

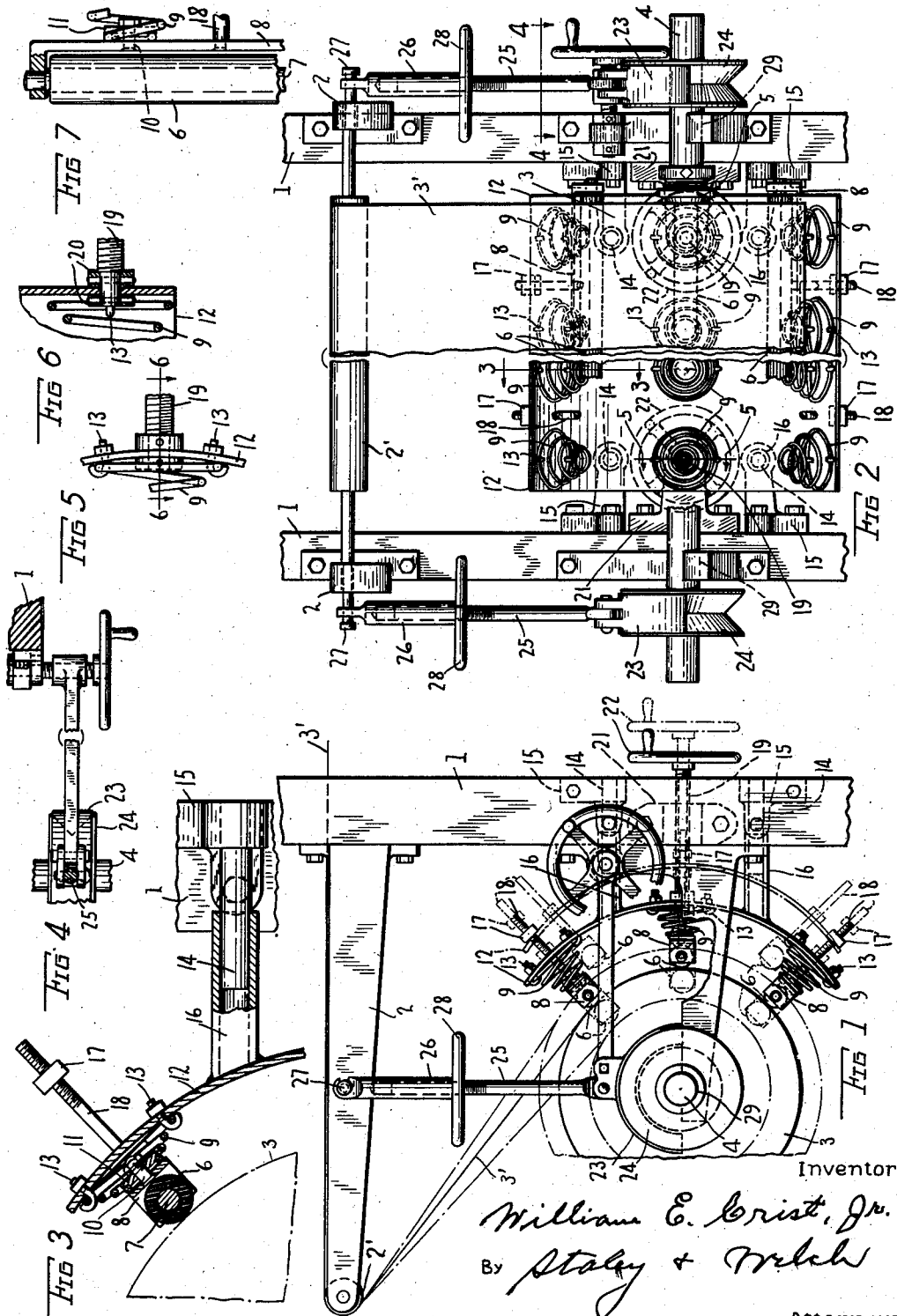
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TENSIONING APPARATUS FOR MATERIAL ROLLS

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TENSIONING APPARATUS FOR MATERIAL ROLLS

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5 Claims. (Cl. 242—75)

This invention relates to an apparatus for maintaining a tension upon material being unwound from a reel, such for instance as upon a roll of paper which is being fed to a printing press, for which purpose it is particularly adapted.

The object of the invention is to provide an apparatus for the purpose specified which will be simple in construction and effective in operation.

In the accompanying drawing:

Fig. 1 is a side elevation of an apparatus embodying my improvement, together with a portion of the frame of a printing press.

Fig. 2 is a view of the rear end of the parts shown in Fig. 1, some of the parts being broken away.

Fig. 3 is a section on the line 3—3 of Fig. 2.

Fig. 4 is a section on the line 4—4 of Fig. 2.

Fig. 5 is a section on the line 5—5 of Fig. 2.

Fig. 6 is a section on the line 6—6 of Fig. 5.

Fig. 7 is a top plan view of a part of the mechanism.

In the present case I have shown my apparatus applied to a printing press. The parts of the apparatus are all supported from the press frame, indicating parts of the rear portion of the press frame and 2 are arms which extend rearwardly from the frame members 1. The roll of paper indicated at 3 is carried upon a shaft 4 in the usual manner, the roll of paper having the usual hollow iron core (not shown) and the shaft having adjustable cones which engage with the ends of the iron core, one only of these cones, 5, being shown.

In order to apply a tension to the roll of paper so that the web 3' thereof may be kept taut there is employed a series of soft rubber rollers 6 mounted upon shafts 7 rotatably supported by a long bracket 8, the rollers being of the full width of the paper. The rollers are arranged in frictional engagement with the paper by a series of springs 9 preferably conical spiral in form, these springs having their inner ends connected to the bracket 8 by bolts 10 and washers 11 and having their rear ends connected to a backing plate 12, preferably of sheet metal, which is formed on the arc of a circle whose center is the center of the paper roll, the springs being connected to this backing 12 by hook bolts 13, three series of rollers and springs being employed in the present instance. The length of the backing plate 12 is slightly greater than that of the width of the roll of paper to insure applying pressure upon the roll of paper near the edges thereof.

The backing plate 12 is supported by a series of pins 14, four of these pins being shown in the

present instance. These pins are carried by brackets 15 which are connected with the press frame members 1 by bolts as shown in Fig. 2. For each of the pins 14 the backing plate 12 is provided with a sleeve 16 each of which slides upon its corresponding pin, these sleeves being connected to the backing preferably by welding.

As the roll of paper decreases in size the rollers 6 urged by the springs are kept in contact with the paper due to the elongation of the springs, the inward movement of these rollers 6 being limited by adjustable stops in the nature of nuts 17 threaded on rods 18 which extend loosely through the backing plate and are connected with the brackets 8, two of these stops being provided for each roller.

In order to withdraw the rollers and their springs to permit the installation of a new roll of paper there is provided a pair of screws 19, the inner ends of which are rotatably connected with the backing plate 12 as shown best in Fig. 6, each screw having a plain reduced inner end which passes loosely through the backing plate and has on each side thereof a collar 20. Each of these screws is threaded in a bracket 21 which brackets are bolted to the press frame members 1, and the outer end of each screw is provided with a hand wheel 22. When the screws are rotated in one direction by these hand wheels, the backing plate, springs and rollers may be withdrawn a sufficient distance to allow the insertion of a new roll of paper upon the shaft 4.

Provision is made for retarding a too free rotation of the shaft 4 which carries the paper roll by means of brake shoes 23 which cooperate with brake pulleys 24 which are secured to the shaft. As is the usual practice one of these grooved pulleys is removable so that the roll of paper with its hollow core may be slipped onto the shaft 4. Each of these brake shoes is pivotally connected with a threaded rod 25 the upper end of the rod being slidably mounted in a sleeve 26 which has a hook engagement with a pin 27 which is connected and projects laterally from the arms 2 of the press frame. A hand wheel 28 has a threaded engagement with each one of the rods and each bears against its corresponding sleeve 26 so that when the wheels are turned in either direction the frictional engagement of the brake shoes 23 with the grooved pulleys may be increased or diminished.

As before explained, the rollers 6 remain in engagement with the paper roll until arrested by the stops 17. These stops are designed to act before the paper is exhausted and at that time,

the tension of the paper, to maintain the tautness of the web, will be maintained by the brake shoes 23 without wrinkling; these brake shoes being sufficient for that purpose due to the decreased size of the paper roll.

It should be explained that when the roll of paper is exhausted the shaft 4 is removed from the open bearings 29 in which it is mounted, slipped into the hollow metal core of a new roll of paper and then replaced in the bearings, the hook connection of the sleeves 26 on the studs 27 permitting them to be readily removed from the studs for that purpose.

Before a new roll is inserted, however, the backing plate 12 and the rollers 6 and springs which it carries are retracted in the manner before explained.

In order to keep the upper roller 6 back of the point where the web 3' leaves the paper roll, the web is passed about an idler roller 2' at the rear end of the arms 2.

By the apparatus described, if the roll of material is wound absolutely straight at the factory, as it almost invariably is, the roll of material will unwind straight and will be fed accurately to the press, thus avoiding wrinkling of the paper, avoid breakage due to too much tension of the brake shoes on the roll of paper, will cause the paper to be kept in proper registry with the printing plates of the press, and will cause the knives of the press to cut the paper at the proper marginal points.

Having thus described my invention, I claim:

1. In a tensioning apparatus for a roll of material during unwinding thereof, a roller, means for supporting the same, a backing plate, a series of springs between said supporting means and backing plate to hold said roller in resilient engagement with the outer surface of the material roll, and means to withdraw said backing plate, roller and springs to permit the insertion of a fresh roll of material.

2. In a tensioning apparatus for a roll of material during unwinding thereof, a roller, means for supporting the same, a backing plate, a series of springs between said supporting means and backing plate to hold said roller in resilient engagement with the outer surface of the material roll, and means to withdraw said backing plate, roller and springs to permit the insertion of a fresh roll of material, said withdrawing means consisting of at least two threaded rods swivelly connected with said backing plate and having a threaded engagement with a fixed part together with means for turning said rods.

3. In a tensioning apparatus for a roll of material during unwinding thereof, a device to engage said roll, a bracket for supporting the same, a backing plate, springs between said backing plate and bracket, and means for slidably supporting said backing plate from a fixed part.

4. In a tensioning apparatus for a roll of material during unwinding thereof, a device to engage said roll, a bracket for supporting the same, a backing plate, springs between said backing plate and bracket, and means for slidably supporting said backing plate from a fixed part, said means consisting of pins on said fixed part and sleeves connected with said backing plate slidably mounted upon said pins.

5. In a tensioning apparatus for a roll of material during unwinding thereof, a roller, a bracket for supporting the same, a backing plate, springs interposed between said bracket and backing plate, threaded rods connected with said bracket and projecting loosely through said backing plate, and nuts on said rods to contact with said backing plate to limit the movement of said roller toward the center of said material roll.

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