June 12, 1934. H. F. BURTON 1,962,681

CREEL

Filed March 24, 1930 2 Sheets-Sheet 1

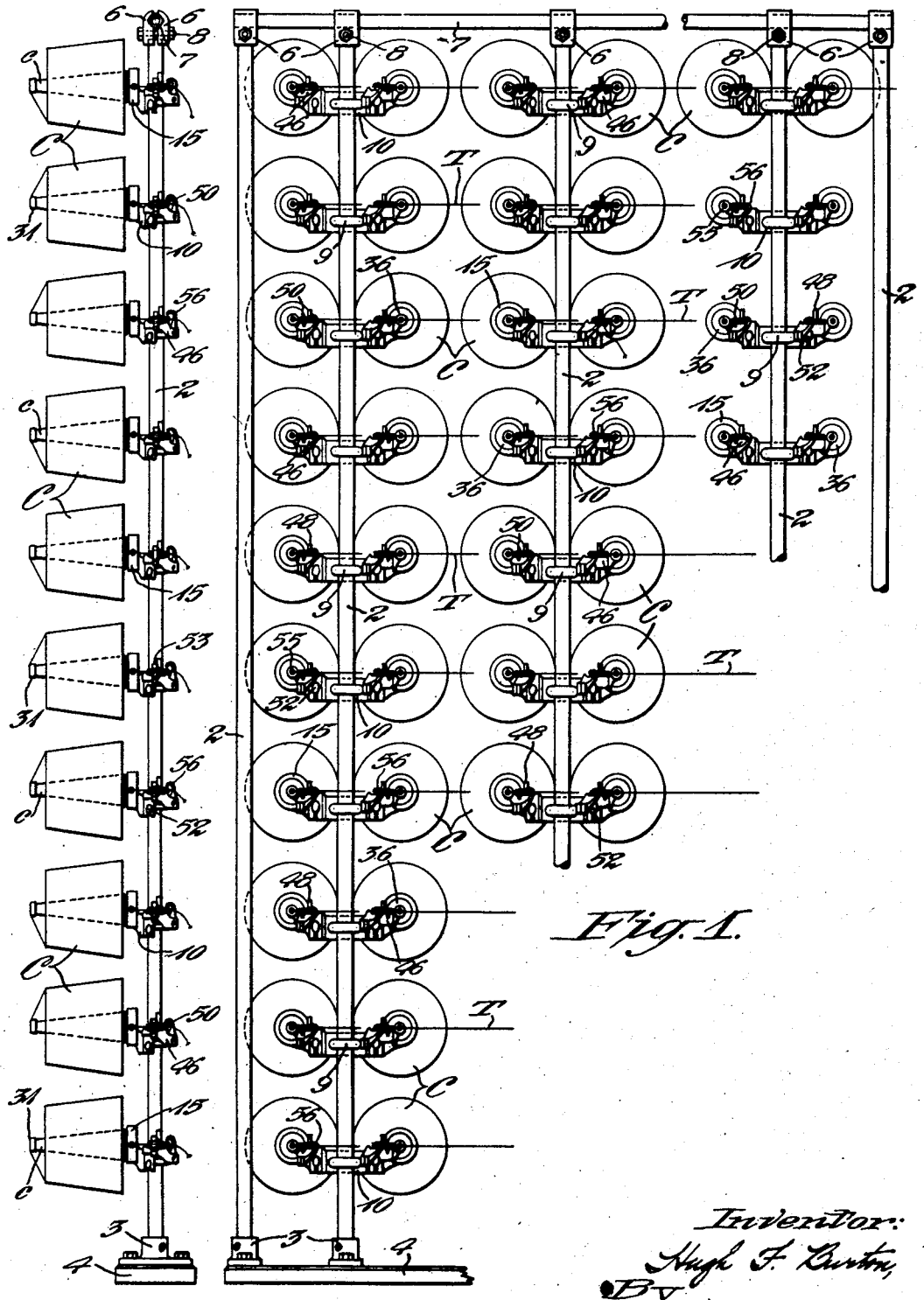


Fig. 1.

Fig. 2.

Inventor:
Hugh F. Burton,
By
Watson, Cole, Grindle & Watson,
Attorneys.

June 12, 1934. H. F. BURTON 1,962,681

CREEL

Filed March 24, 1930 2 Sheets-Sheet 2

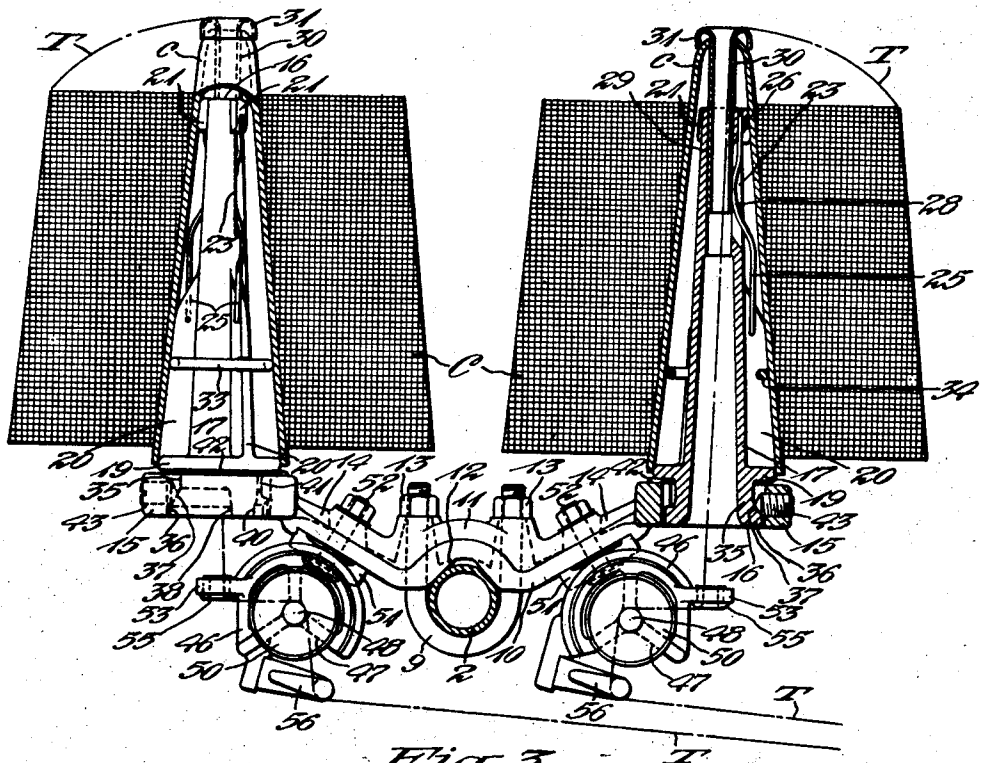


Fig. 3.

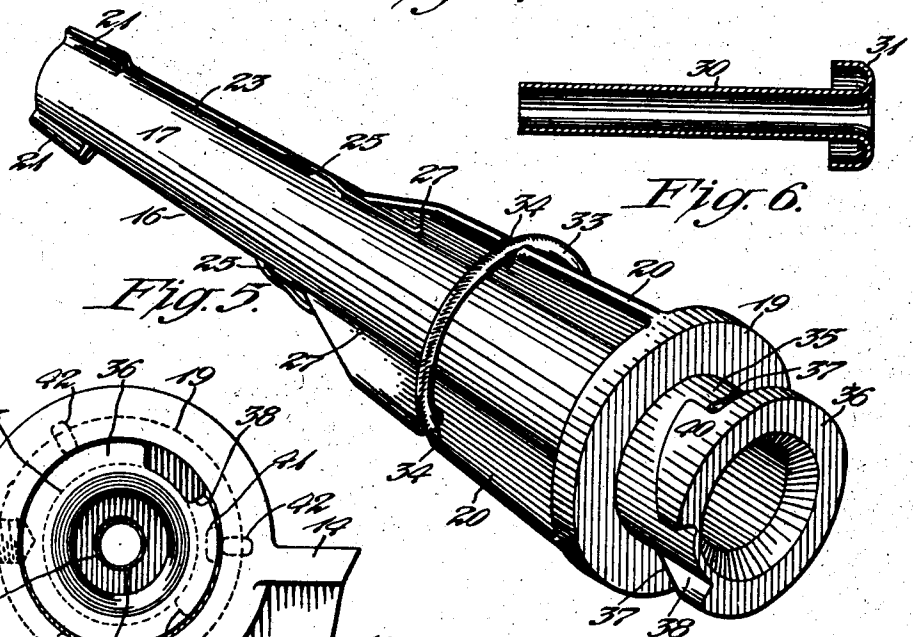


Fig. 5.

Fig. 6.

Fig. 4.

Inventor:
Hugh F. Burton,
By
Watson, Cole, Grosvenor & Goodrich,
Attorneys.

Patented June 12, 1934

1,962,681

UNITED STATES PATENT OFFICE

1,962,681

CREEL

Hugh F. Burton, Providence, R. I., assignor to Universal Winding Company, Boston, Mass., a corporation of Massachusetts

Application March 24, 1930, Serial No. 438,615

14 Claims. (Cl. 242—131)

This invention relates to creels for holding cops, cones and other forms of packages of thread, yarn and the like to deliver the strands in multiple in various transfer processes of the textile art.

One object of the invention is to provide a creel having improved means for supporting the cops, cones or packages to adapt the strand material to be drawn off over the end thereof at a high rate of speed without "ballooning" and with a uniform tension on all of the ends.

Another object of the invention is to provide a creel in which the supplies are arranged in close association to economize in space while permitting easy access to the packages and their ends in doffing, re-creeling and piecing up.

Another object of the invention is to provide a creel of the type indicated having tension-means arranged in close association with the packages to further economize in space and facilitate the threading up of the strands.

Another object of the invention is to provide a creel from which the material may be delivered at a high rate of speed without danger of the strand dragging or catching on the end of the cop tube or thread-carrier on which the package is wound.

Further objects of the improvement are set forth in the following specification which describes a preferred form of construction of the invention, by way of example, as illustrated by the accompanying drawings. In the drawings:

Fig. 1 is a side view of a portion of the improved creel showing a plurality of supply cops or cones mounted thereon;

Fig. 2 is an end view of the same;

Fig. 3 is a plan view showing a pair of the supply-holders with one of them illustrated in section on its longitudinal axis;

Fig. 4 is an end view of the cone-holder showing its method of support;

Fig. 5 is a perspective view of the cone-holder removed from its arm or support; and

Fig. 6 is a sectional view of the strand-guiding tube or quill through which the thread feeds axially of the cone-holder.

It is to be understood that the term "thread" as used in the specification and claims is intended to designate any kind of strand material, and that the term "cone" is employed for convenience to indicate broadly any type of supply package.

The present improved creel may comprise a framework of any preferred construction and, as herein illustrated, it is composed of vertical posts or uprights 2 mounted in sockets 3 which are supported on wooden strips or skids 4. The uprights 2 may consist of rods or pipes and at their upper ends are clamps 6 which connect them to horizontal struts or ties 7. As herein shown the clamps 6 are secured in place on both the vertical and horizontal pipes by means of single bolts 8.

The supply-holders which form one feature of improvement of the present invention are mounted on brackets 10, and for the sake of compactness and to economize in the cost of construction they may be grouped in pairs with a single bracket supporting two holders. As shown most clearly in Fig. 3 of the drawings, each bracket 10 comprises a clamping-portion 11 having a V-shaped notch 12 adapted to engage against the side of the tubular upright or pipe 2 and to be clamped thereto by means of a U-bolt 9 looped around the pipe and extending through holes in the bracket with nuts 13 for securing the parts in place. The bracket 10 has two opposite arms 14 extending at an angle to each other and substantially radially of the upright 2. At the ends of the arms 14 are annular sockets or hubs 15 into which the ends of the cone-holders 16 are inserted and secured by a novel construction of means as later described.

Each cone-holder 16, one of which is shown in perspective view in Fig. 5, is constructed with a hollow tapered barrel 17 projecting axially from an annular flange 19 at its base end. Relatively narrow longitudinal ribs 20 project radially from the barrel 17, extending throughout substantially one-half the length of the cone-holder and merging into the base flange 19. In the present illustration of the invention, three ribs 20 are provided on the cone-holder, they being spaced equidistantly therearound; while at the smaller or outer end of the barrel 17 are shorter ribs or lugs 21 disposed in the same relative position circumferentially thereof. The outer portion of the barrel 17 is slotted to provide relatively narrow slits 23 for receiving a plurality of wire springs 25 which extend in alinement with the ribs 20 and function for a purpose as later explained.

The spring wires 25 have their outer ends slidably held in holes 26 drilled longitudinally of the lugs 21, see Fig. 3, and their opposite ends are bent over to hook through suitable holes 27 in the ribs 20. The springs 25 are bowed inwardly at 28 to adapt them to project through the slits 23 and into the bore of the barrel 17. It will be noted by reference to Fig. 3 that the outer end of the cone-holder has a straight bore at 29 adapted

to receive a tube or quill 30 inserted into its end. The tube or quill 30 has its outer end flanged over at 31 to form a mushroom-shaped head which overlies the end of the cone-tube c or other carrier on which the thread forming the cone C is wound. The quill 30 is inserted into the end of the bore of the cone-holder 16 after the cone C has been placed thereon so that the flange 31 abuts against the rounded end of the paper cone-tube c. The mushroom head of the quill 30 therefore serves as a guard for the rough end of the tube and functions as an eye or guide for the thread T which draws radially inward from the periphery of the cone and through the quill in the manner as later explained.

The quill 30 is held in place in the cone-holder 16 by means of the bowed portions 28 of the springs 25 which engage frictionally with its surface. The cone-tube c is secured in place on the holder through the frictional engagement of the ribs 20 and lugs 21 with its interior, and in some cases a split spring-ring 33 is provided as an expansion element to further grip the interior of the tube. As shown in Fig. 5, the split ring 33 is held in slots 34 cut through the ribs 20 and its outer periphery is preferably knurled or roughened to adapt it to bite into the interior of the cone-tube c.

The base end of the cone-holder 16 is provided with a neck-like support 35 constructed somewhat in the form of a bayonet joint to provide means for securing it within the annulus or socket 15 on the bracket 10. As shown most clearly in Fig. 5 the neck 35 has an end flange 36 formed with a tapered side 37 and interrupted by a radial slot or opening 38, see Fig. 4. Extending circumferentially beyond one side of the opening 38 is a tapered or inclined lug 40, the inner side of which is adapted to ride across a lug or projection 41 projecting inwardly from the bore of the annulus or hub 15. The flange 36 on the end of the cone-holder 16 is inserted into the bore of the annulus 15 with the opening 38 registering with the lug 41. The cone-holder is then turned anti-clockwise, as viewed in Fig. 4, so that the inclined face of the lug 40 on its flange 36 will be caused to ride across the lug 41 to draw the neck 35 through the annulus 15 to bring the flange 19 against its side. A plurality of lugs or projections 42 are provided on this side of the annulus 15 to form a three-point bearing whereby the end of the cone-holder will find a secure fit. A set-screw 43 inserted through a threaded hole in the side of the annulus 15 has a pointed end which is tightened against the tapered side 37 of the flange 36 to clamp the cone-holder in place with the lug 40 serving as a lock therefor.

It has been noted that in the present improved form of creel the strand of thread or other material leads off from the periphery of the cone or supply package C and draws inwardly to pass axially through the quill 30 and the bore of the cone-holder 16 and emerges at the base end of the latter. This arrangement provides for locating the tension-devices in close relationship to the cone-holders to economize in space and also adapts them to be supported on the brackets 10 whereby to simplify the construction. Any preferred form of tension means may be used for tensioning the strands feeding from the supplies and, as herein shown, a plurality of disk-tension devices are employed for this purpose. As shown in Figs. 1 and 3, each tension-device is mounted on a bracket 51 having a skeleton shelf 46 with a rim of generally circular form. Radial arms or ribs 47 extend inwardly from the rim to support a vertical pin or post 48 axially thereof. A pair of tension-disks 50 are rotatively mounted on the pin or post 48 to adapt the thread T to draw therebetween and around the post. The tension-bracket 51 is clamped to the rearward side of the arm 14 by means of a suitable bolt 52. Projecting from one side of the shelf 46 is a lug 53 formed with an opening in which is fitted a porcelain or like vitreous guide-eye 55 arranged in alinement with the axis of the cone-holder 16. The thread T leads through the eye 55, thence draws between the tension-disks 50 and around the post 48 to pass out of the tension-device at a point opposite a hook-shaped guide-arm 56. From the guide-hook 56 the thread is directed along the side of the creel to deliver to the warping-machine or other apparatus used in the transfer process. The method of operating the improved creel is as next explained.

It will be understood that the cone-holders 16 are permanently affixed to the brackets 10 which support them on the uprights 2, any suitable number of supplies being used on the creel in accordance with requirements and the number of brackets being one-half the whole number of cones in use. In creeling the supplies the cones C are slipped onto the cone-holders 16 after the quills 30 have been removed from the ends thereof. As each cone is placed on its holder the ribs 20 thereof frictionally engage the interior of the tube c and the spring-ring 33 provides a further gripping element for retaining the cone in place. After the cone C has been placed on its holder the quill 30 is inserted through the opening in the rounded nose of the cone-tube c and pushed into the bore 29 to be frictionally retained in place by engagement with the wire springs 25. In applying the quill 30 to position care is taken to press the rim of its mushroom head 31 against the rounded end of the cone-tube c to cover any rough edges thereon so as to protect the thread from being cut or abraded. The end of the thread T is drawn inwardly from the periphery of the cone C and threaded into the bore of the quill 30, a thin brush resembling a pipe-cleaner being pushed through the quill and engaged with the strand to thread it clear through the bore of the holder 16. The end of the strand is then picked up and threaded through the guide-eye 55, drawn around the circular rim of the tension-bracket shelf 46 to lead it between the convex faces of the tension-disks 50; and thence it is led outwardly around the guide-hook 56 to be drawn along the creel to feed to the warping or other machine. Each supply package or cone is creeled in this manner and its end threaded through the cone-holder and led through its related tension-device before carrying it to the warping machine or other apparatus which reels off the multiple ends.

As the thread is drawn off to wind a spool or beam the operator or attendant pieces up broken ends in the usual manner, this operation being expeditiously performed by simply threading the end from the cone through the quill and the hollow holder and drawing it into the tension-device. When the thread in the supplies is exhausted the operation of the machine is arrested and a fresh supply of cones creeled and threaded up in the same manner.

The present improved creel is especially adapted for delivering silk, rayon and other glazed threads or yarns which cannot be properly han-

dled on known types of creels of the prior art. The drawing of the thread radially inward from the periphery of the cone to cause it to deliver axially of the latter effectually prevents ballooning of the strand as it unwinds from the surface of the package. Such ballooning tendency is always present when the thread is unwound from the surface of a non-rotatable supply package and the ballooning increases in extent as the distance between the package and the tension-device or other guide is lengthened. On the other hand, it is impracticable to place the tension-device close to the nose of the cone, but with the present improved construction a compact arrangement of the tension-means is secured. That is to say, the tension-device is placed in close association with the base end of the cone and the ballooning prevented by drawing the thread radially inward to feed it through the axial opening of the cone-holder. Due to these provisions the thread may be unwound at a very high rate of lineal speed with the ballooning tendency overcome so that there is no danger of the strand flying out and catching on projecting parts of the creel. Furthermore, due to the fact that ballooning is eliminated the cones may be placed in close relationship to economize in space and render the whole creel less extensive to conserve the time and labor of the operator or attendant.

While the present improved creel is herein shown and described as embodied in a preferred form of construction it is to be understood that various modifications may be made in the structure and arrangement of the device without departing from the spirit or scope of the invention. Therefore, without limiting myself in this respect, I claim:

1. In a supply-holder for creels or the like, the combination of a member adapted for insertion into the cop-tube of a thread package and having an axial passage extending therethrough, and a tubular quill insertable into the supply-holder and provided with an outwardly flaring portion extended rearwardly in an annulus concentric with its tubular portion and of a diameter slightly greater than said tubular portion to adapt it to overlie the rounded end of the cop-tube with its inner edge in engagement therewith to serve as a guard and guide for directing the thread through the axial opening in the supply-holder to prevent the thread from contacting with the end of the tube as it unwinds from the package.

2. Means for supporting thread packages on a creel or the like comprising a relatively stationary supply-holder having an axial opening extending therethrough, means on the exterior of the supply-holder for gripping the tube or carrier on which the thread is wound, a quill having a tubular portion insertable into the end of the supply-holder and provided with a flaring head adapted to abut the end of the tube or carrier whereby to direct the thread leading from the periphery of the package axially through the supply-holder and prevent it from dragging on the end of the tube, and resilient means in the axial opening of the supply-holder for frictionally gripping the quill to retain it in operative position.

3. Means for supporting thread packages on a creel or the like comprising a relatively stationary supply-holder formed with an axial passage terminating in a cylindrical bore, means for gripping the tube of the supply package to the holder, a quill having a tubular portion for insertion into the cylindrical bore of the supply-holder and provided at its end with a flaring head adapted to seat against the end of the tube on which the package is wound to guide the thread through the holder while preventing it from dragging on the tube, and a spring within the axial bore of the supply-holder for releasably retaining the quill in place.

4. Means for supporting thread packages or the like to deliver their ends from a creel comprising a supply-holder having an axial passage extending therethrough, means for retaining the package in place on the holder, a tubular quill adapted for insertion into the bore of the supply-holder and formed with a flaring head for guiding the thread therethrough, and a spring projecting into the bore of the supply-holder and engaging the quill to frictionally retain it in place.

5. Means for supporting thread packages comprising a supply-holder having an axial opening extending therethrough and a longitudinal slit in its side, a tubular quill adapted for insertion into the end of the supply-holder and having a flaring head for guiding the thread therethrough, and a spring extending longitudinally of the supply-holder with a bowed portion seated in the slit therein and projecting into the interior thereof to frictionally engage the quill to retain it in place.

6. Means for supporting thread packages comprising a conical supply-holder having an axial passage extending therethrough and longitudinal ribs on its surface for frictionally engaging the interior of the tube or carrier on which the thread package is wound, said holder formed with longitudinal slits in its side, a quill having a tubular portion adapted for insertion into the axial opening of the supply-holder, and spring-elements having their ends secured to the ribs on the supply-holder and provided with bowed portions extending through the slits thereof to engage the exterior of the quill to frictionally retain it in place.

7. The combination of a supply-holder having a body portion with an axial opening extending therethrough, exterior ribs extending longitudinally throughout a portion of its length and provided with lateral holes, lugs at one end of the holder formed with longitudinal holes, said body portion also provided with radial slits, a quill having a tubular portion adapted for insertion into the end of the axial opening in the supply-holder, and wire springs secured in the holes in the ribs with their opposite ends projecting into the holes in the lugs and formed with bowed portions projecting through the slits in the sides of the holder to engage the quill to frictionally retain it in place.

8. In a device of the type specified, a supporting bracket having an annulus formed with a lug on its interior, a supply-holder having an axial opening and formed with a neck at one end having an annular flange for insertion into the opening in the annulus, said flange provided with a tapered lug adapted to ride against the lug on the interior of the annulus to hold the neck of the holder within the annulus, and a set-screw extending through the annulus and engaging the annular flange on the neck of the holder to fixedly secure the parts together.

9. A creel comprising a framework, a plurality of brackets having means for clamping them to the framework and each provided with an annu-

lar opening, a plurality of supply-holders each having a reduced neck received in the annular opening of one of the brackets and also provided with an axial passage through which the thread is arranged to lead as it unwinds from the periphery of the supply package mounted on the holder, and bayonet joints between the annular openings in the brackets and the necks of the supply-holders to releasably secure the supply-holders to the brackets.

10. A creel comprising a framework consisting of rod-like members, a plurality of brackets having clamping portions adapted to engage around the members of the framework, means for clamping said brackets to the members of the framework, said brackets formed with openings, a plurality of hollow supply-holders having portions received within the annular openings of the brackets, and means for securing said supply-holders to the brackets comprising interengaging wedging faces between the openings of the brackets and the portions of the supply-holders received therein adapted to operate as bayonet joints.

11. A creel comprising a framework, a plurality of brackets detachably mounted on the framework of the creel provided with annular openings, and a plurality of hollow supply-holders of conical form having reduced neck portions at their base ends fitted to the annular openings in the brackets and engageable therewith, and bayonet joints between the annular openings in the brackets and the neck portions of the supply-holders to detachably secure the supply-holders in place on the creel.

12. A creel having a framework, a plurality of brackets having clamping means for adjustably mounting them on the framework and provided with oppositely extending arms formed with annular openings at their ends, and a plurality of hollow supply-holders having reduced neck portions shaped to engage in the openings of the brackets and connected therewith by bayonet joints to detachably secure the supply-holders in place on the creel.

13. A creel comprising a framework, a plurality of brackets having clamping means for adjustably mounting them on the framework and formed with arms provided with annular openings at their ends, hollow conical supply-holders having reduced neck portions at their base ends fitted to the openings in the brackets, means for detachably securing the neck portions of the supply-holders in the openings in the brackets, and tension-devices mounted on the arms of the brackets in offset relation to the axes of the supply-holders.

14. A creel having a framework comprising a series of rod-like uprights, brackets formed with clamping portions straddling the uprights, clamping means surrounding the uprights and fastened to the brackets to secure them to the framework, said brackets provided with oppositely extending arms formed with annular portions at their ends, conical supply-holders having axial passages through which the threads lead rearwardly from the apex ends of the cones supported on the supply-holders and having reduced neck portions engageable in the annular openings of the brackets with bayonet joints for securing them in position thereon, and tension-devices supported on the brackets rearwardly of the supply-holders to adapt the threads to draw therethrough as they lead through the axial openings in the supply-holders.

HUGH F. BURTON.