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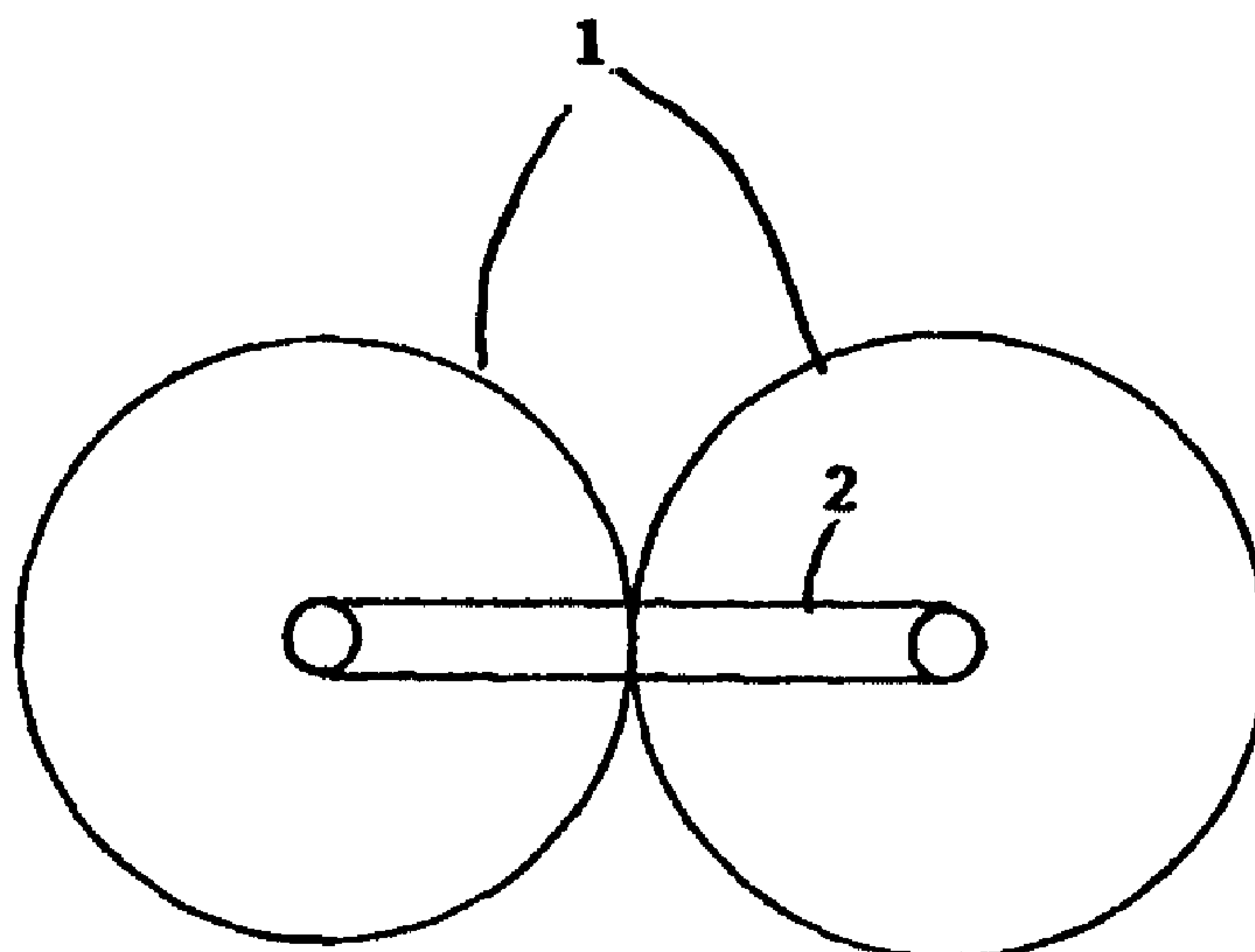
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(51) Int.Cl.⁷ B28B 11/08

(30) 1998/08/03 (981691) FI

(54) **PROCEDE DE MEULAGE**

(54) **A METHOD FOR GRINDING**

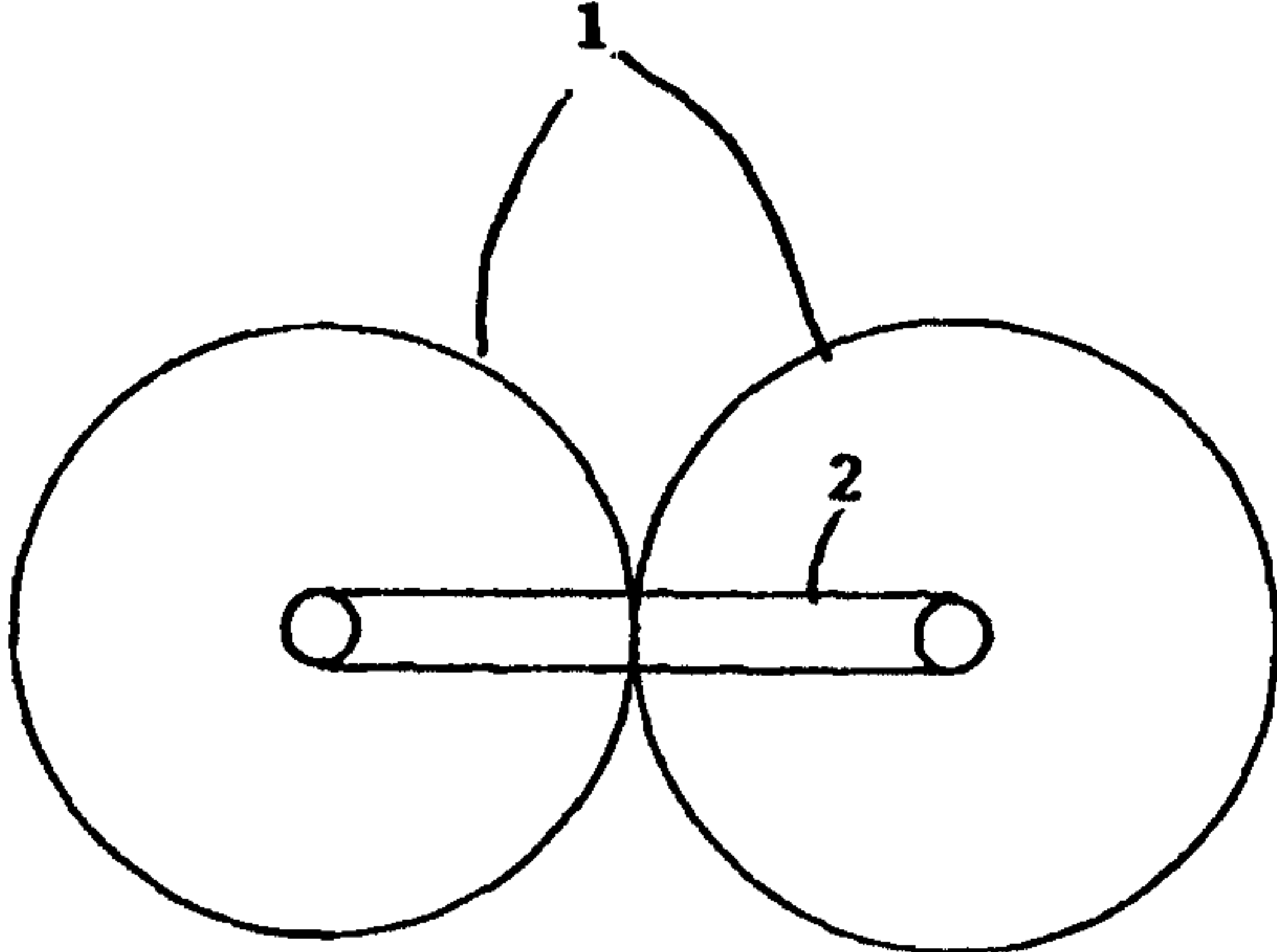


(57) L'invention porte sur un procédé de meulage de composants structurels tels que des colonnes de pierre ou de ciment ou des dalles selon lequel lesdits éléments sont mis en mouvement relatif les uns par rapport aux autres de façon à créer un effet de meulage dû au mouvement.

(57) A method for grinding structural components, such as stone or concrete columns or slabs. According to the invention, the structural components are set in motion in relation to each other with their surfaces in contact with each other, to create a grinding effect through the movement.

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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification ⁷ : B28B 11/08</p>	<p>A1</p>	<p>(11) International Publication Number: WO 00/07787</p> <p>(43) International Publication Date: 17 February 2000 (17.02.00)</p>
<p>(21) International Application Number: PCT/FI99/00648</p> <p>(22) International Filing Date: 3 August 1999 (03.08.99)</p> <p>(30) Priority Data: 981691 3 August 1998 (03.08.98) FI</p> <p>(71)(72) Applicant and Inventor: KUKKONEN, Pertti, Juhani [FI/FI]; Ilmattarentie 13, FIN-00610 Helsinki (FI).</p> <p>(74) Agent: LAITINEN, Pauli, S.; Patentti-Laitinen OY, P.O. Box 29, FIN-02771 Espoo (FI).</p>		<p>(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).</p> <p>Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments. In English translation (filed in Finnish).</i></p>
<p>(54) Title: A METHOD FOR GRINDING</p> <div style="text-align: center;">  </div> <p>(57) Abstract</p> <p>A method for grinding structural components, such as stone or concrete columns or slabs. According to the invention, the structural components are set in motion in relation to each other with their surfaces in contact with each other, to create a grinding effect through the movement.</p>		

A method for grinding

The present invention relates to a grinding method, and in particular to a method, which can be used to grind structural components used in building, such as
5 columns, slabs, and similar.

Traditionally, concrete and stone columns and slabs have been ground using rotating grinding discs or belts, in which the abrasive substance is carborundum or another abrasive stone or powder, as well as increasingly commonly diamond,
10 which will soon be the sole substance used. For example, Finnish patent 90842 discloses one method for using diamond to grind a round concrete column.

All methods using diamond grinding are expensive. In addition, the technical solutions disclosed in the above patent are not only difficult to implement and
15 thus expensive, but also liable to breakage, and demand the continuous presence of someone to operate the apparatus. It is also only possible to grind one column at a time.

German patent 12332 discloses one grinding method, according to which a
20 cylindrical piece can be ground using a second cylindrical piece. This construction and method require separate grinding cylinders, which are naturally also expensive and subject to wear and must be replaced and repaired, leading to considerable additional costs.

The method according to the invention can be used to obtain ground columns or slabs and similar, without diamond grinding or separate grinding cylinders, by means of a simple apparatus, which can also, be used to grind several columns or slabs at a time. The method referred to simply set the structural pieces in
25 motion relative to each other while they are in contact with each other. In the case of columns, this means that the columns are made to rotate against each other, so that they grind themselves. Slabs, on the other hand, are given mainly
30 a linear movement in relation to each other, so that the opposing slab surfaces are ground flat.

An abrasive can be added to the process to increase the grinding effect. However, a concrete column or slab, for example, itself contains abrasive mineral substances.

- 5 Thus, the method disclosed allows several columns or slabs to be connected for simultaneous grinding. The result is also very dimensionally precise products, which grind themselves, without special supervision.

10 The characteristic features of the invention are stated in the accompanying Claims.

In the following, examples of the invention are described with reference to the accompanying figures, in which:

- 15 Figures 1, 2, and 3 show various ways of combining columns for grinding; and
Figures 4 and 5 show a couple of examples of the positioning of slabs for grinding.

20 In each of Figures 1 – 3, number 1 refers to the column and number 2 to a chain or similar device, which suitably connects the columns, for example, by connecting sprockets or similar at the centres of the columns. The arrow shows the direction of rotation. It is obvious that the chain is driven by an electric motor or other suitable drive device, which, however, is not shown in the figures, for
25 reasons of clarity.

It is self evident that the columns can be set in rotation in many different ways. Thus, separate device, of any known type, can be used for each individual column, or all the columns to be ground can be rotated by one and the same
30 device, as described above. In both cases the columns are rotated suitably, to create either a difference in velocity between the columns' outer surfaces, or else opposing rotation in the columns at their point of contact, (so that the columns actually rotate in the same direction).

As stated above, the invention is eminently suitable for grinding, for example, concrete columns, but it is clear that some other material, such as metal, can be used, provided an abrasive substance is added to the process. In such a case, the abrasive substance performs the actual mechanical work.

5

Figures 4 and 5 show one way to grind slabs 3. In particular, two or more slabs 3 can be set on top of each other, after which a suitable device is used to set the slabs in motion in relation to each other. For example, a possible arrangement is for the lower slab to remain in place, while the upper slab or slabs are moved to the left and right (or any other direction) of the position shown.

10

One possible way to move a slab or slabs is by cylinders operated by a pressurized medium, slab 3 being located between them and moved in turn by operating the cylinder on the desired side. Another suitable alternative is to attach a cable or similar to the edge of the slab and use the cables to pull the slab back and forth.

15

If it seems necessary, a suitable mechanical solution can be used to adjust the force imposed by one column or slab on another. In practice, this means that the columns or slabs are pressed against each other at the same time, or that their contact with each other is suitably lightened. It is obvious that this allows the force of the grinding effect to be varied considerably.

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The invention can be adapted in many ways, without, however, deviating from either the basic concept of the invention, or from the scope of protection defined by the Claims.

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Claims

- 5 1. A method especially for grinding structural components, such as columns, slabs, or similar made from, for example, stone or concrete, **characterized** in that the structural components (1, 3) are set in motion in relation to each other while in contact with each other, the contact surfaces being simultaneously ground, due to the contact.
- 10 2. A method according to Claim 1, **characterized** in that, in the case of columns (1), the columns (1) are set in rotation around their longitudinal axis, and made to grind against each other longitudinally.
- 15 3. A method according to Claim 1, **characterized** in that, in the case of slabs (3), the slabs (3) are set in motion linearly or non-linearly in relation to each other, to grind their opposing surfaces against each other.
- 20 4. A method according to Claim 1, **characterized** in that an abrasive substance, mixed with water or some other medium, is added to the method.
- 25 5. A method according to Claim 1, **characterized** in that the grinding pressure acting on the surface of the column or slab arises from the column or slab's own weight.
- 30 6. A method according to Claim 1, **characterized** in that the force acting between structural components (1, 3), is increased or reduced according to the desired grinding effect.
7. A method according to Claim 1, **characterized** in that devices, such as sprockets and chains, cylinders operated by a pressurized medium, or similar, are used in the method to impart kinetic energy to the structural components.

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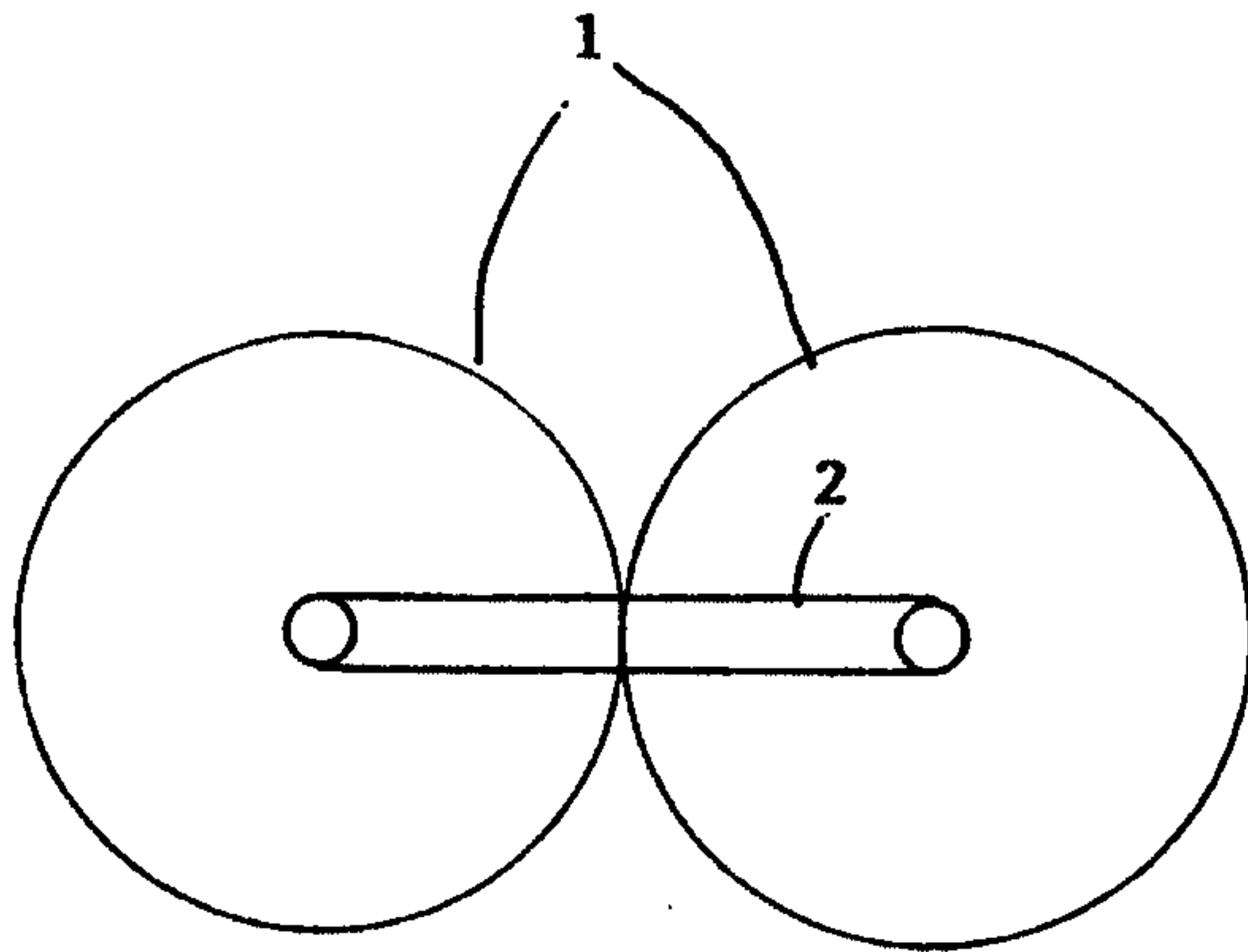


FIG. 1

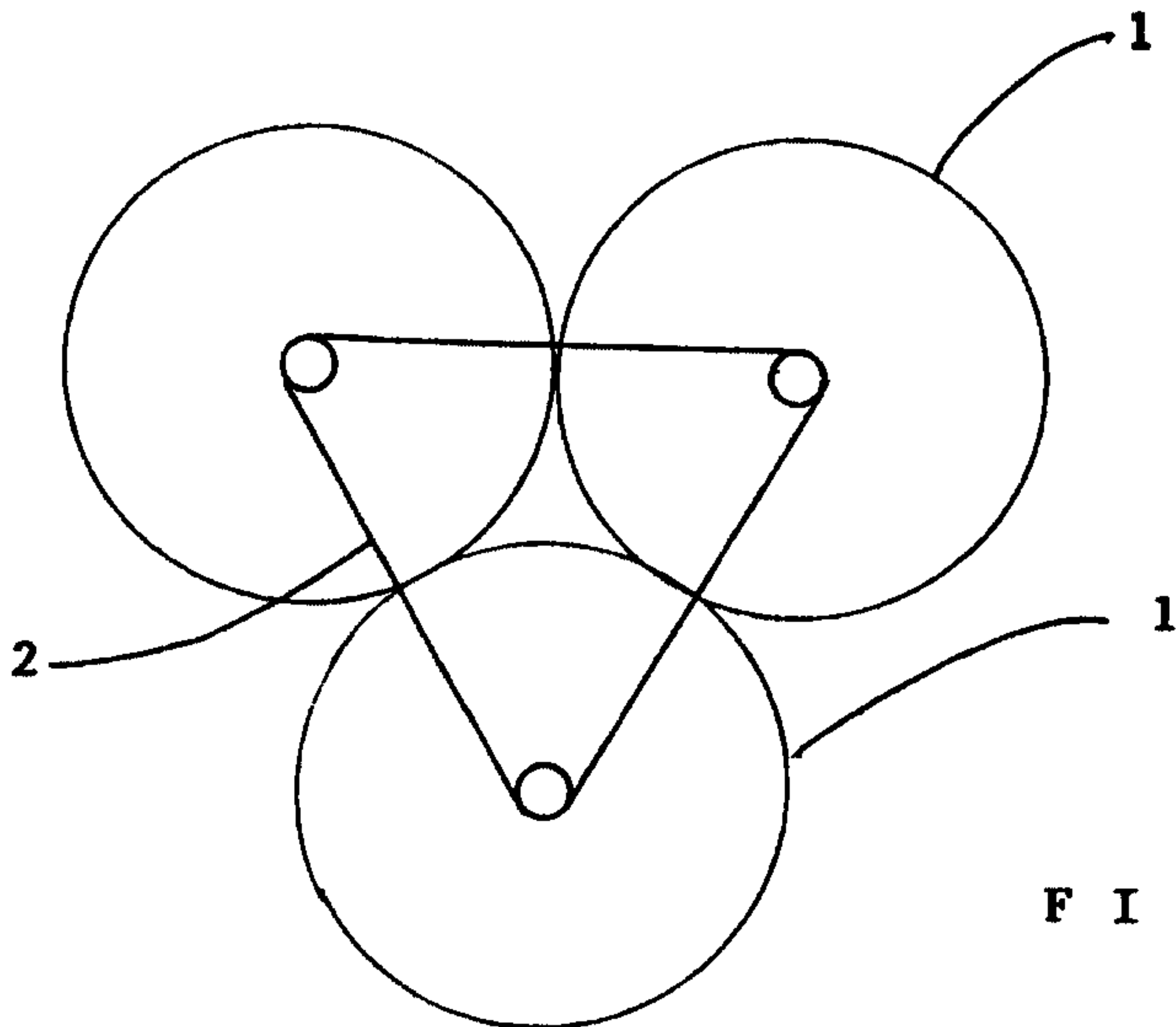


FIG. 2

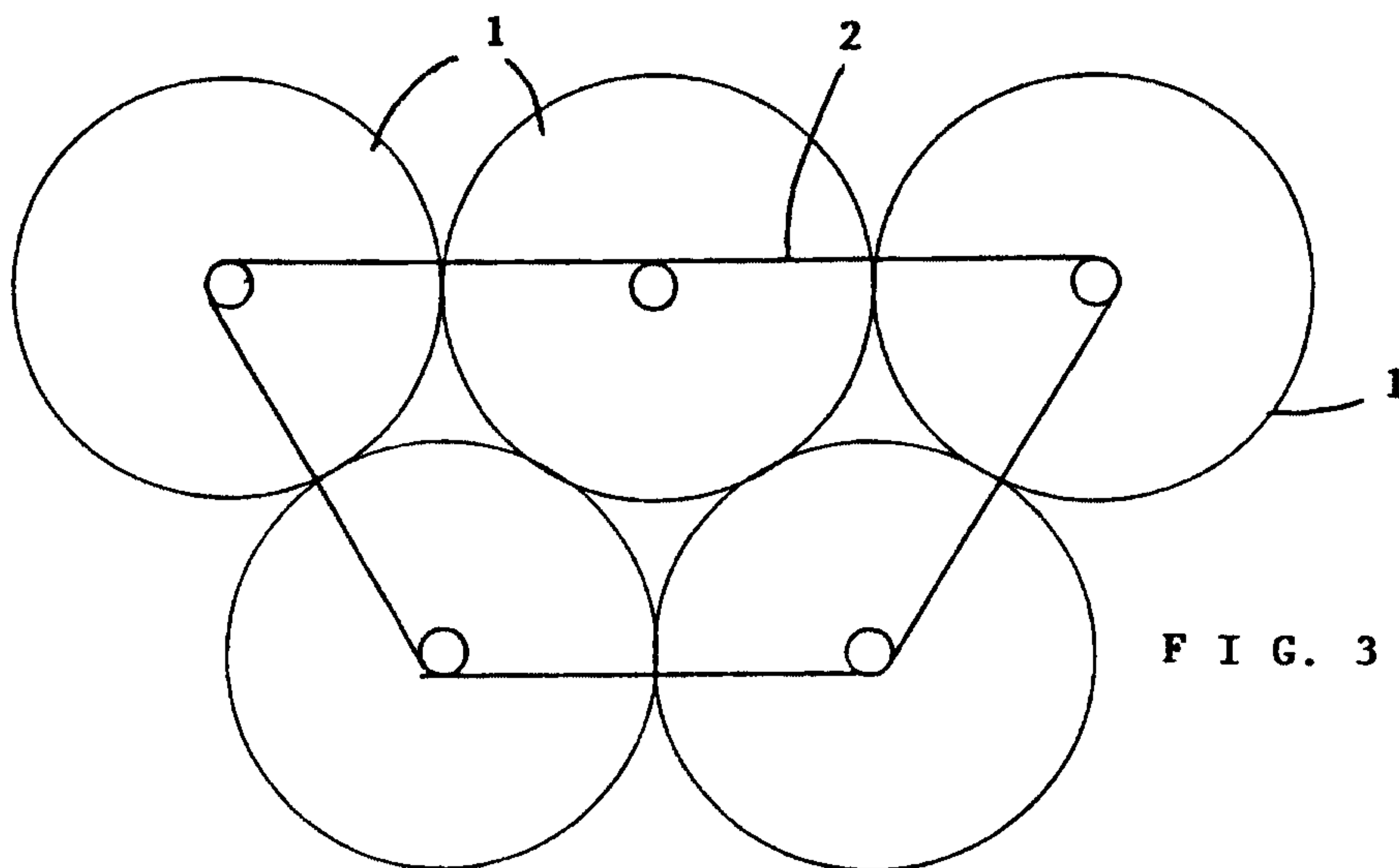
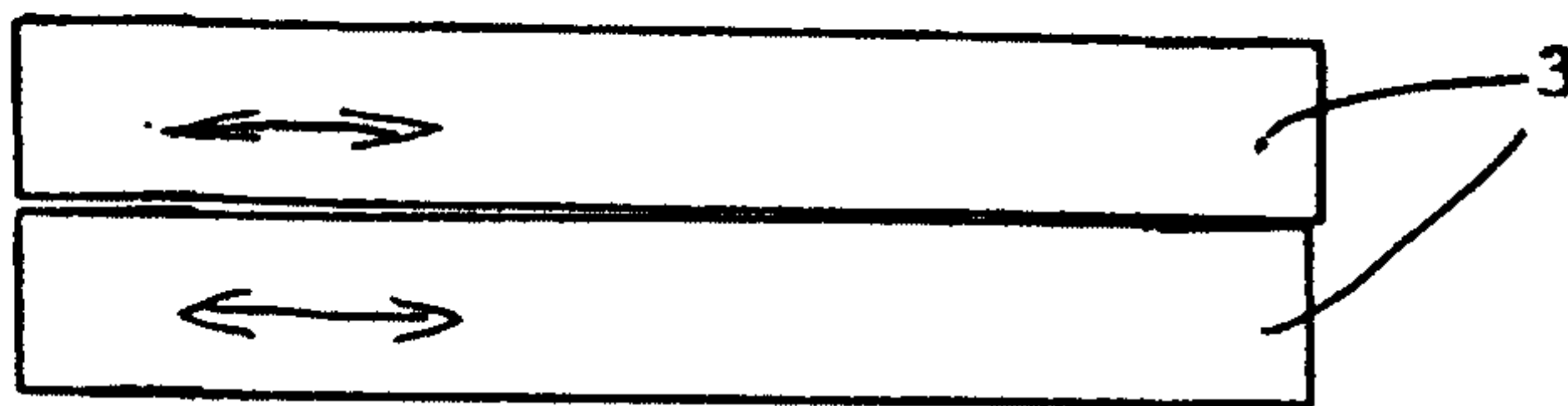
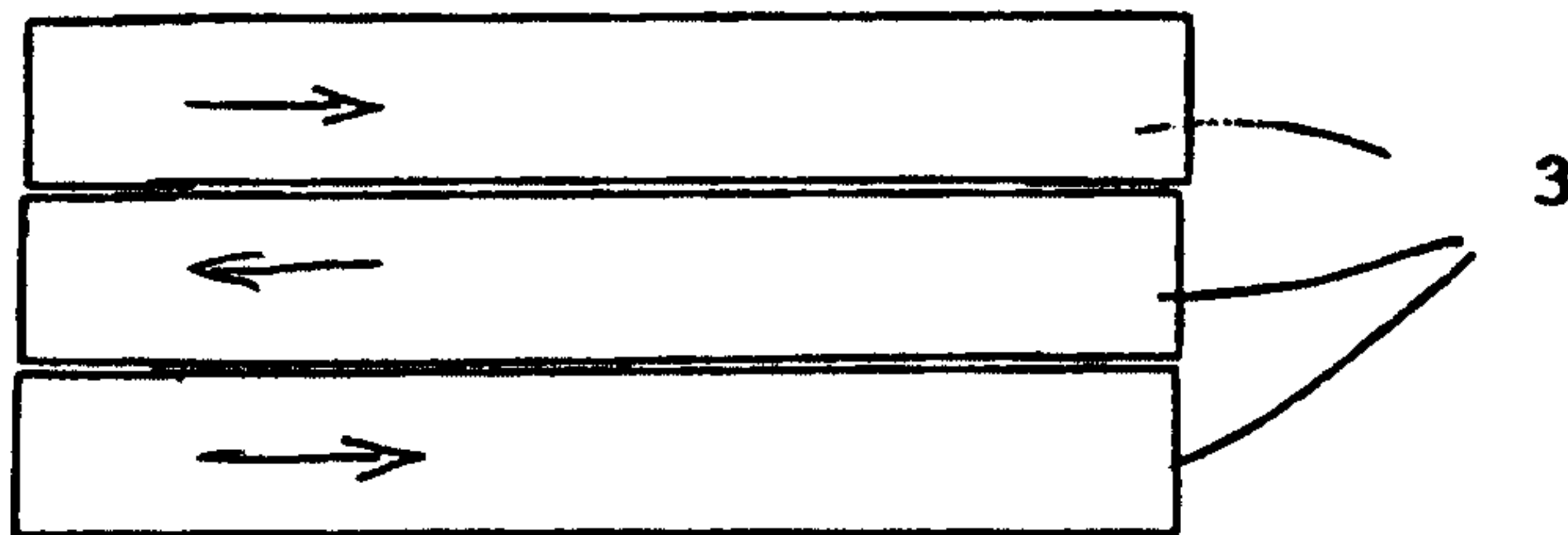


FIG. 3

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F I G. 4



F I G. 5

