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PATENTED JAN. 30, 1906.

A. ALDRICH.
PAPER MAKING MACHINE.
APPLICATION FILED AUG. 10, 1904.

Fig. 1.

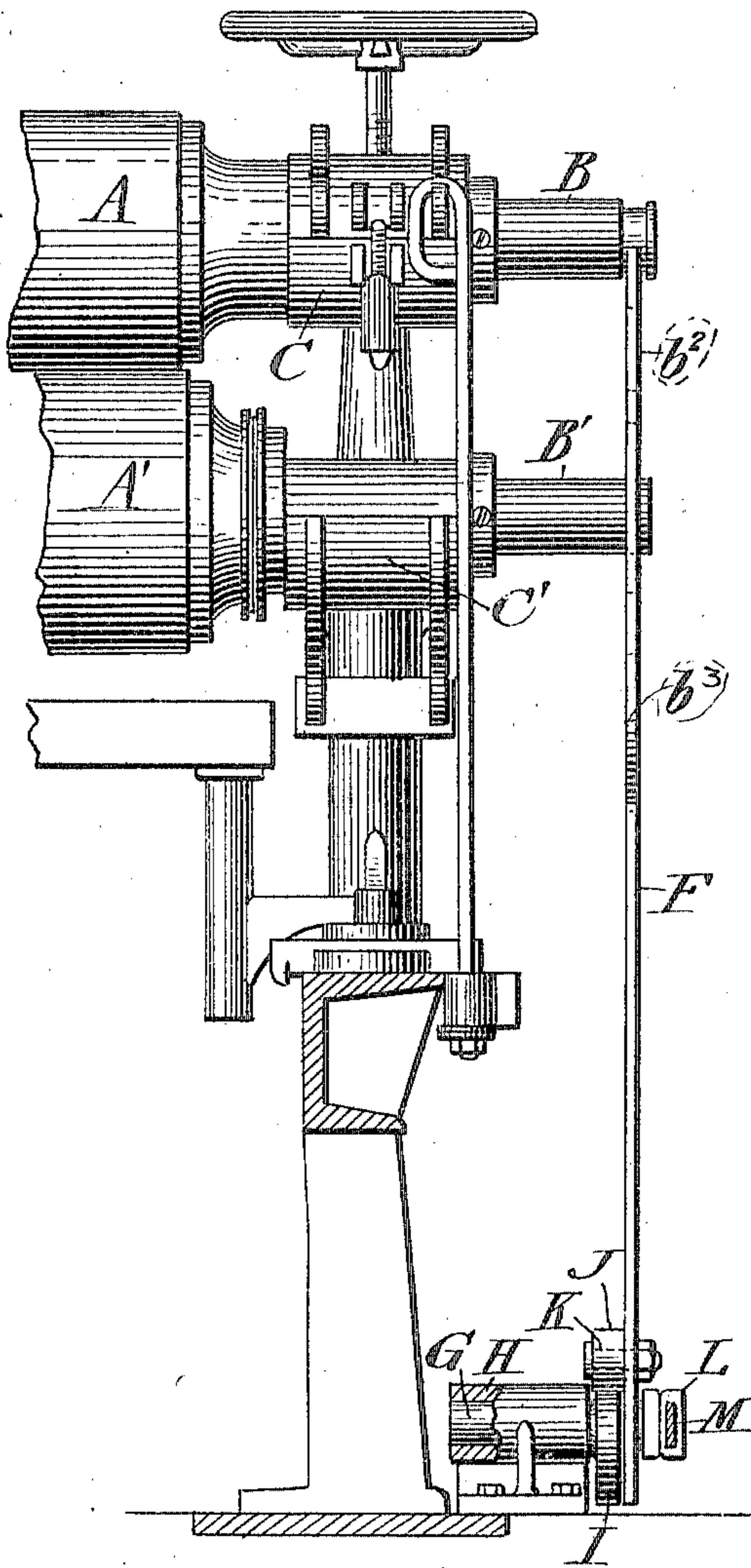
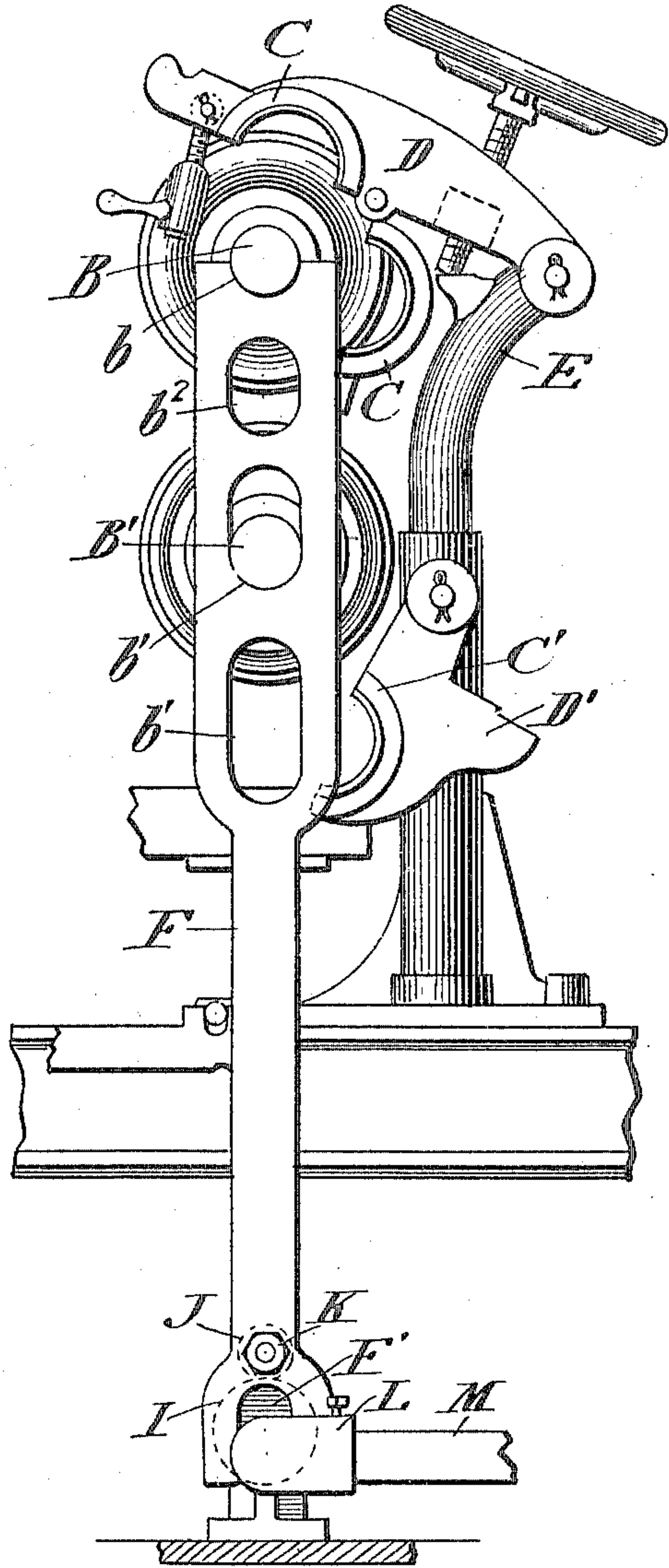


Fig. 2.



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UNITED STATES PATENT OFFICE.

ALONZO ALDRICH, OF BELOIT, WISCONSIN.

PAPER-MAKING MACHINE.

No. 811,527.

Specification of Letters Patent.

Patented Jan. 30, 1906.

Application filed August 10, 1904. Serial No. 220,233.

To all whom it may concern:

Be it known that I, ALONZO ALDRICH, a citizen of the United States, residing at Beloit, in the county of Rock and State of Wisconsin, have invented certain new and useful Improvements in Paper-Making Machines, of which the following is a specification.

The present invention relates to the means for lifting the rolls of a paper-making machine and sustaining them while a new felt is being put in place.

The invention is applicable to any of the several pairs of rolls used in a paper-making machine or, in fact, to any pair of rolls which are located one above another and which it is desired to lift successively and sustain temporarily in lifted positions for any purpose whatever. For the purposes of the present application the invention is shown and described in its use in connection with the squeeze-rolls of a paper-making machine, but with the understanding that it is applicable to any of the rolls of a paper-making or other machine and that I reserve to myself the exclusive right to its use in connection therewith.

The squeeze-rolls of a paper-making machine are arranged one above the other and have extended shafts that turn in bearings carried by movable supports of some form. The invention is not concerned with the nature or construction of these supports excepting that the support for the upper roll should be capable of moving vertically, so as to permit the roll to be lifted, but incapable of moving horizontally, so as to prevent the roll from moving horizontally, and thus sustain the jack in upright position, while the support for the lower roll should be removable, so that it may be lifted or swung out of the way far enough to permit the felt to be slipped onto the roll.

The invention finds its embodiment in a lifting-jack which consists of a bar of the necessary strength having two (or more) seats or bearings, one for each of the rolls, and means located below said seats for forcibly lifting the bar endwise, the said seats or bearings for any given pair of rolls being disposed a slightly-greater distance apart than are the under sides of the shafts of said rolls, so that the shaft of the upper roll comes to a bearing upon its seat and said upper roll is lifted before the shaft of the lower roll comes to a bearing upon its seat and is lifted. By this

means the weight of the rolls is taken off of the supports, so that the support for the lower roll may be moved or swung out of the way, and in addition to this the two rolls are separated, so that the felt may be slipped on over the lower roll. The seat for the highest roll that is to be lifted by the jack may be in the form of a notch in the upper end of the bar; but the seats for the other rolls are preferably in the form of openings formed through the bar at the distance apart necessary to meet the requirements, the seats for the shafts of any given pair of rolls being farther apart than are the under sides of said shafts, so that the rolls will be separated by the upward movement of the bar. In practice, as before intimated, the box or bearing of the upper roll is not removed, but is left in place for preventing the horizontal displacement of the roll, and thus hold the jack in upright positions. For lifting the bar I prefer to use a cam carried by a suitable support or shaft and operatively connected with a lever for turning it, the bar being provided with a bearing for the cam to act against and means being provided for confining the lower end of the bar against displacement in response to the strains put upon it by the action of the cam. Preferably the bar is sustained against lateral displacement by providing it with a longitudinal slot adapted to receive the shaft, so that the bar straddles the shaft and is permitted to move endwise up and down while being restrained against any lateral movement. Preferably, also, the bearing for the cam consists of a stud projecting from the side of the bar and provided with an anti-friction-roller for the purpose of reducing the friction. Preferably the bearing for the cam-shaft is permanently secured to the floor in proper position beneath the extended shafts of each pair of rolls, while the cam-shaft is removable therefrom, so that the jack as a whole may be moved from place to place and used for lifting first one and then another pair of rolls. I desire to have it understood, however, that the invention is not limited to these details in construction, as I believe myself to be the first to provide for the purpose described a lifting-jack consisting of a bar having seats or bearings which are placed in the manner described and cam mechanism for lifting the bar endwise from a point below said seats, so that the upper one of two shafts or similar bodies is lifted by the initial move-

ment of the bar, while the continued movement of the bar subsequently lifts the lower shaft, so that the said shafts are separated and supported.

5 In the accompanying drawings, which are made a part of this specification, Figure 1 is an elevation of a portion of a paper-making machine and of a lifting-jack embodying the invention in place, the parts being shown in
10 their initial positions—i. e., before lifting operation is begun—the parts being viewed at right angles to the axes of the rolls. Fig. 2 is an end elevation of the same parts, showing them in the positions which they occupy
15 after the rolls are lifted and separated.

A represents the upper roll; B, an extension of its shaft; C, the bearing in which the shaft is journaled; D, a swinging support carrying the bearing, and E a standard on which
20 said support is mounted.

A' is the lower roll; B', an extension of its shaft; C', the bearing in which it is journaled, and D' a swinging support carrying the bearing and in turn supported by the standard
25 E. It is not necessary to here describe the construction of these swinging supports. Suffice to say that when the weight of the rolls is removed from them they may be swung out of the way, so as to give free access to the
30 ends of the rolls in well-known manner. For fuller description of supports of this same general type reference may be had to my prior patents, numbered 471,631 and 691,572 and dated March 29, 1892, and January 21,
35 1902, respectively.

F is a bar, preferably of metal, having seats or bearings b and b' , adapted to receive the extensions B and B', respectively. These seats or bearings are farther apart
40 than are the under sides of the extensions B and B', so that when the bar is placed in vertical position with the seat or bearing b in contact with the under side of the extension B the seat or bearing b' will be some distance
45 below the under side of the extension B'. With this arrangement it is manifest that if the bar F be moved upward its first effect is to lift the extension B, and consequently the roll A, and that its continued upward move-
50 ment will bring the seat or bearing b' into contact with the extension B'. This results also in separating the rolls A and A'. After the seat or bearing b' comes in contact with the extension B' the continued movement of
55 the bar will lift both extensions in unison. The weight of the rolls and shafts being thus removed from their journal-bearings, the support D' may be moved out of the way, leaving the outer end of the roll A' easily accessi-
60 ble, so that the endless felt may be slipped onto it, it being understood that the felt is placed over the extension B' before the bar F is put in place.

G is a shaft movably mounted in a bearing H, which is preferably permanently se-

cured to the floor in the vertical plane of the axes of the rolls. This shaft carries a cam I, which has contact with an antifrictional sleeve or roller J, mounted upon a stud K, projecting from one face of the bar F, so that
70 when the shaft is rotated in one direction the cam will exert an upward pressure upon the roller J and lift the bar F and when rotated in the other direction will permit the bar F to move downward. For turning the shaft G it
75 may be provided at one end with a lateral-disposed socket L, adapted to receive the end of a lever M. This socket is preferably integral with the shaft and located a sufficient distance from the cam I to admit the lower
80 end of the bar F, which is provided with a slot F' of sufficient width to receive the shaft G, so that the lower bifurcated end of the bar straddles the shaft and is confined against lateral displacement relatively thereto. The
85 slot preferably extends to the end of the bar in order that the bar may be lifted out of place.

A paper-making machine has several sets of rolls, and their shafts are not all placed
90 at the same height from the floor. In order to accommodate all of the shafts of a paper-making machine, the standards h of the bearings H are made of different heights, and to accommodate rolls of different diam-
95 eters the bar F is provided with the necessary number of seats or bearings properly located, two, in addition to those already described, being shown at b^2 and b^3 .

When it is desired to do so, the bearing C
100 may be swung down away from the shaft b and the support D may be moved away from said shaft by means of the hand-screw d ; but in practice it is not usual to move both of the supports D and D' away at the same time,
105 one of them being left in place to hold its roll and through the medium of the bar F the other roll against lateral displacement.

Having thus described my invention, the following is what I claim as new therein and
110 desire to secure by Letters Patent:

1. A device for lifting and separating a pair of rolls disposed one above the other said device having a vertically-movable bar and means for lifting said bar from below, said
115 bar having means for engaging and lifting the shaft of the upper roll and for receiving lateral support therefrom, and said bar having also means for engaging and lifting the shaft of the lower roll and for restraining it
120 from moving laterally, substantially as described.

2. In a device of the class described, the combination with a pair of rolls, of a bar having seats adapted to receive the shafts of the
125 rolls, said seats being disposed a greater distance apart than are the parts of the shafts which they are adapted to engage, a shaft located below and in the vertical plane of the axes of the rolls, means for turning the shaft
130

last aforesaid, and means for transmitting the movement of said shaft to the said bar, substantially as described.

3. In a device of the class described, the combination with the shafts of a pair of rolls, of a bar having seats adapted to engage said shafts, a cam, means for turning said cam, and means through which the cam bears upon the bar, substantially as described.

4. In a device of the class described, the combination with a pair of rolls and their shafts, of a bar having seats adapted to engage said shafts, a cam adapted to move the bar upward, a shaft carrying said cam, a lever for turning the shaft, and a bearing in which the shaft is mounted, substantially as described.

5. In a device of the class described, the combination with a pair of rolls and their shafts, of a bar having seats adapted to engage said shafts, a cam adapted to move said bar upward, a shaft carrying the cam, and means for turning the shaft, the lower end of the bar and shaft having sliding engagement with each other whereby the bar is permitted to move endwise and restrained against lateral movement, substantially as described.

6. In a device of the class described, the

combination with a pair of rolls and their shafts, of a bar having seats adapted to engage said shafts and having a longitudinal slot, a shaft occupying the longitudinal slot of the bar, a cam carried by the shaft last aforesaid, a socket also carried by said shaft, a lever having its ends fitted in said socket, and an antifriction-roller carried by the bar and engaging the cam, substantially as described.

7. The combination with a pair of rolls, disposed one above the other, and having extended shafts, a support for the upper shaft movable vertically but immovable horizontally and a removable support for the lower shaft, of a device for lifting and separating said rolls, said lifting device having means for engaging the upper shaft whereby the shaft is lifted and the lifting device sustained horizontally and said lifting device having means for engaging the lower shaft whereby it is lifted and sustained against lateral movement, permitting its support to be removed, substantially as described.

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