

(No Model.)

J. H. LORIMER.

DRYING PROCESS.

No. 354,798.

Patented Dec. 21, 1886.

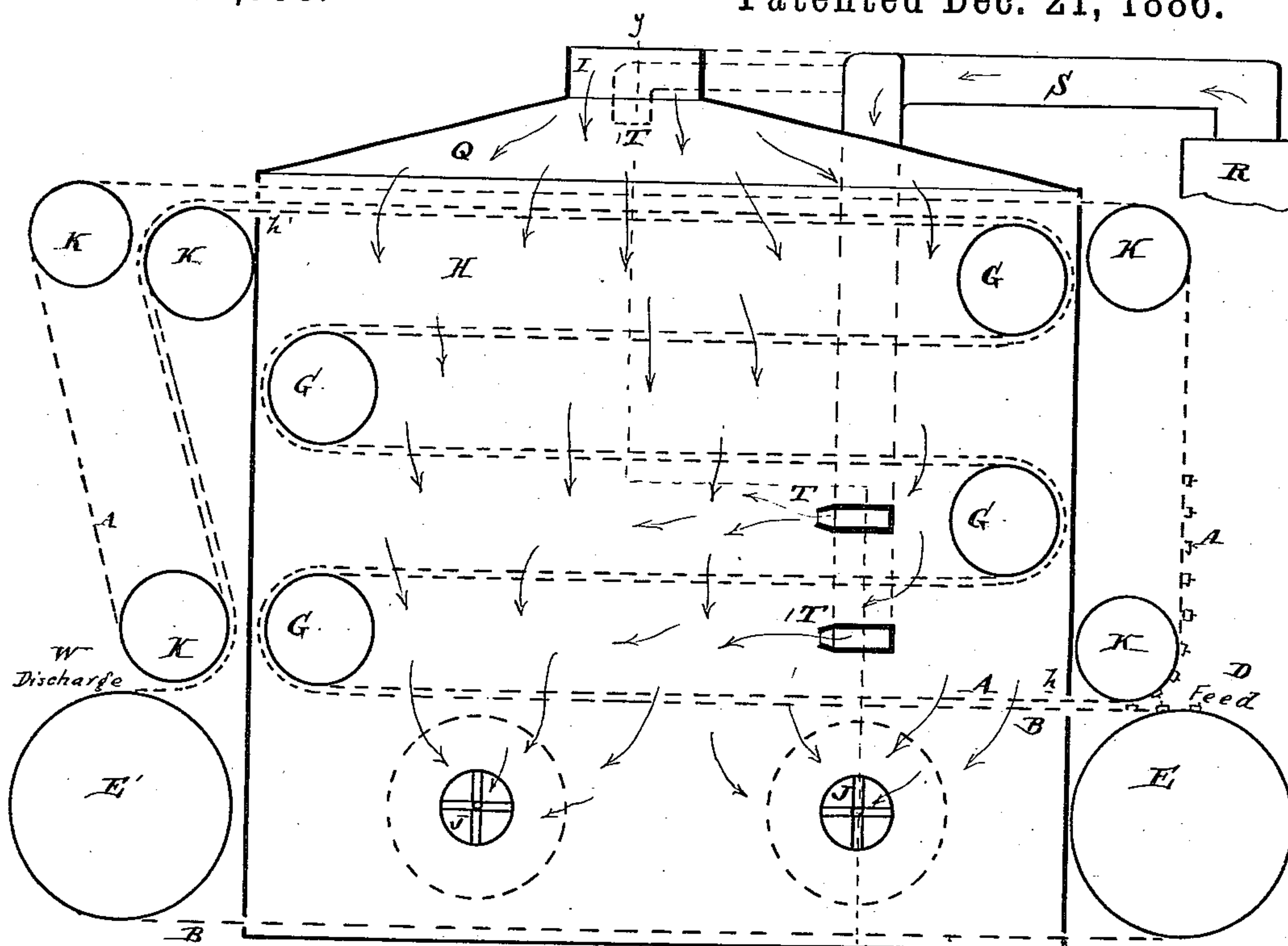


FIG. 1

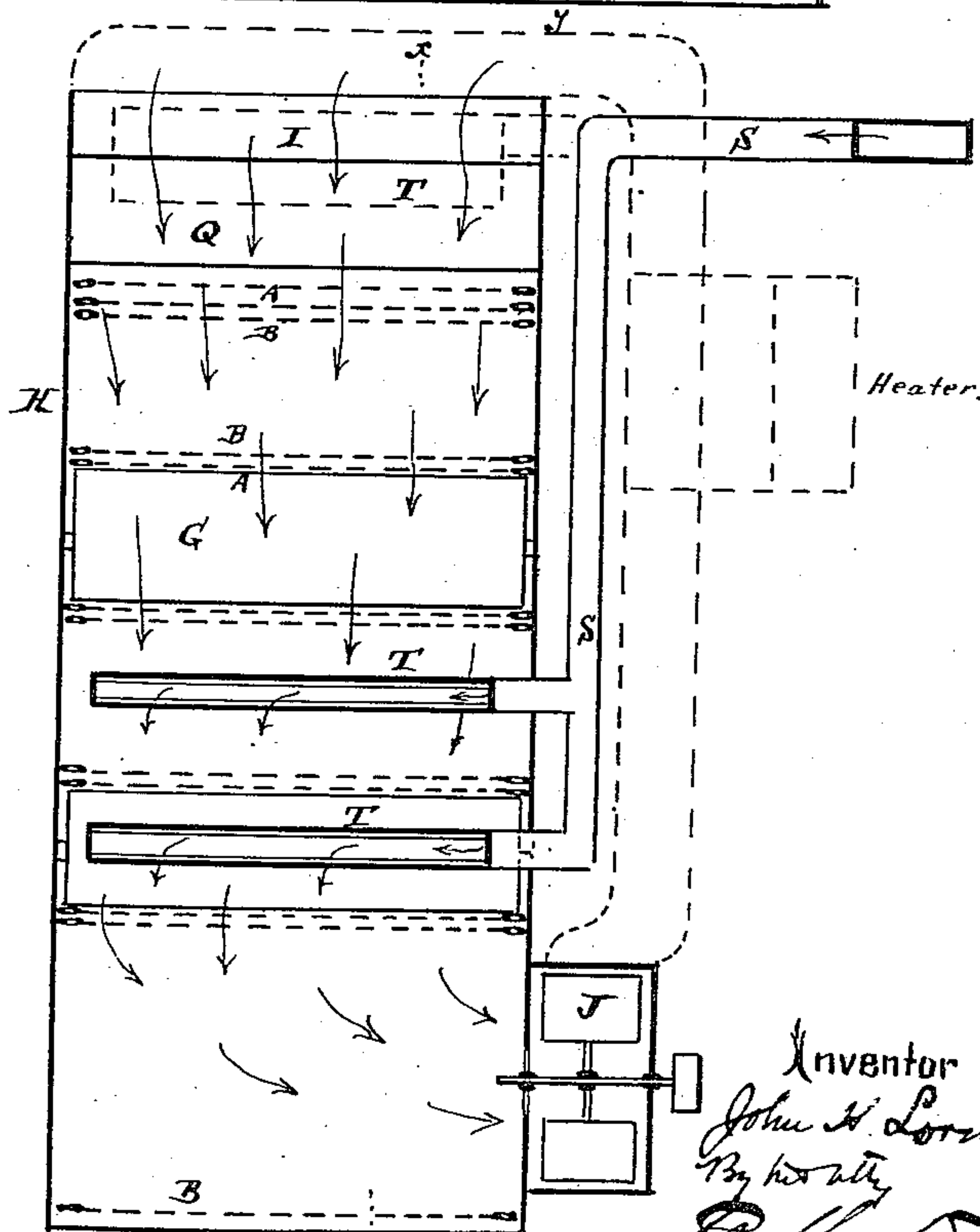


FIG. 2 x

Attest
E. W. Breckinseed

Inventor
John H. Lorimer
By his atty

[Signature]

UNITED STATES PATENT OFFICE.

JOHN H. LORIMER, OF PHILADELPHIA, PENNSYLVANIA.

DRYING PROCESS.

SPECIFICATION forming part of Letters Patent No. 354,798, dated December 21, 1886.

Application filed March 26, 1886. Serial No. 196,643. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. LORIMER, of the city and county of Philadelphia, Pennsylvania, have invented a new and useful Improvement in Drying Processes, of which the following is a specification.

My invention has reference to an improved process for treating textile fibers or materials—such as wool, cotton, yarn, rags, paper-pulp, &c.; and it consists in certain improvements, all of which are fully set forth in the following specification and shown in the accompanying drawings, which form part thereof.

In Letters Patent granted to me March 2, 1886, No. 336,928, is described an improved drying-machine for drying wool, cotton, yarn, &c., by causing them to pass back and forth through a chamber by means of endless aprons, through which chamber and material to be dried currents of air or drying medium are caused to pass; also, in an application bearing even date with this is described apparatus in which gasified, vaporized, atomized, or sprayed disinfectants or colors are fed to the drying-air passing through the machine, whereby it is made to act upon the material which is being conveyed back and forth through the drying-chamber, the air acting as a vehicle for conveying the gas or liquid in its finely-divided condition to and into the material to be acted upon. In this application my object is to supply the disinfectant or bleaching gas or color to the air being passed through the machine, whereby, while the air is drying the passing material conveyed back and forth through the drying-chamber, the disinfectant or bleaching gas or color shall be simultaneously conveyed by said air-currents and caused to act upon every portion of the said material during its passage through the machine. By this method the material is uniformly treated, whether for tinting or for bleaching or disinfecting, or both combined. The bleaching agents may be moist chlorine gas, sulphurous acid, &c., and this may be generated in a separate chamber or compartment and supplied to the current of air as it passes to the machine. Chlorine is very extensively employed for bleaching linen and cotton, the gas acting upon the coloring-matter without affecting the fiber; but silk and wool present much less resistance to chemical ac-

tions and would be much injured by chlorine; hence they are invariably bleached by sulphurous acid. The chlorine may be used in the form of hypochlorite of lime in solution, which may be vaporized or sprayed and fed to the passing air entering the drying-chamber. Sulphurous acid is generally used for bleaching silk, straw, wool, sponge, isinglass, &c., which would be injured by the great chemical energy of chlorine. In this case the moist article or material when fed to the machine would be treated in its moist state by the sulphurous acid which is conveyed by the passing air, and after being bleached the material is dried by the natural operation of the machine. The sulphurous acid might be generated by burning sulphur, and conveyed into the supply-pipe or into the machine between the aprons.

I do not limit myself to any particular disinfectant or bleaching reagent, as any gas or fluid might be used to suit the requirements of the material.

In the drawings, Figure 1 is a sectional elevation on line *xx* of a machine in which to carry on my improved process. Fig. 2 is a cross-section of same on line *yy*.

A B are two endless aprons between which the wool or cotton to be dried is held and conveyed through the drier or hot-air chamber, and may be formed of link-chains with slats between, or webbing, netting, or a combination of any two or more of these may be used, the particular construction of these endless conveyers or aprons being immaterial to my invention. These aprons A B lie close upon each other in passing through the heating or drying chamber H, and while passing around and over the guide-rollers G G move back and forth or up and down through said chamber for the purpose of being retained therein as long a time as necessary. The apron A is guided outside the chamber H by rollers K, and apron B by rollers E E'.

D is the feeding end, and may be of any suitable construction, and the yarn, wool, or cotton to be dried, after being fed upon the apron B, is carried up over rollers G and between it and the apron A, which passes around roller K, and enters the drying-chamber H through openings *h*, and while held between the aprons (and, if desired, prevented from

displacement by slats C thereon) is conveyed over rollers G G, and after passing back and forth a number of times emerges by apertures H to the outside of the chamber, and the material from between the said aprons is discharged at W.

The traveling aprons may be made in any manner desired, but should be of open netting or webbing, and may be secured to chains on its lateral edges, and may be furnished with slats which would be preferably on the top of the net-work or next to the cotton, wool, yarn, &c., to be dried, so as to prevent the same from being displaced on turning over the drums or pulleys in transit through the heating apparatus. The netting may be formed of cord or twine or their equivalent, and, if desired, the slats may have teeth or projections to more securely hold the material to be dried from displacement. The cotton, wool, or yarns in skein or warp may be delivered to the endless aprons and conveyed through the drying-chamber. This drying-chamber H may be simply a large chamber into or through which hot air or gas is forced or drawn by one or more blowers or fans, J, or by any other means, the ingress or egress of air being allowed by the openings at the top or bottom—for instance, as at I.

R represents the chamber for the generation of chlorine or sulphurous acid, from which the vapors or gases are fed by pipe S into the supply I for the air passing to the machine or directly into the chamber H between the aprons, as indicated in dotted lines. The end of the pipe S may be turned into the direction of motion to the air, as indicated at T, so that the passing air sucks out the disinfectant or bleaching reagent. The pressure due to the generation of the gas will insure its being fed in requisite quantities to the machine, and, if desired, the same gas might be used over and over again by connecting the pipe I with the blowers, as indicated in dotted lines. The bleached material fed to the machine would in a measure supply the moisture with which the chlorine gas should be diluted, hence ordinary chlorine gas might be used in the machine, as the irritating effect due to it upon the operator would in a measure be overcome owing to the closed condition of the machine and the suction always being from the outside

of the machine to the interior thereof. The air used as a drying medium may, if desired, be heated before passing through the machine by being caused to pass over hot surfaces, as indicated in Fig. 2, dotted lines.

When the disinfectant or bleaching reagent is a gas, it may be fed directly to the air-supply pipe of the chamber, but when it is a heavy vapor it should be fed between the aprons at one or more places near their entrance to the chamber H, and shortly before the exit of the drying medium, but preferably so that it acts upon both sides of the material to be dried.

In place of bleaching or disinfecting gas any form of fluid may be used, such as Condyl's or Burnett's, for instance.

In this application I do not claim the apparatus, as that forms subject matter of my application bearing even date with this, Serial No. 196,642.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The herein-described process for treating a textile material to be tinted, bleached, or disinfected, which consists in causing the material to be passed back and forth through a closed chamber and exposed to strong currents of air impregnated with a coloring, bleaching, or disinfecting reagent in a gaseous or finely-divided condition, which substances are drawn or forced directly through the material to be treated, substantially as and for the purpose specified.

2. The herein-described process for treating a material to be tinted, bleached, or disinfected and dried, which consists in causing the material in a wet or moist condition to be passed back and forth through a closed chamber, and exposed to strong currents of air impregnated with a coloring, bleaching, or disinfecting reagent, which substances are drawn or forced directly through the material to be treated, and the action being continued sufficiently long to thoroughly dry the said material, substantially as and for the purpose specified.

In testimony of which invention I hereunto set my hand.

JOHN H. LORIMER.

Witnesses:

R. M. HUNTER,
RICH'D. S. CHILD, Jr.