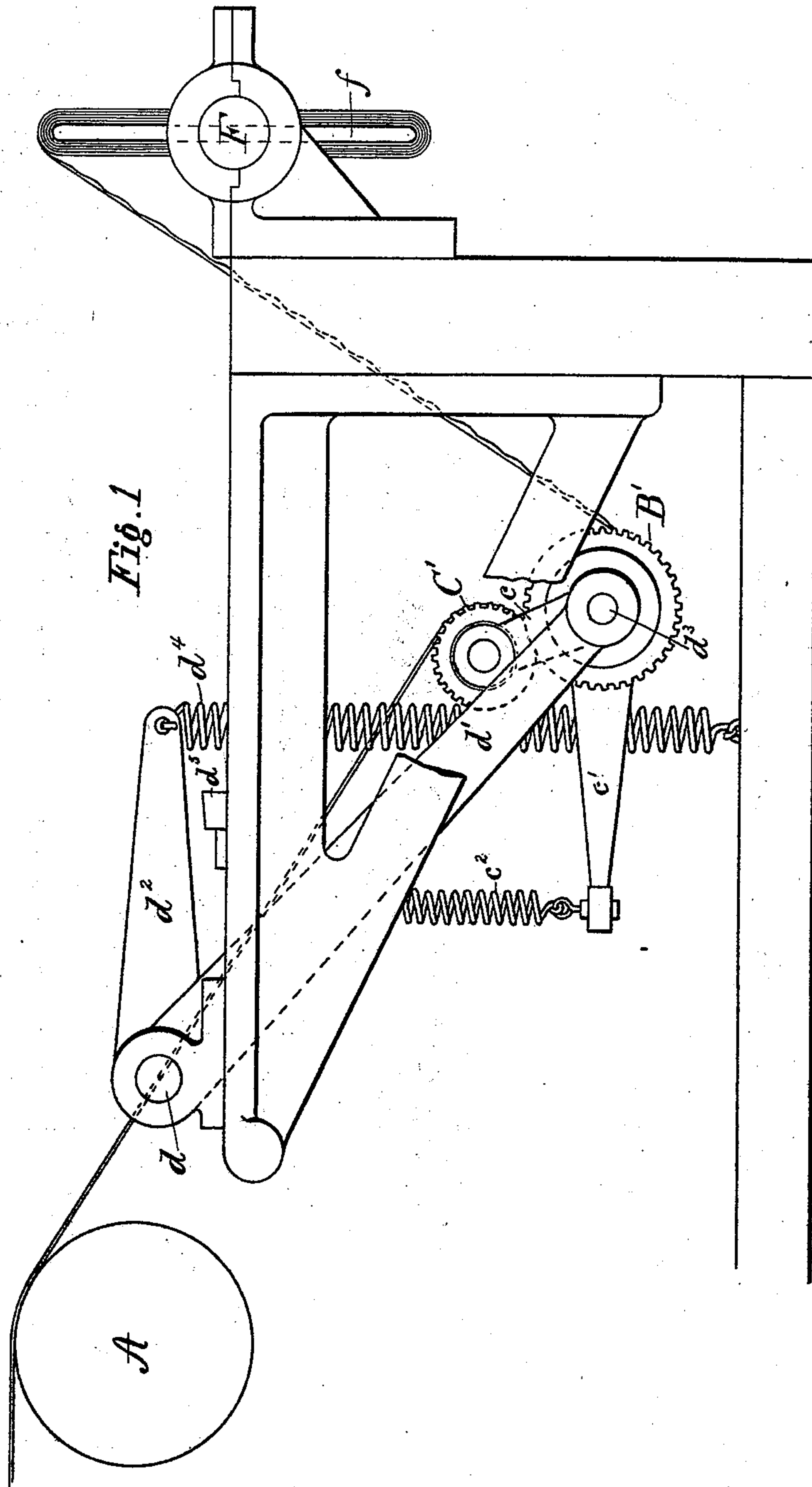


(No Model.)

3 Sheets—Sheet 1.

E. P. & R. W. WATSON.
TENSION REGULATING ATTACHMENT FOR FABRIC PACKAGING MACHINES.
No. 528,750.

Patented Nov. 6, 1894.



Witnesses.

F. Grievold
Helen M. Wood

Inventors;

Edward P. Watson
Robert W. Watson
By *Wing & Thurston*
Their attorneys

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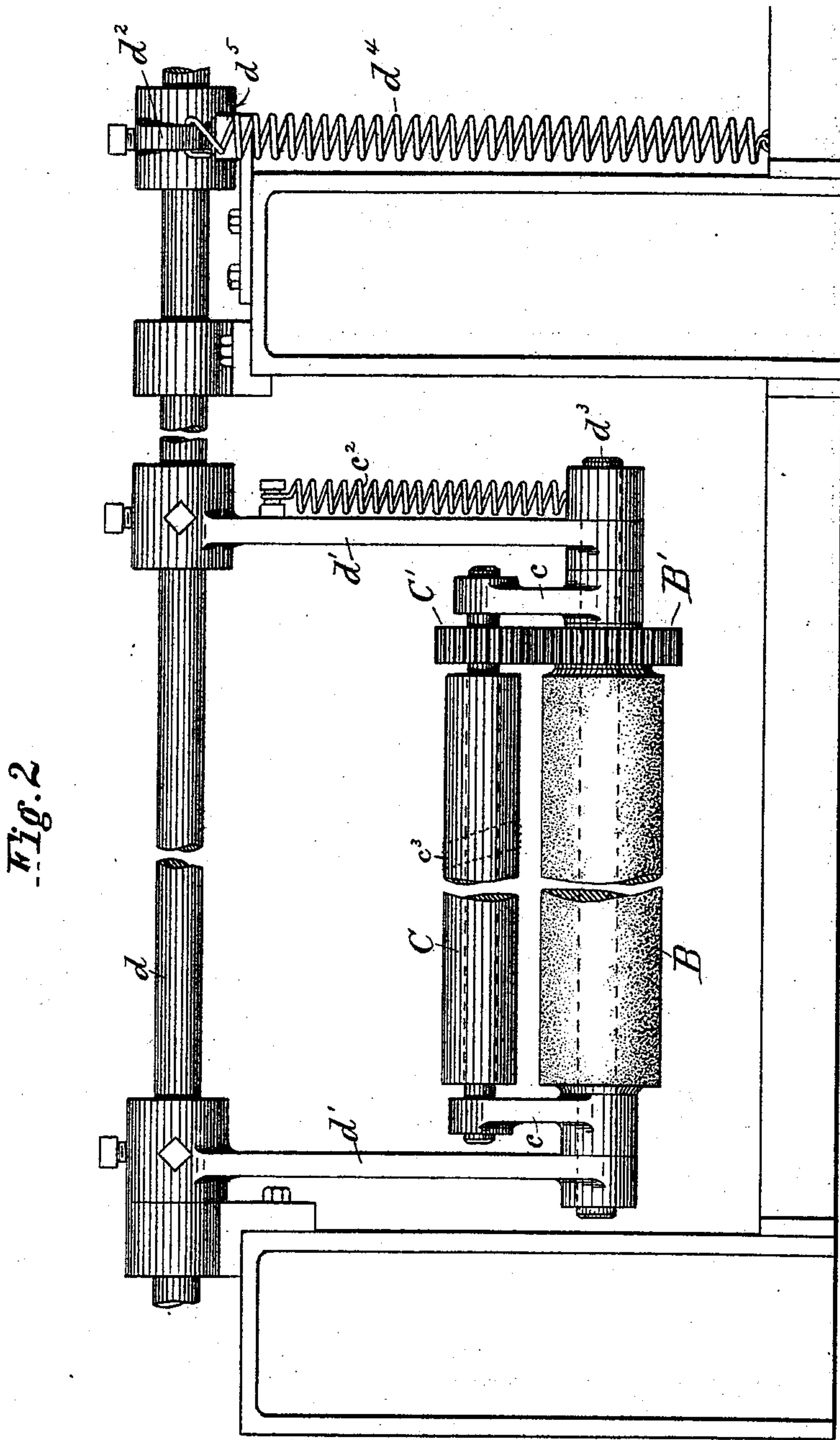
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Witnesses.

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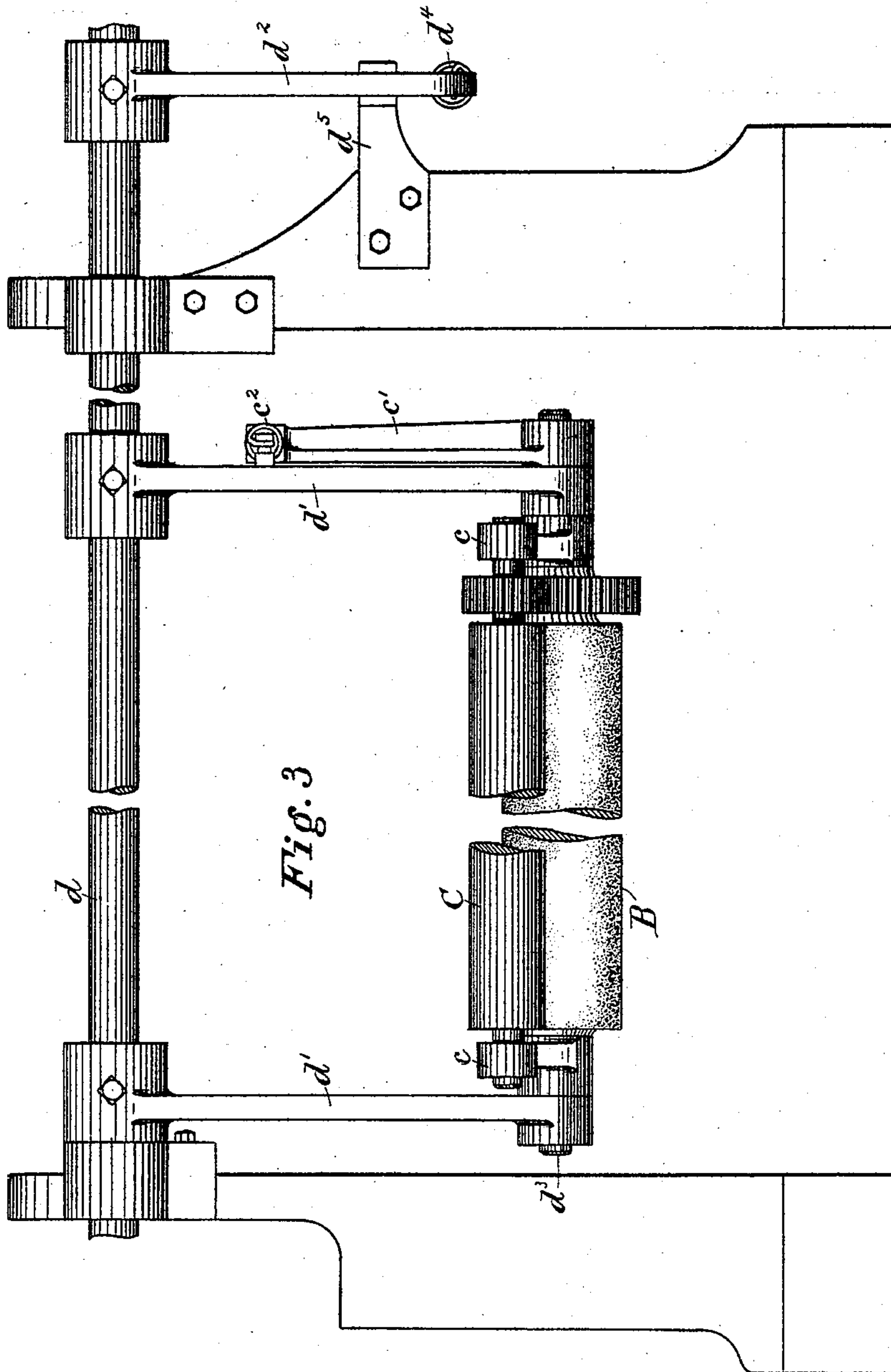
Inventors:

Edward P. Watson
Robert W. Watson
By Wing & Thurston
Their attorneys

(No Model.)

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Witnesses.

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Inventors:

Edward P. Watson
Robert W. Watson
By *Wing & Thurston*
Their attorneys

UNITED STATES PATENT OFFICE.

EDWARD P. WATSON, OF NEW YORK, N. Y., AND ROBERT W. WATSON, OF
PRESTON, ENGLAND.

TENSION-REGULATING ATTACHMENT FOR FABRIC-PACKAGING MACHINES.

SPECIFICATION forming part of Letters Patent No. 528,750, dated November 6, 1894.

Application filed December 1, 1893. Serial No. 492,549. (No model.)

To all whom it may concern:

Be it known that we, EDWARD P. WATSON, residing at New York, in the county of New York and State of New York, and ROBERT W. WATSON, residing at Preston, Lancaster county, England, citizens of the United States, have invented certain new and useful Improvements in Tension-Regulating Attachments for Fabric-Packaging Machines; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our improvements relate to mechanism, (first,) for equalizing the tension on the fabric as it is being wound on a board, and, (second,) for causing both folds of a plicated fabric to lie as smoothly as possible, by distributing the fullness evenly and preventing its accumulation at any one place.

The invention consists in the construction and combination of parts hereinafter described and pointed out definitely in the claims.

In the drawings Figure 1 is a side view of our improved mechanism. Fig. 2 is an end view of said mechanism when the driven shaft which revolves the board is removed. Fig. 3 is a plan view of the parts shown in the preceding figure.

Referring to the parts by letter, A represents a delivery guide roll over which the plicated fabric passes to the mechanism to be presently described. This may be a roll placed between a rigging machine and the winding mechanism to guide the fabric from the former to the latter; or it may be a roll on which the plicated fabric has been loosely wound. The purpose of this roll is to deliver the fabric to the winding mechanism from the proper point to insure the described operation thereof.

F represents a driven shaft which is adapted to revolve the board *f* on which the fabric is to be wound. Any suitable connection between said shaft and board may be made.

Between the roll A and the board *f* are located two rolls B and C around which the fabric passes and by means of which it is deflected from a straight path from the said roll

A to the board. The roll B is mounted loosely in the end of a pivoted frame D made up of, (first,) the rock shaft *d* journaled to the frame work, (second,) the two parallel arms *d' d'*; (third,) the arm *d*²,—the arms being rigidly secured to the rock shaft, and, (fourth,) a rock shaft *d*³ which is journaled in the ends of the arms *d' d'*. The roll B is mounted loosely on the rock shaft *d*³.

A contractile coil spring *d*⁴ is connected at its ends with the arm *d*² and some fixed point,—as a part of the frame and its force is exerted constantly to draw the said arm downward, thereby rocking the rock shaft *d* and moving the roll B farther from the straight path between the roll A and the board. A bracket *d*⁵ lies beneath the end of the arm *d*² and serves as a stop to limit the movement of said arm in the direction in which it is moved by the spring.

Secured to the rock shaft *d*³ are two arms *c* in the ends of which is journaled a roll C. An arm *c'* is secured to said rock shaft, and a contractile coil spring *c*² secured at its ends to said arm and to one of the arms *d'* exerts its force constantly to rock the rock shaft *d*³ and draw the roll C farther away from the straight path between the two rolls A and B.

The fabric passes from the roll A around roll C and then under the roll B to the board *f*. Whenever, as the board is revolved, the fabric is slackened, the springs *b*⁴ and *c*² move the two rolls B and C so that said slack is automatically taken up and an equal tension on the fabric maintained.

In winding a plicated fabric it is found that when the outer fold or ply is drawn smooth, there is a fullness or slack in the inner fold, which, unless regularly and evenly distributed, will bunch up and cause deep cross wrinkles in the fabric, and which not only destroys the symmetry of the package but also injures the fabric. In order to prevent the bunching of the inner fold and to so distribute the fullness thereof that the package will be smooth and even, the two rolls B and C are caused to revolve with different surface velocities. The surface of roll B which is in contact with what is, when wound on the board, the outer ply, moves at the same rate as said ply. The surface of roll C which is in

contact with the inner ply moves at a rate slightly greater. This mode of action is secured by connecting said two rolls by means of the two gears B' and C' which are secured respectively to said two rolls. The gears are of such relative sizes that as one roll is revolved the other will be revolved at the proper relative speed.

The surface of the roll B is covered with emery cloth or like material, and consequently, as the fabric is drawn along in contact therewith, the roll is compelled by the friction to revolve at the same speed and the revolution of the roll B compels the revolution of roll C at the proper relative speed. The roll C by revolving with greater surface velocity in contact with the inner ply pushes the fullness therein forward evenly and regularly. Consequently, when the plicated fabric is wound, this fullness of the inner ply is distributed regularly in the package.

The roll C may in most cases be made of smoothed wood, but in some special cases it has been found of advantage to put onto its surface a strip of emery cloth, as shown as c³ in Fig. 2.

Having described my invention, I claim—

1. In a machine for winding fabrics, the combination of a delivery guide roll, and a driven shaft adapted to revolve a winding board, with a pivoted frame, a tension roller journaled thereon lying out of the direct path from the delivery roll to the winding board, a frame pivoted to the first frame, a tension roller journaled thereon, and independent springs for holding said frames against the strain of the cloth, substantially as and for the purpose specified.

2. In a machine for winding fabrics, the combination of a delivery guide roll and a driven

shaft adapted to revolve a winding board, with a pivoted frame, a tension roll B journaled thereon, a frame pivoted to the first frame, a tension roll C journaled thereon, independent springs holding said frames against the strain of the cloth and two meshing gears of unequal size secured to said two tension rolls, whereby said rolls are revolved in opposite directions and at unequal speeds, substantially as and for the purpose specified.

3. In a machine for winding fabrics, the combination of a delivery guide roll and a driven shaft adapted to revolve a winding board, a rock shaft d, two parallel arms d' d' rigidly secured thereto, a rock shaft d³ journaled in the ends thereof, a tension roll B journaled on said rock shaft d³, an arm d² rigidly secured to the rock shaft d, a contractile coiled spring fixed at one end and secured at the other to the arm d², two parallel arms c c rigidly secured to the rock shaft d³, a tension roll journaled in their ends, an arm c' rigidly secured to said rock shaft d³, and a contractile coil spring secured at its end to the arm c' and one of the arms d d, substantially as and for the purpose specified.

In testimony whereof we affix our signatures in presence of witnesses.

EDWARD P. WATSON.

ROBERT W. WATSON.

Witnesses for Edward P. Watson:

E. L. THURSTON,

FRANCIS J. WING.

Witnesses for Robert W. Watson:

NICHOLAS COCKSHUTT,

Solicitor, Preston, a Commissioner to Administer Oaths in the Supreme Court of Judicature in England.

JOSEPH COCKSHUTT,

Clerk to N. Cockshutt, Solicitor, Preston.