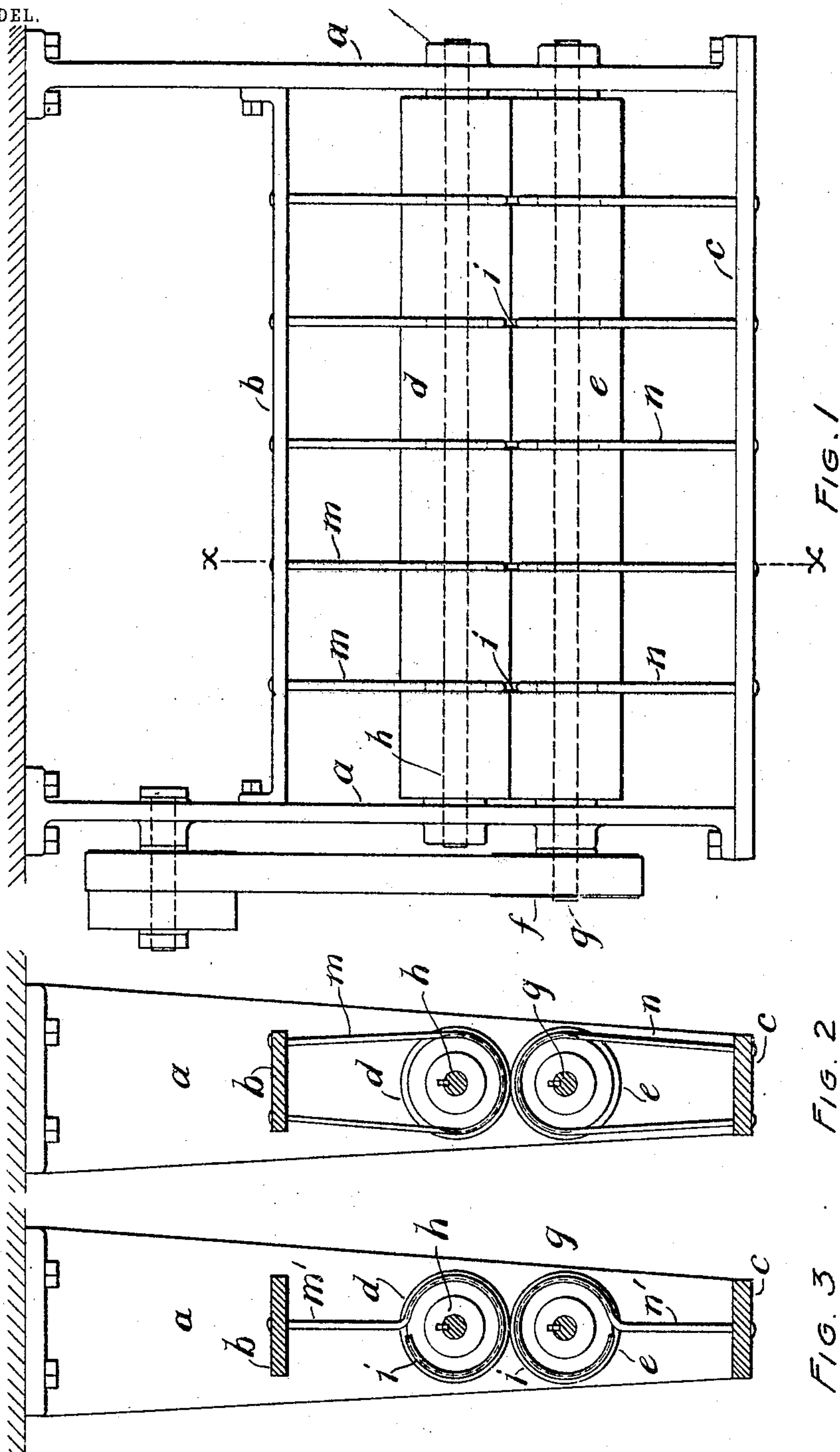


No. 764,702.

PATENTED JULY 12, 1904.

B. BIRTWELL.  
DRAWING ROLLERS.  
APPLICATION FILED JULY 28, 1903.

NO MODEL.



WITNESSES

William E. Brown  
Russell H. Shaw

INVENTOR

Benjamin Birtwell  
by Horatio E. Bellows  
ATT'Y

# UNITED STATES PATENT OFFICE.

BENJAMIN BIRTWELL, OF PAWTUCKET, RHODE ISLAND.

## DRAWING-ROLLERS.

SPECIFICATION forming part of Letters Patent No. 764,702, dated July 12, 1904.

Application filed July 28, 1903. Serial No. 167,276. (No model.)

*To all whom it may concern:*

Be it known that I, BENJAMIN BIRTWELL, a citizen of the United States, residing at Pawtucket, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Drawing-Rollers, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates primarily to drawing-rollers employed in the art of calico-printing in connection with either washing-machines or drying-cans. The purpose of these rollers is to draw the fabric under treatment from the drying-cans at a high rate of speed. When the speed demanded exceeds the passage of ninety yards per minute, serious damage is occasioned by the tendency of the cloth to adhere to and wind around the rolls, with resultant damage to both the fabric and mechanism despite constant personal supervision.

To the end of obviating the above objections my invention consists in novel structure of the rollers hereinafter described, and illustrated in the accompanying drawings, wherein—

Figure 1 is a front elevation of a set of drawing-rollers embodying my invention; Fig. 2, a transverse vertical section of the same on line *x x* of Fig. 1, and Fig. 3 a similar section of a modification of the same.

Like reference-letters indicate like parts throughout the views.

My improved structure comprises the usual swinging or stationary frame comprising the supports *a a*, to which are bolted the cross-bars *b* and *c*, the former above and the latter below the drawing-rollers *d e*. The lower roller *e* is driven by a pulley *f* upon the end of shaft *g*, upon which the roller is mounted, the shaft being journaled in the supports *a*. The shaft *h* of the upper roller *d* is also journaled in the supports immediately above the lower roller and is revolved by frictional contact of the fabric in passing between the two rollers.

The rollers are provided at intervals with circumferential channels or grooves *i*. Embracing a portion of the upper roller and within the channels *i* are a series of metallic bent or looped rods or protectors whose ex-

tremities are fixed in the upper transverse bar *b*. Similar protectors *n* embrace the roller *e* and are fixed at their extremities in the lower transverse bar *c*. Care should be taken that the curved portions of the rods *m n* not to any appreciable extent frictionally bear upon the rollers which they embrace. The covering of the rollers may be of cloth, paper, rubber, or any of the materials generally employed. While this device will not obviate sparking, its peculiar mechanical structure nullifies the adhesive effects of electricity generated by the contact of the fabric with the roller-coverings during the passage of the former. In other words, the rods *n* and *n'* serve in the capacity of mechanical stops for engagement by the web of material being drawn between the rollers should it adhere to one of said rollers and start to wrap thereon.

A modified form of protector is shown in Fig. 3, consisting of a shank with a circular terminal.

It is obvious that my invention is as applicable to the finishing process of woolen as to cotton fabrics.

Having described my invention, what I claim is—

1. In a machine of the character described, the combination with the frame, of drawing-rollers mounted thereon, and means lying between the rollers at opposite sides of the path of the work to prevent the work from wrapping around either roller.

2. In a machine of the character described, the combination with the frame, of a pair of drawing-rollers mounted and provided with annular grooves, and means lying within the grooves and between the rollers at opposite sides of the path of the work to prevent the work from wrapping around either roller.

3. In a machine of the character described, the combination with the frame, of a pair of annularly-grooved rollers mounted thereon, and means to prevent the work from wrapping around either roller, consisting of rods carried by the frame and located at opposite sides of the path of the work with portions lying in the grooves of the respective rollers.

4. In a machine of the character described, the combination with the frame, of a pair of



annularly-grooved rollers mounted thereon, and means to prevent the work from wrapping around either roller, consisting of rods carried by the frame and located at opposite sides  
5 of the path of the work with bent portions lying in the grooves of the respective rollers and embracing the adjacent inner faces thereof.

5. In a machine of the character described, the combination with the frame, of a pair of  
10 annularly-grooved rollers mounted thereon, and means to prevent the work from wrapping around either roller, consisting of rods projected from opposite sides of the frame at substantially right angles to the rollers and  
15 provided with bent portions lying in the grooves of respective rollers and embracing the adjacent faces thereof at opposite sides of the path of the work.

6. The combination with a frame, of a pair

of drawing-rollers mounted thereon and provided with registered grooves, and rods carried by and projected from opposite sides of the frame with portions lying in the grooves of the respective rollers to prevent the work from wrapping around the rollers. 20 25

7. The combination with a frame, of a pair of drawing-rollers having registered annular grooves, and rods carried by and projected from opposite sides of the frame with bent portions lying in the grooves of the respective rollers and embracing the adjacent portions of the rollers. 30

In testimony whereof I have affixed my signature in presence of two witnesses.

BENJAMIN BIRTWELL.

Witnesses:

CHARLES W. GIFFORD,  
HORATIO E. BELLOWS.