(No Model.)

A. LYON.

Dipping Frame.

No. 241,499. **Patented May 17, 1881.**

Fig: 1

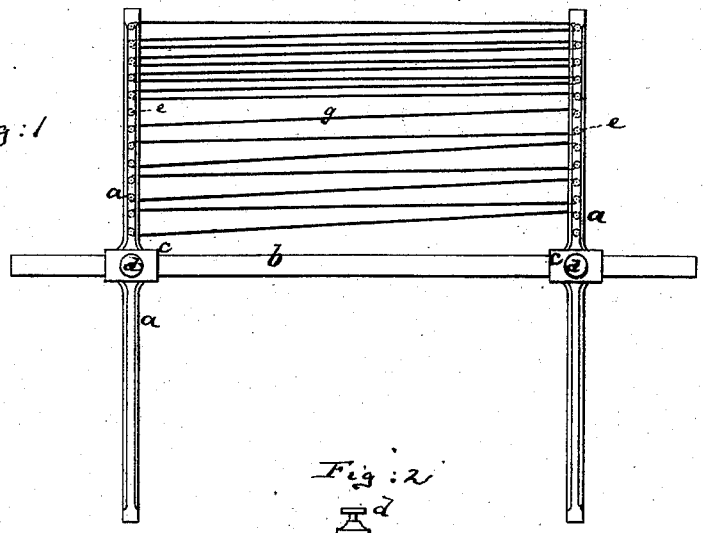


Fig: 2

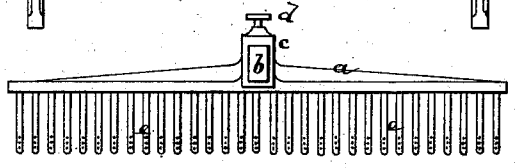


Fig: 3

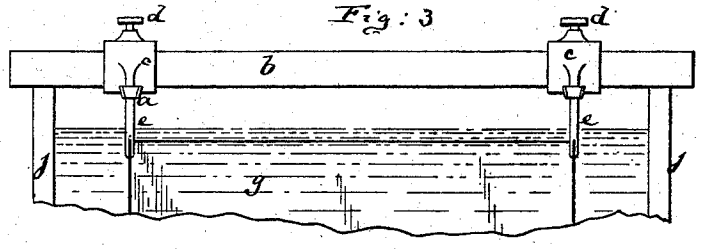
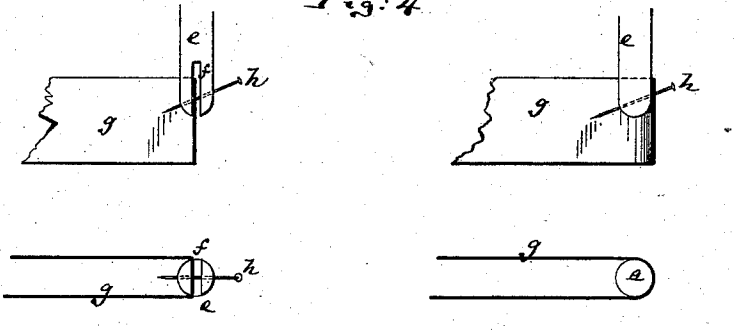


Fig: 4



WITNESSES.

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UNITED STATES PATENT OFFICE.

ANDRÉ LYON, OF ALGIERS, ALGERIA.

DIPPING-FRAME.

SPECIFICATION forming part of Letters Patent No. 241,499, dated May 17, 1881.

Application filed August 17, 1880. (No model.) Patented in France September 20, 1879.

To all whom it may concern:

Be it known that I, ANDRÉ LYON, of Algiers, Algeria, have invented an Improved Tenter or Dipping Frame for Use in Dyeing, (for which I have received French patent for fifteen years, dated September 20, 1879, No. 132,790;) and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed sheet of drawings, making a part of the same.

My invention relates to an arrangement of adjustable tenter or dipping frame for use in redyeing silk fabrics, whereby perfect evenness of color is obtained.

In the accompanying drawings, Figure 1 shows a plan of the improved adjustable dipping-frame, and Fig. 2 an end view of same. Fig. 3 shows the frame in position upon the dye-vat, while Fig. 4 shows different views of the means of attaching the fabric to the frame.

The same letters of reference indicate like parts in all the figures.

In the ordinary mode of dyeing silk fabrics the fabric, being fixed on pins or hooks, is stretched unequally at different parts, besides which, owing to the shrinking of the fabric after its immersion in the vat, the fibers are subjected to excessive tension, which prevents the dye from penetrating uniformly.

The above objections, as well as others, such as the oxidation of the hooks and spotting and other blemishes on the fabric, are entirely avoided by using the improved dipping-frame of my invention.

It consists of two horizontal bars, *a a*, fixed parallel to each other upon one or more cross-bars, *b b*, by sockets *c* and set-screws *d*, as shown. The bars *a a* are each provided with a row of teeth, *e*, each having a slit, *f*, at the end, in which the fabric *g* is inserted and secured by a pin, *h*, passed in an inclined direction through holes in the end of each tooth *e*, as shown, there being a number of these holes to permit the ready insertion of the pin. The disposition of these teeth and pins for securely and easily suspending and removing the fabric is one of the features of my invention.

The fabric being hung in a vertical direction, and so as to be entirely free during the immersion, all liability of crumpling and injury thereto is thus avoided.

In order to suspend the fabric, one of its corners is inserted in a tooth of the frame, and it is then taken across to two teeth of the opposite frame, in which it is secured without being pinched. It is then returned to two other teeth of the first frame, where it is secured in like manner, and so on, as indicated by dotted lines in Fig. 1, until the whole of the piece is thus suspended vertically in the frame.

In order to equalize the vertical tension of the fabric *f* during its immersion into the dye-vat, small weights of lead, glass, or other material are attached by a wire passing through holes made in the said weights to the bottom edge of each fold of the fabric. The fabric is thus suspended freely and maintained always at the same tension while in the vat by means of the weights. The shrinking of the fabric in one direction during its immersion is compensated for by the action of the weights, while it may be regulated in the other direction by varying the distance between the tentering-bars, which may be shifted upon the cross-bars by simply loosening screws *d*.

The apparatus may be easily cleaned, and may be used for any colors.

By these means the dyeing is rendered more perfect.

The apparatus may be held in the hand or suspended by any known means, such as a traveling or other crane or tackle, both while attaching the fabric and for transferring, dipping, and agitating it in one or more vats, &c.

After the several dyeing operations have been completed the fabric is held by the folds and the pins quickly removed. If the pins become oxidized, they are replaced by new ones.

Shades of great regularity are in this manner obtained.

The dipping-frame, which is supported upon the vat *j* in the position shown in Fig. 3, may also be employed for drying fabrics, whereby the necessity of handling is avoided and creasing and other damage to the fabrics prevented.

I am aware that nets and the like have been held distended by means of weights, and do not claim, broadly, the use of weights on suspended fabrics.

I claim—

1. In a tenter or dipping frame for use in dyeing, the construction of bars *a*, having teeth

provided with a slit, *f*, at their end, in combination with a pin, *h*, securing the fabric into the said slits, as and for the purpose set forth.

2. In combination with the tenter or dipping frame and its vertical suspension-teeth *e* and holding-pins *h*, all arranged to hold the fabric in folds, the weights attached to the bottom edge of each fold of the fabric to be dyed, substantially as specified.

ANDRÉ LYON.

Witnesses:
ROBT. M. HOOPER,
JEAN BAPTISTE ROLLAND.