F. L. LANE & H. J. MITCHELL.

MOUNTING FOR RESILIENT CUSHIONS.

APPLICATION FILED MAY 31, 1912.

1,096,846. Patented May 19, 1914.

Fig. 3.

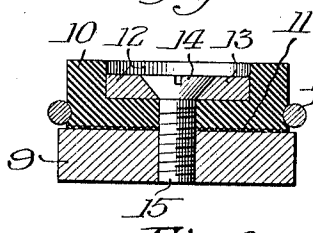


Fig. 5.

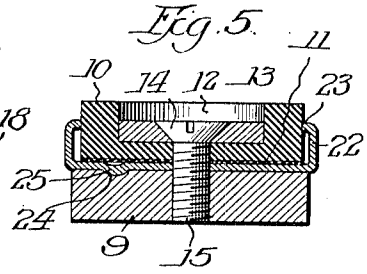


Fig. 4

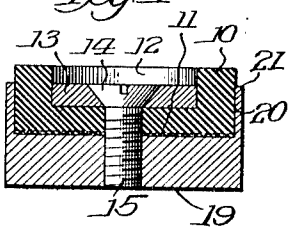


Fig. 6.

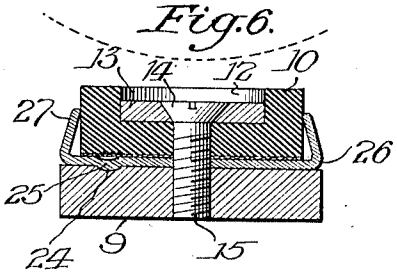


Fig. 7.

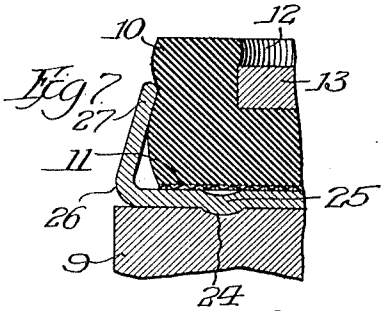


Fig. 1

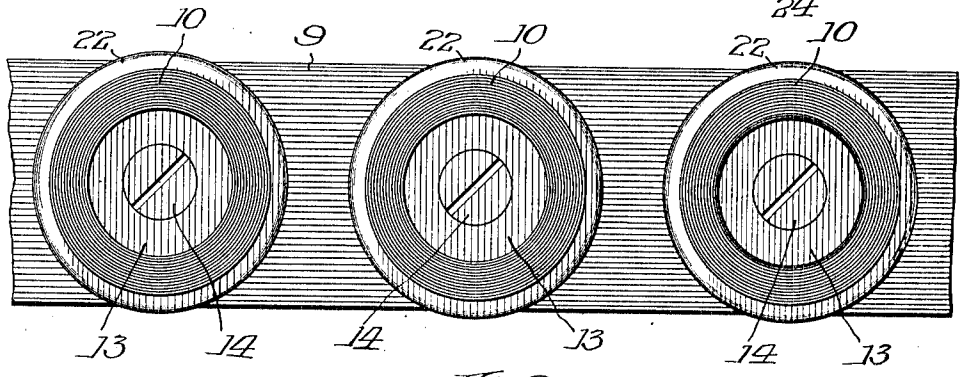
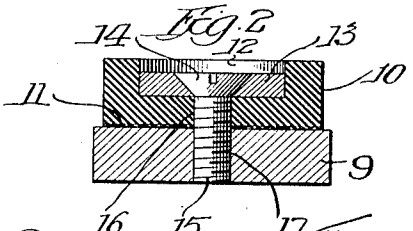


Fig. 2



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UNITED STATES PATENT OFFICE.

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MOUNTING FOR RESILIENT CUSHIONS.

1,096,846. Specification of Letters Patent. Patented May 19, 1914.

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To all whom it may concern:

Be it known that we, FRANKLIN L. LANE and HARRISON J. MITCHELL, residing at Beloit, in the county of Rock and State of Wisconsin, have invented certain new and useful Improvements in Mountings for Resilient Cushions, of which the following is a specification.

This invention concerns or pertains to novel features and improvements in conveyers, carriers, endless beds, and the like, and relates more particularly or especially to those equipped with resilient or yielding friction cushions.

The preferred embodiments of the invention described in detail below are especially applicable for use in connection with endless carriers for wood-working machinery, such for example, as sand-papering machines and planers, but their use, however, as will be apparent, is in no way limited to such class of devices.

One of the leading objects and purposes of the invention is the provision of a cushion provided with effective and efficient holding-means for maintaining it in proper place on the carrier, whereby the board or other article carried or transported by the conveyer is firmly gripped and prevented from slipping as it passes through the machine and is being operated upon.

In order that those skilled in the art may have a full and complete understanding of the invention, its structural features and advantages, a plurality of embodiments of the same have been illustrated in the accompanying drawings which form a part of this specification, and to which reference should be made.

In these drawings: Figure 1 shows a bar or slat of a conveyer or endless bed supplied with a plurality of elastic cushions incorporating our invention. Figs. 2, 3, 4, and 5, illustrate in cross-section different means for effectively holding such cushions to the bars or slats of the conveyer; Fig. 6 shows in cross-section still another method of holding the cushions, and Fig. 7 is an enlarged fragmentary section showing the action of the cushion under compression.

In sand-papering or planing machines, it is desirable or necessary in those devices equipped with endless traveling beds, particularly where short stock is used, to prevent the boards from slipping on such bed or conveyer while being acted upon by the sand-papering drums or planing-cylinder. It has been suggested heretofore to equip the face of such an endless carrier or bed with rubber or other suitable resilient cushions, preferably staggered, on which the board rests during its travel through the machine. Difficulty has been experienced in holding such cushions effectively and fixedly on the conveyer to prevent their being worked or pushed out of place or torn from position while the board is being operated upon by the mechanism. In other words, the strain on these cushions is considerable, and must be cared for in the holding-devices referred to.

The present invention involves the employment of rubber or other suitable yielding cushions of such shape as to secure a suction-hold on the board, the cushions being held to the slats or bars of the conveyer or movable bed by a new and improved means possessing an unusual degree of efficiency in their holding or retaining-effect.

In Fig. 1 of the drawings, the cross-bar or slat 9 of an endless bed or conveyer has fastened thereto a plurality of cylindrical rubber cushions 10, 10, each of which has embedded in its base a canvas or other suitable fabric 11, which, as will be readily understood, stiffens and strengthens the base of the rubber. Also in the particular embodiment of the invention shown in Fig. 2, each of these round cushions has in its top face a concentric cylindrical cavity 12 accommodating a round retaining disk or washer 13 of less thickness than the depth of the recess 12, such disk being centrally conically apertured for the accommodation of the conical-shaped head 14 of a screw 15 which extends through a central hole 16 in the rubber cushion, the threads of such screw engaging and co-acting with those of a threaded hole 17 in the bar or slat 9. That is to say, in this way, each rubber cushion by means of its screw, is securely fastened to the support or bar 9, and the space or cavity above the retaining disk or washer makes of the cushion a suction cup possessing a marked degree of holding-effect on the board or other member placed thereon and conveyed thereby. Obviously, the rubber being yielding, constitutes a resilient

cushion, and a series of cross-bars each equipped with a group or plurality of such cushions provides an endless bed or conveyer yielding in character, and preventing the board or other member from slipping because of the adequate friction between the same and these suction cups or cushions. In some cases it is desirable to provide some kind of a support or retainer around the exterior of the cushion, and in Fig. 3 there is shown a wire ring 18 encircling the cushion and acting in conjunction with the screw and disk to hold or fasten the cushion or suction cup securely to the bar, such ring counteracting or overcoming any tendency for the rubber cushion to tear away from the bar or slat around its periphery or external portion. Such ring acts to stiffen the rubber at the lower section of the cushion and constitutes a confining member to assist in holding the cushion in place.

In Fig. 4 a slightly modified construction is shown in which the cross-bar or slat of the conveyer or bed is provided in its top surface with a cylindrical recess or cavity 20 for each cushion 10 so that the latter is partially accommodated within such recess, the upstanding flange or portion 21 around the cavity constituting a retaining and supporting wall for the lower portion of the cushion. The upper edge of this wall, that is, the top surface of the bar 19, is desirably though not necessarily, on substantially the same level as the top surface of the disk or washer 13, although this feature of construction, as will be readily understood, is not absolutely essential. Such arrangement of the parts, however, secures an adequate cooperating holding or retaining effect of the various members constituting the supporting device for the cushion.

In some instances and under some circumstances it is convenient and desirable to supply a suitable space inside of the retaining-wall of the cushion to permit the flowing, swelling or distorting of the rubber brought about by the pressure exerted on the top of the cushion. Such a modified construction is shown in Fig. 5 in which the conveyer or carrier 9 has on its top surface a sheet-metal cup or shell 22 having at its top an inturned flange or rim 23 circular in shape and acting as a support for the portion of the rubber cushion which it surrounds. As is clearly indicated in Fig. 5, an annular space is provided beneath such flange, into which the rubber of the cushion may swell or enlarge or flow under pressure, the disk or washer 13, cushion 10, and shell or cup 22 being all held or fastened to the bar 9 by a central screw 15. As in the instance shown in Fig. 4, the flange 23 is desirably on substantially the same level as the top of the disk or washer 13, a sufficient portion of the round rubber cushion projecting above the parts 13 and 23, to afford a yielding surface on which the board or other article being carried is adapted to rest. It will be observed that this rubber or resilient cushion 10 is confined and fastened both internally and externally, whereby the maximum retaining and holding-effect is obtained, any tendency for dislodgment or displacement of the cushion being overcome and resisted by the combined and conjoint action of the disk 13 and the the top surface of the bar 19, is desirable, surrounding shell or cup 22, which, at the flange 23, presents an opening for the accommodation of the cushion of substantially the same diameter as the cushion. This cushion, however, has free play to exert its resilient effect on the board, being free to swell or expand in the shell 22 beneath the flange 23. In other words, rubber is not compressible to any great degree, it being merely capable of distortion or flowing at one part due to pressure brought upon some other part. It is because of this that the enlarged or undercut cavity is provided in the shell 22.

The construction shown in Fig. 5 shows the bar 9 as provided with a slight depression 24 for the accommodation of a small boss 25 struck downwardly out of the base of the shell 22 and fitting in the cavity 24. This acts as a holding construction to prevent turning of the cushion around the screw 15 when the board being fed through the sand-papering or planing machine covers only a portion of the cushion. Under such circumstances, as will be readily understood, there would be a tendency exerted on the cushion to revolve it around its axis, that is, around the screw 15.

In Fig. 6 a slightly modified construction is shown, in which there is provided a sheet-metal shell 26 which, instead of having an inturned flange at its upper edge is supplied with a tapered wall 27, presenting at its top a round mouth of substantially the same size as the external diameter of the cushion 10 which it is adapted to accommodate. In this case, as in the instance shown in Fig. 5, the rubber or other resilient material can expand or flow in the enlarged space within the shell at the base of the cushion. The manner in which the rubber flows, or expands, or distorts, is shown in Fig. 7. It enlarges above the top edge of the flange 27 and swells into substantially the form shown inside the shell, the bottom-portion of the cushion being prevented from expansion owing to the resisting-action of the embedded fabric 11. In this figure a sand paper drum 30 is illustrated in a diagrammatic way.

It will be appreciated that the more the rubber is compressed the more it will expand into the cavity in the shell, so that the shell in turn presents a greater holding and re-

taining-effect on the cushion. The advancing part of the rubber cushion is held from tearing away from the bar or slat by the shell, such section of the cushion being backed up by the internal washer or disk 13. The rear portion of the cushion is held up in place and supported by the flange of the shell and is also held down in position by the central disk so that these combined holding-means act to maintain the cushion in proper position and proper relation under the severest conditions of service.

While we have herein illustrated and described several embodiments of the invention, we wish to have it understood that the same is not to be limited to the exact and precise constructions herein shown, as many minor mechanical changes may be made in the same without departure from the substance and essence of our invention, and without the sacrifice of any of its substantial benefits and advantages.

What we claim is:

1. In a wood-working machine, the combination of a bed, a resilient concave cushion disposed thereon, and internally and externally arranged means to secure the cushion to the bed, substantially as described.

2. In a wood working machine, the combination of a bed, a resilient concave cushion disposed thereon, and internally and externally arranged means to secure the cushion to the bed, said securing means comprising a shell having a base underlying and a wall inclosing the cushion walls and extending inwardly into engagement with the upper portion of the cushion walls in combination with a retainer seated within the cavity of the cushion, and a fastening device attaching the retainer and bed through the bases of the cushion and shell, substantially as described.

3. In a wood working machine, the combination of a bed plate, a plurality of resilient concave cushions disposed thereon in spaced relation to each other, and internally and externally arranged means to secure the cushions to the bed, substantially as described.

4. In a wood working machine, the combination of a bed plate, a plurality of resilient concave cushions disposed thereon in spaced relation to each other, and internally and externally arranged means to secure the cushions to the bed, said securing means comprising a shell having a base underlying and a wall inclosing the cushion walls and extending inwardly into engagement with the upper portion of the cushion walls in combination with a retainer seated within the cavity of the cushion, and a fastening device attaching the retainer and bed through the bases of the cushion and shell, substantially as described.

5. In a wood working machine, the combination of a bed plate, a plurality of resilient concave cushions disposed thereon in spaced relation to each other, and internally and externally arranged means to secure the cushions to the bed, said securing means comprising a shell having a base underlying and a wall inclosing the cushion walls in spaced relation thereto in the lower portion and extending inwardly into engagement with the upper portion of the cushion walls, in combination with a retainer seated within the cavity of the cushion, and a screw attaching the retainer and bed to the bases of the cushion and shell, substantially as described.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."