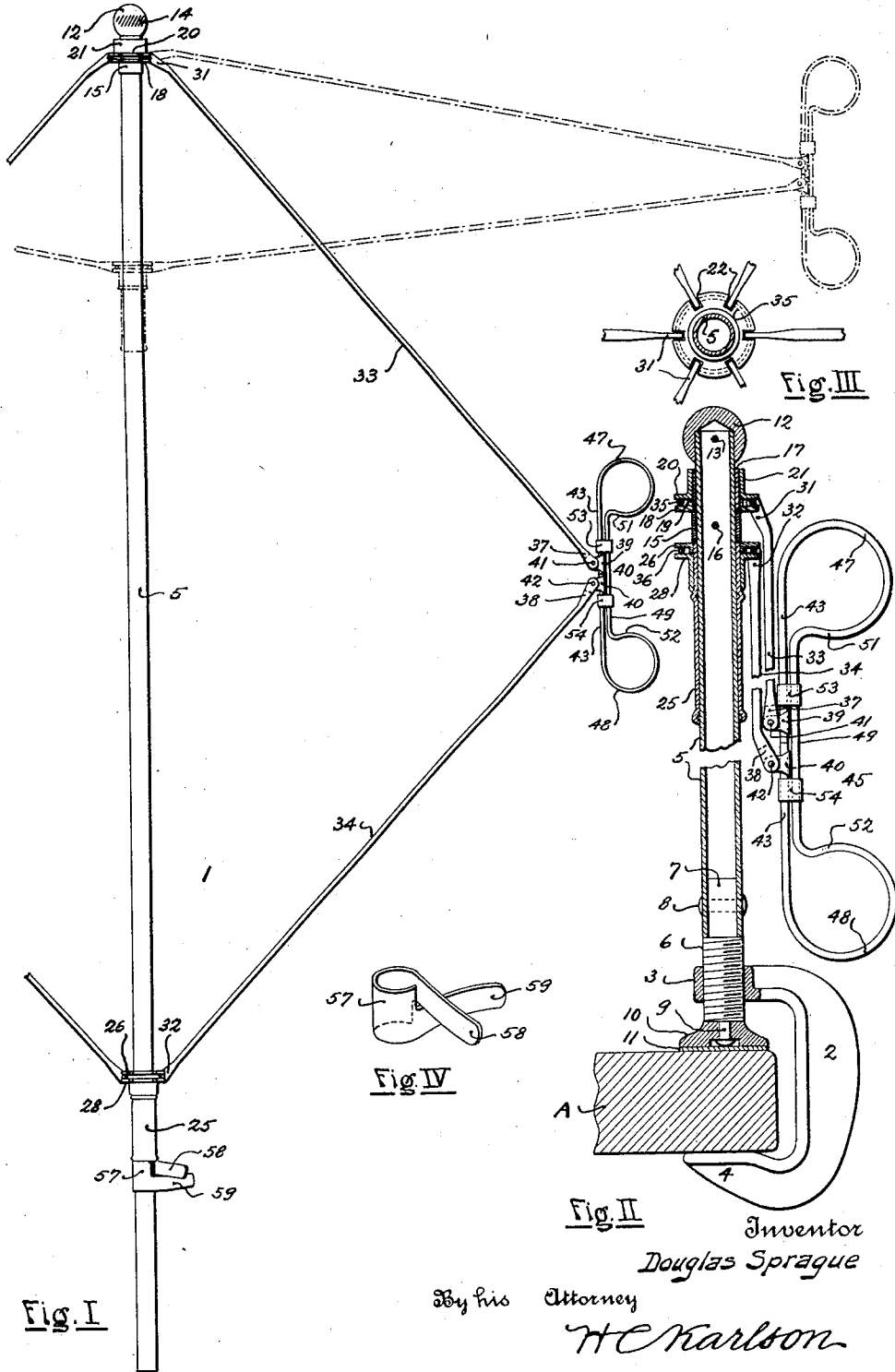


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REEL.

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REEL.

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To all whom it may concern:

Be it known that I, DOUGLAS SPRAGUE, a citizen of the United States, and a resident of the city of Mount Vernon, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Reels, of which the following is a specification.

This invention relates to collapsible reels and it especially appertains to a device for winding and unwinding skeins of cotton or woolen yarn and the like.

One of the objects of the invention is to produce an improved device of the nature set forth that will efficiently perform the function of reeling or unreeling skeins of yarn of any desired size within the compass of the apparatus, and which when not in use may be folded to a compact form convenient for storage and shipment.

A further object is the production of a device of the type specified equipped with yarn holders kept in alinement at various points of extension by the application of the yarn thereto, and which holders are self-righting when collapsed against a central support of the apparatus.

Another object is to provide a device of the species mentioned wherein one end of the central carrier is utilized as a clamping member of an attachment for holding the apparatus to a table or other primary support.

A still further object is to arrange a device of the character described so that certain extensible members included therein will become collapsed when the inner ends of the members are placed in apposition.

Still another object is the provision of a device of the kind referred to having a spring clasp which can be readily manipulated to maintain the yarn holding parts of the apparatus in selective positions.

An additional object is to construct a device of the class alluded to which shall be strong, neat, light and amenable to low cost of production as well as easily repaired.

Other objects and advantages of the invention will become apparent as the specification proceeds.

With the aforesaid objects in view, the invention consists of the novel combinations and arrangements of parts hereinafter described in their preferred embodiments, pointed out in the subjoined claims, and illustrated in the annexed drawing, wherein

like parts are designated by the same reference characters throughout the several views.

In the said drawings:—

Figure I is a fragmentary side elevation of this improved yarn reel, a changed position of some of the parts being indicated in dot-and-dash lines, and other parts omitted;

Fig. II is a fragmentary sectional elevation of the reel with parts thereof in a collapsed state;

Fig. III is a fragmentary plan view of the upper portion of the reel, a part being shown in section; and

Fig. IV is a perspective view of a spring clip included in the construction of this reel.

Generally described, the invention comprises a central tubular stem or upright constituting the main carrier for the device. At the upper part of this carrier is rotatably mounted a non-slidable spacing sleeve or flanged connection, and below the latter is a similar sleeve or connection but which is both rotatable as well as axially translatable on the stem. Hingedly coupled to these sleeves by their inner ends are extensible members or carrier arms of substantially equal lengths, the outer extremities whereof are pivotally connected to holders or keepers adapted to receive and carry a skein of yarn placed thereover. Each pair of these arms have one of their opposed terminals bent or offset so that when they are folded along the stem, the holders will remain in parallelism therewith. The means for maintaining the slidable sleeve at a desired elevation on the stem and thereby increase or decrease the distance between the yarn holders consists of a bifurcated spring clip which may be readily shifted from one position to another. For the purpose of fastening the stem and thereto connected elements to a primary support, such as the edge of a table or the like, an attachment is provided. The latter may be composed of a U-shaped bracket, the coacting clamping member whereof may be the lower end of the stem which is screw-threaded.

The advantages of the invention as here outlined are best realized when all of its features and instrumentalities are combined in the one and same structure, but, useful devices may be produced embodying less than the whole.

It will be obvious to those skilled in the art to which the invention appertains, upon

becoming conversant with the details thereof, that the same may be incorporated in several different constructions. The accompanying drawing, therefore, is submitted only as showing the preferred exemplification of the invention.

In the embodiment of the device under consideration, the numeral "1" designates the reel in its entirety, and "2", a clamp engaging the edge of a table or other suitable primary support "A" to which the reel is firmly attached by the clamp.

The exemplification of the invention represented in Fig. II shows this clamp as consisting of a U-shaped bracket applied so as to have its internally threaded socket 3 above the support "A" while the opposed jaw 4 thereof takes under the latter.

The said socket 3 is arranged to receive the correspondingly threaded lower extremity of a tubular stem or upright 5 constituting the carrier part of standard of the reel. To this end a screw 6 having the threads thereof in engagement with the socket 3 of the clamp is provided with a reduced shank 7 fitted to the interior of the lower terminus of the said post 5 and secured thereto as by means of a transverse pin 8. The said screw 6 forms the coaxing clamping member of the U-shaped bracket "2" and is provided opposite the shank 7 with a neck 9 upon which a foot washer 10 is loosely held or swiveling, as by upsetting the extremity of the former. The under face of the washer 10 may be lined with leather or other suitable material 11 so as to protect the top surface of the table "A" from injury when the clamping member 6 is screwed down. In order to enable the latter and the thereto connected post 5 to be readily turned to apply a binding pressure, or release the same, the upper extremity of the said post has a knob 12 affixed as by means of a pin 13 passing cross-wise therethrough, which knob may be knurled as indicated at 14 for convenience in manipulation.

Between the said knob 12 and a collar 15 also secured by a pin 16 to the central carrying post 5 is rotatably mounted a spacer ferrule, or flanged connection 17. In its preferred construction this spacer is composed of an inner sleeve (17) carrying a pair of flanged collars. One collar 18 with a short neck 19 is disposed around the lower portion of the said sleeve 17 and another flanged collar 20 is spaced with its flange away from the companion flange 18 the depth of the neck 19 of the latter. The said other flanged collar 20 has a neck 21 which as shown surrounds the remaining upper portion of the sleeve 17. Both of the flanges of the collars 18 and 20 have the peripheries notched in a plurality of places as indicated at 22, Fig. III, the object of which will be more fully hereinafter referred to.

Co-acting with the spacing sleeve 17 below the pinned collar 15, is another ferrule connection 25 which is rotatable as well as axially translatable on the central post 5. The last named connection consists of a somewhat extended sleeve (25) that carries at the upper portion thereof other flanged collars 26 and 28, similar but in an inverted relation to the flanged collars 18, 20 first mentioned, and notched in a like manner.

In the notches provided through the double flanges of the relatively fixed and movable spacing sleeves 17 and 25 are received the inner flattened or swaged ends 31, 32 of extensible members or carrier arms 33, 34, which ends are hingedly coupled to their sets of flanges, as by rings of wire 35, 36 respectively.

The said arms 33, 34 may have their outer ends 37, 38 bifurcated so as to straddle clips 39, 40 and be pivotally connected thereto as by short headed studs 41, 42 respectively. These clips are clasped over the rear portions 43 of yarn holders 45. The latter are formed each of a single piece of wire bent into upper and lower loops 47, 48 respectively, which are integral with an inwardly offset part 49 affording ledges 51, 52 for retaining the yarn placed or wound thereon. Bands 53, 54 envelop the adjoining portions of the rear and front wire strands 43 and 49 respectively so as to impart to the yarn holders the required rigidity.

The arms 33, 34 are connected to the yarn holders 45 in pairs. The upper arm 33 has its inner extremity bent as at 31, while the lower arm 34 has the outer end thereof offset as at 38, by virtue of which the said holders become self-righting, and lie in parallelism with the post 5 when the relatively fixed and the slidable spacer sockets 17 and 25 respectively are in apposition, or in other words, when the apices of the inner ends of the arms are juxtaposed, as best represented in Fig. II. Due to this construction a wide range of expansion and contraction of the yarn holders, to accommodate different sizes of skeins, can be had with comparatively limited height or length of the central carrier post.

The means for carrying the slidable spacer 25 at the desired elevation on the post 5 is indicated most clearly in the perspective view Fig. IV, and consists of a spring clip having its sleeve portion 57 curved so as to snugly envelop the major part of the circumference of the said post. The meeting edges of this sleeve are cut away in staggered arrangement on opposite sides of a central transverse plane passing through the same, and from the remaining offset edges thereof extend arms 58, 59 which cross each other in overlapping relation. When these arms are pressed together or toward one another the sleeve will be forced partly open

and may be raised or lowered at the volition of the operator, who by letting go of the said arms permits the sleeve to automatically close and grasp the stem again.

5 The position of the arms 33, 34 represented by dot-and-dash lines in the upper part of Fig. I shows the maximum extensibility of the yarn holder 45. By reason of the double but free pivotal connections 41, 42
10 at the outer ends of the arms 33, 34 the yarn passing from one to the other of the holders 45 will maintain them substantially parallel one with the other and with the central carrying stem 5.

15 The operation of the device will be obvious from the foregoing description. However, it is well to note that a convenient method of opening the appliance from the collapsed state pictured in Fig. II, is to invert the same so that the central carrier post
20 will point downward, with the clamp uppermost. By so doing the pairs of arms will naturally spread out of their own weight and at the same time the slidable sleeve can
25 readily be reached and pulled away from the nested arms. After which the post may be righted to set the reel in its normal position. The post is now ready to be clamped to any
30 suitable primary support. The next step is to adjust the yarn holders to the size of skein to be unreeled by raising or lowering the slidable sleeve through the agency of the spring clip. Thus positioned, the arms
35 with the holders, are free to revolve around the stem while the yarn is either wound or unwound. If a larger skein is desired the slidable sleeve is run up to the proper elevation, and conversely it is brought lower
40 down if a smaller skein is desired.

While a certain preferred embodiment of this device has been shown and described, it will be understood that changes in the form, arrangements, proportions, sizes and details thereof may be made, without departing
45 from the scope of the invention as defined by the appended claims.

Having described my invention what I desire to secure by Letters Patent and claim, is:—

50 1. A device of the character described, comprising in combination, a carrier adapted to be attached to a primary support, holders for the material to be reeled or unre-
55 hingedly connected at their opposite ends to the latter and said holders, the connections on the carrier being such that the juxtaposition thereof folds the arms one within another and draws the holders toward the
60 carrier, while their separation causes the arms with the holders to spread apart.

2. A device of the character described, comprising in combination, a central post attachable to a primary support, holders for
65 the material to be wound or unwound dis-

tributed at various intervals apart about said post, and sets of arms having pivotal connections with both the post and said holders, said arms being so connected with the post as to enable one set thereof to fold
70 within the other, the folding of the arms within one another permitting the employment of a comparatively short post while allowing the holders to lie close alongside the same.

3. A device of the character described, comprising in combination, a centrally disposed supporting member, a series of holders for the material to be reeled or unre-
80 located around said member, sets of arms pivotally jointed at their outer ends to said holders, and connections on the supporting member joining it with the inner ends of
85 said arms, one of said connections being relatively fixed and the other movable, the inner ends of one set of arms having an offset juncture with the fixed connection while the outer ends of the other set have a similar
90 junction with the holders, whereby both sets of arms are enabled to lie substantially parallel with the holders by the sides of the member when the said connections are
brought together in apposition.

4. A device of the character described, comprising in combination, a stem capable of
95 being attached to a primary support, holders for the material to be wound or unwound disposed about said stem, a tubular connection rotatably secured to one terminal of the latter, a set of arms hingedly joining
100 said holders with said connection, another tubular connection mounted to slide on the stem, a second set of arms directly joining said slidable connection with the holders in
105 such a manner as to permit interfolding said sets of arms, and a spacer fixed to the stem so as to sustain the first named connection in its operative position thereon, said tubular
110 connections consisting each of a sleeve-like member and paired flanges associated therewith affording means of attachment for the inner ends of the arms.

5. A device of the character described, comprising in combination, an upright attachable to a primary support, a connection
115 rotatably secured to said upright near one end thereof, another connection slidably mounted on the upright, sets of arms pivotally coupled by their inner ends to said
120 connections respectively so as to enable the arms to interfold, and holders similarly connected with the outer ends of said arms, said holders consisting each of a single wire bent to form retaining ledges for the material to be reeled or unre-
125 eled and arranged to extend below their connections with the arms when the latter are folded.

6. A device of the character described, comprising in combination, a standard adapted to be attached to a table or the like,
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interfoldable sets of arms hingedly connected by their inner ends with said standard, the inner ends of one of said sets being revolubly fixed to the standard while the
5 corresponding ends of the other set are arranged to slide thereon, holders formed of wire embodying retaining portions for the material to be wound or unwound, and clips
10 constituting hinge elements connecting said holders with the outer extremities of said arms, said clips being spaced apart to permit a certain oscillatory movement of the holders relatively to the arms in order to
15 accommodate the former to the material applied thereover.

7. A device of the character described, comprising in combination, a centrally disposed carrier, means for attaching the same
20 to a primary support, holders for the material to be reeled or unreel arranged therearound, sets of arms capable of interfolding and connected by their outer ends hingedly
25 to said holders, tubular members surrounding said carrier, one of said members being rotatably held at or near one terminal of the latter and pivotally joining it with the
inner ends of one of said sets of arms, the

other member similarly coupling the corresponding ends of the second set of arms to the carrier and being arranged to slide there- 30 on, and a separate element embracing the carrier and translatable thereon; so as to sustain the last named number in predetermined locations, thereby maintaining the
35 holders in selective positions.

8. A device of the character described, comprising in combination, a post, means for attaching it to a primary support, holders for the material to be wound or unwound,
40 sets of arms pivotally connected by their outer ends to said holders, a ferrule rotatably secured on said post and hingedly coupling thereto the inner ends of one set of
45 said arms, another ferrule slidable on the post and similarly joining the same to the corresponding ends of the other set of arms, and a self-tightening element axially movable along the post intermediate of said
50 attaching means and said slidable ferrule, whereby the latter may be shifted to selective locations to extend the holder so as to suit various requirements.

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