

W. O. WAKEFIELD.
BELT REGULATOR.
APPLICATION FILED SEPT. 28, 1909.

977,764.

Patented Dec. 6, 1910.

2 SHEETS—SHEET 1.

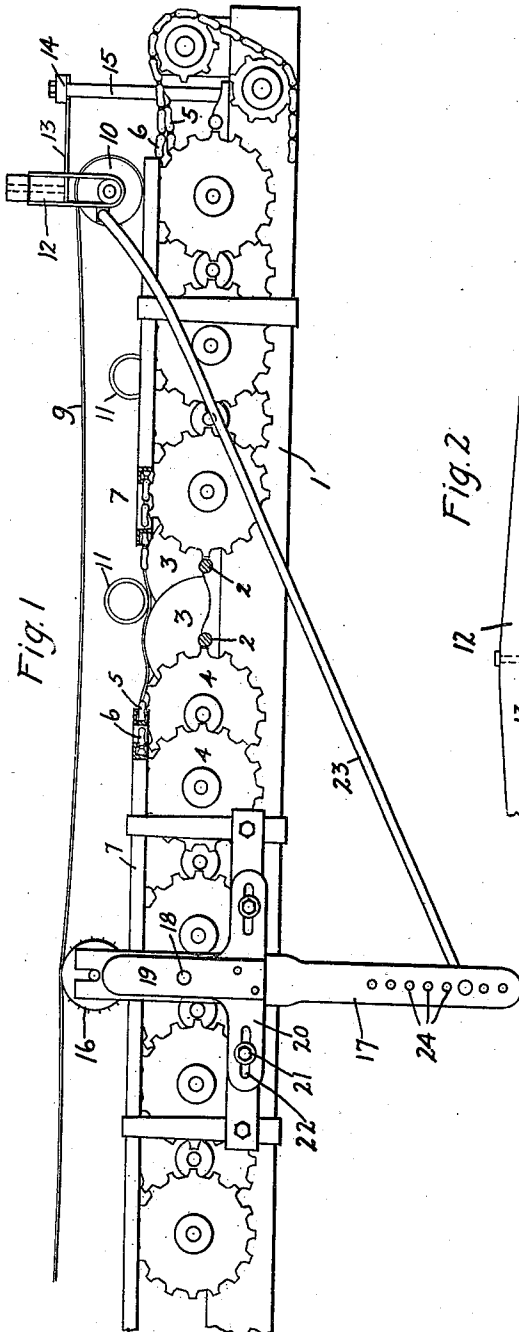


Fig. 1

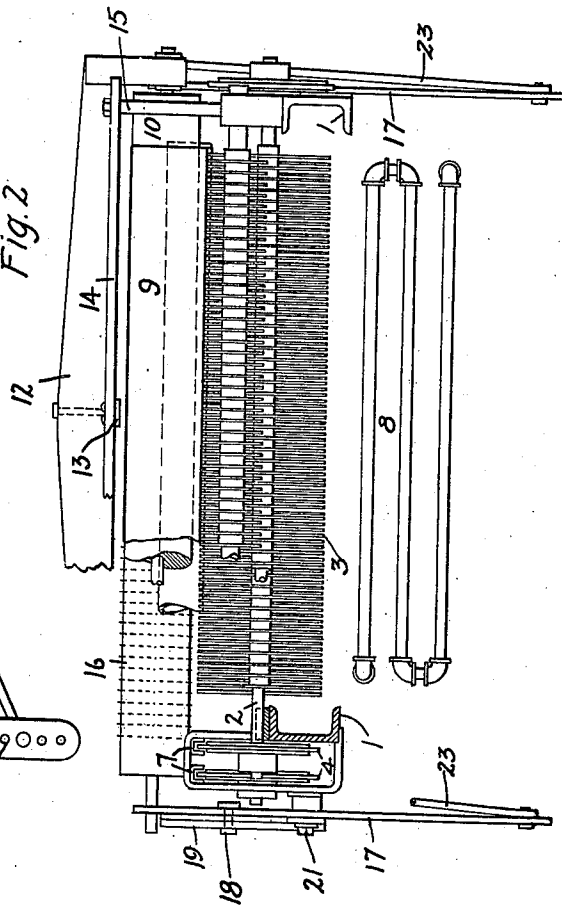


Fig. 2

Witnesses:

Benjamin B. Hall
Emma B. Coons

Inventor:

William O. Wakefield
By *Wm. H. Davis*
His Attorney.

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Fig. 3.

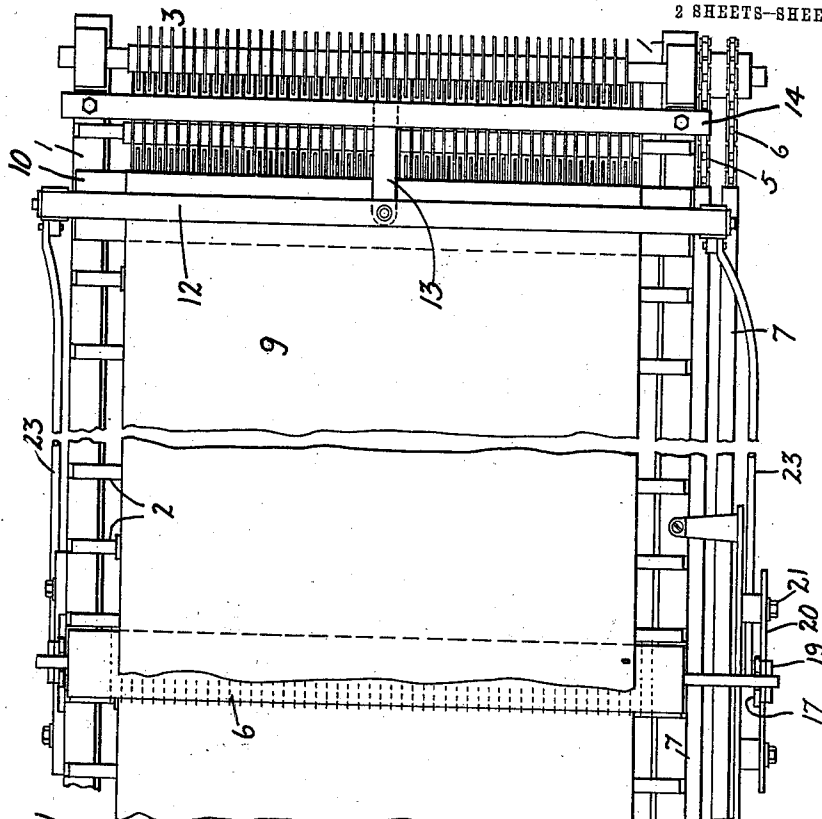
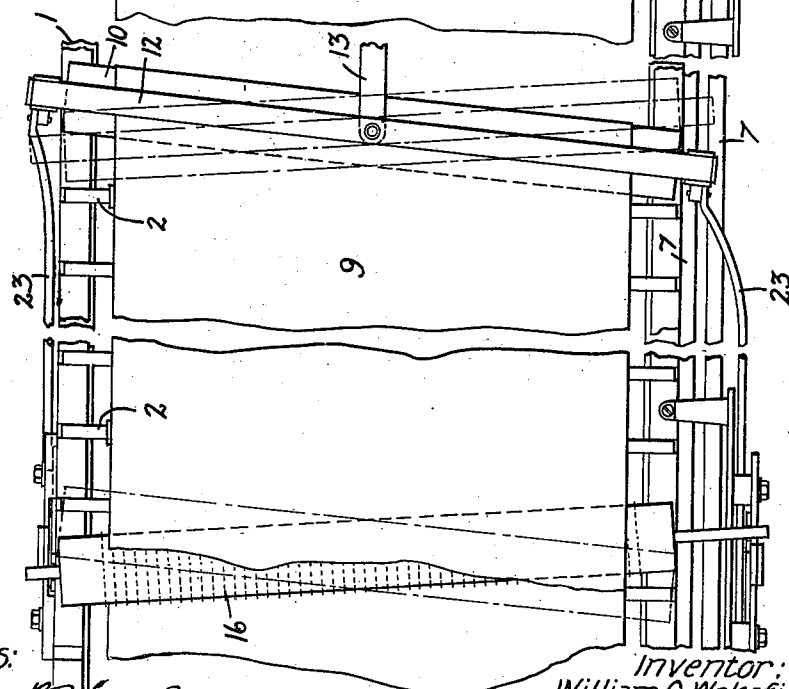


Fig. 4



Witnesses:

Benjamin B. Hull
Emma B. Coons

Inventor:

William O. Wakefield,
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UNITED STATES PATENT OFFICE.

WILLIAM O. WAKEFIELD, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

BELT-REGULATOR.

977,764.

Specification of Letters Patent.

Patented Dec. 6, 1910.

Application filed September 28, 1909. Serial No. 519,984.

To all whom it may concern:

Be it known that I, WILLIAM O. WAKEFIELD, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Belt-Regulators, of which the following is a specification.

This invention relates to devices for causing a wide belt to run true over rollers, and while it has been especially designed for use in a machine for washing and drying blue prints, yet it is capable of application to many different kinds of machines in which a belt runs over rollers and must be kept from creeping sidewise. I do not wish, therefore, to limit the scope of the invention to blue print washing and drying machines, although for the sake of clearness I shall illustrate and describe it in that connection.

The invention consists in the combination with a wide belt, of a teaser roll over which one lap of the belt passes, movable bearings in which said roll is journaled, and means for automatically slewing said roll into a position oblique to the belt whenever said belt creeps laterally. The effect of this obliquity of the teaser roll is to cause the belt to work back along said roll, and in this way it is returned to its normal position. As a means for slewing the teaser roll, I prefer to employ the supporting roller, over which the belt passes at one end of its travel, mounting this roller on movable bearings so that said roller can rock on an axis perpendicular to the plane of travel of the belt. Connections between said teaser roll, and the supporting roller, enable the rocking of the latter due to the lateral creeping of the belt to produce an opposite movement of the former, which tends to counteract the creeping action as explained above.

In the accompanying drawings, Figure 1 is a side elevation of a portion of a blue print washing and drying machine equipped with my belt regulator; Fig. 2 is an end elevation of the same; Fig. 3 is a top plan view; and Fig. 4 is a plan view illustrating the operation of the invention.

In the pending application of myself and J. W. Upp, filed July 14, 1904, Serial Number 216,527, there is disclosed a machine for washing blue prints, in which the prints are fed in at the lower end of an inclined bank of rotating disks which carry them un-

der water jets and finally deliver them to a drying machine. It is the latter machine to which the present invention is applied. The washed prints are received on a second bank of rotating disks which carry them through a box heated by coils of steam pipes. In order to dry the upper surface of the prints more quickly, an absorbent belt is caused to travel with the prints, upon which said belt rests. The belt is dried as it returns to the point of engaging with fresh damp prints.

I have not deemed it necessary to illustrate the whole of the drying machine, but it comprises a frame 1 in which are journaled a plurality of transverse parallel shafts 2, on which are secured the rows of parallel disks 3 of equal diameter. The disks on each shaft intermesh with those on the adjacent shafts so that the tops of the disks form a gently undulating floor on which the damp blue prints rest. At one end of each shaft is a sprocket wheel 4. The sprockets overlap like the disks, and those on alternate shafts are in line, so that the two rows of sprockets are engaged respectively by the two driving chains 5, 6. Both chains move in the same direction, so that by the simultaneous rotation of all the disks the prints are carried from one end of the machine to the other. The chains are protected by the guards 7.

The under side of the prints is subjected to the hot air rising from the coils of steam pipes 8 under the banks of disks. In order to quickly remove the moisture from the upper surface of the prints, an endless belt 9 of absorbent textile material runs from end to end of the machine, passing over rollers 10 at each end and resting upon the tops of the disks or upon the prints carried thereby. The belt is kept in close contact with the prints not only by its own weight but by a set of loose rolls 11, preferably lengths of cylindrical metal tubing laid across it at intervals in the depressions formed by two adjacent rows of disks. The belt is as wide as the length of a row of disks, and it has been found difficult to keep so wide a belt from creeping laterally on its rollers and running off at one side or the other. The wear and tear caused by stationary guides has been costly, and has necessitated frequent renewals of the belt. Moreover, constant watchfulness was required on the part

of the attendants to prevent trouble. My belt regulator entirely overcomes these annoyances and enables a belt to be used much longer than heretofore, besides being entirely automatic in its action and thus relieving the attendant from caring for it.

I mount the rollers 10 so that they can rock on a vertical pivot, moving in the plane of the belt or parallel thereto. In the actual embodiment of the invention, the roller is journaled in a yoke 12 which is pivoted on an upright pivot at the end of a short arm 13 projecting from the middle of a bar 14 supported on standards 15 at each side of the machine. At some convenient point along the machine, a teaser roll 16 is placed between the two laps of the belt. It is journaled in the upper ends of levers 17 fulcrumed at 18 in uprights 19 having arms 20 which are secured to portions of the frame 1, preferably by bolts 21 passing through longitudinal slots 22, so that said uprights and levers can be adjusted lengthwise of the machine. The teaser roll is supported out of contact with the lower lap of the belt, but the upper lap rests on said roll and is engaged by the small pins with which the roll is studded. A connecting rod 23 is pivoted to each end of the yoke 12 and engages with one of a series of holes 24 in the lower end of the lever 17 on that side of the machine.

The operation of the device is illustrated in Fig. 4. So long as the belt runs evenly, the rollers 10 and 16 stand perpendicular to its line of movement, as seen in Fig. 3. But if the belt creeps to one side, say toward the bottom of Figs. 3 and 4, that throws an unbalanced pull upon that end of the roller 10, which rocks on its vertical pivot into or toward the position shown in Fig. 4, oblique to the line of movement of the belt. However, the rocking of the roller 10 causes the rods 23 to rock the levers 17, throwing their upper ends in opposite directions to the movement of the corresponding ends of the roller 10. This slews the teaser roll 16 into an oblique position with reference to the belt, but reverse to that taken by the roller 10 so that on that side of the machine toward which the belt is creeping the ends of the roller 10 and roll 16 will be nearer together than on the opposite side. Owing to the greater length of the lower arms of the levers 17, the obliquity of the teaser roll is not so great as that of the roller 10, and the ratio between them can be varied by shifting the rods 23 along the holes 24. A certain position will be found in which the tendency of the belt to run laterally on the supporting roller 10 is just counteracted by its tendency to run in the opposite direction on the teaser roll. The result is that no mat-

ter which way the belt tries to creep, it will be quickly brought back to a central position. A four-foot belt will run for weeks and not vary more than a quarter of an inch from its central position. This means a great saving in wear and tear and cost of attendance.

What I claim as new and desire to secure by Letters Patent of the United States, is,—

1. Means for preventing the lateral creeping of a belt, comprising a supporting roller over which said belt runs, means permitting said roller to rock in a plane parallel with said belt, a teaser roll in contact with one lap of said belt, and connections between the roller and the roll whereby a rocking of the roller will produce a reverse rocking of the roll.

2. Means for preventing the lateral creeping of a belt, comprising a supporting roller over which said belt runs, a yoke in which said roller is journaled, a pivot perpendicular to said belt on which said yoke is mounted, a teaser roll in contact with one lap of the belt, and connections between the yoke and the roll for causing the latter to assume an oblique position when the yoke rocks on its pivot.

3. Means for preventing the lateral creeping of a belt, comprising a supporting roller over which said belt runs, means permitting said roller to rock in a plane parallel with said belt, a teaser roll in contact with one lap of said belt, levers in which said roll is journaled, and connections between said roller and said levers.

4. Means for preventing the lateral creeping of a belt, comprising a supporting roller over which said belt runs, a yoke in which said roller is journaled, a pivot perpendicular to said belt on which said yoke is mounted, a teaser roll in contact with one lap of said belt, levers in one end of which said roll is journaled, and connecting rods between the other ends of said levers and said yoke.

5. The combination with a belt, of a teaser roll in contact with one lap of said belt, a supporting roller over which said belt passes, movable bearings for both roll and roller, connections whereby the roller when slewed by the belt to an oblique position causes the teaser roll to assume an oblique position but in a reverse direction, and means for varying the ratio of obliquity of the roller and the roll.

In witness whereof, I have hereunto set my hand this 27th day of September, 1909.

WILLIAM O. WAKEFIELD.

Witnesses:

BENJAMIN B. HULL,
HELEN ORFORD.