

M. P. MEISSNER, H. E. ROMER, & F. R. ANKE.

YARN DRYING MACHINE.

No. 190,609.

Patented May 8, 1877.

Fig. 1.

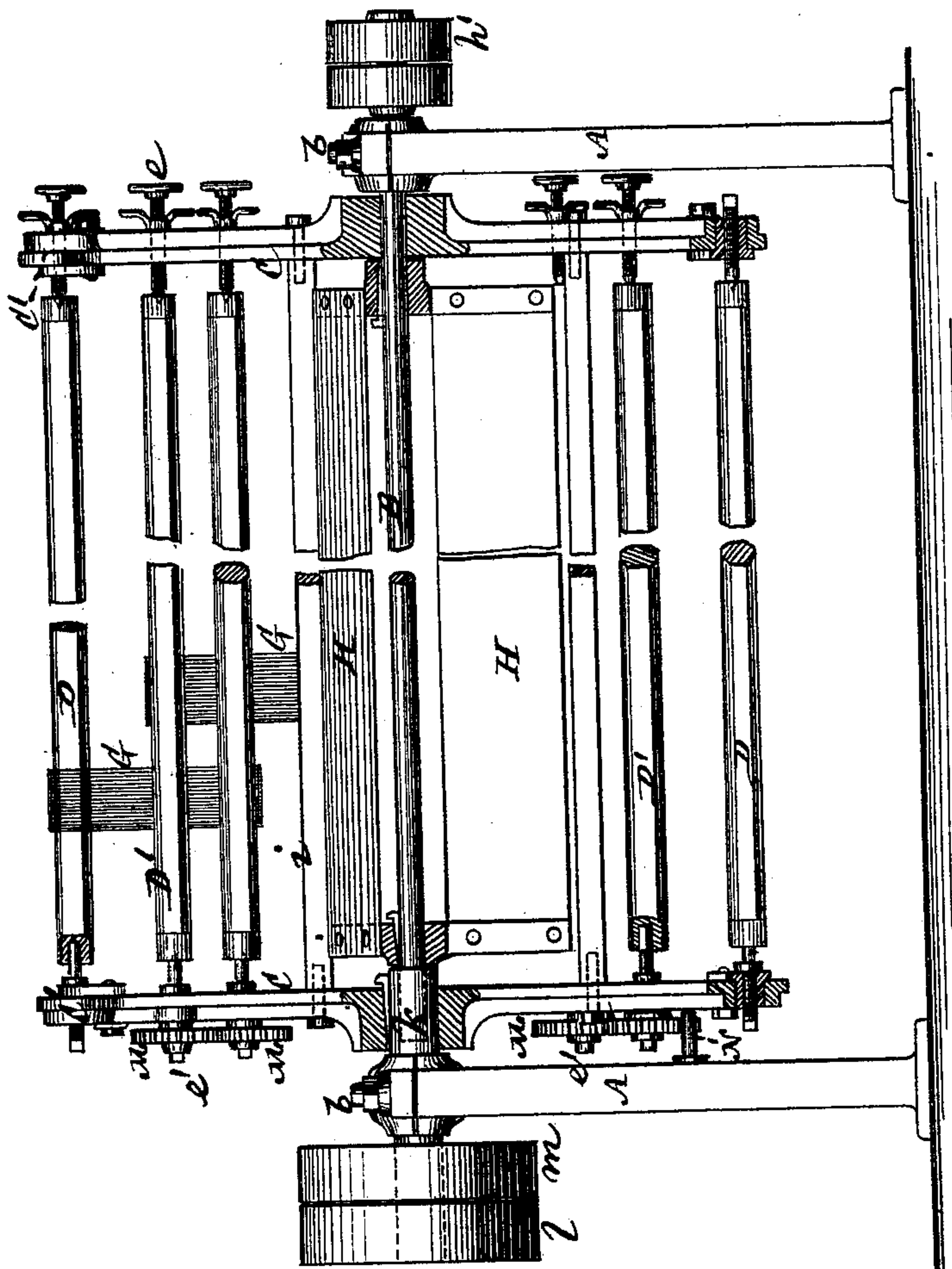
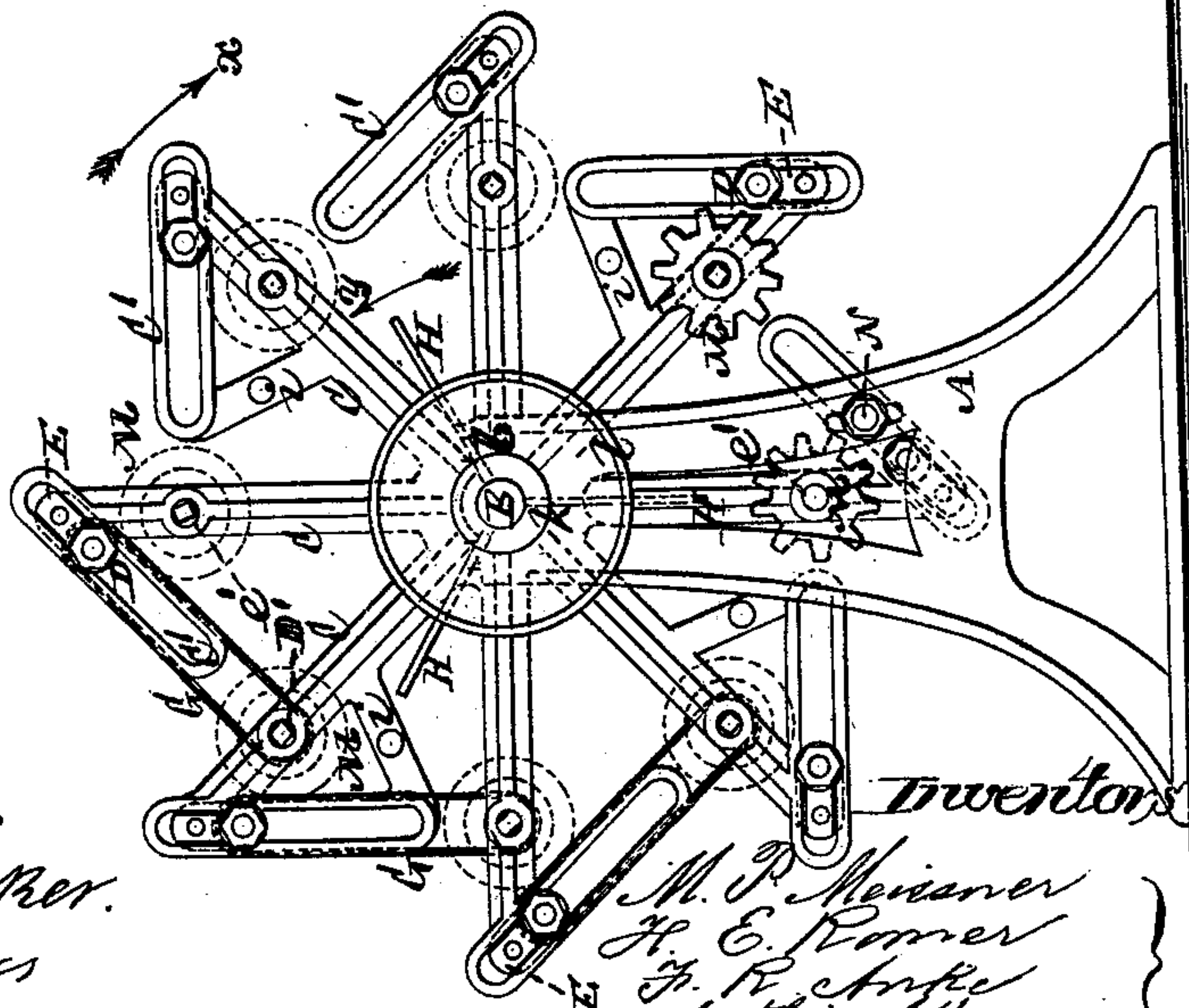


Fig. 2.



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Fig. 3.

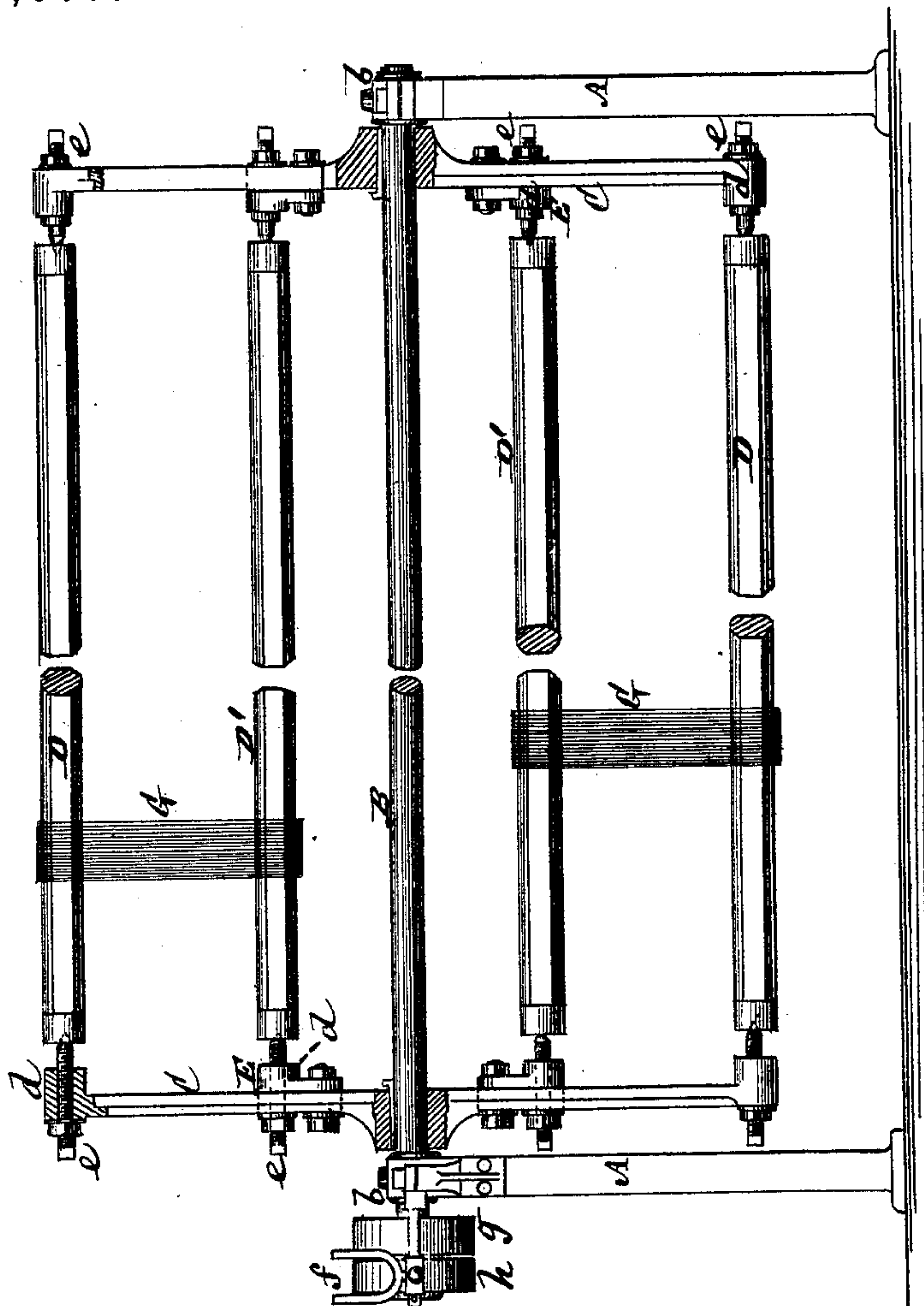
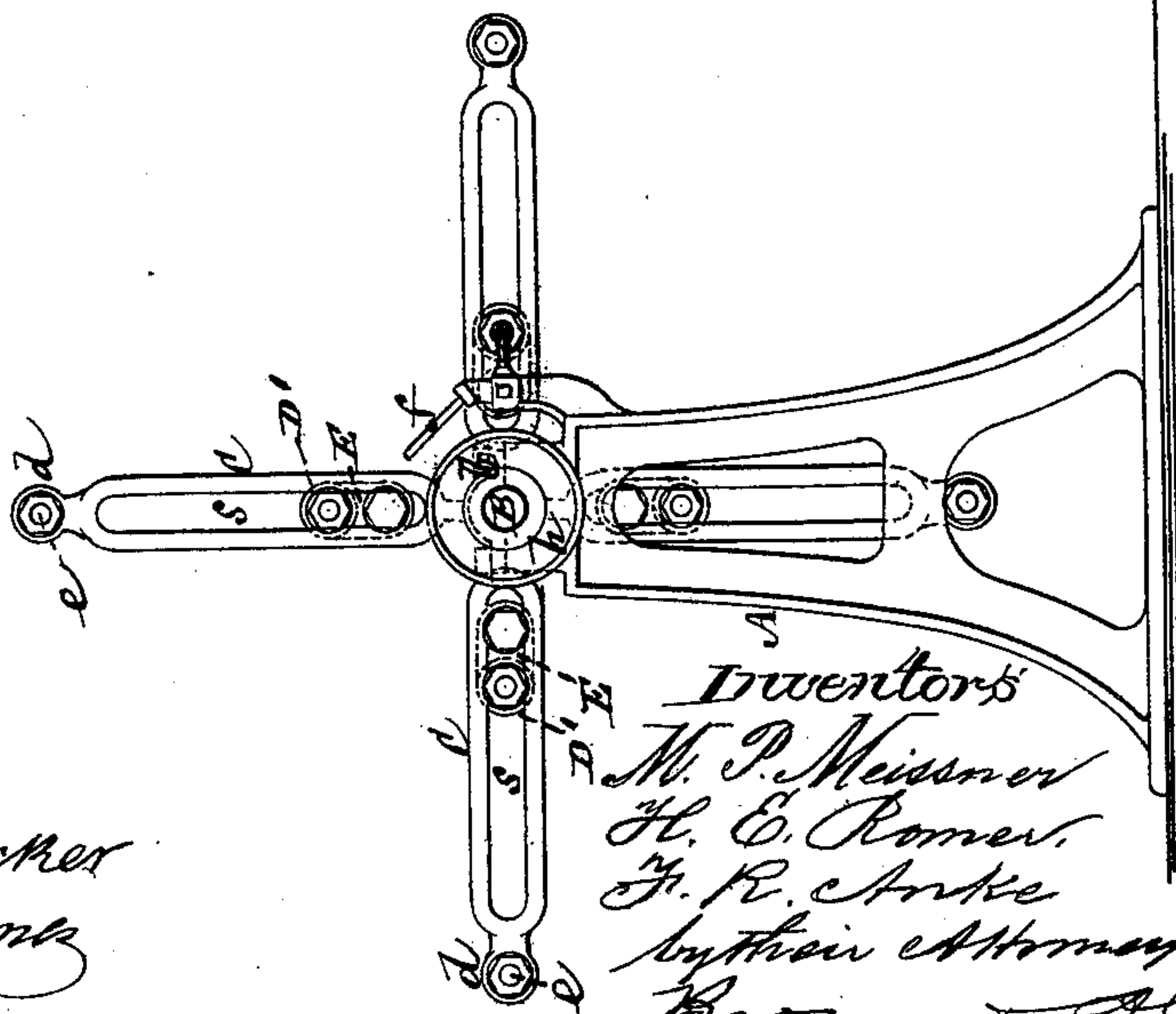


Fig. 4.



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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN YARN-DRYING MACHINES.

Specification forming part of Letters Patent No. **190,609**, dated May 8, 1877; application filed  
February 12, 1877.

*To all whom it may concern:*

Be it known that we, MORITZ PAUL MEISSNER and HEINRICH ERNST RÖMER, both of Chemnitz, and FRANZ ROBERT ANKE, of Oelsnitz, all in the Kingdom of Saxony, Germany, have invented certain new and useful Improvements in Machines for Drying Yarns, of which the following is a description, reference being had to the accompanying drawing, which forms part of this specification.

This invention relates to machines having a rotary motion for drying yarns of all kinds, in hanks.

Heretofore it has been customary to simply hang the hanks in drying-rooms, and to admit into the latter highly-heated air, for the purpose of drying the hanks. This mode of drying is very objectionable, not only on account of the frequent conflagrations which occur by the use of such highly-heated air, but also on account of the injurious effects upon the yarns of said hot air. Thus, dyed yarns of the finest or most delicate tints are very injuriously affected, more especially when yarns of different colors are dried together in the same room, which causes what is known to dyers as "breaking out." Also, yarns of light colors are apt to become spotted.

Our invention has for its object the obviating of these objections, also the drying of the yarns in a more convenient, expeditious, and economical manner.

The invention consists in a revolving reel embracing various novel constructions and combinations of parts, whereby the greatest facility is afforded for hanging up and arranging the hanks on the reel, and for removal of the hanks after the same have been dried, and for adapting the reel to hanks of different lengths, subject to variation of stretch; also, for varying the exposure of the hanks throughout their length while being dried, to prevent unequal drying.

Although our machine may be worked in moderately-warm rooms to assist the drying process, such is not absolutely necessary, and we altogether discard the use of highly-heated air, for the reasons hereinbefore given.

Figure 1 represents a longitudinal vertical section of a yarn-drying reel or machine constructed in accordance with our invention, and Fig. 2 an end view of the same. Fig. 3 represents a longitudinal vertical section of a modified construction of said machine, and Fig. 4 an end view thereof.

Referring, in the first instance, to the modification shown in Figs. 3 and 4 of the drawing, by way of explaining certain features of the invention which are common to the two constructions of the machine shown in Figs. 1, 2, and Figs. 3, 4, respectively, A A are opposite end frames, having upper bearings *b b*, in which the shaft B of the reel is rotated. Secured to this shaft, near its bearings, are the reel-heads, which are formed or provided with any number of radial arms, C. These arms have longitudinal slots *s* in them, and are constructed on their outer ends with bosses *d*, through which center-pins or bolts *e* are projected to support or carry the longitudinal outer bars D of the reel. The center-pins *e*, on one end of the reel, are adjustable through their bosses *d*, but the center-pins *e* on the opposite end of the reel may have a fixed relation in their bosses *d*.

The reel bars D are socketed at their ends to receive within them the points of opposite center-pins *e*. These bars, which are free to turn on the center-pins, may be made of any suitable material, and be of polygonal or any other shape in their transverse section.

Within the slots *s* of the arms C are fitted sliding blocks E, adjustable within and along the slotted arms, and secured therein by means of bolts, at any required distance from the center of the reel. These blocks are also formed with bosses *d*, and serve to carry, by means of center-pins *e*, similar to those hereinbefore described, inner longitudinal reel-bars D'.

The detachable connection of the several reel-bars with the heads of the reel, by means of the center-pins *e*, provides for the putting on and removal of the hanks G of yarn, which, when on the reel are carried, respectively, by a pair of bars, consisting of one outer bar, D,



and one inner bar, D'. The adjustment of the inner bars D' along the slotted arms of the reel provides for adapting the latter to different lengths of hanks, and for varying the stretch of the hanks.

After the reel has been thus loaded with the necessary number of hanks it is rotated at any desired velocity by shifting a driving-belt, by means of a belt-shifter, *f*, from a loose pulley, *g*, onto a fast pulley, *h*, upon the shaft B of the reel, which latter may as readily have its motion arrested when required.

The radial arrangement of the hanks on the reel is favorable to the speedy drying of them as the reel is rotated for the purpose, the air-draft produced being sufficient without heating the air.

Having thus described certain general features of the invention, by the modification shown in Figs. 3 and 4, which has been first selected in this description on account of its greater simplicity, reference will now be made to the more perfect, but complex, construction of the machine shown in Figs. 1 and 2, and in which—

A A represent the end frames of the machine; B, its central shaft, which in this case serves to give rotary motion, by means of its fast pulley *h'*, to a series of vanes, H, constituting a rotary blower, which is concentric with the reel, and revolves in a reverse direction to the reel, and preferably at a higher velocity than it. Said blower may extend throughout the greater length of the reel, the heads of which latter are connected together by stays or bolts *i*, and are supported by the shaft B in the bearings *b*, or by one or more sleeves passing through said bearings, only one sleeve, *k*, here being shown. This sleeve *k* projects beyond or to the outside of the end frame A, which carries it, and serves to carry fast and loose pulleys *l m* for giving a slow rotary motion to the reel in direction of the arrow *x*, while the blower is rapidly rotated in direction of the arrow *y*, and for arresting the motion of the reel when required. The object of the blower is to urge an outward current of air through or over the hanks of yarn on the reel, and thereby to assist in the drying of the hanks. Furthermore, the arms C of the reel in this construction of the machine are represented as mainly radial with slotted oblique extensions C' at their outer ends. The radial portions of these arms carry, by means of center pins *e* and spindles *e'* on opposite ends of the machine, the inner set of reel-bars D', and the slotted extensions C', which occupy an oblique position to the radial portions C, serve to carry, by means of blocks E, adjustable in or out along said extensions, and center-pins fitted through the blocks, the outer set

of reel-bars D, to provide, as in the modification hereinbefore described, for adapting the machine to different lengths and stretches of the hanks. This disposition of the inner and outer sets of reel-bars out of the same radial line allows of the hanks G being extended from the outer bars D of each arm to the inner bar D' of the adjacent arm, as shown in Fig. 2. This prevents that entanglement of light yarns in hanks, which might be occasioned by the sharp currents of air brought to bear on the hanks, supposing the latter to be in close proximity with each other. The hanks may be put in the reel, and be removed therefrom, as hereinbefore described; but the spindles *e'*, which support the inner bars D' at one end of the machine, have pinions M on their outer ends, and are so connected with the bars D' as to be capable of turning the latter, yet permitting of the displacement of the bars when required. By means of these pinions, which, as the reel is rotated, strike a stationary stop, N, the bars D' will be slightly moved or rotated each revolution of the reel, thereby giving to the hanks an intermittent motion, and so varying the surfaces of exposure of the hanks to the drying action of the reel, whereby unequal drying of them is prevented.

We claim—

1. In a machine for drying yarns in hanks, the combination, in a rotating reel, of an inner series of bars, D', and outer series of bars D, adjustable in relation with each other, and independently supported by center-pins or spindles in the heads of the reel, to facilitate the placing and removal of the hanks, substantially as specified.

2. The combination, with the radial arms C, carrying the inner series of reel-bars D', of the slotted, obliquely-arranged extensions C', and the adjustable blocks E, carrying the outer series of reel-bars D, essentially as described.

3. The combination of a rotating fan or blower, H, with the reversely-rotating reel, having inner and outer series of reel-bars, substantially as specified.

4. The combination, in a rotating drying-reel, of an inner series of reel-bars, with an outer series thereof, and means for intermittently rotating on their axes one of either series of said bars, essentially as and for the purpose herein set forth.

This specification signed by us this 21st day of November, 1876.

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