No. 621,103. Patented Mar. 14, 1899.

F. L. LANE.

FEED ROLL.

(Application filed June 13, 1898.)

(No Model.)

Fig. 1.

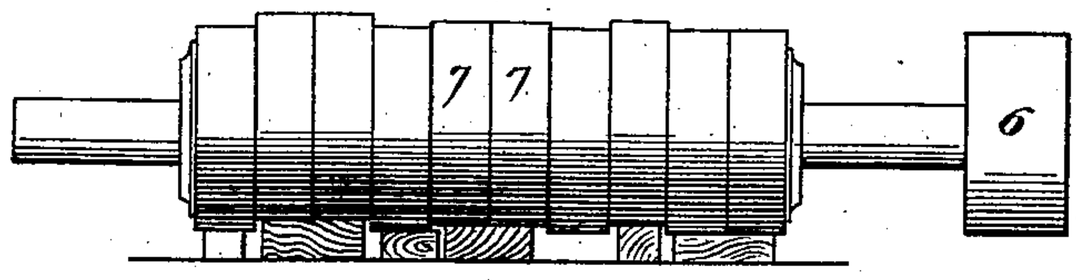


Fig. 2.

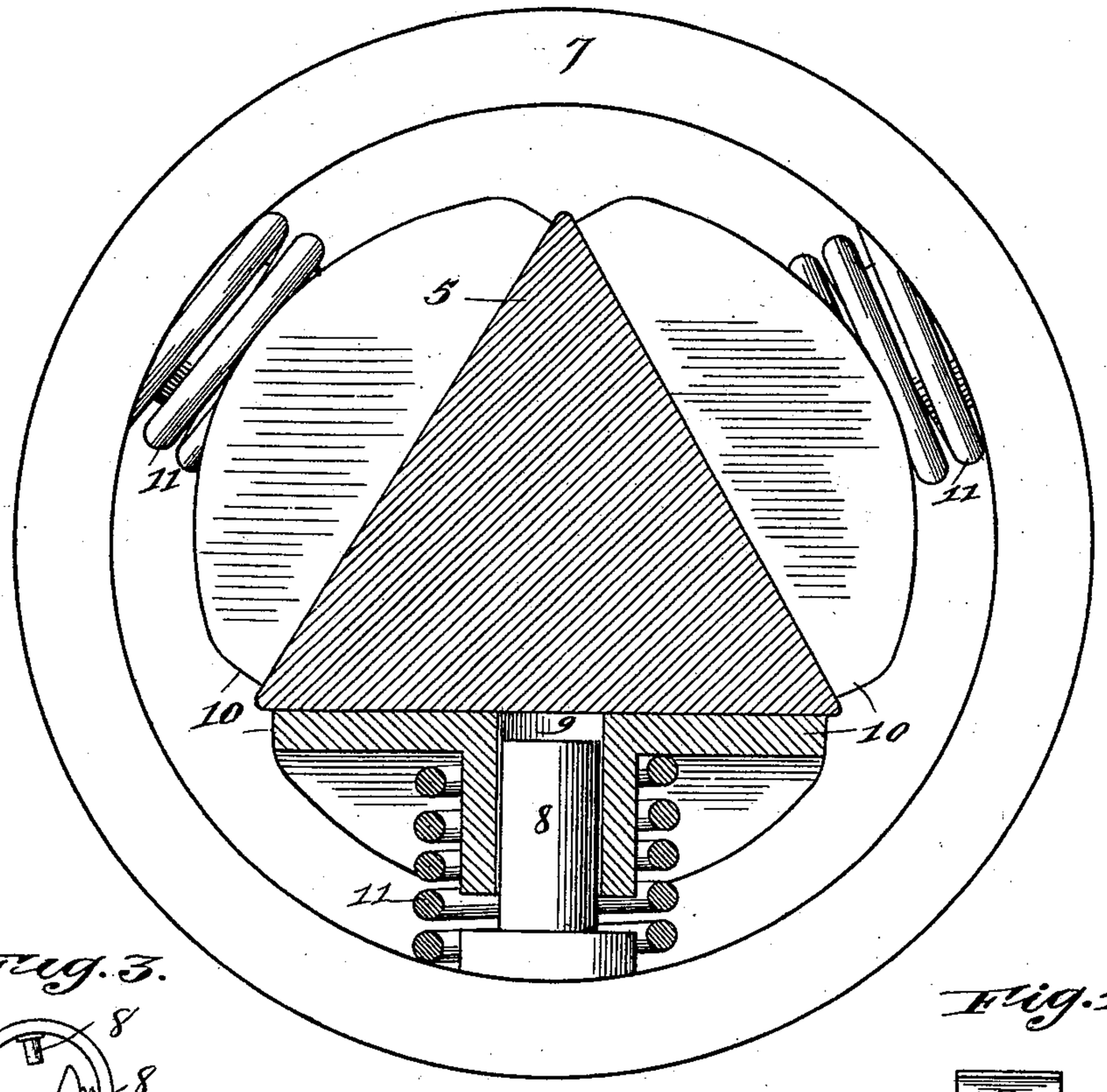


Fig. 3.

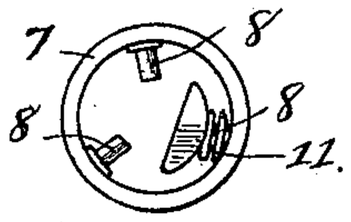
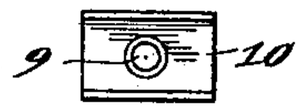


Fig. 4.



Witnesses,
L. G. Mann,
Frederick L. Goodwin.

Inventor,
Franklin L. Lane,
By Offield, Towler & Linthicum,
Attys.

UNITED STATES PATENT OFFICE.

FRANKLIN L. LANE, OF BELOIT, WISCONSIN, ASSIGNOR TO THE BERLIN MACHINE WORKS, OF SAME PLACE.

FEED-ROLL.

SPECIFICATION forming part of Letters Patent No. 621,103, dated March 14, 1899.

Application filed June 13, 1898. Serial No. 683,294. (No model.)

To all whom it may concern:

Be it known that I, FRANKLIN L. LANE, of Beloit, in the county of Rock and State of Wisconsin, have invented certain new and useful Improvements in Feed-Rolls, of which the following is a specification.

This invention relates to an improved feed-roll which may be used in a great variety of machines and for feeding various kinds of material, but is most commonly employed in feeding lumber to planers or surfacers. In this class of machines it is common to feed a number of pieces of material of varying widths and thicknesses simultaneously by the action of the same feed-roll, and to adapt the roll to this work it is sometimes made in sections and these sections yieldingly mounted, so that they may assume various positions eccentric to the shaft, dependent upon the variations in thickness of the pieces of material with which the sections contact.

My invention has for its object to provide an improved roll of this latter type and will be understood from an inspection of the accompanying drawings, in which—

Figure 1 shows the feed-roll in elevation, the sections thereof varying in position, due to the variations in thickness of the material acted upon. Fig. 2 is a sectional elevation through the roll-shaft and one of the driving-shoes and its spring, showing the roll-section in side elevation. Fig. 3 shows one of the roll-sections detached and in side elevation with one of the driving-shoes and its spring, and Fig. 4 is a plan view of the driving-shoe.

As illustrated in the drawings, I have shown my improved feed-roll as composed of a number of sections; but it will be understood that the principle of my invention may be embodied in a feed-roll having a single section only, and it will be further understood that the particular construction illustrated in the drawings may be further modified—as, for example, in the form of the central driving-shaft and in other structural details.

In the drawings, let 5 represent the central driving-shaft, which, as shown, is triangular in form, but which may be rectangular or polygonal in form. This shaft may be driven by a gear or pulley 6.

7 represents the roll-sections, which may be of uniform diameter and width of face and are provided on their perimeters with studs 8, adapted to the sockets 9 of the driving-shoes 10, whereby the ring may have a radial movement relative to the shaft. The precise manner of connecting the shoe and the ring is immaterial so long as the means employed enable the ring to be positively driven by the shaft through the shoe and its connection with the ring. As many shoes will be employed as the shaft has driving-surfaces, and between the shoes and the ring, bearing on both, are interposed springs 11, which operate to hold the shoes at all times in close contact with the opposing shaft-surface, while permitting the sections to yield independently of each other. Normally the sections are substantially concentric to the shaft-axis, but are each capable of yielding independently to accommodate varying thicknesses of material, the limit of yield being determined by the clearance in the connection—as, for example, between the socket 9 and the shoulder on the stud 8.

In operation it is obvious that the roll-sections are positively driven by means of the driving-shoes and their connections, the shoes contacting with the plane surfaces of the shaft, and that as the roll-section yields or rises the shoes will vary their positions relative to each other. The shoes are placed and remain under constant pressure or tension of the springs, and this spring-tension on each shoe will vary during the rotative movement, the spring receiving the extreme or maximum compression as the shoe passes through a vertical plane extending through the axis of the driving-shaft and the point at which the pressure is being applied. It is obvious that during the rotation of the shaft and assuming that the feed-roll sustains sufficient pressure to move it into a position eccentric to the shaft the shoes will have a lateral sliding movement upon the plane surfaces of the shaft with which they contact; but the spring-pressure in all positions of the shoe is sufficient to maintain the latter in contact with the flattened side of the shaft, and thereby effect the driving of the roll-section through

the shoe and its connections. It will also be observed that the springs are arranged radially to the shaft and that the sliding connection between the shoe and the roll-section is also in lines at right angles to the axis of the shaft. Therefore the spring is not required to perform any work save to maintain the shoe in contact with the flattened surface of the shaft, the driving being positive, while the roll-section itself moves against the tension of the spring. The principal function of the spring is to permit the yielding of the roll-section, while the drive is positive, the spring having no other effect in driving save to hold the shoe in contact with the flattened surface of the shaft, and the spring is not therefore subjected to any torsional action.

Among the other permissible variations of structural details is the particular one of forming the sliding connection between the shoe and the roll-section. I have shown studs upon the roll-section and sockets in the shoe. These parts might be reversed or made of other form.

I claim—

1. A feed-roll, comprising in combination, a driving-shaft having three or more plane surfaces, a roll-section surrounding the shaft, driving-shoes contacting with the plane surfaces of the shaft and having a sliding connection with the roll-section, and springs bearing upon the shoes and the section whereby to hold said shoes in contact with the shaft while permitting the section to move toward the shaft, substantially as described.

2. The combination with a rotary shaft, of a feed-roll section arranged about the shaft, loosely-mounted driving-shoes interposed between the shaft and the roll-section and having driving engagement with both, and springs interposed between the shoes and the roll-section and adapted to hold the shoes in driving relation to the shaft and permit the section to yield to external pressure thereon, substantially as described.

3. The combination, with a driving-shaft having three or more plane surfaces, of a feed-roll section surrounding the same, radially-movable shoes adapted to bear upon the plane surfaces of the shaft, studs and sockets carried by the shoes and the roll-section and affording a sliding connection between them, and springs interposed between the shoes and the roll-section and adapted to maintain the shoes in contact with the shaft-surfaces while permitting a limited movement of the section, substantially as described.

4. A sectional roll, comprising in combination, a driving-shaft having three or more plane surfaces or sides, a series of annular sections surrounding said shaft, driving-shoes adapted to said surfaces and having a sliding connection with the roll-sections and springs interposed between the shoes and the roll-sections, whereby the shoes are maintained in driving contact with said shaft-surfaces and the roll-sections are yieldingly supported with relation to the shaft, substantially as described.

FRANKLIN L. LANE.

Witnesses:
C. C. LINTHICUM,
FREDERICK C. GOODWIN.