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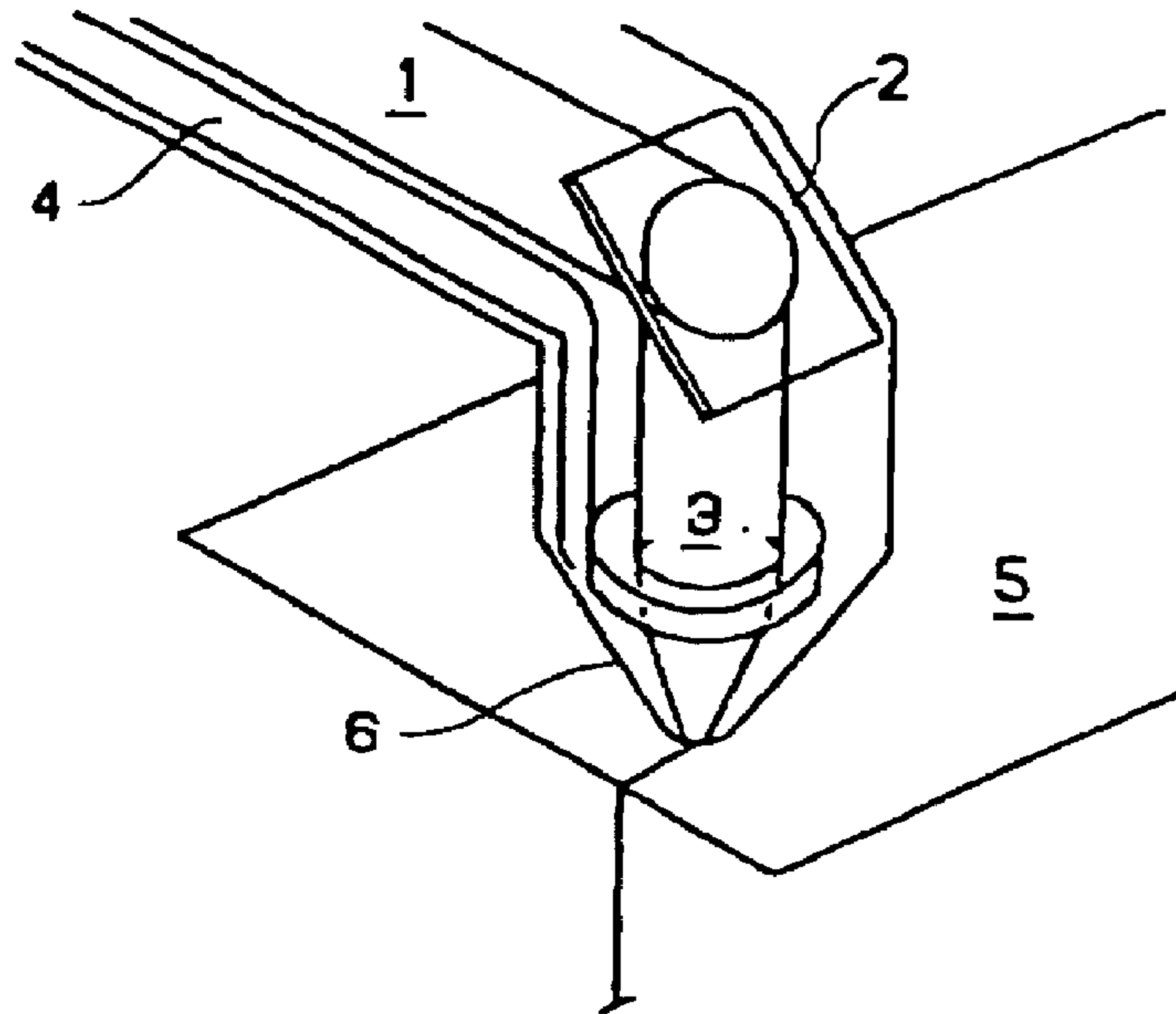
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(54) **SYSTEME DE FABRICATION D'IMAGES A POLARISATION**

(54) **MANUFACTURING SYSTEM FOR A POLARIZING PICTURE**



(57) A method of manufacturing a die for a picture carrier intended for creating the impression of a movement when the picture is projected or illuminated on at least certain parts of the picture or projection, by making use of a polarizes and/or an analyzer and a picture carrier treated accordingly, whereby use is made of a laser for locally working the die.

ABSTRACT

- 5 A method of manufacturing a die for a picture carrier
intended for creating the impression of a movement when
the picture is projected or illuminated on at least
certain parts of the picture or projection, by making
use of a polarizer and/or an analyzer and a picture
10 carrier treated accordingly, whereby use is made of a
laser for locally working the die.

A MANUFACTURING SYSTEM FOR A POLARIZING PICTURE

5 The invention relates to a method of manufacturing a die
for a picture carrier intended for creating the impression
of a movement when the picture is projected or illuminated
on at least certain parts of the picture or projection,
by making use of a polarizer or an analyzer and a picture
10 carrier treated accordingly.

US patent No. 3,437,401 describes a light box for animat-
ing selected parts of a picture, whereby use is made of
a rotating polarizing disc and a light-interrupting foil,
which is provided with several picture line patterns
15 impressed on those parts of the foil that constitute the
part to be animated. Said picture lines have been im-
pressed on the light-interrupting foil by means of a die
or a punch. For the projection use is made in principle
of one or more light sources, a polarizing disc rotating
20 in front of said light sources and a picture carrier
located in front of said polarizing disc, whereby the
picture carrier is locally provided with parts acting as
an analyzer. Said parts acting as an analyzer made be
made by providing certain tension lines according to a
25 certain pattern, yet oriented in varying directions in
the various locations. A suitable selection of the ma-
terial of the picture carrier or the foil will make it
possible, by impressing tension lines, to obtain a po-
larizing effect, on the basis of the properties of the
30 foil material itself. Furthermore it is possible to
provide unevennesses, oriented in certain directions, on
a foil of a suitable material and to provide an ink layer
containing polarizing crystals on said foil. The orienta-
tion of said polarizing crystals will then adapt itself
35 to the orientation of the unevennesses. With such a pre-

treated foil it is also possible to provide a, possibly colourless, layer containing polarizing crystals before or after providing the coloured printing inks.

5 This known method is in particular suitable for producing a large number of identical light-interrupting foils. A large number of intermediate steps are necessary, however, in order to provide the parts, oriented in various directions, of the picture in which a certain polarizing effect is to be effected. Thus it is not unusual to orientate
10 the tension lines and the like in at least nine different directions; it is more common, however, to orientate said tension lines at twenty-four different angles. For each individual direction a separate mask, such as e.g. known from lithography, is to be used.

15 The drawback of such a method is that it is costly, time-consuming and quite laborious, because of the great accuracy that is required, whilst a very high percentage of rejects will still have to be reckoned with.

20 It has become apparent that the dies to be used with such a method can be worked locally, by means of laser beams, in a very simple manner. Taking into account the fact that a small deformation already results in the effect desired, it will be easy to realise said local deformations to the desired extent and in the desired
25 orientation by means of a laser beam. In addition to that, the use of a computer for the laser control has made it possible in a simple manner to provide the desired deformations at any desired location.

30 The use of a die for providing local deformations at various orientations is inter alia described in US patent No. 3,650,625. From this US patent it is clear how complicated and expensive (approximately US \$ 7,000) the

manufacture of a die described therein is. A further drawback of this known manufacturing system is that the accuracy thereof is not satisfactory in practice, while further additional devices as die-rollers and pressing-
5 rollers have to be used.

According to a further elaboration of the invention it has become apparent that it is possible in a simple manner to provide the desired deformations of a picture carrier or foil, without using a die, but to realise the desired
10 local deformations directly by means of a laser treatment, which acts directly on the foil itself. Of course such a laser will have to be effectively controlled by means of a computer as well, in order to realise the desired deformations with the required accuracy. A film thus
15 treated can realise the effect desired by means of tension lines and an ink containing polarizing crystals. In this way the various structures desired, such as inter alia described in US patent No. 3,437,401, can be realised in a very simple manner and with great accuracy, whereby
20 it is no longer necessary to use a die and it is also possible to provide one or only a few picture carriers with a picture with the desired polarizing effect at very short notice. As a result of this separate polarizing pictures can be realised much faster and at much lower
25 cost than before.

It is noted that besides a light source, in front of which a rotating polarizer is located, use may also be made of light sources of polarized light, whereby care must be taken that the orientation of the polarized light
30 is changed after all, e.g. by means of an analyzer disc. It is possible to irradiate the picture or the picture carrier itself with light, so that the picture itself is directly observed by the observer, in the shape of a light box or a neon sign in a shop window. In the latter

case the light source may be placed at some distance. For projection systems, however, the light shining through or being reflected, as is e.g. the case with an overhead projector, will be projected on a viewing screen.

- 5 Laser Praxis, October 1990, München Carl Hansen Verlag, pages 125 through 128 (M. Meyer et al.) describes a system to put numbers, letters and barcodes on organic
an anorganic materials while using a laser. However, this document does not refer to the the creation of small
10 tension lines - thereby orientating the molecules in a direction perpendicular thereto, and ordering the various wavelengths of light - so that an impression of movement is effected using a polarisator and an analysator.

- Patent Abstracts of Japan, vol.11, No. 68 (P-553), Fe-
15 bruary 28, 1987, and JP-A-61 231531, October 15, 1986 describe a method for manipulating a video film, for example, with the aid of mirrors. A picture of a film is provided with another background, for example, and this manipulation is recorded on film or videotape.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a schematic view of an embodiment of a manufacturing system for a polarizing picture according to the invention;

FIG. 2 is an enlarged plan view of a section of the piece of work showing one pattern of tension lines;

FIG. 3 is a view similar to FIG. 2 showing another pattern of tension lines; and

FIG. 4 is a greatly expanded view of the encircled section of FIG. 3.

DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. 1 shows a laser beam 1 deflected by a mirror 2 to a lens 3. The laser beam 1 is surrounded by cutting gas 4 thus preventing the laser beam 1 from diverging. The laser beam 1 is directed to a piece of work 5 via a mouth piece 6.

According to the invention, and as shown in FIGS. 2, 3 and 4, tension lines 7 in the material in the piece of work 5 are orientated in different directions. They thus thereby orient the stretched chain molecules 8 in different directions perpendicular thereto.

CLAIMS:

1. A method of manufacturing a die for forming tension lines along a plurality of predetermined patterns on a picture carrier intended for creating the impression of a movement when a picture is subjected to light on at least certain parts of the picture, by making use of a polarizer and an analyzer and a picture carrier having said tension lines, comprising the steps of directing a laser beam against said die to deform the surface of the die in the patterns corresponding to said predetermined patterns.
2. A method according to claim 1, controlling the movement of the laser beam by means of a computer.
3. A method of directly treating a picture carrier having a picture thereon to form tension lines on the carrier, which lines extend along a plurality of predetermined patterns of different orientation with respect to each other, so as to create the impression of a movement when at least certain parts of the picture are subjected to light, by making use of a polarizer and an analyzer and said picture carrier, comprising the step of directing a laser beam directly against said picture carrier and moving said beam along said surface to deform the surface thereof into said plurality of predetermined patterns of different orientations with respect to each other.

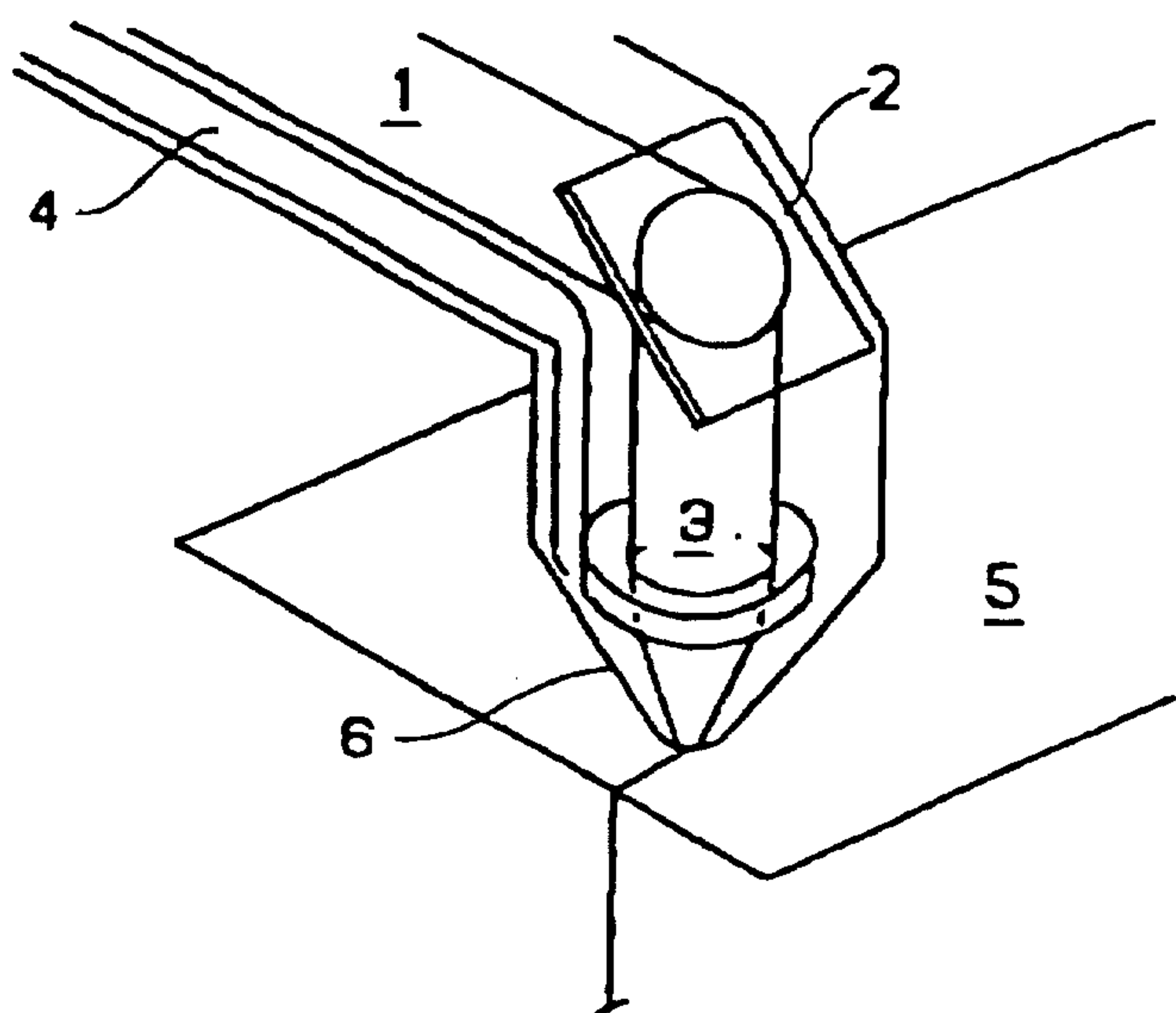


FIG. 1



FIG. 2

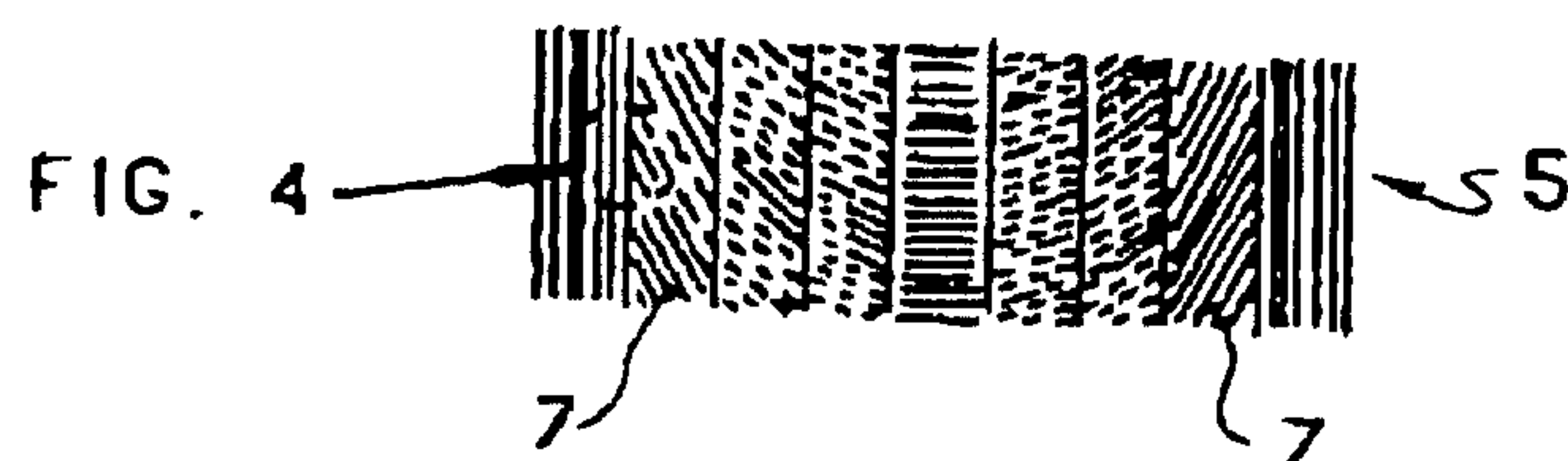


FIG. 3

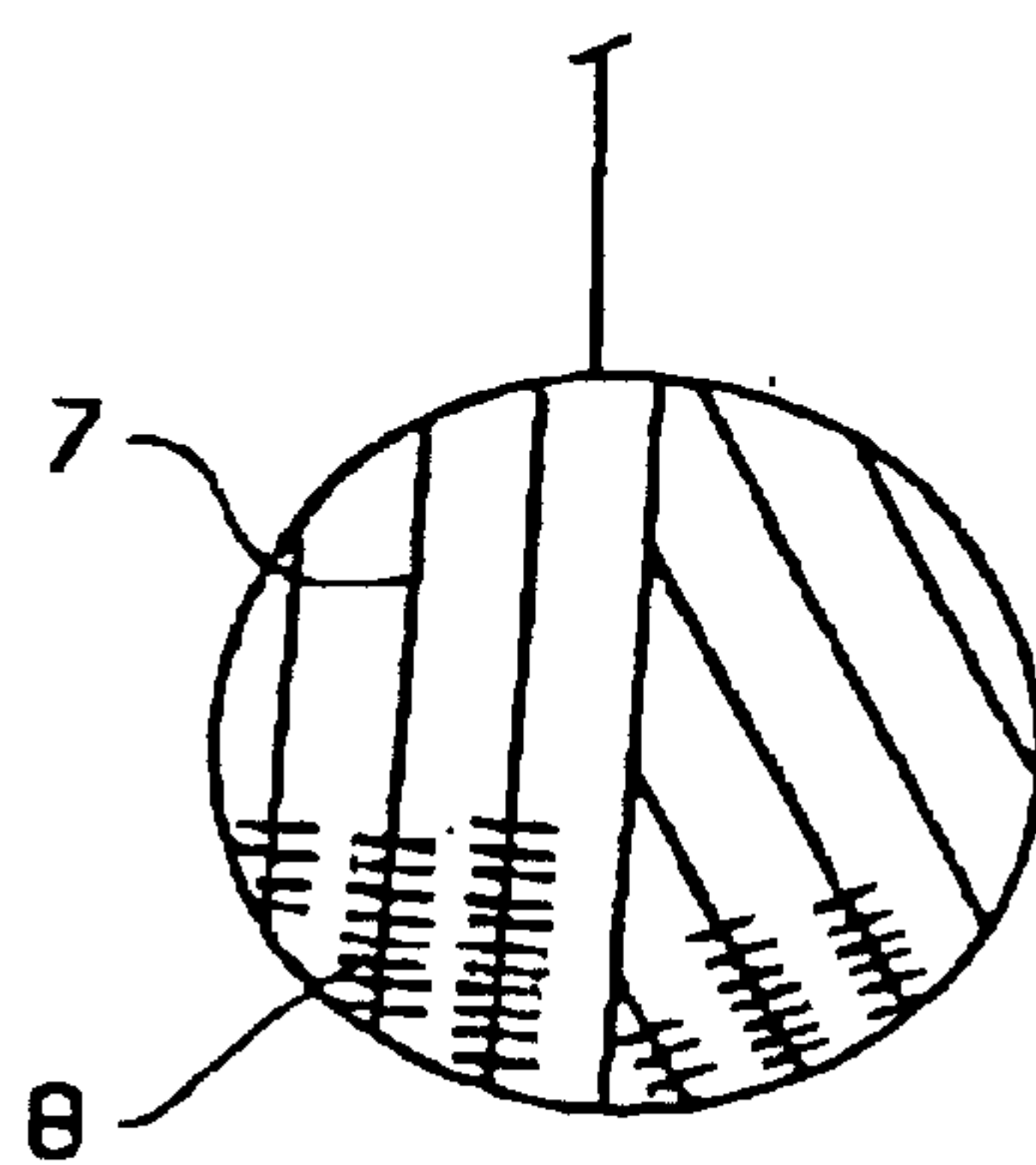


FIG. 4