G. H. BENJAMIN.

BOBBIN.

APPLICATION FILED OCT. 31, 1911.

1,140,352. Patented May 25, 1915.

FIG.1.

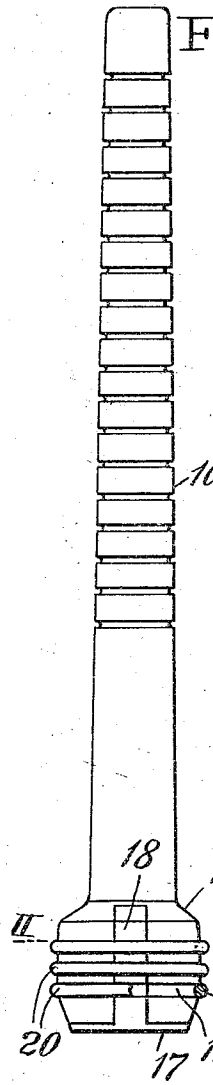


FIG.3.

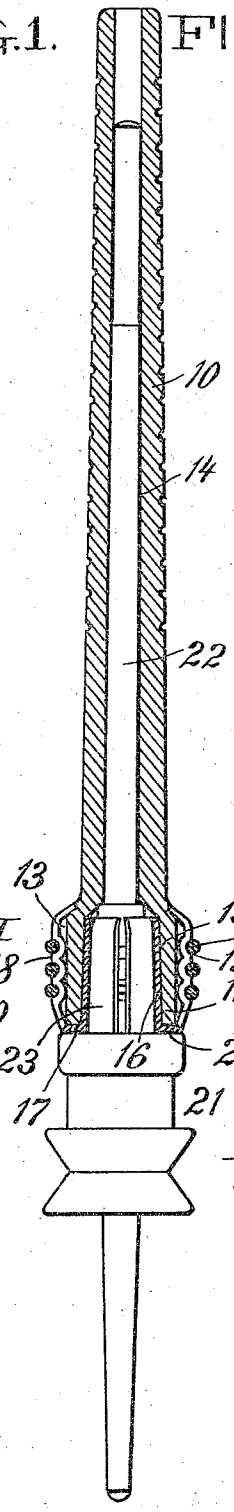


FIG.4.

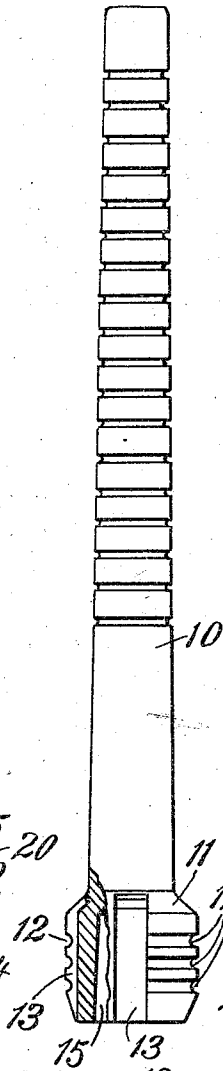


FIG.6.

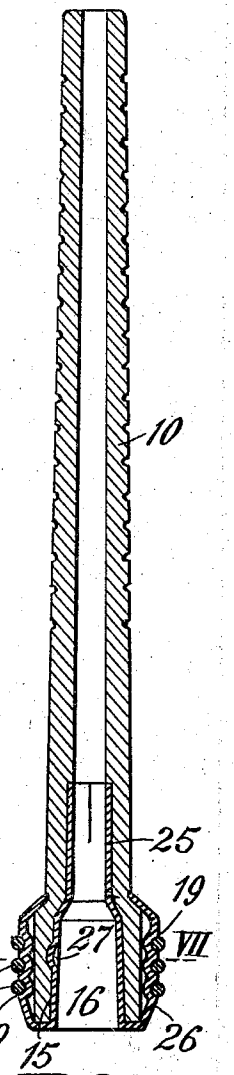


FIG.2.

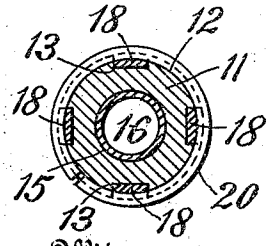


FIG.5.

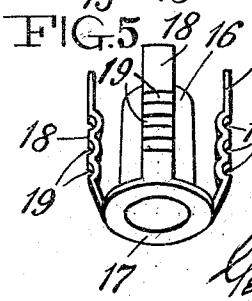
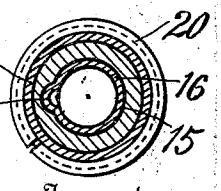


FIG.7.



Witnesses:
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UNITED STATES PATENT OFFICE.

GEORGE HILLARD BENJAMIN, OF NEW YORK, N. Y.

BOBBIN.

1,140,352. Specification of Letters Patent. Patented May 25, 1915.

Application filed October 31, 1911. Serial No. 657,781.

To all whom it may concern:

Be it known that I, GEORGE HILLARD BENJAMIN, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Bobbins, of which the following is a specification.

My invention relates to bobbins of the type which are specially adapted for use with looms where bobbins are automatically fed into the shuttle.

The object of my invention is to produce a bobbin in which the rings on the lower part of the bobbin, which coact with the interior of the shuttle, shall be so arranged as to retain their space relation, and further, that the tube on the interior of the base of the bobbin, which coacts with the shank or clutch of the spindle whirl, shall be so arranged as to form a bearing surface and corresponding in height with the acting surfaces of the clutch and maintain a fixed position relative to the body of the bobbin, and thus be prevented from turning within the bobbin or dropping out of the bobbin, owing to the shrinkage of the material of which the bobbin is made, etc.

A further object of my invention is to provide a base for a bobbin which may readily be secured to old shanks which have split at the base, and thus allow the rings to drop off.

The accompanying drawings will serve to illustrate my invention, in which—

Figure 1 is a side elevation. Fig. 2 is a transverse section on the line II—II of Fig. 1. Fig. 3 is a vertical section of the bobbin and a vertical elevation of a spindle whirl having a clutch. Fig. 4 is a vertical elevation and partial vertical section of the bobbin showing the vertical and horizontal grooves in the base. Fig. 5 is a perspective view of the removable base portion. Fig. 6 is a vertical section of a modification. Fig. 7 is a transverse section taken along the line VII—VII of Fig. 6.

Referring to the drawings, 10 indicates a shank which may be made of any suitable material, such as wood, molded paper stock, solidified cellular material, or metal, preferably aluminum. The shank 10, as is usual, has an enlarged head 11. Formed in the head 11 are circumferential grooves 12 and at equidistant points vertical grooves 13. The interior of the bobbin has formed in it an opening 14 which is enlarged at the head 15.

Surrounding the inner and outer periphery of the head 11 is a base portion, which may be made of metal or any other suitable material, preferably stamped steel. This base portion consists of a tubular member 16, base member 17, arm members 18, provided with horizontal grooves 19, and ring members 20, which may be of well known construction and secured in position in the usual manner. The tubular member 16 is adapted to fit within the cavity 15 of the head 11; the base member 17 to be located under the bottom of the head 11; the arm members 18 in the grooves 13, and the ring members 20 in the grooves 12 of the head 11, and in the grooves 19 of the arm members 18. It will be observed that the grooves 19 of the arm members 18 are in alinement with the grooves 12, and as the arm members 18 have the grooves 19 definitely spaced, the ring members 20 will be held in a defined position as regards each other, and irrespective of shrinking or splitting of the head 11 (with the consequent displacement of the grooves 12), and further, that as the arm members 18 are situated in grooves 13 of the head 11, there can be no rotation of the tubular member 16 within the cavity 15 of the head 11, which rotation is apt to occur by the frictional resistance between the tubular member and the driven whirl, shank or clutch, when a tubular member is inserted into the base of a bobbin and not secured therein, except by the pressure due to the resilient action of the material of which the bobbin is made.

21 represents a spindle whirl, provided with a shank 22 and clutch 23. It will be observed that the clutch 23 coacts with the interior of the tubular member 16. Manifestly the shape of the tubular member may be any that is required to coöperate with any special design of clutch, or as is usual, it may be cone-shaped so as to coöperate with the ordinary cone-shaped spindle shank. The bottom member 17 is shown in the drawings as flat and adapted to coöperate with the top 24 of the spindle whirl 22.

I do not limit myself in any wise to a construction in which the bottom shall be flat, as it may be necessary to give the bottom an inclined face to coöperate with a similarly inclined face on the top of the

spindle whirl, as is usual in certain constructions. Preferably, however, the bottom member shall be flat and the top of the spindle whirl horizontal, as by such construction a vertical position for the spindle on the whirl is maintained, which insures a more perfect traverse and winding of the thread on the bobbin from end to end.

In the construction shown in Fig. 7, the tubular member 16 is extended upward within the bobbin, as shown at 25, and instead of forming the outer portion as arm members 18, it is formed as a shell 26, the tubular member 16 forming an inner shell and the outer member 26 an outer shell, of an annulus. This outer shell is provided with grooves 19 in which are the ring members, 20, as in Figs. 1, 2 and 3. To prevent turning of the annular base portion, the tubular member 16 is pressed into the wood at 27. Any other means of securing the base member to the head 11 may be adopted.

In all of the figures, I have shown the interior tubular member and the exterior members as formed of a single piece of metal. Manifestly, for convenience of manufacture or otherwise, the tubular member, the base member, the arm members or the exterior shell member, can all be formed of separate pieces of material secured by rivets or otherwise, without in any wise departing from the intent of my invention. It will be observed that in the construction shown in Fig. 6, the head portion 11 contains less material than in the construction shown in Figs. 1 and 2, the difference in diameter of the head 11 being compensated for by the external and interior shells of the annular base (Fig. 7). Further, as shown in U. S. Letters Patent No. 914,793 granted to J. R. Coe, March 9th, 1909, the rings 20 may be dispensed with and corrugations formed on the body of the annulus to take the place of the rings.

Having thus described my invention, I claim:

1. A bobbin comprising a shank having a head portion, a base lineally, substantially co-extensive with the head portion, and shaped to inclose the outer and inner surfaces and bottom thereof, and a series of rings which overlie the exterior surface of the base.

2. A bobbin comprising a shank having a head portion, a base lineally, substantially co-extensive with the head portion, and shaped to inclose the outer and inner surfaces and bottom thereof, the outer portion of the base having formed therein a series of spaced grooves and a series of rings located in said grooves.

3. A bobbin comprising a shank having an enlarged head portion, a base having such shape as to inclose substantially the entire outer and inner surfaces and bottom of the head portion, and a series of rings which overlie the exterior portion of the base.

4. In a bobbin the combination with a shank having an enlarged head provided with horizontal grooves and vertical grooves, of a base portion comprising a tubular member located within the head, and carried to the top of the head, a bottom member covering the bottom of the head, arm members located in the vertical grooves on the exterior of the head and provided with horizontal grooves adapted to register with the horizontal grooves of the head, together with a series of rings located and secured in position in said horizontal grooves.

5. In a bobbin the combination with a shank having an enlarged head, of a base portion comprising a tubular inner member carried through the head, a substantially horizontally disposed bottom member, a series of spaced arms extending vertically upward from said bottom portion, said arms provided with horizontal grooves, together with a series of rings adapted to be located and secured in the horizontal grooves of the arms and around the exterior of the head of the shank.

6. In a bobbin, the combination with a shank having an enlarged head of a base portion comprising a tubular member open at the top, having its outer and inner walls substantially of the same vertical height as the walls of the head, together with a series of spaced rings located external to the outer wall of the base.

7. In a bobbin, the combination with a shank having an enlarged head of a base portion having outer and inner parallel walls substantially of the same height as the walls of the head, and a bottom wall substantially of the size of the bottom wall of the head, together with a series of spaced rings located external to the outer wall of the base.

8. In a bobbin, the combination with a shank having an enlarged head provided with spaced concave grooves, of a base portion comprising a tubular member adapted to cover the outer and inner walls and bottom of the head portion, means for preventing rotation of the tubular member relative to the head, and a series of spaced rings located external to the outer wall of the base.

9. In a bobbin, the combination with a shank having an enlarged head, of a base having an interior wall of substantially the same vertical height as the inner wall of the head, means for preventing rotation of the base relative to the head, and a series of spaced rings located on the outer surface of the head.

10. A bobbin comprising a shank having an enlarged head portion and a base shaped to inclose the outer and inner surfaces and bottom of the head portion and form a bearing of determined extent for the clutch por-

tion of the spindle and corresponding in height with the acting surfaces of the clutch, with which it is designed to coöperate.

11. A bobbin comprising a shank, a base shaped to inclose the outer and inner surfaces of the bottom of the shank, the inner surface of said base circular in shape and of a height sufficient to coöperate with the acting surfaces of any spindle provided with a clutch over which it is placed and with which it is designed to coöperate.

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

GEORGE HILLARD BENJAMIN.

Witnesses:
HELEN E. KOELSCH,
ELI WEILL.