

A. CLAVEL.  
 APPARATUS FOR TREATING YARN IN HANKS WITH LIQUID.  
 APPLICATION FILED MAY 5, 1910.

990,802.

Patented Apr. 25, 1911.

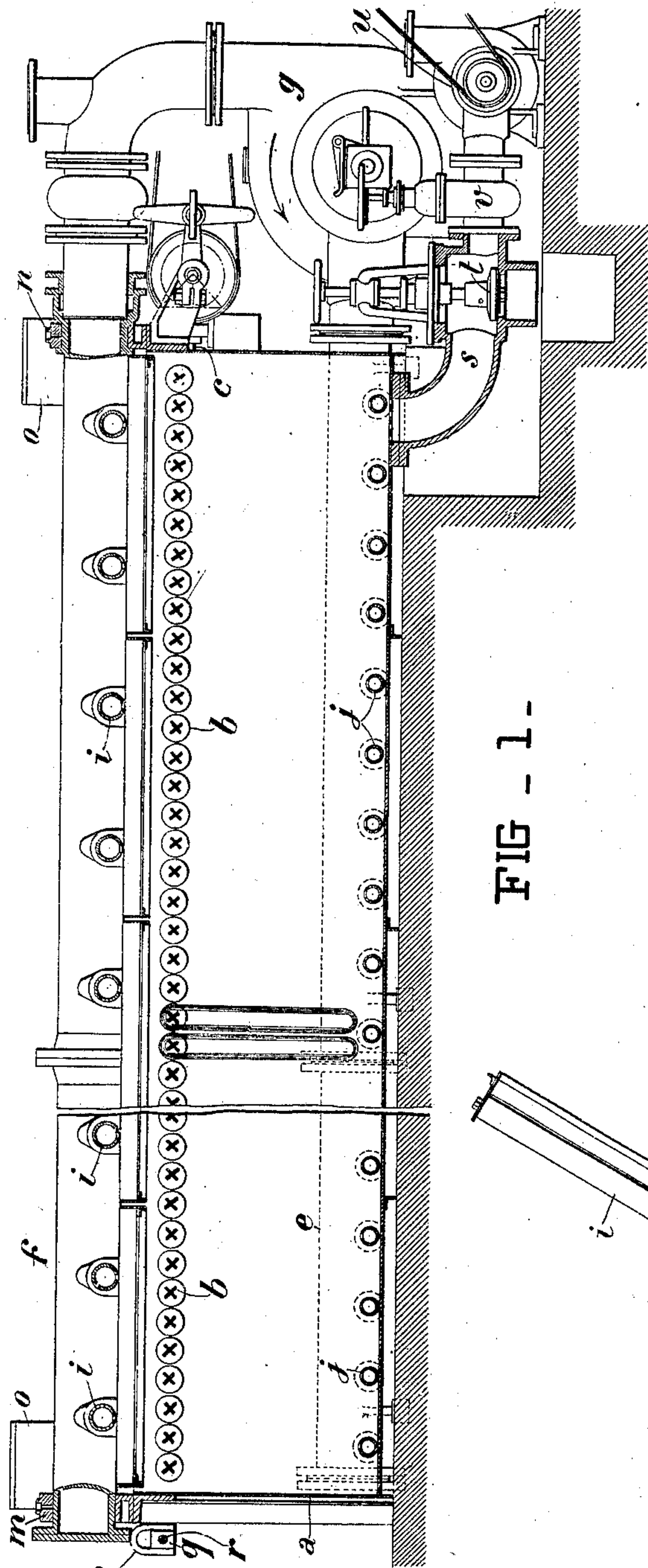


FIG - 1 -

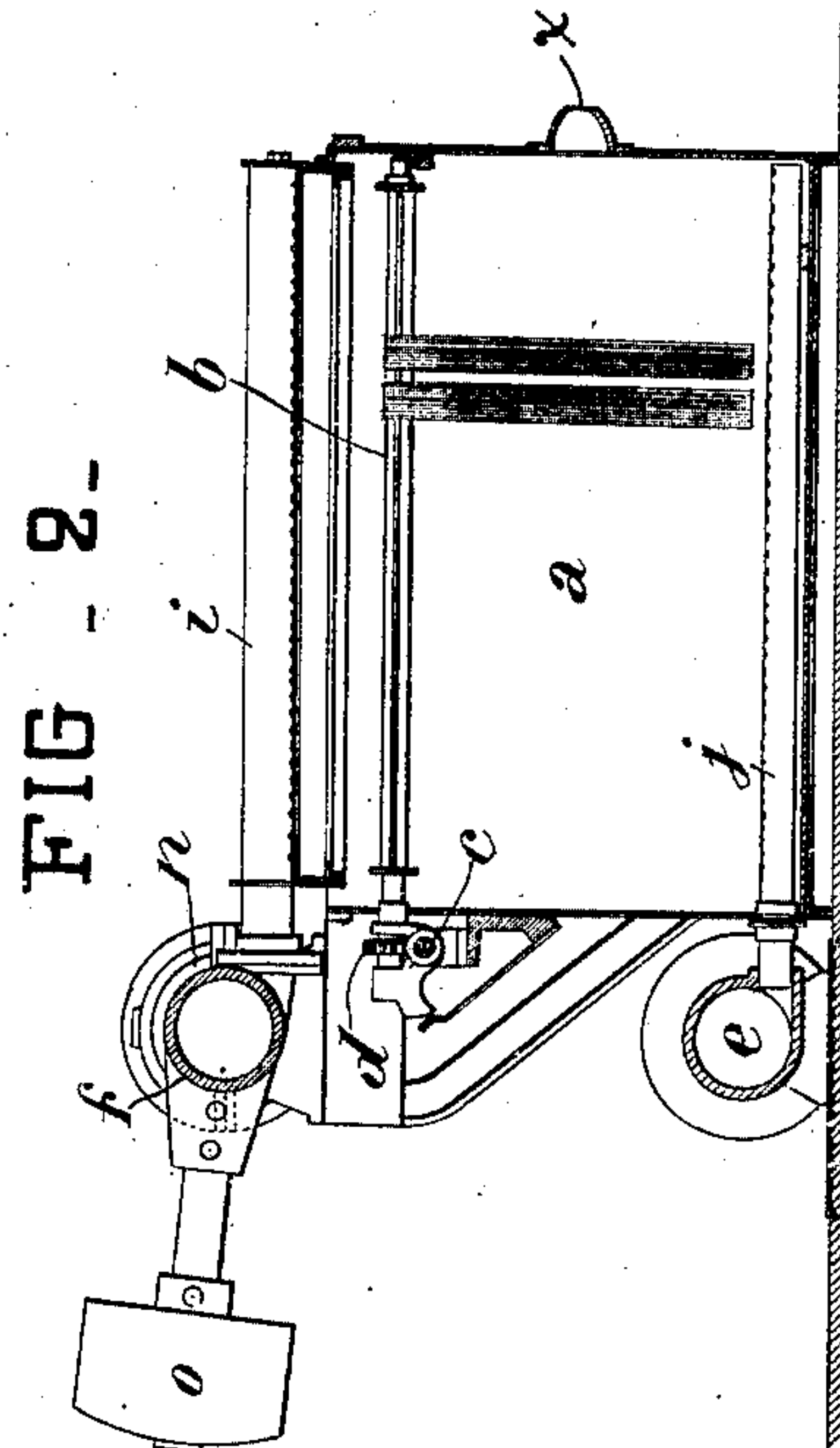


FIG - 2 -

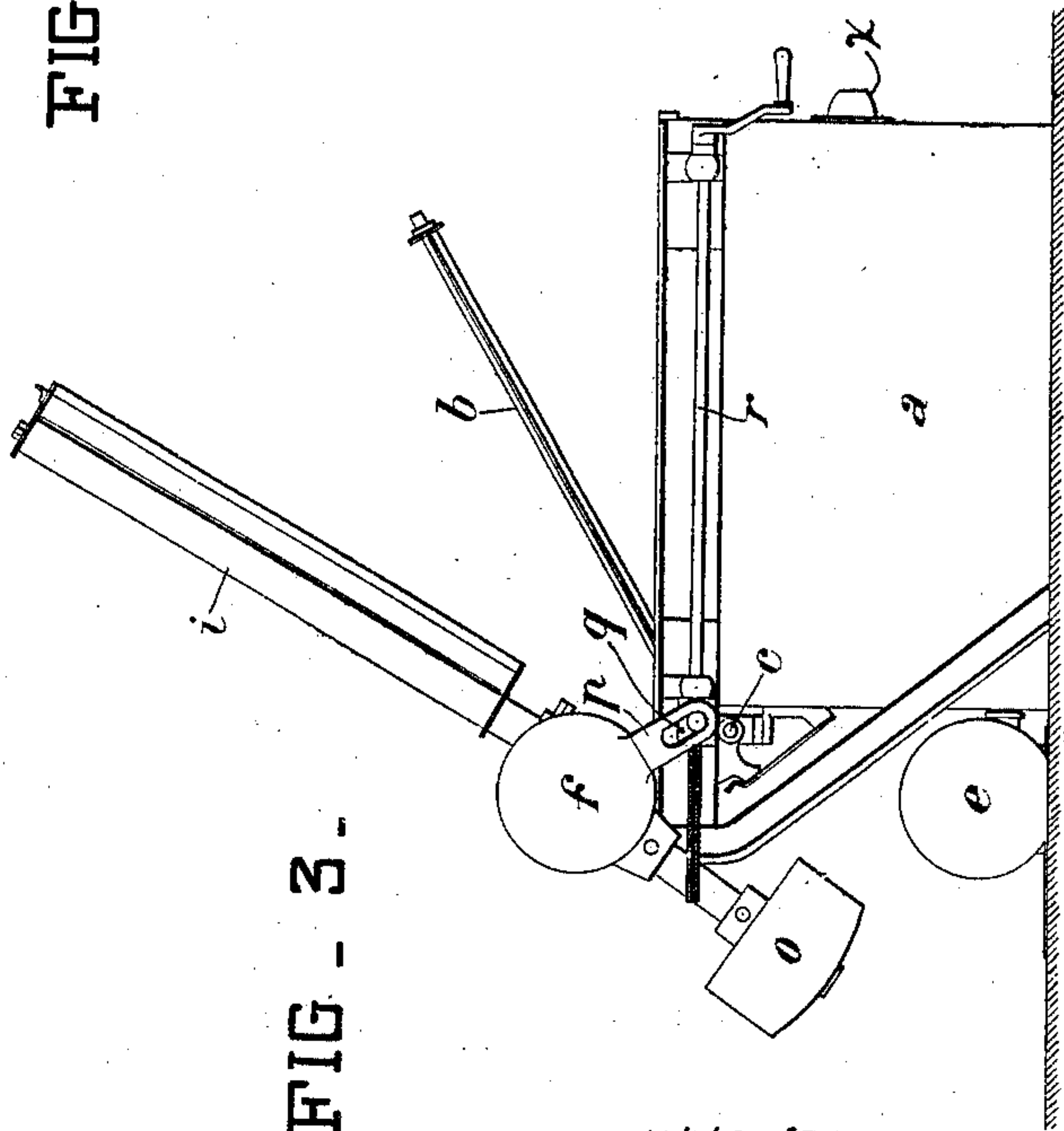


FIG - 3 -

WITNESSES:  
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# UNITED STATES PATENT OFFICE.

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## APPARATUS FOR TREATING YARN IN HANKS WITH LIQUID.

990,802.

Specification of Letters Patent.

Patented Apr. 25, 1911.

Application filed May 5, 1910. Serial No. 559,495.

*To all whom it may concern:*

Be it known that I, ALEXANDER CLAVEL, a citizen of the Swiss Republic, and resident of Basel, Switzerland, have invented new and useful Improvements in Apparatus for Treating Yarn in Hanks with Liquid, of which the following is a full, clear, and exact specification.

The treatment, especially the dyeing and washing, of yarn in hanks by means of a circulating liquid has hitherto been attended with difficulties for the reason that the yarns could only be treated in the stretched out form. If the hanks are not stretched for this operation, they will obviously be liable to get mixed up or otherwise disordered in their usual hanging position. The use of a special stretching device is therefore required in this treatment of hanks. Such stretching devices, however, are apt to render more difficult or delay the introduction and taking out of the hanks and it is therefore the object of the present invention to provide means such that the yarn can be treated without making use of special stretching devices. To this end, the treating chamber which is fitted with means for suspending the hanks is placed between a suction and a pressure pipe for treating liquid and has said suction pipe distributed over its bottom in such a manner that by a large number of suction openings the suction pipe is so close to the lower ends of the hanks that the latter receive a downward pull or stretching by means of the sucked in liquid. By this means the hanks may be treated with a circulating liquid in the treating chamber without any special stretching device and without danger of the hanks getting intermingled. The chamber *a* may be provided with a sight opening *x* for inspecting purposes, as shown in Figures 2 and 3.

To enable my invention to be fully understood I will describe the same by reference to the accompanying drawing, which shows the hanks to be treated suspended from hinged reels in the treating chamber in a known manner and in which:

Fig. 1 is a vertical longitudinal section and Fig. 2 is a vertical cross section of the apparatus, and Fig. 3 an end view of the apparatus, the reels being turned upward. *a* is the treating chamber or receptacle in

the upper part of which are arranged a series of reels *b* which are adapted to support the hanks and are revoluble about their longitudinal axis and pivoted on a shaft *c* situated outside the chamber *a*. The rotary motion of the reels *b* about their own axes is transmitted from the shaft *c* by means of a gearing *d* (Fig. 2), while the reels may be lifted by hand when required.

The chamber *a* is situated between a suction pipe *e* and a pressure pipe *f*. These two pipes are connected to a centrifugal pump *g* by means of which a treating liquid is forced through the chamber *a*. The pressure pipe *f* is provided with perforated pipes *i* which are closed at one end and are parallel to the reels *b* as shown in Figs. 1 and 2. The pipes *i* are provided with openings which are directed downward so that the liquid is sprayed on to the hanks from above. In a similar manner the suction pipe *e* is provided with perforated pipes *j* closed at one end, arranged along the bottom of the chamber *a* and having their suction openings directed upward. The perforations or suction openings of the said pipes *j* are in such close proximity to the lower ends of the hanks of yarn hanging freely from the reels *b* as shown in Figs. 1 and 2, that the hanks are stretched owing to the pull exerted by the sucked in liquid.

The horizontal part of the pressure pipe *f* which is provided with the spraying pipes *i* is mounted in bearings *m*, *n* so as to be capable of turning about its longitudinal axis, in such a manner that the spraying pipes *i* can be turned upward in the manner indicated in Fig. 3 so as to allow of the yarn reels being easily lifted. The spraying pipes *i* are counter-balanced by counterweights *o*. To facilitate the turning motion of the above mentioned pipe portion the latter is connected by means of a slotted arm *p*, to a nut *q* arranged upon a rotatable screw-spindle *r* provided with a crank handle.

The liquid may be allowed to exhaust out of the chamber *a* through an outlet *s* connected to the bottom of the said chamber (Fig. 1), either directly by opening the valve *t* by means of the hydrostatic pressure or by opening the valve *v*, in which latter case the liquid will be drawn away by a suction pump *u*.



It is advantageous to provide a series of liquid receptacles for containing various liquids such as dye or washing liquid in the circuit formed by the suction pipe *e*, the 5 pressure pipe *f* and the centrifugal pump *g*, in order to include the contents of any one of these receptacles in the circuit when desired.

10 Instead of providing the suction pipes *j* with a number of suction perforations, they may also be provided with longitudinal slits.

What I claim is:

1. In an apparatus for treating yarn in 15 hanks with liquid, the combination of a treating chamber, means for supporting the hanks in said chamber in a freely hanging position, a pump device for supplying liquid to said chamber, a pressure pipe system con- 20 nected to the pressure side of said pump device and placed above the hanks to be treated and a series of suction pipes connected to the suction side of said pump device and arranged below the hanks, close to the lower 25 ends thereof and parallel to their supporting means, said suction pipes having suction openings in close proximity to the lower ends of the hanks, for the purpose of caus-

ing the latter to be pulled downward or stretched by means of the sucked in liquid. 30

2. In an apparatus for treating yarn in hanks with liquid, the combination of a treating chamber, movable means for supporting the hanks in said chamber in a 35 freely hanging position, a pump device for supplying liquid to said chamber, a movable pressure pipe system connected to the pressure side of said pump device placed above the hanks to be treated and a series of suc- 40 tion pipes connected to the suction side of said pump device and arranged below the hanks, close to the lower ends thereof and parallel to their supporting means, said suction pipes having suction openings in 45 close proximity to the lower ends of the hanks, for the purpose of causing the latter to be pulled downward or stretched by means of the sucked in liquid.

In witness whereof I have hereunto signed my name this 26th day of April 1910, in the 50 presence of two subscribing witnesses.

ALEXANDER CLAVEL.

Witnesses:

GEO. GIFFORD,  
AMAND RITTER.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."

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