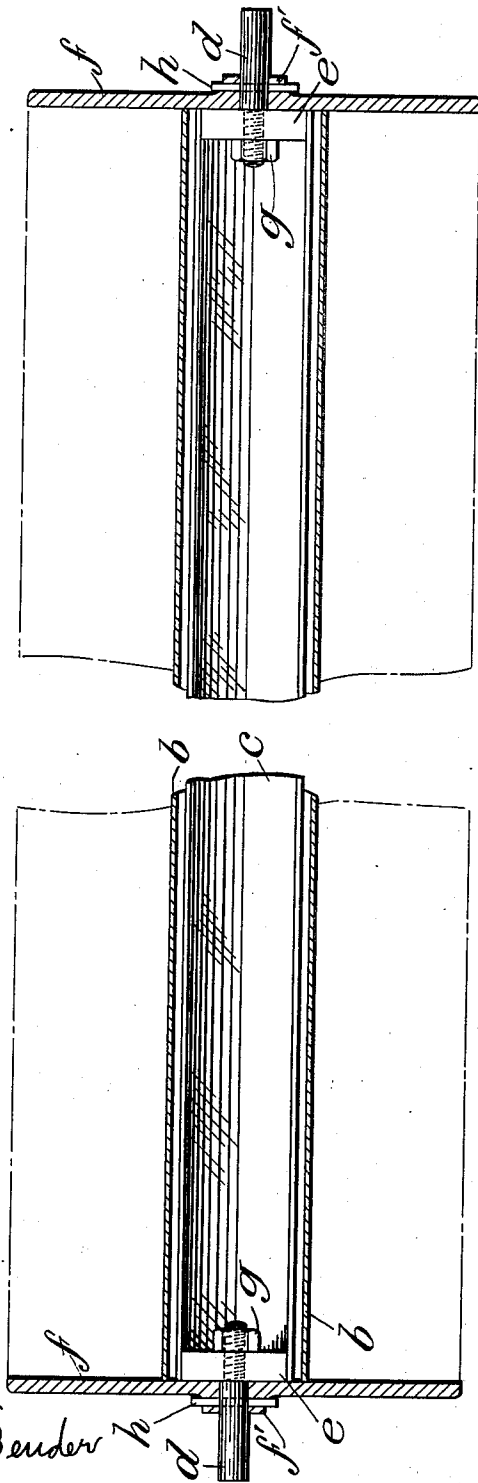


Fig. 1.

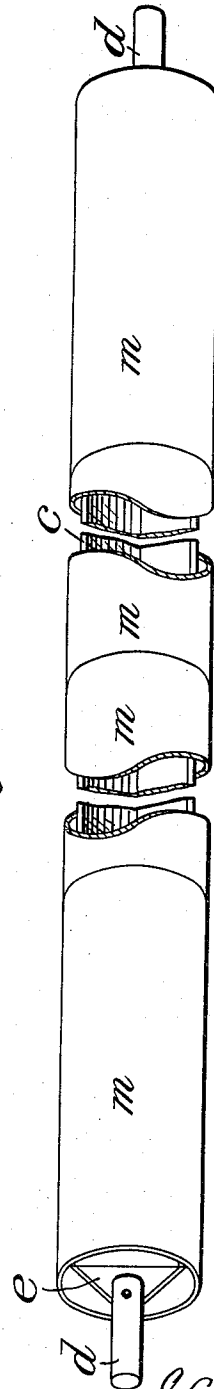


Fig. 2.

WITNESSES
 M. C. Bender
 C. D. Brown

INVENTOR
 J. C. Hedden
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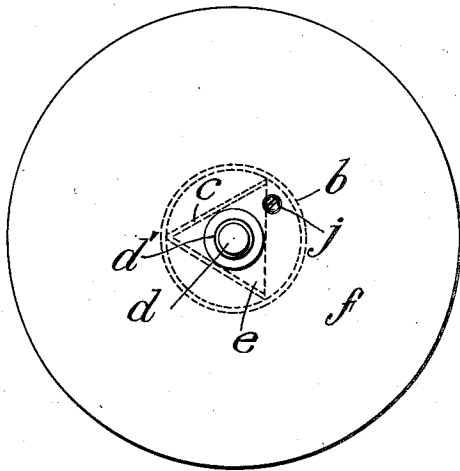


Fig. 3.

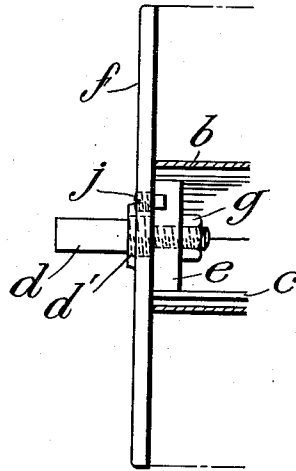


Fig. 4.

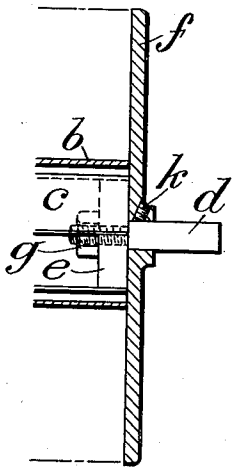


Fig. 5.

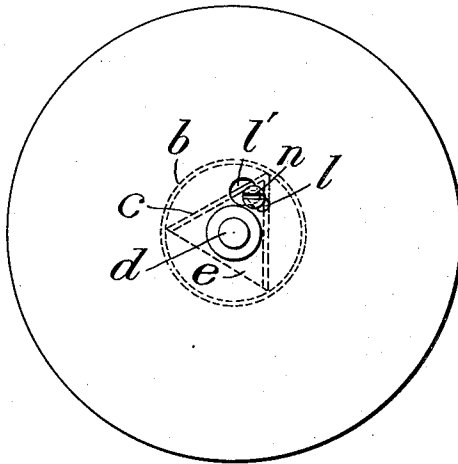


Fig. 6.

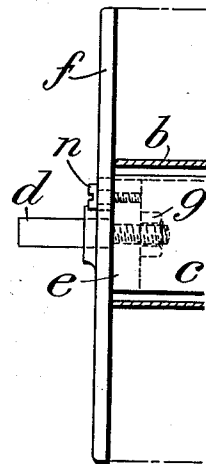


Fig. 7.

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UNITED STATES PATENT OFFICE.

JOHN C. HEBDEN, OF PROVIDENCE, RHODE ISLAND.

JACK-SPOOL.

1,062,005.

Specification of Letters Patent.

Patented May 20, 1913.

Application filed November 18, 1910. Serial No. 593,054.

To all whom it may concern:

Be it known that I, JOHN C. HEBDEN, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Jack-Spools, of which the following is a specification.

My invention consists of improvements in jack-spools or dresser-spools employed in handling warp or filling yarns.

The object of my improvement is to provide a knock-down spool or beam for supporting the yarn wound in multiple in such manner as to allow its removal from the spool without unwinding, so that the material can be shipped in the form of a package without the spool.

With this object in view I provide the spool with a detachable barrel which serves as a core for the yarn mass. The barrel, preferably in the form of a tube, is held on a central support or stringer having detachable end flanges or heads which can be removed to allow the removal of the barrel and package of yarn wound thereon.

The invention is fully set forth in the following specification, illustrated by the accompanying drawings, in which:—

Figure 1 is a longitudinal sectional view of my improved spool with the yarn mass represented by dot-and-dash lines; Fig. 2, a perspective view showing the tubular barrel mounted on the central support or stringer; Figs. 3 and 4, detail views showing a modification in the method of securing the end flanges or heads to the stringer; Fig. 5, a detail view showing another method of securing the heads; Figs. 6 and 7, detail views showing a still further modification.

In Fig. 1, *b* represents a tubular barrel supported on the stringer *c* between the heads or end flanges *f, f*. The stringer *c* is preferably constructed of angle-iron, as shown more clearly in Fig. 2, thus giving a three-point bearing within the tube *b*. The tube *b* may be of metal, wood, paper or fiber and preferably this last named material is used to provide the required stiffness with minimum weight. At both ends of the stringer *c* are metal blocks *e, e* fitted to the V-shaped trough of the angle-iron and secured in position by screws, pins or other

suitable fastening means. Secured in the blocks *e, e*, and projecting therefrom are studs *d, d*, located centrally of the apex and edges of the angle-iron and adapted to serve as gudgeons for supporting the spool to rotate in bearings on the winding or other machine. The studs *d, d* are here shown as screwed into the blocks *e, e* and the check-nuts *a, g* are screwed on to their inner ends against the inner faces of the blocks to secure them against turning when the spool rotates in its bearings. At the ends of the spool I provide the detachable heads or flanges *f, f* bored to fit the studs *d, d*. The flanges *f, f* abut the ends of the stringer *c* and are arranged to be held in place by any suitable means such as now described: In Fig. 1, the flanges are shown as formed with bosses or hubs *f', f'* and pins *h, h* are driven through holes in the bosses and registering holes in the studs to hold the flanges against the blocks *e, e*.

In Figs. 3 and 4 the bore of the flange *f* is shown as threaded to screw on to the threaded shank *d'* of the stud *d*. With this arrangement a set-screw *j* is screwed through the flange with its end abutting the edge of the block *e* to prevent the flange from unscrewing.

In Fig. 5 the flange *f* is shown as secured by a set-screw *k* screwed down through the hub of the flange to bind on the stud *d*.

Figs. 6 and 7 show still another method of fastening the flanges in position at the ends of the spool. In this modification each flange is provided with a "button-hold" or opening which consists of a slot *l'* and an enlarged orifice *l'*. A screw *n* is screwed into the block *e* in position to adapt its head to pass through the orifice *l'*. The flange is then turned to engage the shank of the screw with the slot *l'* and the head of the screw is set up against the face of the flange to bind the latter against the end of the stringer and hold it from turning.

The method of operation of my new device is as follows: The spool is assembled with the tube or barrel *b* held on the stringer *c* between the end flanges *f, f*. The three-point bearing of the stringer within the tube centralizes the latter in respect to the gudgeons *d, d*, so that it is concentric to the axis of the spool and the flanges are secured

on the gudgeons in any suitable manner as previously described. The spool is then applied to the winding machine and the yarn wound on to the barrel in multiple to build up a cylindrical mass between the flanges or heads. After the spool is filled it is taken from the winding machine and one of the end flanges is removed. The barrel *b* is then taken off the stringer and the yarn is supported solely by this barrel or tube *b* so that the packages of yarn can be packed and shipped in this form and the spool proper, consisting of the stringer and heads, is retained for further use in winding up more material. Heretofore it has been the usual practice to ship the yarn on the complete jack-spools and the spools are returned when emptied. This necessitates paying freight and cartage on the spools and the use of the spools is lost during the time that they are in transit. With this practice the yarn mill must have a great many more spools than are necessary for use in winding up the material and as the spools are sometimes lost or damaged in shipment the practice is far from economical. By the use of my present invention it is necessary to have only one set of spools at the producing mill and one set at the converting mill and these spools are kept constantly in use without loss of time in transit and the cost of freight and cartage is saved.

In some cases it is desirable to wind the yarn in separate packages on one spool, so that the whole mass can be divided into relatively small units. To provide for this, the barrel can be made up of a plurality of sections or relatively short tubes *m*, *m*, etc., as illustrated in Fig. 2. These sections are assembled on the stringer *c* in the same manner as with the single tube and their ends abut each other to form one continuous barrel for the spool. The yarn is wound on this form of spool with one or more ends built up on each tube section and the ends of the individual packages abut each other in close contact so that there is one continuous, cylindrical mass of yarn on the spool. When the end flange is detached from the spool the separate packages are taken off the stringer and can be handled and packed more conveniently than where the yarn is supported on one long tube. This method of spooling the yarn also provides for applying the individual packages to different uses and hence does not restrict it to use on a spool of definite length.

It will be observed that my improved spool provides for handling warp and filling yarns with greater convenience than when the material is wound on the usual form of jack- or dresser-spool and, furthermore, its use results in important economies in ship-

ment. The yarn can be wound up in package form on the spool, either in one continuous package or in several shorter ones, and then removed from the spool without unwinding or disturbing the integrity of the yarn mass in any way. The packages of yarn can be handled and shipped without the spool much more conveniently and economically and a less number of spools is required in manufacturing and converting the material. Furthermore, where the yarn on the spool can be broken up into component packages or units it is rendered more adaptable to diversified uses and can be applied to the processes of manufacture more economically.

It will be evident that various modifications might be made in the structure and arrangement of my improved device without departing from the spirit and scope of the invention;

Therefore, without limiting myself to the precise construction shown and described, what I claim is:—

1. In a knock-down jack-spool, the combination with an axially arranged stringer providing a three-point longitudinal bearing, of gudgeons on which the spool rotates fixedly secured at the ends of the stringer, a rigid, tubular barrel supported on the stringer concentric with the axes of the gudgeons, and flanges detachably secured at the ends of the stringer to adapt them to be removed to allow the removal of the barrel without removing the gudgeons.

2. In a knock-down jack-spool, the combination with an axial stringer providing a three-point longitudinal bearing, of gudgeons on which the spool rotates fixedly secured to the ends of the stringer, a rigid, tubular barrel supported on the stringer concentric with the axes of the gudgeons, and flanges mounted on the gudgeons abutting the ends of the stringer and adapted to be secured thereto to allow the flanges to be removed without removing the gudgeons.

3. In a knock-down spool or beam, the combination with a stringer *c* formed of angle-iron, of blocks *e*, *e* fitted to the trough of the angle-iron at the ends of the stringer, studs *d*, *d* extending axially from said blocks, flanges *f*, *f* mounted on the studs abutting the blocks, a rigid, tubular barrel supported on the stringer, and means to detachably secure the flanges in position against the ends of the stringer to allow them to be removed without removing the studs.

4. In a knock-down spool or beam, the combination with an axially arranged stringer having three bearing faces equidistant from the axis of the spool, a rigid, tubular barrel mounted on the stringer and

held concentric with the axis of the spool
by the three bearing surfaces, axial gud-
geons extending from the ends of the
stringer, and flanges detachably secured to
5 the ends of the stringer and adapted to be
removed therefrom to allow the removal of
the barrel without removal of the gudgeons.

In testimony whereof I affix my signature
in presence of two witnesses.

JOHN C. HEBDEN.

Witnesses:

ARTHUR A. ARMINGTON,
GRACE W. BROWN.