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(54) Title: CLEANSING TEXTILE DEVICE ESPECIALLY FOR MAKEUP REMOVAL

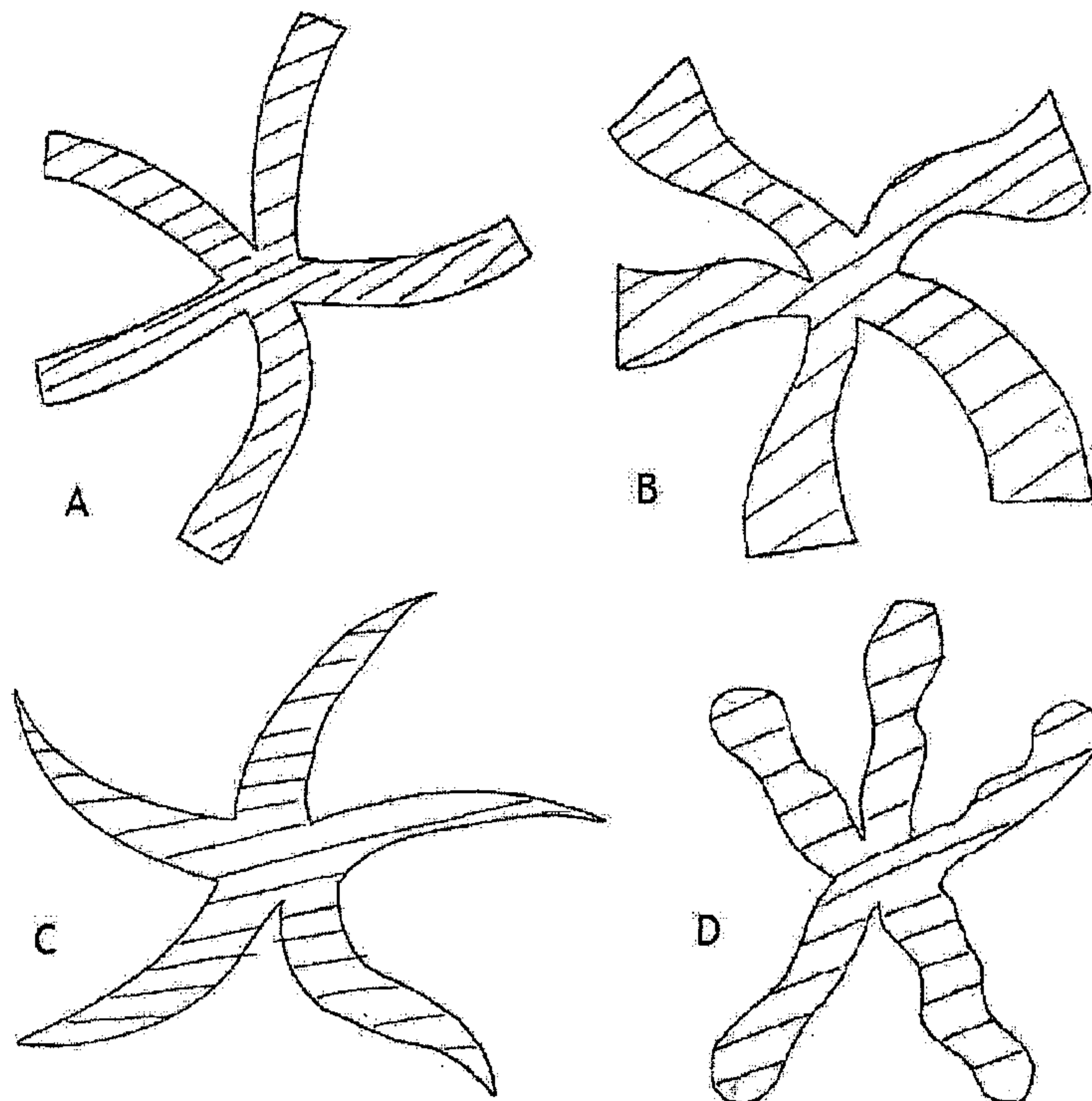


Fig. 1

(57) **Abrégé/Abstract:**

The invention relates to a cleansing textile device, which contains a cleaning element which comprises T-shaped, L-shaped, Y-shaped, X-shaped, or otherwise shaped loops of synthetic fibers consisting of one or more types of synthetic materials, fixed axially in relation to the fiber, where the diameter of a single fiber ranges from 500 nm to 20µm and the thickness of the fiber loop is 50 to 2,000 nm.

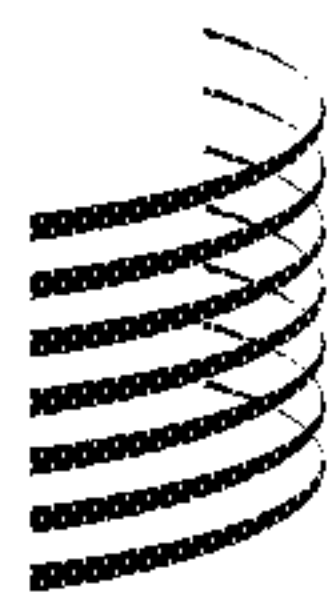


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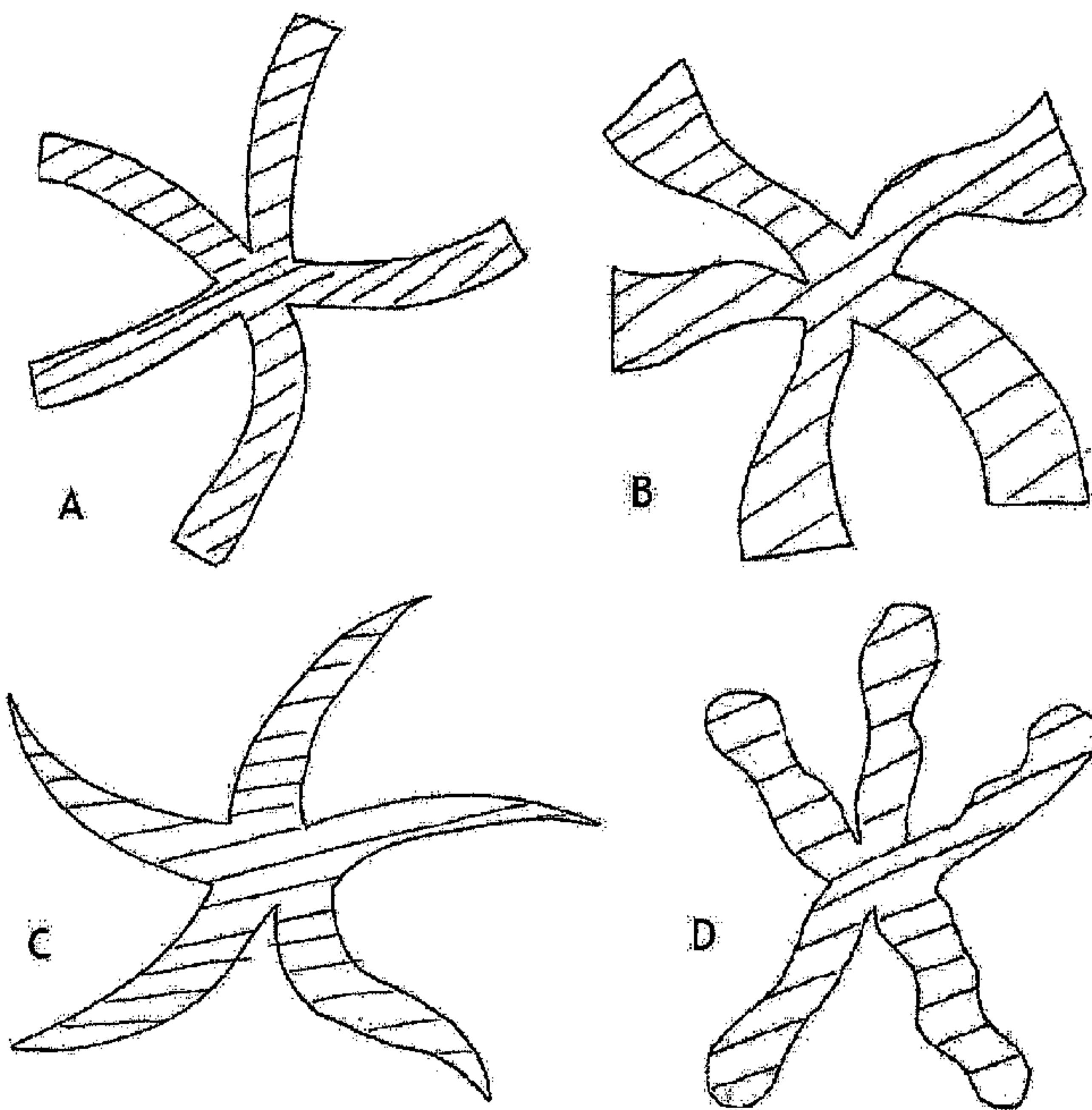


Fig. 1

(57) Abstract: The invention relates to a cleansing textile device, which contains a cleaning element which comprises T-shaped, L-shaped, Y-shaped, X-shaped, or otherwise shaped loops of synthetic fibers consisting of one or more types of synthetic materials, fixed axially in relation to the fiber, where the diameter of a single fiber ranges from 500 nm to 20µm and the thickness of the fiber loop is 50 to 2,000 nm.

WO 2014/142692 A1



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Cleansing textile device especially for makeup removal

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The present invention relates to a cleansing textile device intended to be used particularly for the purification of human skin from makeup.

10 Mechanical skin cleansers used for cosmetic purposes, in particular for removing makeup from the human face, are produced from one type of textile material, or from combinations of fabrics, containing woven patterns or mixed fibers of both synthetic or natural origin. These products owe their cleaning properties to the presence of fibers with circular, elliptical, polygonal or irregular cross-sections, and their ability to collect impurities is achieved by an appropriate density (packing)
15 of fibers, which causes the impurities collected from the skin, by sliding movement of the material, to deposit in the spaces between the fibers. The collected impurities may then be removed from the spaces between the fibers by washing the product or left there should the product be discarded after use (i.e. when it is disposable). The cleaning effect can be increased by the simultaneous use of a suitable chemical
20 agent which can be applied to the skin by means of the cleanser, or some other applicator (e.g., sprayed from a pressure container), or hand-applied by the user of the product.

The Japanese Patent JP2005248365 discloses a base material for the application of cosmetics, consisting of a nonwoven textile cleanser made from solid
25 cellulose fibers, wherein at least 60% of the cellulose fibers forming the cleanser have a diameter of from 2.9 to 7.1 microns, and the material is impregnated with a medical fluid and forms a sheet suitable for skin cleansing.

The Japanese Patent JP2008169180 discloses a fiber sheet intended for purifying the skin, saturated with an aqueous solution of the spherical silica, or
30 another with a non-determined shape other than spherical.

The Japanese Patent JP2006192284 discloses a fiber sheet intended for purifying the skin from makeup, consisting of an oil adsorbent layer, being a nonwoven fabric, a water-retaining layer saturated with a cleaning agent solution,

representing a generically different non-woven textile product, and a layer of impermeable material separating the above two layers.

The Japanese Patent JP2000256180 discloses a fiber sheet for purifying the skin, wherein carbon cleansers having a diameter <50 microns suspended in a water soluble agent which forms a water-soluble acrylic emulsion serve for impregnating the highly elastic material, being a non-woven textile product, until it obtains a unit weight $\geq 25 \text{ g/m}^2$, assuming that coal dust will be partially released onto the skin when rubbed with the product.

The European patent application No. EP0870496 discloses a sheet for purifying the skin, obtained by saturation of an aqueous mixture, comprising a 1-50% of a non-ionic surfactant having an HLB of 16/10, or an aqueous mixture comprising 1-30% by weight of polyhydric alcohol or glycol ether.

The U.S. Pat No. US5055216 discloses a multi-layered fabric designed for cleaning skin, formed by multiple layers of fibers heat sealed together, wherein at least one layer is processed in a manner different from the others, which provides different properties, to enable saturating the layers with liquid perfume or a cleaning agent.

An International Application No. WO9843523 discloses a cosmetic glove for the mechanical removal of make-up, or more broadly, cleaning the surface of the body, made of a machine produced tricot weave using the following needle bar work scheme: L (I): 101-122-232-211; L (II): 101-232; L (III): 101-122-232-211, where each fiber has a linear density of less than 1dtex, and the fabric is made entirely of polyester.

The European patent No. EP0819393 discloses a cosmetic tampon for make-up removal with a central body made of absorbent material, preferably carded cotton, placed between two layers made of auxiliary non-woven fabric.

The Polish Patent PL199701 discloses a tampon for the removal of makeup based on hydrophilic cotton fibers, which has an external face intended to apply aquatic solutions to the skin, and an external surface of the cleanser comprises a water absorption delaying agent. The product, according to the invention, is also used for application of skin care products such as cosmetics.

The aim of the present invention is to improve the cleaning performance of mechanical facial cleansers intended for use in particular for the purification of human skin from makeup, by appropriate shaping of the fibers contained in the cleanser, in order to improve its collecting capabilities, and thereby improving the

properties of the product.

The invention is a textile mechanical cleanser, characterized in that it contains a cleaning layer which comprises several T-shaped, L-shaped, Y-shaped, X-shaped, or otherwise shaped synthetic fiber loops, consisting of one or more types of synthetic materials, fixed axially in relation to the fiber, where the diameter of a single fiber ranges from 500 nm to 20µm and the thickness of the fiber loop is 50 to 2,000 nm.

The solution introduced in the said invention is that the sides of the fiber loops have the thickness of a single fiber over their entire length, tapering from the base towards the edge, and widening from the base towards the edge, or they are irregular in thickness. Figure 1 presents examples of difference in the thickness of fiber loops. The invention consists in choosing, preferably, three or four pairs of alternate fiber loops.

According to the invention, the synthetic fibers are preferably polyolefin fibers or two-component fibers, preferably with a composition of polyester-polyester, polyamide-polyester, polyester-polypropylene, or polypropylene-polyethylene.

According to the invention, the cleaning layer can be one consisting of cleaning fibers, and be attached to a base sheet, at least on one face of the sheet. The base sheet can be a layer of felt, fabric or other flat textile product, or a film made of one or more flexible plastic layers, preferably polyethylene, polypropylene or polyester. The layer of cleaning fibers can be glued, heat sealed, sewn on or flocked onto the base sheet or, if the base sheet is fabric, it can be sewn onto it to make a weave together with the fibers of the base layer.

According to the invention, the cleaning layer can comprise of fibers made of synthetic material or materials, and natural fibers in a ratio of 70 to 100% synthetic fibers of the required shape, and additionally natural hydrophilic fibers, especially viscose or cotton fibers in a ratio of 70 to 100% of synthetic fibers, and 0 to 30% of natural fibers, in particular in order to increase the absorption properties of the cleanser and in order to allow its saturation with cleaning agents, nurturing and protective agents, or fragrances.

According to the invention, the cleanser can be formed, for the purposes of its commercialization, as a flat textile sheet, commonly referred to as a make-up removal pad, and cut to the desired dimensions, and be given a circular, oval, square or another shape.

According to the invention, the cleanser has preferable cleaning properties due to the fact that impurities are collected from the skin's surface by fibers with a determined shape. Unlike previously disclosed products, it is not the presence of fibers made from a specific material or the method of their concentration, e.g. as a cosmetic tampon, that makes the cleanser fully suitable for cleaning human skin, but also the shape of the fibers that influences the efficiency of the product in performing this function. The loops of fibers contained in the product can be oriented spatially, as in the case of loops attached to the base layer by means of the flocking method. They may, however, not be spatially oriented. In any case, the ambling motion of the product will cause an elastic deformation of the individual fibers, causing them to twist around their axis and return to their initial position, as shown schematically in Figure 2. As a result of this repetitive motion, each individual fiber affects the layer of impurities which had gathered on the skin, peeling off the impurities. The impurities can then accumulate in the spaces between the fibers to preventing them from being released back onto the skin after partial removal, as the process of cleaning continues. The product can be cleaned in a manner typical for this type of products, but it can also be treated as a disposable product.

The invention is presented in the figures, where Figure 1 presents examples of difference in the thickness of the fiber in loops, Figure 2 is a schematic diagram of the cleaning fiber layer's deformation when the product is in use, and Figures 3 and 4 are microscopic scans of a single cleaning fiber.

An embodiment of the invention consists of a cleaning base sheet with dimensions of 19×19 cm made of fabric, onto which a cleaning layer comprising of 80% eight-loop fibers, in which adjacent opposing pairs of loops are alternately made of polyamide and polyester, and 20% cotton fibers with a thickness of 3 mm and a weight of 200 g/m^2 , is stitched on and hemmed by means of a cotton thread and runs parallel to the edge of the cleanser in a grid with the eye size of 1×1 cm.

Another embodiment of the invention is a cleanser consisting of a base sheet with dimensions of 13×13 cm, made of cotton fabric and a cleaning layer with loops (terrycloth) forming a fabric weave with the base sheet, where the loops forming the cleaning layer consists of six-fold polyolefin fiber loops.

Claims

1. Cleansing textile device, characterized in that it contains a cleaning element which comprises T-shaped, L-shaped, Y-shaped, X-shaped, or otherwise shaped loops of synthetic fibers consisting of one or more types of synthetic materials, fixed axially in relation to the fiber, where the diameter of a single fiber ranges from 500 nm to 20 μ m and the thickness of the fiber loop is 50 to 2,000 nm.
2. Cleansing textile device, according to patent claim 1, characterized in that the sides of the fiber loops have the thickness of a single fiber over their entire length, tapering from the base towards the edge, and widening from the base towards the edge, or being irregular in thickness.
3. Cleansing textile device, according to patent claim 1, characterized in that the fibers consist of three or four pairs of alternate loops.
4. Cleansing textile device, according to patent claim 1, characterized in that the synthetic fibers are polyolefin fibers or two-component fibers, preferably with a composition of polyester-polyester, polyamide-polyester, polyester-polypropylene, or polypropylene-polyethylene.
5. Cleansing textile device, according to patent claim 1, characterized in that the cleaning element is a layer of cleaning fibers, and it is attached to a base sheet, at least on one face of the sheet.
6. Cleansing textile device, according to patent claim 5, characterized in that the layer of cleaning fibers has a thickness of 2 to 5 mm and weight from 150 to 400 g/m².
7. Cleansing textile device, according to patent claim 6, characterized in that the base sheet is a layer of felt, fabric or other flat textile product, or a film made of one or more flexible plastic layers, preferably polyethylene, polypropylene or polyester.
8. Cleansing textile device, according to patent claim 6, characterized in that the layer of the cleaning fibers is glued, heat sealed, sewn on or flocked onto the base sheet.
9. Cleansing textile device, according to patent claim 7, characterized in that the fibers of the base sheet, comprising of fabric form a weave together with

the fibers of the cleaning fiber layer.

10. Cleansing textile device, according to any one of the preceding claims, characterized in that the cleaning element consists of fibers made of synthetic material or materials and natural fibers in a ratio of 70 to 100% synthetic fibers and 0 to 30% natural fibers.
11. Cleansing textile device, according to patent claim 10, characterized in that the fibers of natural origin are viscose fibers of cotton fibers.
12. Cleansing textile device, according to patent claim 10 or 11, characterized in that the cleaning element is saturated with a chemical cleaning agent, a nurturing and protective agent, or fragrance.

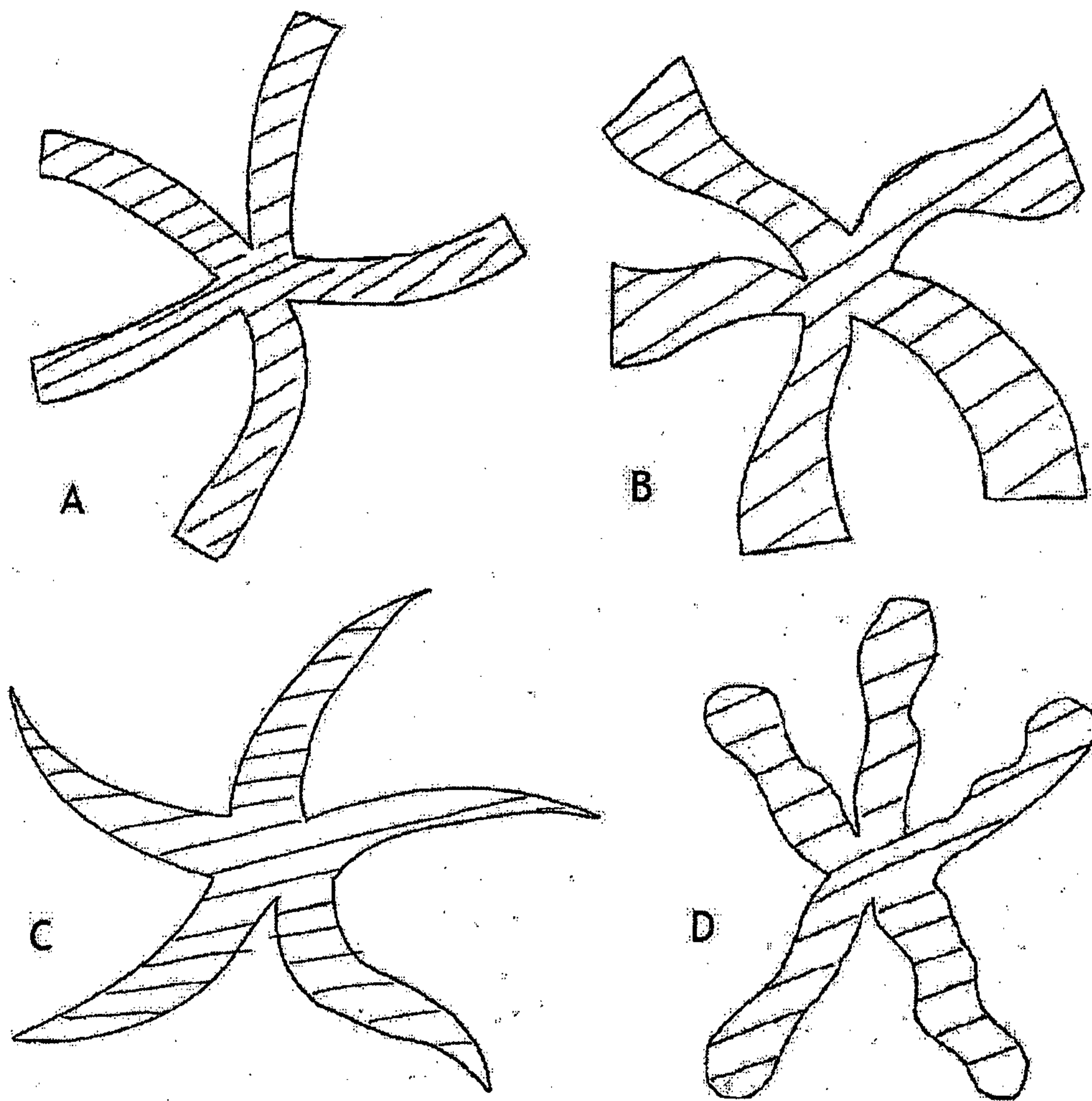


Fig. 1

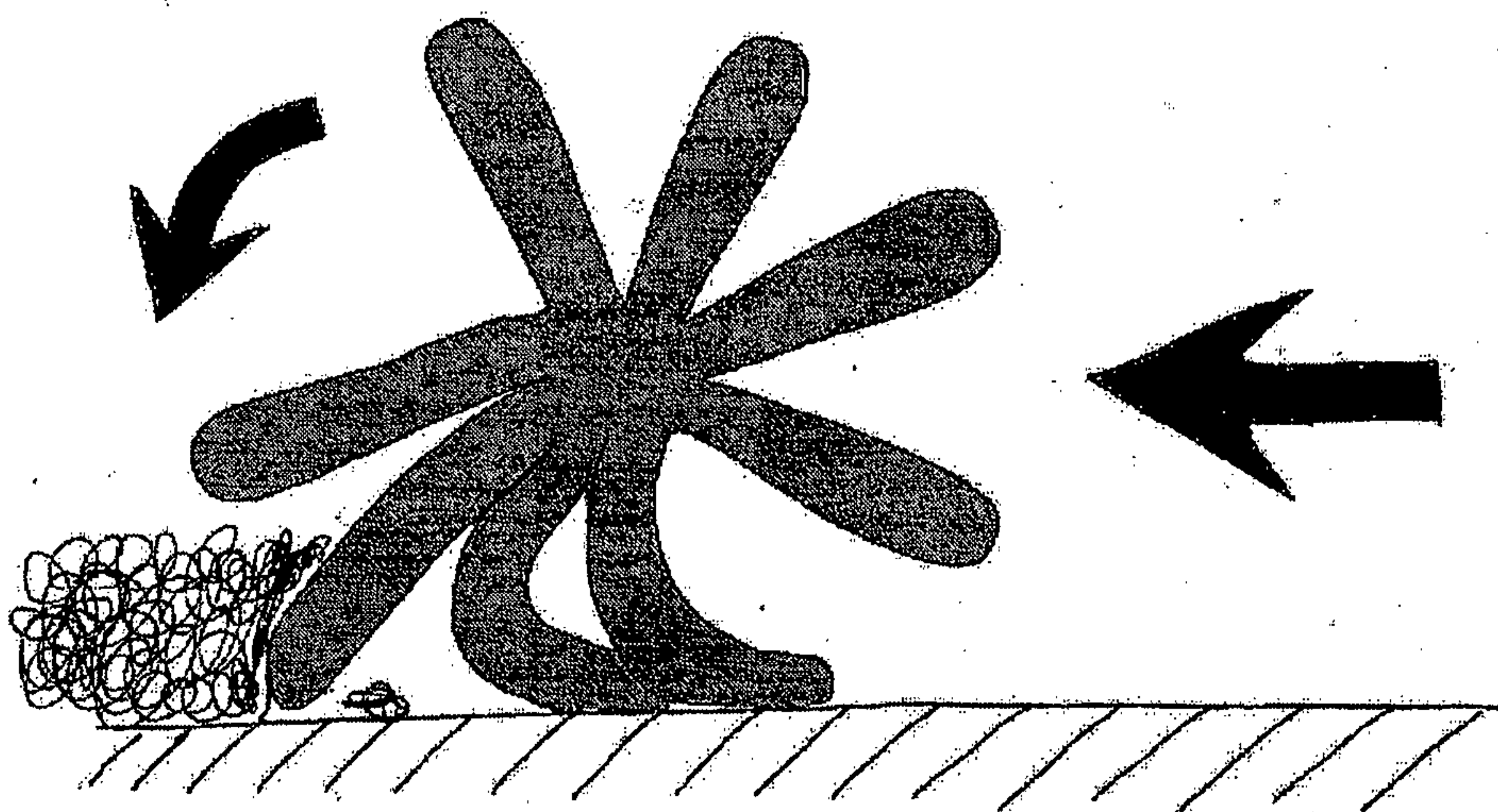


Fig. 2

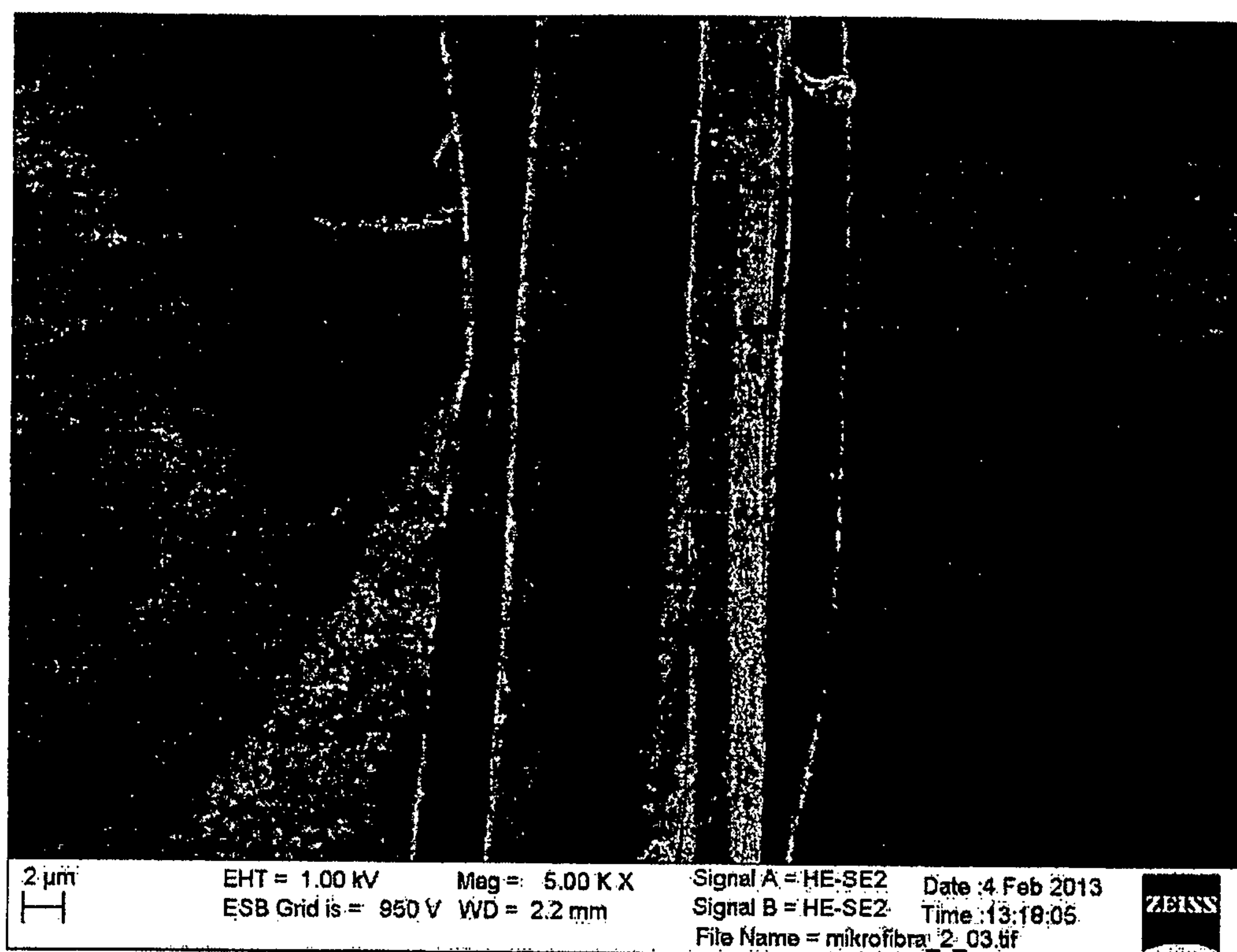


Fig. 3

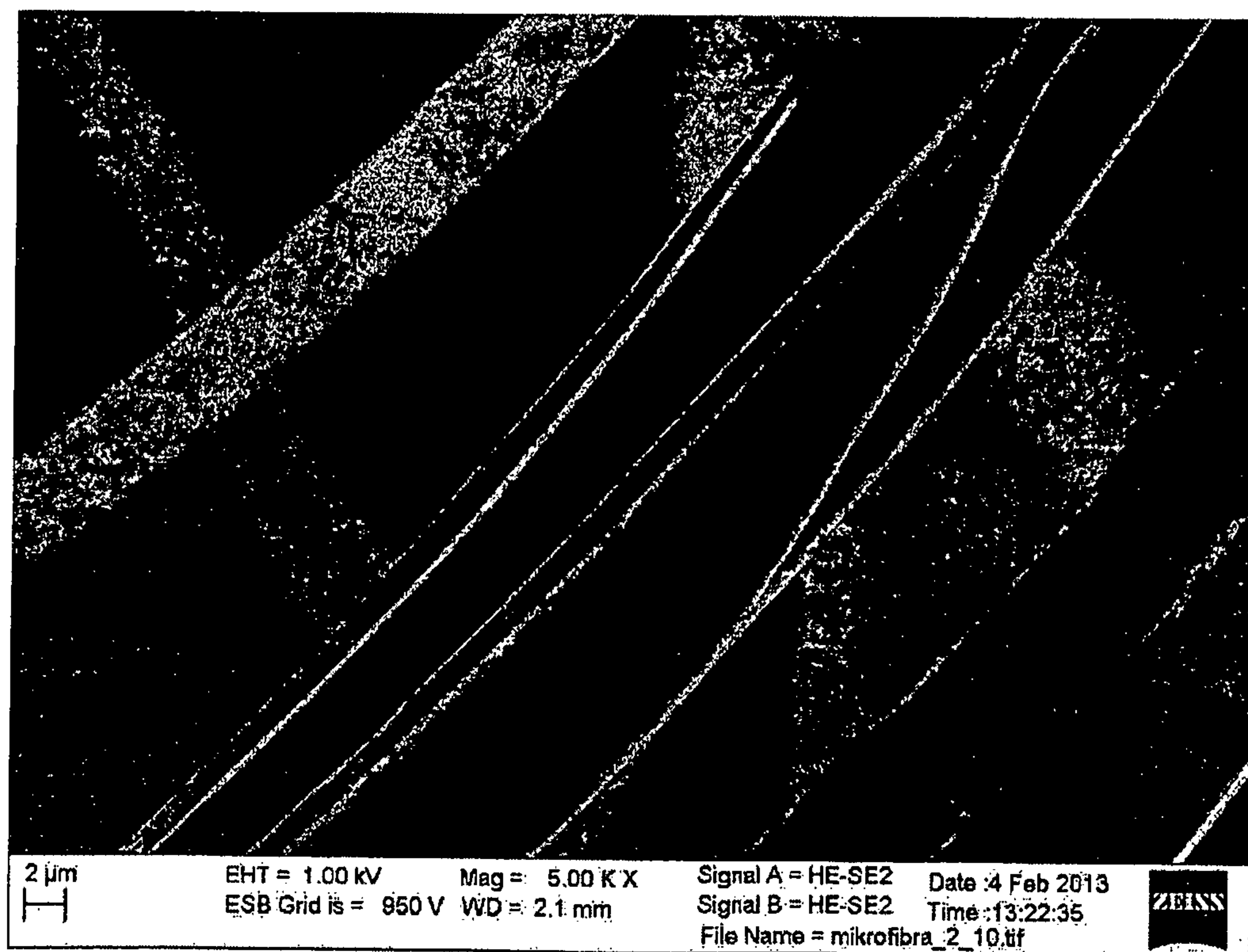


Fig. 4

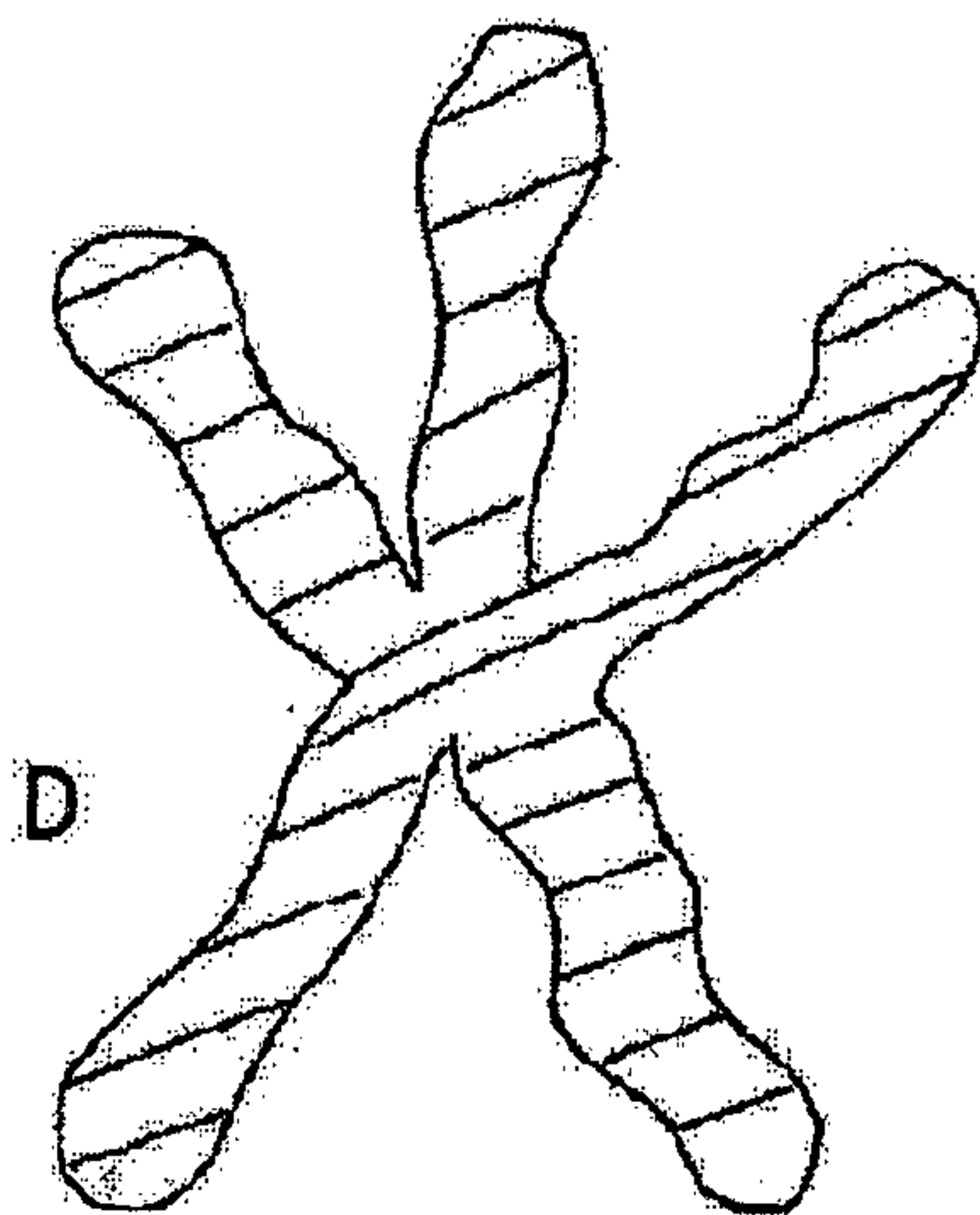
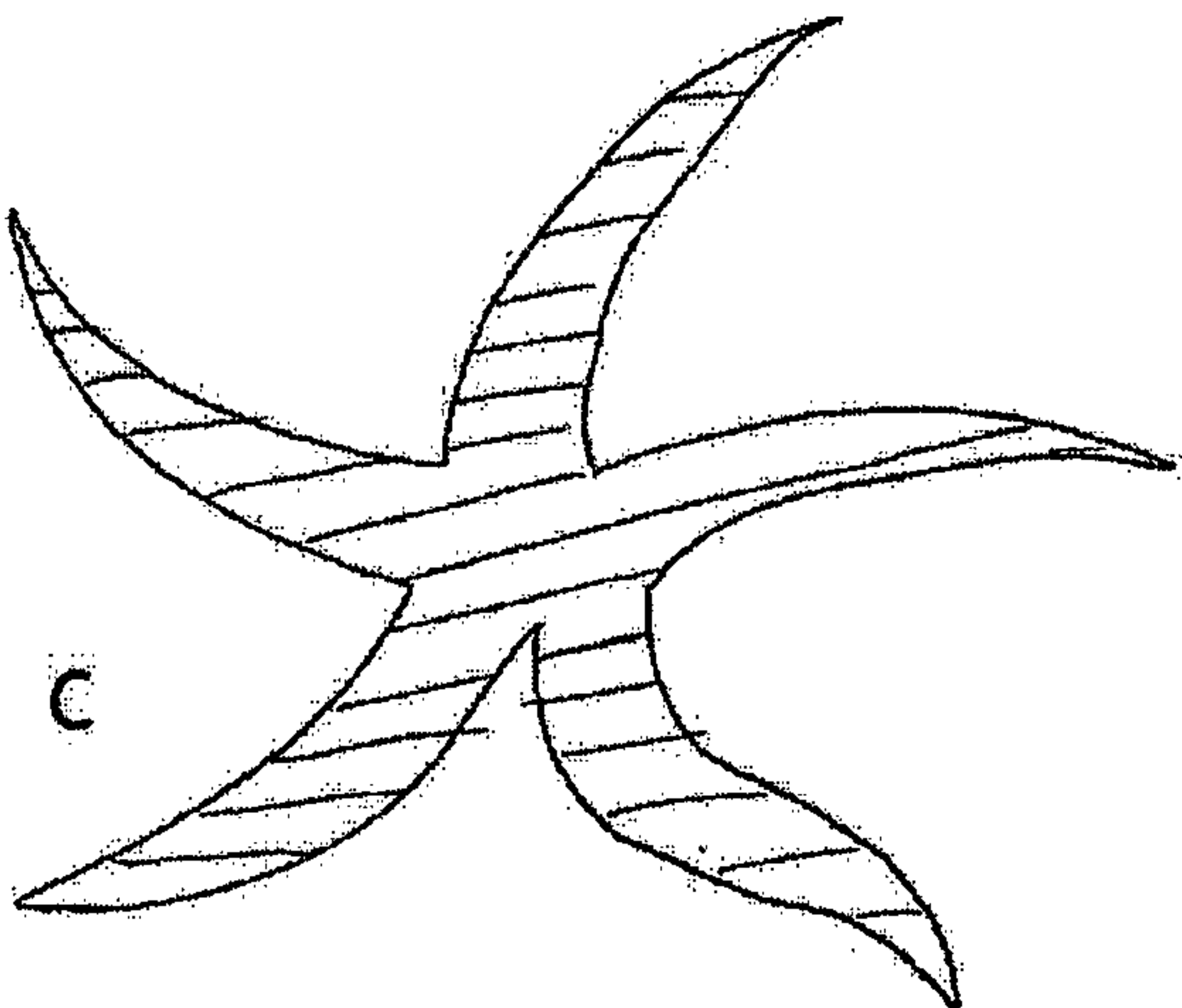
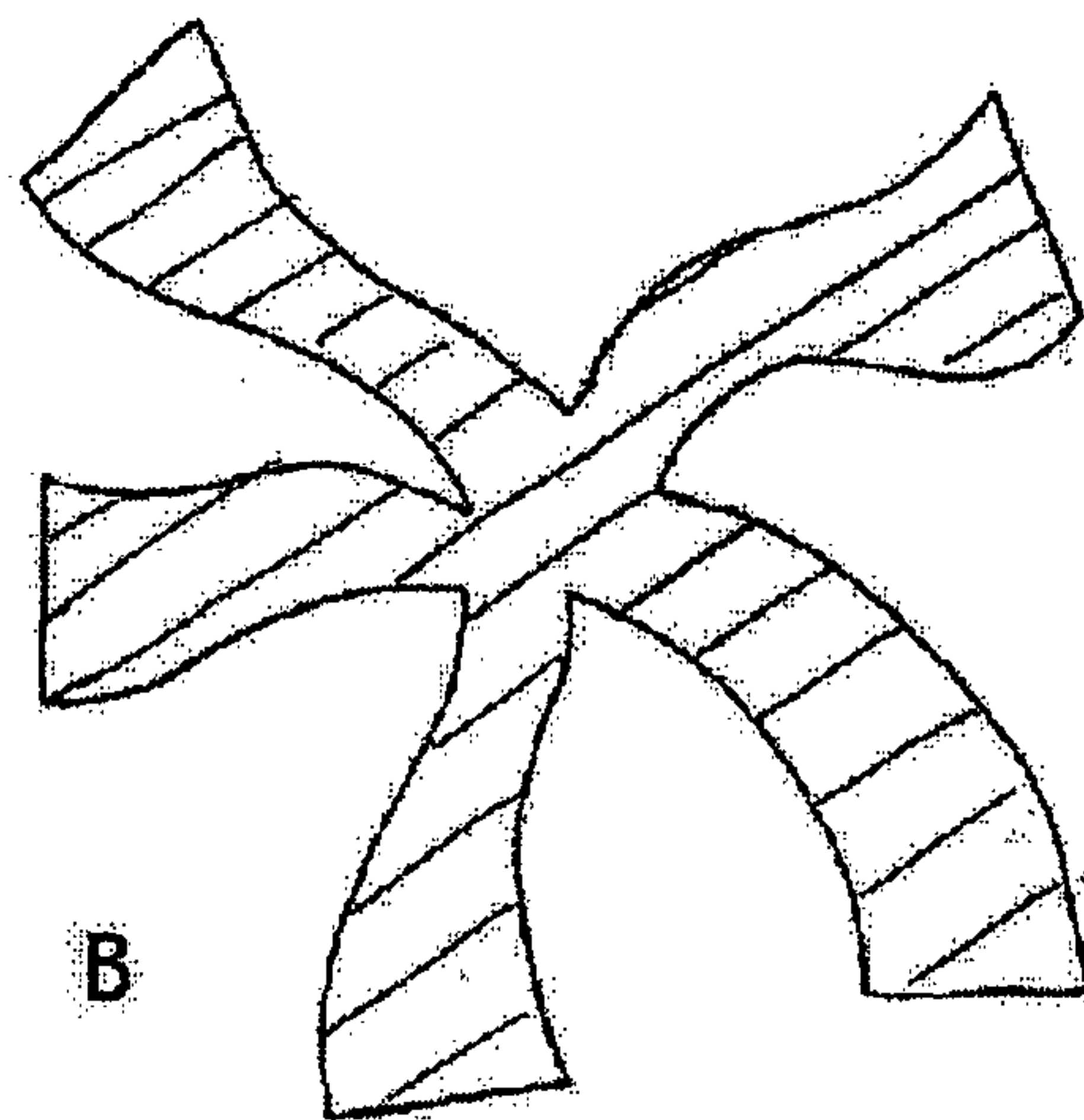
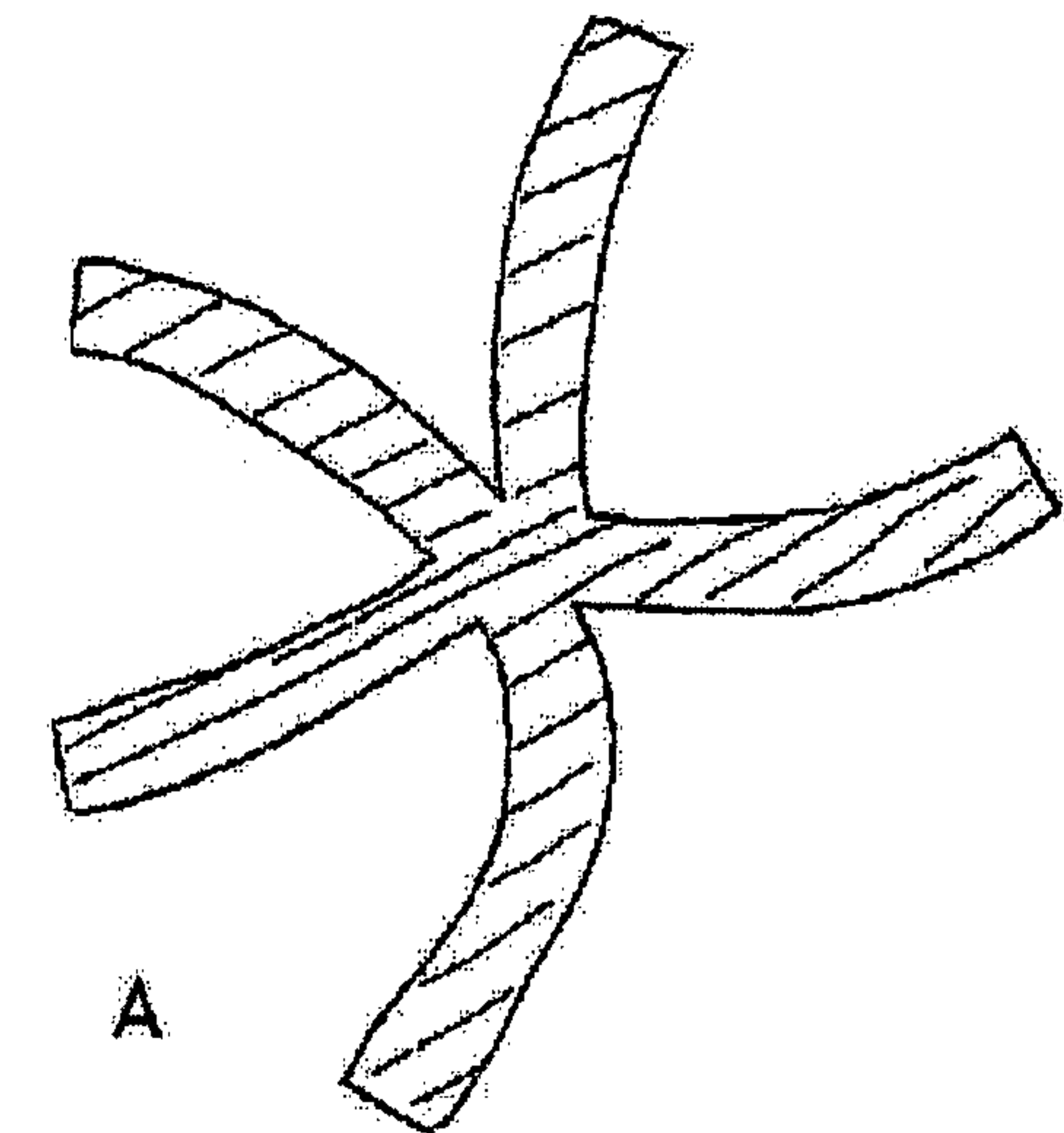


Fig. 1