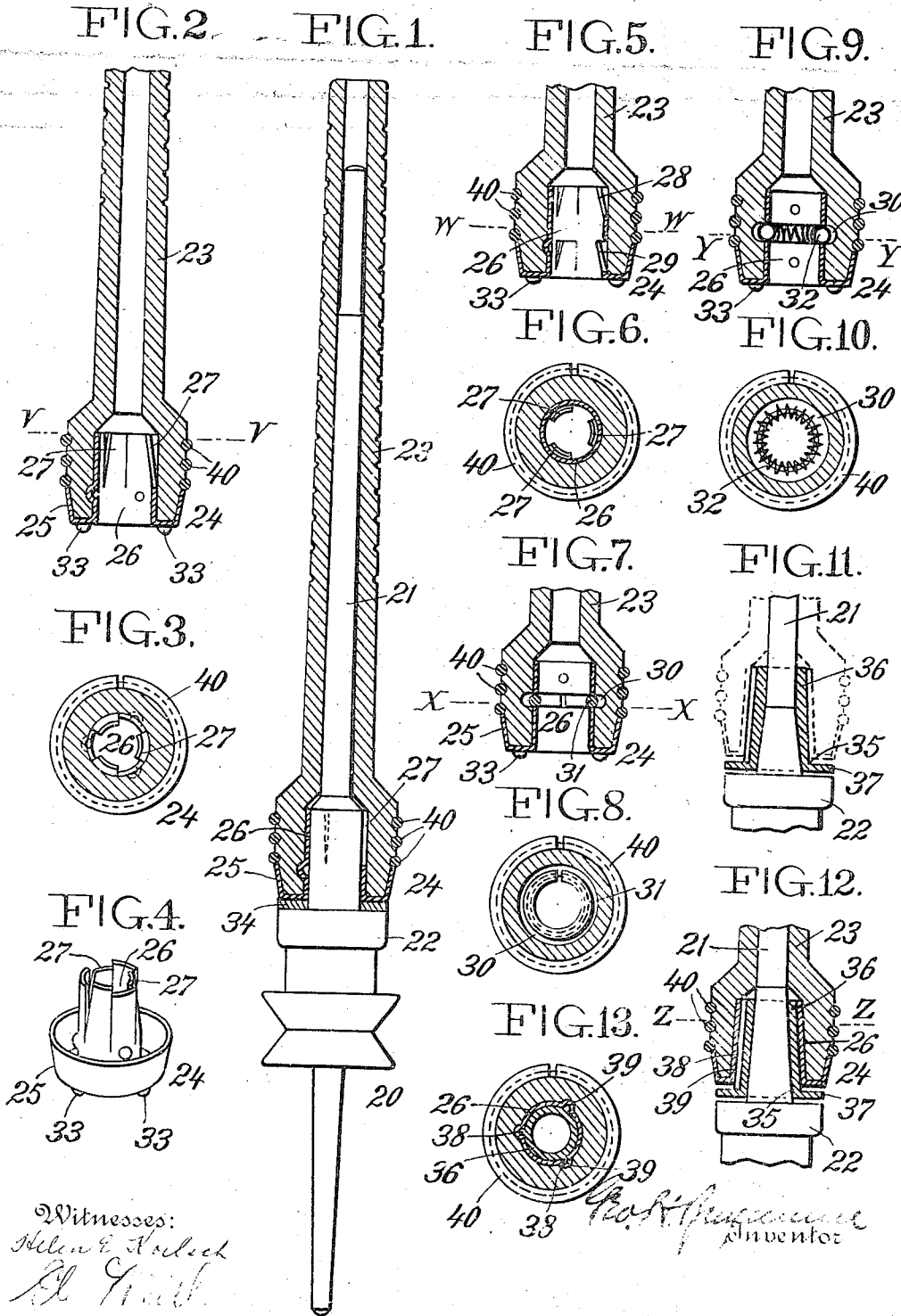


G. H. BENJAMIN,
BOBBIN.

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1,156,579.

Patented Oct. 12, 1915.



UNITED STATES PATENT OFFICE.

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

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, GEORGE HILLARD BENJAMIN, a citizen of the United States, residing at New York city, in the 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 consisting of a shank portion, and a separately formed metallic base or head portion, and the object of my invention is a construction whereby the inner periphery of the base or head will clutch or grasp a spindle stem, or otherwise establish such a relation between them as to insure coincident rotary movement of the spindle and bobbin.

My invention further relates to the employment of means for separating the bottom of the bobbin from the top of the spindle whirl, and also to means whereby the interior cavity of the head of the bobbin may be adjusted to the size or shape of the spindle stem.

In practice it has been found that where the head of a bobbin is made of metal, and the interior periphery of this head smooth, that the frictional resistance between the metallic surface of the interior of the head and the spindle stem is not sufficient to insure coincident rotary movement of the two. Further, that if the metallic head of the bobbin is allowed to come in contact with the top of the spindle whirl, the thread on the bobbin will be crushed or broken, and that therefore it is desirable to separate the bottom of the bobbin from the top of the spindle whirl, or to provide a cushioned surface for the top of the spindle whirl, or bottom of the bobbin. Further that all spindle stems have not the same size or shape, and as it is desirable that the bobbins shall be of uniform size and shape, it is necessary to provide means which shall be introduced between the spindle stem and the bobbin to compensate for such difference in size or shape of the various parts.

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

Figure 1 is an elevation of a spindle with a vertical section of a bobbin mounted thereon, and also showing a cross section of an elastic body between the bottom of the bobbin and the top of the spindle whirl. Fig. 2 is a vertical section of the bobbin detached

from the spindle. Fig. 3 is a section taken on the line V—V of Fig. 2. Fig. 4 is a perspective view of the base or head shown in Figs. 1, 2 and 3. Fig. 5 is a vertical section of a modification. Fig. 6 is a section taken on the line W—W of Fig. 5. Fig. 7 is a vertical section of another modification. Fig. 8 is a transverse section taken on the line X—X of Fig. 7. Fig. 9 is a vertical section of another modification. Fig. 10 is a transverse section taken on the line Y—Y of Fig. 9. Figs. 11 and 12 are elevations of a spindle stem with vertical sections through the base or head and vertical sections through the adjusting devices. Fig. 13 is a transverse section taken on the line Z—Z of Fig. 12.

Referring to the drawings, 20 indicates a spindle; 21, spindle stem; 22, whirl. Mounted on the spindle (in Fig. 1) is a bobbin which consists of the shank 23; base or head 24. The base or head in each of the figures is annular in shape. The outer periphery 25 is shown as smooth, and the inner periphery 26 variously shaped. In Figs. 1, 2, 3 and 4 the inner periphery is split at different points to form spring sections 27, alternate sections being bent inward so as to grasp the base of the stem 21 of the spindle. In Figs. 5 and 6 the inner periphery is split at the top and bottom to form two series of springs 28 and 29. In Fig. 7 the inner periphery has formed in it a groove 30, in which is located a split ring 31. In Fig. 9 the inner periphery is provided with a groove 30 in which is located a coil spring 32. The springs, split ring and the coil spring, all serve to grasp the base of the stem 21 of the spindle, and thus establish a practically fixed relation between the stem and the spindle.

I wish it understood that I do not limit myself in any wise to the particular arrangement of springs or clutching devices on the inner periphery of the head of the bobbin, as other forms may be used.

To prevent the bobbin from coming in contact with the top of the spindle whirl I provide separating devices. In Fig. 2 the device shown consists of projections 33 depending from the bottom of the base or head. Instead of using the projections, a soft washer 34 may be located over the top of the spindle whirl. Where the size or shape of the inner opening of the bobbin

differs from that of the spindle stem and base, a tubular washer 35 may be employed. In Figs. 11 and 12 this washer is shown as having a vertical portion 36 and a horizontal portion 37, taking the place of the washer 34 of Fig. 1. This washer may be of soft material, such as felt or rubber, and it may be provided with corrugations 38 on its exterior surface to cooperate with corresponding corrugations 39 on the interior periphery of the base or head. Likewise the washer may be provided with clutching devices, similar in construction to those illustrated for the interior of the base or head, as shown in the various figures.

In Figs. 11 and 12 the parts are shown as slightly separated, this form of illustration being used for the purpose of indicating that the washer acts as an adjusting means between the spindle and the head of the bobbin, and is not intended to represent that the parts are separated in actual use, except in so far as is necessary by reason of the difference in shape and diameter of the various parts.

In the various figures the bobbin is shown as provided with parallel rings 40 which are arranged around the wooden portion of the base of the stem.

Having thus described my invention, I claim:

1. A bobbin comprising a shank portion, an annular base having its internal wall carried upward for a sufficient distance to insure centering of the bobbin upon a spindle, and a clutch portion adapted to coact with the stem of a spindle when placed upon a spindle.

2. A bobbin comprising a shank portion, an annular base having its internal wall carried upward for a sufficient distance to insure centering the bobbin upon a spindle,

and a clutch portion forming a part of the interior wall of said annular portion.

3. A bobbin comprising a base shaped as an annulus and having its internal wall carried upward for a sufficient distance to insure centering of the bobbin upon a spindle, and said wall constructed to serve as a clutch.

4. A bobbin comprising a shank portion, an annular metallic base having its internal wall carried upward for a sufficient distance to insure centering of the bobbin upon a spindle, and such wall provided with a clutch on its interior adapted to coact with the stem of a spindle when placed upon a spindle.

5. A bobbin comprising a shank portion, a metallic annulus forming a head shaped to inclose the lower portion of the outer wall, the bottom, and the whole inner wall of the head of the shank, and formed on its interior to serve as a clutch to cooperate with the stem of a spindle when placed upon a spindle.

6. A bobbin comprising a shank having a head portion, an annulus inclosing the head portion, said annulus substantially tubular in section at its inner wall, and said wall carried up to cover the internal surface of the head portion and for a sufficient distance to insure centering of the bobbin upon a spindle, and a clutch device adapted to cooperate with the inner wall of the annulus and a spindle, when the bobbin is placed on a spindle.

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

GEORGE HILLARD BENJAMIN.

Witnesses:

HELEN E. KOELSCH,
MARCEL MULET.