

Oct. 12, 1937.

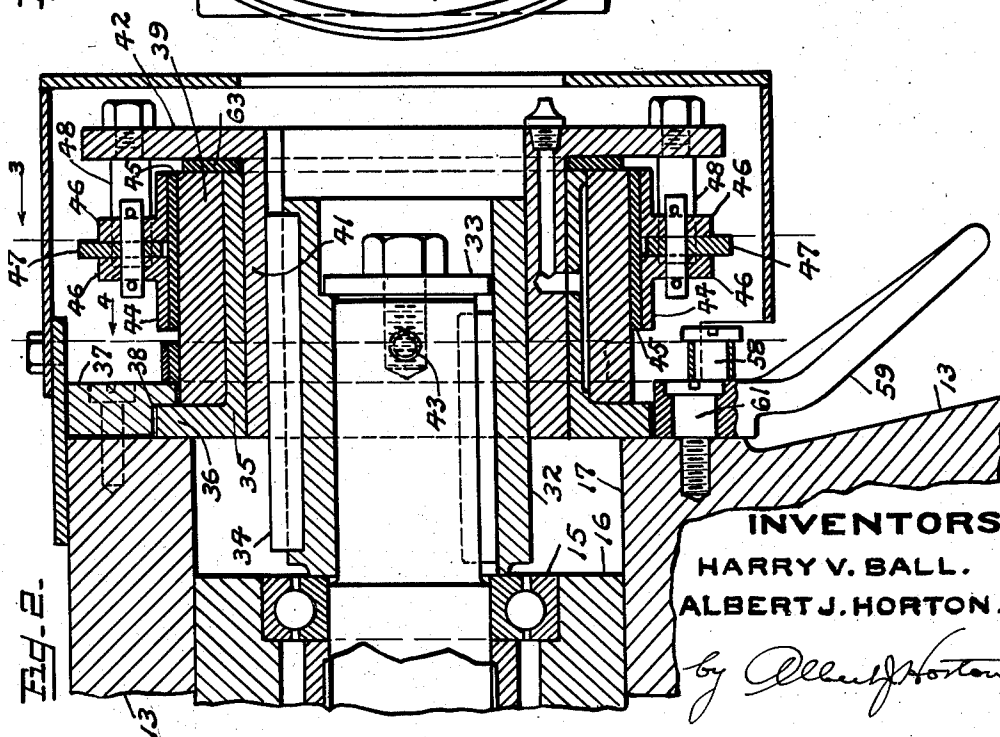
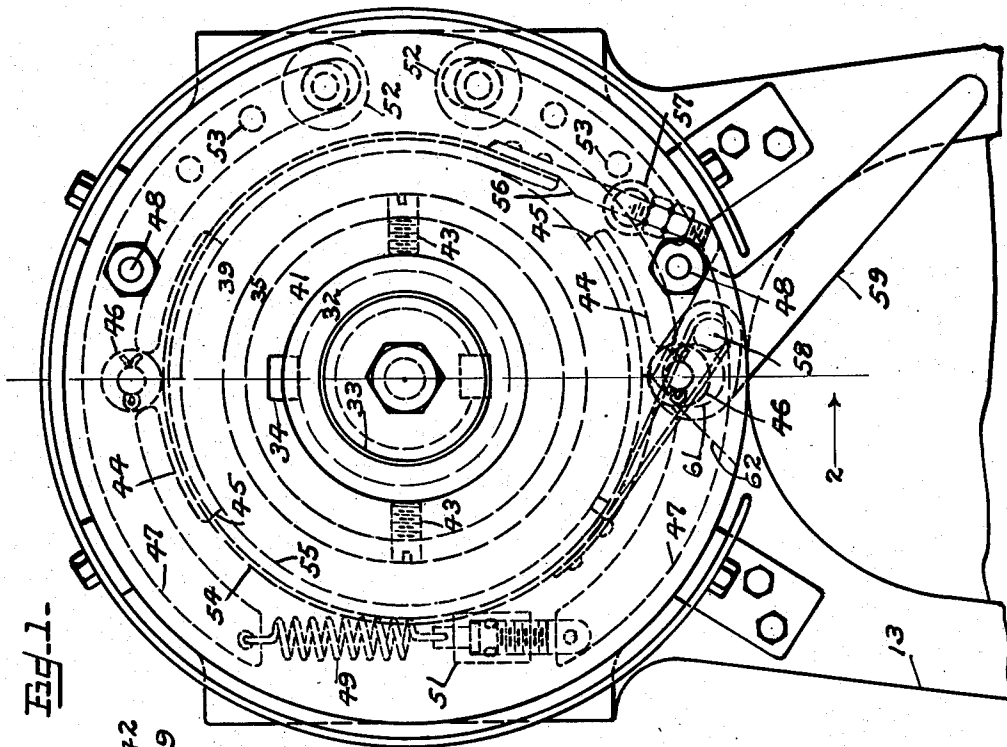
H. V. BALL ET AL

2,095,307

WEB ROLL CONTROLLING MECHANISM FOR PRINTING MACHINES

Filed May 5, 1934

3 Sheets-Sheet 1



INVENTORS.
HARRY V. BALL.
ALBERT J. HORTON.

by *Albert J. Horton*

ATTY.

Oct. 12, 1937.

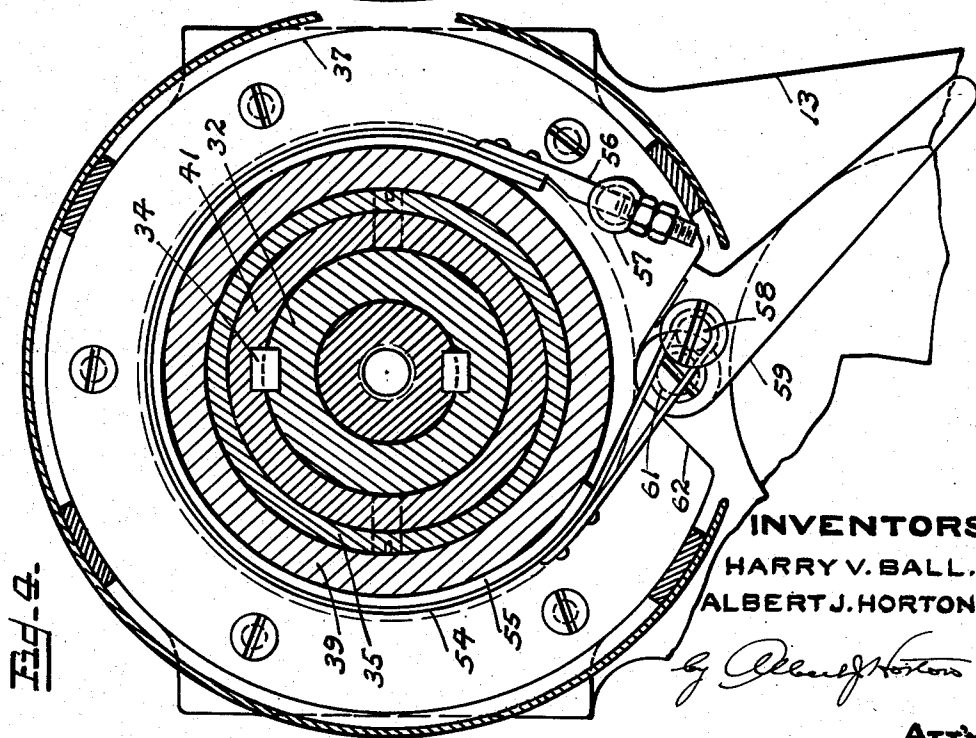
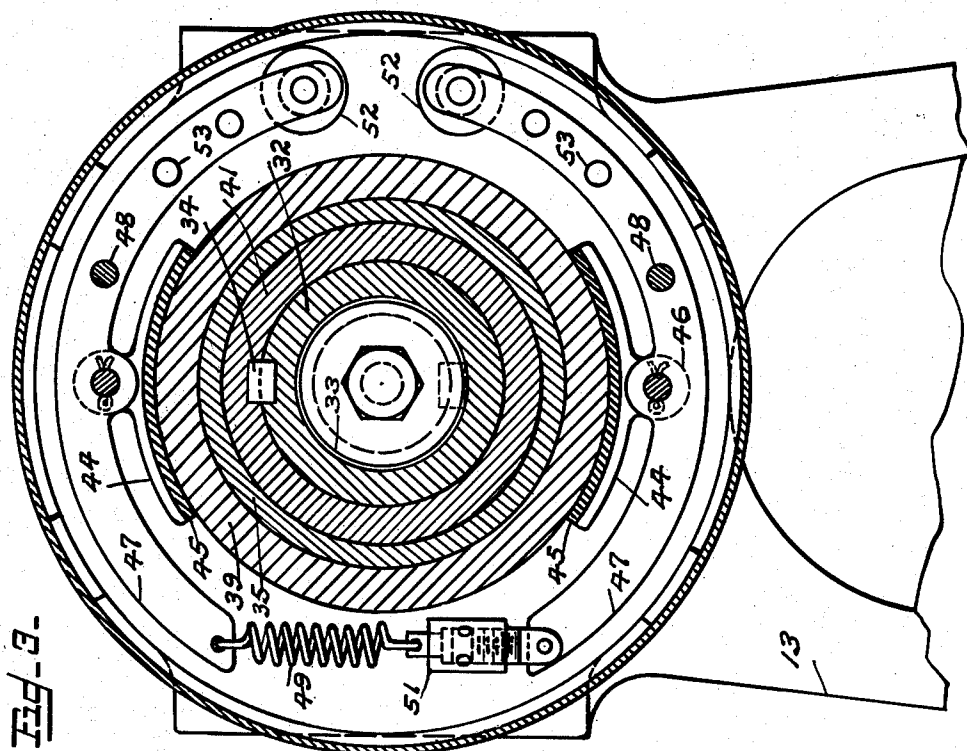
H. V. BALL ET AL.

2,095,307

WEB ROLL CONTROLLING MECHANISM FOR PRINTING MACHINES

Filed May 5, 1934

3 Sheets-Sheet 2



INVENTORS.
HARRY V. BALL.
ALBERT J. HORTON.

Albert J. Horton

ATTY.

Oct. 12, 1937.

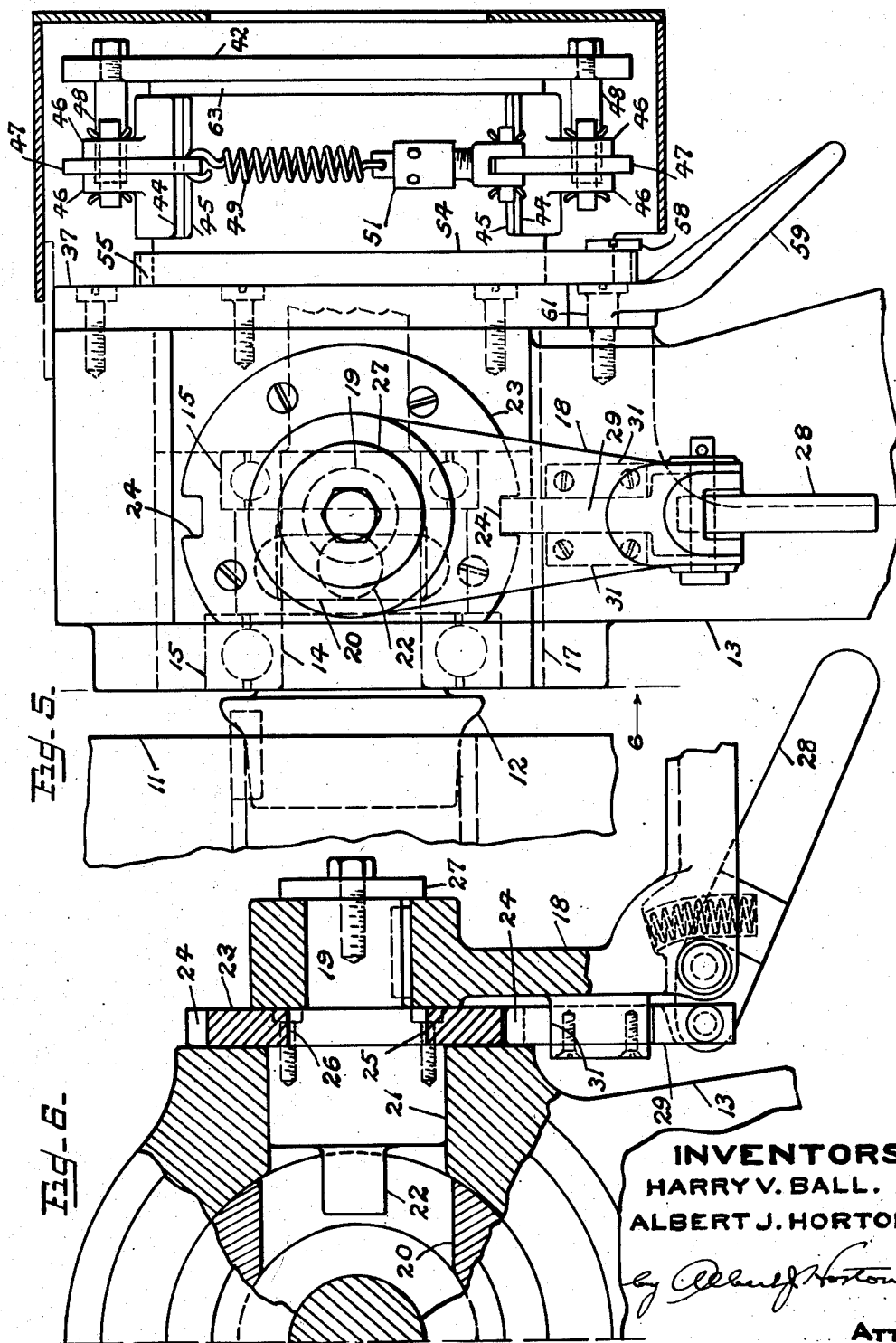
H. V. BALL ET AL

2,095,307

WEB ROLL CONTROLLING MECHANISM FOR PRINTING MACHINES

Filed May 5, 1934

3 Sheets-Sheet 3



INVENTORS.
HARRY V. BALL.
ALBERT J. HORTON.

by Albert J. Horton

ATTY.

UNITED STATES PATENT OFFICE

2,095,307

WEB ROLL CONTROLLING MECHANISM FOR
PRINTING MACHINES

Harry V. Ball, Concord, Mass., and Albert J. Horton, White Plains, N. Y., assignors, by mesne assignments, to R. Hoe & Co., Inc., New York, N. Y., a corporation of New York

Application May 5, 1934, Serial No. 724,062

4 Claims. (Cl. 242-75)

This invention relates to an improved mounting for web rolls used in conjunction with newspaper printing machinery and more particularly to a friction brake device which is adapted to continuously apply a braking pressure upon the chuck spindle which supports the roll while the web is drawn from the web roll, and is further adapted to automatically vary said braking pressure as the roll diameter changes during the unwinding thereof.

Web rolls are usually mounted upon two chuck spindles one at each end thereof, which spindles are slidable endwise in suitable supporting brackets or standards. Braking means have also previously been provided but are only adapted to apply a fixed braking pressure to the spindle.

It is one object of the present invention to provide an arrangement which is adapted to rotate with the chuck spindle and which will cause yieldable brake members to frictionally engage a fixed sleeve and apply a braking pressure thereto, which will thus prevent the web roll from racing or feeding the web faster than required.

Another object is to provide means whereby the braking pressure is adapted to be gradually relieved as the diameter of the roll decreases and the speed increases, which result is brought about through the action of centrifugal force applied to the brake members.

Another object is to provide means whereby the fixed sleeve is adapted to be released so that the chuck spindles will rotate freely when a new roll is being mounted thereon and the web is threaded through the guide rolls of the machine.

Another object is to provide means whereby the chuck members are adapted to be moved into or out of engagement with the web roll while in a driving relation with the brake supporting member.

With the foregoing and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts, and in the details of construction hereinafter described.

The preferred embodiment of the invention is illustrated in the accompanying drawings wherein:

Figure 1 is an end elevational view of a web roll support with parts broken away and showing generally the chuck spindle and brake mounting;

Figure 2 is a vertical section taken on the line 2 of Figure 1, showing the mounting for the brake mechanism on the chuck spindle;

Figure 3 is a vertical cross section taken along

the line 3 of the Figure 2 showing the brake mounting;

Figure 4 is a vertical cross section taken along the line 4 of Figure 2 showing a hand actuated brake band engaging a floating sleeve and which is adapted to hold the sleeve in a stationary position;

Figure 5 is a side elevational view of one roll support end, showing the chuck reciprocating member; and

Figure 6 is a fragmentary vertical section taken on the line 6 of Figure 5, with parts in elevation, showing the chuck actuating member in operating engagement with the chuck supporting member.

Referring to Figure 5, one end of a web roll indicated as 11, is mounted in a running position on a chuck 12. A spindle 14, projecting inward from the head of said chuck, is rotatably mounted within suitable bearings such as ball bearings 15, which bearings are secured within a ring housing 16 and the latter is slidably mounted within a bore 17 in the head of the support 13.

Means is provided for moving said ring housing 16 laterally within the support head to thereby move the chuck 12 into or out of engagement with the web roll. Said means comprises a handle 18, having a head portion fixed to the outer reduced end of a stub shaft 19, which shaft is rotatably mounted within a bore 21, provided in the side of the support head as shown in Figure 6, and has an eccentrically positioned projection 22, which engages an elongated vertical slot 20 within the side of the ring housing 16. A plate 23, having diametrically opposed slots 24 in the end thereof, is secured to the support head and has an opening 25 therein, which is adapted to freely fit over a shoulder 26 on said stub shaft 19. A collar 27 secured to the outer end of the stub shaft 19, locks the head of the handle 18 against the plate 23, and said plate positions the shaft within the bore 21.

In the position shown in the drawings the eccentric projection 22, on the stub shaft 19, is shown as having moved the chuck outward into a web roll engaging position. To move said chuck out of engagement with the roll the handle will be swung through an arc of 180° which will cause the eccentric projections to move within the elongated slot 20 and by its engagement with one wall thereof will move the ring housing 16 and chuck therein away from the web roll. A similar movement of the handle through 180° will again return the chuck to its extended position.

tion. By means of a spring retracted handle lever 28, pivotally mounted on the handle 18, and a plunger 29 connected therewith and engaging one of the slots 24 in the plate 23, the stub shaft 19 is locked in either a chuck engaged or disengaged position. Guides 31 are provided on the handle to support and guide the plunger 29.

Referring now to Figure 2, a portion of the chuck spindle 14 is shown extending beyond the ring housing 16. A splined sleeve 32 is keyed to the extended end of the chuck spindle and is fixed between the inner ring of one of the spindle bearings and a collar 33 secured to the end of the splined shaft. A key 34 is also fixed within the outer periphery of the splined sleeve.

A brake shoe supporting structure and parts cooperating therewith are mounted over the splined sleeve and are supported by the head of the standard 13. Said structure comprises a support sleeve 35 which has a flange 36 at one end thereof, and a ring 37 which is bolted to the head of the standard 13 and is adapted to retain the flange 36 of the sleeve 35, in a running relation within an undercut portion 38 thereof, and also includes a floating sleeve 39 mounted over said support sleeve 35 and a brake shoe supporting sleeve 41, mounted over and keyed to the spline sleeve 32. A flange 42 projects upward from the outer end of the sleeve 41. Set screws 43—43 are secured within the sleeve portions of the support sleeve 35 and the brake shoe support sleeve 41, as shown in Figure 1, so that both of said sleeves will rotate together. The entire brake shoe supporting structure in fact, as thus far described, is rotatable with the chuck spindle, and the chuck spindle with the splined sleeve 32 secured thereto, is slidable endwise within the brake shoe supporting sleeve 41.

Two diametrically opposed brake shoes are positioned over the periphery of the floating sleeve 39 and are carried by the flange 42 of the brake shoe supporting sleeve 41. Each brake shoe comprises a bracket 44, having a concave lower portion with brake lining 45 thereon and upwardly disposed ears 46, which ears are pivotally mounted upon a rocker beam 47. Said rocker beam is pivotally mounted at the end of a stud 48 projecting from the inner face of the flange 42. Spring tension means is provided to maintain a predetermined pressure of the brake shoes upon the periphery of the floating sleeve and comprises an expansion spring 49, and a coupling member 51 joined thereto, which have their free ends secured between two ends of the rocker beams 47—47 as shown in Figure 3. Said coupling is preferably of the turnbuckle type, which is adapted to be adjusted to vary the tension of the spring 49. Counterweights 52 are provided for the opposite ends of the rocker beams 47 and are also adapted to be adjusted within openings 53, to provide a desired compensation or counterbalance against tension of the spring 49.

A manually actuated friction brake member is provided to engage the floating sleeve 39, as shown in Figure 4, which is adapted to be manipulated so as to clamp said floating sleeve in a fixed position when the web roll is running, during the normal operation of the printing machine, and is adapted to release said clamp when setting up or removing a web roll. Said brake member comprises a brake band 54, having a brake lining 55 thereon and engaging the periphery of the floating sleeve 39. One end of said brake band 54 is anchored to a screw threaded rod 56, which rod is adjustably positioned within an anchor

post 57, projecting from the fixed ring 37. The opposite end of said brake band 54 is secured to a stud 58, which stud is secured within a hand lever 59, pivotally mounted on a pivot stud 61, in the head of the standard 13. The pivotal portion of the hand lever is positioned within a cavity 62, in the lower end of the ring 37, the walls of which cavity provide stops for the lever 59 when the same is moved to a brake band clamping or unclamping position. It will be observed that by the arrangement of the brake band anchoring stud 58, on the hand lever 59, the said stud 58 will be thrown to an off center position in relation to the hand lever pivot stud 61 and said hand lever will be locked thereby.

In regard to the operation of the brake shoe mechanism, it will be observed that the brake shoe sleeve 41 will rotate with the chuck spindle 14, through its keyed connection with the splined sleeve 32, and that the support sleeve 35 will also rotate therewith by reason of the set screw connection between the brake shoe sleeve and the support sleeve. When the brake band actuating hand lever 59 is thrown to the position shown in Figure 4, the floating sleeve 39 becomes fixed in a stationary position, due to the brake band being mounted on the stationary supporting structure, and said sleeve then becomes a bearing within which the supporting sleeve 35 rotates. A thrust washer 63 is placed between the end of the floating sleeve 39 and the flange 42 of the brake shoe sleeve, to take the end thrust of the floating sleeve when the brake shoe supporting structure is rotating. The brake shoes will exert a certain predetermined pressure or tension upon the periphery of the clamped floating sleeve as they are rotated therearound. Since the original pressure is regulated to satisfy the conditions required for a full sized roll of large diameter, a certain varying reduction of said pressure would be required as the diameter of the roll is reduced while the web is fed to the printing machine, which would cause the roll to accelerate in proportion to its reduction in size. This latter condition is provided for through the mounting of the brake shoes on their rocker beams 47—47, which beams have a tendency to be moved slightly around their pivot studs 48—48 by centrifugal force, which increases as the speed of rotation of the web roll increases. The centrifugal action will thus act against the tension of the spring 49 to release the tension of the brake shoes upon the sleeve 39, and maintain substantially constant tension on the web running from the roll.

When setting up a web roll, the chuck 12 is moved from a retracted position into engagement with the web roll by the movement of the hand lever 28, the arrangement being such as to permit the chuck spindle to move endwise within the brake shoe supporting structure without interfering with same. The hand actuated brake band lever 59 provides a convenient means for freeing the spindle from the brake, when preparing the web rolls for use.

It will be seen that a web roll control mechanism is provided having a brake device which acts automatically to reduce brake pressure as the speed of the roll increases due to its decrease in diameter.

It will be understood that the invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and it is therefore desired that the present embodiment be considered in all respects as illustrative and not restrictive, reference being had

to the appended claims rather than to the foregoing description to indicate the scope of the invention.

What we claim is:

5 1. A web tension control mechanism operable upon a web roll supporting spindle, a brake supporting structure positioned over said spindle and in driving relation therewith, including a stationary member, brake shoes mounted on said supporting structure for movement therewith and being in engagement with said stationary member, said brake shoes being movable from engagement with said stationary member by centrifugal force due to their movement with said supporting structure, and means to maintain said brake shoes in constant yieldable engagement with the periphery of said stationary member to exert a braking pressure thereagainst.

20 2. A web tension control mechanism operable upon a web roll supporting spindle, a brake supporting structure positioned over said spindle and in a driving relation therewith, including a floating sleeve, means to clamp said sleeve in a stationary position, brake shoes mounted on said supporting structure and engageable with said sleeve, and means to move said brake shoes out of engagement with said sleeve by centrifugal force due to their movement with said supporting member including a rocker beam for each
25 30 brake shoe pivotally mounted on said supporting structure and connected with its brake shoes, and means to maintain said brake shoes in yieldable engagement with the sleeve.

35 3. A web tension control mechanism operable upon a web roll supporting spindle, a standard

to support said spindle, a brake supporting structure positioned over said spindle and rotatably mounted on said standard in driving engagement with said spindle, a splined sleeve keyed to said spindle and to said brake supporting structure, a floating sleeve supported on and positioned in a concentric relation to said brake supporting structure and spindle, manually operable means to clamp said floating sleeve in a stationary position, brake members pivoted on said brake supporting structure for movement therewith and being movable about the pivots thereof relatively to said structure by centrifugal force, and means tending to maintain said brake members in a frictional engagement with the periphery of said clamped sleeve.

4. A braking mechanism operable upon a web roll supporting spindle, a brake supporting structure positioned over said spindle and adapted to be driven thereby, a floating sleeve positioned in a concentric relation to the brake supporting structure and spindle, a brake band engaging said sleeve and a manually operated clamping handle connected therewith to clamp said sleeve in a stationary position, rocker beams pivotally mounted on said brake supporting structure at opposite sides of the periphery of said sleeve, brake shoes loosely mounted on said rocker beams and engaging opposite peripheral surfaces of said sleeve, adjustable spring means expanded between two adjacent ends of said rocker beams and compensating counterweights mounted on the opposite ends of said rocker beams.

HARRY V. BALL.

ALBERT J. HORTON.

35