O. REIRSON.

PNEUMATIC BED FOR LEATHER WORKING MACHINES.

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**1,179,649.**

Patented Apr. 18, 1916.

Fig. 1.

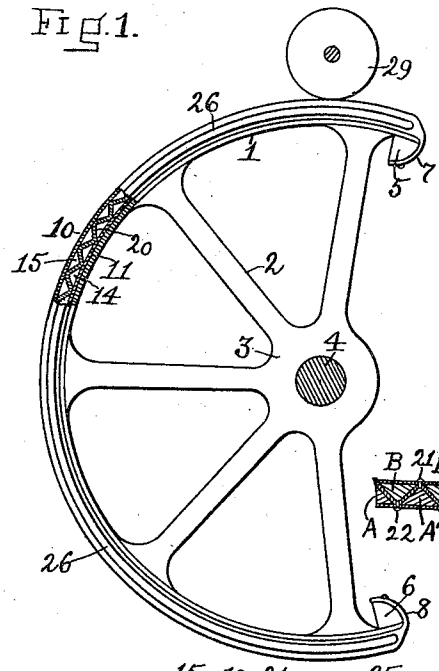



Fig. 2.

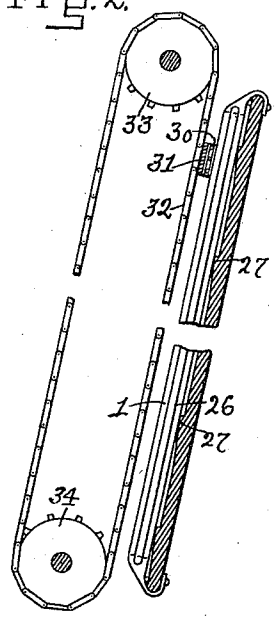
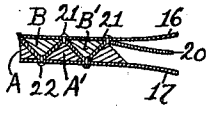



Fig. 6.



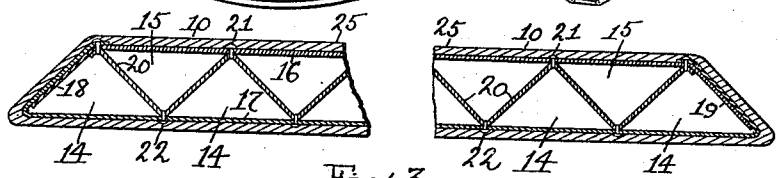




Fig. 3.

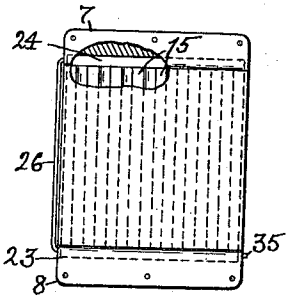



Fig. 4.

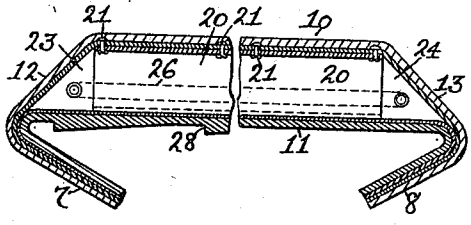



Fig. 5.

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# UNITED STATES PATENT OFFICE.

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## PNEUMATIC BED FOR LEATHER-WORKING MACHINES.

1,179,649. Specification of Letters Patent. Patented Apr. 18, 1916.

Substitute for application Serial No. 18,481, filed April 1, 1915. This application filed January 26, 1916. Serial No. 74,501.

*To all whom it may concern:*

Be it known that I, OSCAR REIRSON, a citizen of the United States, and a resident of Peabody, in the county of Essex and State of Massachusetts, have invented an Improvement in Pneumatic Beds for Leather-Working Machines, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to improvements in pneumatic beds particularly of the type which are adapted for use in leather working machinery such as unhairing machines, fleshing machines, leather finishing machines and the like.

In the treatment of hides in machines of the class above mentioned it is necessary to provide a resilient bed which will present the surface of the hide to the entire scraper or other tool with the same pressure against the tool notwithstanding differences in thickness of the hide, so that the surface of the hide may be treated uniformly throughout. In the usual type of unhairing and fleshing machines the bed upon which the head is placed is of thick rubber or other resilient material, which is usually covered with a protecting covering to prevent oil and other material, which will cause the deterioration of the rubber, from coming into contact with the same. It is however, difficult to prevent the rubber from deteriorating, and if it becomes softened in spots an imperfect operation of the machine will result.

Different hides are of different degrees of thickness and toughness and different parts of the same hide also differ in like manner. It is therefore desirable to provide a means for adjusting the pressure with which the hide is forced against the unhairing or unfleshing tool, so that an equal degree of pressure may be secured.

It is very necessary that the working surface of the bed shall be flat if used upon a flat bed machine and uniformly curved if used upon a cylindrical machine, so that each portion of the hide will be presented to the knife properly. As before stated it is necessary that each portion of the surface shall be of such a resilient character that it may yield without thereby producing an increased pressure between the tool and some other portion of the hide.

The object of the present invention is to provide a pneumatic bed with means for supporting the upper and lower walls thereof in such a manner that uniform pressure will be produced upon said walls throughout their extent and the working surface of the bed caused to remain smooth.

Another object of the invention is to provide a pneumatic bed of the character described with means permitting the intercommunication of the various chambers so that the air may not become pocketed in any way to cause an undesirable increased pressure upon a portion of the working surface. Another object of the invention is to provide a bed of the character described with integral means for securing the bed to its support.

Other objects of the invention will more fully appear from the following description and the accompanying drawings and will be pointed out particularly in the annexed claims.

In the drawings: Figure 1 is an end view partly in section of the cylindrical bed support of a rotary unhairing machine equipped with a flexible bed made in accordance with my invention, showing also the relation of the bed to the rotary tool. Fig. 2 is a similar view of an unhairing machine of the "Alston" type having a flat bed constructed in accordance with my invention and showing one of the scrapers carried by an endless chain in operative relation to the bed. Fig. 3 is a transverse sectional view of a pneumatic bed embodying my invention. Fig. 4 is a plan view partly broken away of the flat bed illustrated in Fig. 2. Fig. 5 is a longitudinal sectional view of the same broken away at its central portion to economize space, and Fig. 6 illustrates the method of constructing the bed herein shown.

Fig. 1 of the accompanying drawings illustrates the bed cylinder 1 of a rotary unhairing or fleshing machine which is supported upon radial arms 2 extending from a hub 3 mounted upon a suitable shaft 4.

The cylindrical bed support may be in the form of a segment of a cylinder, and may be provided with clamping members 5—6 secured at the inner side of the edges of the sector, these clamping portions serving as means for attaching the extended end or fastening strip 7—8 of the resilient bed. Fig. 2 shows a similar bed as applied to a flat supporting surface instead of a cylindrical bed support.

The bed as illustrated in the preferred form of the invention disclosed herein comprises an upper wall 10 and a lower wall 11 connected by side walls 12 and 13, to form a substantially rectangular or trapezoidal hollow bed. The ends of the walls 11 and 12 are extended as illustrated in Fig. 5 and united to form the extensions 7 and 8, which may be secured to the members 5 and 6 in the manner aforesaid. In order that the upper and lower walls of the bed may be maintained in parallelism, so as to present a smooth working surface, the interior of the bed is made up of a series of chambers or conduits 14, 15, preferably triangular in cross section and oppositely disposed so that their bases present continuous planes of support for the upper and lower walls of the bed. These triangular conduits may be made in a plurality of ways, for example they may be made of separate tubes and placed side by side between the walls 10 and 11, preferably however they are constructed of a transverse web of flexible material attached alternately to the upper and lower walls 10 and 11, so that the transversely extending portions form the walls of adjacent chambers.

In the preferred embodiment of the invention illustrated herein and as particularly shown in cross section in Figs. 3 and 5, the upper and lower walls 10 and 11 of the bed comprise strips 16, 17 of canvas or other flexible substantially non-stretchable material, either integral at their ends 18—19 or suitably secured together and sufficient in length and width to form a bed of the desired size. These canvas strips preferably are connected throughout the working surface of the bed by a single web 20 of canvas or other flexible substantially non-stretchable material, which is firmly secured as by rivets 21—22 alternately to the upper and lower strips 16, 17, so that the space between the strips 16 and 17 is divided into the several triangular chambers 14, 15 in the manner aforesaid. The canvas web 20 preferably is narrower than the strips 16—17, so that the latter extending beyond the ends of the web 20 may be secured together to form the attaching extensions 7—8 aforesaid. The space 23—24 between the strips 16 and 17 beyond the ends of the web 20, form chambers which connect with the ends of the triangular chamber aforesaid. The bed thus formed is coated with a thick layer of rubber 25, which is vulcanized upon the outer strips of canvas throughout their entire area, including the extensions 7 and 8, thereby producing an air tight bed divided by the webs 20 into a series of triangular chambers, which chambers are intercommunicating through the transversely disposed end chambers 23, 24. It will be understood that the transverse web 20 may be led either longitudinally of the strips 16—17 or transversely thereof, according to the character of the bed desired. For example in case a flat bed is to be used, such as is illustrated in Fig. 2, the triangular chambers will extend longitudinally thereof. If desired, however, the triangular chambers may extend transversely of the length of the bed, as illustrated in the circular bed disclosed in Fig. 1. In either event, the intercommunication of the triangular chambers and the end chambers will maintain a uniform pressure throughout the bed, unless pressure is applied throughout the entire width of the bed in such a manner as to restrict or close communication. In order to prevent such an occurrence, which would result in pocketing the air of the bed in advance of the tool, I have provided a separate conduit connecting the end sections 23—24 aforesaid, the connecting conduit being placed beyond the range of the operating tool. This conduit is illustrated in Fig. 1 as a pipe 26 extending along the end of the bed in parallelism with the circumference of the cylinder, and in Figs. 4 and 5 as a pipe 26 extending parallel to the bed but above the plane of the supporting base.

It will be obvious, that if the bed is to be used upon a cylindrical support, such as is illustrated in Fig. 1 the outer triangular compartments, would be larger than the inner triangular compartments, and the bed may be formed during its manufacture, so that it will fit exactly the form of surface to which it is to be applied.

Where the bed is to be used upon a flat or plane support, I have found it convenient to provide shouldered ledges 27 at intervals along the surface of the bed, and to form recesses 28 in the vulcanized lower wall of the bed adapted to receive and rest upon said ledges. As illustrated herein the cylindrical bed is shown in Fig. 1 in operative relation to a rotating tool 29, which may be the usual tool provided with spirally arranged knives or vanes extending in opposite directions from the longitudinal center of the tool. As illustrated in Fig. 2, the operating tool is in the form of diagonal blades 30 on a bar 31 carried upon link chains 32, which pass over guiding and driving rolls 33—34, so positioned as to cause the blades to travel parallel to the

supporting bed 1. Any suitable means may be provided for introducing air into the bed, as for example a valved communication 35, which may be attached to a suitable air pump either permanently or temporarily.

The bed illustrated herein may of course be manufactured in any suitable manner. I have however designed a novel process of construction for said bed which is both effective and economical. In my process I provide a number of complementary triangular forms A and B preferably of wood as illustrated in section in Fig. 6. I first bend the middle portion of a strip of canvas about the form A, interposing between the inclined wall thereof the end of the transverse web 20. I then secure the upper strip 16 to the web 20 by the rivets 21 or otherwise at the apex of the triangular form A. The triangular form B is then placed between the upper strip 16 and the transverse web 20, and the rivets 22 are inserted through the lower strip 17 and the web 20 at the apex of the triangular form B. Another triangular form A′ like the form A is then inserted between the strip 17 and the transverse web 20, and a second series of rivets 21 inserted along the apex of the form A′ through the strip 16 and 20. A triangular form B′ like the form B is then inserted between the strip 16 and the strip 20, and the operation repeated until a bed structure of the character above described of the desired width or length is formed. A coating of rubber is then applied to the exterior surface of the members 16—17 and vulcanized upon the same the forms A—B, etc., being permitted to remain during the vulcanizing process. The forms are then removed and the extended ends of the strips 16—17 vulcanized together to form the attaching extensions 7 and 8.

It is to be understood that the apparatus disclosed herein is illustrative and not restrictive, that the invention may be embodied in other forms within the spirit and scope of my invention and that the novel bed disclosed herein may be adapted to various other uses than in connection with leather working machines.

Claims:

1. A pneumatic bed for leather working machines having parallel upper and lower walls connected by a plurality of flexible webs secured in fixed relation to said walls and extending across the working area of the bed and disposed in planes inclined to the plane of the said walls.

2. A pneumatic bed for leather working machines having parallel upper and lower walls connected by a plurality of flexible webs secured in fixed relation to said walls and extending across the working area of the bed and inclined alternately in opposite directions.

3. A pneumatic bed for leather working machines having parallel upper and lower walls, a plurality of compartments formed by a flexible continuous web extending across the working area of the bed and attached alternately to said upper and lower walls to form webs having a fixed relation to said walls and lying in planes inclined alternately in opposite directions.

4. A pneumatic bed for leather working machines having parallel upper and lower walls, a plurality of compartments formed by a flexible continuous web extending across the working area of the bed and attached alternately to said upper and lower walls to form webs having a fixed relation to said walls and lying in planes inclined alternately in opposite directions and forming a series of cylindrically disposed air chambers triangular in cross section, and means permitting intercommunication of all the air chambers thus formed.

5. A pneumatic bed for leather working machines comprising parallel upper and lower walls connected by a continuous web of canvas extending across the working area of the bed and attached alternately to the upper and lower walls to form webs lying in planes inclined alternately in opposite directions and forming a series of chambers and a chamber disposed transversely of the ends of all of said chambers and connecting therewith whereby free circulation of the air throughout the bed is permitted.

6. A pneumatic bed for leather working machines comprising upper and lower parallel walls of canvas covered by a thick vulcanized coating of rubber, a flexible member secured alternately to said upper and lower walls of canvas to form a series of parallel triangular air chambers, transverse compartments at the ends of said chambers and connecting therewith, and a conduit connecting said end compartments outside of said bed whereby pocketing of the air is prevented.

7. A pneumatic bed for leather working machines comprising upper and lower parallel walls of canvas covered by a thick vulcanizing coating of rubber and extended and united to form a pneumatically closed bed, and also to provide means for securing said bed to its support, a flexible member secured alternately to said upper and lower walls to form a series of longitudinal compartments extending throughout the working area of said bed and transverse compartments connecting with the ends of said longitudinal compartments.

8. A pneumatic bed for leather working machines comprising upper and lower parallel walls of canvas covered by a thick vulcanizing coating of rubber and extended and united to form a pneumatically closed bed, and also to provide means for securing said bed to its support, a flexible member secured

alternately to said upper and lower walls to form a series of longitudinal compartments extending throughout the working area of said bed and transverse compartments connecting with the ends of said longitudinal compartments, a recess formed in the under wall of said bed adapted to engage ledges upon the bed support.

9. A pneumatic bed for leather working machines comprising layers of flexible substantially non-stretchable material secured together at their sides and ends to form a chamber between said layers, webs of flexible substantially non-stretchable material located in said chamber and extended across the working area of the bed and firmly secured to said layers to subdivide said chamber into compartments for the reception of an elastic fluid under pressure, and to resist outward movement of the outer of said layers under the influence of said pressure, and means attached to said layers and extended beyond walls of the said chamber for attachment of said bed to a supporting member.

10. A pneumatic bed for leather working machines having upper and lower substantially parallel walls of flexible substantially non-stretchable material covered by a layer of rubber vulcanized thereto and having portions united to form a pneumatically closed bed and extended beyond walls of said pneumatically closed bed to form means for attachment to a supporting member, and webs of flexible substantially non-stretchable material interposed between said upper and lower walls and extended across the working area of the bed to form air compartments, and means for securing said webs in fixed relation to said walls to enable the said webs to resist outward movement of the upper wall under the influence of air pressure within said compartments.

11. A pneumatic bed for leather working machines comprising layers of flexible substantially non-stretchable material secured at their sides and ends to form an air chamber having substantially parallel upper and lower walls and side and end walls and to leave portions extended beyond walls of said chamber for attachment to a supporting member, webs of flexible substantially non-stretchable material interposed between said upper and lower walls and extended across the working area of the bed and firmly secured to said upper and lower walls to subdivide said chamber into compartments and to resist outward movement of said upper wall by fluid pressure within said compartments, and a layer of rubber of substantial thickness covering said upper wall and vulcanized thereto.

12. A pneumatic bed for leather working machines, having substantially parallel walls of flexible substantially non-stretchable material secured together air tight to form a closed air chamber and to leave portions extended beyond walls of said chamber to form means for attachment to a supporting member, and webs of flexible substantially non-stretchable material interposed between said substantially parallel walls and extended across the working area of the bed, and means to secure said webs in fixed relation to said walls and subdivide the said chamber into compartments, and a wearing surface covering the outer of said walls and secured to said bed.

In testimony whereof, I have signed my name to this specification.

OSCAR REIRSON.

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