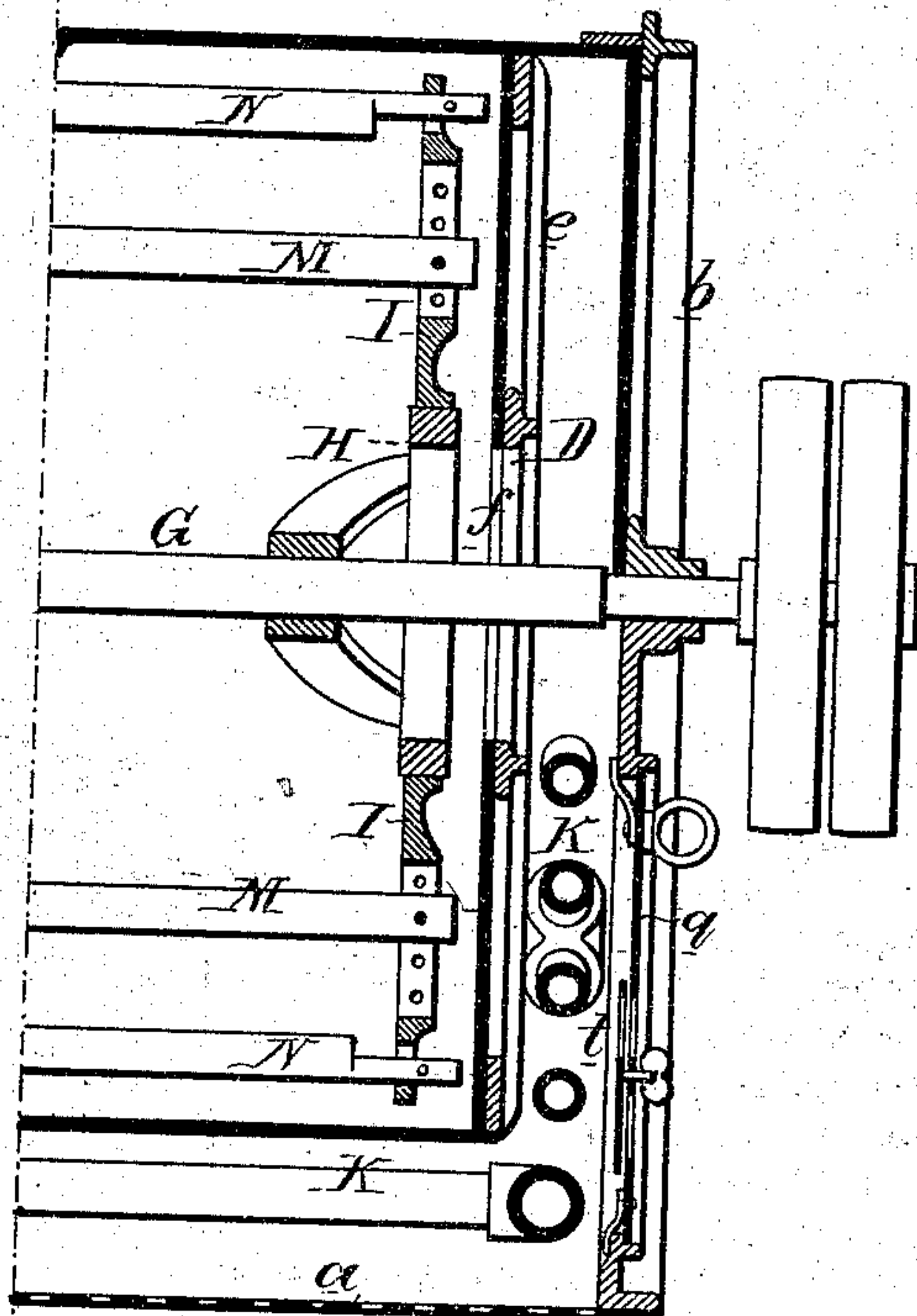
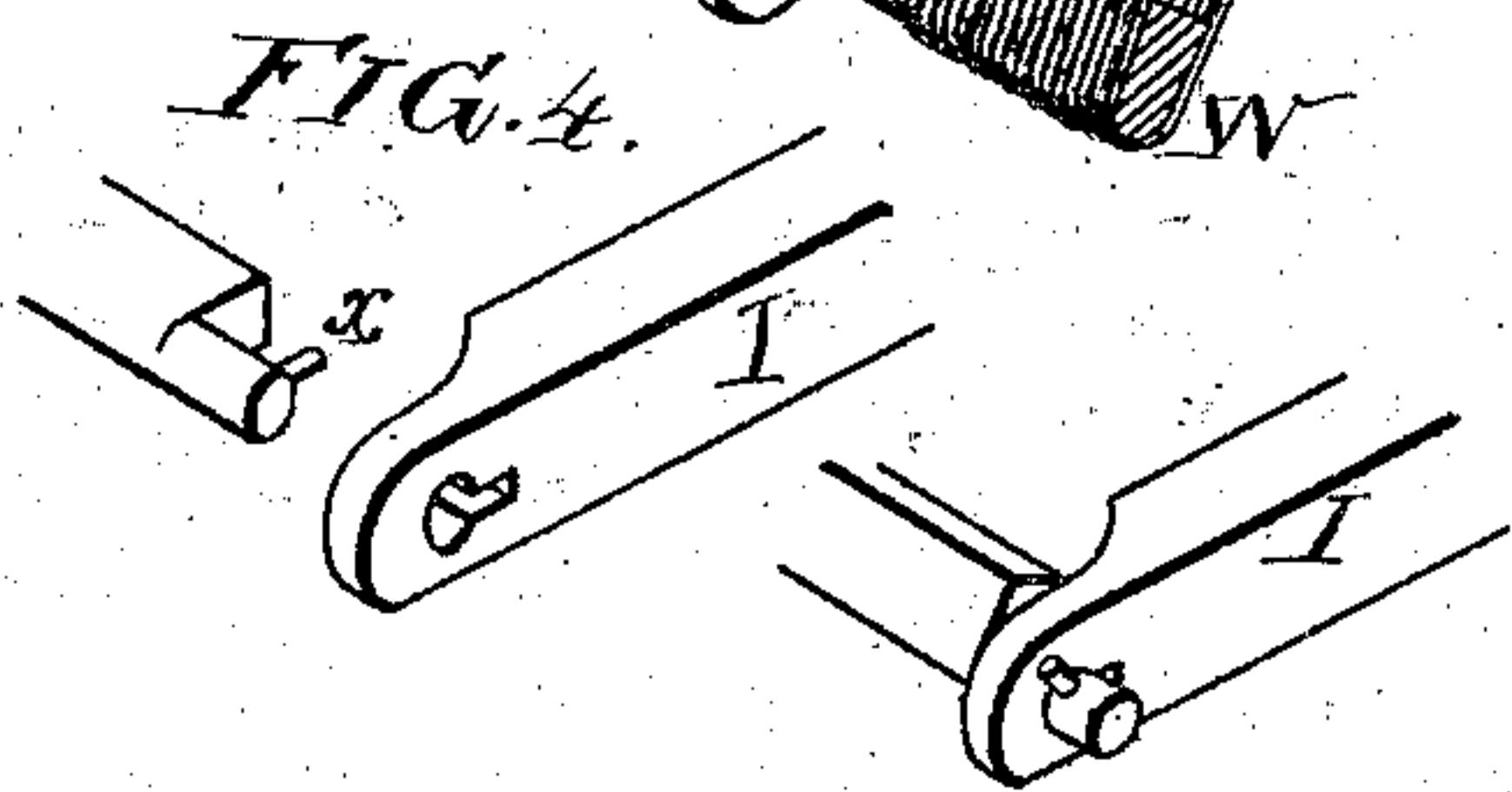
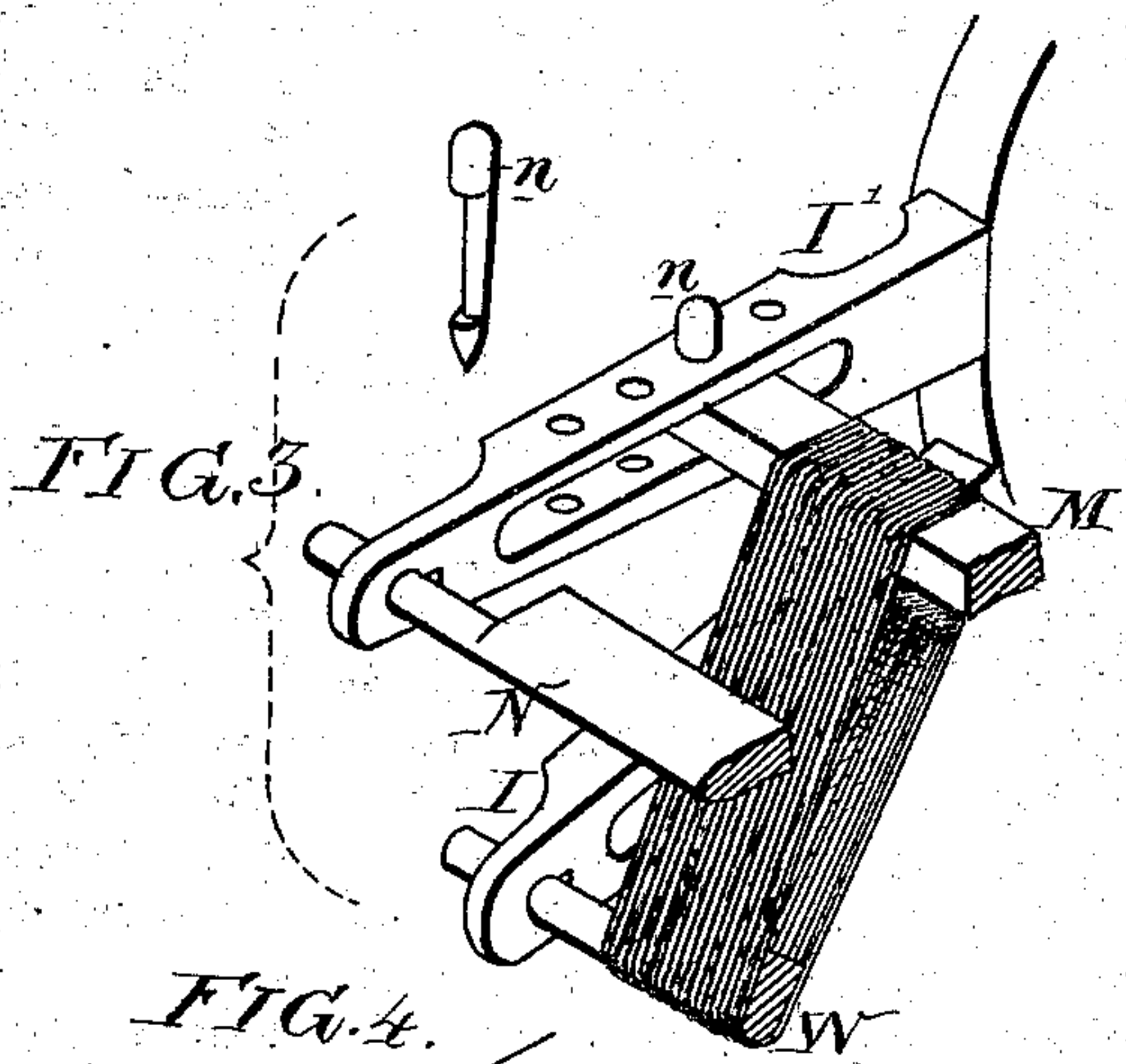
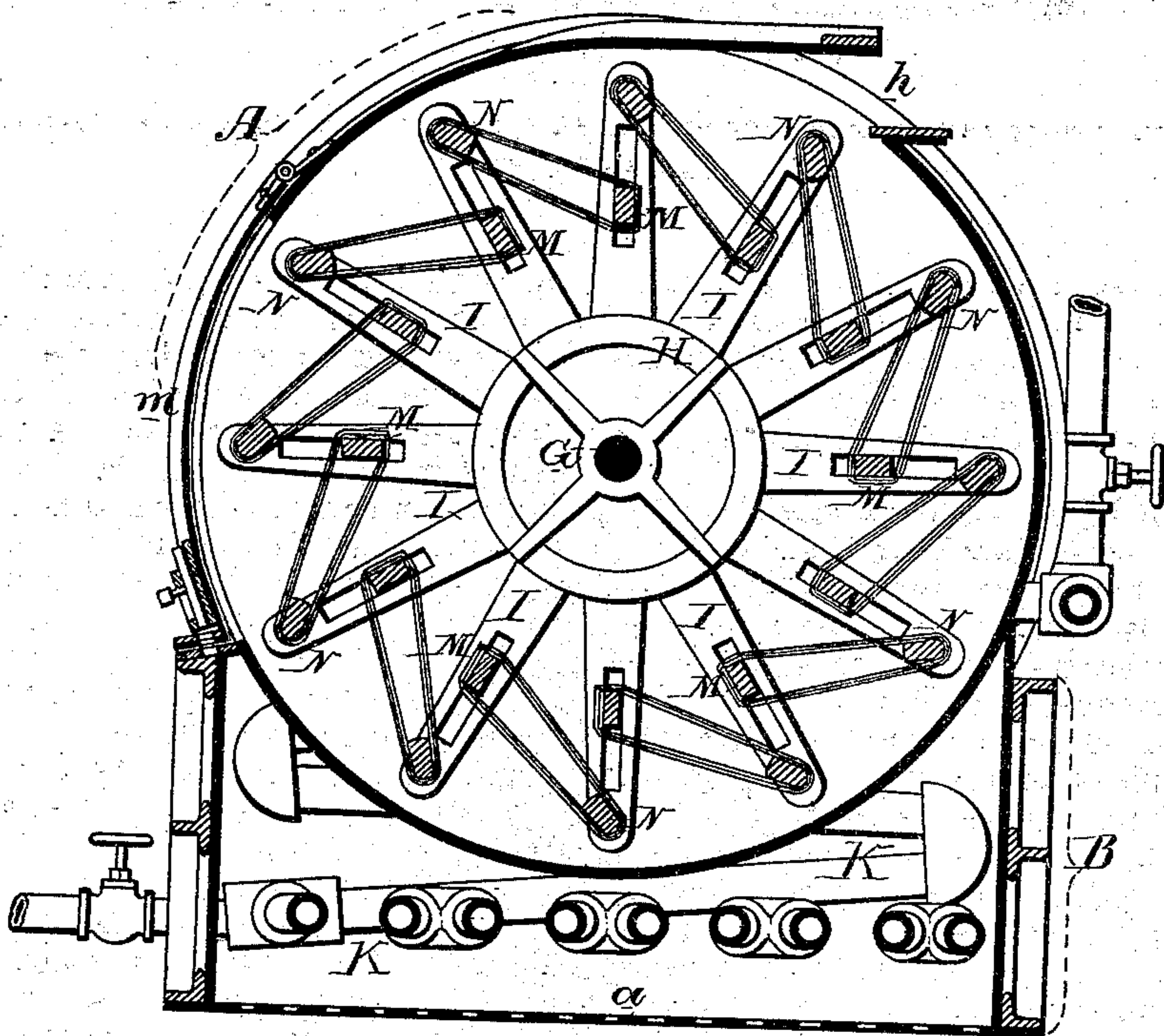


J. RAMSDEN.
Yarn-Drying Machines.

No. 152,683.

FIG. 1.

Patented June 30, 1874.



Witnesses Hubert Howson
Harry Smith

John Ramsden
by his Atty.
Howson and Son.

UNITED STATES PATENT OFFICE.

JOHN RAMSDEN, OF UPPER DARBY, PENNSYLVANIA.

IMPROVEMENT IN YARN-DRYING MACHINES.

Specification forming part of Letters Patent No. **152,683**, dated June 30, 1874; application filed January 19, 1874.

To all whom it may concern :

Be it known that I, JOHN RAMSDEN, of Upper Darby, Delaware county, State of Pennsylvania, have invented an Improved Yarn-Drying Machine, of which the following is a specification :

The object of my invention is to rapidly dry hanks of yarn after they have been dyed, by causing them to revolve rapidly in a casing in which air is induced to enter, and from which it is discharged under pressure by the action of the revolving hanks.

The mechanism for carrying my invention into effect is illustrated in the transverse vertical section, Figure 1, the partial longitudinal section, Fig. 2, and the perspective views, Figs. 3 and 4, of the accompanying drawing.

A hollow cylindrical casing, A, is mounted on an oblong box, B, having a perforated base, *a*, the opposite ends *b* of the box being carried upward as high as the top of the cylinder, to which they are united, as shown in Fig. 2; so that between each end *b* of the box and the adjoining end *c* of the cylinder there is a passage, D, for the air admitted to the box through the perforated base *a*. Suitable bearings on the opposite ends *b* of the box are adapted to a central shaft, G, to which, within the cylinder, are secured two rims, H, and to each rim are secured a number of radial slotted arms, I, twelve in the present instance, and from each arm of one rim to the opposite arm of the other rim extend two bars, M and N, for carrying the hanks of yarn, as shown in Fig. 1, and in the perspective view, Fig. 3. Air is admitted to the cylinder from the passages D, through a central opening, *f*, in each end *c* of the said cylinder, and is discharged from the latter through an elongated opening, *h*, as shown in Fig. 1. Steam-pipes K are arranged within the box B, in the manner shown in the drawing, or in any other manner which will insure the presentation of an extended heating-surface to the air as it passes through the box, and before it enters the cylinder. It may be here remarked that these air-heating pipes are required only when the atmosphere is damp.

The cylinder A is furnished with a door, *m*, for closing an opening, through which the hanks of yarn may be placed on and removed

from the bars M and N, which, as before remarked, extend from one arm, I, of one rim H to the opposite arm of the other rim; and a series of hanks of yarn are placed over and stretched by and between the bar M of one pair of arms I and the bar N of the adjoining pair of arms I', as shown in Fig. 3. Each end of each bar N is rounded, and the rounded portion is adapted to a hole near the end of the arm, in which hole there is a slot for the passage of a pin, *x*, as seen in Fig. 4. On turning the bar to a given point, so that the pin will coincide with the slot, it can be moved longitudinally free from the arm, so as to receive the hanks, and on withdrawing a peg, *n*, the bar M can also be moved longitudinally, so that its end is free from the arm. When the hanks have been strung onto the two bars the ends of the latter are fitted to the arms, the bar N being turned to a position where its pin will not coincide with the slot, and the arm M is pushed inward toward the shaft G so far as to insure a proper stretching of the hanks, after which the peg *n* is passed through the slotted arm and through the bar. It will be observed that this pin is so recessed that it cannot be readily withdrawn, the tension of the hanks tending to maintain the pin in such a position that the shoulders formed by the recess shall bear one on one side and the other on the opposite side of the arm. The bar N is of such a shape that the hanks, when stretched, tend to maintain it in the position to which it has been turned, so that its pin cannot coincide with the slot. These provisions for the proper securing of the bars to the arms are essential, as the rapid rotation of the shaft with the arms, bars, and hanks might tend to detach the said bars.

When all the bars have been furnished with hanks packed closely side by side, these hanks will form, as it were, a series of vanes, as shown in Fig. 1; and when the shaft G is rapidly rotated, these vanes will act in the same manner as the blades of a fan, by inducing a volume of air to pass into the box B, thence through the passages D, and thence through the central openings *f* in the opposite ends *c* of the cylinder A, the air being discharged through the outlet *h*, under a pressure commensurate with the speed of the shaft. The hanks, as

they rotate, are consequently subjected to the same pressure of air, which results in soon depriving them of all moisture, especially if steam be permitted to circulate through the pipes K. I prefer, however, to dispense with the steam-heating appliances whenever the state of the atmosphere will permit it. In the ends *b* of the box B there are doors *q*, on opening which access may be had to the interior, and each door is furnished with a register, *t*, through which more or less additional air may be admitted to the box.

Among the advantages possessed by my invention over the usual process of drying yarn in heated rooms may be mentioned the following: No specially-constructed building is required, as the apparatus can be placed at any convenient location within or adjacent to the dye-house. The usual risks of fire are entirely avoided. The attendants are not subjected to a hot and stifling atmosphere, and can work in comfort; and the drying is accomplished much more rapidly and uniformly than usual, the latter being especially the case

with sized or starched yarn, in which the sizing material is apt to settle to the lower ends of the hanks when the latter are simply suspended from bars in a drying-room in the ordinary manner.

I am aware that hanks of yarn have been attached to a frame contained within a casing, into which air is introduced under pressure, while the frame revolves. This I do not claim; but

I claim as my invention—

The combination of the casing A, its inlets *f*, and outlets *h*, with the revolving frame, consisting of the shaft G, its arms I, the bars M, adjustable in slots in the arms, and bars N, adapted to the arms, all as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN RAMSDEN.

Witnesses:

HENRY MYERS,
THOMAS H. KAY.