2 Sheets--Sheet 1.

R. HARTMANN.

Machine for Drying Yarn.

No. 123,895.

Patented Feb. 20, 1872.

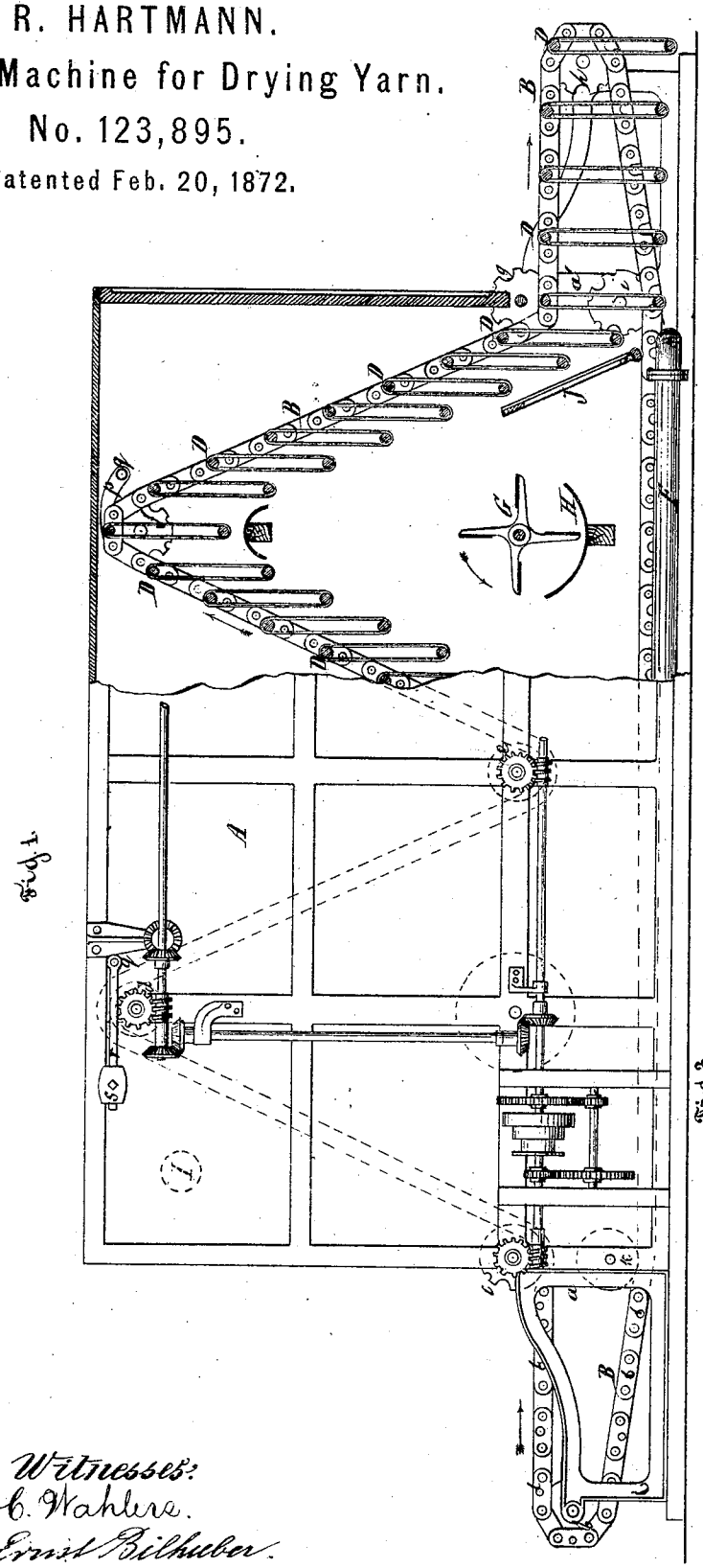

Fig. 1.

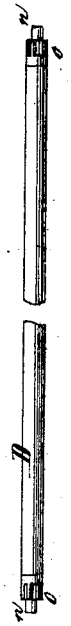

Fig. 4.

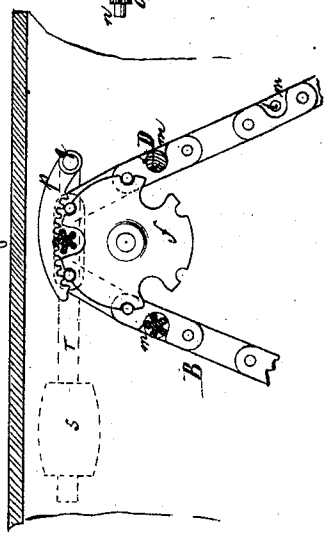

Fig. 3.

Witnesses:
C. Wahlers.
Ernst Bilhuber.

Inventor.
Richard Hartmann
per
Van Santvoord & Hauff
Attys

2 Sheets--Sheet 2.

R. HARTMANN.

Machine for Drying Yarn.

No. 123,895. Patented Feb. 20, 1872.

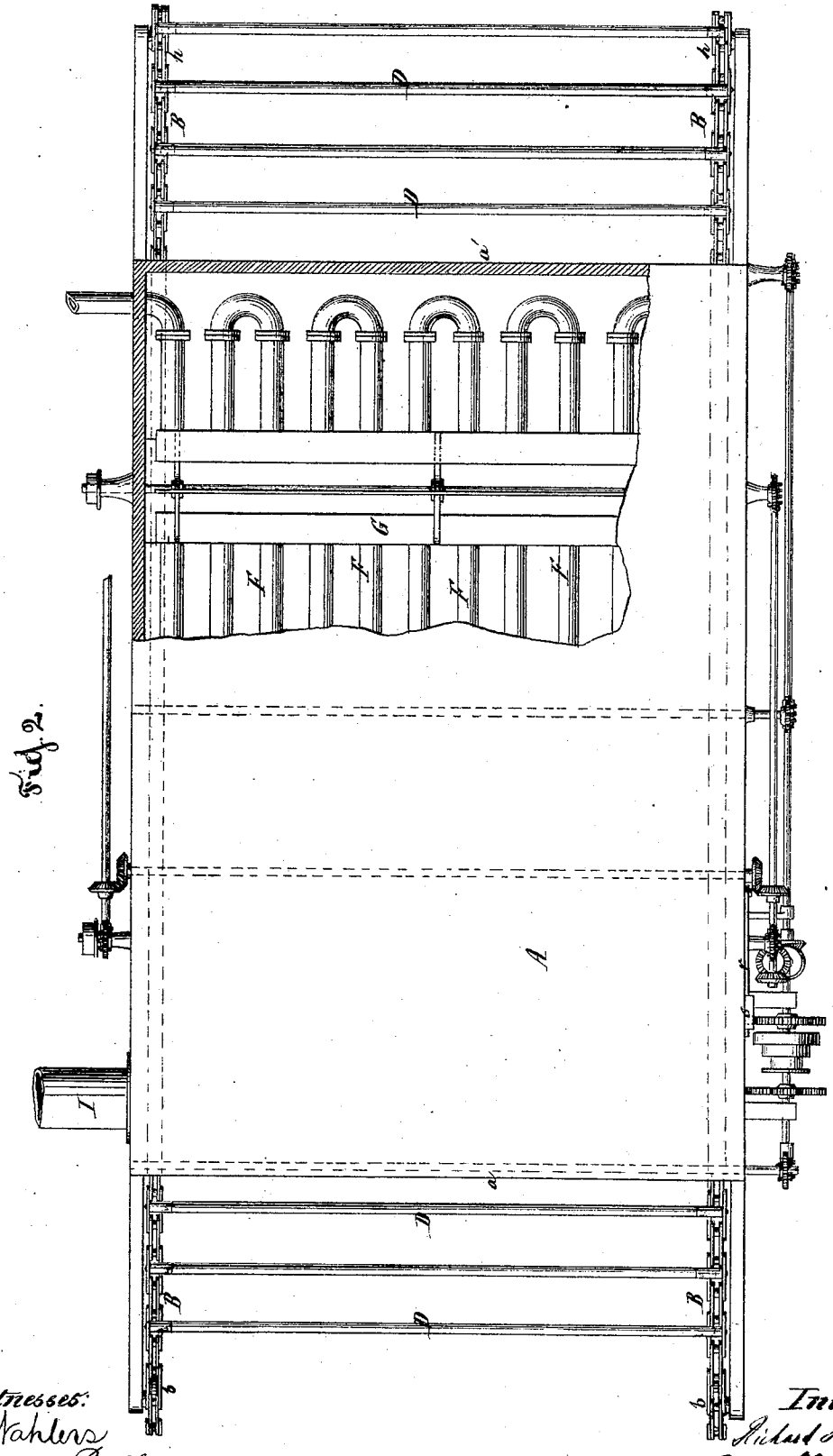

Fig. 2.

Witnesses:
C Wahlers
Ernst Bilhieber

Inventor:
Richard Hartmann
per
Va. Santwood & Mauff
Atty

UNITED STATES PATENT OFFICE.

RICHARD HARTMANN, OF CHEMNITZ, SAXONY.

IMPROVEMENT IN MACHINES FOR DRYING YARN.

Specification forming part of Letters Patent No. 123,895, dated February 20, 1872.

To all whom it may concern:

Be it known that I, RICHARD HARTMANN, of Chemnitz, in the Kingdom of Saxony, have invented a new and Improved Machine for Drying Yarn; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which drawing—

Figure 1 represents a sectional side view of my invention. Fig. 2 is a sectional plan or top view of the same. Fig. 3 is a detached view of one of the chain-wheels, and a portion of a chain in a larger scale than the previous figures. Fig. 4 is a detached elevation of one of the skein-suporting traverses.

Similar letters indicate corresponding parts.

This invention consists in the arrangement of two endless chains running in a zigzag course through a heated chamber, the links of said chains being provided with sockets for the reception of the skein-supporting traverse-rollers in such a manner that said traverse-rollers, when filled with skeins of wet yarn, can be readily attached to the chains at the receiving end of the chamber, and that after said traverse-rollers with their skeins have been carried through the chamber in a zigzag course, they can readily be removed from the chains at the discharging end of the chamber. The skein-supporting traverse-rollers are provided with pinions at their end which engage with segmental racks secured in the proper position in the interior of the heated chamber in such a manner that each time a traverse-roller passes one of said racks, a partial revolution is imparted to it (the traverse) and to the skeins suspended from it and all the parts of the skeins are uniformly dried. The segmental racks are depressed and held in gear with the pinions on the skein-supporting traverse-rollers by the action of weighted levers. With the chains passing in a zigzag course through the heated chamber, are combined one or more fan-blowers and concaves, to throw the heated air in contact with the skeins suspended from the traverse-rollers, and also an exhaust-fan to remove the moist air from the heated chamber. The entrance and discharge openings of the heated chambers are protected by suitable screens, so as to prevent waste of heat, and to insure a proper effect of the exhaust-fan.

In the drawing the letter A designates a chamber, the walls of which are made of metal or any other suitable material, and which is hermetically closed, with the exception of two apertures, *a a'*, in its ends for the admission and discharge of the yarn. Through this chamber extend two endless chains, B B, each of which is stretched over a series of chain-wheels, *b c d e f g h i k*, (see Fig. 1,) which are partly situated inside and partly outside of said chamber. The chain-wheels *b* and *h* are mounted on studs which have their bearings in standards C C, extending beyond the ends of the chambers while the chain-wheels *c*, *d*, *e*, *f*, and *g*, are so situated in relation to each other that the chains while passing through the chamber travel in a zigzag course. All these chain-wheels are mounted on studs secured in the sides of the chamber so that the chains run close to said sides, and the space between the chains is left free and unobstructed for the passage of the yarn. The alternate portions of the links of the chains which run next to the sides of the chamber are provided with round holes *l*, (see Fig. 3,) to form sockets for the reception of the gudgeons at the ends of the traverse-rollers D, while the inner portions of said double links are furnished with concave recesses *m* to admit the body of said traverse-rollers. These traverse-rollers are constructed of wood or metal just long enough to reach from one side of the chamber to the other, and they are provided at their ends with gudgeons, (see Fig. 4,) to catch in the sockets of the chains. Near one or both ends of each traverse-roller are formed pinions *o*, and as the traverse-rollers are carried through the chamber by the action of the chains, these pinions are brought in contact with segmental racks *p*, (best seen in Figs. 1 and 3.) These racks are mounted on the inner ends of rock-shafts *q* which extend through the sides of the chamber, and on the outer ends of which are secured levers *r* loaded with weights *s*, which have a tendency to depress the racks and to keep them in gear with the pinions of the traverse-rollers just as the same pass over the chain-wheels *d* and *f*, said racks being so situated that they extend over these chain-wheels. The skeins of yarn

are suspended from the traverse-rollers, as shown in Fig. 1, and by imparting to said traverses an intermittent revolving motion, the skeins are also turned, and those parts of the skeins which bear upon the traverses are changed, so that all parts of said skeins are uniformly dried. The chamber A is heated by means of steam-pipes F situated on its floor and fed with steam from a boiler. Between these steam-pipes and the apexes of the angles formed by the chain B are situated fan-blowers G, which throw the heated air in contact with the skeins, and the effect of these fan-blowers is increased by concaves H placed beneath them, (see Fig. 1.) From the top of the receiving end of the chamber A projects a pipe, I, (see Fig. 2,) which connects with an exhaust-fan, (not shown in the drawing,) and by the action of this exhaust-fan the moist air is sucked out of the chamber A, the connection of said fan with the chamber being made near the receiving end where the skeins contain the largest quantity of moisture. The receiving and discharge apertures *a a'* of the chamber A are protected by screens J covered with oil-silk or other suitable material to prevent as much as possible any waste of heat. The mechanism for imparting motion to the various parts of my apparatus is clearly shown in Figs. 1 and 2 of the drawing, and requires no further explanation.

By these means the important operation of drying yarn can be carried on in a comparatively small space with little expenditure for fuel and with great saving in labor and time when compared with the process of drying yarn in the ordinary drying-rooms, and furthermore, the yarn, when passed through my apparatus, is uniformly dried throughout, it shows no changes or spots in the color and it retains its full strength and toughness.

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

1. In an apparatus for drying yarn the arrangement of two endless chains traveling in a zigzag course through a heated chamber, said endless chains being provided with sockets *l* and recesses *m*, for the reception of the skein supporting traverse-rollers, substantially in the manner herein shown and described.

2. The pinions *o* on the skeins supporting traverse-rollers, in combination with racks acting on said pinions, and imparting to the traverse-rollers an intermittent revolving motion, substantially as set forth.

3. The levers *r* and weights *s*, in combination with the racks acting on the pinions of the skein-supporting traverse-rollers, substantially in the manner described.

This specification signed by me this 28th day of August, 1871.

RICHARD HARTMANN.

Witnesses:
EUGEN WEISY,
A. V. BORN.