July 5, 1960 F. R. CASS 2,943,813

THREAD GUIDES FOR TEXTILE MACHINES

Filed June 14, 1957

Fig. 1.

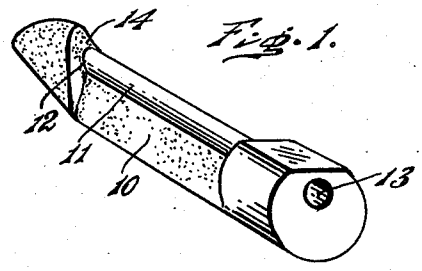


Fig. 2.



Fig. 4.

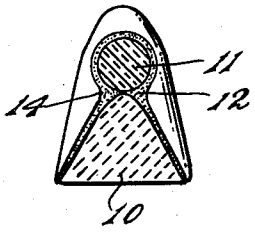


Fig. 3.

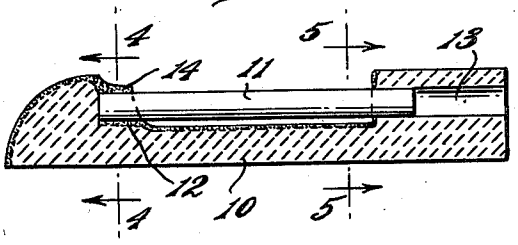
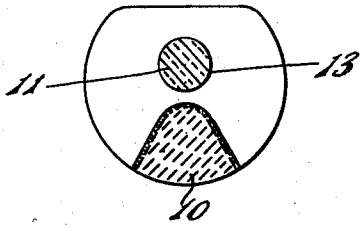


Fig. 5.



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THREAD GUIDES FOR TEXTILE MACHINES

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This invention relates to thread guides for textile machines, in which the wearing parts, over which the thread or yarn passes, are made of hardened materials which are mounted in holders made of suitable materials which usually are not as hard as the parts over which the thread or yarn travels.

Heretofore thread guides for textile use have been made of various materials, such as metallic wire, glass, porcelain, both glazed and unglazed, enameled iron, titanium compounds, and more recently corundum, usually in the form of synthetic sapphire or sintered alumina. In practice, the latter material has been found to effectively reduce the wear caused by the cutting action of the moving yarn, the partciular adaptability of this material being pointed out in U.S. Letters Patent No. 2,485,553, issued to The Linde Air Products Company.

However, due to the cost of synthetic rubies and sapphires and sintered alumina made in shapes to serve as textile guides, it has been found necessary to provide holders of such material that they may be readily made to fit the machines, and to mount the corundum, in the form of bars, rods, or small inserts, at the places of greatest wear.

The securing of the insert was usually done as a final operation, with a suitable cement, air or oven dried, using a holder provided with a sapphire insert of an easily formed shape. This being a hand operation, it was comparatively expensive, and in addition there was usually a rough joint or crack left between the holder and the insert. Also, there was always the danger of the cement coming loose or being attacked by residual chemicals resulting from the manufacture of synthetic yarns.

With the foregoing in view, the object of the present invention is to provide a novel form of thread guide for textile machines and the like, comprising a holder of a preferred material, having an insert for the running of the yarn thereover, which insert is made of any preferred material of much greater hardness than the material of the holder.

In the preferred embodiment of the present invention, the holder is preferably made of porcelain, either with or without glaze on the exposed surfaces thereof, and the member over which the yarn passes is made of one of the modern synthetic materials of great hardness, such as alumina, sintered aluminum oxide, or corundum in the form of synthetic sapphire made in elongated rod shape or form.

The present invention relates more particularly to the manner in which the rod of hard material is mounted and is held in position in the holder, and the arrangement and construction is such that there will be no tendency of the parts to separate by reason of differences in expansion and contraction, either during the initial forming of the same, or after the assembled device is in use.

The nature and characteristic features of the invention will be readily understood from the following description, taken in connection with the accompanying drawing forming part thereof, in which:

Figure 1 is a perspective view of a thread guiding device embodying the main features of the present invention;

Fig. 2 is a top or plan view thereof;

Fig. 3 is a longitudinal section taken on the line 3—3 of Fig. 2;

Fig. 4 is a vertical section, enlarged, taken on the line 4—4 of Fig. 3; and

Fig. 5 is a similar enlarged section, taken on the line 5—5 of Fig. 3.

It should, of course, be understood that the description and drawing herein are illustrative merely, and that various modifications and changes may be made in the structure disclosed without departing from the spirit of the invention.

Referring to the drawing, the thread guide of the present invention consists essentially of a holder **10**, suitably shaped for the use of the same in a textile machine or apparatus in which it is to be used.

In connection with such a holder, an insert **11**, made of corundum, such as synthetic sapphire or the like, in rod like form, is mounted in the holder **10**, in a manner to be hereinafter described, to provide a wear resistant surface for the running of the yarn thereover.

The holder **10** may be, and preferably is, made of ceramic material, such as glazed porcelain, although enameled iron, or glass, in various forms may be used if desired.

In the carrying out of the present invention, the holder **10** is provided at one end with a seat **12** for the positioning and securing one end of the rod **11**, and at the other end of said holder **10**, there is provided a hole **13** in alignment with the seat **12** at the other end of the holder **10**. The hole **13** is of a diameter such that the rod may pass therethrough and serves to secure the otherwise free end of the rod **11** against lateral movement, yet permitting the same to expand and contract lengthwise relative to the holder **10**, whenever the device is subjected to differences of temperature, either during the making of the same, or subsequently when it is in use.

The fixed end of the rod **11** is preferably secured in place in the end of the holder **10** in which it is seated, by means of glaze **14** which coats the body of the holder **10** and serves as an effective securing means after the device has been fired.

It will be noted that the intermediate portion of the holder **10** is so shaped as to provide a definite space below the rod **11** and the top glazed surface of said intermediate portion of the holder **10**, or if the two are in contact, that portion of the porcelain that touches the insert must be free of glaze. Also the hole **13** must be glaze-free.

The interior of the hole **13** must be left unglazed, the arrangement being such that the end of the rod **11**, which is supported in the hole **13** of the holder against lateral movement displacement, will nevertheless be permitted to expand and contract the required amount in said hole **13**.

It will be noted that by the foregoing arrangement the rod **11** will at all times be free to expand and contract lengthwise with respect to the body of the holder **10** in which it is supported, and there will be no tendency to fracture by reason of differences in the expansion and contraction of the materials employed.

I claim:

1. A thread guide for textile machines and the like comprising a holder made of a single integral piece of molded material, and an insert in said holder over which the thread is adapted to pass comprising a straight rod of harder material seated at one end in a portion of the holder and permanently secured thereto by a fired glaze, and the other end of said rod being supported against

lateral movement but free to move longitudinally in a hole in another portion of the holder which hole is in alignment with the seat in which the first mentioned end of the rod is secured.

2. A thread guide for textile machines and the like comprising a holder made of a single integral piece of molded ceramic material, and an insert in said holder over which the thread is adapted to pass comprising a corundum rod seated at one end in a portion of the holder and permanently secured thereto by a fired glaze, and the other end of said rod supported against lateral movement but free to move longitudinally in a hole extending through another portion of the holder, said hole

corresponding in shape and size to the cross-section of the rod whereby said rod may be initially passed through said hole for positioning the same in the holder.

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