March 12, 1929. E. E. BERRY ET AL 1,704,853

CALENDER DOCTOR OPERATING MEANS

Filed Feb. 4, 1928 3 Sheets-Sheet 1

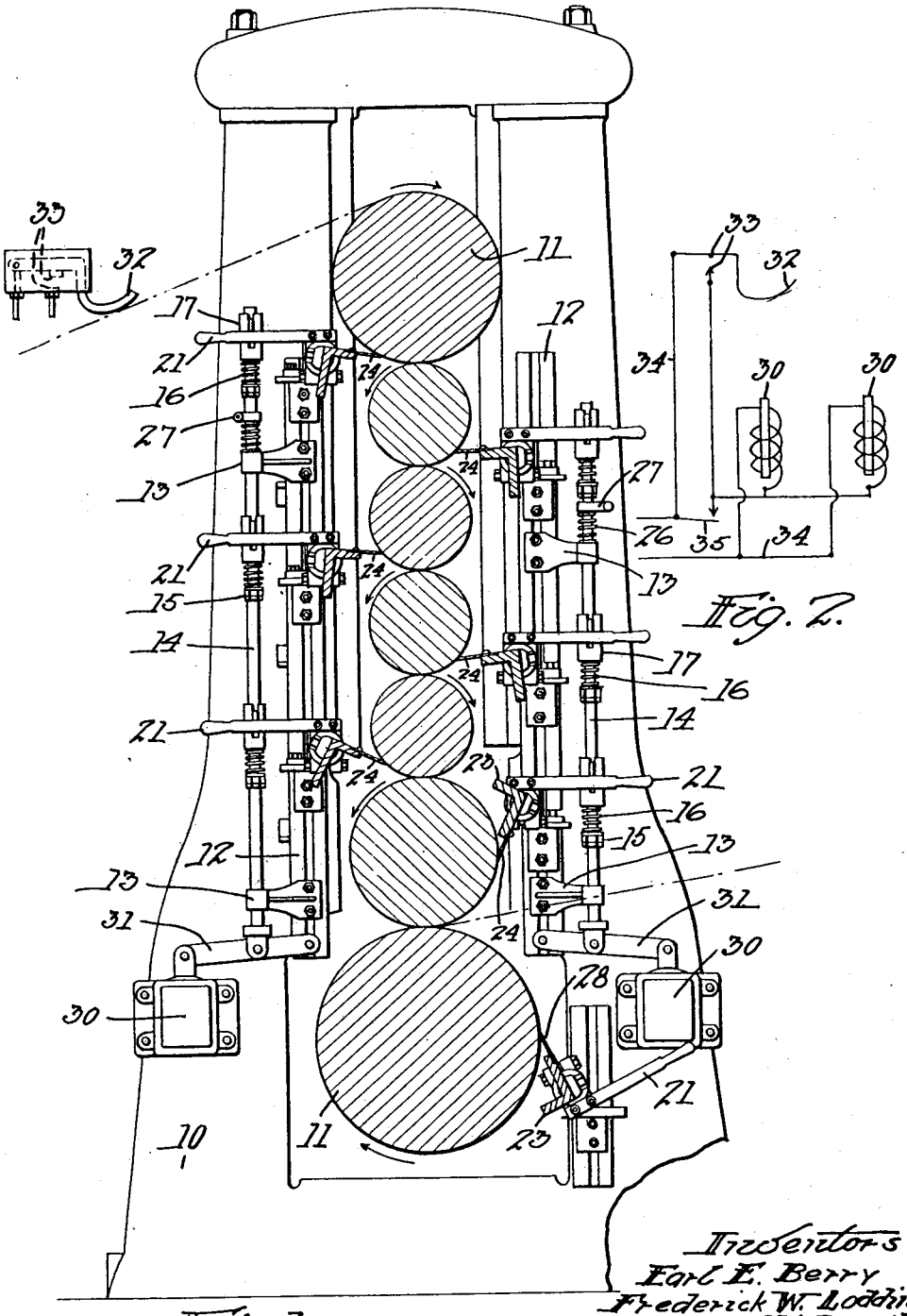


Fig. 1.

Fig. 2.

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Filed Feb. 4, 1928 3 Sheets-Sheet 2

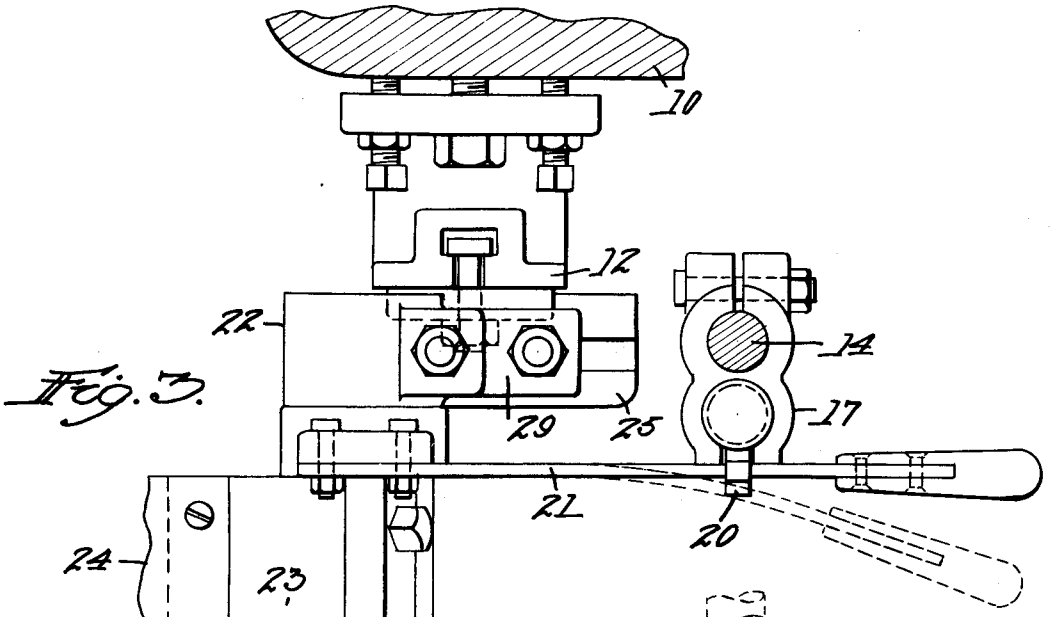


Fig. 3.

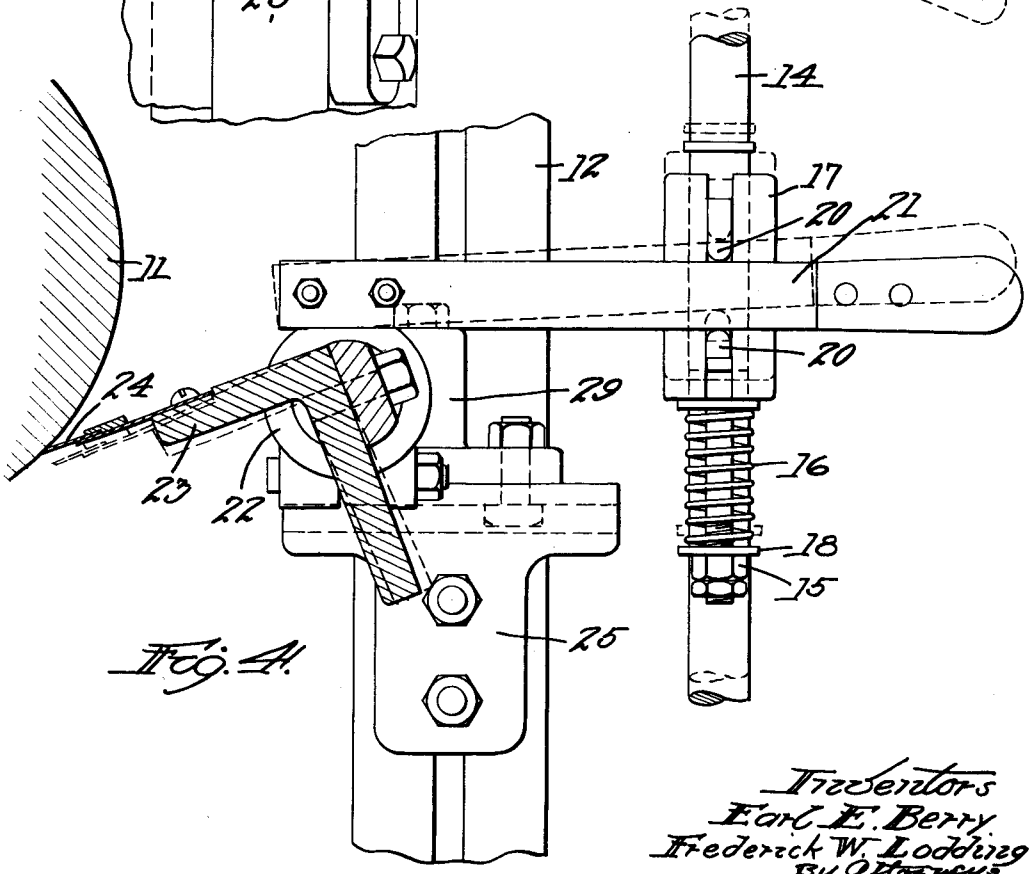


Fig. 4.

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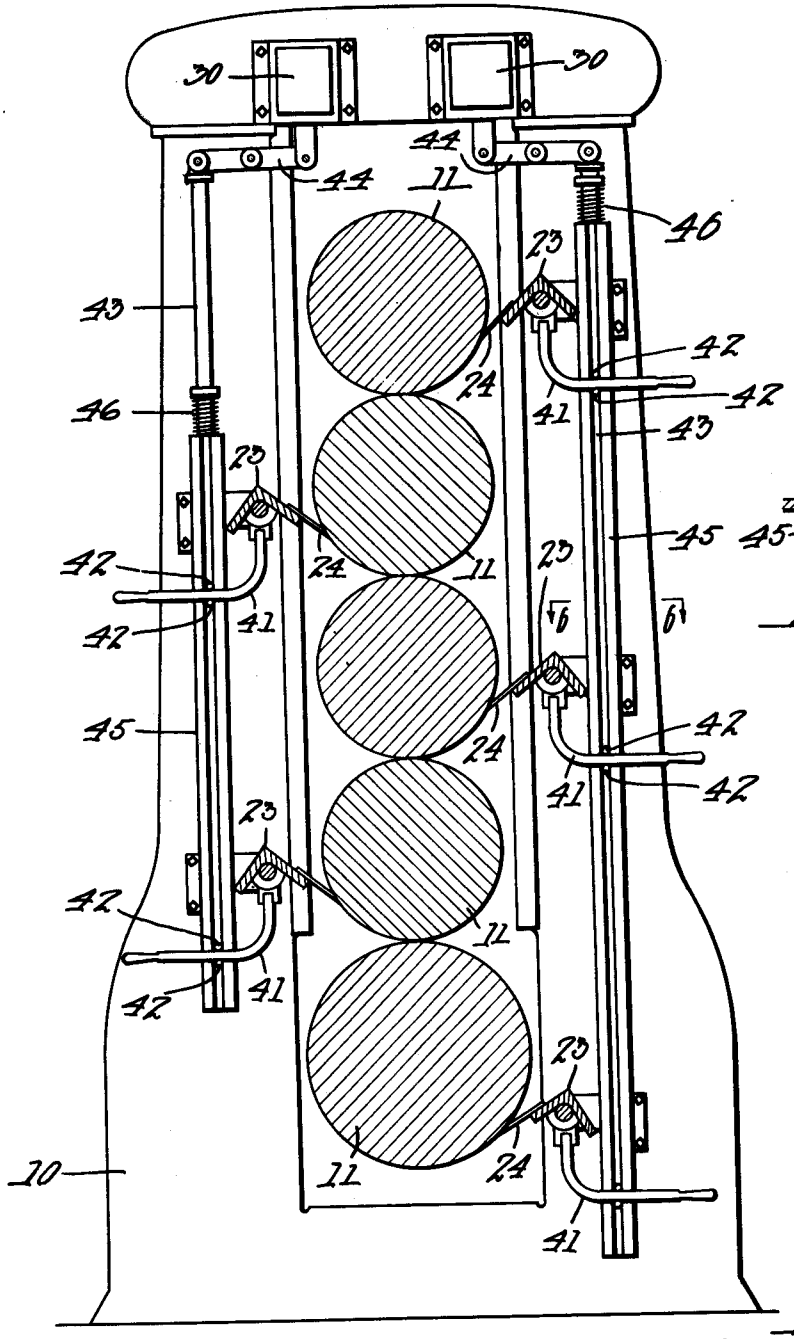


Fig. 5.



Fig. 6.

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UNITED STATES PATENT OFFICE.

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CALENDER-DOCTOR-OPERATING MEANS.

Application filed February 4, 1928. Serial No. 251,995.

This invention relates to means for controlling the doctors on a calender used in connection with paper making machinery.

The principal objects of the invention are to provide an improved and simplified means for operating all the doctors on one side of the calender from a single mechanism and for operating the two sets simultaneously or individually, as desired and for controlling the same magnetically; to provide means for simultaneously and automatically operating a series of doctors under magnetic control from which any one of the doctors can be released and operated by hand at will, and also to provide means for operating the doctors wherever the web breaks.

Other objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings in which—

Fig. 1 is an end view partly in section of a paper calender showing a preferred embodiment of this invention applied thereto;

Fig. 2 is a wiring diagram showing a connection of the same with means for operating the doctors when the web breaks;

Fig. 3 is an enlarged plan of one of the doctors showing the means for releasing it to be operated by hand;

Fig. 4 is an enlarged view similar to one of the doctors shown in Fig. 1, illustrating in dotted lines the second position of the doctor;

Fig. 5 is a view similar to Fig. 1 showing a modification, and

Fig. 6 is a sectional view on the line 6—6 of Fig. 5.

In the form shown in the first four figures the frame 10 of the calender supports the calender rolls 11 in the usual way. On each side of the frame is a guide 12 arranged vertically and in the form of a plate having a groove therealong. Fixedly, but adjustably, mounted along each of these grooves are series of brackets 13. These brackets are provided with vertical passages in which a rod 14 is mounted to slide vertically.

These rods carry heads 17 resting on springs 16 which bear on plates 18 carried on the rods 14 and adjusted by nuts 15. Each head is provided with two stops 20 and between these stops projects a flexible handle 21 which is secured on one of two trunnions 22 mounted to turn in bearings and carrying a doctor back 23. On each doctor back is fixed a doctor blade 24 for engaging the adjacent cylinder 11. The raising of the rod 14 will turn all these doctors on that side down to the dotted line position in Fig. 4. Also each handle 21 can be pulled out from between the stops 20 and moved to the dotted line position in Fig. 4 to turn the doctor down away from the calender roll or up toward it, if they are down at the time.

These trunnions 22 are mounted on adjustable frames 29 on the opposite ends of the machine carried by brackets 25 which are adjustably but fixedly mounted in the groove in the guide 12.

The upper bracket 13 has a spring 26 above it adapted to come up against a collar 27 on the rod 14 and hold this rod up normally in a position in which the doctors are all drawn away from the calender rolls.

For the operation for each one of these rods 14 we have provided a solenoid 30 which, by means of a lever 31 pivoted at a stationary point, lowers the rod 14 upon the energization of the solenoid and forces all the doctors into contact with their respective rolls, except that we have shown one doctor 28 as always operated by hand. All the doctors can be operated by hand to release them when the rest of them are on or to apply them to the roll when the rest are off.

In certain cases it is desired to operate the doctors automatically and for this purpose a lever 32 is provided normally held up by the web of the paper but adapted to descend when the web breaks to bring a pair of contacts 33 together and complete the circuit through the line 34 to the two solenoids 30 and thus actuate them to put all the doctors on automatically when the web breaks. A switch 35 is shown for throwing this out when desired.

In the form shown in Figs. 5 and 6 these conditions are simplified somewhat. The several doctors 24 on each side of the machine are operated by handles 41 which are flexible and connected directly with the doctor backs 23. They are operated by a pair of stops 42 mounted on a rod 43 which is connected directly with a lever 44 operated

by a solenoid 30 located in this case at the top. This rod is guided directly in a groove 45 and a spring 46 holds it up in opposition to the solenoid. In other respects this construction is similar to the other, but is considerably simplified as will be obvious.

Although we have illustrated and described only two forms of the invention we are aware of the fact that other modifications can be made therein by any person skilled in the art without departing from the scope of the invention as expressed in the claims. Therefore, we do not wish to be limited in these respects but what we do claim is:—

1. The combination of a calendar and its rolls and doctors, a vertical guide, means supported adjustably by said guide for supporting the several doctors along one side of the machine, a solenoid located at the end of the guide, and means operated by the solenoid for moving the doctors into contact with their respective rolls, said means comprising a vertical rod adapted to be operated by the solenoid, and a series of handles each connected with one doctor and detachably connected with the rod.

2. In a device for operating a series of calender doctors, the combination with a guide, of a series of brackets mounted thereon, a doctor pivotally mounted on each bracket and having a flexible handle projecting therefrom, a slidable rod having means for engaging said handles, means for moving the rod for the purpose of moving the handles and moving the doctors into contact with their respective rolls, said handles being adapted to be flexed out of engagement with the rod so that any one of them can be operated independently by hand.

3. In a device for operating a series of calender doctors, the combination with a vertical guide, of a series of brackets adjustably mounted thereon, a doctor pivotally mounted on each bracket and having a flexible handle projecting therefrom, a slidable rod having means for engaging said handles, electro-magnetic means for lowering the rod for the purpose of lowering the handles and raising the doctors into contact with their respective rolls, said handles being adapted to be flexed out of engagement with the rod so that any one of them can be operated independently.

4. In a doctor operating device for calenders, the combination of a vertical guide, a rod slidable up and down in said guide, means for pushing the guide down, said guide having a series of pairs of projections, a series of pivoted doctors each having a handle projecting between said pairs of projections, whereby the lowering of the rod will apply the doctors to the calender rolls, said handles being flexible to release them from the projections to allow the doctors to be operated individually by hand.

5. In a doctor operating device for calenders, the combination of a rod, means for moving the rod, said rod having a series of pairs of projections, a series of pivoted doctors each having a handle projecting between said pairs of projections, whereby the movement of the rod in one direction will apply the doctors to the calender rolls, said handles being flexible laterally to release them from the projections to allow the doctors to be operated individually by hand.

6. The combination of a calender and its rolls and doctors, a vertical guide, means supported adjustably by said guide for supporting the several doctors along one side of the machine, a solenoid located at the end of the guide, and means operated by the solenoid for moving the doctors into contact with their respective rolls, said means comprising a vertical rod adapted to be operated by the solenoid, and a series of handles each connected with one doctor and with the rod, with a contact arranged to be closed when the web breaks, and means connected with the contact for energizing the solenoid.

In testimony whereof we have hereunto affixed our signatures.

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