A. H. KEHRHAHN.

SECTIONAL ROLL FOR LEATHER WORKING MACHINES.

APPLICATION FILED SEPT. 15, 1910.

1,066,913.

Patented July 8, 1913.

2 SHEETS—SHEET 1.

Fig. 1.

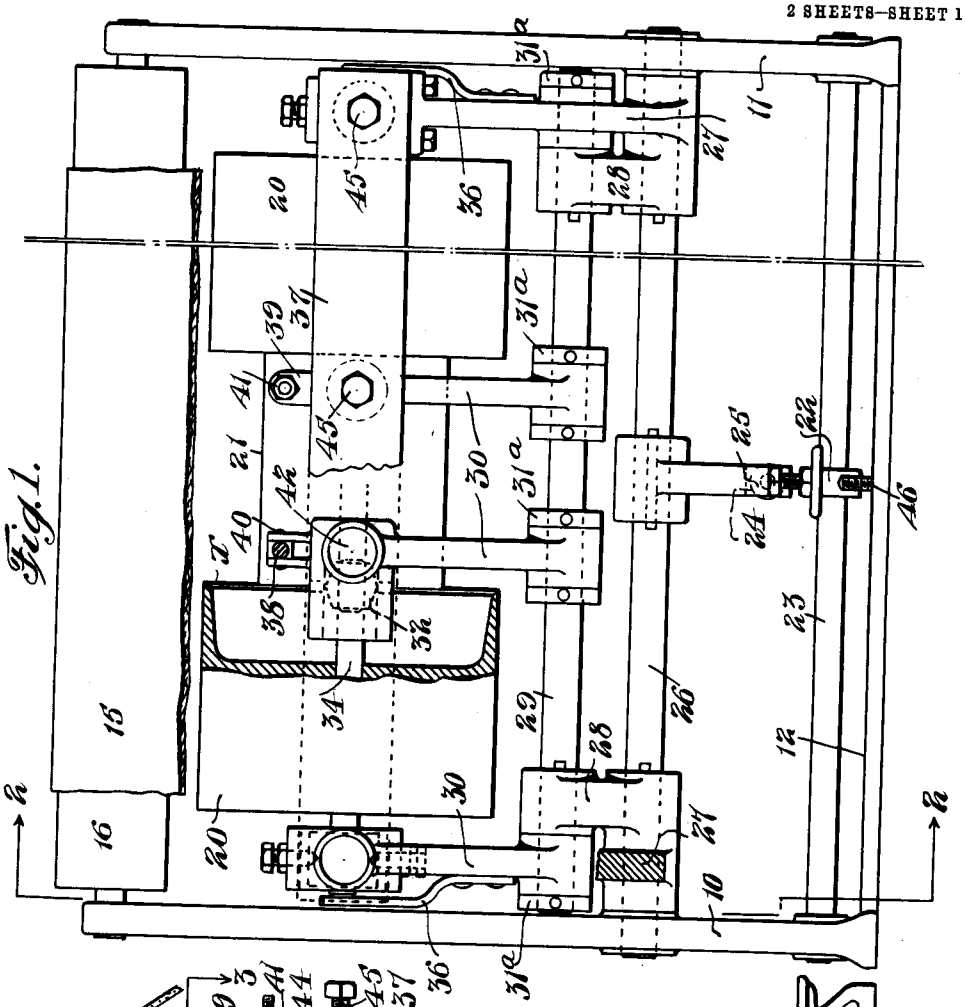
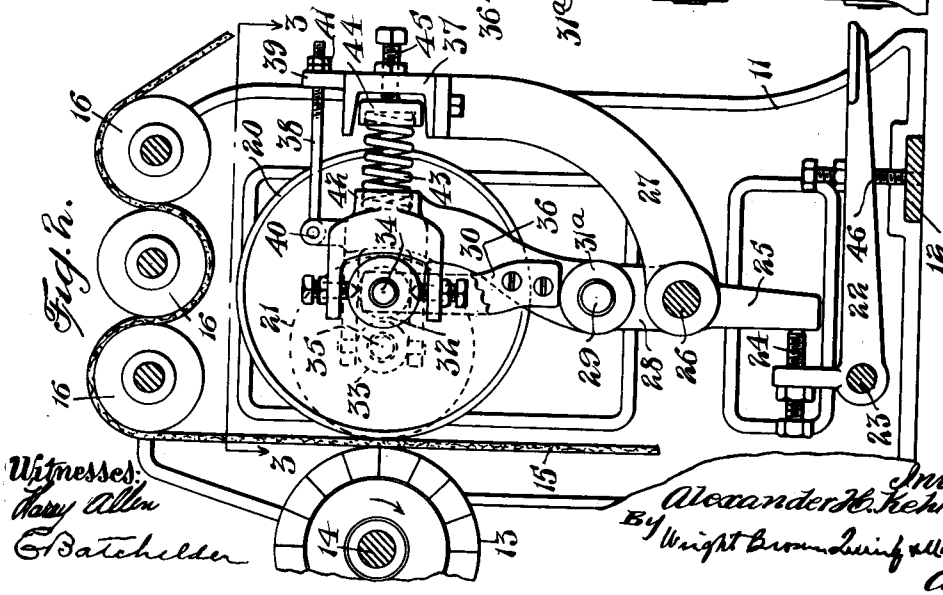


Fig. 2.



Witnesses:
Harry Allen
E. Batchelder

Inventor:
Alexander H. Kehrhahn,
By Wright Brown Quinby & May
Attys.

A. H. KEHRHAHN.

SECTIONAL ROLL FOR LEATHER WORKING MACHINES.

APPLICATION FILED SEPT. 15, 1910.

1,066,913.

Patented July 8, 1913.

2 SHEETS—SHEET 2.

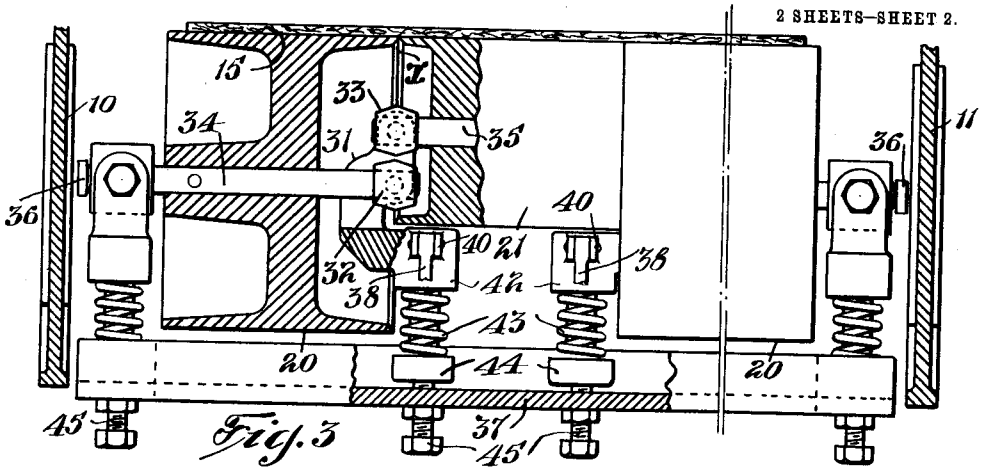


Fig. 3

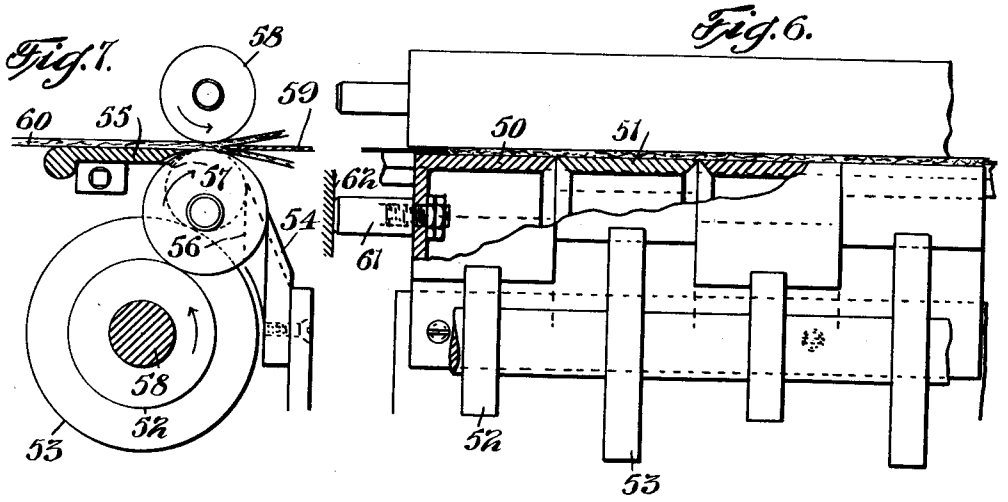


Fig. 7.

Fig. 6.

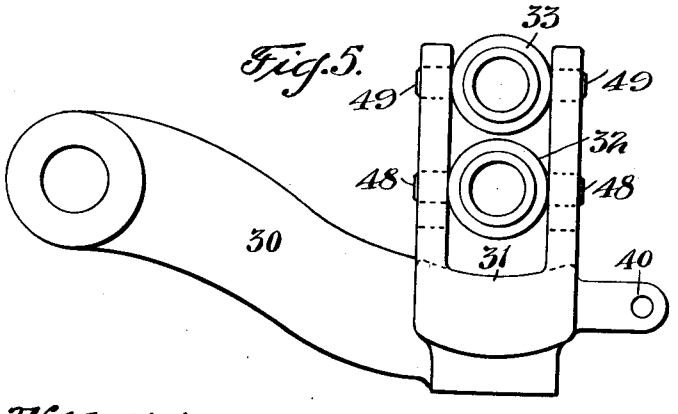


Fig. 5.

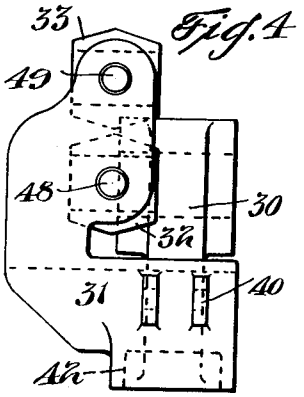


Fig. 4

Witnesses:
Harry Allen
E. Batchelder

Inventor:
Alexander H. Kehrhahn,
by Wright Brown Quinby & May
Atty.

UNITED STATES PATENT OFFICE.

ALEXANDER H. KEHRHAHN, OF FRANKFORT-ON-THE-MAIN, GERMANY.

SECTIONAL ROLL FOR LEATHER-WORKING MACHINES.

1,066,913. Specification of Letters Patent. Patented July 8, 1913.

Application filed September 15, 1910. Serial No. 582,160.

To all whom it may concern:

Be it known that I, ALEXANDER H. KEHRHAHN, a subject of the King of Prussia and Emperor of the German Empire, of Frankfort-on-the-Main, in the Kingdom of Prussia, Germany, have invented certain new and useful Improvements in Sectional Rolls for Leather-Working Machines, of which the following is a specification.

The object of the present invention is to provide a sectional roll in combination with a working member, and means for severally supporting the sections of the roll so as to maintain a substantially continuous and smooth surface for engaging one side of the work to hold the work against the working member.

The object in dividing the roll into a series of sections is to enable the several sections to assume various angles with relation to each other so that they may automatically accommodate themselves to variations in the thickness of the work at different points and maintain a substantially uniform pressure of the work against the working member at all points, irrespective of such variations of the work.

The invention is especially adapted to leather working machinery in various classes such as fleshing, unhairing, scudding, shaving, scouring, splitting or other machines which employ a working member for operating upon a considerable portion of the work and a work-supporting member for holding the work against the working member. It is obvious, however, that a sectional roll of the character hereinafter described is not necessarily limited to leather working machines.

The essential features of construction and arrangement are as follows: The roll is composed of a series of sections of relatively large and small diameter. The sections are arranged end to end in alternate order with reference to their different diameters. Each relatively small section is therefore disposed between two relatively large sections. The purpose of employing sections of different diameters instead of sections of uniform diameter is to permit the sections to assume various angles with relation to each other and to provide sufficient space at the rear of the sections for the introduction of supporting means for the several sections. There is another element of construction which is necessary to enable the several sections to assume various angles, this other element being hollow construction at the ends of the sections whereby the end portions of the smaller sections may enter into the space in the ends of the large sections.

Of the accompanying drawings which illustrate two forms in which the invention may be embodied, Figure 1 represents a front elevation, partly in section, of a leather working machine provided with a sectional roll, said machine being broken out between its ends and the ends brought together to economize space on the drawing. Fig. 2 represents a vertical section on line 2—2 of Fig. 1. Fig. 3 represents a horizontal section on line 3—3 of Fig. 2. Fig. 4 represents a top plan view of one of several arms each provided with swiveled bearings for the shafts of two adjacent sections. Fig. 5 represents a side elevation of the arm shown by Fig. 4, the arm in this figure being projected from Fig. 4 instead of standing upright as shown in Fig. 2. Fig. 6 represents an elevation, partly in section, of a leather splitting machine provided with a sectional roll and driving mechanism for the several sections. Fig. 7 represents a vertical section of the mechanism included in Fig. 6.

The same reference characters indicate the same parts wherever they occur.

The machine shown by Figs. 1 and 2 comprises a frame including the upright end members 10 and 11 which are connected at the base by a beam 12 and which are connected and tied together at other points by various shafts hereinafter specified.

A rotatable bladed cylinder is indicated at 13, this cylinder being the element hereinafter termed the working member. It is mounted upon a shaft 14 for which the upright end members 10 and 11 afford suitable bearings. The working member is rotated in the direction indicated by an arrow in Fig. 2.

A hide or other piece of work which is to be subjected to the action of the working member is indicated at 15. According to the arrangement of the several elements in the machine illustrated, the work is fed upwardly, or in the opposite direction to the movement of the working member. The means here shown for feeding the work comprises coöperative feed rolls 16 which en-

gage the work as shown. The feed rolls are conventionally illustrated as affixed upon shafts whose ends have bearings in the upright frame members 10 and 11 but any approved feed roll construction may be substituted therefor. The feed rolls may be driven by any suitable means. (Not shown.)

The sectional roll which forms the basis of the present invention is employed for holding the work against the working member 13. As shown by Figs. 1, 2, and 3, the sectional roll is composed of a series of cylindric sections of different diameters, the relatively large sections being indicated at 20 and the small sections at 21. Each section is provided with individual supports which are relatively movable as hereinafter explained. All the supports are movable toward and from the working member 13, and they are adapted to be moved simultaneously toward the working member to place the sectional roll in operative position.

As shown by Figs. 1 and 2, the machine is provided with a treadle 22 which, when depressed, moves the sectional roll to operative position. The treadle is mounted upon a shaft 23 and carries an adjustable screw 24 which is arranged to abut against an arm 25 keyed or otherwise affixed upon a rock shaft 26. The shaft 26 carries other arms 27 which are likewise keyed. The arms 27 are provided with bell crank extensions 28 in which the ends of a shaft 29 are keyed. The shaft 29 supports a series of arms 30, all of which are adapted to oscillate with relation to the shaft. The arms 30 are prevented from moving longitudinally of the shaft by collars 31^a, one swiveled bearing 32 sufficing for each. These arms 30 carry the bearings in which the sections 20 and 21 are mounted. The construction of the arms 30 is shown in detail by Figs. 4 and 5. The free end of each arm is in the form of a fork or yoke 31. The yoke is offset, as shown by Figs. 3 and 4, so as to be adapted to extend into the hollow end of one of the large sections 20 and thence into the hollow end of an adjacent smaller section 21. In each fork or yoke 31 are mounted two swiveled bearings indicated at 32 and 33 respectively. The arms 30 at the ends of the shaft 29 do not enter between two sections of the roll and therefore do not require the offset formation and the two swiveled bearings with which the intermediate arms 30 are provided.

The sections 20 are provided with shafts 34, and the sections 21 are provided with shafts 35. The shafts 34 are mounted in the bearings 32, and the shafts 35 are mounted in the bearings 33. All the shafts are free to move longitudinally in their swiveled bearings for the purpose of permitting close relation of the adjacent sections, as hereinafter explained. The arms 30 at the extremities of the shaft 29 are provided with leaf springs 36 which engage the outer ends of the end shafts 34 and exert their tension in opposite directions, tending to move said shafts toward each other. The distance between the centers of the bearings 32 and 33 is equal to the difference between the radius of a large section 20 and a small section 21, the arrangement being such that the work-engaging portions of the several sections are supported in alinement with each other when the shafts 34 and 35 are parallel, thus presenting to the work a continuous smooth backing throughout the aggregate length of the series of sections. This relation is shown at the top of Fig. 3, where the peripheries of the several sections are in alinement with each other and form a continuous surface bearing upon the work. Not only are the ends of the sections hollowed out, but the ends of the rim portions are concaved or beveled, as indicated at x. The tension of the springs 36 maintains contiguous relation of the several sections at all times at the work-engaging portions of the sections, and at no time do the sections become separated at the work-engaging portions to form gaps. The swiveled bearings 32 and 33 permit one section to assume various angles with relation to the adjacent sections, and when a change of angle occurs the sections rock one upon another at their points of contact which are always their work-engaging portions. The concaved or beveled faces at the end of the arms extend to the peripheries of the sections, and the sections are thus enabled to rock one upon another without separating at their work-engaging portions. During every change of angle of one section with relation to the others, contiguous relation of all the sections is maintained by the springs 36, which are designed to yield to any degree required by relative angular movements of the sections.

The free ends of the arms 27 support a beam 37. The free ends of the arms 30 are connected by links 38 with ears 39 on the beam 37. The links are pivotally connected at 40 to the arms 30, and their ends are provided with nuts 41 which are adapted to engage the ears 39. The free ends of the arms 30 are further provided with cups 42 in which are seated helical springs 43. The opposite ends of the springs 43 are seated in cups 44 which are carried by adjusting screws 45 threaded in the beam 37. The springs 43 when compressed exert their tension to force the sections 20 and 21 toward the working member, while the nuts 41 on the threaded links 38 maintain the free ends of the arms 30 within a predetermined distance of the beam 37.

The weight of the arms 27 is sufficient to normally retract the sectional roll from the

work; but, if desired, a spring or springs (not shown) may be provided for furnishing additional tension tending to retract the same. When the treadle 22 is depressed the shaft 26 is rocked in a direction which causes the beam 37 to move toward the working member. When the movement of the several sections is not opposed, they occupy fixed positions with relation to the beam 37 and consequently they move toward the working member in unison when the treadle is depressed until their movement is arrested by engagement with the work. Further movement of the treadle results in movement of the ears 39 after movement of the links 38 has been arrested by contact of the sections with the work, whereupon the springs 43 become further compressed. An adjustable stop 46 is attached to the treadle 22 for engaging the beam 12 to limit downward movement of the treadle. The stop 46 is preferably adjusted so as to have slight additional downward movement after the movement of the sections toward the working member has been arrested by the work.

It will be observed by reference to Fig. 3 that the axes of the pivots or trunnions 48 and 49 of the swiveled bearings 32 and 33 respectively are in the transverse plane of the ends of the sections. By reason of arranging the swiveled bearings in this manner the abutting work-engaging portions of the sections remain substantially fixed with relation to each other when the angle of one section changes with relation to the other section. If the axes of the pivots 48 and 49 were not in the aforesaid transverse plane the ends of the abutting work-engaging portions would advance or recede when a change of angle occurred and thus cause the work-engaging portion of one section to project beyond that of the adjacent section, thereby forming a shoulder against the work instead of maintaining a substantially continuous uninterrupted line of contact with the work.

In the form shown by Figs. 6 and 7, the work-supporting roll comprises a series of sections 50 and 51 which are relatively large and small in diameter and arranged in alternate order, as in the form first described. The ends of these rolls are likewise hollow, and either concaved or beveled, as shown by Fig. 6. The essential difference between the sections of this form and the sections of the first form is that these sections are not provided with central shafts but are supported by means of rolls 52 and 53 which engage their peripheries. The sections 50 are confined between the fixtures 54 and 55, and the sections 51 are likewise confined between fixtures 56 and 57, these fixtures engaging the peripheries of the respective sections. The fixtures do not, however, engage the sections so tightly as to interfere with the rotation of the sections. In this form the rolls 52 and 53 are affixed upon a shaft 58 which may be rotated. If it is desirable to impart rotation of the rolls 52 and 53 to the sections 50 and 51, the rolls are preferably shod with rubber or other friction material.

As shown by Fig. 7, the sections in this form hold the work against a coöperative roll 58. A splitting knife is indicated at 59 and is so arranged that the work 60 will be fed edgewise against its cutting edge if the sections 50 and 51 and the roll 58 be rotated in the direction indicated by arrows. The sections at the two extremes of the series are provided with central studs 61. Leaf springs or other spring-tensioned members 62 may be arranged to abut against the outer ends of the studs 61 to hold the sections 50 and 51 in contact with each other. The driving rolls 52 and 53 are arranged midway between the ends of their respective sections so that the sections are adapted to rock on the rolls and assume the various angles with relation to each other according to the inequalities in the thickness of the work at different points. If the friction material with which the rolls 52 and 53 are shod is resilient, the resilience thereof is sufficient to hold the respective sections against the work in yielding tension.

What I claim is:—

1. A leather working machine comprising a working member, a sectional roll for supporting the work against said working member, said roll consisting of a series of sections of different diameters and having hollow ends, and arranged end to end, and means for supporting said sections severally so that their work-engaging portions are flush and continuous, said means being movable to permit said sections to assume various angles.

2. A leather working machine comprising a working member, a sectional roll for supporting the work against said working member, said roll consisting of a series of sections of different diameters and having hollow ends, and arranged end to end, and means for supporting said sections severally and holding them toward said working member with yielding tension so that their work-engaging portions are flush and continuous, said means being movable to permit said sections to assume various angles.

3. A leather working machine comprising a working member, a sectional roll for supporting the work against said working member, said roll consisting of a series of sections of relatively large and small diameter arranged end to end in alternate order with regard to the different diameters, said sections having hollow ends, and means for supporting the sections severally so that their work-engaging portions are flush and

continuous, said means being movable to permit said sections to assume various angles.

4. A leather working machine comprising a working member, a sectional roll for supporting the work against the working member, and means for supporting the several sections of said roll, said means having provisions for permitting relative movement of the sections and for maintaining continuous relation of their work-engaging portions, the supporting means of some of said sections being adapted to yield independently of the supporting means of the other sections.

5. A leather working machine comprising a working member, a coacting work-supporting roll composed of a series of cylindric sections arranged end to end, the diameter of each section being different from that of the adjacent section or sections, and yielding means for supporting said sections so as to maintain their work-engaging portions substantially in alinement.

6. A leather working machine comprising a working member, a roll for supporting the work against said working member, said roll being composed of a series of cylindric sections arranged end to end, each of said sections being different in diameter from the adjacent section or sections, yielding means for supporting the several sections so as to permit endwise movement and to maintain their work-engaging portions substantially in alinement, and yielding means for maintaining the confronting ends of the sections in contiguous relation.

7. A leather working machine comprising a working member, and a coacting roll composed of a series of cylindric sections of varying diameter arranged with their work engaging portions in alinement.

8. A leather working machine comprising a working member, and a coacting roll composed of a series of alternating cylindric yieldable sections of different diameter having their work engaging portions contiguous and in alinement.

9. A leather working machine comprising a working member, and a coacting roll composed of a series of alternating cylindric sections of different diameters, and yielding supports for said sections.

10. A leather working machine comprising a working member, a sectional roll consisting of series of alternating sections of different diameter arranged with their work engaging portions in alinement, swiveled bearings arranged in the planes of the ends of said sections, and yielding supports for said bearings.

11. A leather working machine comprising a working member, and a sectional roll consisting of a series of alternating sections of different diameter arranged with their work engaging portions in alinement, and with their ends contiguous, said sections being constructed and yieldingly supported to preserve the contiguity of their ends and yet permit a relative angularity of two adjacent sections.

12. A leather working machine comprising a working member, and a rotatable bed roll composed of a plurality of sections arranged end to end with their work engaging portions flush, and means for supporting said sections to permit them to move into axial angularity with each other.

13. A leather working machine comprising a working member, a sectional roll for supporting the work against the working member, and means for supporting the sections of the roll against the work, said supporting means comprising a series of yielding elements disposed to act separately on the sections, and relatively movable elements disposed to act as intermediaries between said yielding elements and the roll sections, said intermediate elements being interconnected and adapted to support said roll sections at various angles relatively to each other and maintain continuity of the series of work-engaging portions of the sections.

In testimony whereof I have affixed my signature, in presence of two witnesses.

ALEXANDER H. KEHRHAHN.

Witnesses:
W. P. ABELL,
J. M. MURPHY.