

J. BUTLER.
ROLL CENTERING DEVICE.
APPLICATION FILED OCT. 7, 1909.

1,014,446.

Patented Jan. 9, 1912.

Fig. 2.

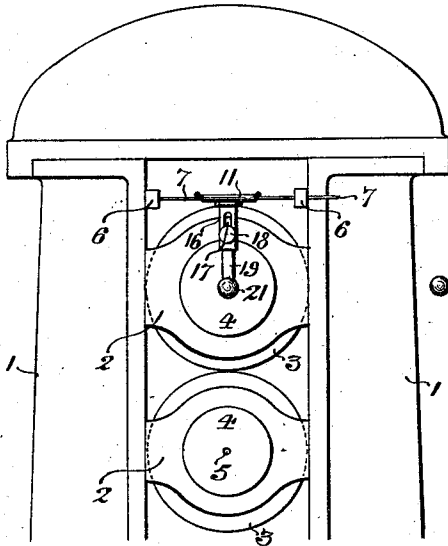


Fig. 1.

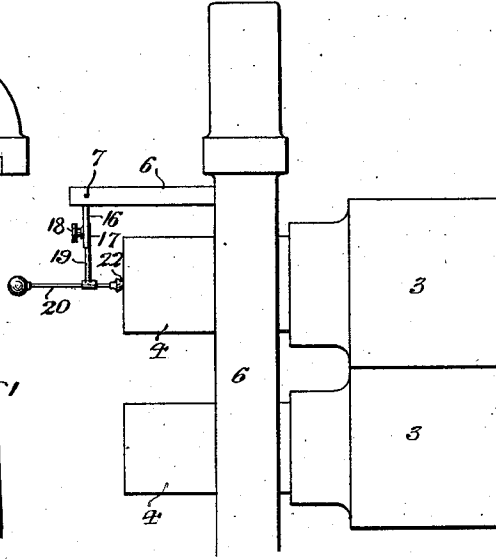


Fig. 3.

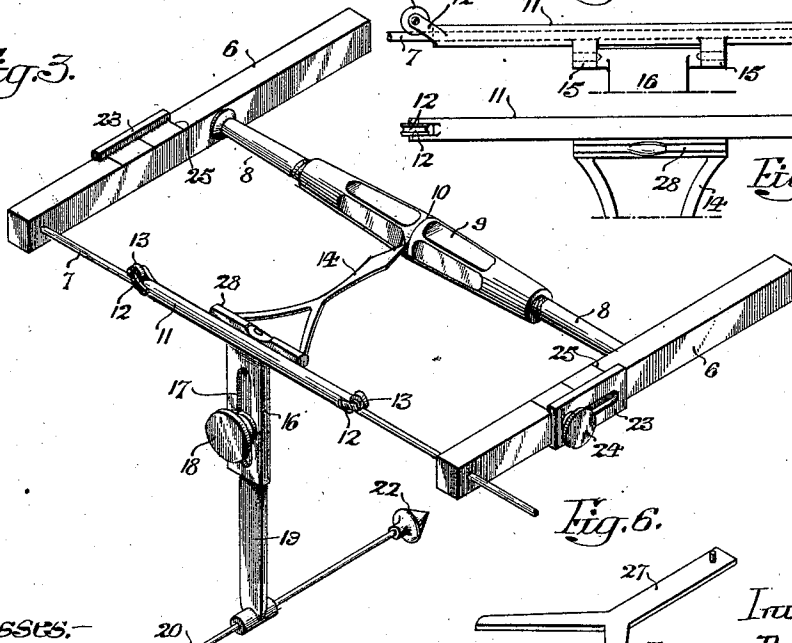


Fig. 4.

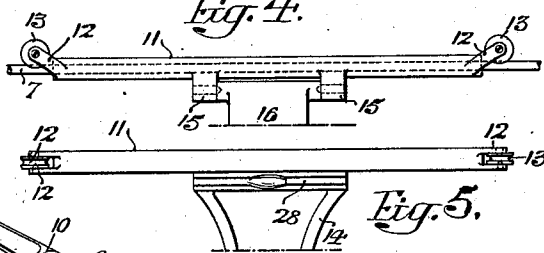
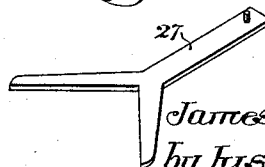


Fig. 5.

Fig. 6.



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UNITED STATES PATENT OFFICE.

JAMES BUTLER, OF PHILADELPHIA, PENNSYLVANIA.

ROLL-CENTERING DEVICE.

1,014,446.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JAMES BUTLER, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Roll-Centering Devices, of which the following is a specification.

My invention relates to that class of devices particularly designed for indicating when the rolls of a stack, such as those employed in calendering machines, are in the proper relative positions; one object of the invention being to provide a device, which while of a relatively simple and substantial construction, shall be highly accurate and easily applied to the various rolls of a series. These objects and other advantageous ends I secure as hereinafter set forth, reference being had to the accompanying drawings, in which:—

Figure 1, is a side elevation of a portion of a calendering machine illustrating my invention as applied thereto; Fig. 2, is an end elevation of the machine shown in Fig. 1; Fig. 3, is a perspective view illustrating in detail the various parts of the device; Figs. 4 and 5, are respectively a side elevation and a plan on a somewhat larger scale than Fig. 2, further illustrating the construction of my invention; and Fig. 6, is a perspective view of a form of roll-engaging member alternative to that shown in Fig. 3.

In the above drawings 1 indicates the cheek piece of one end of a frame of a calendering machine in which are mounted any desired number of bearings 2 for the calender rolls 3. As is well known, each of these rolls is provided with a neck portion 4 projecting through and beyond the bearings 2 and usually having in the center of its end a conical depression or lathe center 5. As first mounted in the housing or frame of the machine and also under certain conditions of operation, the rolls 3 are almost invariably out of line with each other so that instead of adjacent rolls being engaged with each other along a line the full length of their bodies, they are apt to lie at an angle so as to engage each other over very limited or short lines. It is necessary, therefore, that by suitable adjusting means, forming no part of the present invention, they shall be shifted so as to be practically parallel with each other, and my device is primarily

intended to indicate whether each roll is in its proper position in the housings, as well as to show how much movement is necessary to bring it into place. For this purpose I provide two relatively heavy bars 6 of rectangular section having a rod 7 extending from one end of one of them to the corresponding end of the other and preferably fixed in one bar while slidable in the second. At or adjacent the center of each bar is rigidly attached a stud or short rod 8 and these two rods project toward each other, having their adjacent ends provided respectively with right and left hand threads. An elongated nut 9 has in its opposite ends correspondingly threaded recesses to receive the ends of the studs 8 and the middle of this nut is marked by a center line 10; the various parts being so designed that said line is at all times midway between the outside faces of the bars 6, irrespective of the position of the nut upon the studs 8.

Mounted upon the rod 7 is a carriage 11, preferably, though not necessarily provided at its ends with upwardly projecting arms 12 in which are journaled flanged wheels 13 designed to run upon said rod as a track. Rigidly attached to or formed integral with this carriage is a pointer 14 extending at right angles to the line of said carriage so as to cooperate with the center line of the nut 9 under predetermined conditions. Each of the wheels is mounted on conical pointed screws so that it may be adjusted with the utmost nicety to take up any lost motion due to wear or other causes. Projecting downwardly from the under side of the carriage 11, in a direction at right angles to the line of the pointer 14, are a pair of lugs 15 in which are mounted pointed bearing screws designed to support a swinging arm 16. Said arm is slotted at 17 for the reception of a screw having a thumb nut 18 whereby it is possible to adjustably clamp a bar 19 to said arm. The lower end of this bar is made tubular for the reception of a rod 20 which has at one end a handle 21 and at the other end a conical head 22;—said rod being free to slide longitudinally through said tubular end.

With this arrangement of parts, when it is desired to center the rolls of a stack or other series, I place the bars 6 between the cheek pieces of the housing adjacent to the first roll 3 which it is desired to adjust, and

in order that said bars may project for equal distances beyond the faces of said cheek pieces, I mount on them adjustable plates 23 which may be clamped in any desired positions by screws 24 and thus used to limit the position of the bar by engaging the cheek pieces; there being lines 25 on said bars by which said plates may be set. Thereafter the bars may be placed in the positions upon the cheek piece determined by said plates, and the nut 9 turned so as to force said bars apart, thereby clamping them against the inside or adjacent faces of the cheek pieces. As the carriage 11 is free to move longitudinally upon the rod 7, it is then possible to place the conical head 22 in the lathe center 5 of the particular roll 3 immediately under the bars 6.

Since in the manufacture of the device, the various parts are so constructed and adjusted that the rod 20 is exactly parallel to the pointer 14, this latter, when the head 22 is central within the center hole of the roll, will occupy a position the same distance from the outer face of one of the bars 6 as the distance between the center of the roll and that face of the cheek piece 1 engaged by said bar. The nut 9 and studs 8 are also so made that when the bars have been clamped in position, the center line 10 is equidistant from the two cheek pieces 1, so that under the conditions above noted, if the roll is correctly placed, the end of the pointer 14 lies in engagement with said line 10. If, on the other hand, the roll is to one side of its central position, the pointer 14 lies at a corresponding distance to one side of the center line 10, and as the roll is moved to its correct position by any suitable device, said pointer will indicate when it finally reaches the same. Thereafter, by turning the nut 9, the two bars 6 may be unclamped from the cheek pieces and remounted adjacent a second roll to be adjusted; the free end of the rod 7 sliding through one of the bars to permit of this operation.

It is obvious that the bars 6 may be made to extend for a greater or less distance between the cheek pieces, depending upon the distance to which the necks of the rolls project beyond them, and if, as in some cases, said rolls should not be provided with lathe center holes, I may replace the bar 19 and rod 20 by a bar 27 forked at its lower end so as to be capable of engaging the cylindrical surface of the end of the neck. This member 27 may be attached to the arm 16 by a thumb nut 18 engaging its screw as before.

In order that the two bars 6 may be adjusted to the same height so as to bring the rod 7 and the studs 8 with the nut 9 into horizontal positions, I provide the carriage 11 with a spirit or other level 28.

By mounting my apparatus between the

cheek pieces of the housing, as above noted, I am enabled to quickly and accurately set the same, especially since the adjacent faces of said cheek pieces constitute reliable and unvarying surfaces of reference from which the proper positions of the rolls can at all times be determined.

Any wear or looseness of the parts can be quickly and conveniently taken up by adjustment of the conical pointed bearing screws, and as is obvious, the device may be applied to or removed from the machine whose rolls are to be adjusted, with the utmost quickness.

I claim:—

1. A roll center indicating device consisting of a supporting structure including two members formed to engage the cheek pieces of a housing, means for moving said members apart to clamp them to such cheek pieces, means carried by said supporting structure for engaging a roll, with an indicator actuated by said roll engaging means and coöperating with a portion of said clamping means to show when the roll is centered.

2. The combination in a roll center indicating device, of two substantially parallel bars formed to detachably fit the cheek pieces of a housing; a supporting structure carried by the bars; a member slidably supported on said structure so as to be movable toward or from either bar and capable of engaging the roll; an indicator connected to said member; and a piece supported by the bars in position to coöperate with said indicator to show when a roll is centered.

3. A roll center indicating device consisting of a framework, means for detachably clamping said framework to the frame of a machine, an indicator placed to coöperate with a part of said clamping means to show the position of a roll, and a roll engaging member connected to said indicator and adjustable upon said framework.

4. The combination of a framework including two bars, and means for clamping said bars to the framework of the machine, said means consisting of an adjustable nut and studs engaged by said nut, with a center indicating device, and roll engaging means connected to said device.

5. The combination in a roll center indicating device of a frame capable of being removably mounted on the roll housing, a member having a center line, a carriage movable on said frame, with a roll engaging member and an indicator connected to said carriage, and capable of coöperating with said center line.

6. The combination of two bars capable of engaging the cheek pieces of a housing, a supporting structure extending between the bars, a threaded stud on each bar, a nut threaded on said studs, a carriage adjust-

ably mounted on said structure, a center indicator connected to the carriage, and a roll engaging member connected to said indicator.

5 7. The combination of two bars, means for clamping said bars to a machine, a rod on the bars, a carriage movable thereon, an indicator connected to the carriage, an arm also supported on the carriage, and an adjustable roll engaging member carried by
10 said arm.

8. The combination of two bars, a supporting structure extending between said bars, means for clamping said bars to the
15 cheek pieces of a housing, consisting of a stud on each bar, and a nut oppositely threaded on said studs, there being a center line on said nut, a carriage carried by said supporting structure and provided with an
20 indicator placed to cooperate with said center line, and a roll engaging member also supported on the carriage.

9. The combination of two bars, means for clamping said bars to the cheek pieces of
25 a housing, consisting of a stud on each bar, a nut oppositely threaded on said studs, means carried by said bars for engaging a

roll, and an indicator actuated by said roll engaging means.

10. The combination of two bars, means 30 for attaching said bars to the frame of a machine, a structure extending between said bars, a carriage supported by said structure and adjustable relatively to said bars, center indicating means for the carriage, a bar 35 connected to the carriage, and a roll engaging member slidably mounted in said bar.

11. The combination of a frame capable of attachment to the housing of a machine, a carriage adjustably mounted on said 40 frame, an indicator and a roll engaging member supported on the carriage, said indicator being operatively connected to said member and placed to cooperate with a part 45 of the frame, and a level also on the carriage.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses.

JAMES BUTLER.

Witnesses:

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WM. A. BARR.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."