

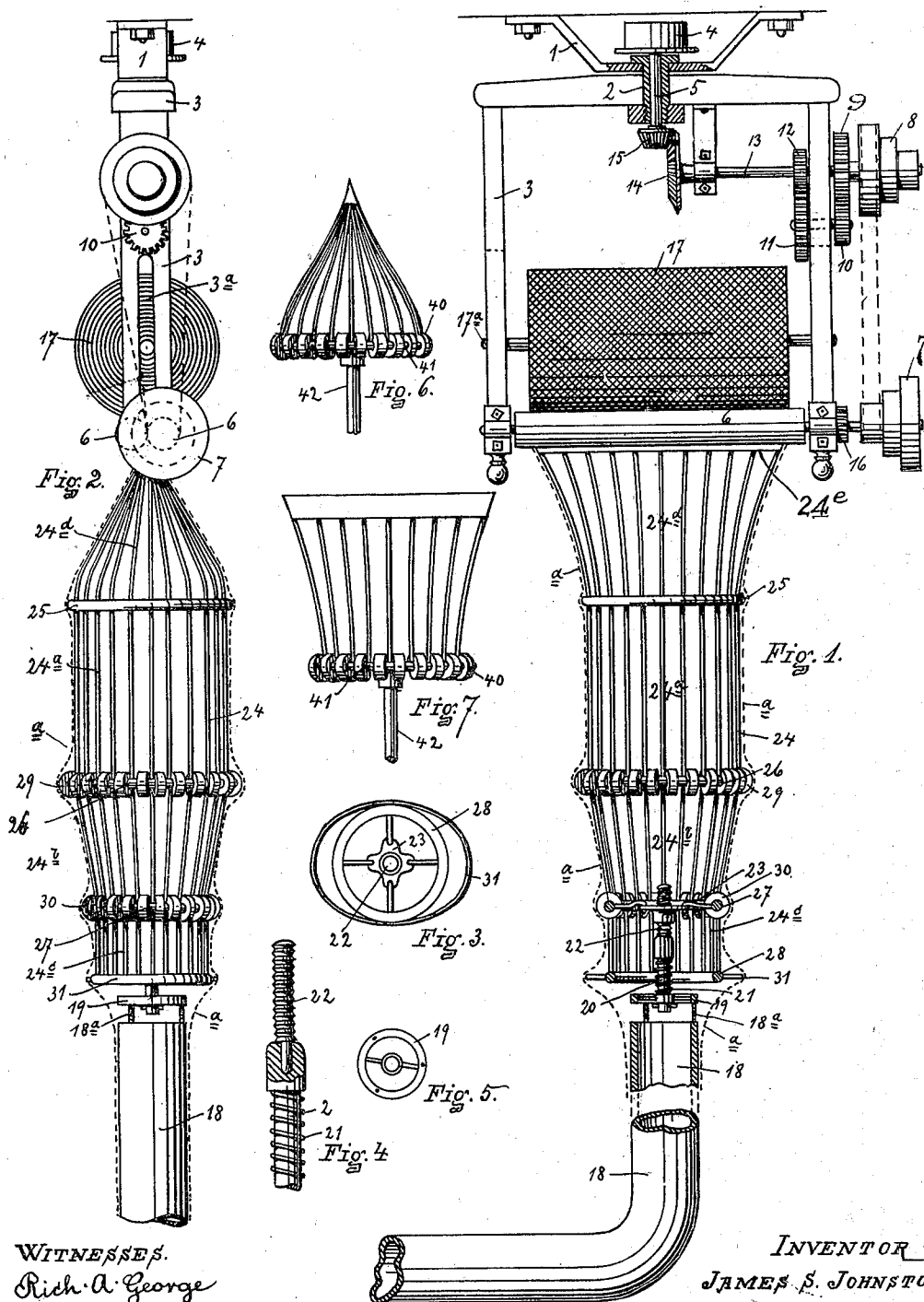
No. 625,169.

Patented May 16, 1899.

J. S. JOHNSTON.
CLOTH DRYING APPARATUS.

(Application filed May 28, 1898.)

(No Model.)



WITNESSES.
Rich. A. George
Dwight H. Colagrove

INVENTOR
JAMES S. JOHNSTON
BY Milton E. Robinson
ATTORNEY

UNITED STATES PATENT OFFICE.

JAMES S. JOHNSTON, OF UTICA, NEW YORK.

CLOTH-DRYING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 625,169, dated May 16, 1899.

Application filed May 28, 1898. Serial No. 681,992. (No model.)

To all whom it may concern:

Be it known that I, JAMES S. JOHNSTON, of Utica, in the county of Oneida and State of New York, have invented certain new and useful Improvements in Cloth-Drying Apparatus; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and numerals of reference marked thereon, which form part of this specification.

In the drawings, Figure 1 shows a side elevation of my improved cloth-drying apparatus. Fig. 2 shows an edge view. Fig. 3 shows the lower end of the drier-head shown in Figs. 1 and 2. Fig. 4 shows details of the construction, partially in section. Fig. 5 shows an adjustable head-supporting ring or spider. Figs. 6 and 7 show, respectively, edge and side views of a modified form of drier-head.

Referring to the reference characters in a more particular description, 1 indicates a hanger which, as shown, is secured to the ceiling, although it may be secured to any suitable supporting-frame. The hanger receives a hollow bolt 2, which supports the rotary frame 3. The hanger is formed to make provision for the driving-pulley 4, and the shaft 5 thereof passes through hollow bolt 2. The rotary frame 3 carries the drawing-rollers 6 6 at its lower side, which are driven from the band-pulley 4 by sets of cone-pulleys 7 and 8 with an intermediate belt, (shown in dotted lines;) the back-gears 9, 10, 11, and 12, the shaft 13, and bevel miter-gears 14 15, the latter of which is secured on the lower end of the shaft 5 and the former on the end of shaft 13. The cone-pulleys 8 and gear-wheel 9, which are secured together, run free on the projecting end of the shaft 13. The cone-pulleys 7 are secured on the projecting end of the shaft of the roller 6, and the two rollers are coupled by a pair of gears 16. The frame is adapted to receive the accumulating cloth-roll 17, which is held in place by the shaft 17^a thereof passing through slots 3^a in the uprights of the frame. The frame 3 is arranged over the vertical portion 18 of a hot-air blast-pipe located on the floor or in the lower portion of the frame when a frame

is employed. On the open end of the pipe 18 is mounted by adjusting-screws 18^a a ring or circular spider 19. The spider 19 carries a post or spindle 20, supported by a spring 21, interposed between the shoulder thereon and the spider 19. The post or spindle 20 engages the lower end of the screw 22, which has a pivot at its lower end received by a socket in the upper end of the post or spindle 20 and affording a joint, permitting the free rotation of the screw with the parts above it. The screw 22 is threaded into a spider 23, secured in the lower end of the drier-head 24.

The drier-head is formed of longitudinal wires disposed at intervals, as shown, and, generally speaking, has a cylindrical body portion 24^a, an inverted truncated cone portion 24^b, a lower cylindrical portion 24^c, and an upper or delivery end portion 24^d. The wires are held by rings 25 and 26 of the same diameter and rings 27 and 28 of the same diameter and both of a lesser diameter than rings 25 and 26. On the rings 26 and 27 are arranged sets of small rollers 29 and 30. On the lower ring 28 is provided a supplemental elliptical ring 31.

On the delivery end portion 24^d of the drier-head the wires converge in bow form edgewise of the head and diverge in bow form sidewise and terminate and are held in the flat delivering end piece 24^e. This end piece is adapted to take a position between the lower portions of the rollers 6.

The drier-head 24 is removed by forcing the same downwardly against the tension of the spring 21 until the top is displaced from between the roll 6, where it may be lifted off from the upper end of the pipe 18.

The goods (tubular fabric) to be operated upon after being washed, bleached, or otherwise treated and while wet are placed and accumulated upon the pipe 18. The head 24 is then placed in position and the end of the fabric passed up over it and between the rollers 6 6. The air-blast through pipe 18 being now applied, the drawing mechanism is started and the fabric after passing the rollers 6 is accumulated upon the roll 17.

The important object to be attained is the accumulation of the fabric on the roll 17, with the courses or wale of the fabric perfectly

parallel with the axis of the roll and the edges at the ends of the roll true and even and the fabric free from twist. To this end the shape and arrangement and construction of the drier-head are important. In passing over the head the fabric *a* after leaving the pipe 18 and while wet is given a slight stretch or opening in the direction of the length of the rollers 6 by the elliptical ring 31. Thence it passes the part 24^e and is thrown off by the rollers 30. It is then further opened or expanded until it passes and is thrown off by rollers 29. It then passes the cylindrical portion 24^a and onto the delivery portion 24^d, from which it is delivered with the courses or web perfectly true to the rollers 6. Any twists in the fabric are taken out by the rotation of the frame 3 by hand, if necessary.

During the time the fabric is passing the head it is continuously subject to the air-blast, which tends to open the fabric and reduce the friction on the head. By the use of the open longitudinal wire construction of head the friction of the fabric on the head is reduced to the minimum. The friction is a troublesome feature in that it is difficult to equalize it at all similar points, and the courses or wale tends to come off crooked.

In Figs. 6 and 7 is shown a modified form of head, which is essentially the delivery end of the previously-described form, having the rollers 40 on the base-ring 41 thereof and mounted on a vertical shaft or spindle 42. This form is used with a spreader mounted on the shaft 42 between the head and the end of the pipe 18.

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

1. The combination of a stand or blast pipe, a rotatable cloth-drawing frame located above said pipe, and an interposed, rotatable drier-head extending between the drawing-frame and said pipe, substantially as set forth.

2. The combination with the drawing-rollers and blast-pipe of a drying apparatus, of a drier-head having its delivery end formed of longitudinal wires converging edgewise and diverging sidewise and at the delivery end extending between a ring and a flat bar, substantially as set forth.

3. The combination with the drawing-rollers and blast-pipe of a drying apparatus, of

a drier-head formed of longitudinal wires, and having a cylindrical body portion terminating in a straight bar, substantially as set forth.

4. The combination with the drawing-rollers and blast-pipe of a drying apparatus, of a drier-head having a circular body, an elliptical ring at one end and a straight bar at the other, substantially as set forth.

5. In a drying apparatus, a suspended, rotatable frame, a pivotal bearing for the frame, rollers mounted in said frame, a driving-shaft for said rollers passing through the pivotal bearing and connecting with the said rollers, substantially as set forth.

6. The combination of a suspended, rotatable frame, drawing-rollers mounted therein, a stand or blast pipe and a drier-head pivotally mounted on the stand-pipe and engaging with, and rotatable with the frame, substantially as set forth.

7. The combination of a suspended, rotatable frame, cloth-winding mechanism therein, a stand or blast pipe and an interposed drier-head, and a spring between the stand or blast pipe and the drier-head, substantially as set forth.

8. The combination with the drawing-rollers and blast-pipe of a drying apparatus, of a drier-head formed of longitudinal wires having a cylindrical portion with frame-rings at either end thereof, and having a truncated, conical portion and a delivery portion terminating in a flat straight end, and rollers mounted on one or more of said frame-rings, substantially as set forth.

9. The combination with the cloth-drawing mechanism and blast-pipe of a drying apparatus, of a drier-head formed of longitudinal wires or pieces and having a cylindrical body, a truncated, conical portion and a portion converging edgewise and diverging sidewise and terminating in a straight or flat bar, substantially as set forth.

In witness whereof I have affixed my signature, in presence of two witnesses, this 21st day of May, 1898.

JAMES S. JOHNSTON.

Witnesses:

PETER P. SMITH,
SARAH H. BROWN.