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A. J. CLINE

PAPER ROLL CHUCK

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Fig. 1.

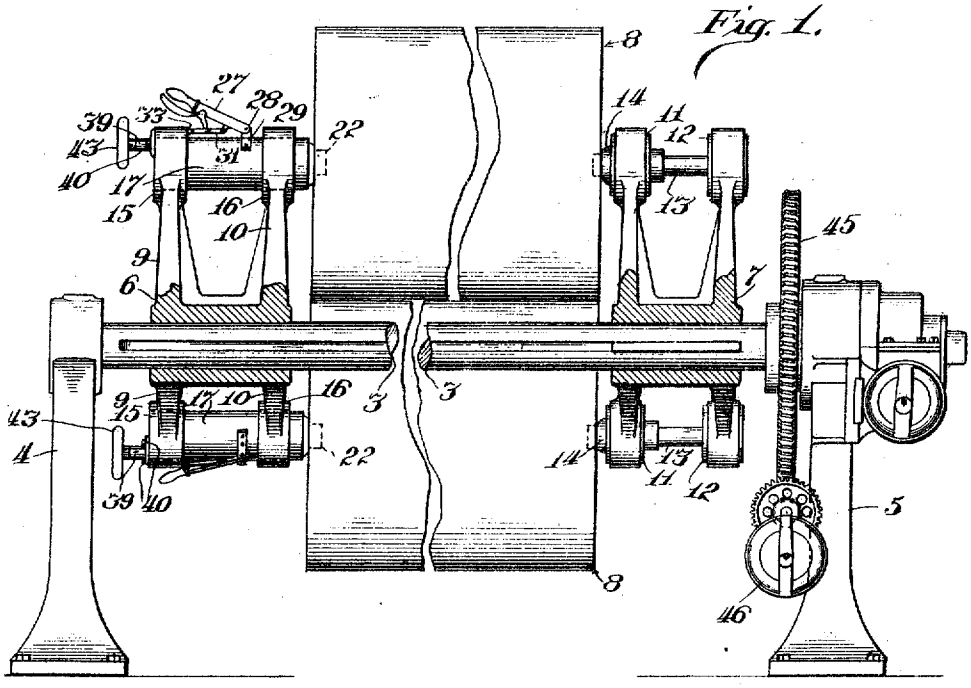
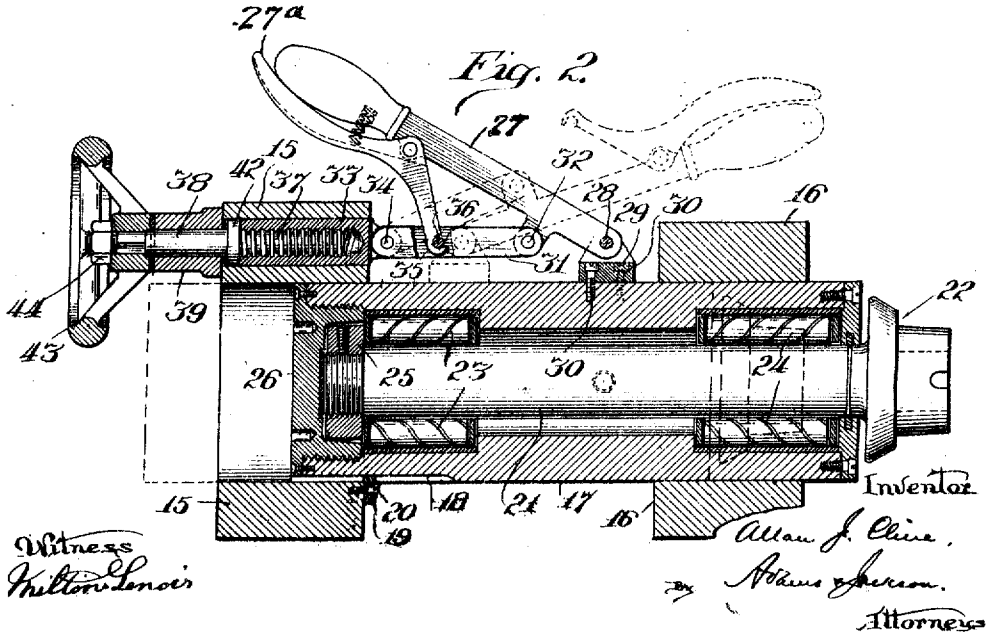


Fig. 2.



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UNITED STATES PATENT OFFICE.

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PAPER-ROLL CHUCK.

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To all whom it may concern:

Be it known that I, ALLAN J. CLINE, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Paper-Roll Chucks, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to web roll supports for printing presses and other machinery operating upon a roll of paper or other fabric. In such machinery, and particularly in connection with newspaper presses, the web roll while being drawn into the press is carried on a mandrel held between chucks or freely rotating spindles having heads which fit into and against the ends of the mandrel so as to center it and support the roll firmly without interfering with its free rotation. In high speed newspaper work it is necessary that the paper roll supports be so constructed that the rolls may be mounted in the supports quickly and accurately, and that the mandrels of exhausted rolls be easily removable, so that there will be no appreciable loss of time in changing rolls, and, therefore, such paper roll supports are usually so constructed that one of the spindles is movable longitudinally toward and from the other and in the same axial line so that the cooperating spindles of a given roll support may be separated to release the mandrel of an exhausted roll, or may be brought together to engage the mandrel of a fresh roll; a lever being provided for not only moving the longitudinally movable spindle, but also for locking the movable spindle in operative position. Such roll supports as heretofore constructed do not, however, operate satisfactorily under all conditions, because the range of movement of the longitudinally movable spindle is constant or invariable, and as the mandrels are not all of the same length it occurs with more or less frequency that a mandrel is not held tightly and properly centered because of a loose engagement therewith of the spindle heads, or, in case the mandrel happens to be too long, the movable spindle cannot be set over far enough to permit the lever to be securely locked, and, therefore, there is danger that the roll may work loose.

The object of my present invention is to improve the construction of paper roll supports of the character mentioned by providing a construction which will permit the range of movement of the movable spindle to be quickly and accurately adjusted whenever occasion requires, so that the proper engagement of the spindle heads with the mandrel and the locking of the parts in operative position may be assured. I accomplish this object as illustrated in the drawings and hereinafter described. What I regard as new is set forth in the claims.

In the accompanying drawings,—

Fig. 1 is an elevation, with some parts in section, and the intermediate portions of the rolls broken away, showing a multiple roll paper roll stand equipped with roll holders having my improvements applied thereto; and

Fig. 2 is an enlarged longitudinal section of the adjustable member of one of the roll holders.

In the drawings I have shown my invention applied to a rotary newspaper roll stand arranged to carry three wet rolls, and therefore, provided with three pairs of roll holders. This will be apparent from an inspection of Fig. 1 in which 3 indicates the central supporting shaft of the roll stand which is mounted in suitable bearings provided in standards 4, 5 so as to be capable of rotation. Mounted upon this shaft are two brackets 6, 7 set far enough apart so that the rolls 8 may be placed between them, and keyed to the shaft 3 so that they rotate therewith. Each of these brackets comprises three pairs of radially-disposed arms 9, 10, the arms of the several pairs being 120° apart, each pair of arms of the bracket 6 being opposite a pair of arms of bracket 7. The arms of the bracket 7 are provided with bearings 11, 12 in which are mounted rotary spindles 13 which have no longitudinal movement in their bearings. The spindles 13 are provided with chuck heads 14 adapted to engage one end of the usual mandrel which forms the center of the paper roll, as shown in Fig. 1. The arms 9, 10 of the bracket 6 are provided with bearing blocks 15, 16, in which is mounted a sliding support 17 which does not rotate but is capable of longitudinal movement in its bearings. For holding this sliding support against rotation it is preferably provided with a keyway 18 into which projects a

key 19 secured to the bearing block 15 by a screw 20, as shown in Fig. 2, but this may be accomplished in any other suitable way. Mounted in the support 17, which is hollow, is a spindle 21 arranged in axial alinement with the spindle 13 and having a head 22 adapted to engage the roll mandrel and to cooperate with the corresponding head 14 to center and firmly secure the mandrel in place. Preferably the spindle 21, and also the spindle 13 are mounted in anti-friction bearings 23, 24, and the spindle 21 is held against longitudinal movement independently of the support 17 by a nut 25 screwed upon its inner end, and a cap 26 screwed into the inner end of the support 17.

The support 17 is moved longitudinally toward and from the opposite spindle 13 to engage or release the roll by means of a lever 27, which in the construction illustrated is fulcrumed at its lower end upon a pivot 28 carried by a block 29 fixedly secured to the support 17, as by screws 30, this block being placed at some intermediate point between the bearing blocks 15, 16 as shown in Fig. 2. The intermediate portion of the lever 27 is connected with the block 15 by a link 31 which is pivotally connected with the lever 27 by a pivot 32 and is indirectly connected with the block 15 by means of a plunger 33 and a pivot 34. The plunger 33 is normally locked in fixed relation to the block 15, but is capable of being moved longitudinally of itself and in parallelism with the support 17 for the purpose of securing a fine adjustment, as will be hereinafter described, but, for the present, it will be noted that when the parts are in the position shown in full lines in Fig. 2, if the lever 27 be moved over to the right the pivot 32 will act as a fulcrum and the inner end of the lever will swing to the left, moving the support 17 and spindle 21 in the same direction until the parts assume the position shown in dotted lines in said figure. When the parts are in the latter position, by moving the lever 27 to the left they will be restored to the position shown in full lines. Thus the support 17 and spindle 21 may easily be moved toward or from the corresponding spindle 13 on the opposite side of the roll, and the range of movement of the spindle 21 and its support will be constant. Fig. 2 shows the operative position of the spindle 21 in full lines, and it is locked in such position by a spring latch 27^a mounted on the lever 27, and having a hook 35 which engages a pin 36 carried by the link 31. Preferably this link is a double one, and the pin 36 is fitted between the two members thereof so that it is securely held in position. Obviously, when the latch 27^a is in its operative position the lever 27 cannot be actuated, and the spindle 21 cannot move out of its operative position.

While the construction described operates very satisfactorily with mandrels of uniform length, it frequently happens that their length varies, and, therefore, it is necessary that the range of movement of the spindle 21 and its support 17, that is to say, the extent to which they are moved toward the opposite spindle by the actuation of the operating lever 27, be adjusted to compensate for such variation, and that provision be made for making such adjustment easily and quickly in order that the mounting of the rolls in the stand be not delayed. In my improved apparatus this is accomplished by adjusting the plunger 33 to move the pivot 32 closer to or farther from the opposing chuck member at the other side of the roll. For this purpose the plunger 33 is provided with internal screw threads in which is fitted the screw threaded end 37 of a bolt 38, as shown at the left in Fig. 2. This bolt is mounted in a bearing block 39 which is bored concentrically with the plunger 33 and is fitted over the outer end of said plunger and secured to the bearing block 15, preferably by bolts 40 shown in Fig. 1. A collar 42 is carried by the bolt 38 between the block 39 and the outer end of the plunger so as to prevent outward movement of the bolt 38. This collar is preferably fitted in the outer end of the bore in which the plunger 33 operates, so that it is enclosed by the block 39. A hand wheel 43 is mounted on the outer end of the bolt 38, which is preferably squared. 44 indicates a nut which secures the hand wheel 43 in place.

By this construction, by rotating the hand wheel 43 in one direction, the bolt 38 may be turned to force the plunger 33 toward the right as viewed in Fig. 2, thereby setting the spindle head 22 over to the right, as will be required to accommodate a shorter mandrel. In like manner, by reversing the rotation of the hand wheel 43, the spindle head 22 can be set back to accommodate a longer mandrel. In either case, however, after the adjustment is effected the length of stroke of the spindle effected by the operation of the lever 27 remains unchanged. It will be understood, of course, that instead of placing the adjustable spindles at the left-hand end of the shaft 3, as illustrated, they may be placed at the opposite end.

For rotating the shaft 3 I preferably provide a worm wheel 45 driven by suitable gearing actuated by a motor 46, but this has nothing to do with my present invention, which relates solely to the devices for mounting one or more rolls in operative position. It should be understood, therefore, that my improvements may be applied to a single roll holder as well as to a multiple roll holder or stand such as that illustrated. My invention may also be applied to other machinery than printing presses, as it is

suitable for use in any situation where a roll of fabric is to be mounted so as to be capable of unreeling freely.

What I claim as my invention and desire to secure by Letters Patent, is—

1. A roll support comprising a rotary spindle movable longitudinally into or out of position to engage the roll, a lever adapted to be operated to move said spindle longitudinally into and out of operative position, and a screw connecting said lever with a stationary member, for varying the range of movement of said spindle when actuated by said lever.

2. A roll support comprising a longitudinally sliding member, a rotary spindle mounted thereon and movable longitudinally therewith, a stationary block, a lever pivotally connected with said sliding member, a plunger connected with said lever and mounted in said block, and means for moving said plunger longitudinally to vary the range of movement of said sliding member by the actuation of said lever.

3. A roll support comprising a longitudinally sliding member, a rotary spindle mounted thereon and movable longitudinally therewith, a stationary block, a lever pivotally connected with said sliding member, a plunger connected with said lever and mounted in said block, and a screw operating on said plunger to move the same longitudinally, for varying the range of movement of said sliding member by the actuation of said lever.

4. A roll support comprising a longitudinally sliding member, a rotary spindle mounted thereon and movable longitudinally therewith, a stationary block, a lever pivotally connected with said sliding member, and adjustable means interposed between said block and lever, whereby said lever may be actuated to slide said member longitudinally to move said spindle into and out of operative position and the range of movement of said member when actuated by said lever may be varied, said adjustable means comprising a device having sliding engagement with said block and a link pivotally connected with such sliding device and with the lever.

5. A roll support comprising a longitudinally sliding member, a rotary spindle mounted thereon and movable longitudinally therewith, a stationary block, a lever pivotally connected with said sliding member, and adjustable means interposed between said block and lever, whereby said lever may be actuated to slide said member longitudinally to move said spindle into and out of operative position and the range of movement of said member when actuated by said lever may be varied, said adjustable means comprising a screw-threaded device having sliding engagement with said block, a threaded member engaging said last-named device, and a link pivotally connected with such device and with the lever.

6. A roll support comprising a longitudinally sliding member, a rotary spindle mounted thereon and movable longitudinally therewith, a stationary block, a lever pivotally connected with said sliding member, and adjustable means interposed between said block and lever, whereby said lever may be actuated to slide said member longitudinally to move said spindle into and out of operative position and the range of movement of said member when actuated by said lever may be varied, said adjustable means comprising a screw-actuated member arranged substantially parallel with said longitudinally sliding member and the spindle, and a link connecting said screw-actuated member with said lever.

ALLAN J. CLINE.