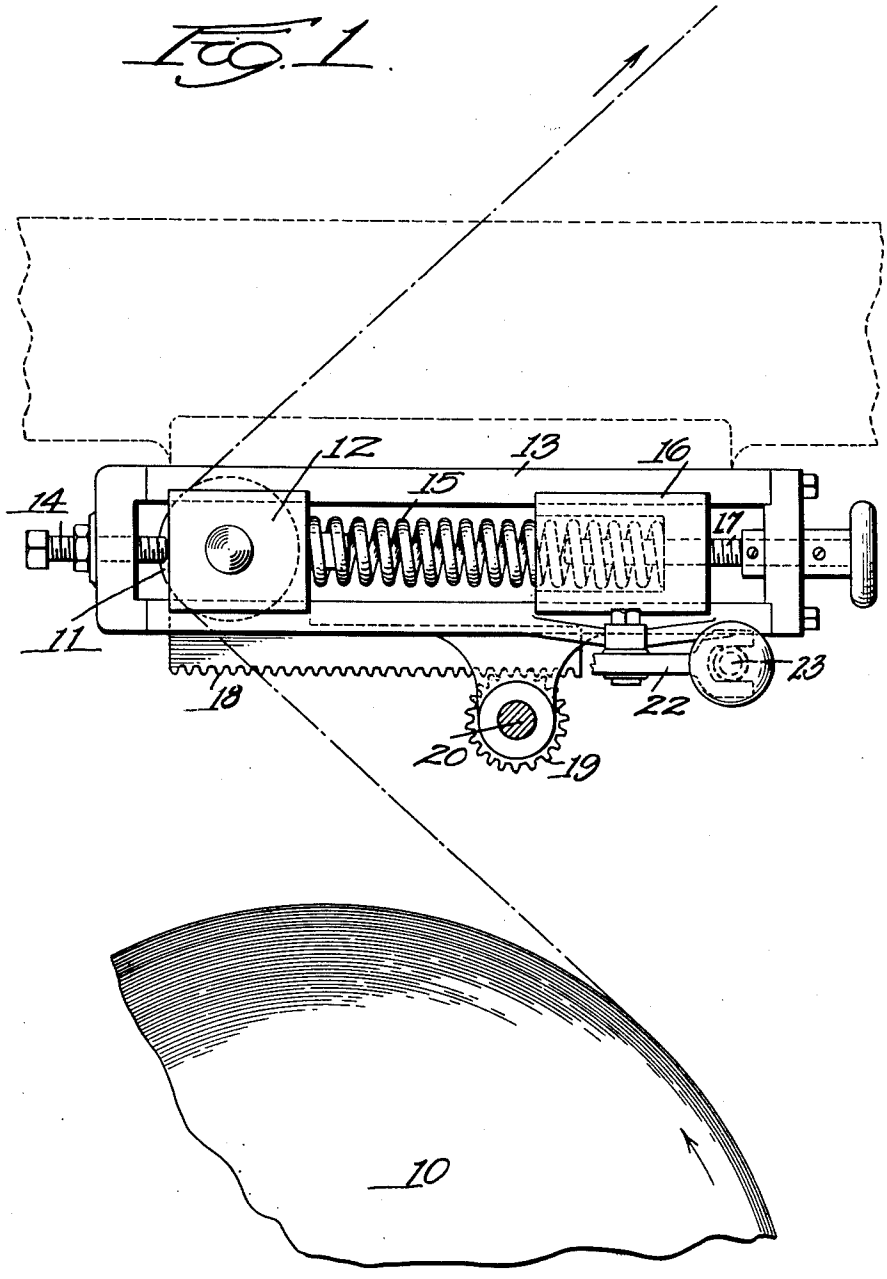
Oct. 3, 1933. H. A. W. WOOD 1,929,087

TENSION ROLL

Original Filed Feb. 12, 1929 2 Sheets-Sheet 1

Fig. 1.



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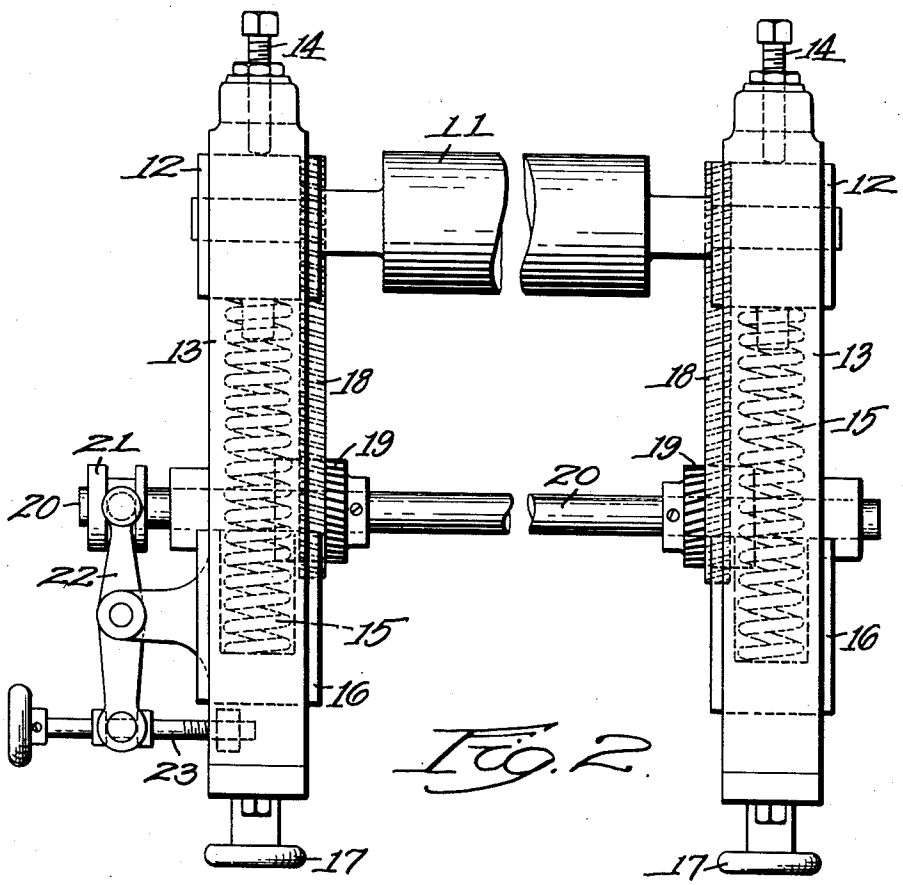


Fig. 2.

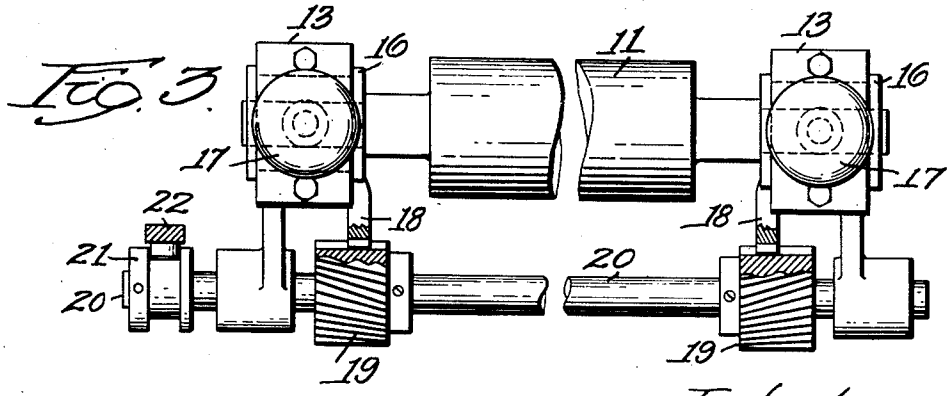


Fig. 3.

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TENSION ROLL

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Application February 12, 1929, Serial No. 339,375
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7 Claims. (Cl. 242—75)

This invention relates to a tension roll for webs, and although capable of other uses, is especially adapted for printing presses.

The principal objects of the invention are to provide means whereby if the web runs on one end of the spring-pressed roll the roll will be kept in alignment, irrespective of the differences in pressure on the two ends of the roll, this being especially desirable when running a half or quarter width web on the roll; to provide this means in a simple and convenient form adapted to cooperate with the springs which operate on the two ends or bearings of the roll; to provide means whereby, in spite of this construction, the roll can, if desired, be adjusted out of alignment to compensate for unevenness in the web coming from the web roll; and to provide means whereby the two elements above mentioned can cooperate with each other in one mechanism.

Other objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings in which

Fig. 1 is a side view of a tension roll for a printing press embodying this invention;

Fig. 2 is a plan showing the roll and the two tension devices, one at each end, and

Fig. 3 is an end view thereof, partly in section.

All printing presses are equipped with rolls used for tensioning the web and so are textile finishing and other machines. They are spring seated and are designed to keep the web, which runs at all times from a more or less uneven paper roll, smooth and taut as it is fed into the press. When it is desired to run only a half or quarter width web, it is usually run on one end of the web roll, and therefore, tends to throw the roll out of alignment. This would be detrimental to good printing and often causes wrinkles in the paper, due to the lack of uniformity of the tension on the two ends of the roll.

This invention is designed to eliminate the disalignment of a tension roll, especially when running a half or quarter width paper, and also to provide for adjusting it out of alignment when found necessary due to unevenness of the paper roll.

Referring to the drawings, the web is shown as running from the paper roll 10 over the tension roll 11 to the press, but of course it will be understood that tension rolls having the same characteristics can be located in several places on the press. The roll 11 is long enough to accommodate a full width web as built. Very often a half or quarter width web is run, on one end of the roll.

The roll is carried by two boxes 12 which are mounted to slide in stationary guides 13, up to a stop screw 14. Obviously the web tends to pull these boxes away from this stop screw, and springs 15 are used in this case, as is usual, for resisting the pull of the web and holding the roll under spring tension to properly tension the web. These springs are seated at the opposite end in another pair of boxes 16 which also can slide in the guides. These boxes are held in adjusted position by screws 17.

Obviously the springs alone will not hold the tension roll 11 in perfect alignment. To prevent their moving independently of each other, I provide ech of the roll carrying boxes 12 with a rack 18 permanently and fixedly secured thereto. With each rack a pinion 19 meshes, and each of these pinions is secured on a cross shaft 20 which is free to turn. Therefore, it will be seen that both ends of the roll are obliged to move equal distances, and the roll cannot get out of alignment after it is once properly lined up by the adjustment of the boxes 16.

Due to the unevenness of the paper rolls it has occasionally been found that the tension roll must be deliberately thrown out of alignment. For this purpose the pinions 19 and racks 18 are provided with angular teeth cut of opposite hands. Therefore when the shaft 20 is moved in an axial direction one rack will be advanced and the other drawn back and the roll 11 may be set so that it will be out of alignment and more tension applied to one end than the other.

To move the shaft 20 longitudinally it is provided with a grooved collar 21 into which a roll or the end of a lever 22 engages. The other end of this lever is operated by an adjusting screw 23. By means of this screw, therefore, the uneven adjustment can be provided. Obviously the tension of the springs 15 can be increased or decreased to any desired degree by operating the adjusting screw 17 and the tension at both ends can be evened up in that way.

It will be seen, therefore, that the desired functions above stated can be accomplished in a very simple and convenient manner by this mechanism.

Although I have illustrated and described only one form of the invention and referred to it as applied to a printing press for operating a particular tension roll, I am aware of the fact that the invention can be carried out in other forms

and applied to the tension of webs other than paper webs for printing presses and can be used on other parts of printing presses and other machines having tension rolls, without departing from the scope of this invention as expressed in the claims. Therefore, I do not wish to be limited to the particular form shown and described, but what I do claim is:—

1. The combination with a tension roll for a printing press, of a pair of boxes for supporting the roll, springs bearing on the boxes for applying tension, a pair of racks each movable with one box, a pinion meshing with each rack, and a freely rotatable shaft, mounted in fixed bearings, on which both pinions are fixed.

2. The combination with a tension roll for a printing press, of a pair of boxes for supporting the roll, springs bearing on the boxes for applying tension, a pair of racks extending from each box, a freely rotatable shaft, pinions fixed on opposite portions of said shaft and meshing with the racks, and means for adjusting said pinions to change the alignment of the roll.

3. The combination with a tension roll for a printing press, of a pair of boxes for supporting the roll, springs bearing on the boxes for applying tension, a rack extending from each box, a pinion meshing with each rack, and a freely rotatable shaft on which both pinions are fixed, the teeth on the racks and pinions being cut on a slant and of opposite hands on the two sides, whereby motion of the pinions relative to the racks in an axial direction will adjust one rack forward and the other backward.

4. The combination with a tension roll for a web adapted to run on one end of the roll, of a pair of boxes for supporting the ends of the roll, springs for applying pressure to said boxes to tension the web, a pair of racks extending from the boxes, a pair of pinions meshing with the racks, the pinions and racks on each side having the teeth cut on a slant in opposite directions, a freely rotatable shaft on which said pinions are fixed, and means for adjusting the shaft in an axial direction.

5. The combination with a tension roll for a web adapted to run on one end of the roll, of a box for supporting the end of the roll, a rack extending from the box, a pinion meshing with the rack, the pinion and rack on each side having the teeth cut on a slant, a freely rotatable shaft on which said pinion is fixed, and means for adjusting the shaft in an axial direction.

6. The combination with a tension roll for a web, of a guide at each end of the roll, a pair of boxes for supporting the ends of the roll and slidable in said guides, springs engaging the boxes for applying tension to the web through the roll, means fixed with respect to said boxes and means cooperating with said last mentioned means for transmitting motion of each box to the other equally, another pair of boxes supporting the opposite ends of said springs and slidably arranged, and screws for adjusting the latter boxes toward and from the first named boxes for adjustment.

7. The combination with a tension roll for a web, of a guide at each end of the roll, a pair of boxes for supporting the ends of the roll and slidable in said guides, a pair of boxes in the opposite ends of said guides and slidable therein, springs mounted in said guides between opposite boxes and engaging said boxes for applying tension to the web through the roll, and means for transmitting motion of each of said first mentioned boxes to the other equally.

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