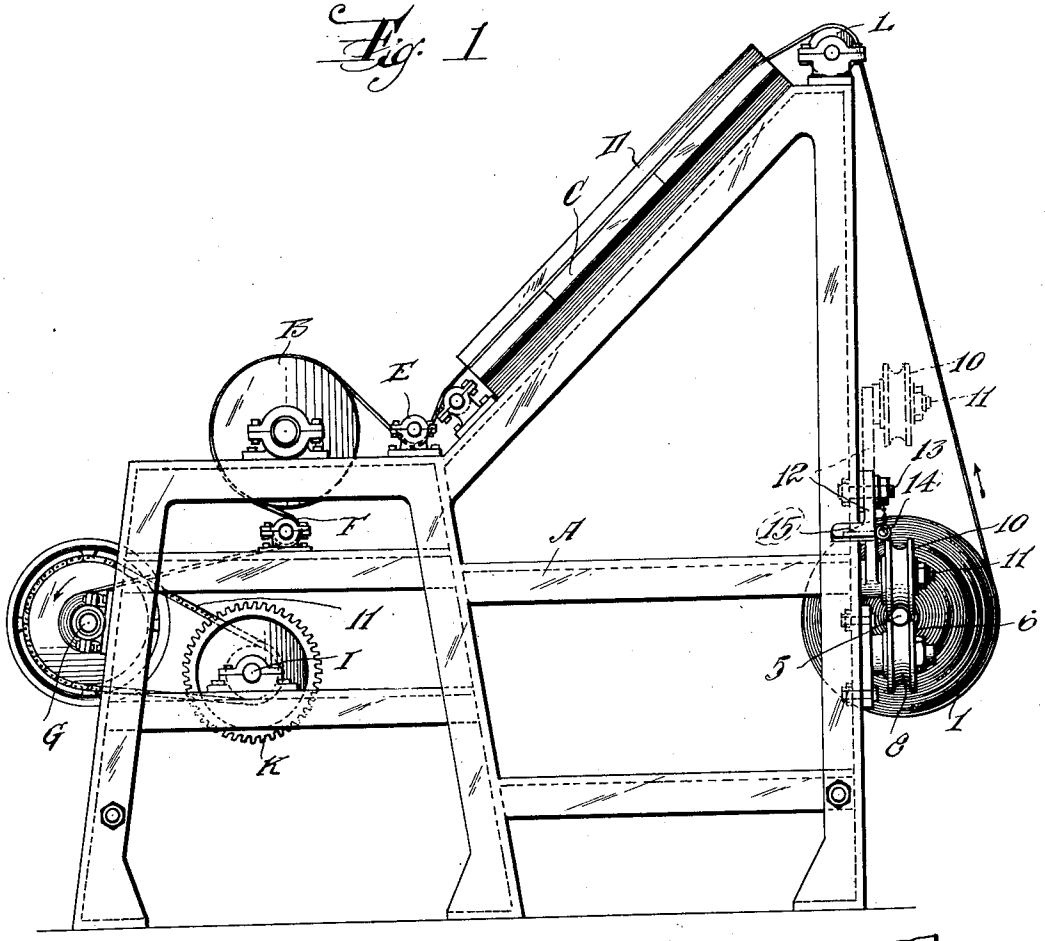
Aug. 8, 1933. W. J. CULLEN 1,921,405

ROLL SHAFT MOUNTING FOR INSPECTION REELERS AND THE LIKE

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Fig. 1



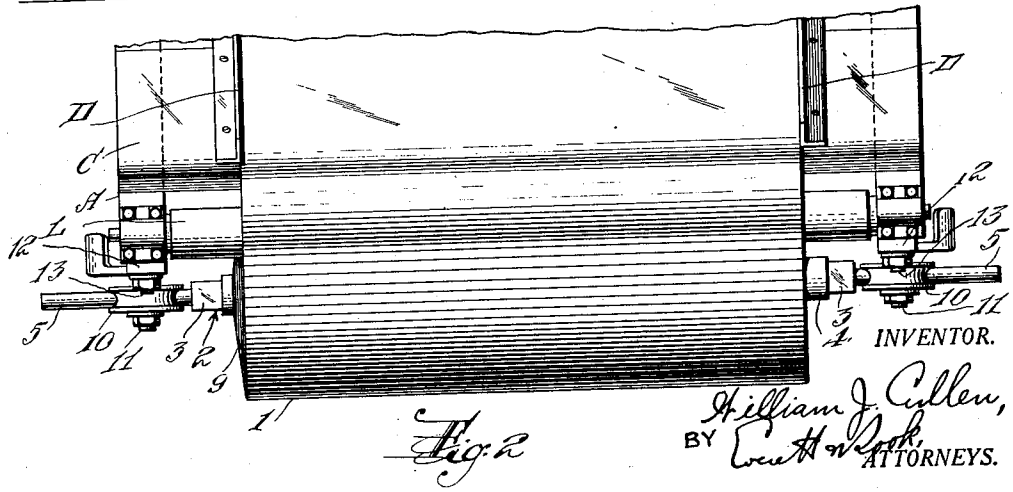


Fig. 2

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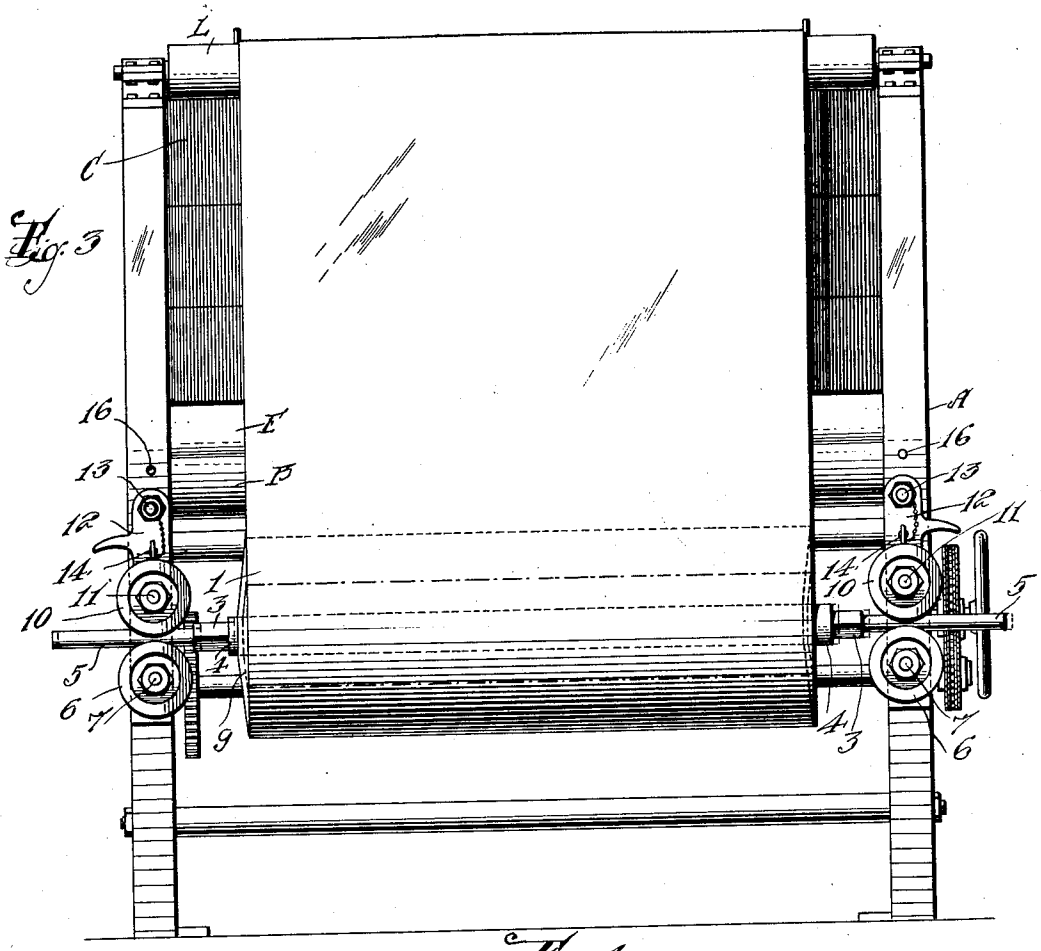


Fig. 3

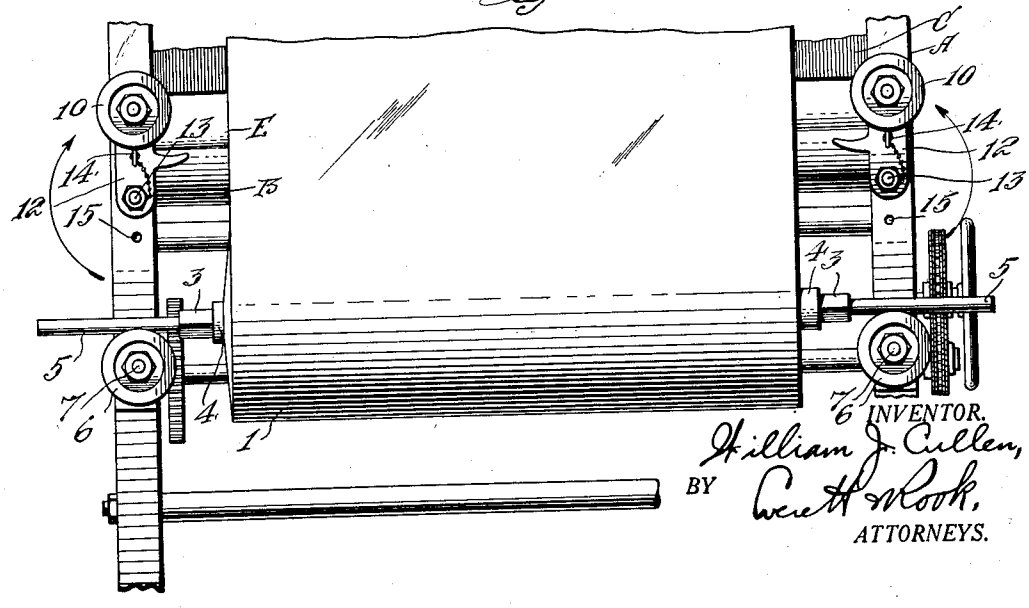


Fig. 4

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UNITED STATES PATENT OFFICE

1,921,405

ROLL SHAFT MOUNTING FOR INSPECTION REELERS AND THE LIKE

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Application September 3, 1931. Serial No. 560,963

3 Claims. (Cl. 242—76)

This invention relates in general to machines wherein a roll of material is unrolled or unwound for some purpose, for example to inspect the material. In such machines, particularly machines for inspecting web material, such as paper, treated fabrics, and the like, a roll of the material to be inspected is mounted on a shaft which is removably arranged in journals or bearings. The web of material is unwound from said roll between fixed guides over an inspection roller, and then wound upon another roll. The material is frequently irregularly or unevenly wound upon the roll, and due to this uneven winding and the fixed relation of the guides between which the material is moved, the edges of the material become folded, torn or wrinkled.

One object of my invention is to provide a novel and improved mounting for the shaft of the roll of material, whereby said shaft may freely move longitudinally to compensate for unevenness or irregularity in the winding of the material on the roll. In other words, the invention contemplates the mounting of the roll shaft so that it may move with respect to the fixed guides whereby the material may always freely pass between the guides without danger of folding, wrinkling or tearing of the edges of the material due to lack of parallelism between the edges of the material and the guides, which is produced by uneven winding of the material on the roll.

Other objects are to provide such a shaft mounting comprising a pair of rollers journaled in a common plane having circumferentially grooved peripheries to rotatably and longitudinally movably support a roll shaft; to provide in such a mounting means for preventing lateral movement of the shaft on said rollers; to provide a machine of the character described including a frame, means for unwinding material from a roll, fixed guides to limit lateral movement of the material in its own plane, a shaft having a roll of material to be inspected, and means for mounting said shaft so that it may freely rotate and longitudinally move as the material is unwound therefrom; and to obtain other advantages and results as will be brought out by the following description.

Referring to the accompanying drawings, in which corresponding and like parts are designated throughout the several views by the same reference characters,

Figure 1 is a side elevation of an inspection reeler embodying my invention;

Figure 2 is fragmentary top plan view thereof, showing the mounting for the roll shaft;

Figure 3 is a rear elevation of the machine, and

Figure 4 is a fragmentary rear elevation, showing the manner of applying and removing the roll shaft to and from the supports or bearings.

Specifically describing the illustrated embodiment of the invention, the machine comprises a frame A upon the top of which is journaled a roller B at the lower end of a guide table C that is also mounted on the top of the frame. Upon this guide table C are adjustably mounted a pair of spaced and parallel guides D disposed substantially perpendicular to the axis of the roller B, so as to guide web material over said roller. Between the guide table C and the roller B are idler rollers E, and beneath the roller B is another idler roller F. At the front side of the machine is journaled a winding shaft G upon which the material to be inspected is to be wound after inspection, said shaft being driven by any suitable means such as chain and sprocket gearing H from a drive shaft I which may be driven from any suitable source of power through a gear or sprocket K.

The roll of material to be unwound and inspected is mounted at the rear of the machine, said roll being designated 1 and is carried by a shaft 2 which preferably has a polygonal middle portion 3 for receiving core blocks 4 upon which the material is wound. The end portions 5 of the shaft are shown as cylindrical. The material passes from the roll 1 over a guide roller L to the guide table C between the fixed guides D, over the idler rollers E, inspection roller B, idler roller F and is attached to the shaft G. The material is unwound from the roll 1 by the tension on the material exerted by the drive mechanism upon the shaft G.

My invention resides particularly in the mounting for the roll shaft 2, and consists in mounting this shaft so that it may both rotate and move longitudinally transversely with respect to the guides D to compensate for unevenness in the winding of the material upon the roll 1. As shown on the drawings, this mounting comprises a pair of rollers 6 journaled at 7 on the rear of the frame A in substantially the same plane with their axes parallel and horizontal, said rollers having circumferentially grooved peripheries 8 to receive and support the cylindrical ends 5 of the roll shaft 2. With the roll shaft 1 so mounted, it will be obvious that it may freely rotate and longitudinally move on the rollers 6.

In operation of the machine, and assuming that the material of the roll 1 has been unevenly

wound so that the edges of the material at both ends of the roll in different convolutions thereof are in different planes transversely to the axis of the shaft, as indicated at 9, and that the material has been threaded between the guides D, over the inspection roller B and attached to the shaft G, rotation of the shaft G in the direction of the arrows on Figure 1 will unwind the material from the roll 1. The guides D are fixed with respect to the roll, and the edges of the material tend to assume angular relations to the guides due to the uneven winding of the material, but this tendency of the material is overcome by longitudinal movement of the roll shaft 1 in one direction or the other, as indicated in dot and dash lines on Figure 3 of the drawings. In other words, with the material wound on the roll 1 as shown in Figure 3, the lateral pressure and/or tension on the material due to the lack of alinement with the guides of the edges of the material as it leaves the roll will cause the shaft 1 to gradually longitudinally move or can be manually moved to the right so that the edges of the material will always be exactly parallel with the guides D. Accordingly, injury to the edges of the material, for example folding, wrinkling or tearing, by contact with the guides, will be obviated. Of course, the shaft 5 might be manually moved in the same direction, if desired, but such manual movement would be inaccurate due to difficulty in estimating the required extent of movement, and the edges of the sheet might become torn or wrinkled. The tension on the material as it is unwound from the roll tends to raise the shaft from the roller 6 so as to decrease the frictional resistance to movement of the shaft.

Obviously the roll shaft 1 may be applied to and removed from the rollers 6 by simply placing the ends of the shaft on the peripheries of the rollers and removing the shaft therefrom.

In many instances it may be desirable to provide means to prevent lateral movement of the roll shaft 1 on the rollers 6, as when the shaft is under considerable lateral tension. Such means may consist of another pair of rollers 10 each arranged on the frame with its periphery in juxtaposition to the periphery of one of the rollers 6, as clearly shown in Figure 3 of the drawings. In other words, the rollers 10 and 6 are arranged at opposite sides of the shaft 1. Preferably the peripheries of the rollers 10 are also circumferentially grooved.

It is also desirable to bodily movably support the rollers 10 so as to facilitate the application and removal of the shaft 1 to and from the rollers 6. Accordingly, the rollers 10 may be journaled at 11 on brackets 12 which are pivotally mounted at 13 on the frame, so that by swinging of the brackets the rollers 11 may be brought into proximity to or swung away from the rollers 6. In Figure 4 of the drawings, the rollers 10 are shown as swung away from the rollers 6. The brackets 12 may be positively locked in their different positions by a pin 14 removably inserted in openings 15 and 16 in the frame.

While I have shown and described my invention as embodied in one type of machine and in certain details of construction, it should be understood that this is primarily for the purpose of illustrating the principles of the invention; that the invention may be used with many other types of machines where it is desired to accomplish a result similar to that above described, and that the details of construction may be widely changed without departing from the spirit or scope of the invention.

Having thus described the invention, what I claim is:

1. The combination of a frame, a shaft with a roll of material thereon, means for mounting said shaft on said frame for rotation and free longitudinal movement in both directions, means on said frame for unwinding said material from said roll under tension, and guides on said frame each engaging one edge of said material between said roll and said means for unwinding said material and remote from the roll to limit lateral movement of said material in its own plane and guide it in a predetermined path, whereby said roll shaft may move longitudinally as said material is unwound from the roll to adjust the edges of said material into alinement with said guides and compensate for irregular winding of said material on said roll.

2. The combination of a frame, a pair of rollers having circumferentially grooved peripheries journaled on said frame with their axes parallel and horizontal, each of said rollers to receive on its periphery one end of a shaft having a roll of material thereon with the shaft disposed so that an axial plane thereof is at right angles to the axes of said rollers and said shaft may rotate and move longitudinally freely in both directions, means on said frame for unwinding said material from said roll under tension, and guides on said frame each to engage one edge of said material between said means for mounting the roll and said means for unwinding said material to limit lateral movement of the material in its own plane and guide it in a predetermined path, whereby said roll shaft may move longitudinally as said material is unwound from said roll to adjust the edges of said material into alinement with said guides and compensate for irregular winding of said material on said roll.

3. The combination of a frame, means thereon for mounting a shaft having a roll of material thereon for rotation and free longitudinal movement in both directions, a winding shaft journaled on said frame to unwind said material from said roll, means for rotating said winding shaft, a guide table between said winding shaft and said means for mounting said roll of material on the frame over which said material is movable, and elongated guides on said guide table, each to engage one edge of said material between said roll and said winding shaft to guide the material in a predetermined path to said winding shaft, whereby said shaft having the roll of material may move longitudinally to adjust the edges of said material into alinement with said guides and compensate for irregular winding of said material on said roller.

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