G. F. READ.

WEB ROLL TENSION DEVICE.

APPLICATION FILED JAN. 18, 1909.

971,073.

Patented Sept. 27, 1910.

2 SHEETS—SHEET 1.

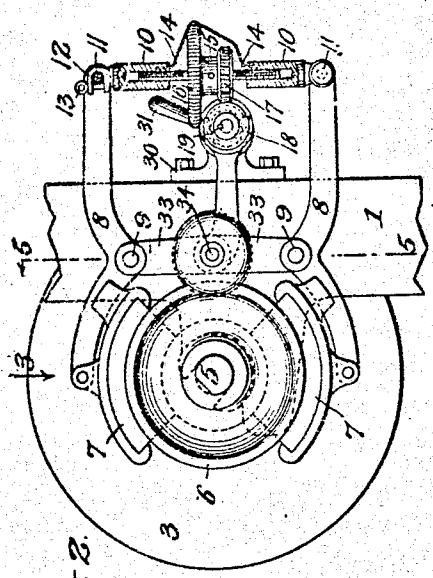

Fig. 2.

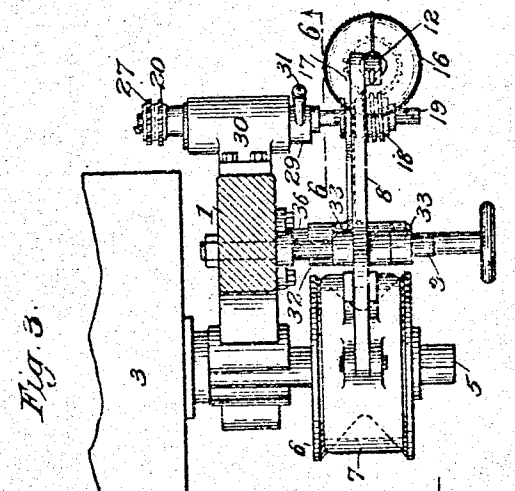

Fig. 3.

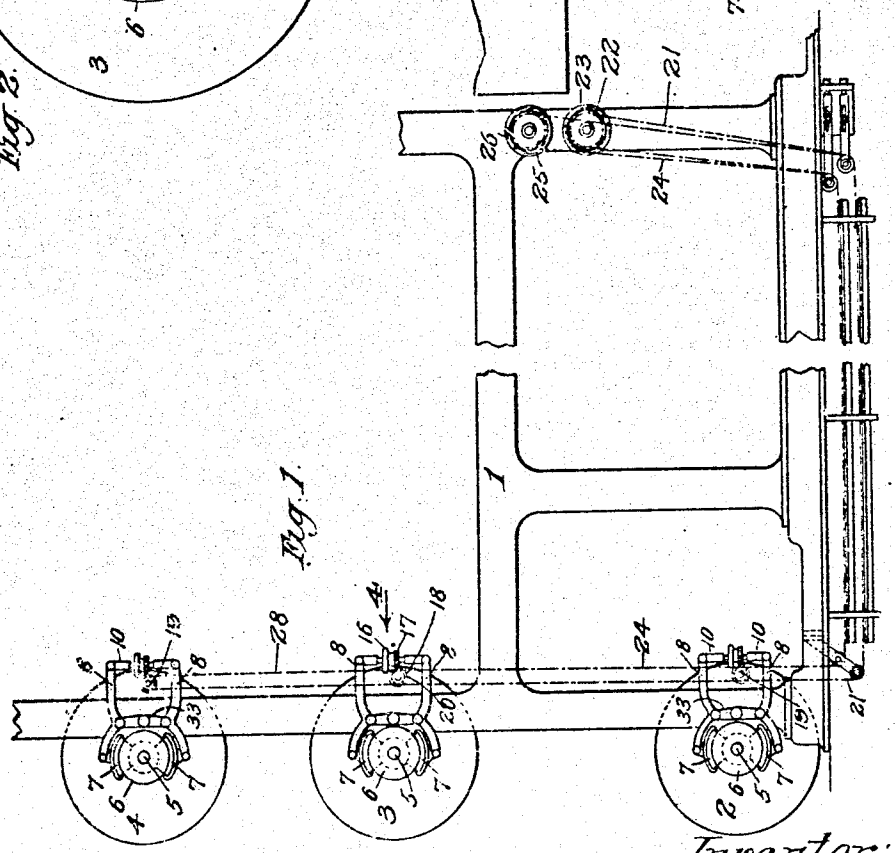

Fig. 1.

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2 SHEETS—SHEET 2.

Fig. 4.

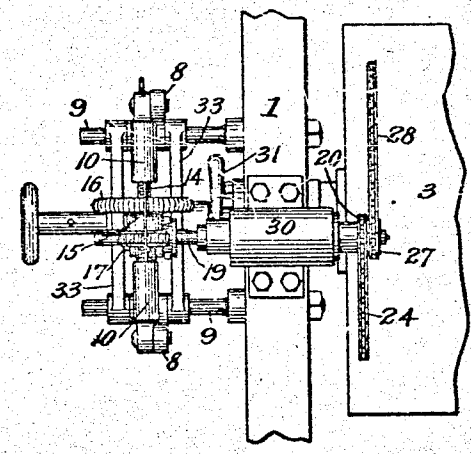


Fig. 5.

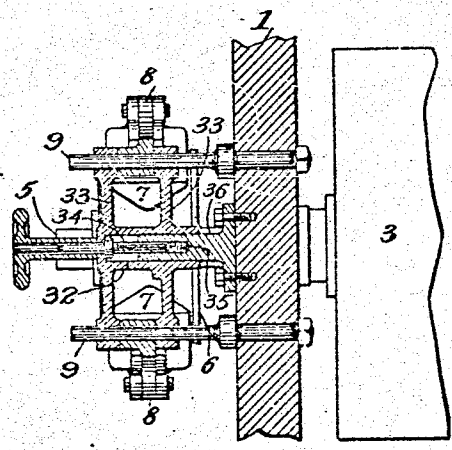


Fig. 6.

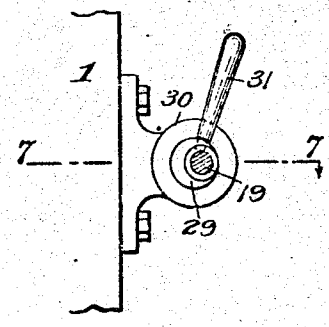
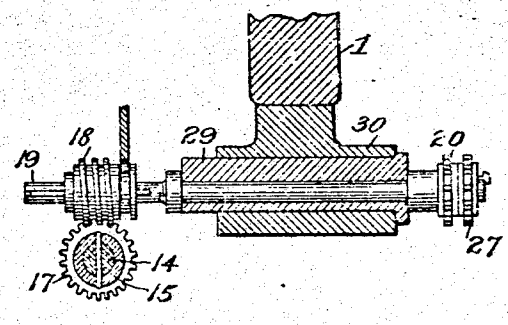


Fig. 7.



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UNITED STATES PATENT OFFICE.

GEORGE F. READ, OF LONDON, ENGLAND, ASSIGNOR, BY MESNE ASSIGNMENTS, TO R. HOE AND CO., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

WEB-ROLL-TENSION DEVICE.

971,073. Specification of Letters Patent. Patented Sept. 27, 1910.

Application filed January 18, 1909. Serial No. 472,781.

To all whom it may concern:

Be it known that I, GEORGE F. READ, a citizen of the United States, residing at London, county of Middlesex, England, have invented certain new and useful Improvements in Web-Roll-Tension Devices, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to improvements in web roll tension devices for printing and similar machines.

It is common in machines in which paper taken from a roll is operated upon to provide tension devices for controlling the delivery of the web from the roll, a usual construction being a brake mechanism operating upon the web roll spindle. The tension devices heretofore employed have been provided with adjusting devices by which the amount of tension is regulated, these adjusting devices being located at or near the roll. Such devices require the presence of an attendant at the roll where adjustment is to be effected, and the attendant may, therefore, be required to go from some other part of the machine where he is watching the operation in order to adjust the tension. Further, in machines in which a plurality of rolls are used, such, for instance, as a multiple roll printing machine, where the tension of a number of webs has to be adjusted, more than a single attendant may be required to adjust the several tension devices employed.

It is one of the objects of this invention to produce a construction by which the tension device covering the delivery of a web from a roll may be adjusted either at the roll or at a point distant from the roll, as, for instance, near the delivery end of the machine.

A further object of the invention is to produce a construction in which where a machine is operating upon a plurality of rolls, the tension devices may be adjusted from a point at a distance from the rolls.

With these and other objects in view, the invention consists in certain constructions and in certain parts, improvements and combinations as will be hereinafter fully described and then specifically pointed out.

Referring to the drawings, Figure 1 is a side elevation of so much of a machine employing a plurality of web rolls as is necessary to illustrate the invention. Fig. 2 is a side elevation, on an enlarged scale, of the middle tension device illustrated in Fig. 1, certain parts being shown in section. Fig. 3 is a top plan view of the construction shown in Fig. 2, the direction of view being indicated by the arrow 3. Fig. 4 is a side view of the tension device illustrated in Fig. 2, the direction of view being indicated by the arrow 4 in Fig. 1. Fig. 5 is a section on the line 5—5 of Fig. 2. Fig. 6 is a detail view illustrating one of the features of construction, and Fig. 7 is a sectional plan on the line 7—7 of Fig. 6.

Referring to the drawings, which illustrate one embodiment of the invention, 1 indicates the frame of the machine which may be, for instance, the frame of a multiple roll printing machine. This frame supports a plurality of rolls, as 2, 3, 4, these rolls being mounted in journals of any approved type. Each of these rolls is provided with a tension device which may be of any approved construction. As illustrated, the shafts or spindles 5 of the rolls are provided with grooved drums 6, the grooves being engaged by proper shaped pad blocks 7, these pad blocks being pivoted on levers 8 which as shown are mounted on spindles 9 projecting from the frame of the machine.

Whatever type of tension device be employed in carrying the invention into effect, it will be provided with means for properly adjusting the tension. In the particular construction illustrated, the tension is adjusted by varying the pressure of the pad blocks on the drum. As shown this is effected by providing each of the levers 8 with a threaded socket 10, these sockets being pivoted on the levers by studs 11, or in any other suitable manner. For a purpose hereinafter stated, one of these threaded sockets, as, for instance, the upper one, may be removably secured to the lever by providing it with a hook, as 12, and pin 13. These threaded sockets, in the construction shown, are engaged by right and left hand screws 14 which are mounted in a hub 15. The construction so far described is, generally speaking, well-known in the art.

Means may be provided for adjusting the tension either at the roll or at a distance from the roll, and these means may be widely varied in construction. As illustrated, in order to adjust the tension at the roll, there is provided a hand wheel 16

which is fast to the hub 15. In the particular construction illustrated, the means for adjusting the tension at a distance from the roll includes a worm gear 17, this gear being fast upon or formed integrally with the hub 15. This worm gear is engaged by a worm 18 formed on a shaft 19 and this shaft may be provided with a sprocket wheel 20. This sprocket may be engaged by a chain, as 21, which, by means of suitable guides, may be led to the desired point at a distance from the roll. In the construction illustrated, this chain 21 is led to a sprocket drum 22 provided with a hand-wheel 23, this drum being shown as mounted on one of the forward uprights of the frame of the machine.

When, as in the particular construction illustrated, the operation of the machine requires a plurality of rolls, the means for operating the controlling mechanism of the tension device may be conveniently arranged to be operable from a common point. In the particular construction illustrated, the shaft 19 of the middle roll has its sprocket 20 engaged by a chain 24 which by suitable guides, as illustrated, is led to a sprocket drum 25 provided with a hand wheel 26, this sprocket drum being mounted on the frame of the machine in juxtaposition to the drum 22 before referred to. In this construction, the shaft 19 of the middle roll is provided with an additional sprocket 27 (see Fig. 3) which is engaged by a chain 28 which runs to and around the sprocket 20 on the worm gear shaft 19 of the upper roll.

In the best constructions embodying the invention, means will be provided for interrupting the operation of the means by which the tension controlling mechanism is operated from a distance. While this may be effected in various ways, in the construction illustrated, the worm shaft 19 is mounted in an eccentric sleeve 29, this sleeve being in turn mounted in a bearing 30 secured to the machine frame. The sleeve 29 may be provided with a handle as 31, so that by rocking the sleeve the worm 18 will be thrown out of mesh with the gear 17.

In the particular construction illustrated, the means for adjusting the two upper rolls from a distance will operate on the rolls alternately, or; in other words, when the upper roll is to be adjusted from the wheel 26, the worm and gear of the middle roll will be thrown out of mesh, and vice versa. As usual in such constructions, the tension devices may, if desired, be of such construction as to permit the paper rolls to be given an endwise adjustment in the machine. In the construction illustrated, this is accomplished by providing a hub 32 (see Figs. 4 and 5) with oppositely extending pairs of arms 33, these arms being mounted on the studs 9 and each lever 8 lying between a pair of the arms. The hub is provided with a screw 34 engaging a threaded socket 35 formed on a stud 36 secured to the machine frame on which stud the hub 33 is mounted to slide. It is apparent that by turning the screw the hub will be adjusted toward and away from the frame of the machine, and, owing to the construction of the spindle, drum and pad blocks, the roll will be given a sidewise adjustment. When the roll is to be removed altogether, the pin 13 will be removed, thus permitting the tension adjusting means to be swung out from between the levers and allowing the pad blocks to disengage from the roll spindle.

Changes and variations may be made in the construction by which the invention is carried into effect. The invention is not, therefore, to be confined to the particular construction herein shown and described.

What is claimed is:—

1. In a printing machine, the combination with means for supporting a web roll, of a tension device therefor, mechanism for controlling the tension device, means for operating the controlling mechanism at the roll, means for operating the controlling mechanism at a distance from the roll, and means for throwing out of operation the distance operating means.

2. In a printing machine, the combination with means for supporting a plurality of web rolls, of tension devices for said rolls, mechanisms for controlling the operation of the tension devices, means for operating said controlling mechanisms at the rolls, means for operating said controlling mechanisms at a distance from the rolls, and means for throwing out of operation said distance operating mechanism.

3. In a printing machine, the combination with means for supporting a web roll, of a tension device therefor, mechanism for controlling the operation of said tension device, means for operating said tension controlling mechanism at the roll, means including a suitable gearing for operating said tension controlling mechanism at a distance from the roll, and means for interrupting the action of the gearing.

4. In a printing machine, the combination with means for supporting a plurality of web rolls, of tension devices for said rolls, mechanisms for controlling the operation of said tension devices, means for operating said controlling mechanisms at the rolls, and means operable from a common point for operating said tension controlling mechanisms at a distance from the rolls.

5. In a printing machine, the combination with means for supporting a plurality of web rolls, of tension devices for said rolls, mechanisms for controlling the operation of said tension devices, means for operating

said controlling mechanisms at the rolls, means including suitable gearing for operating said tension controlling devices, said means being operable from a common point at a distance from the roll, and means for interrupting the action of the gearing.

6. In a printing machine, the combination with means for supporting a web roll, of a tension device therefor, mechanism for controlling the operation of the tension device, means for operating said controlling mechanism at the roll, suitable gearing also operating said tension controlling mechanism, a driver for the gearing, said driver being operable at a distance from the roll, and means for interrupting the action of the gearing.

7. In a printing machine, the combination with means for supporting a plurality of web rolls, of tension devices therefor, mechanisms for controlling the operation of said tension devices, means for operating said tension controlling mechanisms at the rolls, gearing for operating said tension devices, drivers for the gearing, said drivers being operable at a common point at a distance from the roll, and means for interrupting the action of the gearing for any of the rolls.

8. In a printing machine, the combination with means for supporting a plurality of web rolls, of tension devices therefor, mechanisms for controlling the operation of said tension devices, said mechanisms including hubs, hand-wheels on the hubs, worm gears on the hubs, worms coacting with said gears, flexible driving means for the worms, said driving means being operable at a common point at a distance from the rolls, and means for throwing the worm gears out of mesh.

In testimony whereof, I have hereunto set my hand, in the presence of two subscribing witnesses.

GEORGE F. READ.

Witnesses:
H. D. JAMESON,
F. L. RAND.