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PATENTED SEPT. 8, 1908.

J. BENDEL.

APPARATUS FOR TREATMENT OF RAMIE AND OTHER TEXTILE SUBSTANCES.

APPLICATION FILED DEC. 12, 1906.

3 SHEETS—SHEET 1.

Fig. 2.

Fig. 3.

Fig. 4.

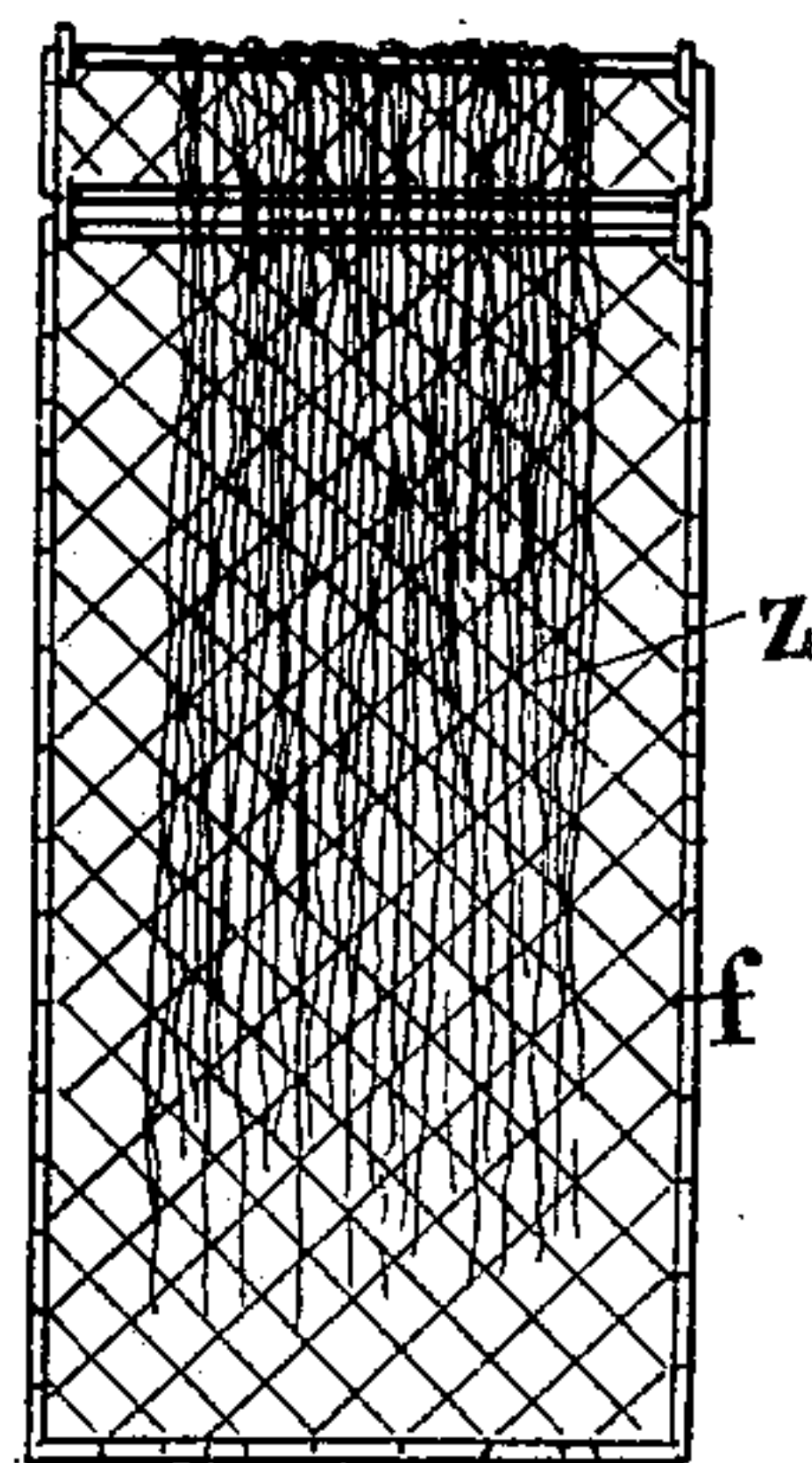
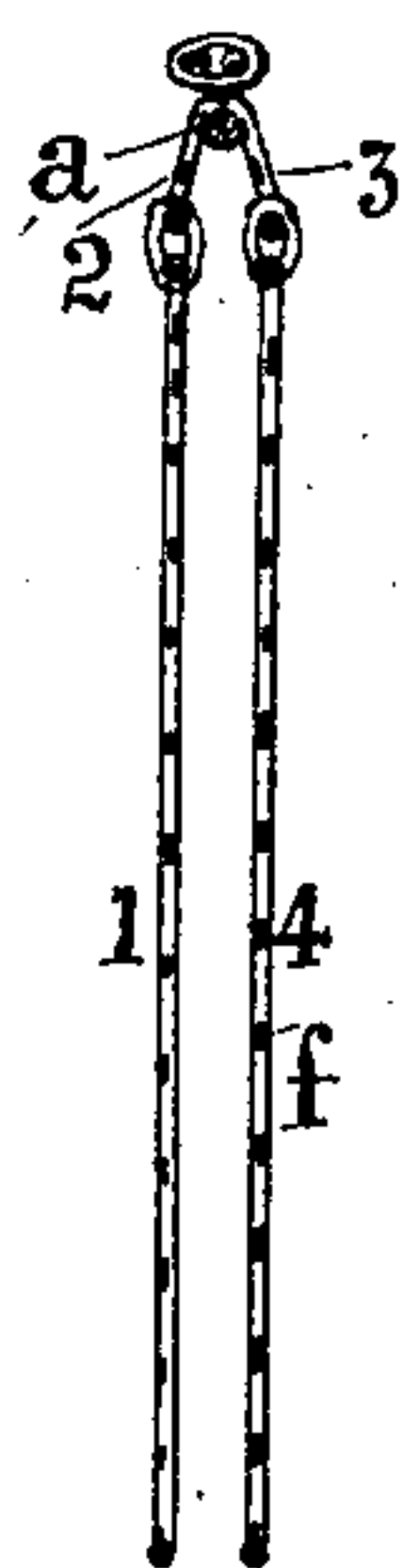
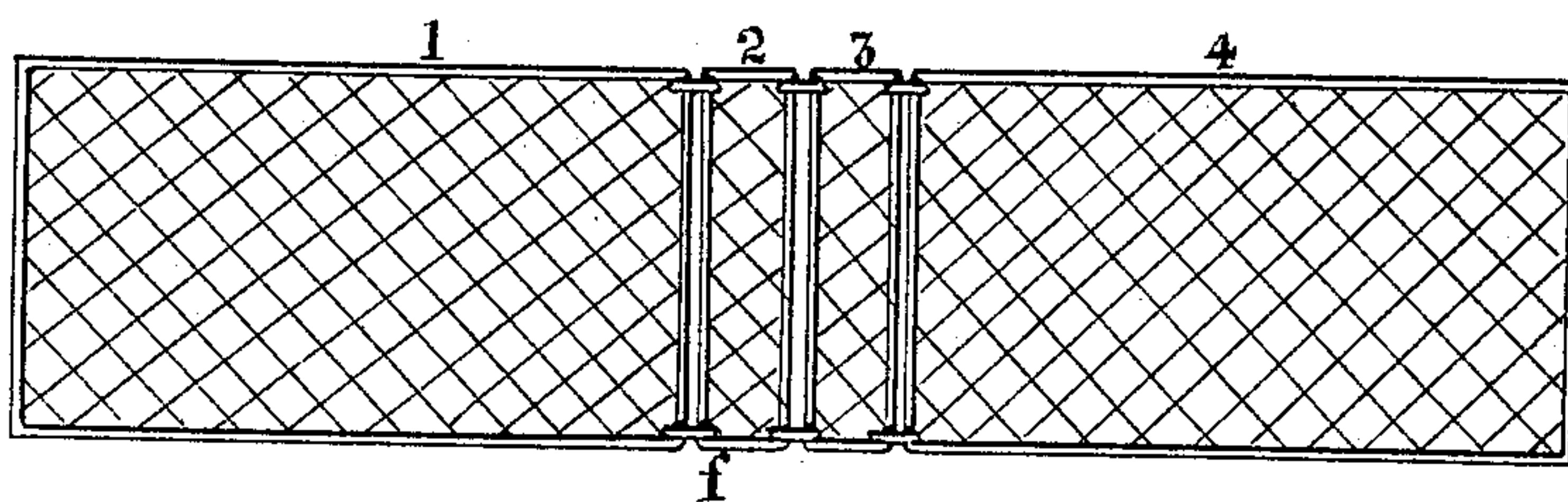


Fig. 1.



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3 SHEETS—SHEET 2.

Fig. 5.

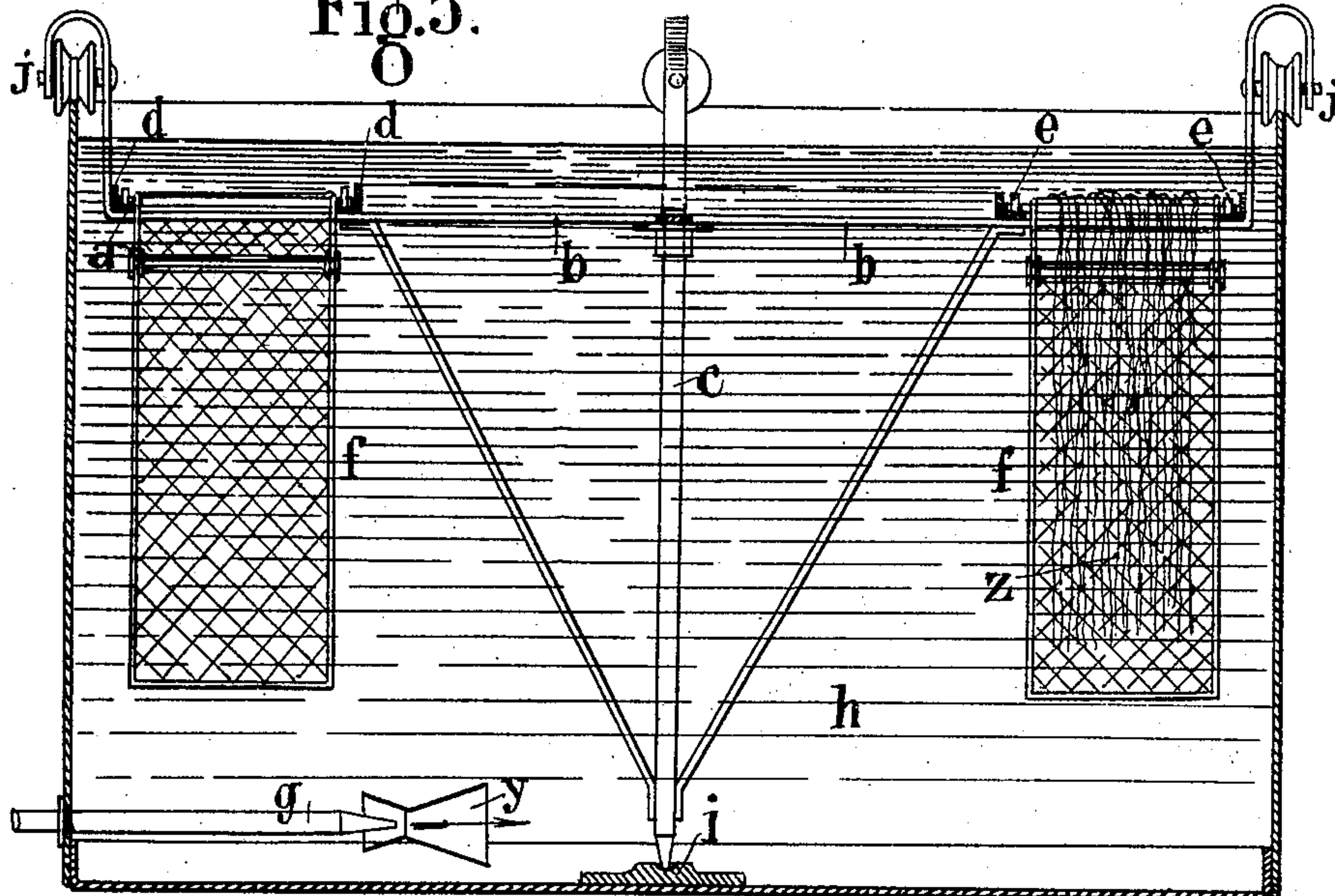
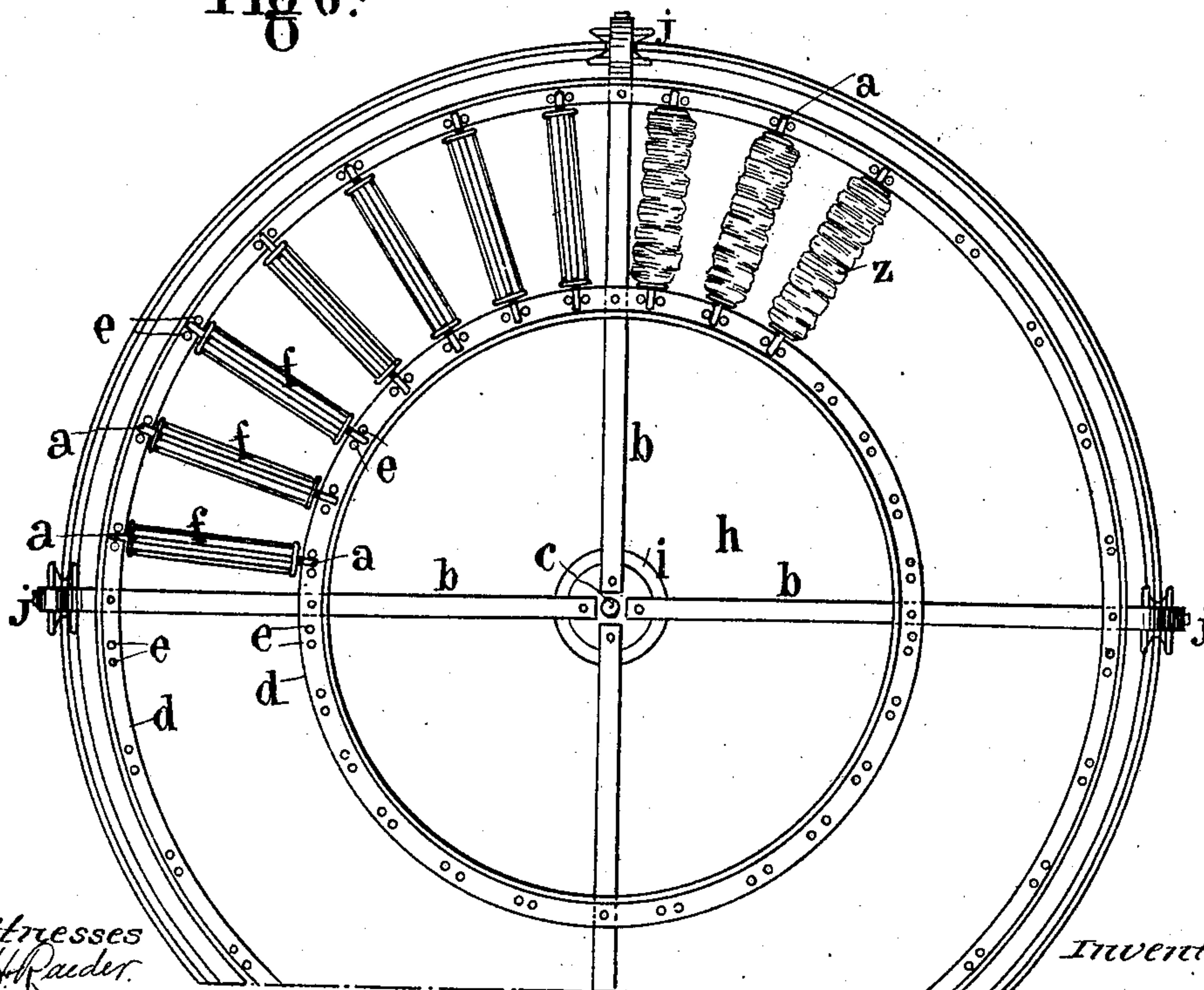


Fig. 6.



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3 SHEETS—SHEET 3.

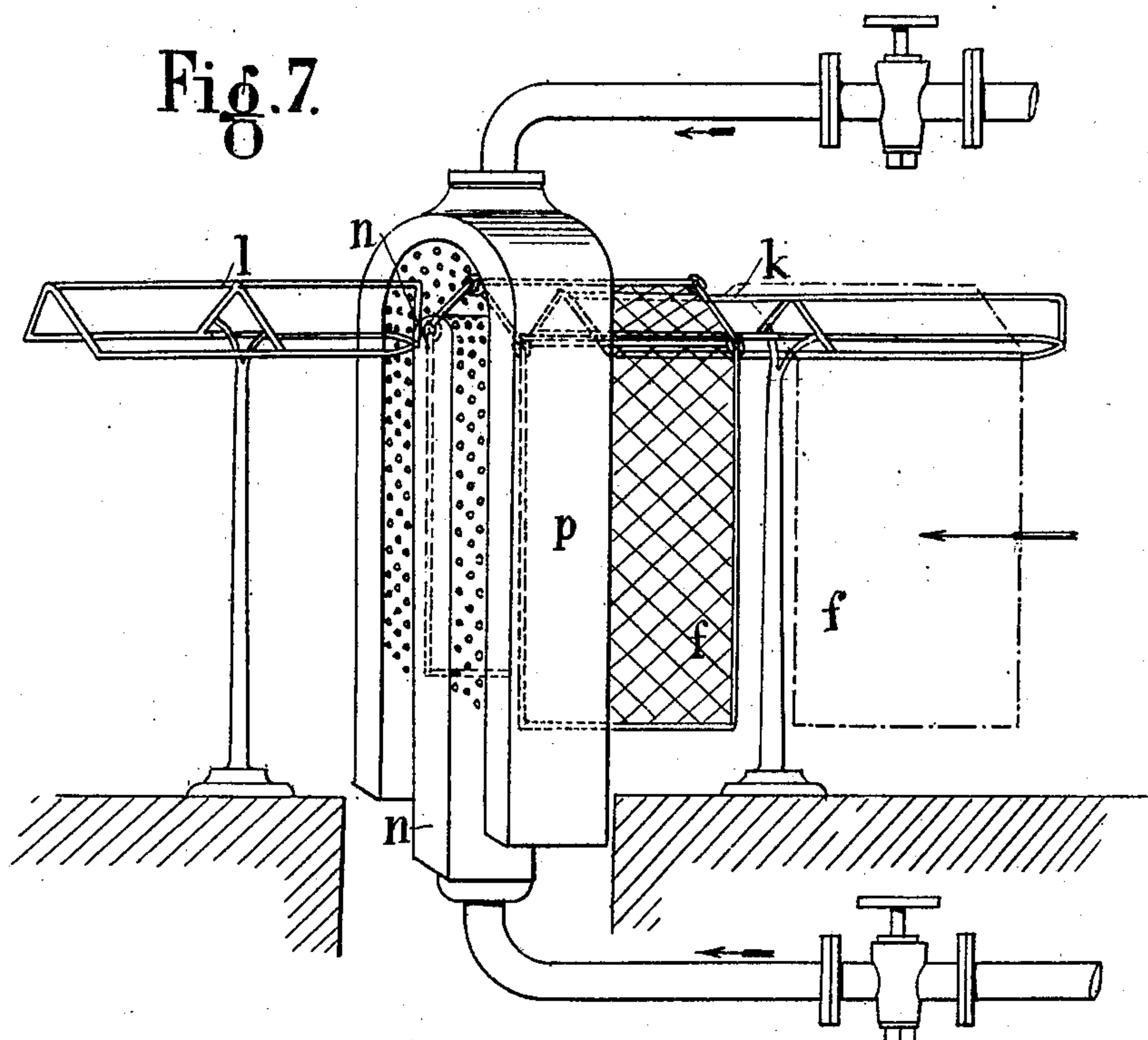
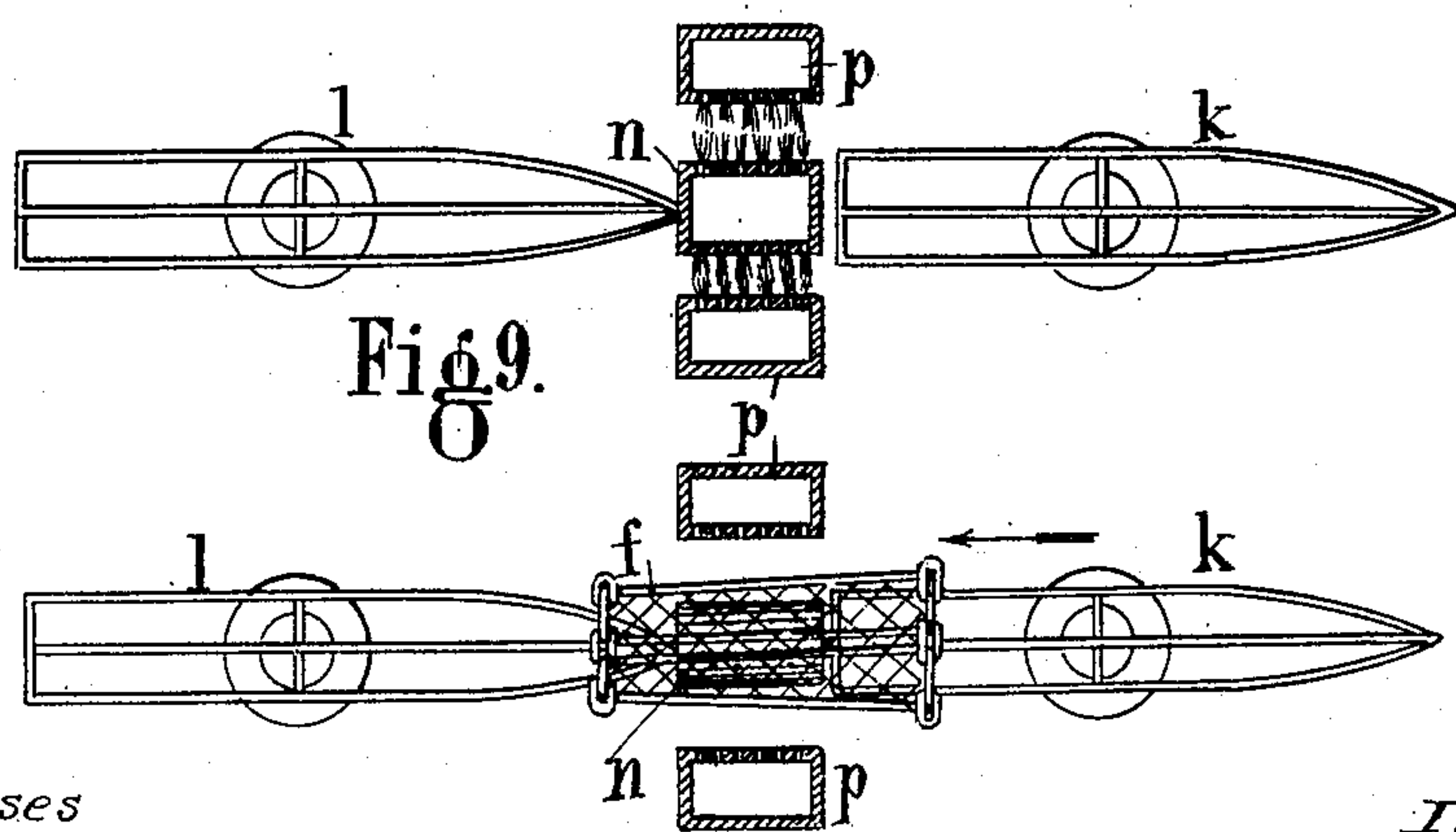


Fig. 8.



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APPARATUS FOR TREATMENT OF RAMIE AND OTHER TEXTILE SUBSTANCES.

No. 897,956.

Specification of Letters Patent.

Patented Sept. 8, 1908.

Application filed December 12, 1906. Serial No. 347,560.

To all whom it may concern:

Be it known that I, JACQUES BENDEL, a citizen of the Republic of France, residing at No. 57^{bis} Avenue de Lamothe-Piquet, in the city of Paris, Republic of France, have invented certain new and useful Improvements in Apparatus for the Treatment of Ramie and other Textile Substances, of which the following is a specification.

There is in existence a process for removing the pellicle from and ungumming ramie and other similar textile substances, which is carried out in the following manner: The ramie which has to be ungummed and its pellicle removed is first of all thoroughly wet by steeping the raw strips in water; these strips are placed astride an appropriate support in such a manner as to form two sheets which hang vertically on either side of the support and are freely exposed throughout their entire length; the strips thus suspended are subjected:—1. To the action of a softening bath; 2. To the action of an apparatus for removing the cortex or pellicle which is arranged for projecting upon their entire length fine jets of water under pressure which serve to carry off the pellicle detached in the first bath and a portion of the gum; 3. And finally to the action of an ungumming bath which completes the solution of removal of the gummy substances.

This invention relates to improvements in the apparatus employed for carrying out this process, more particularly with the object of rendering the operations continuous.

Figures 1 to 4 of the accompanying drawings represent the novel support upon which the strips remain suspended throughout the whole of the treatment: Fig. 1 shows in plan the support developed; Fig. 2 is an end view of the same as it is arranged in the softening and ungumming apparatus; Fig. 3 is a similar view showing the support as arranged during the removal of the pellicle and Fig. 4 shows the support in the side elevation with the strips of ramie *z* suspended thereon. Figs. 5 and 6 show the apparatus in which the softening or ungumming is effected in vertical section and in plan respectively. Figs. 7 to 9 represent the improved apparatus employed for the removal of the pellicle; Fig. 7 shows it in perspective and Figs. 8 and 9 show it partly in plan and partly in horizontal section.

During all the operations, the strips of ramie *z* remain suspended upon a support *f* which is constituted by four frames containing a trellis or grating of wide mesh, (1, 2, 3, 4, Fig. 1) jointed one to the other by means of rings or otherwise.

The softening apparatus and the ungumming apparatus is each constituted by a circular tank *h* in which a horizontal annular frame is able to rotate freely; this frame is constituted by two circular angle irons *d d* connected by radial arms *b* to a central shaft *c*; the lower extremity of this shaft rests in a step bearing *i*. The arms *b* are prolonged outwards for carrying grooved rollers *j* which run upon the circular edge of the tank *h*.

For their treatment in the tank *h*, the strips of ramie *z* are placed upon the support *f* and this latter is suspended at its middle point on a bar *a* as shown in Fig. 2; the angle irons *d d* are arranged at a sufficient distance apart for receiving between them the supports *f*, thus arranged and the bars *a* are of appropriate length for resting upon these bars *d*, as clearly shown in Figs. 5 and 6. These angle bars may be provided with pins *e* arranged in pairs for receiving between them bars *a*, the successive pairs of pins being separated one from the other by an interval equal to that which should exist between the different supports *f* when they are suspended in the tank *h*. The tank is provided with an appropriate heating device, such for example as a steam injector *g*, with double frusto-conical nozzle *y*, producing an intimate mixture of the steam with the water in the tank.

The pellicle removing apparatus comprises two kinds of sprinkling rose *n*, *p* between which the ramie support *f* may be passed when its branches 1 and 4 are kept apart as shown in Fig. 3. To this end, the sprinkling rose *p* is of horse-shoe shape, while the sprinkling rose *n* forms a central core arranged at a sufficient distance from the horse-shoe member to permit the support *f* loaded with ramie to pass between the two without touching them. During this passage the sheet of ramie is subjected on its outer side to the action of the fine and numerous jets of water thrown upon it by the inner perforated wall of the horse-shoe *p*, and at the same time this same sheet is subjected on its inner side to the action of the jets of water thrown upon it by the lateral perforated walls of the core

n ; preferably, the number of perforations on the parts n and p are equal, in such a manner that the two faces of the sheet of ramie may be subjected to the action of the same number of jets.

On the right and left hand of the sprinkling roses n and p triangular wire seats or supports k and l are arranged, these being intended to maintain and guide the supports f during their passage from one side of the device n p to the other; the seat k is preferably contracted on its side most distant from the perforated parts p n in such a manner that the support f may readily be passed upwards in the direction indicated by the arrow (Fig. 7) and similarly the seat l is preferably contracted at its extremity adjacent to the parts n , p , so that the articulated support f may not be impeded when it advances from k to l between the sprinkling roses n , p , as indicated in Fig. 9.

The essential dispositions of the improved apparatus having been described, its operation is as follows:—The supports f loaded with ramie are suspended in the apparatus shown in Figs. 5 and 6, in such a manner that they are immersed in the heated softening bath. After a support f has effected a complete revolution in the tank h , it is removed by the attendant and subjected to the action of the pellicle removing apparatus; every time the attendant takes a support f from the tank h he rotates the circular frame d , d' by the interval comprised between two successive supports and may at the same time impart to it a small reciprocating movement in such a manner as to agitate the ramie in the bath; each support when removed from the tank h is immediately replaced by another which will be withdrawn after it has effected a complete revolution. As regards the support f which has just been removed from the softening tank h , it is placed upon the seat k and caused to pass slowly from k to l in such a manner as to subject the ramie carried by it to the pellicle removing action of the fine jets of water of the sprinkling roses n , p ; if desired, it may be given a reciprocating movement between k and l until the pellicle is completely removed. This support is then suspended in a second apparatus, identical with that shown in Figs. 5 and 6, and containing the ungumming bath. A fresh support f is then taken from the softening tank, and in its turn subjected to the action of the pellicle removing apparatus, and so on in succession in a continuous manner.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A support for sustaining ramie or similar textile substance in strips, comprising two relatively short frames hinged together, a longer frame hinged to the outer end of each

of said short frames, and a reticulated surface extending throughout the confines or extent of each frame.

2. A support for ramie or other textile substance in strips, comprising two oblong, relatively narrow frames, said frames being hinged together; a frame pivotally secured to the outer edge of each of said oblong frames, said frames being relatively long; and wire mesh secured in each of said frames and extending from wall to wall thereof.

3. In an apparatus for treating ramie, the combination of a circular tank; a vertical shaft centrally disposed therein; a pair of circular supporting irons; arms extending outwardly from the shaft beneath said irons and over the upper edge of the tank; rollers carried by said arms and resting upon the upper edge of the tank; a series of cross-bars removably supported upon the circular irons; and a series of reticulated frames, adapted to support ramie or other fiber, mounted upon said cross-bars.

4. In an apparatus for treating ramie or other fiber in strips, the combination of a sprinkling rose, horseshoe in form and provided with openings upon the inner face thereof; a second sprinkling rose standing between the arms of the first rose and spaced therefrom, the perforations in said second rose opening toward the arms of the first rose; a reticulated supporting frame for the fiber being treated; and means for supporting said frame out of contact with the roses, as it is passed between the same.

5. In an apparatus for treating ramie or other fiber, the combination of a rose, horseshoe in shape and provided with perforations upon the inner face thereof; and a second rose arranged between the arms of the first rose and out of contact therewith, said rose being provided with perforations opening toward the face of the horseshoe rose.

6. In an apparatus for treating ramie or other like fiber, the combination of a rose, horseshoe in shape, having openings formed in the inner face thereof; a second rose located between the arms of said first rose and spaced away therefrom, the perforations in the second rose opening toward those in the first rose; a support located to one side of the roses; a second support located upon the opposite side of said roses; and a reticulated frame for supporting the fiber, said frame being adapted to be passed along the first support between the roses and onto the other support.

7. In an apparatus for treating ramie or other fiber, the combination of a rose substantially horseshoe in shape and provided with perforations upon its inner face; a second rose standing between the arms of the first rose and spaced away therefrom, the perforations of said second rose opening toward the perforations of the first rose; a sup-

port standing in line with the centrally-dis-
posed rose and with one end thereof imme-
diately adjacent thereto, the forward end of
the support being tapered or brought to a
5 point; a second support standing upon the
opposite side of the central rose, the forward
end of said support being tapered or inclined
and standing in close proximity to the cen-
tral rose; and a reticulated frame adapted
10 to support the fiber under treatment, said
frame being of such form as to readily pass

onto the first support between the roses and
onto the second support, whereby the fiber
will be thoroughly subjected to spray passing
from the roses. 15

In witness whereof I have hereunto set my
hand in presence of two witnesses.

JACQUES BENDEL.

Witnesses:

HENRY AUGUSTE BERTIN,
HANSON C. COXE.