

F. T. McDONOUGH.
FEED ROLL.
APPLICATION FILED FEB. 21, 1908.

936,250.

Patented Oct. 5, 1909.

3 SHEETS—SHEET 1.

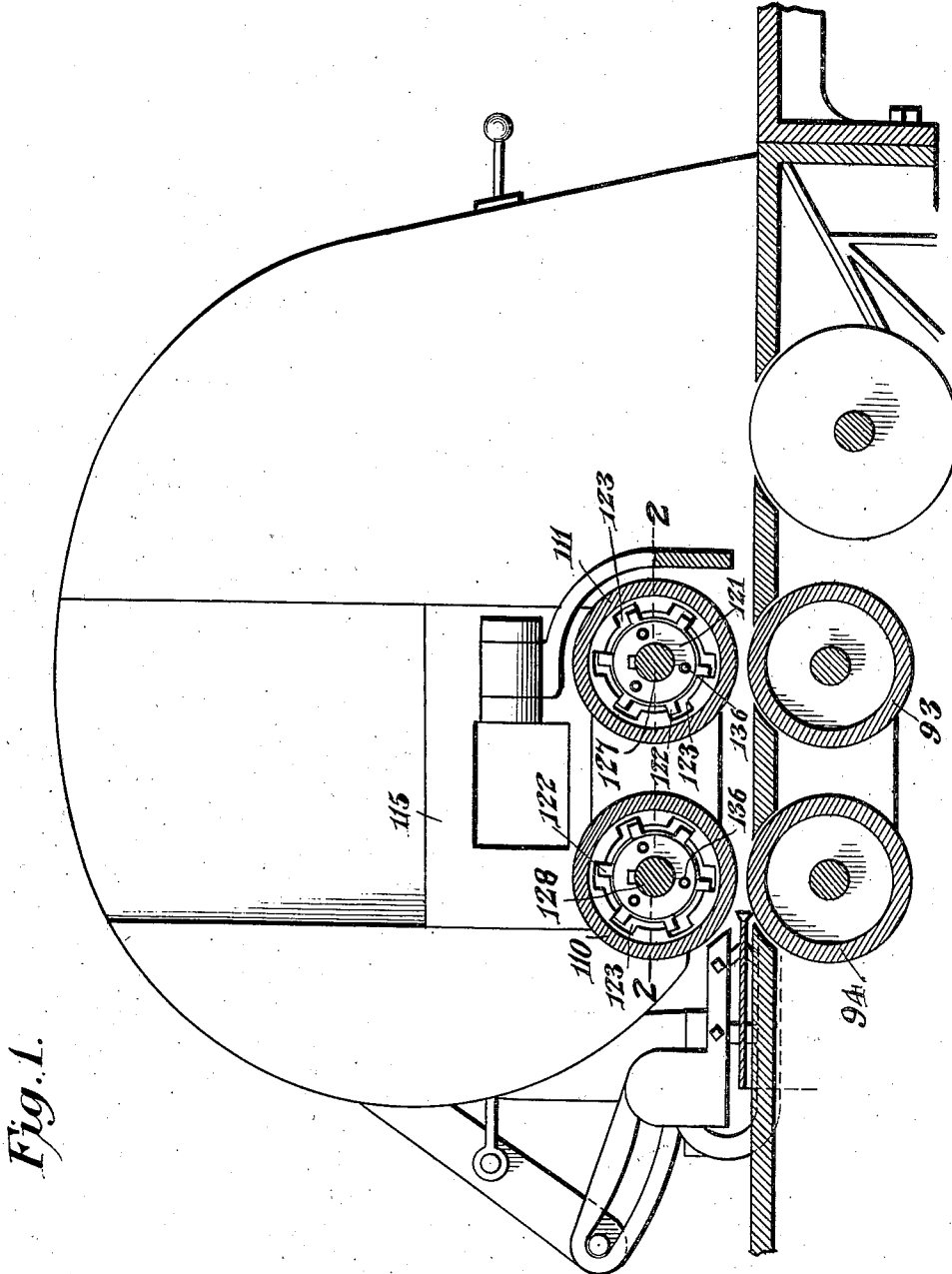


Fig. 1.

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Witnesses

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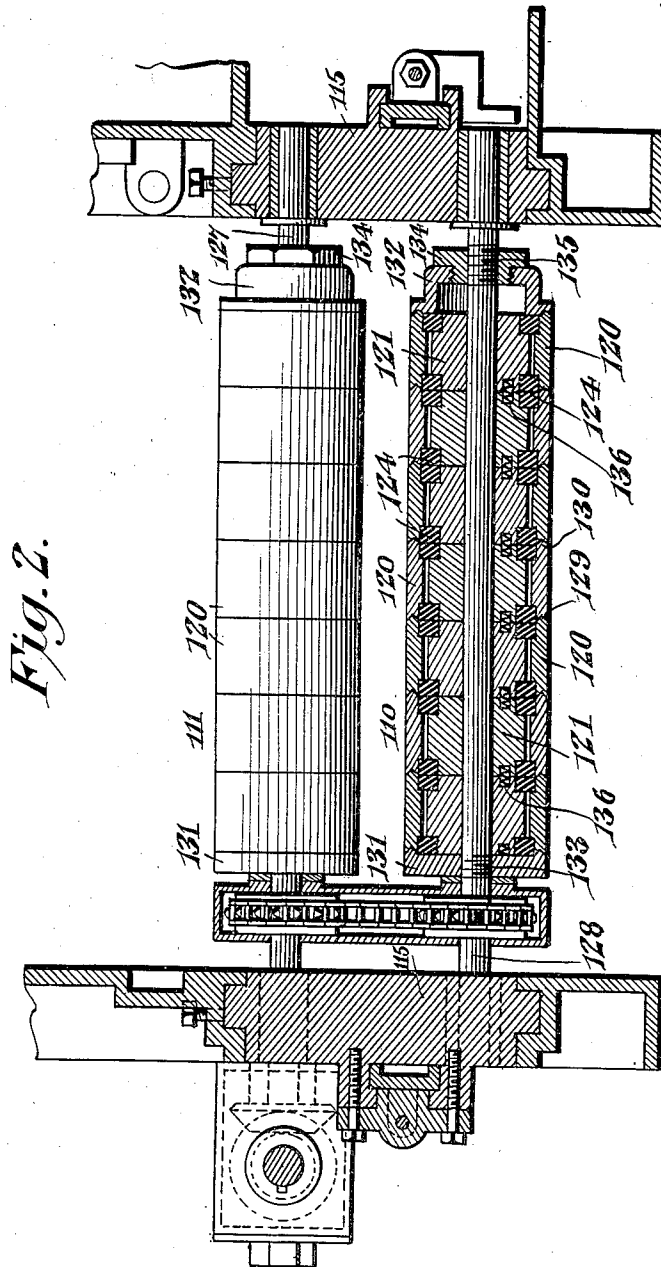


Fig. 2.

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3 SHEETS—SHEET 3.

Fig. 3.

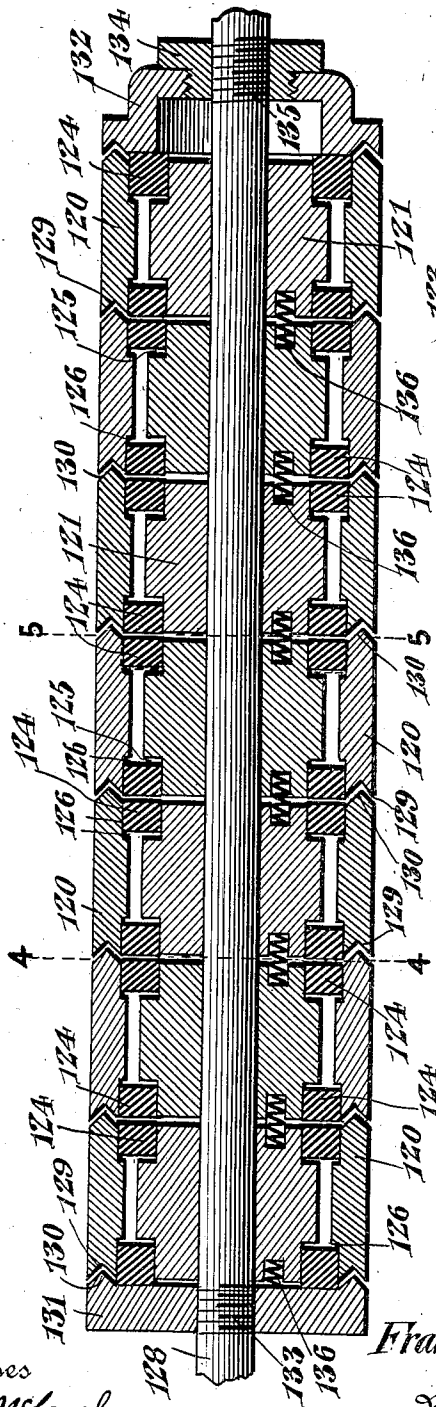


Fig. 5.

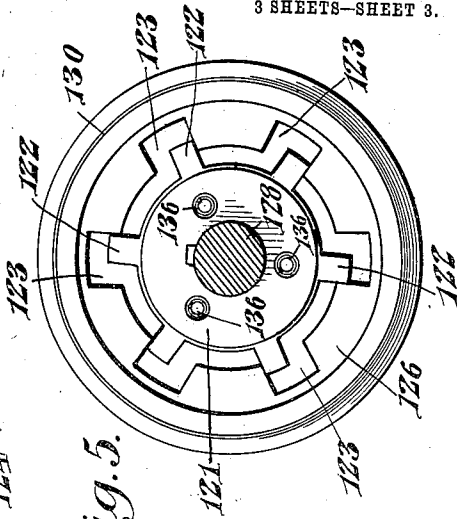
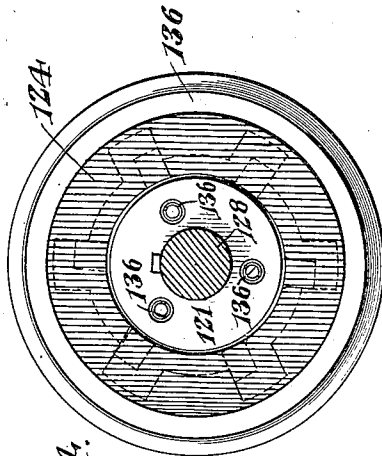


Fig. 4.



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UNITED STATES PATENT OFFICE.

FRANCIS THOMAS McDONOUGH, OF EAU CLAIRE, WISCONSIN.

FEED-ROLL.

936,250.

Specification of Letters Patent.

Patented Oct. 5, 1909.

Original application filed March 20, 1907, Serial No. 363,526. Divided and this application filed February 21, 1908. Serial No. 417,109.

To all whom it may concern:

Be it known that I, FRANCIS THOMAS McDONOUGH, a citizen of the United States, residing at Eau Claire, in the county of Eau Claire and State of Wisconsin, have invented a new and useful Feed-Roll, of which the following is a specification.

The present application is a division of the application filed by me Mar. 20, 1907, Serial No. 363,526, for an improvement in horizontal band resawing machines, and relates to a feed roll.

The object of the present invention is to provide yieldable feed rolls adapted to conform to the configuration of the stock, and capable of exerting a constant uniform pressure on the same, and of enabling stock of different thicknesses to be simultaneously cut.

A further object of the invention is to provide feed rolls capable of yielding independently of the means for applying pressure to the stock, and adapted also to be locked against such yielding action so as to operate as rigid rolls, when desired.

With these and other objects in view, the invention consists in the construction and novel combination of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended; it being understood that various changes in the form, proportion, size and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings:—Figure 1 is a vertical sectional view of a portion of a horizontal band resawing machine, provided with feed rolls, constructed in accordance with this invention. Fig. 2 is an enlarged horizontal sectional view, taken substantially on the line 2—2 of Fig. 1, one of the upper feed rolls being in section and the other being shown in plan view. Fig. 3 is an enlarged longitudinal sectional view of one of the feed rolls, showing the sections separated. Fig. 4 is a sectional view, taken substantially on the line 4—4 of Fig. 3. Fig. 5 is a similar view, taken substantially on the line 5—5 of Fig. 3, the elastic rings being removed.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

110 and 111 designate upper feed rolls, journaled in suitable bearings of the vertically movable bearing frames 115.

The upper feed rolls are provided with independently movable rim sections 120, which are arranged on spider hubs 121, having radial arms 122 extending into inner recesses 123 of the rim sections 120. The recesses 123 are of sufficient size to permit a limited rotary and a limited radial movement of the rim sections independently of the inner spider-shaped hubs or projections 121. The outer or rim sections are maintained concentric with the inner or hub sections by yieldable means, which may be either in the form of springs or elastic rings 124 of rubber, but any other suitable material may be employed.

The hub sections are provided at their side faces with registering annular recesses 125, which receive the elastic rings 124, and the latter are of a size to fill the said recesses and project beyond the outer ends of the arms of the hub sections and fit in annular recesses 126 of the rim sections. Each set of the outer and inner sections 120 and 121 is equipped with a pair of elastic rings 124, as clearly illustrated in Fig. 3 of the drawings, and any number of inner and outer sections and their rings may be mounted on a shaft to provide a sectional feed roll of the desired length. The annular recesses 126 of the rim sections are located at the inner peripheries of the said rim sections, and they register with each other similar to the annular recesses of the hub sections. The hub and rim sections of the upper feed rolls are laterally movable on the shafts 127 and 128, and the rim sections are adapted to interlock, as clearly illustrated in Fig. 2 of the drawings, to form rigid upper feed rolls. The hub sections 121 are splined, or otherwise slidably interlocked with the shafts 127 and 128. For this purpose the rim sections are provided with interlocking V-shaped grooves 129 and ribs 130, which interfit and which lock the rim sections against relative movement. The rim sections are held in this interlocked relation by means of a relatively fixed nut 131, and an adjustable nut 132, located at the ends of the feed roll and provided, respectively, with a V-shaped rib and a corresponding groove. The oppositely tapered or V-shaped rib of the nut 131 fits in the groove of the contiguous

terminal rim section 120, and the groove of the nut 132 receives the oppositely beveled rib of the other end section 120. The nut 131 engages a threaded portion 133 of the shaft on which the feed roll is mounted, and the other nut 132 consists of a cylindrical body portion having inwardly and outwardly extending annular flanges. The outwardly extending annular flange is provided with a V-shaped groove, and the inwardly extending flange is threaded and engages the exterior threads of an adjusting nut 134, which is also interiorly threaded to engage a threaded portion 135 of the shaft. The nuts 133 and 134 are adapted to be moved outwardly to release the sections of the upper feed roll, and the lateral separation of the sections of the upper feed roll is effected by means of coiled springs 136, which are mounted in registering sockets of the hub sections. The coiled springs 136, which are interposed between the hub sections, are compressed when the rim sections are interlocked, as shown in Fig. 2, and they are adapted to expand and carry the rim sections out of engagement with each other. The elastic rings may also be laterally compressed, when the rim sections are interlocked, so that they will expand and assist in moving the sections out of engagement with each other. The horizontal band resawing machine is also equipped with a pair of lower rigid feed rolls 93 and 94, and the rim sections of the upper feed rolls may be interlocked to present rigid unyielding surfaces to the lumber, or the sections may be released to enable the upper feed rolls to adjust themselves to the uneven surfaces of the lumber, when separate pieces of lumber of different thicknesses are simultaneously sawed.

Any suitable tension device may be connected with the feed rolls for maintaining a constant pressure on the lumber, and when the sections are released, the upper feed rolls are adapted to exert a constant pressure on stock of different thicknesses to enable the same to be simultaneously cut. The upper feed rolls will then yield independently of the means for applying pressure to the stock.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. A feed roll provided with independent peripheral sections movable inwardly and outwardly, means for cushioning the sections in such movements, and means for yieldably spacing the sections from each other in a direction longitudinally of the feed roll to permit said sections to move freely.

2. A feed roll provided with independent peripheral sections movable inwardly and outwardly, means for cushioning the sections in such movements, and yieldable means in-

terposed between the sections for holding the same in spaced relation.

3. A feed roll comprising a plurality of independently movable rim sections, means for cushioning the same, and means for locking the rim sections rigid with one another.

4. A feed roll comprising a plurality of rim sections provided at their edges with means for rigidly interlocking the sections, cushioning means for the sections, and means for holding the sections in their interlocked relation.

5. A feed roll comprising a plurality of rim sections having interfitting tapering ribs and grooves, means for cushioning the sections, and means for holding the sections rigidly interlocked with each other.

6. A feed roll comprising a plurality of interlocking rim sections, cushioning means for the sections, and adjustable means for holding the sections interlocked with each other against radial movement to form a rigid roll.

7. A feed roll comprising a plurality of independently movable hub sections, a plurality of independently movable rim sections having interlocking means at their contiguous edges, cushions interposed between the hub and rim sections, and means for locking the rim sections rigid with one another against radial movement to form a rigid roll.

8. A feed roll comprising a plurality of hub sections having radial arms, rim sections provided with recesses receiving the arms, and cushioning means interposed between the hub and rim sections and located at the sides of the arms between the hub sections to yieldably space the latter.

9. A feed roll comprising a plurality of cushioned sections, means for automatically spacing the sections, and adjustable means for holding the sections rigid with each other.

10. A feed roll comprising a plurality of hub sections, rim sections, cushioning means for the rim sections, and yieldable means for engaging the hub sections for automatically spacing the same.

11. A feed roll comprising a plurality of hub sections having sockets at their sides, coiled springs arranged in the sockets for automatically spacing the sections, a plurality of rim sections, and means for cushioning the same.

12. A feed roll comprising a plurality of rim sections, hub sections, cushioning means interposed between the sections, and nuts located at the ends of the roll for rigidly clamping the rim sections.

13. A feed roll comprising hub and rim sections having registering annular recesses between the sections, and cushioning rings fitting in the recesses and overlapping the sections.

14. A feed roll comprising hub and rim

sections having registering recesses, cushioning rings located within the recesses, and coiled springs interposed between the hub sections.

5 15. A feed roll provided with a plurality of peripheral sections movable inwardly and outwardly and also capable of relative lateral movement to space them to provide a yieldable roll, means for cushioning the sections in their inward and outward movement, 10 and means for locking the sections rigid with each other against radial movement to form a rigid roll.

15 16. A feed roll comprising a longitudinal series of annular rim sections movable inwardly and outwardly, means for cushioning the sections in such inward and outward movement and for yieldably maintaining the sections in spaced relation, and means for 20 clamping the sections together to form a rigid roll.

17. A feed roll comprising a longitudinal series of annular rim sections having recesses at their inner sides contiguous to their meeting edges, a shaft, and annular cushions mounted on the shaft and fitting in the recesses so as to bear against the inner sides of the rim sections at their joints and arranged to cushion and space the said sections.

18. A feed roll comprising a shaft, a plurality of hub sections arranged thereon, a corresponding series of rim sections inclosing the hub sections, cushions interposed between the hub and rim sections to form a yieldable roll, and means mounted on the shaft for locking the hub and rim sections against radial movement to form a rigid roll. 35

19. A feed roll comprising a shaft, a series of hub sections mounted on the shaft, a corresponding series of rim sections surrounding the hub sections, and cushions located at the juncture of the hub sections to yieldably separate the same and extended beyond the hub sections to bear against and cushion the rim sections. 40 45

20. A feed roll comprising hub and rim sections, means for cushioning the rim sections, and coiled springs interposed between the hub sections to yieldably separate the latter. 50

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

FRANCIS THOMAS McDONOUGH.

Witnesses:

B. HOGAN,
E. A. ARNOLD.