

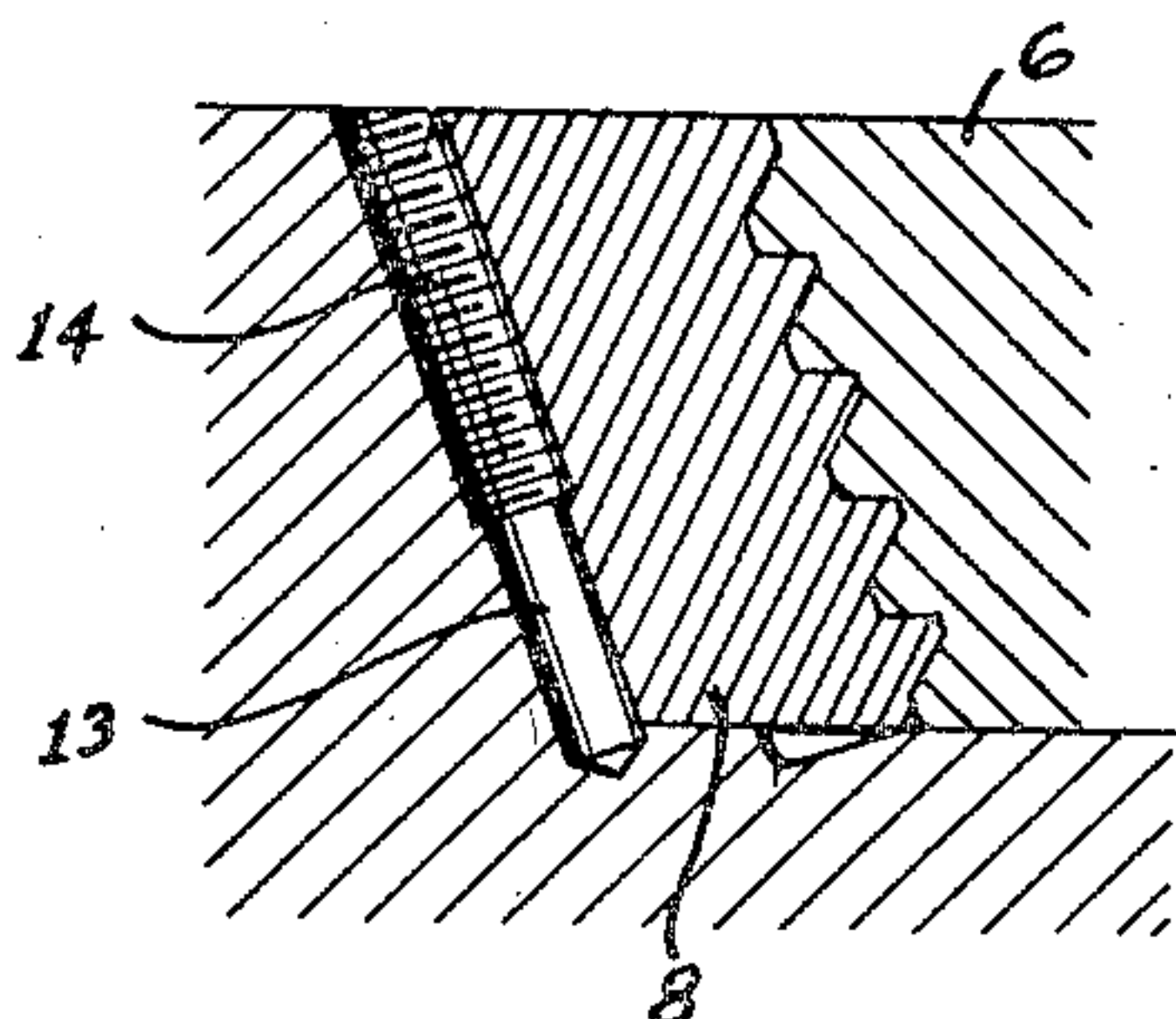
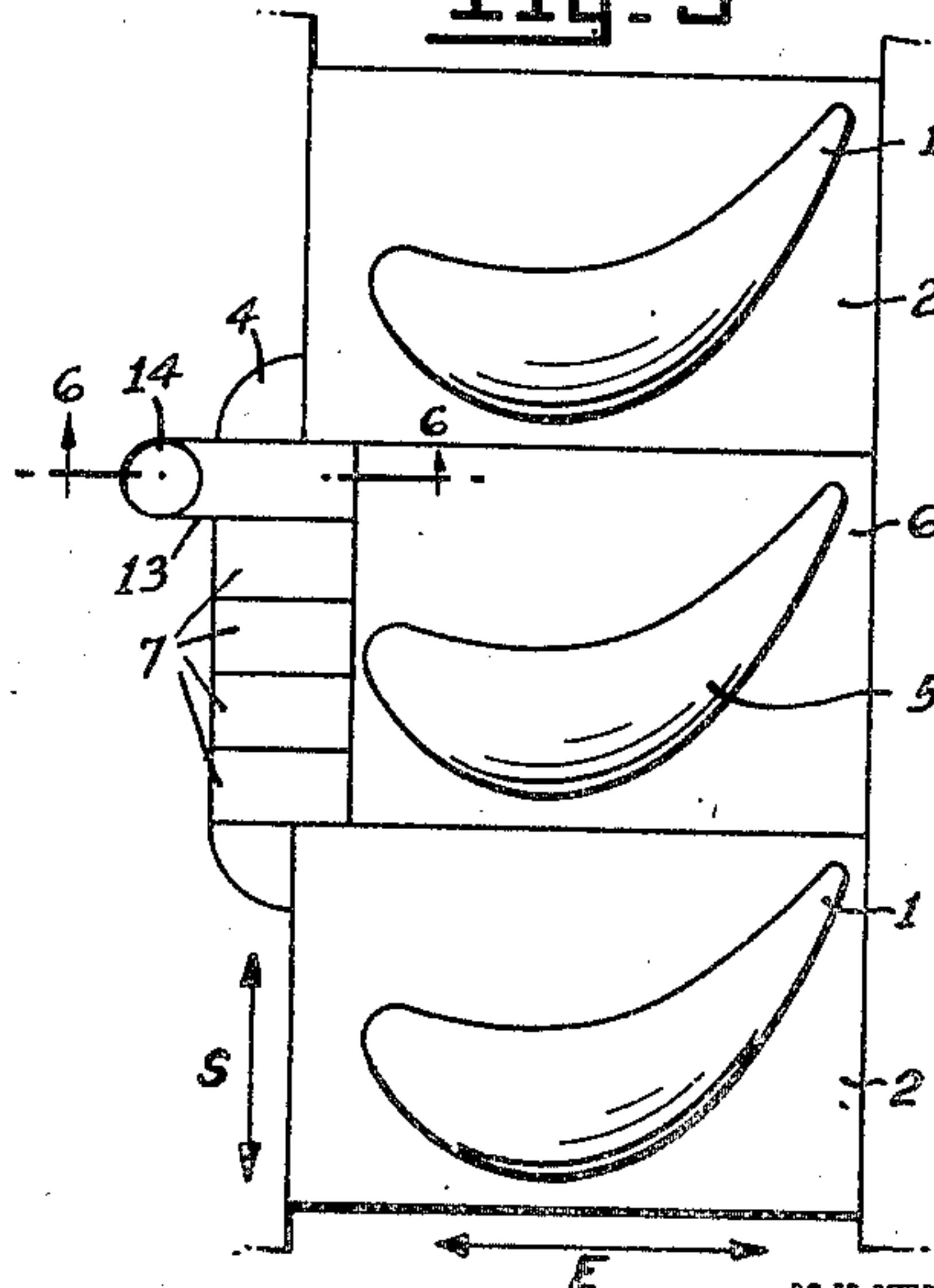
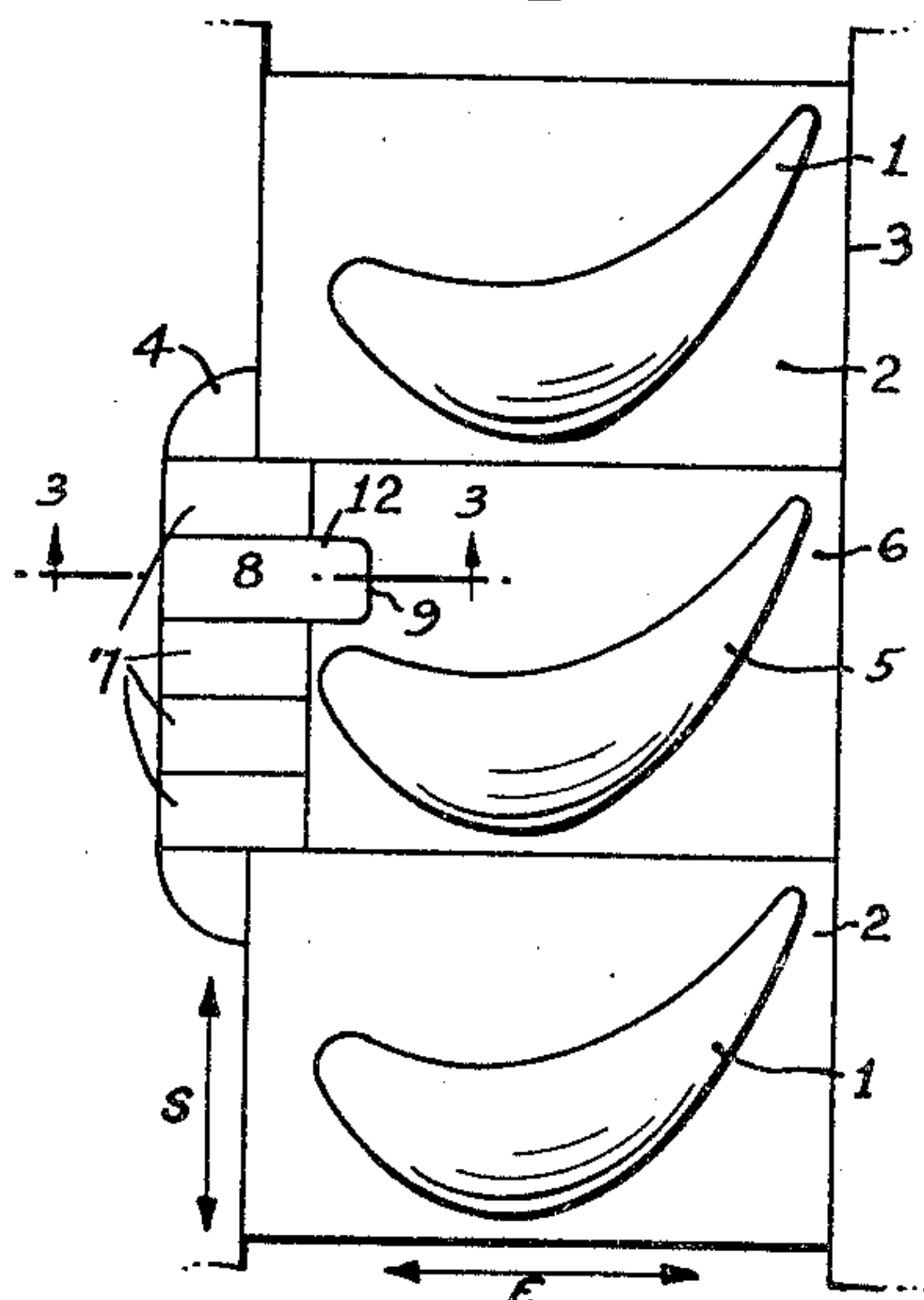
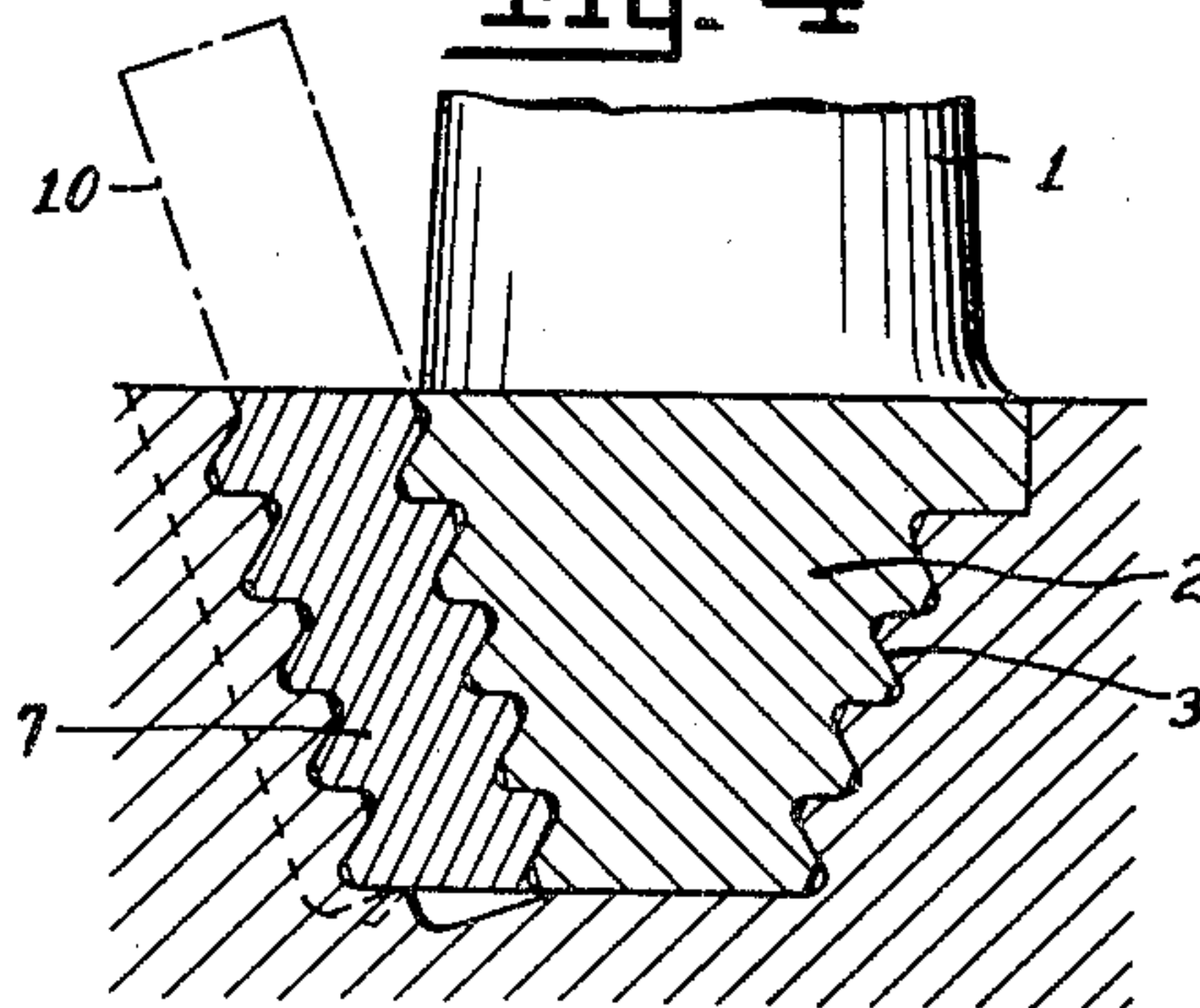
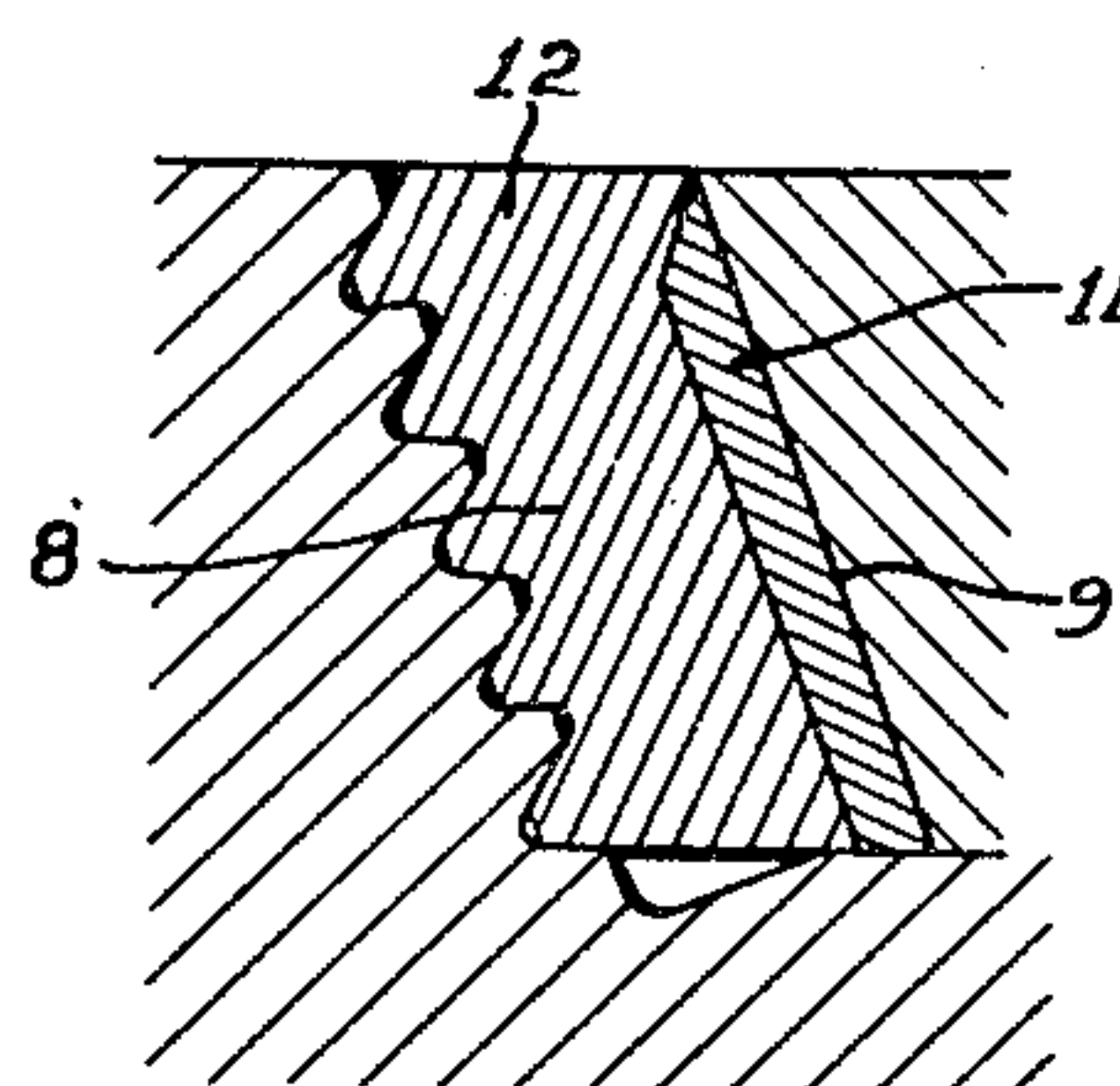
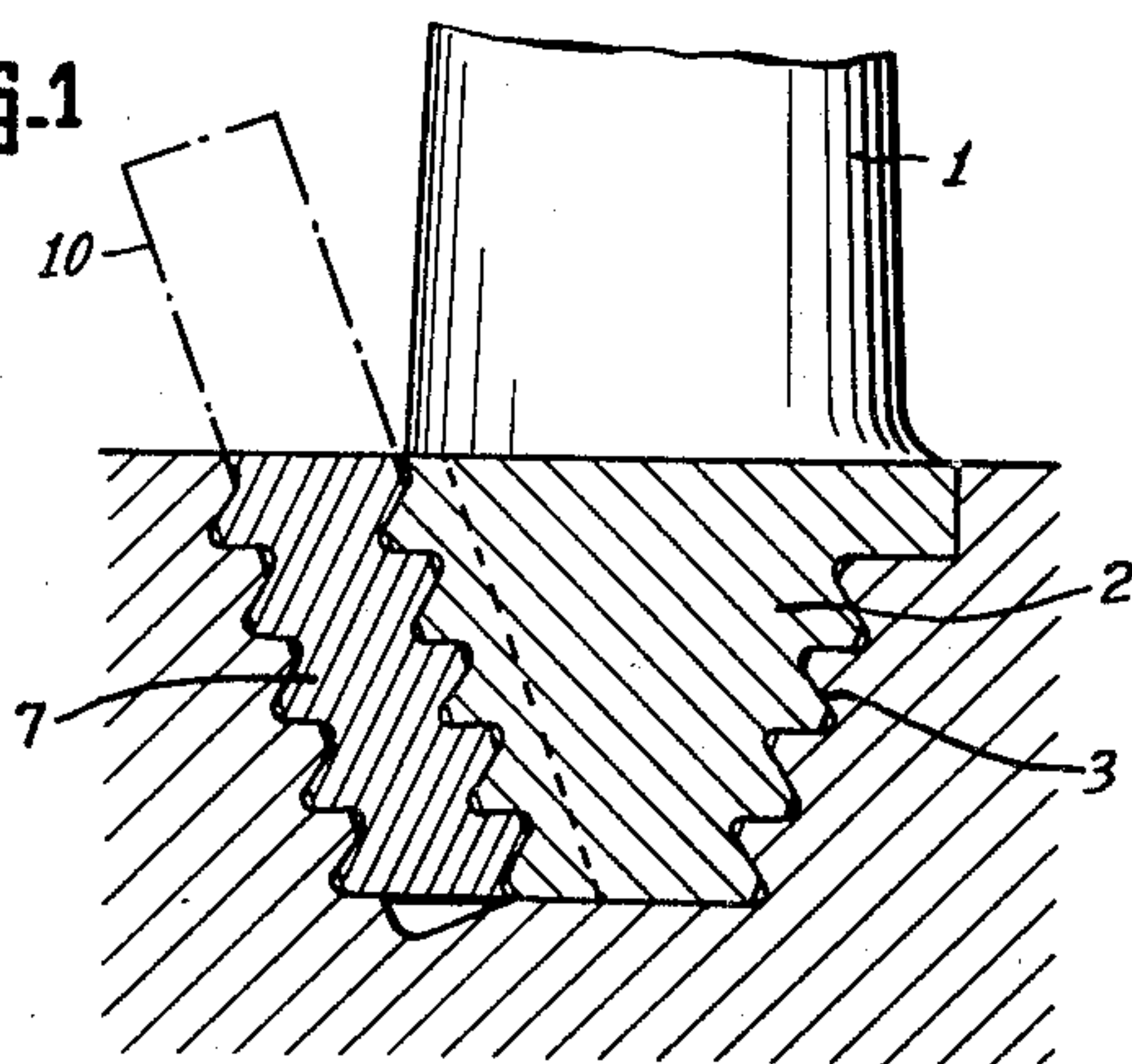
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TURBOMACHINE BLADING CONSTRUCTION

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TURBOMACHINE BLADING CONSTRUCTION

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3 Claims. (Cl. 253-77)

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This invention relates to turbomachines having blade carriers, especially high-speed rotors, in which the blade feet are inserted into grooves, each groove having at least one insertion position formed by a lateral widening of the groove. The invention is characterized in that the locking means closing that widening is subdivided in the longitudinal direction of the groove into several parts, each of which is inserted separately through an additional widening. That additional widening may be provided on the blade foot itself or in the wall of the blade insertion position on the carrier.

Two embodiments of the subject matter of the invention are illustrated by way of example in Figs. 1-6. In the case of the first example, Figs. 1-3, the additional widening is in the blade foot; in the second example, Figs. 4-6, in the wall of the blade insertion position.

The feet 2 of the blades 1 (Figs. 1-6) are introduced into the groove 3 of a blade carrier, for instance a turbine or compressor casing or runner. Groove 3 may be straight, circular, or helical according to the overall design of the turbomachine without affecting the application to it of this invention. For introducing the blades, groove 3 has a blade insertion position 4 which is formed by a lateral widening of the groove. This widening extends longitudinally of the groove 3 for a distance which exceeds the similar length of a blade foot only by a slight amount. After insertion of all the blades but one, a closing blade 5 is inserted, whose foot 6 differs from the feet of the other blades in that it is somewhat set back on the side toward the groove widening.

For securing the closing blade 5 against falling out, into the lateral widening at the blade insertion position 4 multi-membered locking means are inserted, subdivided in the longitudinal direction of the blade groove 3 into five parts, 7 and 8. Through an additional widening, the locking parts 7 are introduced into the widening of the groove at the blade insertion position 4. The final locking part 8 is then introduced into the additional widening.

In the first example (Figs. 1-3), the additional widening is provided at 9 in the foot 6 of the closing blade 5. After all parts 7 of the locking means (which may be provided with extension pieces 10, as indicated by dash-dotted lines, to make them easier to handle) have been inserted through the additional widening 9 into the blade insertion opening 4, the final locking part 8 is inserted into the additional widening 9 and secured against falling out by a closing pin 11.

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After removing the extensions 10 if they are used, the closing pin 11 in its turn is secured against falling out by caulking the locking part 8 at 12.

In the second example (Figs. 4-6) the additional widening is provided at 13 in the wall of the blade insertion position on the carrier itself. After the final locking part 8 has been introduced into the additional widening 13, a hole is drilled and tapped with a screw thread along the joint between the blade carrier and the locking part 8 and into it a retaining screw 14 is inserted. After the extension 10 and the retaining screw 14 have been cut away to the level of the surface of the blade carrier, the retaining screw 14 is secured against falling out by peening round the edge of the screw.

For convenience of definition in the claims surfaces designated as "sides" are to be considered as running in the direction of the double arrows marked S in Figs. 2 and 5, surfaces running in the direction of the double arrows marked E being "ends" or "cross-sections."

I claim:

1. In a turbomachine having a blade carrier and a continuous row of discrete blade elements carried by said carrier, a construction for attaching said blade elements to said carrier including feet on said blade elements having supporting surfaces formed on the sides thereof, a continuous groove in said carrier having supporting surfaces formed on the sides thereof conjugate to the supporting surfaces on said feet, a blade insertion opening in said groove whereby said feet may be introduced into said groove and moved longitudinally thereof with said conjugate supporting surfaces in mutual engagement to fill said groove except for the position of said opening, said blade insertion opening having supporting surfaces formed on the sides thereof, a closing blade element for introduction into said blade insertion opening for completing the row of blade elements, said closing blade element having a foot smaller than said blade insertion opening and with supporting surfaces formed on the sides thereof, a plurality of locking parts which have the cross section of the space formed between a side of said closing blade element foot and a side of said blade insertion opening, a lateral widening of said space whereby said locking parts may be introduced into said space and moved longitudinally thereof to fill said space except for the position of said widening, and a final locking means whereby said lateral widening is filled and secured.

2. The construction of claim 1 in which the

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lateral widening is in the closing blade element foot.

3. The construction of claim 1 in which the lateral widening is in the carrier.

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