No. 720,307. PATENTED FEB. 10, 1903.

J. J. WOOD.

ARMATURE BAND.

APPLICATION FILED FEB. 26, 1902.

NO MODEL.

FIG. 1.

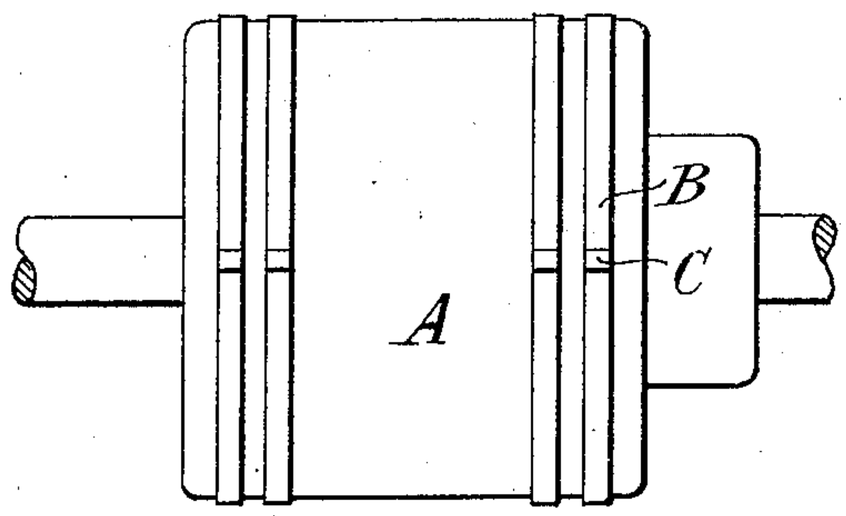


FIG. 2.

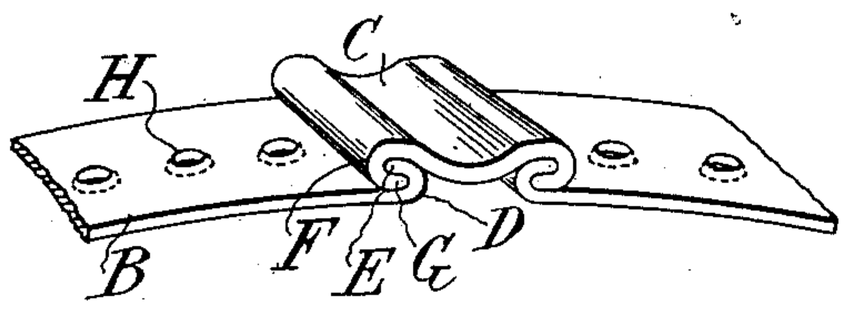


FIG. 3.

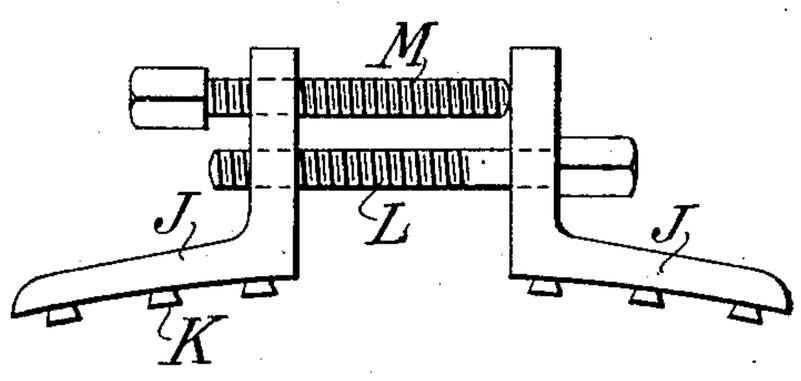


FIG. 4.

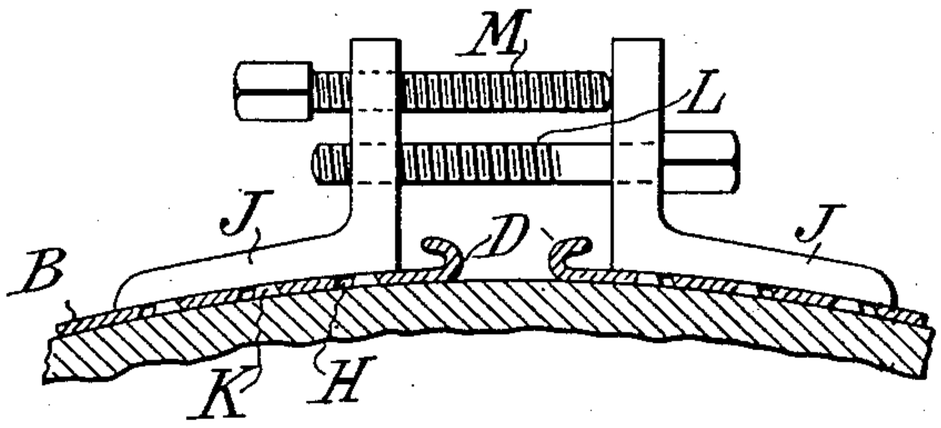
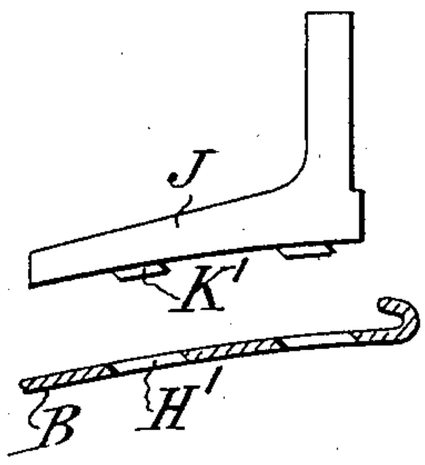


FIG. 5.



WITNESSES:

René Bruine

Thomas Wallace

INVENTOR:

James J. Wood,

By Attorneys,

Arthur G. O'Brien & Co.

UNITED STATES PATENT OFFICE.

JAMES J. WOOD, OF FORT WAYNE, INDIANA.

ARMATURE-BAND.

SPECIFICATION forming part of Letters Patent No. 720,307, dated February 10, 1903.

Application filed February 26, 1902. Serial No. 95,705. (No model.)

To all whom it may concern:

Be it known that I, JAMES J. WOOD, a citizen of the United States, residing at Fort Wayne, in the county of Allen and State of Indiana, have invented certain new and useful Improvements in Armature-Bands, of which the following is a specification.

In the making of armatures it is necessary to provide means for preventing the windings from being loosened by centrifugal force. The means usually employed are bands surrounding the windings at suitable points and clamped tightly thereon. The conditions under which these bands have to be applied and used are peculiar and quite distinct from the conditions surrounding the application and use of bands for other materials and in other machines. The joints should be easily made or broken in order to permit the removal and replacement of sections of the winding at will, and at the same time they must be strong and reliable. The material surrounded by the bands is but slightly compressible, yet the band must fit quite tightly. Very little space is available for any provisions upon the band by which it can be grasped to draw the ends together. The means used for drawing the ends together should not project inside the inner face of the band, since there would be a chance of injuring the windings and since it would result in a loose band when the tightening means is withdrawn. It is also essential that the band should not be very much heavier at the joint than at other points, since this would tend to unbalance the armature.

My invention aims to provide an improved band including means for tightening and means for locking the same, which is well adapted for application and use under the peculiar conditions observed.

The accompanying drawings illustrate an embodiment of my invention.

Figure 1 shows an armature with two pairs of bands applied at opposite ends. Fig. 2 is a perspective view of the end of a band in the locked position. Fig. 3 is a side elevation of a tightening means adapted for use with the band shown in Fig. 2. Fig. 4 illustrates the application of the tightening means of Fig. 3 to the ends of a strip to draw such ends together. Fig. 5 illustrates another form of the tightening means and strip.

My improved armature-band comprises a strip which preferably extends completely around the windings and which has shoulders at or near its meeting ends, these ends being locked by a member which has corresponding shoulders engaging the shoulders on the strip to hold the ends thereof together. Preferably the strip is flat and has its ends alined with each other, and the shoulders are symmetrical with each other. The locking member and the strip are held together preferably by making the shoulders on the strip and locking member overhanging, so that they interlock. Preferably the shoulders on the strip and also on the locking member are formed by flanges bent up from the material of which these parts are formed, the flanges on the strip being bent outward, so as to let the inner face thereof lie flat against the winding. The strip is preferably of phosphor-bronze or the like and the locking member of steel to give the requisite stiffness to the interlocking portions. I provide also in connection with the strip and locking member a tightening means for drawing the ends of the strip together to permit engagement thereof by the locking member, the strip and the tightening means having coöperating interengaging provisions, preferably in the form of undercut recesses or perforations in the strip and undercut projections on the tightening means, whereby the tightening means may temporarily engage the strip.

Referring to the drawings, A indicates an armature provided at suitable points with bands comprising strips B, having their ends held together by locking members C.

Fig. 2 shows a band as a thin flat strip B, having its ends bent outward to form flanges D with overhanging edges E. The locking member C, which holds the ends of the strip together, is a short piece of thin stiff material—such, for example, as steel of low-spring temper—having corresponding inwardly-bent flanges F, with overhanging edges G, interlocking with the flanges D E. Preferably the flanges D and F, as shown, are perpendicular to the direction of the strain, which is the direction of the length of the strip, so that

the locking-faces are directly normal to the strain and there is no tendency of the locking member to slip sidewise. The shouldered engagement formed by the flanges acts, as above explained, to hold the ends of the strip from separation and also to hold the locking member C upon the ends of the strip. The steel locking member or clip C is preferably curved inwardly between the flanges, as shown, to give it, approximately, the form which it would tend naturally to assume under strain, whereby when the strain is put on it the tendency to distortion or pulling out of the flanges is reduced, so that with a metal (as tempered steel) of the proper stiffness the slackening of the band under strain is prevented. Preferably a long overlap of the engaging edges of the flanges is provided, the overhang E of the flange D being embraced within the overhang G of the flange F, and the depth of the flanges is only sufficient to easily accommodate the thickness of the metal. A secure interengagement is thus effected, which, with the character of steel used, makes it practically impossible to open up the bent ends of the strip and draw them out of the overhanging flanges of the clip by a straight pull, such as occurs in use.

In forming my improved band I preferably form the strip B and the locking member C separately in the shape shown in Fig. 2 and then draw the ends of the strip together around the armature-windings until the flanges D are close enough together to permit sliding the locking member C over them in a direction transverse to the length of the strip. The ends are then released and pull strongly against the flanges of the locking member. This joint can be easily broken at any time by the reverse process—that is to say, by drawing the ends together until the locking member C can be slid off the flanges D. I contribute to the facility of forming and breaking the joint by providing tightening means for drawing the ends together and by providing the strip with separate means, as the perforations H, Fig. 2, or H', Fig. 5, for temporary engagement with the tightening device. As shown in Figs. 3 and 4, the tightening mean include a pair of members J, having undercut projections K for engagement with the correspondingly-undercut perforations H in the strip B. The members J are preferably flanged, as shown, and a screw or the like L is used for drawing the members toward each other to draw the ends of the strip together. It is necessary to prevent the outer parts of the members J from being canted inward, and thereby breaking the connection between the projections K and the perforations H. I provide for this purpose a second screw M, which holds the outer parts of the members J apart from each other and which is loosened as the screw L is tightened up. The position of the projections K in the perforations H is thus maintained and the accidental separation of the tightening means from the strip is prevented. The thickness of the projections K, as indicated in Fig. 4, is preferably substantially the same as that of the strip B, so as to avoid their engagement with the windings, and so as to avoid also any looseness of the band when the projections K are withdrawn.

Obviously the nature of the interengaging provisions between the tightening means and the strip may be considerably varied without changing the mode of operation. For example, in Figs. 3 and 4 these parts are undercut not only in the direction toward the end of the strips, but also in the opposite direction, while in Fig. 5 the corresponding projections K' and perforations H' are slanted bodily in the direction toward the end of the strip.

Though I have described with great particularity of detail a device embodying my invention, yet it is to be understood that the invention is not limited to the particular embodiment disclosed. Various modifications of the details and of the combinations of parts are possible to those skilled in the art without departure from the invention. It is understood, for example, that the locking-shoulders need not be at the extreme ends of the strip, but may be either at or near such ends. It is understood also that the strip having means for engagement with a locking member and separate means for temporary engagement with a tightening device is an important feature of the invention regardless of the nature of the separate engaging means.

Instead of using a single strip B, extending entirely around the armature, I may obviously form a band from two, three, or more strips united at their respective ends to form a single complete band. By forming the connection of the several strips in the manner indicated above I may provide a joint capable of easy separation to take out a section at one or more points for replacement or repair of the armature-coils at such point or points.

I do not in the present application claim the separate tightening device described; but I am not to be understood as waiving my right to claim the same in another application.

What I claim is—

1. An armature-band comprising a flat metal strip having ends alined with each other and having symmetrical shoulders, and a locking member symmetrical with said strip and having corresponding shoulders engaging the shoulders on said strip to hold said ends together.

2. An armature-band comprising a metal strip having overhanging shoulders at its ends, and a locking member having corresponding overhanging shoulders engaging the shoulders on said strip with the overhang of one shoulder within the overhang of the other, whereby to hold said ends together, and to hold said strip and locking member together.

3. An armature-band comprising a metal strip having overhanging shoulders at its ends, and a locking member having corre-

sponding overhanging shoulders engaging the shoulders on said strip with the overhang of one shoulder within the overhang of the other, the depth of said shoulders being only sufficient to easily accommodate the thickness of the metal whereby to hold said ends together, and to prevent the ends of said strip from drawing out of said overhanging shoulders of the locking member.

4. An armature-band comprising a metal strip having its ends bent outward to form overhanging flanges, and a locking member having its ends bent inward to form corresponding flanges engaging the flanges on said strip, the depth of said flanges being only sufficient to easily accommodate the thickness of the metal whereby to hold said ends together, and to prevent the ends of said strip from drawing out of said overhanging flanges of the locking member.

5. A strip adapted to form part of an armature-band, having near its ends means for engagement with a locking member, and separate means for temporary engagement with a tightening device.

6. An armature-band comprising a strip of bronze having overhanging shoulders at its ends, and a locking member of steel having corresponding overhanging shoulders engaging the shoulders on said strip with the overhang of one shoulder within the overhang of the other, the depth of said shoulders being only sufficient to easily accommodate the thickness of the metal whereby to hold said ends together, and to prevent the ends of the strip from drawing out of the overhanging shoulders of the locking member.

7. An armature-band, comprising a metal strip having shoulders at its ends, and a locking member having corresponding shoulders engaging the shoulders on said strip to hold said ends together, said locking member being curved inwardly between its engaging shoulders, to the effect set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JAMES J. WOOD.

Witnesses:
F. S. HUNTING,
W. L. BLISS.