

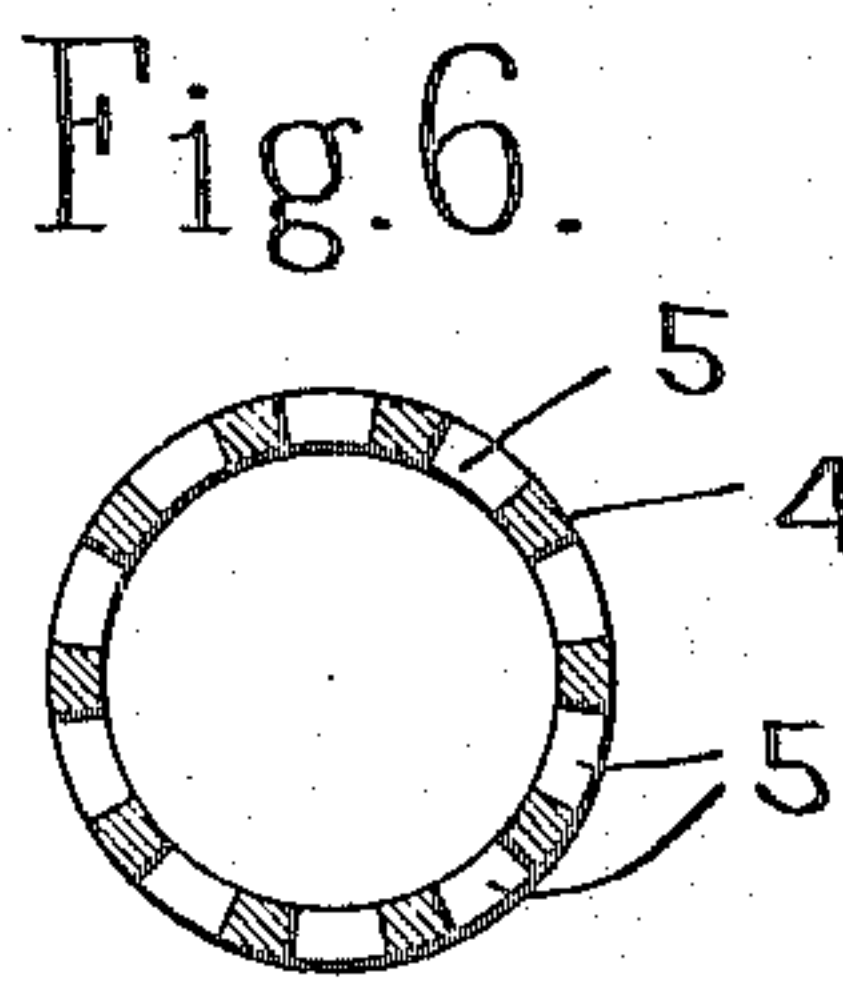
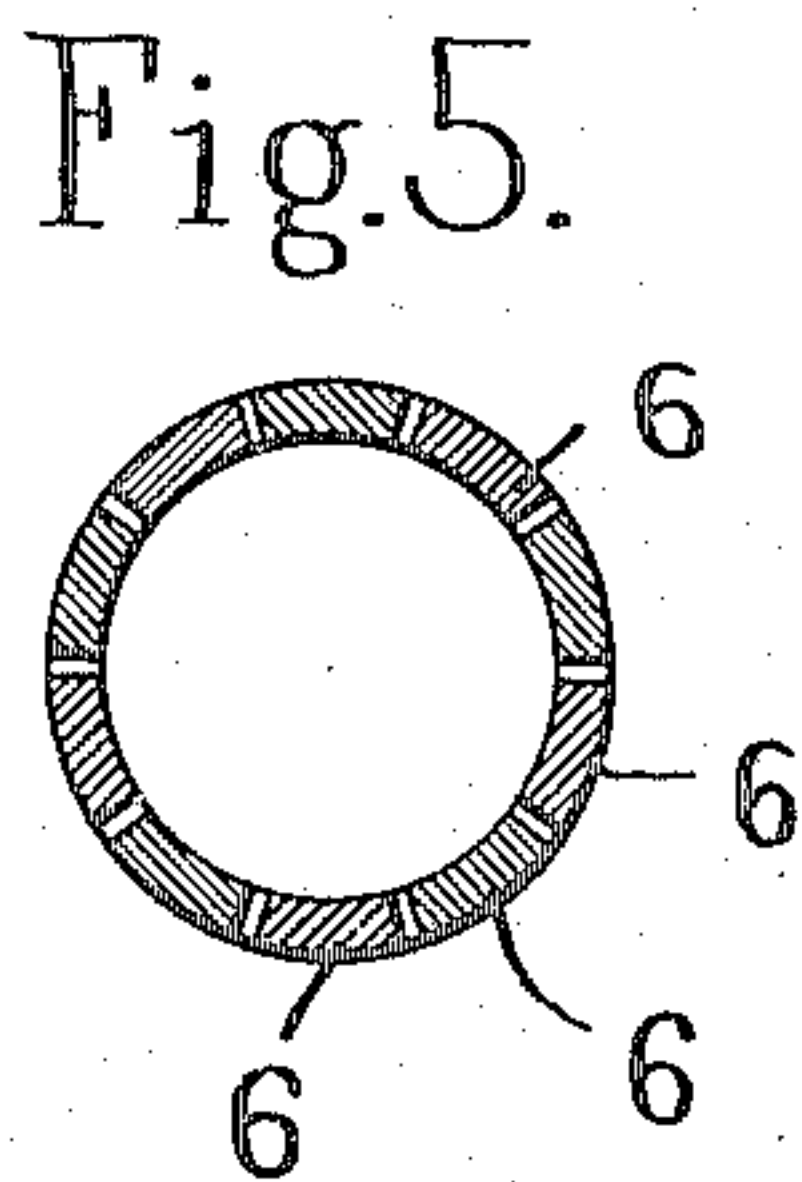
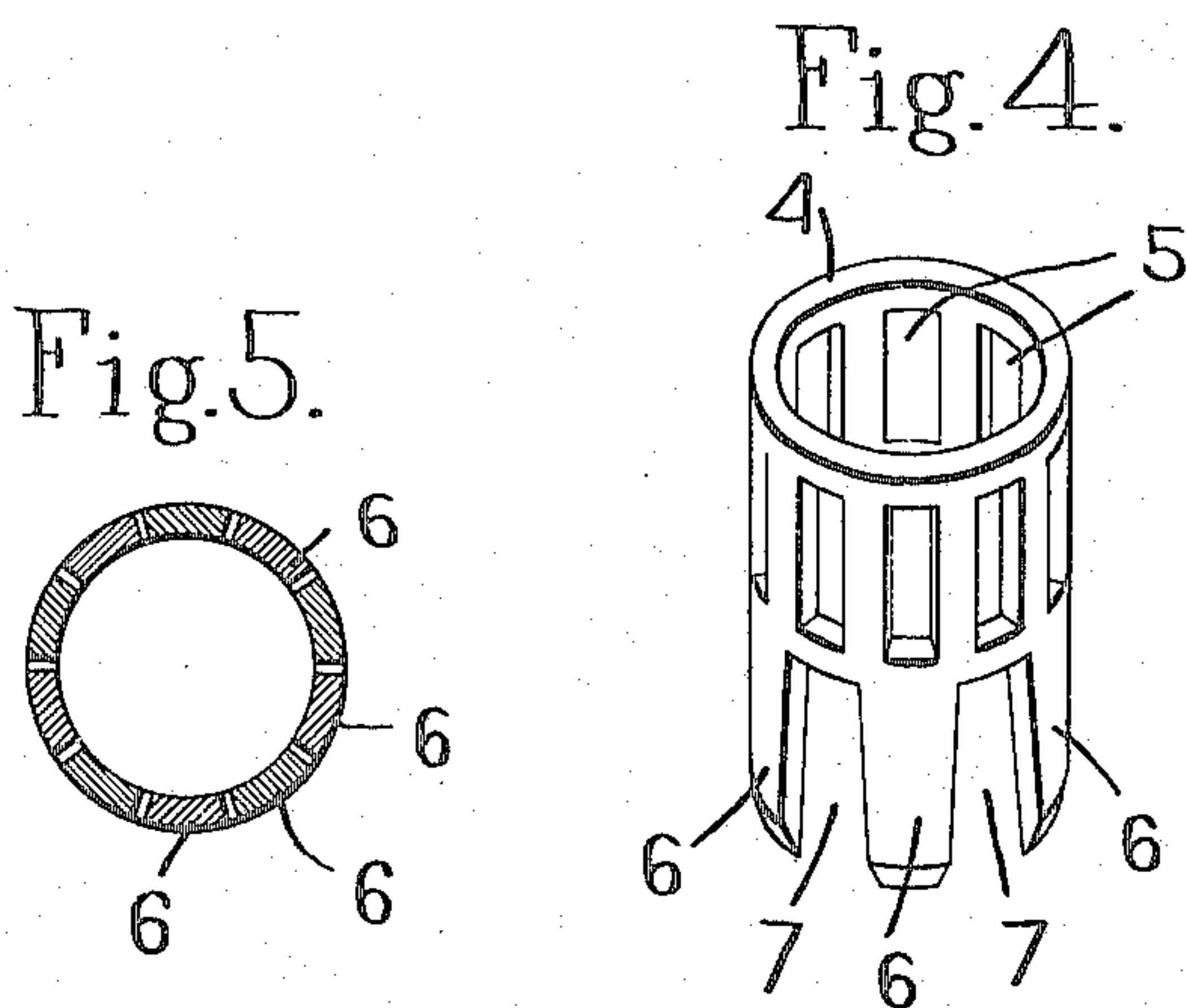
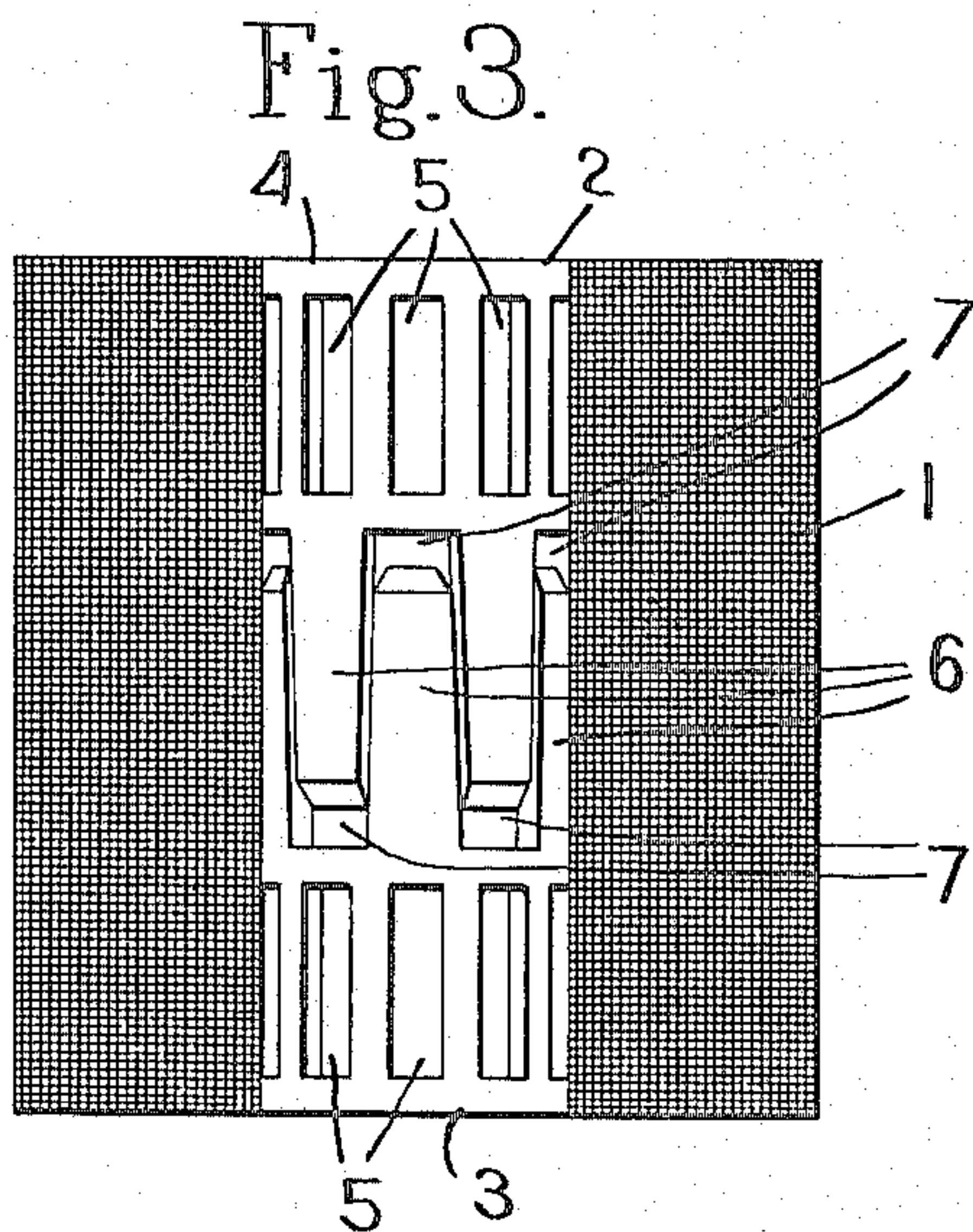
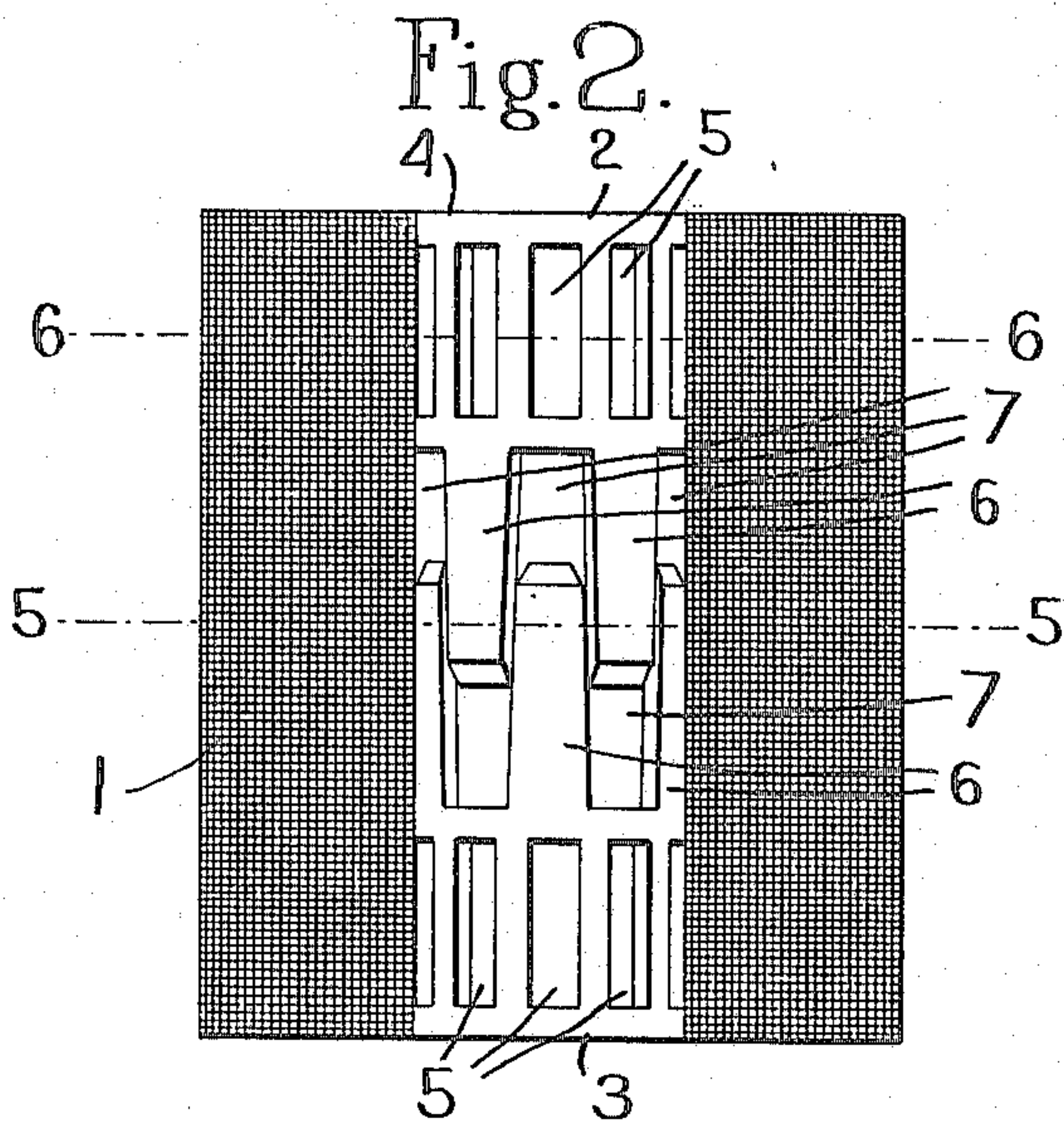
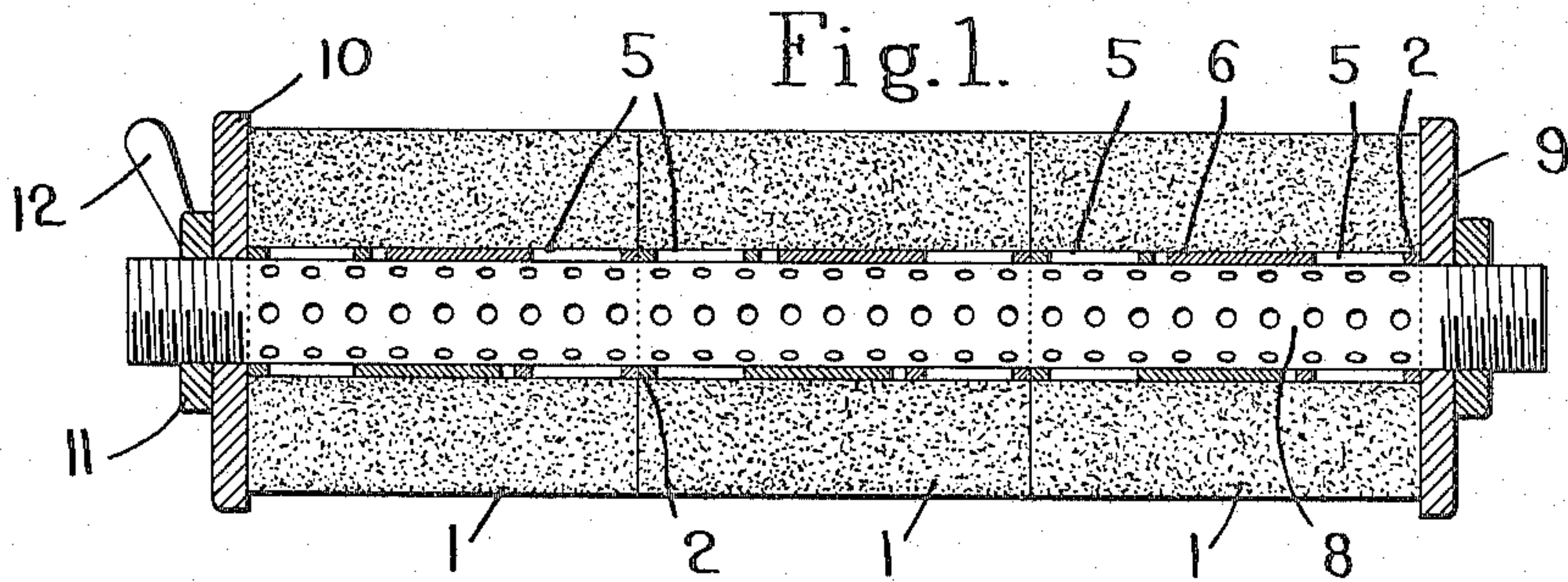
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J. F. BENOIT

YARN PACKAGE AND CORE THEREFOR

Filed June 4, 1923



Inventor.  
Joseph F. Benoit  
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Attys.



## UNITED STATES PATENT OFFICE.

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YARN PACKAGE AND CORE THEREFOR.

Application filed June 4, 1923. Serial No. 643,238.

*To all whom it may concern:*

Be it known that I, JOSEPH F. BENOIT, a citizen of the United States, and resident of Sanford, county of York, State of Maine, have invented an Improvement in Yarn Packages and Cores Therefor, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

One method which is now commonly used for dyeing yarn consists of winding a yarn package on a hollow core or sleeve which is contractible longitudinally, subjecting the yarn package to end pressure until all parts of the yarn package are of uniform density and then forcing the dye liquor through the package from the interior thereof, this usually being done by placing the package on a perforated pipe and forcing the dye liquor through the perforations in the pipe and thus through the yarn mass.

The form of hollow core or sleeve which is now commonly used to support the yarn package during the process of dyeing the yarn is in the nature of a helical spring having a fabric covering. One objection which is met with in using this form of core is that owing to the spring nature thereof there is always a tendency for the core to expand longitudinally so that after the yarn has been compressed in the direction of its length and the pressure is relieved the expansive action of the spring sometimes forces the ends of the core out beyond the compressed yarn package thus interfering with the unwinding of the dyed yarn from the core and also hampering the handling of the yarn package.

One of the objects of my present invention is to provide an improved longitudinally contractible core for a yarn package which is so constructed that it will remain in its contracted condition without any tendency to resume its expanded condition. The advantage of this is that when the yarn package has been contracted longitudinally to bring the yarn mass to uniform density throughout and the core has been correspondingly contracted in length, said core will retain its shortened condition throughout subsequent handling of the yarn package and without any tendency to expand again and thus cause the ends of the core to project beyond the condensed yarn package.

Another object of the invention is to provide an improved core for this purpose which does not require a fabric covering which is rigid in a radial direction and which is constructed so that the yarn can be wound directly thereon.

Other objects of the invention are to improve generally expansible and contractible cores for yarn packages all as will be more fully hereinafter set forth.

In order to give an understanding of the invention I have illustrated in the drawings a selected embodiment thereof which will now be described after which the novel features will be pointed out in the appended claims.

Fig. 1 is a sectional view showing a plurality of yarn packages mounted on the perforated pipe and in condition to be subjected to the action of the dye liquor;

Fig. 2 is a sectional view through a yarn package when it is wound on my improved core;

Fig. 3 is a section showing the package after it has been subjected to end pressure to bring all parts thereof to uniform density;

Fig. 4 is a perspective view of one section of the improved core;

Fig. 5 is a section through the core on the line 5—5, Fig. 2;

Fig. 6 is a section through the core on the line 6—6, Fig. 2.

In the drawings 1 indicates a yarn package or cop which has been wound upon my improved core, the latter being indicated generally at 2. This core is made in two sleeve-like sections 3 and 4 which are rigid in a radial direction but which when assembled may have an axial movement relative to each other. Each section comprises a sleeve-like body portion having a plurality of perforations 5, the inner end of the body being formed with longitudinally-extending fingers 6 which are separated by spaces 7. The spaces 7 of each section are of the proper size to receive the fingers of the other section so that when the sections are placed in axial alignment and with the fingers of the two sections in overlapping relation a continuous cylindrical sleeve or core is formed. The provision of the fingers allows the two sections to have a movement relative to each other in an axial direction. These core sections are made rigid radially and will preferably be made of some ma-



terial which is not affected by the action of the dye liquor which is used in dyeing the yarn.

5 In using the core the two sections thereof will be placed on the spindle of the winding machine in substantially the relation shown in Fig. 2 and the yarn mass will then be wound directly on the hollow core thus producing the yarn package shown in Fig. 10 2. After the yarn package has thus been formed and before it is subjected to the action of the dye liquor it is compressed in an axial direction until all parts of the yarn mass are of uniform density. During this 15 compressing action the two sections 3 and 4 of the core have an axial movement relative to each other, the arms 6 of one section entering further into the spaces 7 of the adjacent section as shown in Fig. 3. 20 In winding the yarn on the core the ends of the yarn package will be wound flush with the ends of the core and when the yarn is thus compressed axially the ends of the core still remain flush with the ends of the 25 yarn package. Owing to the construction of the core there is no tendency for the latter to expand in an axial direction and hence the compressed yarn package will retain its shape shown in Fig. 3 without 30 any tendency on the part of the core sections to project beyond the ends of the yarn mass.

35 So far as the present invention is concerned the yarn package may be subjected to the end pressure and brought into the condition shown in Fig. 3 by any suitable means. In Fig. 1 I have illustrated a perforated pipe 8 having a collar or flange 9 stationarily mounted thereon and onto 40 which a plurality of yarn packages 1 may be placed. These yarn packages are confined between the flange 9 and a movable flange 10 and the compressing of the yarn packages endwise to bring the yarn mass

to the uniform density is accomplished by 4 means of a collar 11 screwed onto the pipe 8 and provided with a suitable handle 12 by which it may be turned. By screwing up the collar 11 the desired endwise pressure will be applied to the packages during 50 which the two sections of the core of each package will have the telescopic relation.

The dye liquor may be then forced through the pipe 8 whereby said liquor will be forced through the perforations in the 55 pipe and in the cores and thus throughout the yarn mass.

After the dyeing operation has been completed and the cops 1 are removed they will retain their compressed shape and the sectional core will also remain in its contracted 60 condition during subsequent handling of the cop.

I claim:

1. A core on which a yarn package may 65 be wound comprising a tubular perforated body formed in two sections, the adjacent ends of the sections having fingers interlocking with each other, said sections being movable relative to each other in an axial 70 direction.

2. A core on which a yarn package may be wound comprising two perforated tubular sections each having at its inner end longitudinally-extending fingers spaced 75 from each other, the spaces between the fingers of each section receiving the fingers of the other section.

3. A core on which a yarn package may be wound comprising two perforated tubular 80 sections rigid in a radial direction and each having at its inner end a plurality of spaced fingers, the fingers of one section fitting the spaces of the other section.

In testimony whereof, I have signed my 85 name to this specification.

JOSEPH F. BENOIT.