Jan. 1, 1924 1,479,448

J. G. BENTLEY

QUILL

Filed May 25, 1923

Fig.1.

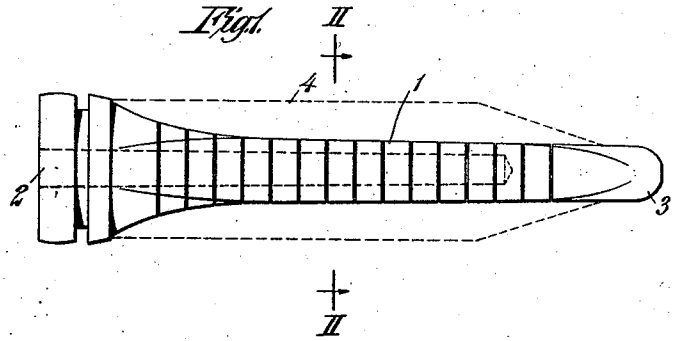


Fig.2.

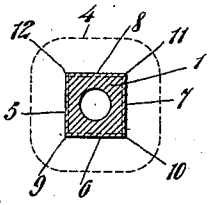


Fig.3.

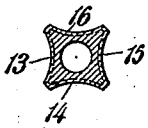


Fig.4.

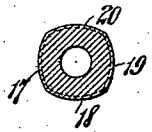


Fig.5.

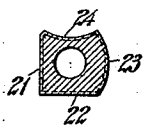


Fig.6.

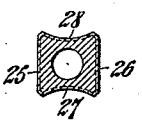


Fig.7.

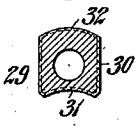


Fig.8

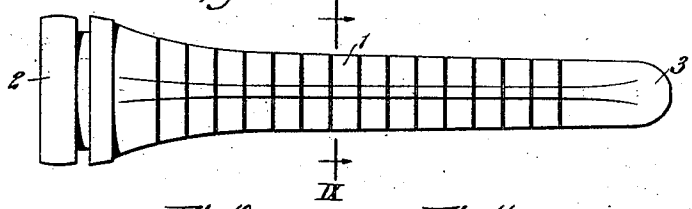


Fig.9.

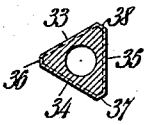


Fig.10.

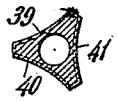


Fig.11.

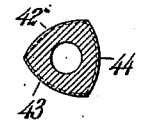


Fig.12.

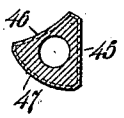


Fig.13

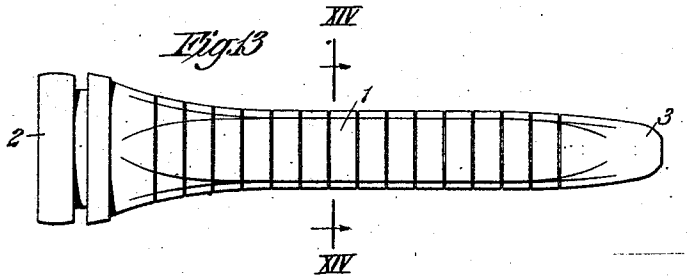


Fig.14.

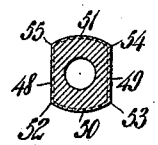


Fig.15.

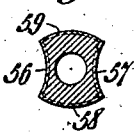
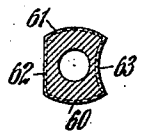


Fig.16.



INVENTOR

John G. Bentley

BY

Brumbaugh and Howard

ATTORNEYS

Patented Jan. 1, 1924. 1,479,448

UNITED STATES PATENT OFFICE.

JOHN G. BENTLEY, OF PATERSON, NEW JERSEY.

QUILL.

Application filed May 25, 1923. Serial No. 641,400.

To all whom it may concern:

Be it known that I, JOHN G. BENTLEY, a citizen of the United States, and resident of Paterson, in the county of Passaic and State of New Jersey, have invented a new and useful Improvement in Quills, of which the following is a specification.

Where a metal filament, such as tinsel, has been wound on a quill of ordinary circular form in cross section, it has been necessary to make a quill of very great diameter in comparison to the thickness or wrappings of the filaments around it and it has been also necessary to only put a very thin layer of said wrappings around the quill. Otherwise when the wound quill was in use in the loom, owing to the nature of the metal filament which is smooth, hard and also very heavy, the whole wound mass would have a tendency to slide off the end of the quill as the shuttle was thrown back and forth in the loom. Therefore, owing to the relatively small amount of filling which can be wound on a quill of this character in comparison with what is wound on a quill when using other materials, such as cotton, silk, etc. the production of the metal filled cloth was very slow and expensive, this being due to the vast number of quills a weaver would have to put in his shuttles during a day, making it necessary to stop the loom every time a new quill was inserted into the shuttle.

The object of my invention is to make a quill of multi-sided form in cross section along its winding portion and preferably provided with one or more pronounced edges whereby the metal filament winding will be made to cling to the quill, thus rendering it possible to wind to a far greater thickness than was possible heretofore, without danger of the windings shelling off the quill and also materially increasing the length of time that a quill will last when weaving in the loom and thus relatively increasing the production.

By my improvement I have found that the thickness of the wrappings on the quill can be more than double the diameter of the empty quill, the edge or edges caused by the irregular shape of the quill along the winding portion thereof serving to grip the metal tightly and distinctly bend it. The metal filament between the edges is wound comparatively loose so that the outer layers have a tendency to sink into the folds of the inner layers at these loose points, thus causing the interlocking of the layers and preventing the windings from shelling off the quill. This type of winding will not hinder the drawing off of the filament as it is more or less stiff and has a tendency to unwind or spring away from the quill which causes it to form a wide arc around the quill so that it will not catch in any of the edges which would be the case if the wrappings were of a different nature.

The taper or thickness of the quill is not materially important as the wrappings may be wound on and drawn off quills of greatly varying thicknesses and tapers.

The quill may also be made in many different forms in cross section. Several of these forms are illustrated in the accompanying drawings, in which—

Fig. 1 represents in side elevation a quill square in cross section with flat sides along its winding portion.

Fig. 2 represents a cross section taken in the plane of the line II—II of Fig. 1.

Fig. 3 represents a cross section through the winding portion of a quill in which the four sides are concave.

Fig. 4 represents a similar section in which the four sides are convex.

Fig. 5 represents a similar section in which two adjacent sides are flat, the third side is convex and the fourth side concave.

Fig. 6 represents a similar section in which two opposite sides are flat and the other two opposite sides are concave.

Fig. 7 represents a similar section in which two opposite sides are flat, the third side is concave and the fourth side is convex.

Fig. 8 represents in side elevation a quill triangular in cross section with flat sides along its winding portion.

Fig. 9 represents a cross section taken in the plane of the line IX—IX of Fig. 8.

Fig. 10 represents a cross section through the winding portion of a quill showing three concave sides.

Fig. 11 represents a similar section showing three convex sides.

Fig. 12 represents a similar section showing one straight, one concave and one convex side.

Fig. 13 represents in side elevation a quill of oblong rectangular form in cross section

along its winding portion, said quill having two opposite flat sides and two opposite convex sides.

Fig. 14 represents a cross section taken in the plane of the line XIV—XIV of Fig. 13.

Fig. 15 represents a cross section through a quill at its winding portion in which two opposite sides are concave and two opposite sides are convex.

Fig. 16 represents a similar section in which two opposite sides are convex, the third side is flat and the fourth side is concave.

The winding portion of the quill is denoted by 1, the headed end by 2 and the non-headed end by 3.

The contour of the wrapping is denoted in dotted lines by 4 in Figs. 1 and 2.

In Figs. 1 and 2 the quill is shown as square in cross section along its winding portion with four flat sides 5, 6, 7, 8, forming between them four edges or corners 9, 10, 11, 12. In Fig. 3 the four sides, 13, 14, 15, 16 are concave. In Fig. 4 the four sides 17, 18, 19, 20 are convex. In Fig. 5 the two adjacent sides 21, 22 are flat, the third side 23 is convex and the fourth side 24 is concave. In Fig. 6 two opposite sides 25, 26 are flat and the other two opposite sides 27, 28 are concave. In Fig. 7 two opposite sides 29, 30 are flat, the third side 31 is concave and the fourth side 32 is convex. In Figs. 8 and 9 the quill is triangular in cross section along its winding portion with flat sides 33, 34, 35, forming between them three edges or corners 36, 37, 38. In Fig. 10 the three sides 39, 40, 41 are concave. In Fig. 11 the three sides 42, 43, 44 are convex. In Fig. 12 the side 45 is flat, the side 46 is concave and the side 47 is convex. In Figs. 13 and 14 the quill is of oblong rectangular form in cross section with opposite flat sides 48, 49 and two opposite convex sides 50, 51, forming between them four edges or corners 52, 53, 54, 55. In Fig. 15 two opposite sides 56, 57 are concave and the other two opposite sides 58, 59 are convex. In Fig. 16 the two opposite sides 60, 61 are convex, the third side 62 is flat and the fourth side 63 is concave.

In all of these forms the edges are provided along the winding portion of the quill for bending the metal filaments, leaving looser portions between the edges so as to permit the interlocking of the several layers of the windings and thus preventing the shelling off of the coils from the end of the quill and destroying the further usefulness thereof.

The provision of these edges also permit the traverse winding of an interlocked mass of the metal filament on the quill, the said mass having a substantial thickness between its ends as compared to the diameter of the quill in the corresponding cross sectional plane.

It is evident that the edges or corners formed along the winding portion of the quill may be sharp or blunt, as the case may be, and that the body of the quill when viewed in cross section may assume many different shapes between such edges or corners so long as the windings will be caused to interlock and permit a substantial thickness of material to be wound and retained on the quill, the same not being dependent upon the size of the diameter of the quill, the invention being as applicable to quills of small diameter as to quills of large diameter.

What I claim is:—

1. A quill of multi-sided form in cross section along its winding portion.

2. A quill of rectangular form in cross section along its winding portion.

3. A quill of square form in cross section along its winding portion.

In testimony that I claim the foregoing as my invention, I have signed my name this 22nd day of May, 1923.

JOHN G. BENTLEY.