

June 1, 1926.

1,586,750

E. A. JOLINE

FLEXIBLE SHAFT CASING

Filed Nov. 19, 1924

FIG. 1.

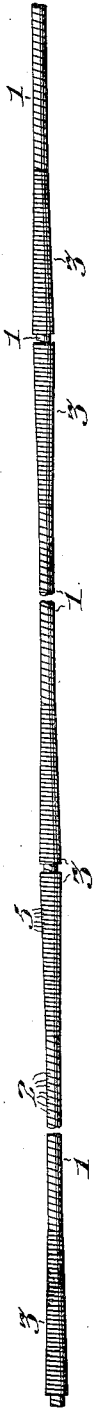


FIG. 2.

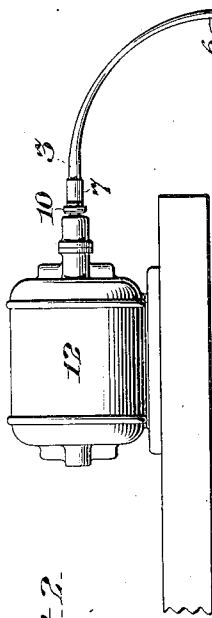


FIG. 3.

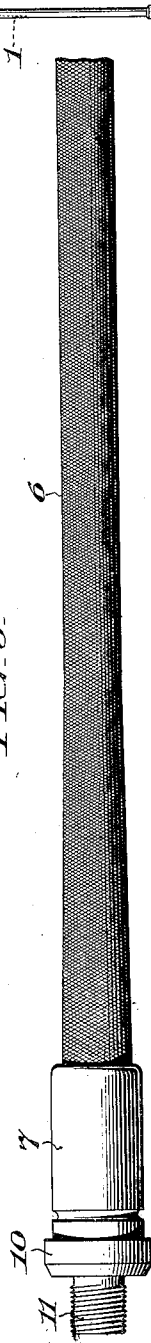
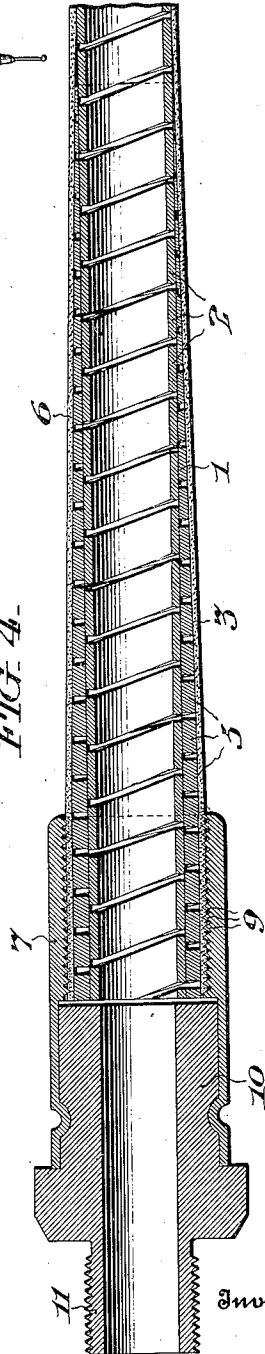


FIG. 4.



Inventor

Emmet A. Joline,

By

Clifton C. Holloway

Attorney

Patented June 1, 1926.

1,586,750

UNITED STATES PATENT OFFICE.

EMMET A. JOLINE, OF TOTTENVILLE, NEW YORK, ASSIGNOR TO THE S. S. WHITE DENTAL MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

FLEXIBLE-SHAFT CASING.

Application filed November 19, 1924. Serial No. 750,845.

My invention relates particularly to that class of casings that provide sheaths or sleeves for flexible shafts such as are employed in connecting a dental engine hand-piece, die-sinker's tool, massage device, hair clipper or other such power actuated hand-controlled implement, with shaft actuating means such as a dental engine, motor or other suitable driving element, and is especially directed to novel means for reinforcing said casing at regions where the most severe and more frequent strains are likely to occur and produce a permanent bend or set therein.

In the manufacture of shaft casings as heretofore constructed, it has been common practice to form a hollow tube of coiled wire or strip material upon which a covering of fabric is woven or braided and to form reinforcements by weaving or braiding a plurality of layers of fabric of varying longitudinal extent at the regions where it is desired said casing be reinforced. Thus it will be seen that the required weaving or braiding of the several layers of fabric to form reinforcements necessitated such interruptions in the formation of said covering as to prevent its continuous fabrication, and consequently added greatly to its cost of manufacture.

The principal objects of my invention are to provide a hollow flexible shaft casing that may be formed in continuous length with reinforcements disposed at predetermined distances and subsequently divided into lengths suitable for commercial uses.

Other objects of my invention are to provide a flexible shaft casing with spring reinforcements forming a component part of said casing, and a continuous covering for said casing and its reinforcements.

My invention comprehends a flexible shaft casing having tapered spring sleeves forming reinforcements that may be formed or otherwise disposed thereon and concealed by a covering which may be uninterruptedly fabricated around said casing and its reinforcements.

Specifically stated, the form of my invention as hereinafter described, comprises a continuous flexible shaft casing formed of coiled wires or strip material, and having disposed at suitable predetermined regions thereon coiled spring reinforcements, preferably tapered, and a covering of fabricated

material of uniform thickness woven or braided over said casing and its reinforcements to provide an uninterrupted textile protection therefor, said reinforcements serving to indicate where the casing may be severed to provide cut lengths for commercial use.

In the accompanying drawings Figure 1 is a side elevational view of a continuous length of flexible shaft casing showing reinforcements disposed thereon in suitable predetermined spaced relation in accordance with my invention; Fig. 2 is a side elevation view, on a reduced scale, of a flexible shaft casing constructed in accordance with my invention, showing its practical embodiment in connecting a handpiece with a motor; Fig. 3 is a side elevational view of a fragment of the flexible shaft casing shown in Fig. 2, and comprising the terminal portion which is connected with the motor shown in said figure; and Fig. 4 is a longitudinal sectional view, on an enlarged scale, of the structure shown in Fig. 3, taken on an axial plane of said structure.

In said figures, the casing body 1 may preferably be formed of wire or strip material 2, helically coiled as shown in Figs. 1 and 4, to afford a flexible tubular structure, which, as shown in Fig. 1, may be produced in continuous length.

At suitable predetermined regions along said casing body, reinforcements may be formed or disposed, comprising spring supports 3 of any desired construction, but preferably formed of coiled strip material 5, and tapered as shown.

Having thus provided the reinforced tubular casing body, it may be conveniently covered by a textile fabric 6, which may be woven or braided continuously about said casing body 1 and its reinforcing spring supports 3, throughout its length.

Referring to Fig. 1, it will be readily seen that the relatively spaced opposed larger ends of the reinforcing spring supports 3 serve to indicate where the casing body 1 may be severed to produce cut lengths for commercial use, such as is illustrated in Fig. 2.

Such cut lengths may, as shown in Figs. 3 and 4, be provided with a terminal fitting comprising the thimble or ferrule 7, into which it may be engaged with the internally disposed threads 9, and which, as shown,

is provided with the terminal member 10 having the threaded nipple 11, for convenient connection with the motor 12, or other suitable driving element, as shown in Fig. 2, to connect a handpiece 13, or other suitable driven element, with said motor or driving element.

It may be here noted that the reinforcement may be only at the supported end as shown attached to the motor in Fig. 2, or the casing may also be provided with a reinforcement at its free end to which the handpiece is attached.

Although I have described the fabrication of the textile covering about the continuous unsevered casing body shown in Fig. 1, it is to be understood that said casing may be severed into cut lengths, and with the reinforcements properly disposed, such cut lengths may be temporarily connected as by wiring them together or any other suitable manner, to provide a continuous train of such cut lengths, and the textile covering fabricated continuously about said casings and their reinforcements throughout the connected train.

My invention is advantageous, in that flexible shaft casings formed as herein contemplated are not only more economical to manufacture than the casings in commercial

use, but have increased efficiency and durability.

I do not desire to limit my invention to the precise details of construction and arrangement as herein set forth, as it is obvious that various modifications may be made therein without departing from the essential features of my invention as defined in the appended claims.

Having thus described my invention, I claim:

1. A flexible shaft casing having a tapered coiled spring reinforcement forming a component part of said casing.

2. A flexible shaft casing comprising a tube of coiled strip material formed in continuous length and having spring reinforcements formed at predetermined distances along its length, and a covering for said tube fabricated continuously over said tube and its reinforcements, said reinforcements indicating the regions where said tube may be severed to provide individual reinforced lengths of casing suitable for commercial use.

In witness whereof, I have hereunto set my hand this 17th day of November, A. D. 1924.

EMMET A. JOLINE.