W. P. BOSWORTH.

CUSHION MAT.

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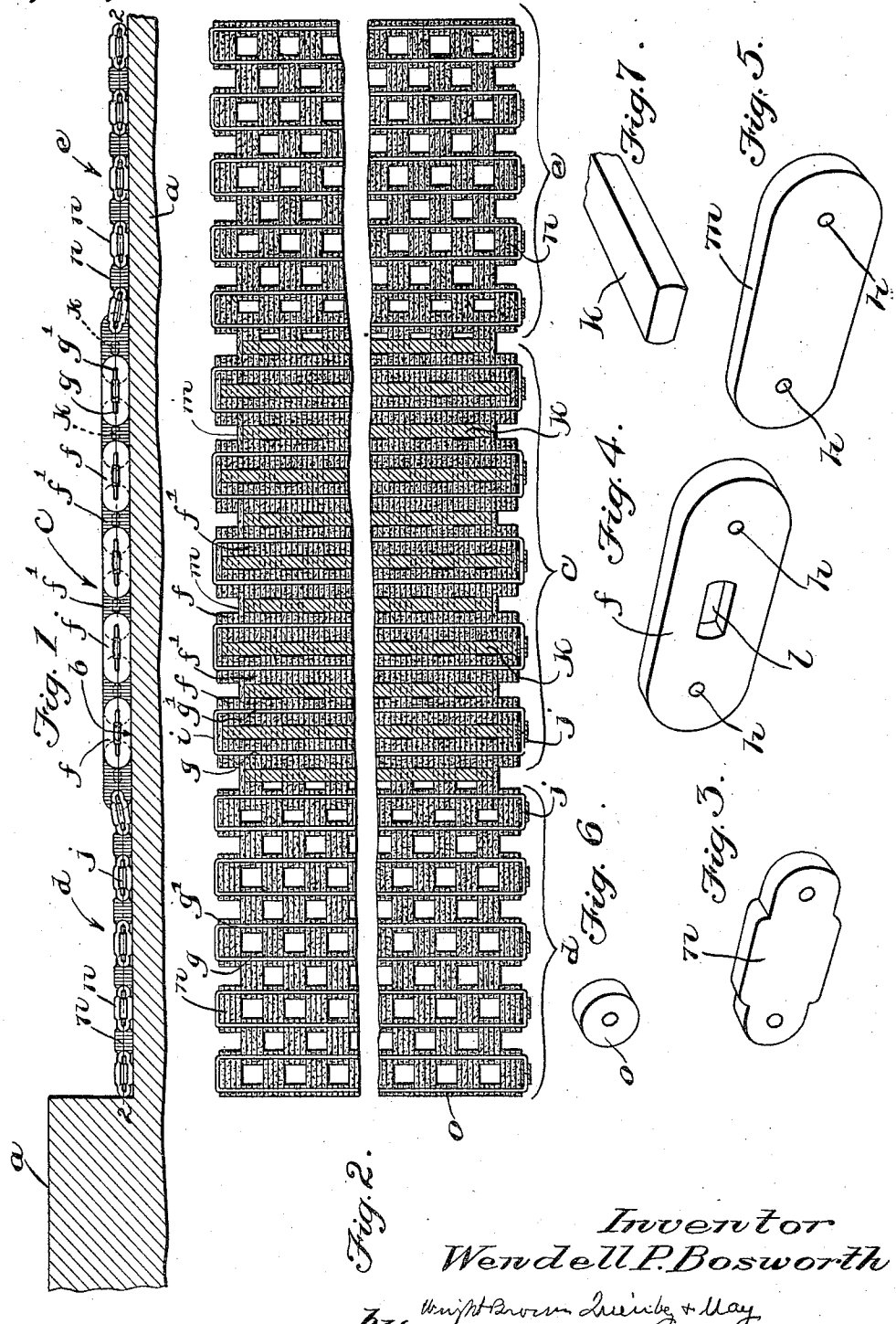


Fig. 1.

Fig. 2.

Fig. 7.

Fig. 5.

Fig. 4.

Fig. 6.

Fig. 3.

Inventor
Wendell P. Bosworth

by Wright Brown Quinby & May
Attorneys

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UNITED STATES PATENT OFFICE.

WENDELL P. BOSWORTH, OF BROCKTON, MASSACHUSETTS, ASSIGNOR TO BROCKTON HEEL COMPANY, INC., OF BROCKTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

CUSHION-MAT.

1,276,865. Specification of Letters Patent. Patented Aug. 27, 1918.

Application filed November 14, 1917. Serial No. 202,054.

To all whom it may concern:

Be it known that I, WENDELL P. BOSWORTH, a citizen of the United States, residing at Brockton, in the county of Plymouth and State of Massachusetts, have invented new and useful Improvements in Cushion-Mats, of which the following is a specification.

The present invention relates to a mat intended to soften the impact of heavy bodies and to withstand the effects of numerous and frequently repeated blows of such bodies. One use for which the mat is particularly adapted, and with reference to which the embodiment of the same herein illustrated has been constructed, is to cover the floor of a bowling alley pit; that is, the space at the rear end of a bowling alley into which the balls used in the game of bowls or tenpins drop after rolling the length of the alley. The floor of such a pit is always at a somewhat lower level than the floor of the alley, and the heavy balls, moving rapidly, fall upon and strike the same with great force. The mat which I have shown and described in this specification is designed to cover the floor of such a pit, to provide a cushion protecting both the floor and the balls from the destructive effects of impact. The particular object of the invention is to combine in a mat adapted for this purpose, and other purposes, the qualities of yieldingness and resilience, with ability in itself to sustain with the minimum of deterioration the severe blows thus applied.

In carrying out this object I have produced the mat herein shown and described, all the novel features of which I claim as my invention. Among the more important of such features are included:—

(1) A construction having short pieces of tough and flexible material, preferably sole leather, connected together by pins, rods, or wires, those pieces which are located in the region or section of the mat receiving the impacts or blows being of greater width than the others;

(2) The combination with the pieces in the region above specified of strong and relatively bulky bars, preferably made of steel, embedded in such pieces to enable them to resist the crushing effect of the blows sustained, and to relieve the connecting pins or wires of breaking strains;

(3) The combination with a mat section having bulk, strength, compressive resistance, and cushioning ability sufficient for the purposes indicated, of a flanking section or sections extending the boundaries of the mat to those of the space in which it is contained, having stiffness sufficient to retain the impact-receiving section in its appointed position, and being made of smaller pieces and without sustaining bars for securing economy of material.

It may be said in brief, that my invention consists in the foregoing features, and in other means hereinafter set forth, for accomplishing the objects previously stated.

In the drawings,

Figure 1 is an edge view of my novel and improved mat showing the same as employed in the pit of a bowling alley.

Fig. 2 is a sectional view taken on line 2—2 of Fig. 1, in other words the section midway between the top and bottom surfaces of the mat.

Figs. 3, 4, 5, and 6 are perspective views illustrating different pieces which enter into the construction of the mat.

Fig. 7 is a perspective view of one end of one of the filling bars or plugs.

The same reference characters indicate the same parts in all the figures.

In Fig. 1 *a* represents the rear end of a bowling alley, and *b* the floor of the pit. The balls used in the game of bowling fall into the pit, but by reason of their momentum do not strike the floor thereof until they have traveled for some distance beyond the alley's end.

The mat embodying this invention is shown as lying on the floor of the pit in position to receive the impact of the balls falling into the same. It is composed essentially of an impact section or portion *c* and spacing sections or portions *d* and *e*. The impacting portion occupies that part of the pit which receives the impact of the ball, while the spacing portions extend from the impact portion to the boundaries of the pit and retain the latter in the desired location. Two spacing sections are shown, the same being on respectively opposite sides of the impact section, but I may construct mats having only one of such portions.

The impact section is made of pieces of material which are sufficiently yielding and resilient to serve the purposes of a cushion and are at the same time strong, tough, and

durable. They are designated by the reference letters f, f and f', f'. The material preferably used for these pieces is sole leather, although I do not limit the invention to that material but reserve the right to use any other material having the desired qualities. All the pieces thus far described are alike. They are arranged in parallel lines, and also in parallel rows, the rows being transverse to the length of the pieces. I make this distinction between "lines" and "rows" simply for convenience of description and of clear definition in the claims, but without intending thereby to limit the invention in any manner. Where the stock is sole leather, or other material which is comparatively thin in proportion to the length and breadth of the pieces, the latter are preferably bunched, so that two, three, or more are placed in contact with one another and spaces are left between adjacent bunches in the same row substantially equal to the bunches of pieces in the next rows. I have designated by the letter f the pieces in alternate rows and by the letter f' the pieces in intermediate rows. The pieces, or bunches of pieces designated f, f are located in the same lines in longitudinal zones, while the pieces or bunches f, f' are in line with one another, and with the spaces between the pieces or bunches f of the adjacent rows. Thus the pieces in adjacent rows are staggered. They are further located so that pieces in adjacent rows overlap, those in one row intruding into the spaces between the pieces or bunches in the adjacent rows on either side thereof. While I prefer to bunch the pieces as above described, and as shown in the drawing, I do not limit the invention to this arrangement, but may separate all of the pieces from one another in each row, and have an individual alternation of pieces in adjacent rows instead of a periodic or grouped alternation.

The overlapping ends of the pieces are coupled together by connectors g, g', these connectors being rods or wires which are threaded through holes h (Fig. 4) in the pieces f and f'. In this drawing the connector rods are shown as arranged in pairs, the rods of each pair being integrally connected by a cross length i at one side of the mat and their ends at the other side of the mat bent toward one another and confined in a sleeve j. This is a preferred construction but is not obligatory. In each row of pieces f, f' is inserted a filler bar or plug k, the latter being a relatively massive and bulky, and also strong and comparatively rigid bar, preferably of steel, although permissibly of other metal or even of a non-metal which has the desired qualities above named in sufficient measure. These filler or plug bars are passed through holes l centrally arranged in the posts f and f', the same bar preferably passing throughout substantially the whole width of the mat, being less than this width, or the width of the row in which the individual bar is contained, by the thickness of a cover piece m (shown in Fig. 5) of which there is one at each end of each row. These cover pieces m are like the pieces f and f' in dimensions and outline and in the fact that they are pierced with holes h for the connector rods; and different only in lacking the opening l for the plug or filler bar.

This bar is preferably, although not necessarily, of greater width than thickness, and placed with its width extending in the longer dimension of the pieces f, f'. Another preferred feature is that the width of the bar is nearly or substantially as great as the width of the space between the ends of the pieces in the rows on opposite sides of the row in which the bar is contained. In other words the bars nearly fill the spaces bounded by pieces or groups of pieces in the same row and by the intruding ends of pieces contained in other rows. These bars are an important feature of the invention and greatly add to the power of the mat to resist the destructive effect of heavy and frequently repeated impacts. They not only fill the centers of the pieces with a solid and rigid material, or at least a material which is firmer and stronger than the material of the pieces themselves, but also brace the pieces, preventing them from tipping over or shifting longitudinally under the impact, and thereby relieve the connector rods of bending and shearing stresses and save the pieces from chafing on the connector rods. Thus the plug or filler bars add to the resistance of the pieces themselves against being crushed by the impact, and protect the couplings between the pieces.

The spacing sections d and e are similarly constructed of pieces n, n arranged in parallel transverse rows and in the same lines with pieces f, f and f', f', respectively; also overlapping at their ends and preferably bunched together in groups, the overlapping ends being coupled together by connector bars like connector bars g, g' as already described. These sections differ from the impact section c in being made without filling bars and in that the pieces n are all generally smaller in dimensions, and particularly of materially less width than the pieces f, f'. In short the pieces n are simply of such dimensions as will give the sections d and e sufficient stiffness to prevent shifting of the impact section under the propelling effect of the blows, which are delivered in a glancing manner.

At the ends of the mat the spaces between the pieces are filled by washers o which are strung upon the endmost connector wires as shown clearly in Fig. 2.

The diversity of characteristics between the interior or impact section *c*, and the marginal or spacing sections *d* and *e*, has an important function and advantage in that it causes the mat to lie smoothly and flat on the floor, preventing it from being buckled or curled up in any part, under the effect of severe and repeated pounding. This diversity consists principally in the fact that the impact section is hard, compact, and relatively inflexible, made so by the bulky filling bars, while the marginal sections are relatively flexible, being without any filling bars whatever, and their connector rods being light and comparatively flexible. As a result of this marginal flexibility, any bending of the mat which might take place under exceptionally severe blows, is limited to the impact section exclusively, and is not communicated to the marginal sections. The latter thus lie flat and smoothly upon a floor even in cases where the central portion may be more or less bent, buckled, or otherwise distorted.

While I have emphasized the utility of the herein described mat to cover and cushion the floor of a bowling alley pit, I would point out that I have not intended thereby to limit the invention to that particular use.

What I claim as my invention, for which I desire protection, is:

1. A cushion mat composed of pieces of tough flexible yielding material arranged in longitudinal parallel lines and transverse parallel rows, with spaces between successive pieces in the same lines and between pieces in the same rows, the pieces in contiguous lines and rows being staggered and overlapping at their ends, connectors passing through the overlapping parts of said pieces transversely of said lines, thereby pivotally connecting the pieces together, and relatively bulky and rigid filling bars passing through the pieces in several of the adjacent rows and between the ends of the pieces in the respectively adjacent rows.

2. A cushion mat as set forth in claim 1, distinguished by the fact that said bars are substantially as wide as the spaces between successive pieces in said longitudinal lines.

3. A cushion mat as set forth in claims 1 and 2 inclusive distinguished by the fact that said filling bars are placed substantially midway between the opposite edges of the pieces through which they pass, whereby the mat may be used with either of its opposite sides or faces uppermost, and that said bars have a thickness materially less than the width of said pieces, whereby the latter provide a sufficiency of cushioning material both above and beneath the bars.

4. A cushion mat as set forth in claim 1, of which the pieces through which said bars pass form the impact portion of the mat, distinguished by a spacing portion constructed of narrower pieces similarly arranged and connected, without filling bars.

In testimony whereof I have affixed my signature.

WENDELL P. BOSWORTH.

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