

May 29, 1928.

1,671,685

W. C. SCOTT

ROLL CHANGE MECHANISM

Filed Feb. 20, 1926

7 Sheets-Sheet 1

Fig. 2.

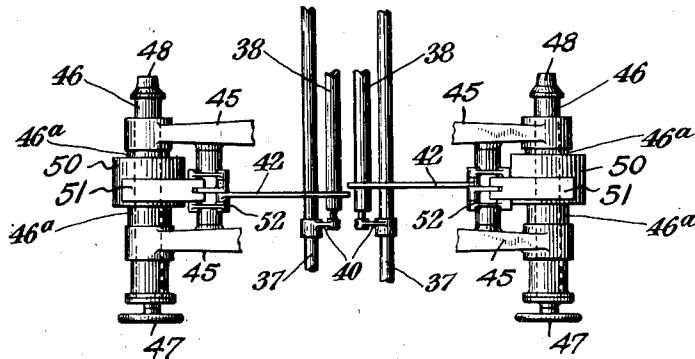
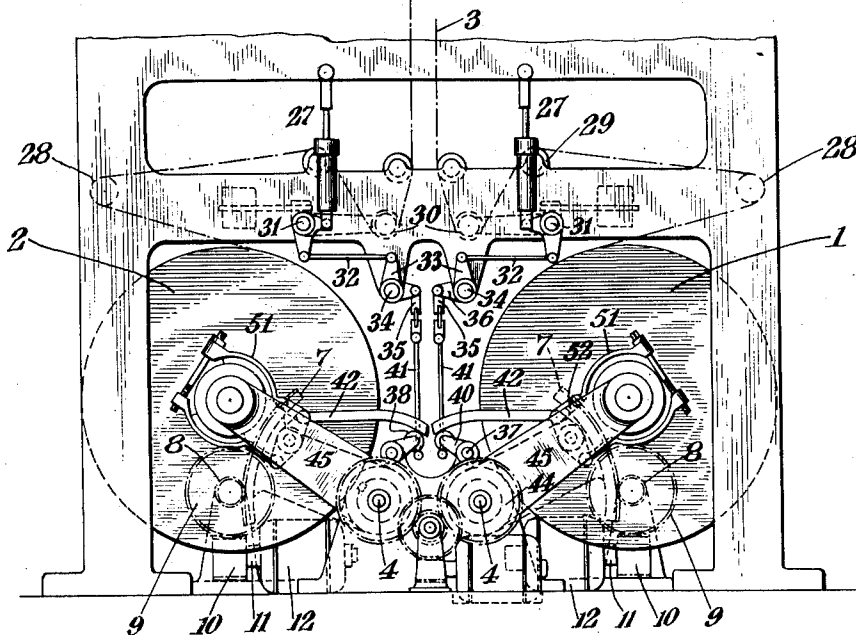


Fig. 1.



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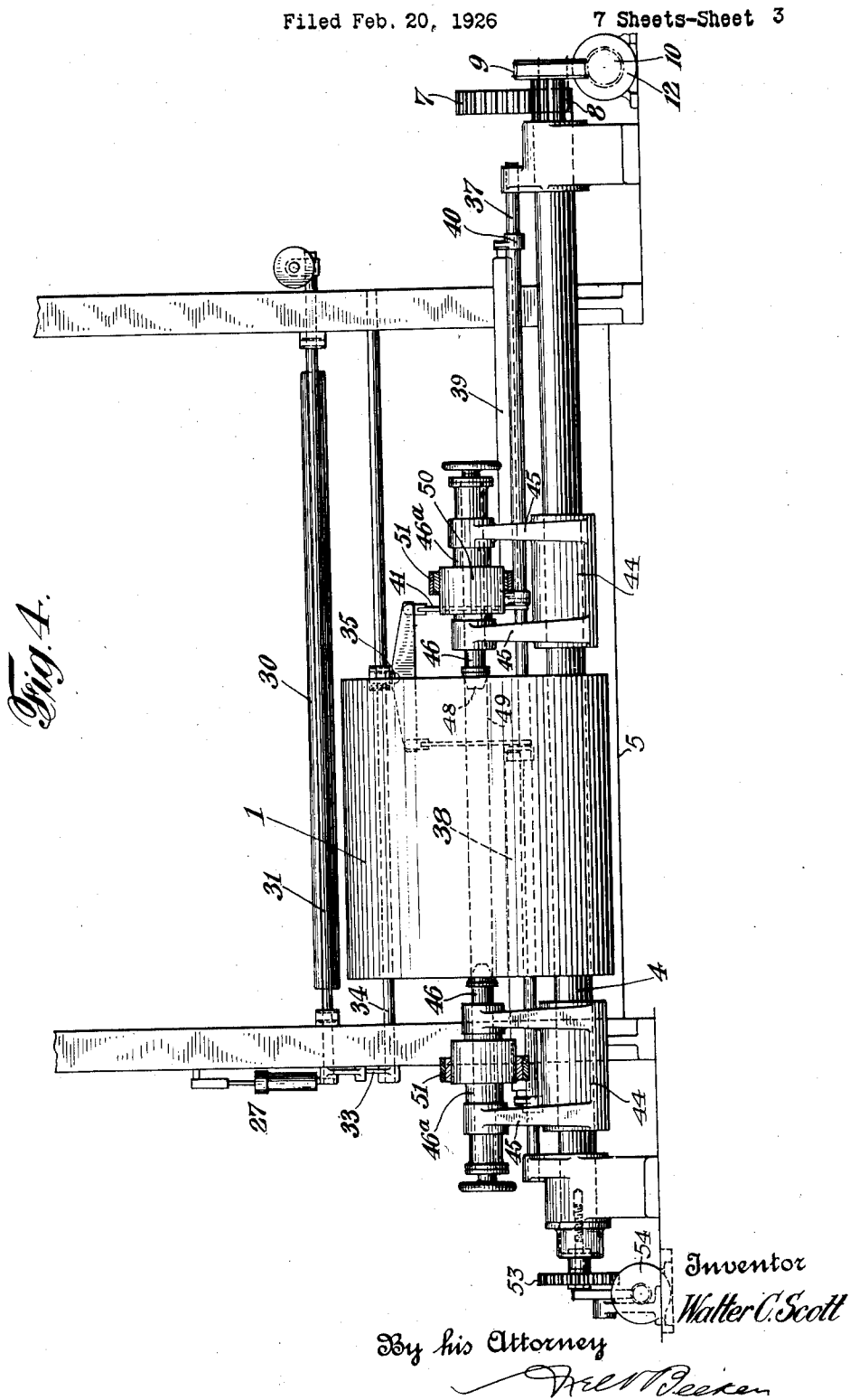
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7 Sheets-Sheet 3



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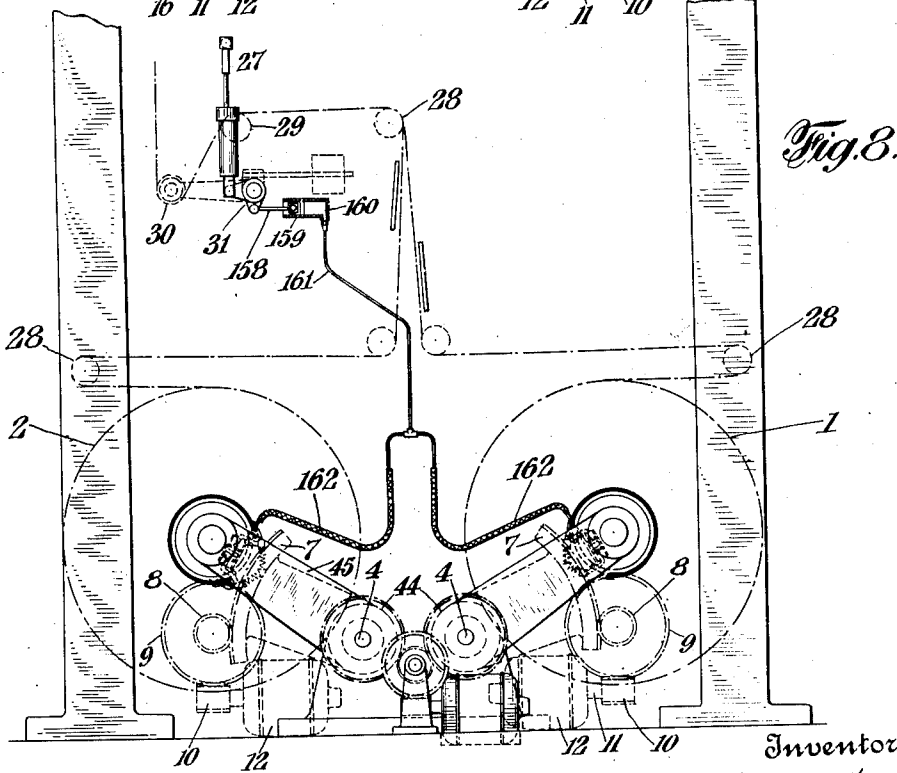
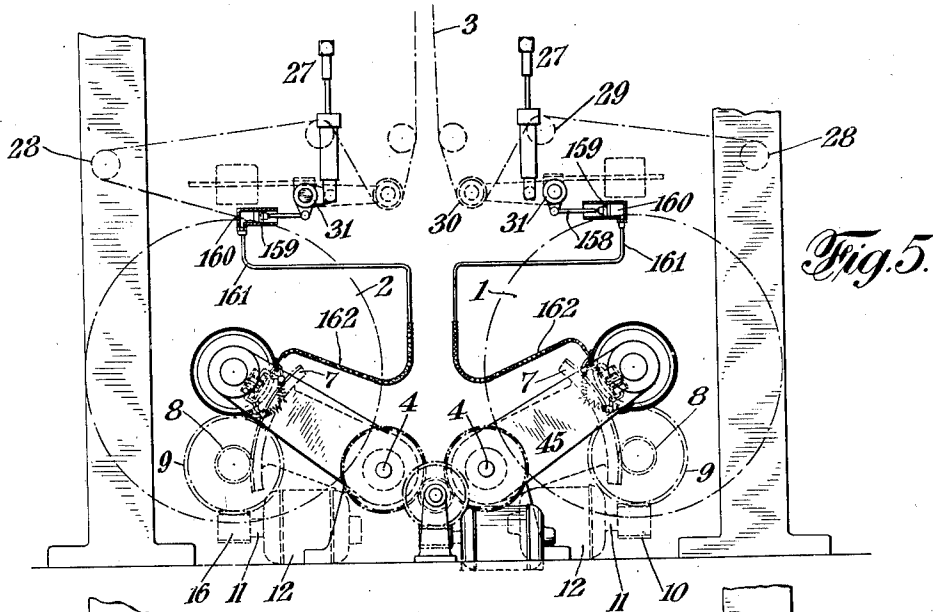
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7 Sheets-Sheet 4



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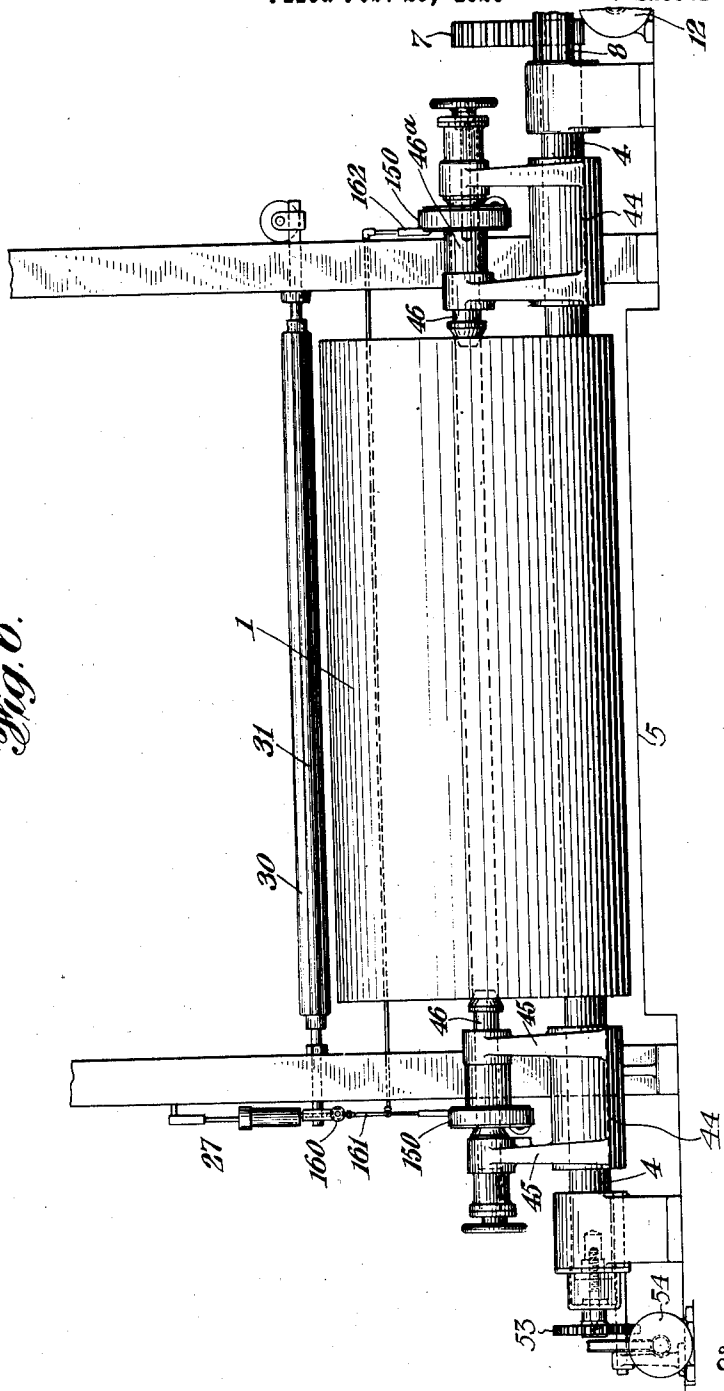
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7 Sheets-Sheet 5

Fig. 6.



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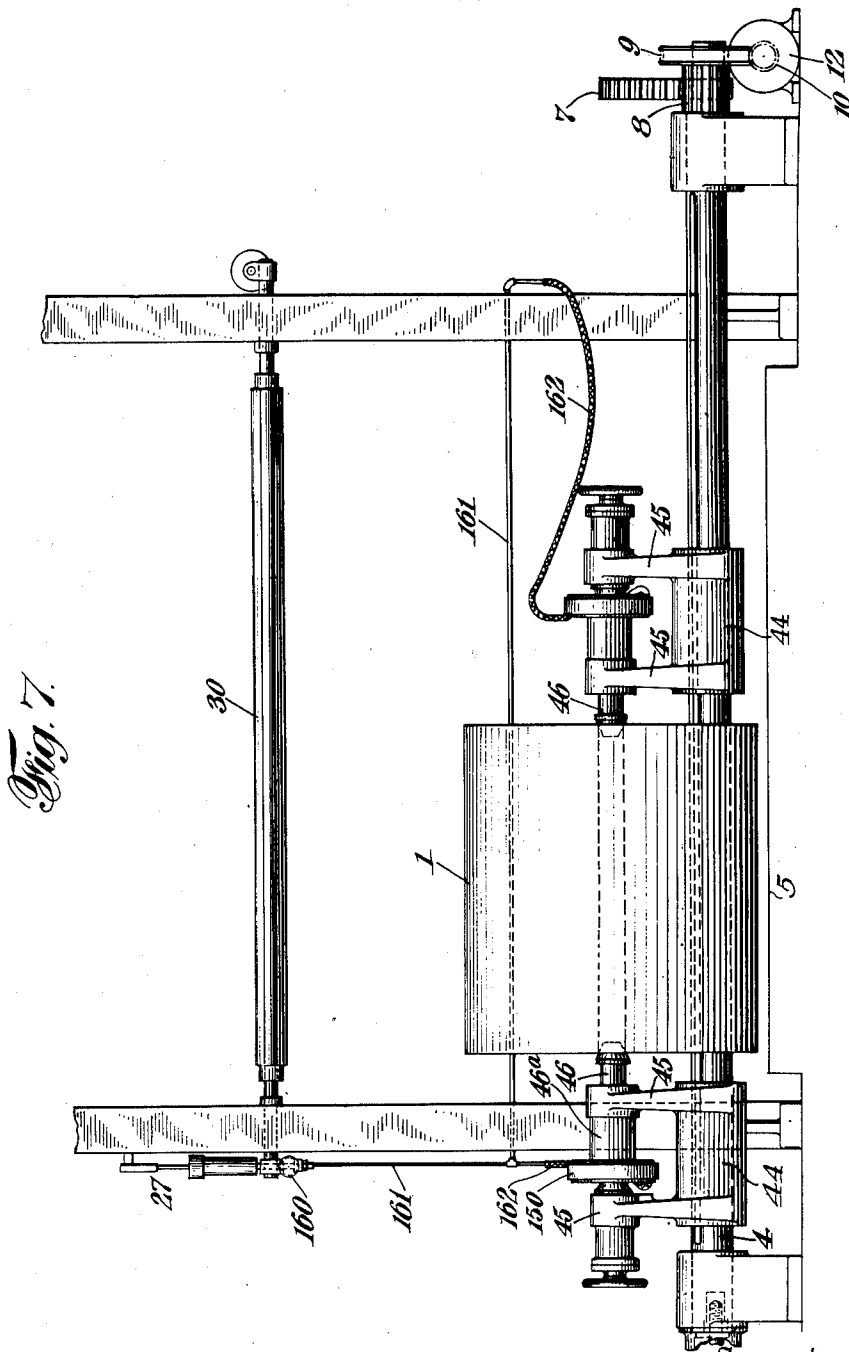
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ROLL CHANGE MECHANISM

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7 Sheets-Sheet 6



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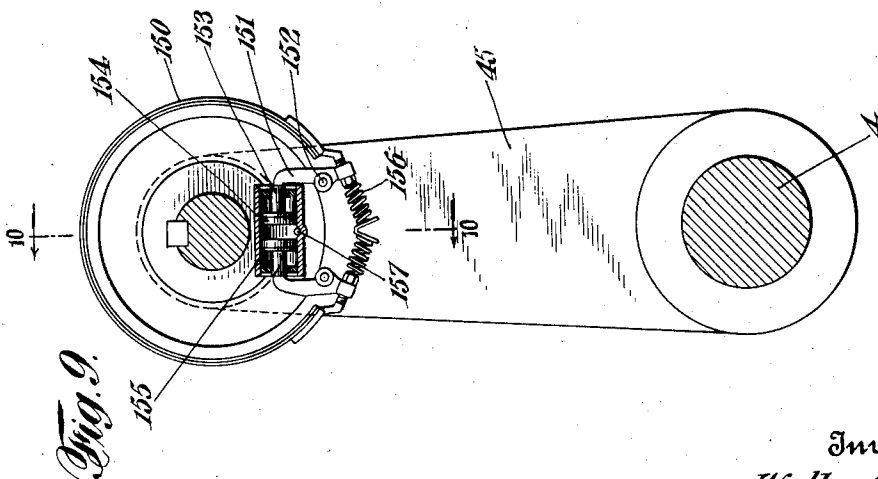
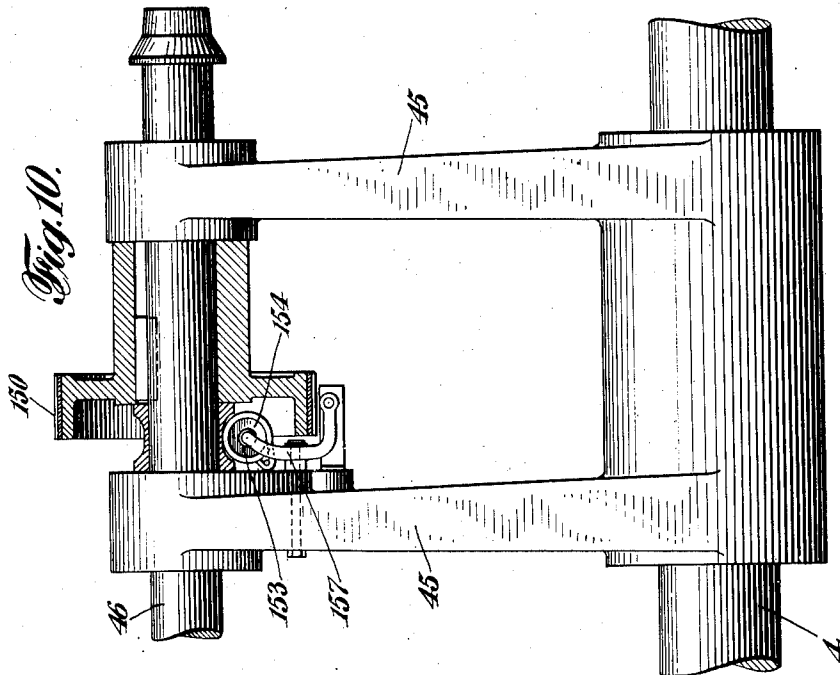
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7 Sheets-Sheet 7



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UNITED STATES PATENT OFFICE.

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ROLL CHANGE MECHANISM.

Application filed February 20, 1928. Serial No. 89,528.

This invention relates to a source of supply of webs for a web-pulling, such as a printing machine, and has for its main object and feature the more expeditious handling of web rolls than has heretofore been possible.

In the accompanying drawings the invention is disclosed in a concrete and preferred form in which:

Fig. 1 is an end elevation, somewhat diagrammatic in form, of a device embodying the invention.

Fig. 2 is a top plan view of certain of the parts shown in Fig. 1.

Fig. 3 is a side elevation of the parts shown in Fig. 1.

Fig. 4 is a view similar to Fig. 3 but with the parts adjusted to a different position.

Fig. 5 is a view similar to Fig. 1 but showing fluid pressure connections instead of mechanical connections, to operate the brake mechanism.

Fig. 6 is a side elevation of the parts shown in Fig. 5.

Fig. 7 is a view similar to Fig. 6 but with the parts adjusted to a different position.

Fig. 8 is a view similar to Figs. 1 and 5 showing a modified form of the invention.

Fig. 9 is a detail view of the fluid pressure brake.

Fig. 10 is a sectional view substantially on the plane of line 10—10 of Fig. 9.

1 and 2 indicate two web rolls one of which is shown as feeding a web 3 and the other of which is awaiting its turn to be employed. Each roll is intended to be supported by suitable bearings which can be swung around center 4 to lift or lower a web roll and to sustain it in an elevated position free of the floor so that the web thereof can be unwound. The specific form which these bearings take will be described at a later point. Suffice it to say here, that chucks that are movable toward and away from each other are preferably employed. Beneath each set of bearings and intermediate thereof is a platform 5 which may be the floor and which bodily supports a web roll before it is picked up by the bearings. The bearings for each roll are carried by a shaft 4 and this shaft carries at one end a gear sector 7 that meshes with a pinion 8 moving with a worm wheel 9 driven from worm 10 on armature shaft 11 of motor 12. Motor 12 is a reversible motor so that rotation can be had in either direction. The

arrangement is in duplicate so that there is a motor for each shaft 4, and consequently each shaft can be actuated independently of the other.

It is customary in the art to control the brake of the employed roll by the pull or slackness of the web itself. Devices of this character are shown in the patent to Scott No. 558,426 and to Jones No. 1,395,830. The Jones tension device is indicated diagrammatically in the drawings at 27 and web 3 is led over spring roller 28, guide roller 29 and tension roller 30 after which it passes to the press. The operation of this device is so well known as to need no detail description it being enough to say that tension roller 30 moves up or down in response to tautness or slackness in the web. In so doing it actuates bell crank 31 connected by means of rod 32 to crank 33. Crank 33 is mounted on rock shaft 34 and this latter carries equalizing bar 35 by means of arm 36. 37 is a shaft extending lengthwise of the web roll and mounted on this shaft are two rods 38 and 39, said rods being carried by means of cranks 40 that are connected to the equalizing bar 35 by links 41. The swinging movement of tension roller 30 is therefore reproduced by both of the parallel rods 38 and 39. 42 is a brake rod, there being one at each end of the machine, which rests loosely on the top of the parallel rod 38 or 39, and in this way the brakes of the chucks are operated so that brake pressure is applied equally at both ends of the web roll. The foregoing arrangement has been described in connection with one web roll as 1, but, as shown, there is a similar arrangement connected with web roll 2.

Turning now to the particular construction of bearings here employed and to the brake mechanism associated therewith, 4 indicates a shaft or supporting member, there being a shaft for each web roll. Carried by each shaft are two brackets 44 which are adjustable toward and away from each other on said shaft. Each bracket comprises a bushing and two arms 45, spaced apart, the outer ends of which afford bearings for chuck shaft 46, said chuck shaft being adjustable in said arms by means of handwheel 47 in a manner well understood. 48 indicates the chuck proper adapted to enter slightly core 49 of the web roll. Mounted on the chuck shaft is brake wheel 50, of a well-known type, around which is wrapped

brake band 51 actuated by toggles 52 and to these toggles brake rod 42 is pivoted. The toggles and brake rod are conveniently mounted between arms 45 of the bracket, and it will be understood that, when bracket 44 is adjusted, the chuck and the brake mechanism are likewise adjusted, brake rod 42 sliding over rod 38 or 39 and the brakes can therefore be operated in any adjusted position of the brackets or chucks. It is therefore possible to adjust the device for a full width web as shown in Fig. 3 or for a half width web as shown in Fig. 4, and it will be understood that the parts can be adjusted so that half width web is either at one side or the other or in the middle. To side-register the web recourse may also be had to an adjustment lengthwise of shaft 4, and this adjustment can be effected by means of wheel 53 in a manner well known either by hand or by means of a motor as 54, said motor serving to slide both shafts 6 in unison.

One web roll, as 1, being in position and feeding its web, another web roll, as 2, is rolled into position on platform 5 after which arms 45, of roll 2, are lowered to bring the chucks thereof in alinement with the core of the roll. The chucks or brackets, or both, are now adjusted until the chucks engage the core, and arms 45 are raised to lift the web roll into a position above platform 5 and are sustained in this position. When the web from roll 1 is exhausted, or nearly so, the web from roll 2 is pasted to the expiring web from roll 1, and the feed is thus transferred from one web roll to the other. While the web from roll 2 is being fed, a new roll 1 is rolled into position and the operation is repeated, and this alternation may of course continue indefinitely.

It will be seen, however, that owing to spacing collars 46^a, when the chuck shaft is given an adjustment in arms 45 the brake wheel will maintain its position, so that said brake wheel is adjustable with the chucks by sliding 44 on shaft 4 but is not adjustable when moving the chuck shaft individually. The chuck shaft may therefore be said to be adjustable with the brake and also independently thereof.

If desired, instead of using mechanical self-adjusting connections, fluid pressure means may be employed to actuate the brakes. Referring to Figs. 9 and 10, brake band 150 of the chuck shaft brake is connected at its opposite ends to swinging members 151 pivoted at 152. Members 151 engage rods 153 of plungers or pistons 154 contained within cylinder 155. Springs 156 tend to urge, through members 151, pistons 154 toward each other and thus to decrease the braking effect, and fluid pressure introduced through duct 157 tends to separate the pistons and thus to increase the braking effect.

Referring now to Figs. 5, 6 and 7, it will be seen that crank 31 is connected to rod 158 of plunger 159 sliding in cylinder 160 and this cylinder is connected by means of pipes 161 and flexible connections 162 to duct 157. Oil or other fluid is contained in the pipes and connections and thus any movement of crank 31 in response to slackness or pull of the web will affect the brake. Brakes may of course in this case also be applied at both ends of the roll.

I wish it distinctly understood that so far as the invention relating to brake mechanism is concerned it need not be associated with means for lifting and lowering the web rolls from the floor, although it will be observed that when the two features are combined a relation springs up in that both the mechanical and fluid connections permit of the up-and-down movement of the brackets without disconnecting the brakes. It is, however, possible to use the same brake mechanism and connections when combined with other methods of manipulating the web rolls as shown in application Ser. No. 89,527, filed Feb. 20, 1926.

In Figs. 1 to 7 inclusive two crank arms 31 and two tension devices are disclosed, but as shown in Fig. 8 only one tension device and crank arm need be used, the change in control by the tension device from one web to another being effected when the webs are pasted together.

I claim:

1. A source of supply of web for a web-pulling machine including: a platform to bodily support a web roll, bearings to support opposite ends of the web roll, means to lift and lower said bearings and to sustain them in an elevated position with the roll out of contact with the platform to thereby admit of rotation of the roll to unwind the web thereof, brake mechanism carried by at least one of said bearings, actuating means for the brake mechanism controlled by the tension of the web, and a connection between the actuating means and the brake mechanism admitting of the movement of the bearing.

2. A source of supply of web for a web-pulling machine including: a platform to bodily support a web roll, bearings to support opposite ends of the web roll, means to lift and lower said bearings and to sustain them in an elevated position with the roll out of contact with the platform to thereby admit of rotation of the roll to unwind the web thereof, brake mechanism carried by at least one of said bearings, actuating means for the brake mechanism, controlled by the tension of the web, a connection between the actuating means and the brake mechanism admitting of the movement of the bearing, and means to adjust the bearings to engage or disengage the web roll.

3. A source of supply of web for a web-pulling machine including: chucks to support opposite ends of a web roll, a platform beneath and intermediate the chucks, means to lift and lower said chucks and to sustain them in an elevated position with the roll out of contact with the platform to thereby admit of rotation of the roll to unwind the web thereof, brake mechanism carried by said chucks, actuating means for the brake mechanism controlled by the tension of the web, connections between the actuating means and the brake mechanism admitting of the movement of the chucks, carrier arms to support the chucks, means to adjust the carrier arms toward and away from each other, and means to adjust the chucks in the carrier arms to engage or disengage the web roll.

4. A source of supply of web for a web-pulling machine including: two sets of bearings, each set to support opposite ends of a web roll, a platform beneath and intermediate each set of bearings to receive a web roll, means to lift and lower each set of bearings and to sustain them in an elevated position out of contact with the platforms independently of the other set, to thereby independently pick up and bring the rolls to feeding position, brake mechanism carried by each set of bearings, actuating means for the brake mechanism controlled by the tension of a web, and independent connections between the actuating means and the brake mechanisms of each set admitting of the movement of the bearings.

5. A source of supply of web for a web-pulling machine including: two sets of bearings, each set to support opposite ends of a web roll, a platform beneath and intermediate each set of bearings to receive a web roll, means to lift and lower each set of bearings and to sustain them in an elevated position out of contact with the platforms independently of the other set, to thereby independently pick up and bring the rolls to feeding position, brake mechanism carried by each set of bearings, actuating means for the brake mechanism controlled by the tension of a web, independent connections between the actuating means and the brake mechanisms of each set admitting of the movement of the bearings, and means for independently adjusting the bearings of each set toward and away from each other.

6. A source of supply of web for a web-pulling machine including: two sets of bearings, each set to support opposite ends of a web roll, a platform beneath and intermediate each set of bearings to receive a web roll, means to lift and lower each set of bearings and to sustain them in an elevated position out of contact with the platforms independently of the other set, to thereby independently pick up and bring the rolls to feeding

position, brake mechanism carried by each set of bearings, independent actuating means for the brake mechanism of each set of bearings controlled by the tension of the web from the roll supported by the bearings whose brake mechanism it controls, and independent connections between the actuating means and the brake mechanism of each set admitting of the movement of the bearings.

7. A source of supply of web for a web-pulling machine including: two sets of bearings, each set to support opposite ends of a web roll, a platform beneath and intermediate each set of bearings to receive a web roll, means to lift and lower each set of bearings and to sustain them in an elevated position out of contact with the platforms independently of the other set, to thereby independently pick up and bring the rolls to feeding position, brake mechanism carried by each set of bearings, independent actuating means for the brake mechanism of each set of bearings controlled by the tension of the web from the roll supported by the bearings whose brake mechanism it controls, independent connections between the actuating means and the brake mechanism of each set admitting of the movement of the bearings, and means for independently adjusting the bearings of each set toward and away from each other.

8. A source of supply of web for a web-pulling machine including: two sets of bearings, each set to support opposite ends of a web roll, a platform beneath and intermediate each set of bearings to receive a web roll, means to lift and lower each set of bearings and to sustain them in an elevated position out of contact with the platforms independently of the other set, to thereby independently pick up and bring the rolls to feeding position, means for independently adjusting the bearings of each set toward and away from each other, a brake mechanism for the bearings of each set, independent actuating means for the brake mechanisms of each set, each actuating means controlled by the tension of a web, and independent connections between each actuating means and the brake mechanisms it controls.

9. A source of supply of web for a web-pulling machine including: bearings to support opposite ends of a web roll, a movable member extending lengthwise of the web roll, means controlled by the tension of the web to move said member, a brake carried by one of the bearings, means for lengthwise adjusting the bearing carrying the brake, and a brake rod to actuate the brake, adjustable with the bearing and slidably engaging the movable member and operated by the latter.

10. A source of supply of web for a web-pulling machine including: bearings to sup-

port opposite ends of a web roll, a shaft extending lengthwise of the web roll, a rod substantially parallel to the shaft and mounted on the latter, means, controlled by the tension of the web, to actuate said parallel rod, a brake carried by one of said bearings, means for lengthwise adjusting the bearing carrying the brake, and a brake rod, to actuate the brake, adjustable with the bearing and resting loosely on the parallel rod.

11. A source of supply of web for a web-pulling machine including: bearings to support opposite ends of a web roll, a movable member extending lengthwise of the web roll, means controlled by the tension of the web to move said member, means for adjusting the bearings toward and away from each other, a brake carried by each of the bearings, and a brake rod also carried by each of the bearings and slidably engaging the movable member and operated by the latter.

12. A source of supply of web for a web-pulling machine including: bearings to support opposite ends of a web roll, a shaft extending lengthwise of the web roll, a rod substantially parallel to the shaft and mounted on the latter, means, controlled by the tension of the web, to actuate said parallel rod, means for adjusting the bearings toward and away from each other, a brake carried by each of the bearings, and a brake rod also carried by each of the bearings resting loosely on the parallel rod.

13. A source of supply of web for a web-pulling machine including: bearings to support opposite ends of a web roll, means for adjusting said bearings one toward the other, brake mechanism carried by at least one of said bearings and adjustable therewith, actuating means controlled by the pull or slackness of the feeding web to effect operation of the brake mechanism, and connections between the brake mechanism and the actuating means to operate the former from the latter in any adjusted position.

14. A source of supply of web for a web-pulling machine including: chucks to support opposite ends of a web roll having a core, means for adjusting said chucks toward and away from each other, brake mechanism carried by at least one of said chucks and adjustable therewith, actuating means controlled by the pull or slackness of the feeding web to effect the operation of the brake mechanism, and connections between the brake mechanism and the actuating means to operate the former from the latter in any adjusted position.

15. A source of supply of web for a web-pulling machine including: a shaft, two brackets adjustable toward and away from each other on said shaft, a bearing in each bracket to support one end of a web roll, means to adjust the bearings in the brackets

to engage or disengage a web roll, braking means for the roll carried by at least one of said bearings and adjustable therewith, actuating means responsive to the pull or slackness of the feeding web to control the operation of the brake mechanism, and connections between the brake mechanism and the actuating means to operate the former from the latter in any adjusted position.

16. A source of supply of web for a web-pulling machine including: bearings to support opposite ends of a web roll, means for adjusting said bearings one toward the other, brake mechanism carried by both of said bearings and adjustable therewith, actuating means responsive to the pull or slackness of the feeding web to control the operation of the brake mechanism, and connections between the brake mechanism and the actuating means to operate the former from the latter in any adjusted position of either of the bearings.

17. A source of supply of web for a web-pulling machine including: chucks to support opposite ends of a web roll having a core, means for adjusting said chucks toward and away from each other, brake mechanism carried by both of said chucks and adjustable therewith, actuating means responsive to the pull or slackness of the feeding web to control the operation of the brake mechanisms, and connections between the brake mechanisms and the actuating means to operate the former from the latter in any adjusted position of either of the chucks.

18. A source of supply of web for a web-pulling machine including: bearings to support opposite ends of a web roll, means for adjusting said bearings one toward the other, brake mechanism carried by at least one of said bearings and adjustable therewith, actuating means responsive to the pull or slackness of the feeding web to control the operation of the brake mechanism, and self-adjusting connections between the brake mechanism and the actuating means to operate the former from the latter in any adjusted position.

19. A source of supply of web for a web-pulling machine including: chucks to support opposite ends of a web roll having a core, means for adjusting said chucks toward and away from each other, brake mechanism carried by at least one of said chucks and adjustable therewith, actuating means responsive to the pull or slackness of the feeding web to control the operation of the brake mechanism, and self-adjusting connections between the brake mechanism and the actuating means to operate the former from the latter in any adjusted position.

20. A source of supply of web for a web-pulling machine including: bearings to sup-

port opposite ends of a web roll, means for adjusting said bearings one toward the other, brake mechanism carried by both of said bearings and adjustable therewith, actuating means responsive to the pull or slackness of the feeding web to control the operation of the brake mechanism, and self-adjusting connections between the brake mechanism and the actuating means to operate the former from the latter in any adjusted position of either of the bearings.

21. A source of supply of web for a web-pulling machine including: chucks to support opposite ends of a web roll having a core, means for adjusting said chucks to-

ward and away from each other, brake mechanism carried by both of said chucks and adjustable therewith, actuating means responsive to the pull or slackness of the feeding web to control the operation of the brake mechanisms, and self-adjusting connections between the brake mechanisms and the actuating means to operate the former from the latter in any adjusted position of either of the chucks.

Signed at Plainfield in the county of Union and State of New Jersey, this 9th day of February, 1926.

WALTER C. SCOTT.