

No. 877,232.

PATENTED JAN. 21, 1908.

F. W. ROLLAND, JR.
WEB CONTROLLER FOR PRESSES.
APPLICATION FILED OCT. 30, 1907.

Fig. 1.

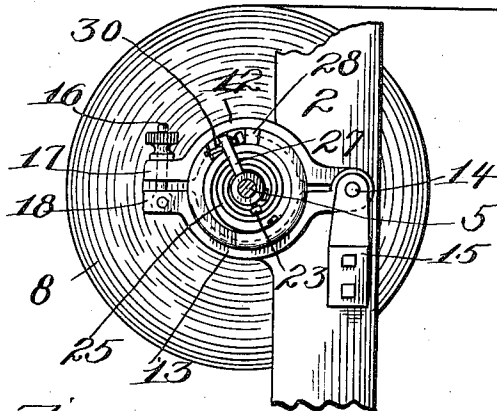


Fig. 2.

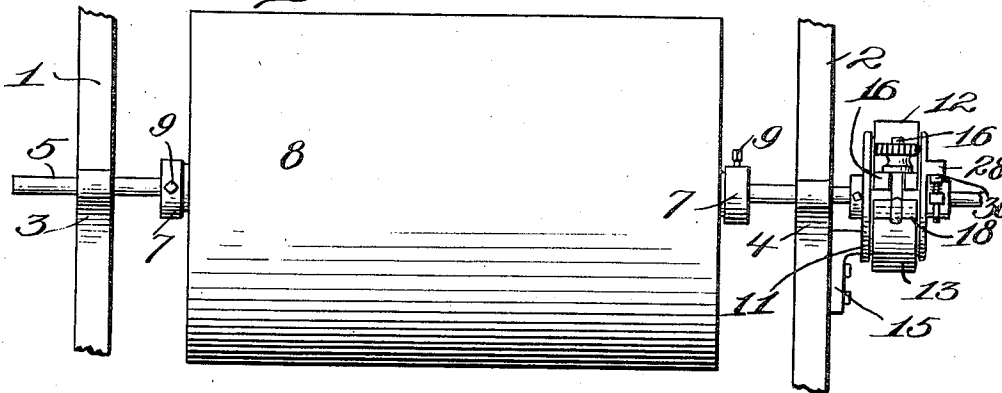


Fig. 3.

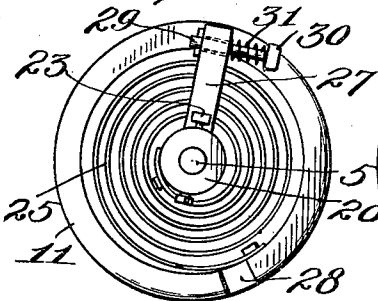


Fig. 4.

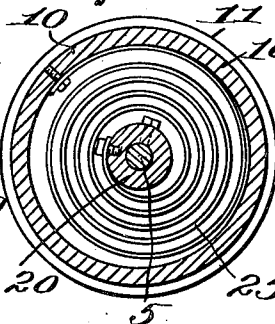
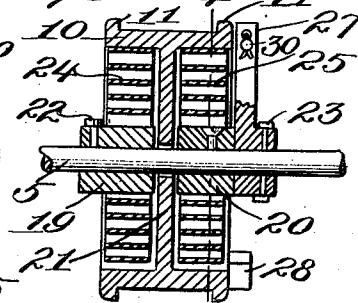


Fig. 5.



Witnesses:
E. Hester
J. B. Keeler

Inventor
Frederick W. Rolland Jr
By *James L. Norris*

Atty

UNITED STATES PATENT OFFICE.

FREDERICK W. ROLLAND, JR., OF CHICAGO, ILLINOIS.

WEB-CONTROLLER FOR PRESSES.

No. 877,232.

Specification of Letters Patent.

Patented Jan. 21, 1908.

Application filed October 30, 1907. Serial No. 399,877.

To all whom it may concern:

Be it known that I, FREDERICK W. ROLLAND, Jr., a citizen of the United States, residing at Chicago, in the county of Cook, and State of Illinois, have invented new and useful Improvements in Web-Controllers for Presses, of which the following is a specification.

My present invention relates to improvements in devices for controlling the unwinding movement of rolls of paper and other material which forms a web, such as used in printing presses of the web type, and it has for its objects to produce a controller of this character that is capable of starting the unwinding movement of the roll gradually and with a minimum resistance in order to avoid snapping of the web when the press is started, and that so operates when the press is stopped, that the unwinding movement of the roll is arrested in a way that will prevent slack in the web.

Another object of the invention is to provide a device of this character that is capable of being adjusted at a relatively low tension during the starting movement of the roll as when the press is being started, and after the latter has attained full speed, an additional amount of tension may be applied that will retain the web in proper condition during the operation of the parts.

To these and other ends, the invention consists in certain improvements, and combinations and arrangements of parts, all as will be hereinafter more fully described, the novel features being pointed out particularly in the claims at the end of the specification.

In the accompanying drawing—Figure 1 is a side elevation of a roll supporting rack showing a paper controlling device constructed in accordance with the present invention; Fig. 2 is a side elevation of the parts shown in Fig. 1; Fig. 3 is an end view of the roll supporting shaft showing the controlling device thereon, the springs being partially tensioned; Fig. 4 represents a section on the line 4—4, of Fig. 5; and Fig. 5 represents an axial section through the controller.

Similar parts are designated by the same reference characters in the several views.

It will be understood, of course, that a controller constructed in accordance with the present invention, is capable of being em-

ployed generally in connection with rolls of paper and other material for the purpose of facilitating the starting of the unwinding movement thereof, and for arresting its unwinding movement so as to prevent undue slack of the web when the feeding of the latter has been interrupted, and in the present instance, the controller is shown in connection with a printing press of the type that receives the paper in the form of a continuous web from a paper roll.

In the present embodiment of the invention, 1 and 2 represent the uprights of a rack that is arranged in line with the press and is provided with brackets 3 and 4, that are adapted to receive the roll supporting shaft 5, the latter being passed through the central opening of the roll as is usual, and is arranged to turn with the roll, a pair of clamping collars 7 being shown in the present instance which engage the opposite ends of the roll 8 and are secured in clamping position upon the shaft by means of set screws or equivalent devices 9. The strip of paper leading from the roll, of course, constitutes the web which leads to the feed rollers of the press and receives the impression from the type of the latter.

The controller shown in the present embodiment of the invention, comprises a brake drum 10 which in the present instance is in the form of a pulley preferably provided with flanges 11 between which the divided brake bands 12 and 13 engage, the brake bands being preferably semi-circular in form and hinged at one side of the drum to a pin 14 which is secured to a relatively fixed bracket 15, and the pressure and consequent friction between the bands and the drum is adjusted by a screw 16 that passes through the lugs 17 and 18 on the free ends of the brake bands. This screw is so constructed that it may be removed or otherwise adjusted to disconnect the brake bands and thereby permit a pivotal movement of the latter that will enable the bands to be opened and thereby release the drum when the shaft is removed from the supporting brackets for the purpose of supplying a fresh roll of paper. This brake drum is loosely mounted on the shaft, that is to say, it is capable of rotating relatively thereto, and it is held in operative position by means of a pair of collars 19 and 20 that are arranged on opposite sides of the web 21

of the drum, said screws or equivalent devices 22 and 23 serving to secure the two collars rigidly to the shaft so as to prevent relative longitudinal or rotary movement between the parts.

Between the brake drum and the shaft of the paper roll is interposed a compensating medium that serves to effect the gradual starting of the unwinding movement of the roll when the press is set in operation, and for arresting the movement of the roll to prevent undue slack in the web when the press is stopped. In the present instance a pair of spiral springs 24 and 25 are employed, these springs having their inner ends secured respectively to the collars 19 and 20 which rotate with the shaft, and their outer ends are attached to the brake drum, the direction of winding of the two springs being similar to and is determined according to the direction in which the roll rotates to effect the unwinding of the web, the object being to set or tension the springs when the roll is rotated in a direction of unwinding the web, provided rotation of the brake drum is resisted by the brake bands. The spring resistance thus interposed between the brake drum and the paper roll will act to retard or resist the unwinding movement of the roll with a yielding force, but in order to enable the brake bands to be adjusted so as to exert a considerable braking action on the roll, such for instance as when the press is in full operation, it is preferable to provide a more or less positive stop that serves to form a positive driving connection between the shaft and drum after the tension of the springs has exceeded a given limit, the stop shown in the present instance comprising a radially projecting arm 27 that is suitably arranged to rotate with the shaft, it forming part of the outer collar 20 in the present instance, and this arm is adapted to cooperate with a laterally extending projection 28 on the brake drum when the paper roll is at rest and thereby limits the unwinding of the springs, and after the shaft has been rotated through approximately a revolution relatively to the brake drum, this arm will cooperate with the opposite side of the projection and thereby provide a more or less positive driving connection between the shaft and the drum. In order to eliminate shock between the arm on the shaft and the cooperating projection on the drum, it is preferable to provide one of the parts with a buffer or shock absorber, that shown in the present instance comprising a plunger having a stem 29 that is guided to reciprocate in the plane of movement of the arm and has a head 30 thereon which is adapted to engage the projection 28 on the drum, a helical spring 31 encircling the stem of the

plunger between the head thereon and the adjacent side of the arm and serving to press the plunger head forward or in advance of the arm so that as the latter approaches the projection 28 on the drum, the plunger head will first engage it, and the resistance due to the compression of the spring will serve to cause the relative rotation between the shaft and the brake drum to gradually cease and thereby avoid shock. However, the buffer may be arranged on the projection of the brake drum if so desired, it being understood that this feature of the invention is not necessarily limited to the exact arrangement shown.

In practice, the usual shaft 5 is inserted in the central opening through the paper roll before the latter has been lifted and placed upon the rack, the shaft being removed from the rack for this purpose after the brake bands have been opened to disengage the brake drum. The roll may then be placed upon the rack, the brake bands being adjusted upon the periphery of the drum and the screw 16 set so that a reduced amount of friction is produced between the brake bands and the drum that will resist turning movement of the latter. The strip of paper from the roll is, of course, introduced into the press and the feeding movement thereof is effected by the usual feed rolls when the press is started, the movement of the web causes an unwinding movement of the roll, and the shaft 5 turning with the latter causes the arm 27 to leave the projection 28 and rotate relatively to the brake band, and therefore the starting of the roll may be accomplished with a minimum tension of the web for the reason that the springs permit a limited degree of rotation between the shaft of the roll and the brake band. After the roll has completed approximately a full revolution that usually is sufficient to start the roll in full speed or accelerate the roll until normal speed is attained, the arm 27 on the shaft reaches a position opposite to the projection on the brake drum, the buffer serving to produce a substantially positive driving connection between the arm and projection so that during the normal operation of the roll, the brake bands may be adjusted to any extent in order to obtain the requisite or desired braking action. In stopping the press more or less suddenly, the tendency of the roll as usually mounted, is to run ahead and thereby produce an undue amount of slack in the web, but according to the present invention, the moment the tension on the web due to a diminution in the speed of the press ceases, the springs 25 and 26 will immediately act, causing the arm 27 rotatable with the shaft to leave the projection 28 on the brake drum and thereby overcome the inertia

of the roll and diminish its speed, and this retarding action continues until the unwinding movement of the roll ceases upon the stopping of the press.

5 A roll controlling device constructed in accordance with the present invention, is relatively simple in construction so that it may be made cheaply and is not liable to get out of order and in practice, it prevents an undue amount of slack between the roll and the
10 press or other machine into which the web is fed, so that when the press is started, there is no liability of the web snapping.

What I claim is—

15 1. A web controller for rolls of paper and the like, involving a shaft for the roll, a brake drum rotatable thereon, and a device constantly connecting said shaft and drum during relative rotation thereof and acting to
20 rewind the roll.

2. A controller of the character described, comprising a shaft for the roll, a tensioning device rotatable relatively thereto, a spring connecting the shaft and tensioning device
25 during relative rotation of the latter and shaft, and positive driving devices for connecting the tensioning device and shaft after the latter has rotated to tension the spring.

3. A controller of the character described
30 embodying a shaft operable during the unwinding of the roll, a tensioning device adapted to resist rotation of the shaft, and a compensating medium forming a constant yielding connection between the shaft and the
35 tensioning device.

4. A controller of the character described embodying a shaft rotatable during the unwinding of the roll, a tensioning device adapted to resist rotation of the shaft, and a roll-rewinding device yieldingly and constantly
40 connecting the shaft and tensioning device and permitting a limited degree of relative rotation.

5. A controller of the character described
45 embodying a shaft rotatable during the unwinding of the roll, a tensioning device for retarding rotation of the shaft, and a spring connecting the shaft and tensioning device and windable by a relative rotation of the
50 shaft and tensioning device, said spring normally acting to produce a relative rotation of the parts to rewind the roll.

6. A web controller for paper rolls comprising a shaft adapted to rotate with the roll during its unwinding, a brake device, and
55 a spring operatively connecting the latter and the shaft during relative rotation of said parts and operable during the unwinding of the roll to rewind the latter.

7. A web controller for paper rolls, comprising a shaft to receive the roll and rotatable therewith, a brake drum rotatably
60 mounted on the shaft and having tensioning

devices adapted to cooperate therewith, and a spiral spring having its ends directly connected respectively to the drum and shaft for yieldingly resisting rotation of the latter. 65

8. A controller of the character described, embodying a shaft rotatable during the unwinding motion of the roll, a tensioning device for resisting rotation of the shaft, a compensating medium forming a yielding connection between the shaft and tensioning device during relative rotation of the latter and the shaft, and means for limiting the relative rotation of the shaft and tensioning device. 70 75

9. A controller of the character described embodying a shaft rotatable during the winding motion of the roll, a brake drum having tensioning devices arranged to cooperate therewith, a compensating medium yieldably connecting the shaft and drum, and means for forming a positive driving connection between the shaft and drum after
80 these parts have turned relatively through a predetermined angle. 85

10. A controller of the character described embodying a shaft operable during the unwinding movement of the roll, a brake drum loosely mounted on the shaft, tensioning devices arranged to cooperate with the drum, a spring having its ends connected respectively to the shaft and drum, and a stop for limiting the relative rotation of the shaft and drum. 90 95

11. A controller of the character described embodying a shaft operable during the unwinding of the roll, a drum revoluble on the shaft and having tensioning devices arranged to cooperate therewith, a spring operatively connecting the shaft and drum, and a stop for limiting the relative rotation of the shaft and drum embodying an arm on one of the parts and a cooperating projection on the other part. 100 105

12. A drum of the character described, comprising a shaft, a brake drum rotatable thereon and having tensioning devices cooperating therewith, a spiral spring forming an operative connection between the shaft and drum and permitting relative rotation thereof, and a stop for limiting the rotation of the shaft relatively to the drum comprising an arm on one of the parts, a projection on the other part, and a buffer for forming a yielding connection between the arm and projection. 110 115

13. A controller of the character described embodying a shaft adapted to serve as a support for a paper roll, a brake drum rotatable thereon, a spiral spring forming an operative connection between the drum and the shaft, and a stop for limiting the relative rotation of the shaft and drum. 120

14. A controller of the character described, comprising a shaft, a brake drum having a 125

web journaled on the shaft, a pair of collars
fixed to the shaft and cooperating with op-
posite sides of the web, a pair of spiral springs
housed within the drum and having their
5 ends connected respectively to the latter and
the collars and both operating to turn the
shaft in a given direction relatively to the
drum, and a stop arranged to form a positive
driving connection between the shaft and

drum and to permit a limited degree of rota- 10
tion thereof.

In testimony whereof I have hereunto set
my hand in presence of two subscribing wit-
nesses.

FREDERICK W. ROLLAND, JR.

Witnesses:

FREDERICK J. SPECHT,
LE ROY T. PALMER.