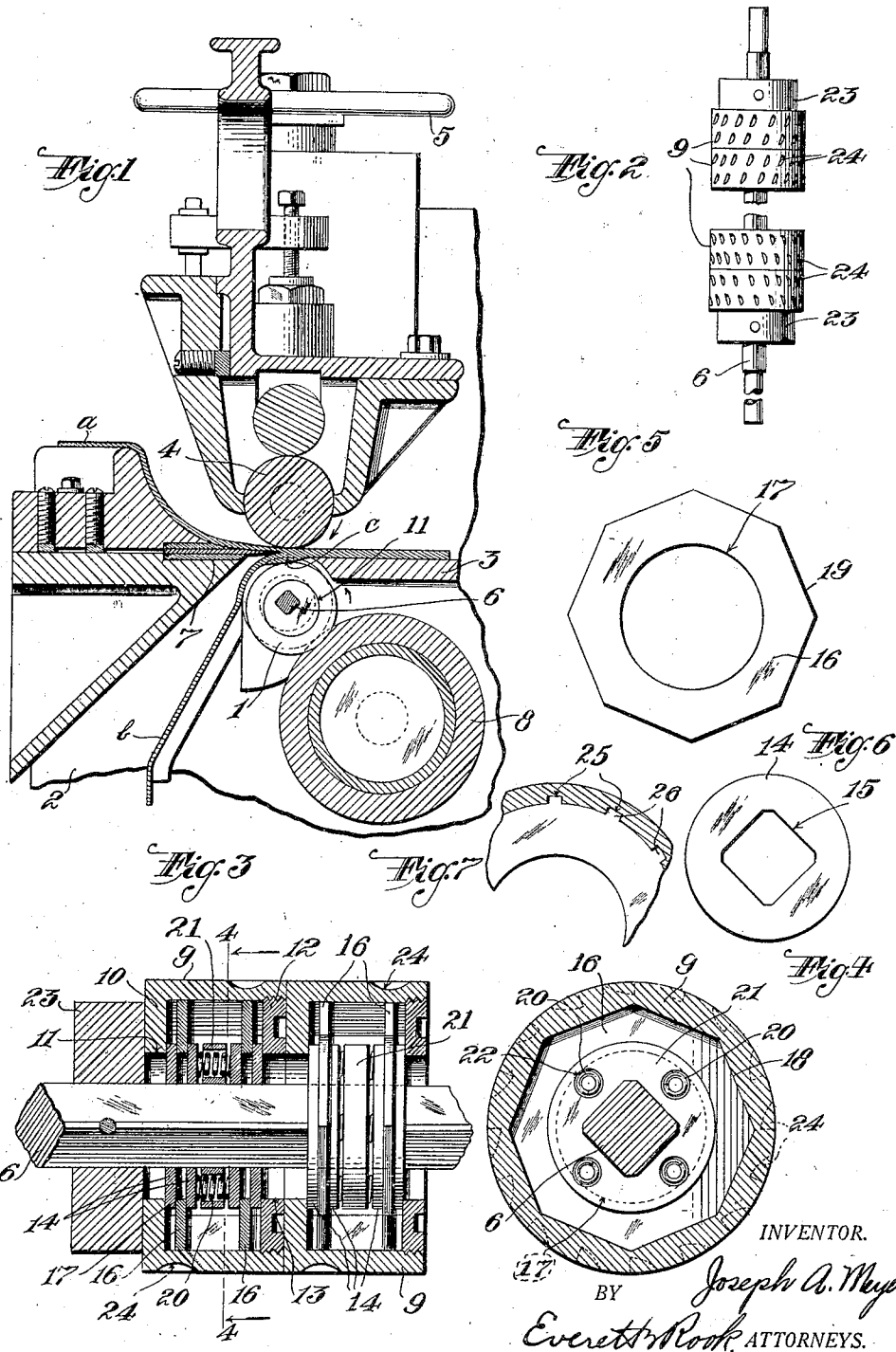


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LEATHER SPLITTING MACHINE.
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LEATHER-SPLITTING MACHINE.

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To all whom it may concern:

Be it known that I, JOSEPH A. MEYER, a citizen of the United States, and a resident of Newark, in the county of Essex and State of New Jersey, have invented new and useful Improvements in Leather-Splitting Machines, of which the following is a specification.

The objects of the invention are to secure an improved construction for driving the rings of the ring roll from the shaft on which they are arranged, so as to leave them free to move radially against the resiliency of the rubber roll and accommodate variations of thickness in the leather; to provide an improved construction in which each of the ring sections of the ring roll is frictionally driven from the shaft whereby the accidental stopping of one or more of the ring sections, as by the jamming of a piece of leather or foreign matter between the ring sections, does not in any manner interfere with the proper operation of the other ring sections; to accommodate different speeds of travel of the leather at different points in the width of the machine; to thus enable portions of the hide or skin, such as the outer edges to be easily retarded with respect to the middle, harder portion which cuts or splits more slowly; to enable such retardation to be accomplished by simply pulling backward upon the lateral edge portions of the hide without affecting the median longitudinal portion of the hide, the ring sections slipping with respect to each other and the shaft; to provide within each ring section means independent of the other ring sections for frictionally driving or imparting motion to the same from the shaft; to thus provide means within each ring section having a positive connection with the shaft and held in frictional engagement with the ring section; to provide the periphery of the ring roll with a plurality of recesses or depressions, arranged in oppositely directed spirals at opposite ends of the rolls and tending to separate the lateral marginal portions of the hide to prevent bagging thereof; to thus secure the benefits of the grooves in spreading, in combination with the benefits of independently rotatable rings, and to obtain other advantages and results as may be brought out by the following description.

Referring to the accompanying drawings, in which like numerals of reference indi-

cate the same parts throughout the several views,

Figure 1 is a fragmentary vertical sectional view through a splitting machine embodying a ring roll constructed in accordance with my invention;

Figure 2 is a detached fragmentary plan-view of the ring roll;

Figure 3 is an enlarged fragmentary vertical longitudinal sectional view through the ring roll, both of the rings being shown in section, and the friction elements of one of the rings being shown in side elevation;

Figure 4 is a transverse vertical sectional view through one of the ring sections taken on the line 4—4 of Fig. 3;

Figure 5 is a detached plan view of one of the friction rings attached to the ring section;

Figure 6 is a similar view of one of the friction disks connected to the ring roll shaft, and

Figure 7 is a fragmentary transverse sectional view through one of the ring sections and one of the friction plates showing a modified manner of providing a positive connection between the plate and ring section.

A ring roll 1 constructed in accordance with my invention is specifically designed for use in connection with a conventional leather-splitting machine comprising a frame 2 upon which is mounted a table or bed 3 to support the leather A to be split as it is fed to the splitting device. Above the table 3 longitudinally of the machine is mounted the gage roll 4 adjustable by conventional means 5, and below the gage roll and parallel thereto is mounted my improved ring roll 1 on a ring roll shaft 6, the leather to be split passing between the gage roll 4 and the ring roll 1 to the usual band knife 7 and being split in the conventional manner into the two pieces *a* and *b*. The gage roll 4 is adjustable relatively to the ring roll 1 to accommodate hides of various thicknesses and the ring roll is held yieldingly in engagement with the underside of the hide by the rubber roll 8 which has frictional contact with said ring roll.

The ring roll shaft 6 is positively driven in addition to being frictionally driven by the rubber roll 8, and the ring roll is so constructed that the ring sections are individually and frictionally driven from the shaft 6, at the same time being free to slip

with respect to each other and move radially relatively to the ring roll shaft to accommodate various speeds of travel of different portions of the hide and irregularities in the surface of the hide. Each ring section 9 of the ring roll 1 is substantially a hollow cylinder having one integral end 10 provided with an axial opening 11 of substantially greater diameter than the ring roll shaft 6 to allow the ring section to move radially upon the shaft. The other end of the ring section is closed by any suitable means such as the screw plug 12 which has an axial opening 13 similar to the opening 11 and for the same purpose. Within each ring section is arranged a plurality of spaced pairs of spaced friction plates 14 which are positively connected to the shaft 6 in any suitable manner, in the present instance the shaft 6 being shown as polygonal in cross-section, and the friction plates being formed with polygonal openings 15 to snugly fit upon the shaft 6. The friction plates 14 are of a diameter large enough to overlap the edges of the openings 11 and 13, and one plate of one pair frictionally engages the inner side of the end 10 of the ring section while one plate of the other pair frictionally engages the inside of the screw plug 12, as more clearly shown in Figure 3 of the drawings. A friction ring 16 is interposed between the plates 14 of each pair of friction plates and is provided with an axial opening 17 of substantially the same diameter as the openings 11 and 13 so that the friction plates 14 upon opposite sides of the respective rings 16 overlap the edges of said openings 17 and frictionally engage the sides of the rings 16. The rings 16 are positively connected to the ring section 9 so as to rotate therewith in any suitable manner, in the present instance the interior of the ring section being polygonal and formed with the flat faces 18, the rings 16 being correspondingly shaped and provided with the flat faces 19 to snugly engage the faces 18 of the ring section.

For the purpose of maintaining the friction plates 14 and friction rings 16 in constant and forcible frictional engagement, I may provide a plurality of springs 20 which are interposed between the innermost friction plates 14, the said springs being under compression and tending to force the respective friction plates 14 into frictional engagement with the end 10 of the ring section, the screw plug 12 and the friction rings 16. Obviously, the friction plates 14 are slidable longitudinally of the shaft 6 and the rings 16 are slidable longitudinally of the ring section 9. To maintain the springs 20 in proper relation to the friction plates, I provide a spring carrier 21 which is positively connected to the shaft

6 and rotates therewith, the said carrier being provided with a plurality of transverse openings 22 to loosely receive the springs 20, as clearly shown in Figures 3 and 4 of the drawing. When it is desired to remove or renew any of the friction plates, friction rings, or springs, it is merely necessary to unscrew the plug 12, whereupon the various friction elements can be easily removed from the ring section.

The ring sections are arranged upon the ring roll shaft 6 side by side as shown in Figures 2 and 3 between a pair of stop collars 23 which are rigidly connected to the shaft 6 and prevent displacement of the ring sections therefrom. The rings extending from the center of the shaft to the stop collars 23 are respectively provided with a plurality of oppositely extending and spirally arranged depressions or recesses 24, the said depressions being preferably substantially crescent-shape as shown in Figure 2 of the drawing, the edges of said depressions 24 causing the ring sections to have a tight frictional engagement with the hide so as to cooperate with the gage roller 4 to feed the hide to the knife 7, and the spiral arrangement of said depressions serving to smooth and stretch the hide from the center toward the edges thereof to prevent bagging or wrinkling.

In the operation of the device the rubber roll, ring roll, and gage roll, rotate in the directions indicated by the arrows to feed the hide or leather A to the band knife 7. The ring roll shaft 6 is positively driven by any suitable means, not shown, and the ring sections 9 are individually and frictionally driven from the shaft by the friction plates 14 and friction rings 16. In other words, motion is frictionally imparted from the shaft to each of said ring sections independently of the imparting of motion to the other ring sections. The ring sections in the ring roll are yieldingly held against the underside of the hide by the rubber roll 8, and should a projection or irregularity in the hide, as indicated at c in Figure 4, strike one of the ring sections, said ring section will yield radially by virtue of its loose fit upon the ring roll shaft and press into the rubber roll which causes the ring to assume its original position after the irregularity has passed. This displacement in no way affects the other ring sections which continue to operate freely. Should rotation of one or more of the ring sections 9 be stopped by the wedging or jamming of a piece of leather or other foreign matter between the rings, or otherwise accidentally, the remaining rings being individually driven from the shaft 6 will continue to operate without disturbance or interference by the stopping of the other rings, and it is therefore not necessary to immediately stop the operation

of the machine and adjust or repair the ring sections as is frequently the case where the ring sections are frictionally driven one from the other. It often occurs that as the hide is being fed through the machine the skirts or marginal edges thereof travel faster than the thicker middle portion which is harder to split and the edges are pulled back or retarded by the operator. In the usual construction of ring roll this pulling is done against the positive drive of the ring sections and the only retardation is caused by hard enough pulling to cause the hide to slip under the ring roll and gage roll. With my construction the frictional drive of the ring sections from the shaft allows the rings at the ends of the shaft to be rotated and slipped backwardly, at the same time allowing the other rings to rotate in the usual manner and at the usual speed to feed the hide. The engagement of the friction plates 14 with the ends of the ring sections and the friction rings 16 tends to hold the ring sections in an upright position and thus prevent tilting of the rings and provide against ring marks on the hide. As the ring roll rotates the depressions 24 in the ring sections stretch and smooth the hide from the center toward the edges thereof and this smoothing action takes place even at the roughest places in the hide and when the rings are displaced, owing to the fact that each ring is provided with a plurality of spirally arranged depressions 24 and is constantly frictionally driven from the shaft 6.

Another manner of providing a positive connection of the rings 16 with the ring section is shown in Figure 7. According to this form of the invention the interior of the ring section may be made circular and provided with a plurality of longitudinally extending grooves 25, and the rings 16 are made circular and of a diameter substantially that of the interior of the ring section and provided with outwardly projecting radial lugs 26 to slidably fit in the grooves 25 in the ring section.

While I have shown and described one possible embodiment of my invention, it will be understood that this is for the purpose of illustrating the principles thereof only, and that various modifications and changes can be made in the detail construction thereof by those skilled in the art without departing from the spirit or scope of the invention. For instance, while I have shown the friction plates 14 secured on a polygonal shaft, other means for providing a positive connection of the plates and shaft might be utilized; also other means than that shown can be provided for obtaining a positive connection of the friction ring 16 with the ring section. Furthermore, I might utilize other types of springs for

maintaining the frictional engagement between the plates 14 and rings 16, such as flat leaf springs, or spring washers, or the like. The number of friction plates 14 and friction rings 16, and the number of the springs 20, can be varied as desired. Therefore, I do not desire to be understood as limiting myself except as required by the following claims when construed in the light of the prior art.

Having thus described the invention, what I claim is:

1. In a ring roll, the combination of a shaft, means for driving the shaft, a plurality of ring sections loose on said shaft, and means for frictionally imparting motion from the shaft to each of said sections independently of the imparting of motion to the other ring sections.

2. In a ring roll, the combination of a shaft, means for driving the shaft, a plurality of ring sections loose on said shaft, and resilient means for frictionally imparting motion from said shaft to each of said ring sections independently of the other ring sections.

3. In a ring roll, the combination of a shaft, means for driving the shaft, a plurality of ring sections loose on said shaft, a plurality of friction elements mounted on said shaft and rotatable therewith, each of said elements being adapted to frictionally engage one of said ring sections, and means for maintaining frictional engagement of said friction elements with their respective ring sections to frictionally drive said ring sections from the shaft.

4. In a ring roll, the combination of a shaft, means for driving said shaft, a plurality of ring sections loose on said shaft, a plurality of friction elements one for each of said ring sections mounted on said shaft and rotatable therewith, and means for resiliently engaging each of said friction elements with its respective ring section to frictionally drive said ring sections independently of each other.

5. In a ring roll, the combination of a shaft, means for driving the shaft, a plurality of ring sections loose on said shaft, friction elements mounted on said shaft and rotatable therewith, and yielding means for each section maintaining frictional engagement between said ring section and its friction element.

6. In a ring roll, the combination of a shaft, means for driving the shaft, a plurality of ring sections loose on said shaft, a pair of friction elements for each ring section mounted on said shaft and rotatable therewith, and yielding means interposed between the elements of said pair of friction elements for maintaining frictional engagement between said elements and their respective ring sections.

7. In a ring roll, the combination of a shaft, means for driving the shaft, a plurality of ring sections loose on said shaft, and means within each of said ring sections for frictionally imparting motion thereto from said shaft independently of the imparting of motion to the other ring sections.

8. In a ring roll, the combination of a shaft, means for driving the shaft, a plurality of ring sections loose on said shaft, each of said ring sections comprising substantially a hollow cylinder, and means within said ring sections and rotatable with said shaft for frictionally imparting motion from said shaft to each of said ring sections independently of the imparting of motion to the other ring sections.

9. In a ring roll, the combination of a shaft, means for driving the shaft, a plurality of ring sections loose on said shaft, each of said ring sections comprising substantially a hollow cylinder, a friction element within each of said ring sections and positively rotatable with said shaft, said friction elements frictionally engaging the inner walls of their respective ring sections to frictionally impart motion thereto from the shaft independently of the imparting of motion to the other ring sections.

10. In a ring roll, the combination of a shaft, means for driving the shaft, a plurality of ring sections loose on said shaft, each of said ring sections comprising substantially a hollow cylinder having end walls, a pair of friction elements mounted within each of said ring sections and positively rotatable with said shaft, said friction elements having a frictional engagement with the said end walls of their respective ring sections for driving said ring sections.

11. In a ring roll, the combination of a shaft, means for driving the shaft, a plurality of ring sections loose on said shaft, each of said ring sections comprising substantially a hollow cylinder having end walls, a pair of friction elements mounted

within each of said ring sections and positively rotatable with said shaft, and yielding means for maintaining said friction elements in frictional engagement with the said end walls of their respective ring sections to drive said ring section.

12. In a ring roll, the combination of a shaft, means for driving the shaft, a plurality of ring sections loose on said shaft, each of said ring sections comprising substantially a hollow cylinder, plurality of spaced friction elements mounted within each of said ring sections and positively rotatable with said shaft, and spring means interposed between the friction elements of each ring section for maintaining frictional engagement between said friction elements and the inner walls of their respective ring sections.

13. In a ring roll, the combination of a shaft, means for driving the shaft, a plurality of ring sections loose on said shaft, each of said ring sections comprising substantially a hollow cylinder, a friction element mounted within each of said ring sections to rotate therewith, and a second friction element rotatable with said shaft and frictionally engaging said first-mentioned friction element.

14. In a ring roll, the combination of a shaft, means for driving the shaft, a plurality of ring sections loose on said shaft, each of said ring sections comprising substantially a hollow cylinder, a plurality of friction rings mounted within each of said ring sections in planes at substantially right angles to the axis of said ring sections and rotatable therewith, said ring sections being provided with openings to loosely receive said shaft, and a plurality of friction plates mounted on said shaft and rotatable therewith, said friction plates having frictional engagement with said friction rings in the ring sections.

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