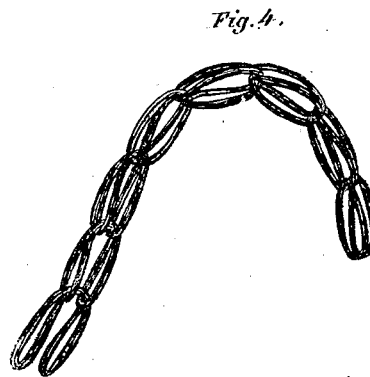
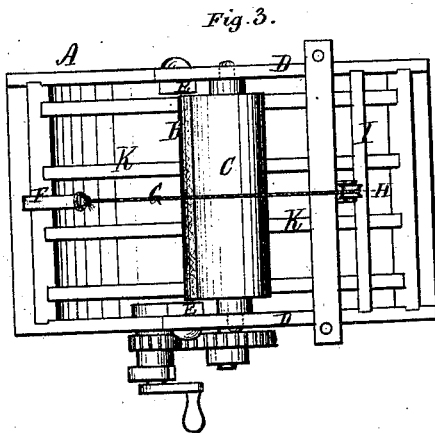
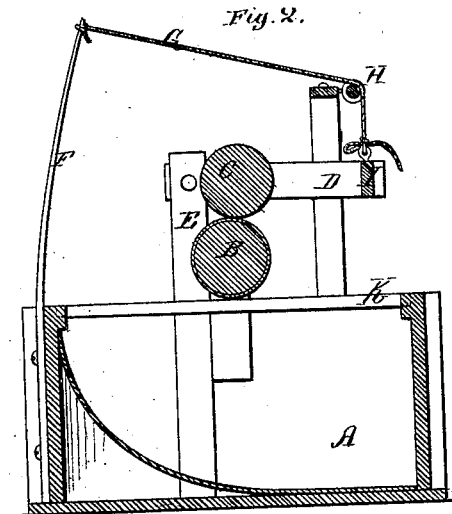
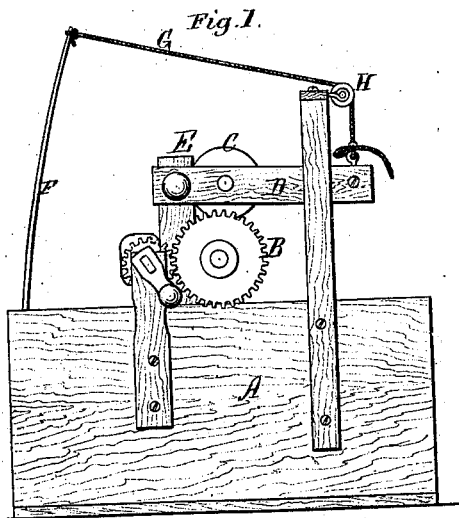


J. E. Clarner,

Bleaching Thread.

No. 109,177.

Patented Nov. 15, 1870



Witnesses:
Phil. P. Larnier,
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Inventor:
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United States Patent Office.

JOHN ERNEST CLARNER, OF PAWTUCKET, ASSIGNOR OF ONE-HALF HIS RIGHT TO BENJAMIN F. GREENE AND HORACE DANIELS, OF SMITHFIELD, RHODE ISLAND.

Letters Patent No. 109,177, dated November 15, 1870.

IMPROVEMENT IN APPARATUS FOR BLEACHING THREADS, YARNS, &c.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, JOHN ERNEST CLARNER, of the town of Pawtucket, county of Providence, State of Rhode Island, have invented a new and useful Apparatus for use in connection with the Process of Bleaching Threads, Yarns, &c.

My invention consists in certain novel squeezing devices, and in combining with the liquor-vats of the bleachery a set of graduated squeezing-rollers, by means of which the threads to be bleached may, when formed into a continuous chain of hanks or knots, be subjected to the continuous or uninterrupted action of the several chemical and rinsing operations; and I do hereby declare that the following specification, taken in connection with the drawing furnished and forming a part of the same, is a true, clear, and exact description thereof.

Figure 1 represents, in side elevation, a set of the graduating squeezing-rollers, with one of the accompanying tanks.

Figure 2 represents the same in longitudinal vertical section.

Same letters of reference are used in both figures.

Figure 3 shows the same in top view.

Figure 4 shows a chain of knots or hanks of thread ready for the operation of bleaching.

A is a tank for containing any of the desired chemicals.

B is the base roller. It is mounted on an axle having bearings fitted to suitable standards at each end. Power is communicated thereto by means of gearing in the usual manner.

C is the crown roller. It is mounted on an axle having bearings in a pivoted lever, D, jointed to a standard, E.

F is a graduating spring-bar attached to the end of the tank, and projecting upward to a height considerably above the crown roller.

From this bar a cord, G, is drawn across the face of pulley, H, down to and connecting with a connecting-bar, I, which joins the pivoted levers D.

The tank A is provided with dividing-bars K, extending longitudinally from one top edge to the other.

During the process of bleaching thread it is subjected substantially to the following operations in practically the order as stated.

First, it is boiled in caustic soda.

Second, rinsed.

Third, subjected to the action of bleaching-powders in solution.

Fourth, rinsed.

Fifth, subjected to the action of the "sour," a solution of water and sulphuric acid.

Sixth, rinsed.

Seventh, washed in suds.

Eighth, rinsed.

Heretofore thread in hanks or knots has been tied up in bundles of, say, from ten to fifty pounds, and carried through the various operations by hand. Between each of them the heavy wet bundles were removed from the boiling-keir, rinsed by hand, and conveyed to the next in order, and so on throughout the entire process.

Various attempts have been made to lessen the expense of handling the goods during the process, but none prior to my invention have proven of practical value.

In the handling of the thread in bundles, it is exceedingly difficult to get a uniform action of the chemicals, as it is obvious that the loosely-tied portions are more readily and completely affected than such as are tied more compactly. It is, therefore, often necessary to leave the mass of thread in the various solutions for a longer period than would be necessary if the action could possibly have been made more uniform.

I am aware that rollers have been constructed and used in the old countries to a limited extent, which were capable of receiving, at one of their ends, the hanks of thread which encircled the rolls, and were then subjected to their compressing action. In such cases the labor of handling was increased over the old method, and it therefore has never been practically adopted.

With my improved apparatus I proceed as follows:

The hanks or knots of thread are formed into a chain, after the manner shown in fig. 4, and coiled in mass into the keirs for boiling. After this process the ends of the respective chains are conveyed to the first rinsing-tank; thence under a guide-roller in the bottom of the tank, (not shown;) thence upward between the base and crown rollers, the several chains being kept apart and prevented from clogging in the rolls by the dividing-bars.

The respective rolls should be operated at a uniform speed, and the chains of thread made to remain as long in the various solutions as would be requisite for proper action thereof. Carrying rollers should be placed between the tanks, to facilitate the free transit of the thread.

The time requisite for the action of the several solutions could readily be obtained and nicely regulated by having the rollers revolving at a certain speed, and by accumulating a surplus of chain between the several rollers.

Should it be desirable to handle the thread in "bundles" during a part of the operation, and in chain while passing the rinsing-rollers, a great economy in handling will be effected, as well as superior results, as compared with the old methods of rinsing.

In passing the chain of hanks between the rollers it is obvious that a loose knot, having a slightly-increased thickness, occurs at each joint between the hanks.

To readily pass the knots I have arranged the graduated crown roller, which can be adjusted by tightening or loosening the spring line G. If several chains are passing the rolls at once, it is obvious that the entire weight of the crown roll should be permitted to bear upon the base roll and the intermediate chains, while, if but one or two chains were passing, the weight should be proportionately graduated.

Having thus described my invention,

I claim as new and desire to secure by Letters Patent—

1. The apparatus described, consisting essentially of

the tank A, dividing-bars K, base roller B, crown roller C, pivoted levers D, graduating spring-bar F, and cord G, operating substantially as and for the purposes specified.

2. Combining, with the series of chemical and rinsing-tanks of a thread-bleachery, a set of graduated rollers, B and C, arranged with relation thereto, substantially as described, whereby the thread to be bleached in a chain of hanks or knots may be subjected to the continuous action of the chemical and rinsing operations, as and for the purposes set forth.

JOHN ERNEST OLARNER.

Witnesses:

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A. J. CUSHING.