May 15, 1928. 1,670,022

H. D. CLINTON

SPOOL OR BOBBIN

Filed Aug. 8, 1927 2 Sheets-Sheet 1

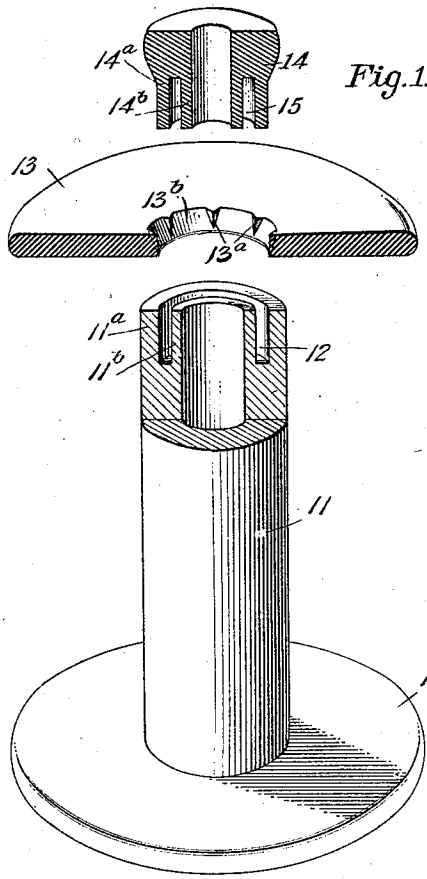


Fig. 1.

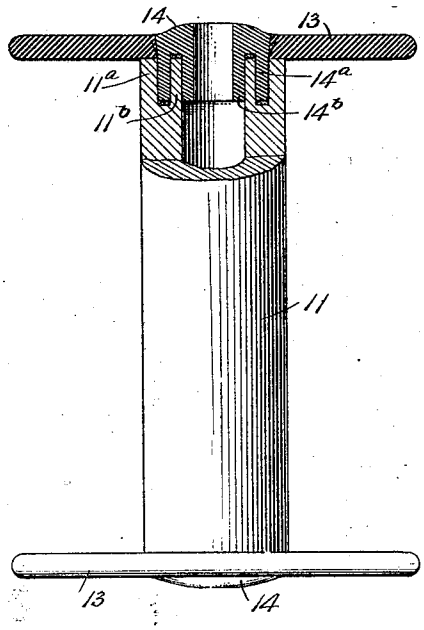


Fig. 2.

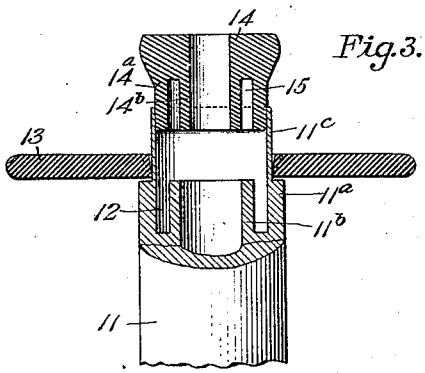


Fig. 3.

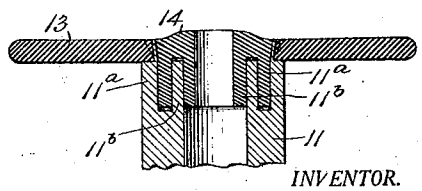


Fig. 4.

INVENTOR.

Harry D. Clinton

BY Dowell and Dowell

ATTORNEYS

May 15, 1928. 1,670,022

H. D. CLINTON

SPOOL OR BOBBIN

Filed Aug. 8, 1927 2 Sheets-Sheet 2

Fig. 5.

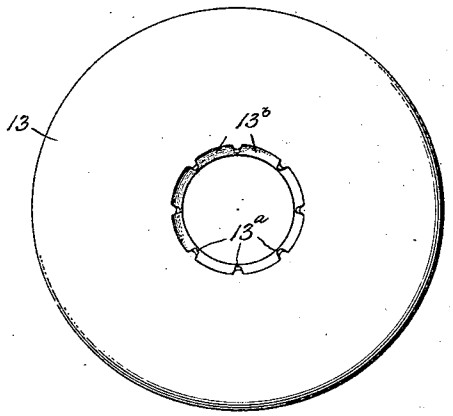


Fig. 6.

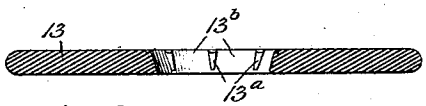


Fig. 7.

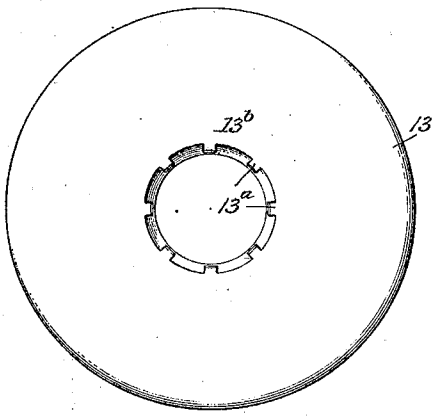


Fig. 8.

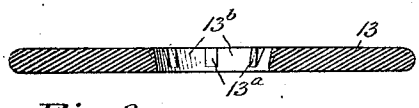


Fig. 9.

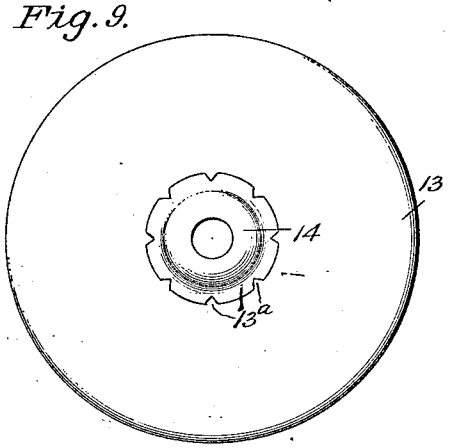
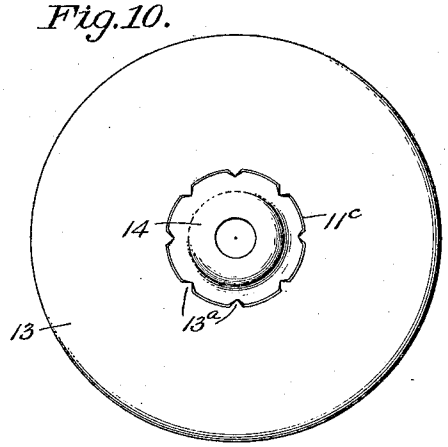


Fig. 10.



INVENTOR.

Harry D. Clinton

BY *Dowell & Dowell*

ATTORNEY

Patented May 15, 1928. 1,670,022

UNITED STATES PATENT OFFICE.

HARRY D. CLINTON, OF JOHNSON CITY, NEW YORK.

SPOOL OR BOBBIN.

Application filed August 8, 1927. Serial No. 211,405.

This invention relates to spools and bobbins of the character employed in textile mills.

It aims to provide spools and bobbins of improved construction, rendering them substantially non-breakable and durable under usage conditions in the various textile-mill operations or practices of feeding yarn for cloth and fabric weaving.

The invention will be best understood by reference to the accompanying drawings illustrating embodiments thereof with certain modifications.

In said drawings:

Fig. 1 is a perspective view in illustration of a spool with head and fastening plug at one end in applicative relation to the barrel, the parts being shown in transverse section;

Fig. 2 is an elevation representing a finished spool, the united parts being shown in transverse section;

Fig 3 is a sectional view illustrating a modified construction, the spool head and plug being shown in applicative relation to a barrel similarly as in Fig. 1;

Fig. 4 is a sectional elevation representing a finished spool of the modified construction;

Fig. 5 is a plan view of a modified form of spool head;

Fig. 6 is a transverse section thereof;

Fig. 7 is a plan view of another modified form of spool head;

Fig. 8 is a transverse section of the latter;

Fig. 9 represents an end view of a finished spool of the construction shown in Fig. 2; and

Fig. 10 represents an end view of a finished spool of the modified construction shown in Fig. 4.

Referring to the drawings, 11 denotes the wooden barrel or stale of a spool or bobbin. Said barrel is shown centrally bored to tubular form and having a recess or crevice 12 in its end extending substantially concentric with but spaced from its bore, i. e., a portion of the tubular wall of the barrel separates the recess from the bore.

In this instance said recess is annular, but may advantageously be made polygonal instead. In certain instances it may be desirable to provide a series of recesses in spaced relation annularly of the barrel bore in place of the continuous recess shown. However, upon modifying the character of the recess in either of the ways mentioned, the form of the fastening plug hereinafter described must be correspondingly modified as will become obvious.

Accordingly, the barrel end is bifurcated or formed with substantially double wall portions 11^a and 11^b, which in the illustrative construction appear as concentric tubular extensions of the barrel and this form is regarded as preferable.

The heads 13 to be secured on the ends of the barrel are of hard vulcanized fibre or other tough and non-brittle composition resisting breakage. Such heads are cut or punched from slabs of the component material, in squares or discs having central apertures and are stamped, pressed and trimmed to the desired form embodying ribs or ridges 13^a spaced around their central apertures.

In such formation, said apertures are made substantially frusto-conical, with projecting edges of said ribs lying in a conical plane of lesser slope than the intervening grooves or surface-portions 13^b, said grooves or surface-portions being deepest at the outer side of the head and said ribs being terminated along the edge at the inner side of the head to leave a smooth and unbroken margin therearound. From the foregoing, it will be understood that the ribs are of tapering or substantially triangular form in longitudinal section.

The heads are substantially alike in all instances, any modification or variance in form thereof being in respect more particularly to their outer peripheries and the shape of the ribs provided around the edge of their apertures, through which fastening plugs are inserted.

In Figs. 1 to 4 inclusive, the heads are shown with said ribs or ridges of triangular form in transverse section. In Figs. 5 and 6 they are shown with ribs of curved or semicircular form in transverse section, while in Figs. 7 and 8 they are shown with the ribs in rectangular form. Heads of the several forms illustrated may be applied to the barrels with like effectuality, but the form shown in the first four figures is considered preferable.

Means for securing the heads to the barrel is shown provided by plugs or bushings 14 shaped to permit partial insertion through the central apertures of the heads in uniting relation with the barrels. As these fastening plugs are subjected to compression strains, they are formed preferably of dog-

wood which is hard and not easily cracked or split under pressure, although other material may be equally suitable.

In this instance, said plugs or bushings are of annular form with central bore and enlarged head tapering to a shank or wall-portion having a recess or crevice 15 extending from the edge thereof substantially concentrically with but spaced from its bore correspondingly to the aforesaid recess in the barrel end.

Accordingly, the shank portions of the plugs are bifurcated or formed with substantially double wall-portions 14^a and 14^b adapting them to complementary fit in the recessed ends of the barrels, the diameter of the outer wall-portion 14^a of the plug being substantially equal to the diameter of the recess 12 of the barrel and the diameter of the inner wall 14^b of the plug being equal substantially to the bore of the barrel.

Obviously, if the recess 12 in the barrel ends is modified as hereinbefore suggested, the shape of the inner and outer wall-portions of the plug must be modified correspondingly. Similarly, if the ribbed or ridged apertures in the spool heads are made frusto-polygonal instead of frusto-conical as shown, the head of the plug must be shaped correspondingly to fit thereinto.

In applying a spool head to a barrel, that side of the head having the smaller diameter of aperture is placed toward and against the barrel end. The walls of the recess in barrel end and plug, as also the outer wall-portion of the latter, are advantageously coated with glue or cement. The plug is then inserted through the central aperture of the spool head and pressed to place in complementary fit with the barrel end. The pressure applied to the plug in forcing it to place causes the enlarged head thereof to compress within the smaller frusto-conical aperture of the spool head with the ribs or ridges of the latter progressively biting into and embedding firmly therein like teeth. Being so forced with its head compressed in complementary engagement with the ribs of the spool head and with its shank or wall portions fitting into and between the corresponding wall portions of the barrel end, the plug positively secures the spool head to the barrel. The plug is finally "trimmed-off" and the spool is finished as illustrated in Fig. 2, whereupon its end will have the appearance represented in Fig. 9.

Obviously, according to this construction, the meeting surfaces between fastening plug and barrel are materially increased over prior art constructions without enlarging the plug, and when coated with glue or cement the increased binding surfaces add tremendously to the holding power of the plug.

So firmly is the plug thus made to secure the spool head to the barrel that when the glue or cement has dried, the parts cannot be again separated. Any force applied to remove the spool head from the barrel will simply break the head or split the barrel before allowing the parts to separate. Even if the spool were immersed in water, the glued or cemented surfaces would not be reached and softened thereby, because the complementarily fitted wall-portions of plug and barrel provide effectual insulation thereagainst. A strong, durable and substantially non-breakable spool impervious to moisture is accordingly produced.

Referring now to Figs. 3 and 4, a modification of the claimed construction is illustrated, wherein a plug and spool head of described form are applied to a barrel having its end formed with a thin extension or neck 11^c of the outer wall-portion 11^a thereof. In this instance the spool head is slipped over said extension and the plug is forced therethrough into complementary fit with the barrel end as previously described. As the plug is pressed into place, it expands the thin extended wall or neck of the barrel and wedges the same against the ribs or ridges around the frusto-conical aperture of the head so that said ribs will bite therethrough into the plug head and become firmly embedded in the wood, thereby providing a thin liner between the interengaging plug and spool head. The plug is finally "trimmed-off" and the spool is finished as illustrated in Fig. 4, whereupon its end will have the appearance represented in Fig. 10.

A simple but superior construction of spools and bobbins is thus provided, adding materially to the strength and lasting qualities of such articles even under exposure to moisture. As previously stated, the heads of spools constructed as described cannot be separated from their barrels except by breaking the spools apart, and since the heads are of hard fibre or other composition resistive to crush and break, the spools are practically indestructible under the severest of usage conditions. As replacements in use of such spools will be minimized, they have a distinct economic advantage over spools and bobbins of the various prior art constructions.

Obviously, variations in the form of fastening plug, barrel-end and spool-head, as also in the shape and spacing of the ribs or ridges in the central aperture of the latter may be made without departing from the spirit and scope of the invention. Therefore, it is not intended that the invention shall be limited by the appended claims to the specific construction shown and described.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. In a spool or bobbin, a barrel having spaced and substantially concentric wall-portions in its end; a composition head faced against said end of the barrel and formed with a central aperture having tapering ribs therearound; and a plug securing said head to the barrel, having spaced and substantially concentric wall-portions fitting complementarily with the wall-portions of the barrel and an enlarged head-portion compressed within the aperture of said head with the ribs of the latter firmly embedded therein.

2. A spool or bobbin comprising a barrel having substantially double and concentric wall-portions at its ends; heads of hard composition faced against the ends of the barrel and formed with central tapering apertures having ribs therearound; and fastening plugs securing said heads to the barrel, having substantially double and concentric wall-portions fitting complementarily with the wall-portions of the barrel and enlarged head-portions compressed within said apertures of the heads with the ribs of the latter firmly embedded therein.

3. A spool or bobbin comprising a barrel having substantially double and concentric wall-portions at its ends; heads of hard composition faced against the ends of the barrel and formed with central taperingly ribbed apertures registering at their inner faces along the inner edge of the outer wall-portions of the barrel; and plugs securing said heads to the barrel, having substantially double and concentric wall-portions fitting complementarily with the concentric wall-portions of the barrel and enlarged head-portions compressed engageably within the ribbed apertures of said heads.

4. A spool or bobbin comprising a wooden barrel having spaced and substantially concentric wall-portions at its ends; hard composition heads faced against the ends of the barrel and formed with central tapering apertures having ribs spaced therearound, the edge of the apertures at the inner faces of said heads being disposed along the inner edge of the outer wall-portions of the barrel; and fastening plugs securing said heads to the barrel, having spaced and substantially concentric wall-portions fitting complementarily with the wall-portions of the barrel and enlarged head-portions compressed within the apertures of the heads with the ribs of the latter firmly embedded therein.

5. A spool or bobbin comprising a cylindrical wooden barrel having a co-axial recess in its end spaced from and substantially concentric with its central bore; a hard composition head faced against the recessed end of the barrel and formed with a central frusto-conical aperture having ribs spaced therearound; and a wooden plug also having a co-axial recess in its end spaced from and substantially concentric with its bore and fitting complementarily with the recessed end of the barrel and having an enlarged head-portion compressed within the aperture of the composition head with the ribs of the latter embedded therein.

6. A spool or bobbin comprising a wooden barrel having spaced and substantially concentric wall-portions in its ends; hard composition heads faced against the ends of the barrel and formed with central frusto-conical apertures having ribs projecting therearound in a conical plane of lesser slope than the intervening grooves or surface-portions of their apertures; and wooden fastening plugs securing said heads to the barrel, said plugs being formed with enlarged heads and with spaced and substantially concentric wall-portions fitting complementarily with the corresponding wall-portions of the barrel ends, the enlarged head-portions of the plugs being compressed within the apertures of the composition heads with the ribs of the latter embedded therein.

7. A spool or bobbin comprising a wooden barrel having spaced and substantially concentric wall-portions with a thin extension of one of said portions at its ends; hard composition heads faced against the ends of the barrel in engagement over said extensions thereof and formed with central frusto-conical apertures having ribs projecting therearound in a conical plane of lesser slope than the intervening grooves or surface-portions of their apertures; and wooden plugs securing said heads to the barrel, said plugs being formed with spaced and substantially concentric wall-portions fitting complementarily with the corresponding wall-portions of the barrel and enlarged head-portions compressed within the apertures of the heads thereby wedging said barrel extensions against the ribs of the latter and firmly embedding the same therein.

8. A spool or bobbin comprising a wooden barrel having spaced and substantially concentric wall-portions in its ends; hard composition heads faced against the ends of the barrel; and wooden plugs securing said heads to the barrel, said plugs being formed with spaced and substantially concentric wall-portions complementarily fitting with the corresponding wall-portions of the barrel and with enlarged heads compressed against the walls of said heads.

9. A spool or bobbin comprising a wooden barrel having substantially double and concentric wall-portions in its ends; hard composition heads faced against the ends of the barrel and formed with central apertures having ribs spaced therearound; and wooden plugs securing said heads to the barrel, said plugs being formed with substantially double and concentric wall-portions fitting

complementarily within the corresponding wall-portions of the barrel and with enlarged head-portions compressed within said apertures of the heads with the ribs or teeth of the latter complementarily embedded therein.

10. In a spool or bobbin, means for securing a hard fibre head to a wooden barrel comprising a hard wooden plug formed with an enlarged head and substantially double and concentric wall-portions complementarily fitted with corresponding wall-portions formed in the ends of the spool barrel, the enlarged head-portion of the plug being forcibly compressed against the composition head in substantially complementary engagement therewith.

In testimony whereof I affix my signature.

HARRY D. CLINTON.