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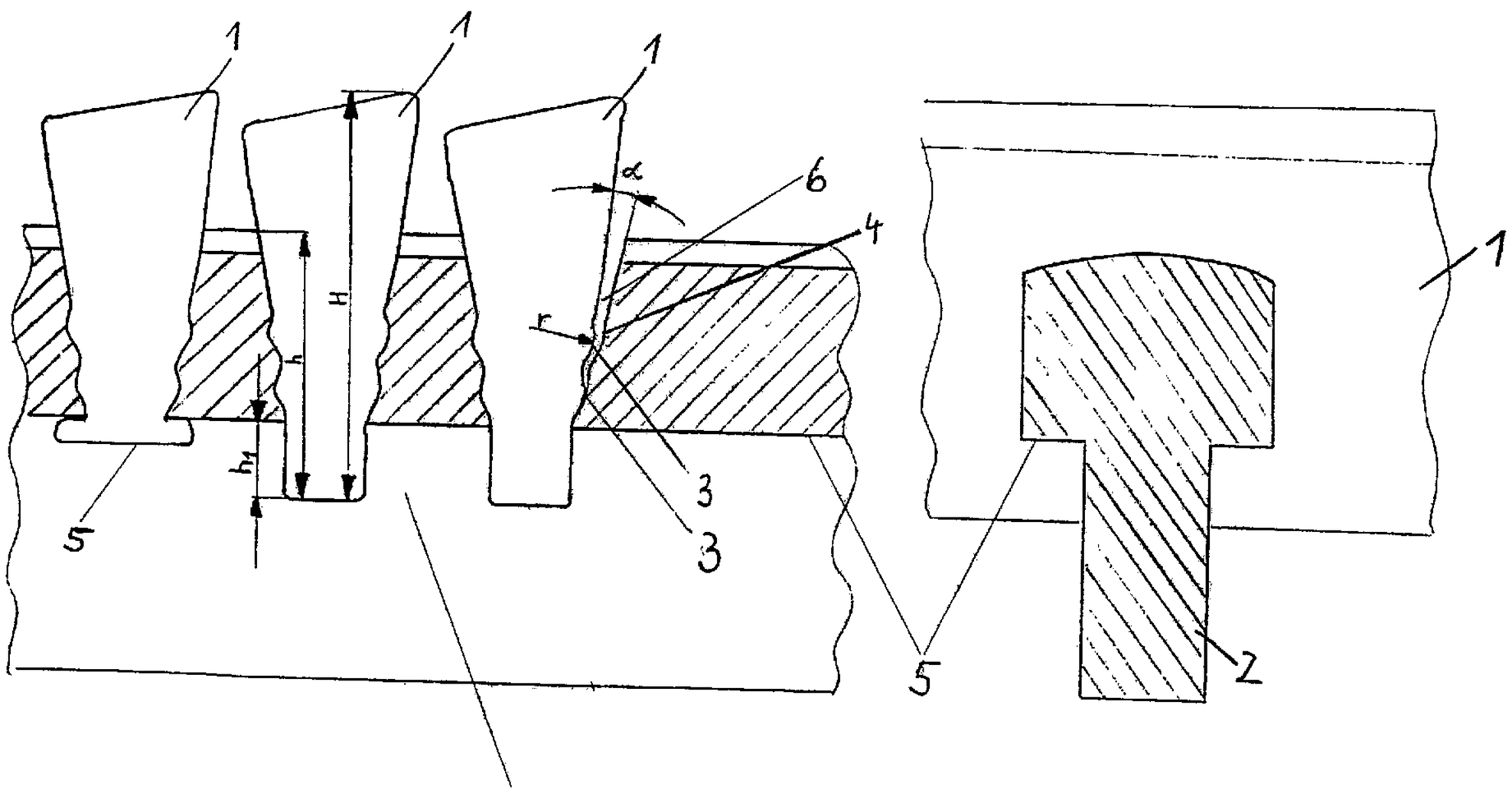
(54) Titre : CRIBLE ET PROCESSUS DE FABRICATION D'UNE TEL CRIBLE
(54) Title: SCREEN AND PROCESS FOR MANUFACTURING A SCREEN OF THIS KIND



(57) Abrégé/Abstract:
The invention refers to a flat or cylindrical screen, comprising rods and rod-bearing supporting elements. It is mainly characterised by the rods 1 having indentations 3 in the side walls which gear into inversely shaped recesses 4 in a supporting element 2. The invention also refers to a process for manufacturing a screen of this kind, characterised by the supporting elements 2 being bent open elastically and the rods 1 inserted, whereupon the supporting elements 2 spring back, encircle the rods 1 positively and form a screen mat.

ABSTRACT

The invention refers to a flat or cylindrical screen, comprising rods and rod-bearing supporting elements. It is mainly characterised by the rods 1 having indentations 3 in the side walls which gear into inversely shaped recesses 4 in a supporting element 2. The invention also refers to a process for manufacturing a screen of this kind, characterised by the supporting elements 2 being bent open elastically and the rods 1 inserted, whereupon the supporting elements 2 spring back, encircle the rods 1 positively and form a screen mat.

Fig. 1)

Screen and process for manufacturing a screen of this kind

The invention relates to a flat or cylindrical screen, comprising rods and rod-bearing supporting elements. In addition, the invention refers to a process for manufacturing a screen of this kind.

Various types of screen are known, for example from WO 98/14658. Here, a screen is described which comprises a number of rods and supporting elements, where the supporting elements have slots. In this case the supporting elements take the shape of a U-profile, which means that part of these rods must undergo plastic deformation in order to secure the rods to the supporting elements. A different kind of screen is known from DE 44 35 538 A1. Here, too, rods and rod-bearing supporting elements are used, where the rods are secured with positive locking by clamping due to plastic deformation of the rod-supporting elements. In addition flat or cylindrical (centripedal or centrifugal) screens are known, where the rods are attached by welding to the rod-supporting elements. This form of fastening, however leads to a series of disadvantages because considerable welding stress is transferred to the components during welding and this causes distortion of the entire screen body. Furthermore, the fastening effect is not always guaranteed because the welds may begin to break up under certain circumstances and in the course of time due to signs of wear. The manufacturing process itself is actually very complicated and time-consuming, and it is very difficult in particular to set the supporting width precisely between two adjacent screen rods.

The aim of the invention is thus to create a screen that does without plastic deformation of the rods and/or supporting elements and without

welds. In addition, a simple manufacturing process for this type of screen is to be developed.

The invention is thus characterised by the rods having indentations in the side walls which gear into inversely shaped recesses in the supporting element. Thus, a fixed connection can be created with form closure without the need for welding or plastic deformation.

An advantageous further development of the invention is characterised by the indentations being circular or elliptical and preferably having a radius r of 0.1 mm < r < 2 mm. As a result, it is possible to mount the rods easily without deformation of the supporting elements, which also permits manufacture at low cost. The rods can be inserted easily, whereby the circular or elliptical formed indentations lead to a more even area pressure and therefore to a good fixed connection with the supporting elements.

An advantageous configuration of the invention is characterised by the spacing h_1 between the indentations and the end of the rod facing away from the flow preferably measuring at least 0.1 mm < h_1 < 6 mm. This makes the rod more resistant to vibration.

A favourable configuration of the invention is characterised by three or more indentations with the respective recesses being provided on one side wall. This means that a secure form closure can be achieved.

A favourable further development of the invention is characterised by a different number of indentations being provided on either side of the rods. This guarantees a better fastening effect in the event of one-sided onflow.

An advantageous further development of the invention is characterised by the supporting elements having a T or I shape. This shape provides a larger screen area.

A favourable configuration of the invention is characterised by the rods, which have a total height H, protruding into the supporting element to a height h, where the relationship of h to H is preferably greater than 0.5. This protects the rod more effectively against flow forces.

An advantageous configuration of the invention is characterised by the bottom part of the rod being pressed together with the supporting element. This provides even better stability at higher forces.

The invention also refers to a process for manufacturing a screen of this kind, characterised by the supporting elements being bent open elastically and the rods inserted, whereupon the supporting elements spring back, encircle the rods positively and form a screen mat. Thus, a screen mat can be formed easily without welding or pressing, where it is possible to position the rods exactly and thus, obtain low tolerances.

An advantageous further development of the invention is characterised by the screen mat being rolled together to form a cylinder.

The invention is described below in examples and with reference to the drawings, where Fig. 1 shows a variant of the invention and Fig. 2 shows a section through the line marked II-II.

Figure 1 illustrates an example of three rods 1, mounted in supporting elements 2. The right-hand rod 1 shows that it has several indentations 3 with a radius r on both side walls. The supporting element contains recesses 4 with exact inverse shaping and the necessary clearance distances in relation to the screen basket diameter. The present illustration shows two indentations and two recesses on each side, however there can also be three or more such indentations and recesses if necessary. The number of indentations on either side may also differ. These indentations with a circular or elliptical segment shape have a radius r to which 0.1 mm < r < 2 mm applies. The rods can be inserted easily, whereby the circular or elliptical formed indentations lead to a more even area pressure and therefore to a good fixed connection with the supporting elements.

The middle rod in Figure 1 shows the length measurements of the rod, which has an overall height H. The indentations are spaced at a distance h_1 to which 0.1 mm < h_1 < 6 mm applies, from the end of the rod facing away from the flow. The rod 1 projects into the supporting element with a height h, where the relationship of h to H should preferably be larger than 0.5. The projecting section of the rod on the side facing away from the flow can be pressed together with the surfaces 5 of the supporting element to obtain better fastening. This applies if the supporting element 2 is made in a T shape. If an I shape is used, the rod 1 is not pressed together. The supporting element 2 can also be made in other shapes than a T or I, e.g. square, rectangular, square with rounded corners, rectangular with rounded corners, with the rounding on only one or on

several corners. The indentations provided in the supporting element 2 to hold the rod 1 can have clearance equivalent to the angle ∝ on the side facing away from the flow. With the cylindrical shape of the screen basket this avoids plastic deformation in the supporting element 2.

Figure 2 shows a section through the line marked II-II in Fig. 1, where the T shape of the supporting element 2 and one rod 1 are visible. On the surface 5 this rod 1 can be pressed together with the supporting element 2 if necessary.

The connection between rods and supporting elements is essentially positive, i.e. without plastic deformation of the individual components or additional connecting links, such as weld seams. A screen of this type can be made, for example, by pressing the rods together with the supporting elements until they lock into place. Another form of manufacture is to bend the supporting elements open elastically so that the recesses 6 for the rods expand and the individual rods 1 can be inserted. When the supporting elements have sprung back into place, a level screen mat is formed by the clamped profile rods. Thanks to the above mentioned design as snap connection, this process permits the rods 1 to be inserted precisely into the supporting elements 2, thus lowering the slot width tolerances. If this level screen is then shaped into a screen basket, the clamping effect is increased further due to the bending radius when the screen is rolled up. Pressing the protruding ends of the rods together with the supporting elements 2 increases the stability of the screen mat further. The supporting elements 2 can also be shaped as rings with the indentations 6 according to the invention worked into these rings, where the dimensions are somewhat smaller than specified, i.e. the indentations 6 are slightly smaller than the rods 1. Subsequently

the rings are nicked at one point and bent open far enough for the rods to lock into place. When the rings have bent back into place, they can be welded together to form a basket.

The invention is not limited to the examples presented. On the contrary, the indentations 3 in the rods 1 can be shaped at will as long as they engage in the inversely identical recesses in the supporting element. The rods 1 can also take any shape from a rectangle to a triangle.

Patent Claims

1. Flat or cylindrical screen, comprising rods and rod-bearing supporting elements, **characterised by** the rods (1) having indentations (3) in the side walls which gear into inversely shaped recesses (4) in a supporting element (2).

2. Screen according to Claim 1, **characterised by** the indentations (3) being circular or elliptical and preferably having a radius r of $0.1\ mm < r < 2\ mm$.

3. Screen according to one of Claims 1 or 2, **characterised by** the spacing h_1 between the indentations (3) and the end of the rod (1) facing away from the flow preferably measuring at least $0.1\ mm < h_1 < 6\ mm$.

4. Screen according to one of Claims 1 to 3, **characterised by** three or more indentations (3) with the respective recesses (4) being provided on one side wall.

5. Screen according to one of Claims 1 to 4, **characterised by** a different number of indentations (3) being provided on either side of the rods (1).

6. Screen according to one of Claims 1 to 5, **characterised by** the supporting elements (2) having a T or I shape.

7. Screen according to one of Claims 1 to 6, **characterised by** the rods (1), which have a total height H, protruding into the supporting element (2) to a height h, where the relationship of h to H is preferably greater than 0.5.

8. Screen according to one of Claims 1 to 7, **characterised by** the bottom part of the rod being pressed together with the supporting element (2).

9. Process for manufacture of a screen according to one of Claims 1 to 8, **characterised by** the supporting elements (2) being bent open elastically and the rods (1) inserted, whereupon the supporting elements (2) spring back, encircle the rods (1) positively and form a screen mat.

10. Process according to Claim 9, **characterised by** the screen mat being rolled together to form a cylinder.

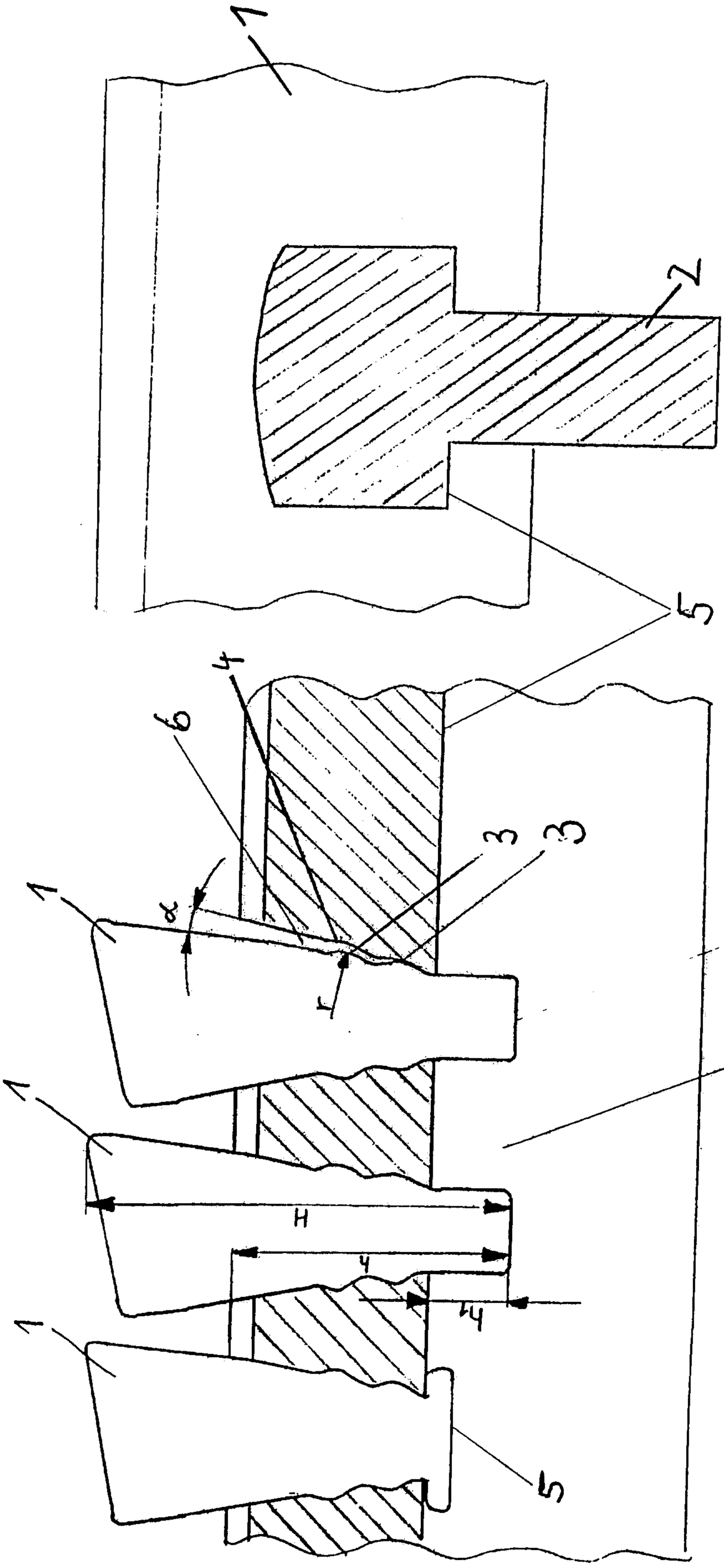
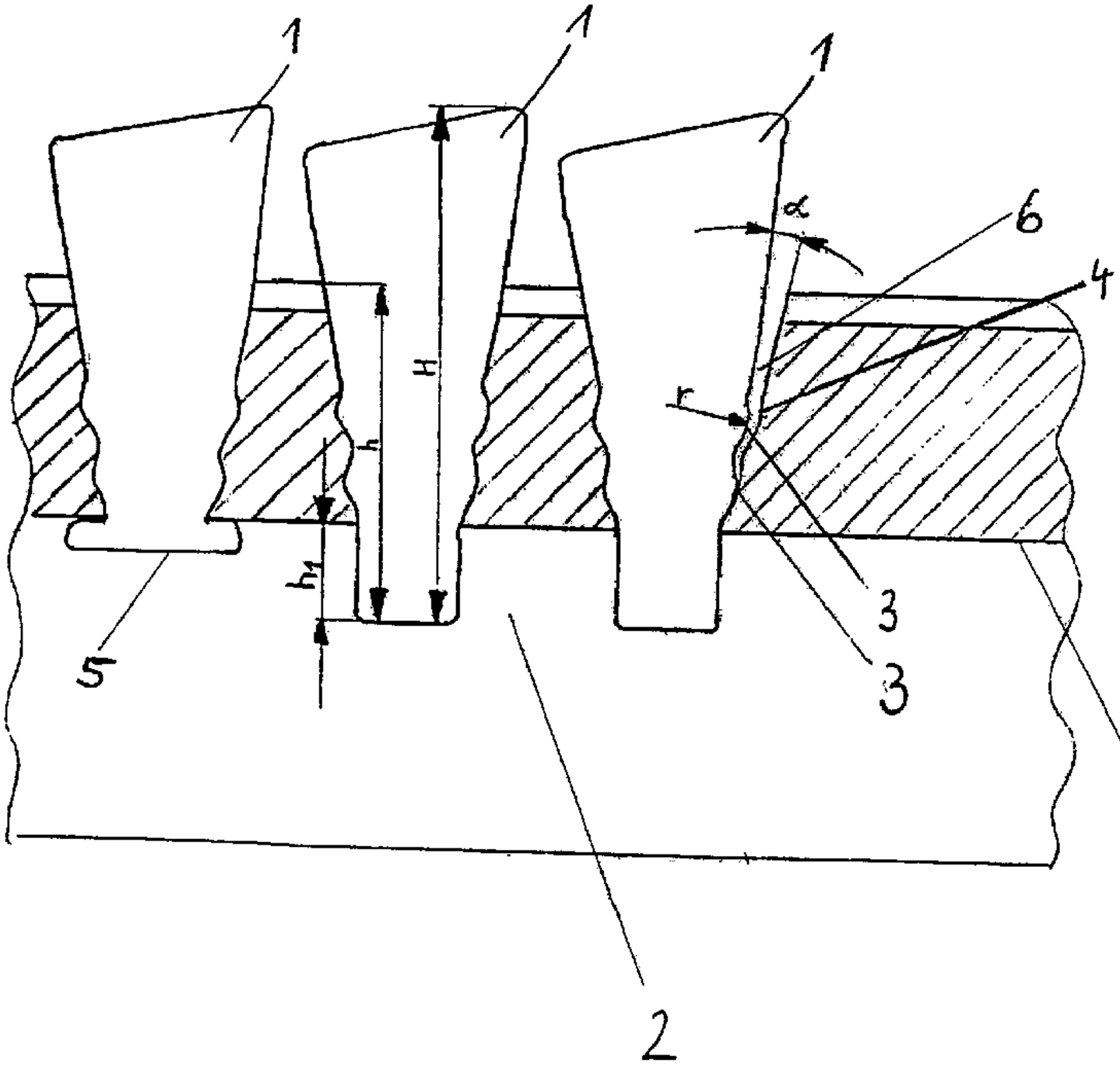


Fig. 2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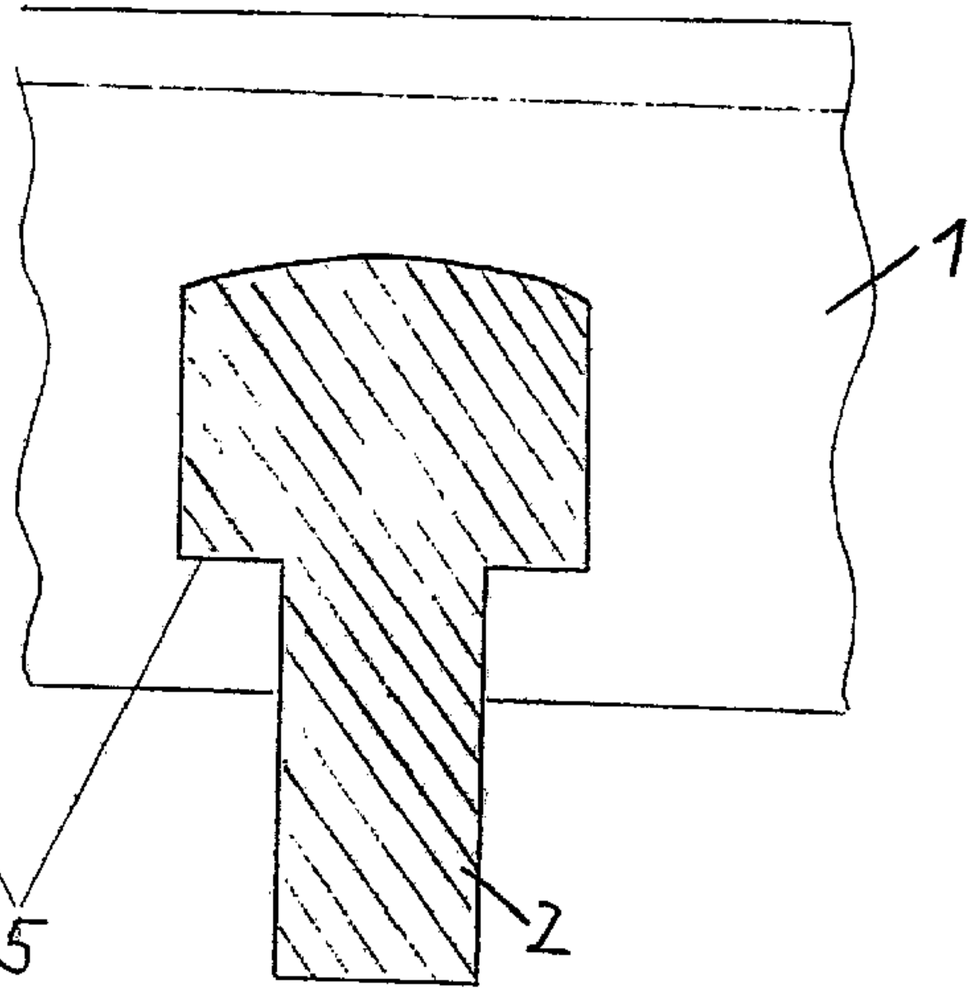
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