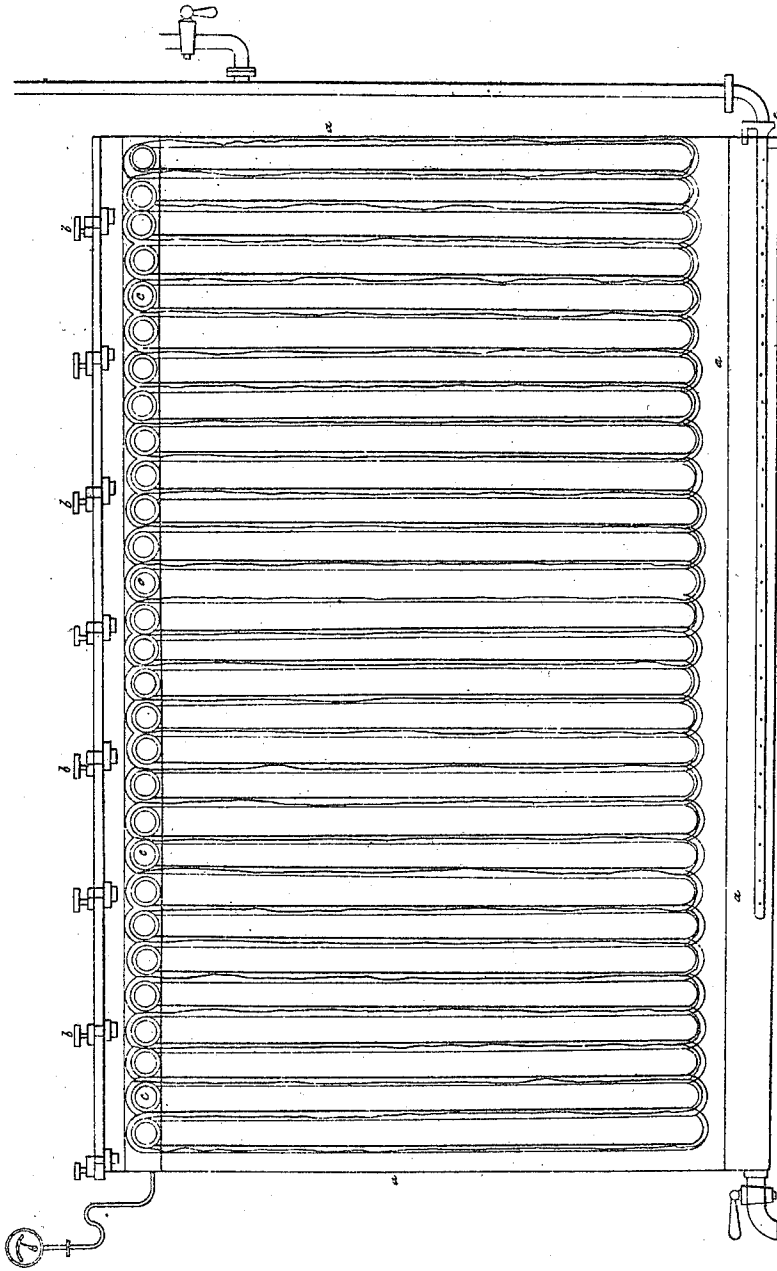


L. JAROSSON.

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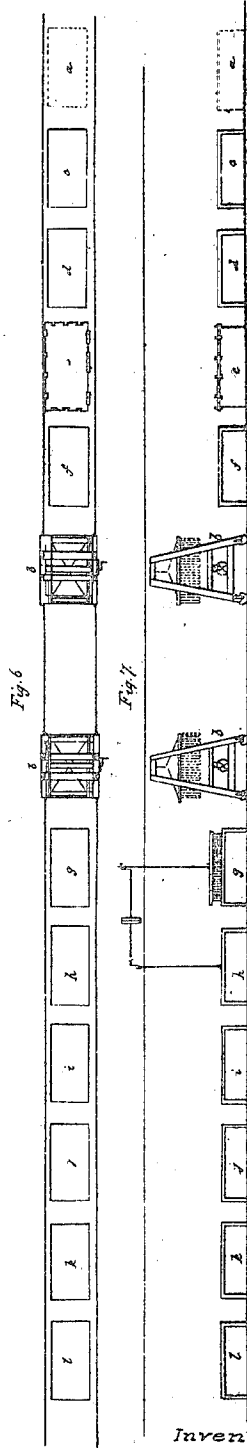
Nº 72500

Patented Dec. 24, 1867.



Witnesses

1. variety
2. off ground



Inventor

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Bleaching & Scouring Hemp &c.

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Patented Dec. 24, 1867.

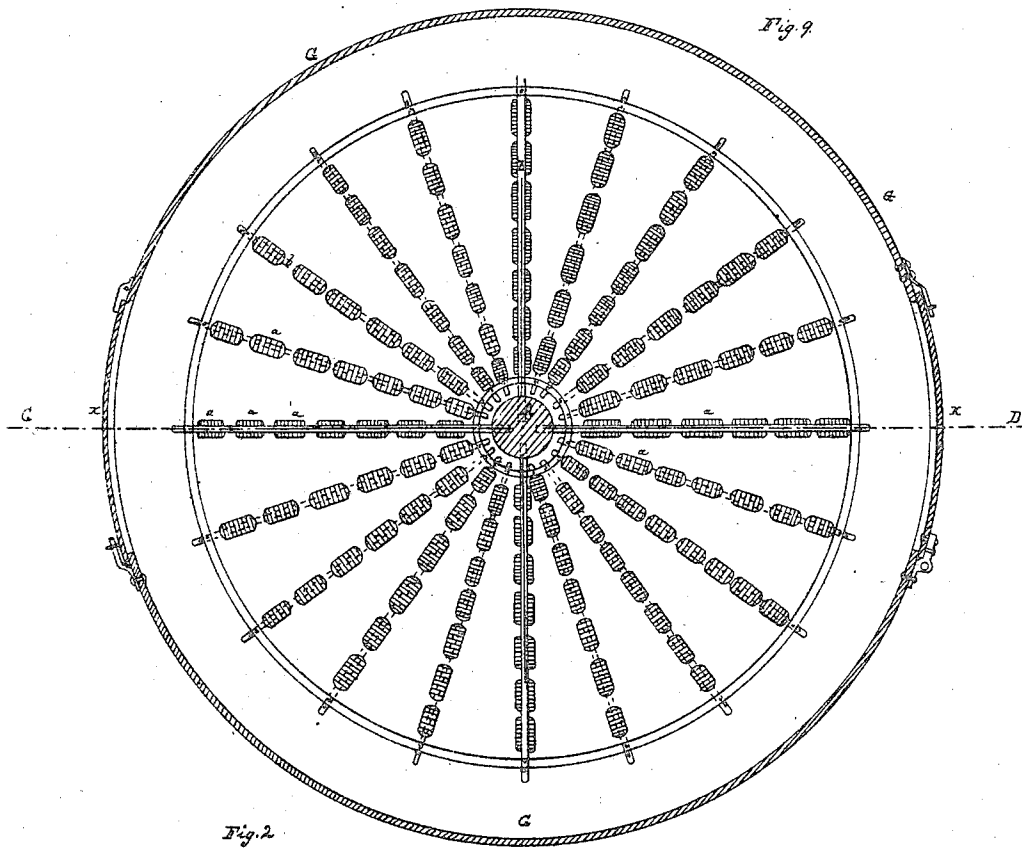


Fig. 2

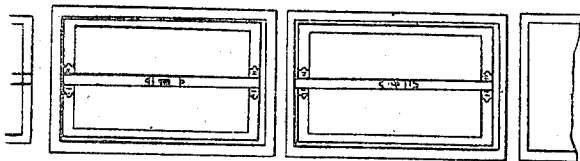


Fig. 3

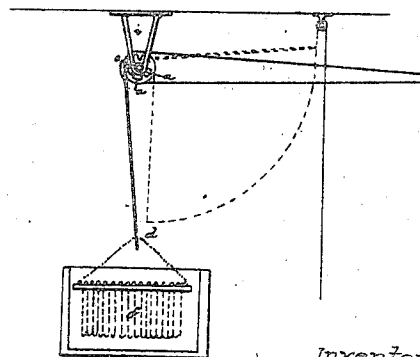


Fig. 4

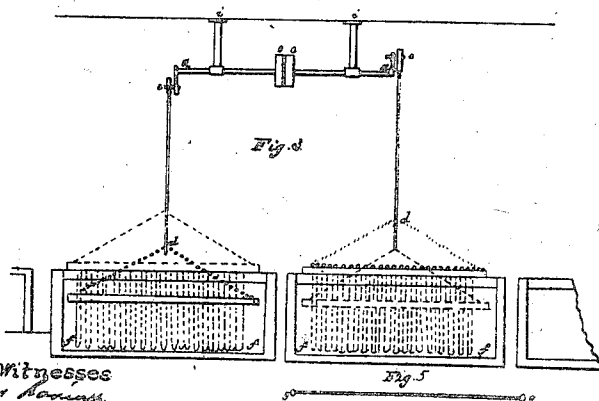


Fig. 5

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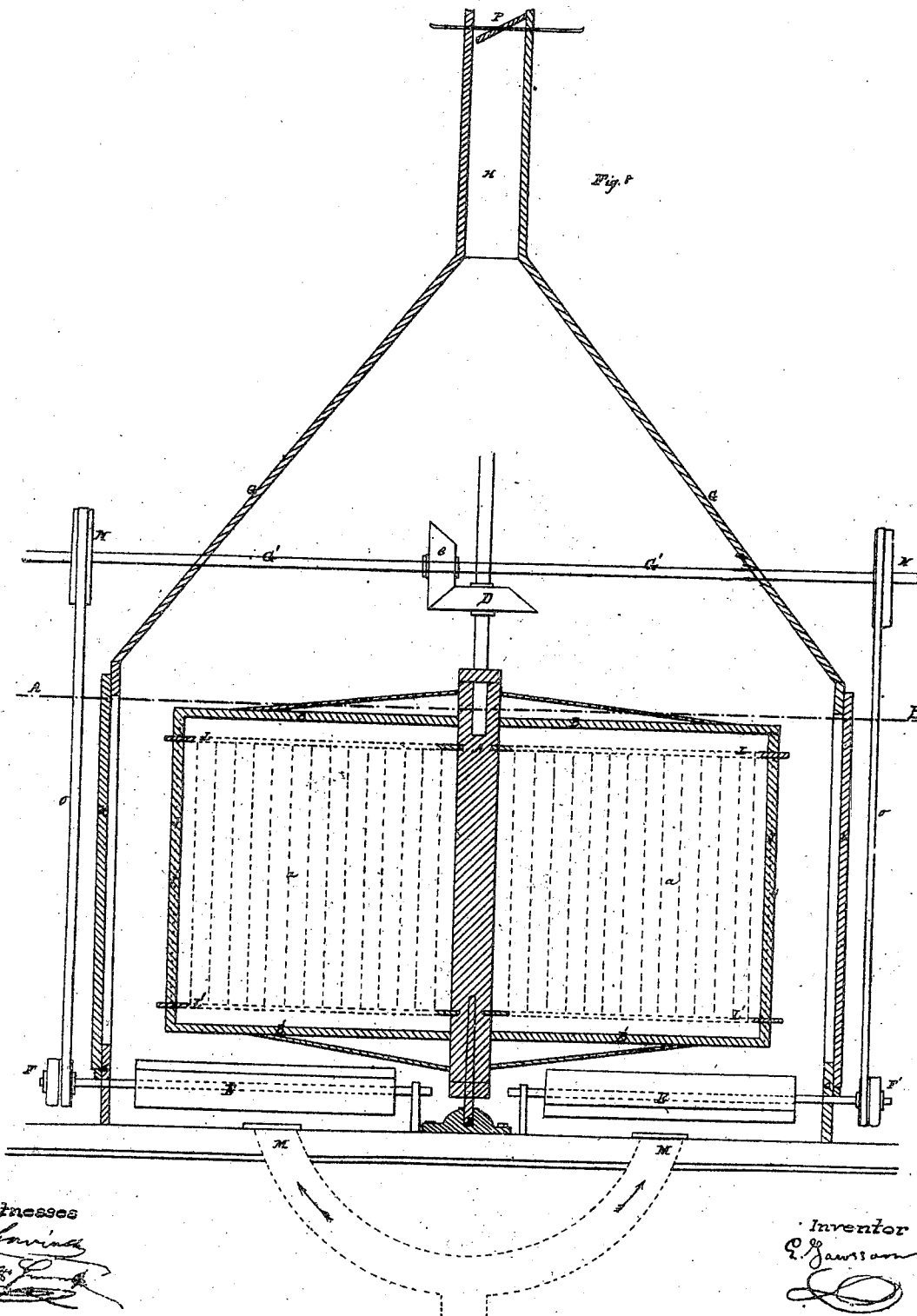
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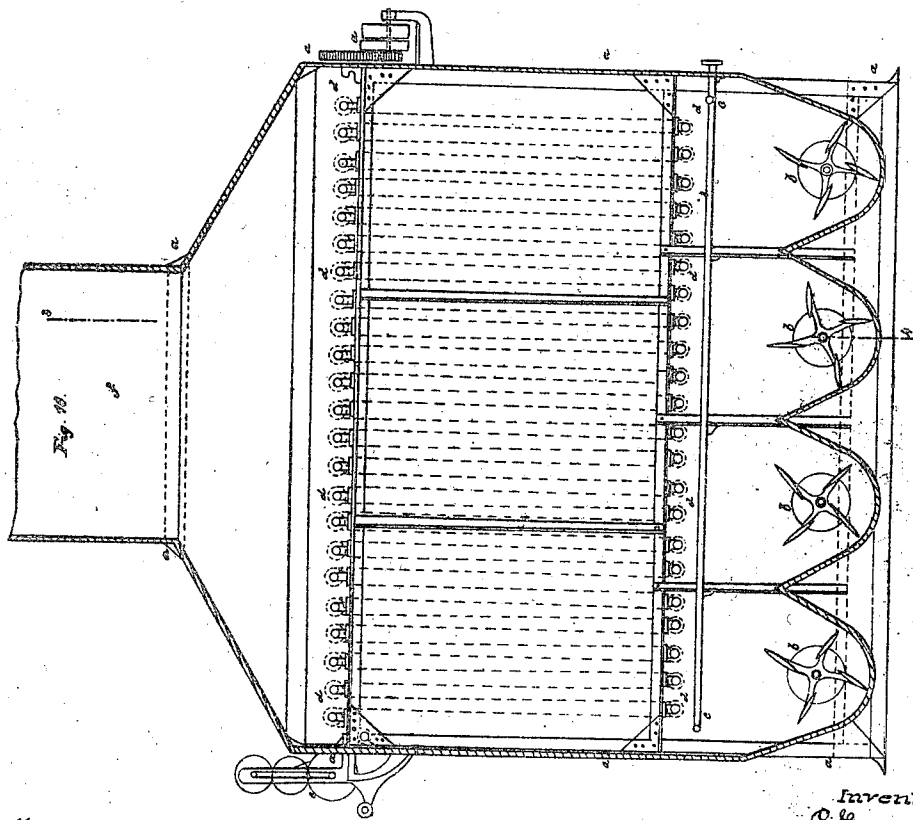
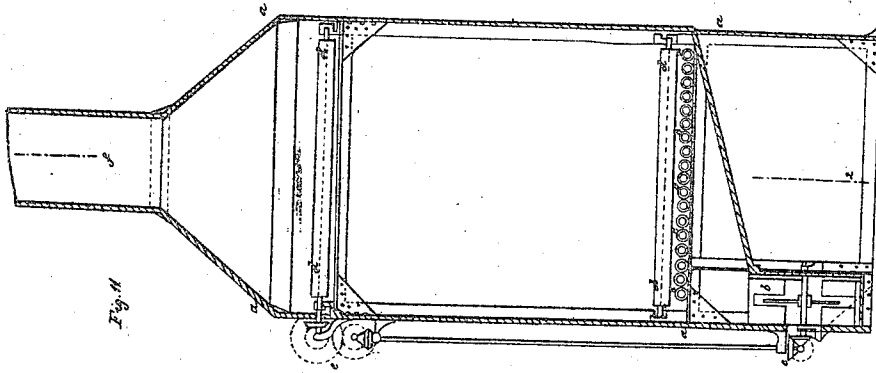


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N^o 72500

Patented Dec. 24/1867



Witnesses

1. *[Signature]*
2. *[Signature]*

Inventor

L. Jarosson

United States Patent Office.

LÉON JAROSSON, OF LILLE, FRANCE.

Letters Patent No. 72,500, dated December 24, 1867.

IMPROVEMENT IN BLEACHING AND SCOURING HEMP, FLAX, AND OTHER FIBRES.

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, LÉON JAROSSON, wholesale chemist, of Lille, in the Empire of France, have invented "Improvements in Bleaching and Drying Threads and Fabrics, and in combining apparatus for that purpose;" 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.

This invention refers, first, to a new process and very economical apparatus for scouring, rinsing, bleaching all hemp, flax, cotton, and other threads and fabrics, merely by means of dry steam, without using any liquid in the apparatus; and secondly, to an improved drying-apparatus for the same.

By these words, "scouring, rinsing," we mean taking off from the yarns, &c., all resinous matters contained therein, which are quite insoluble in water, and which are to be dissolved without anywise altering the fibres of the threads.

The bleaching of the above fabrics has been heretofore obtained by unboiling said fabrics or yarns, or having them dipped for five or six hours into water saturated with salts of soda.

My economical process consists in dipping said yarns or fabrics in a cold alkali, and submitting them afterwards to steam. By this mode of proceeding is saved at least seventy-five per cent. of the alkaline substance required by the old process, and quite as much of steam for each operation, and the results obtained are much quicker and more regular on hemp, flax, cotton-yarns, or the woven fabrics of the same fibrous materials.

I have in the annexed drawing, Figure 1, represented a first-scouring apparatus, which consists of a sheet-iron tank, *a*, provided with a lid hinged thereto, and shut or secured by means of screws *b*. This tank may be made of any form and any suitable substance, such as wood, copper, stone, &c. My cotton, flax, &c., yarns or fabrics are merely impregnated with alkaline matters, salts of soda, caustic soda, potash, varying from one to five degrees by the hydrometer, according to the nature of the substances to be treated. When the yarns or fabrics are well imbibed and sufficiently dripped, they are suspended in the apparatus from sticks *c c c*, as shown, as close to each other as possible, the lid is lowered and screwed, and the valve at the bottom opened for letting the steam into the apparatus. A low-pressure manometer, *f*, marks the pressure exerted in the apparatus, and is serving as a gauge for ascertaining and maintaining in the scouring-apparatus a constant regular temperature. The operation after continuing from one to two hours, at a pressure of from one to two atmospheres, will be quite over, when there only remains to take off the fabrics or yarns to rinse, chloride, and acidify them as usual. As to the creaming or yellowing of the flax-yarn prior to weaving it, one hour's steaming will be sufficient for a thorough creaming, whereby the desired roundness, brilliancy, and solidity of the thread are obtained.

I have, at figs. 2, 3, 4, 5, 6, and 7, represented other arrangements which refer to all the successive operations of creamage and bleaching of the yarns.

Practice having made me perfectly aware of this fact, that the dipping of the hanks lengthwise in solutions of alkalis, or in chlorine solutions, would yield, besides a notable saving, far greater results than regular scouring, I operate on the whole length of the hanks, but in order to prevent any entangling of the threads, I insert in the upper part of each range a light stick, shown at fig. 5, of any substance unattackable by chlorine.

I also claim various improvements in the bleaching, scouring, chloriding operations, which are rendered perfectly mechanical; that is to say, in the treatment by chlorine the dipping is effected mechanically. The arrangements and devices used for this chlorining or chloriding operation are illustrated in figs. 2, 3, 4, 5, 6, and 7.

Figure 2 is a plan view of the vats.

Figure 3, a longitudinal elevation.

Figure 4, an end elevation; and

Figure 5 shows a detail of one of the sticks aforementioned.

In these figures the same letters of reference indicate the same parts.

a b, transmission or driving-shaft; *c c*, driving-pulleys; *e e*, eccentric-cranks for the dipping in and taking off of the whole hanks from the chlorined bath, and thus causing them to be alternately submitted to the action of chlorine and to that of ambient or surrounding air; *i i*, bearings; *d d*, hooks for catching the frames; *f f*, hanks shown lengthwise; *g g*, sticks, or zinc or other metal rods, fig. 5, unattackable by chlorine. These rods are terminated by a ring at each end.

Figures 6 and 7 show in plan view and elevation, with sufficient indications, a whole mechanical scouring, chloriding operation, such as practised. On the right side is shown the scouring arrangements, and on the left the mechanical arrangements for the treatment by chlorine.

In these two last figures, *a* shows the frame inserted in the hanks, which frames are liable to move up and

down, being connected to cranes *b b*, and made to slide on two rails on each side of the range of vats or scouring, chloriding-apparatus. By causing said cranes to move on, there can be successively dipped the hanks into the vat *c*, containing the proportion of alkali for the half white products, and into that, *d*, containing the proportion of alkali for the cream-colored ones; into the apparatus *e*, wherein the hanks are submitted to the action of steam, this apparatus being represented at fig. 1; into the vat *f* containing hot water; and from thence the hanks are transferred to the chloriding-vats *g h i j k l*, containing the chlorine, water, acid, soap, &c. Instead of the scouring, chloriding-vats being ranged in a straight line, a pivoted crane may be made use of, and the vats be ranged within the circumference described by the arm of said crane.

Figure 8 shows in vertical sectional elevation through C D, fig. 9, and in sectional plan view, fig. 8, through A B, an improved dry-chamber for drying the yarns or fabrics which have undergone the foregoing operations. This drying-chamber comprises all the various conditions of a good drying operation, such as hot and cold-air ventilating, and centrifugal force, resulting from the acquired velocity of the apparatus, which makes from five hundred to one thousand revolutions a minute.

A, vertical shaft, turning on a centre, X, in a socket. B B, arms radiating from shaft A. J J, vertical bars connecting the arms B B. All these bars form together a frame in connection with the shaft A, and supporting tubes or rods L L, for suspending the hanks from, with any desired tension given to them by the setting of said bars apart from one another at distances which may be varied, by means of holes pierced in the length of the vertical bars J J of the shaft A. G, dry-chamber case. This case or casing is cylindrical, and may be of wood, sheet iron, or any other substance. K K, slide-doors of the casing G. C, friction-cone, set on a horizontal shaft, C', receiving motion from any motive-power. By this is operated another friction-cone, D, on vertical shaft A, which thus imparts to the frame B B J J a continuous rotary motion. One of the cones C or D is made to slide on its shaft, so as to either throw the machine in or out. E E, paddle-ventilators or fans, operated by pulleys F F, which receive motion from the upper shaft C' through the pulleys N N and straps O O. M, exit-pipe, for letting hot air into the chamber G G. H, draught-evaporating chimney. I, regulating-valve within the chimney H.

a a, Figure 9, show hanks suspended from the rods or bars L L.

I have represented, Sheet IV, an improved drier of my invention.

Figure 10 shows a longitudinal sectional elevation of the said drier, through 1 2 of fig. 11.

Figure 11 shows a cross-sectional elevation of the same, through 3 4, fig. 10; and in these two figures the same letters indicate the same parts.

a, walls or inner sides of the drying-room. *b b*, fans worked by suitable transmissions; they are blowing air on to the pipes *c c*, or into the hot-water or hot-air stove. *d d*, cylinders or drums round which are rolled the pieces or fabrics, forming as it were endless bands, turning at any required velocity. The cylinders are grooved to better convey the material, and they are imparted motion by a transmission, *e*, whereby are likewise worked the fans. *f*, draught-chimney, for the exit of damp air.

The bleaching-process and apparatus which I have described is by far the most simple, plain, and economical.

First. This new method of scouring by dry steam is not only a notable improvement in the working, but it presents a great saving of soda and steam. In fact, after every dipping, the threads or fabrics may be allowed to drip into the bath, and all the dropping matters will serve for the subsequent operation. It suffices for that to feed the said bath.

Second. The threads or yarns will preserve all their strength, for instead of being manipulated and heaped up in vats, they will pass successively and self-actingly from one vessel to another without undergoing any fatigue.

Third. The hues will prove more regular, more quickly obtained. In fact, when the hanks are dipped into the bath, the pressure exerted by the material on the liquid, and the resistance opposed by the latter, will enforce their division, their being thrown open so as to admit through their whole extent, and in regular manner, the alkaline liquid which they are to absorb. The circulation of light-pressure steam into the tank causes the dissolving action of alkali to react on the resinous matter from which the threads are afterwards completely cleaned by a water-washing. From this perfect uniformity in the scouring-process will result therefore a great uniformity in the colors or hues obtained subsequently with chlorides comparatively weak, and the threads being better scoured, the hues will be more quickly obtained.

Fourth. My manner of proceeding obviates the inconveniences of using water saturated with marl or mud, steam being employed for this unboiling operation, or water chemically pure.

By the use of my drying mechanical hot-air and cold-air apparatus, as described, the drying of a very large amount of threads is effected at once and in very short time.

By this process and apparatus, as described, is obtained in a mechanical continuous manner, the bleaching, (scouring, chloriding) of all flax, hemp, cotton-yarns, and fabrics.

And I claim specially—

1. The apparatus represented fig. 1, for scouring the hanks of threads by means of dry steam.
2. The arrangements relating to the whole of the successive cream-coloring and bleaching of the threads, as illustrated in figs. 2, 3, 4, 5, 6, 7.
3. The drier for said threads, represented in figs. 8 and 9.
4. The drier for fabrics, as represented at figs. 10 and 11.

Witnesses:

GURVILLE,
JAMES HAMP,
A. GUION.

L. JAROSSON.