R. A. LEIGH.

PNEUMATIC OR COMPRESSED AIR CUSHION BED.

APPLICATION FILED OCT. 2, 1919.

1,351,480. **Patented Aug. 31, 1920.**

2 SHEETS—SHEET 1.

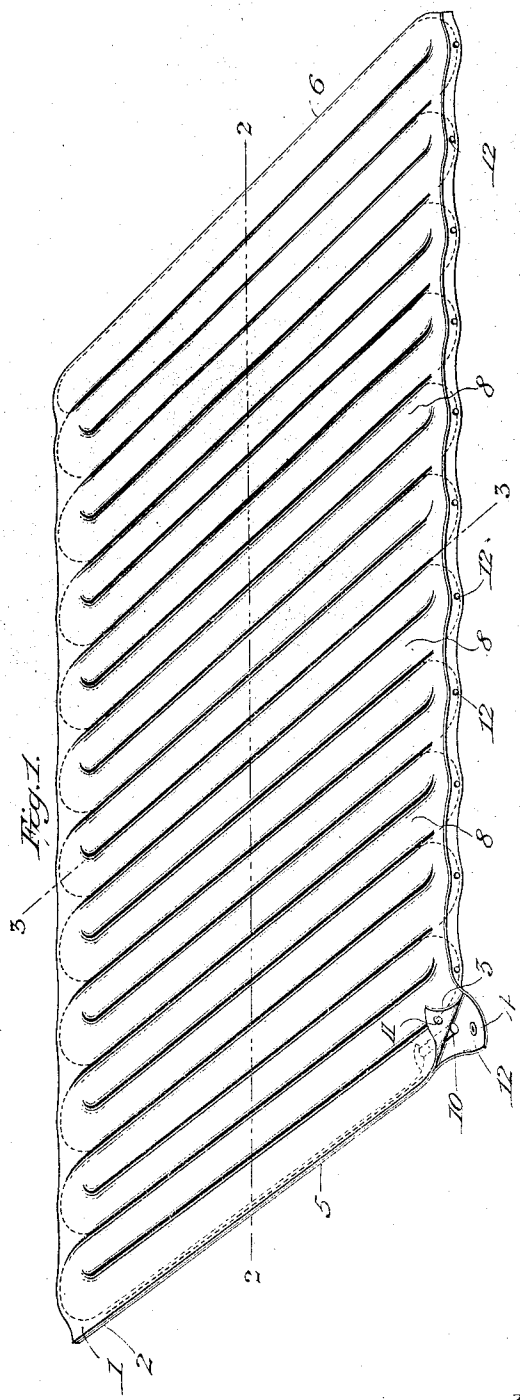


Fig. 1.

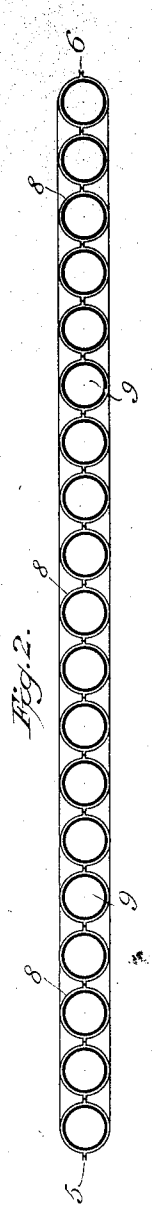


Fig. 2.

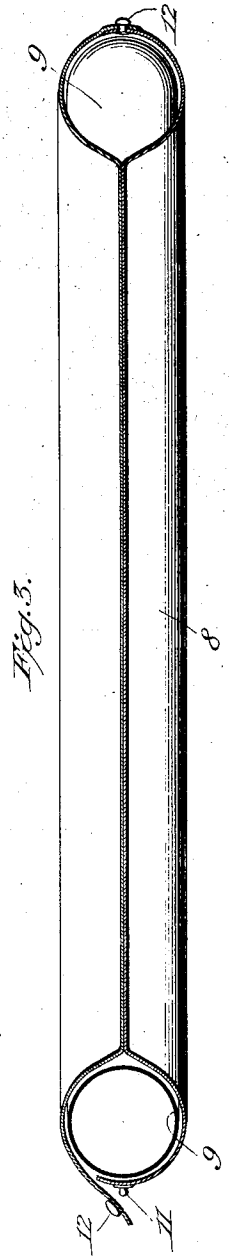


Fig. 3.

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Fig. 4.

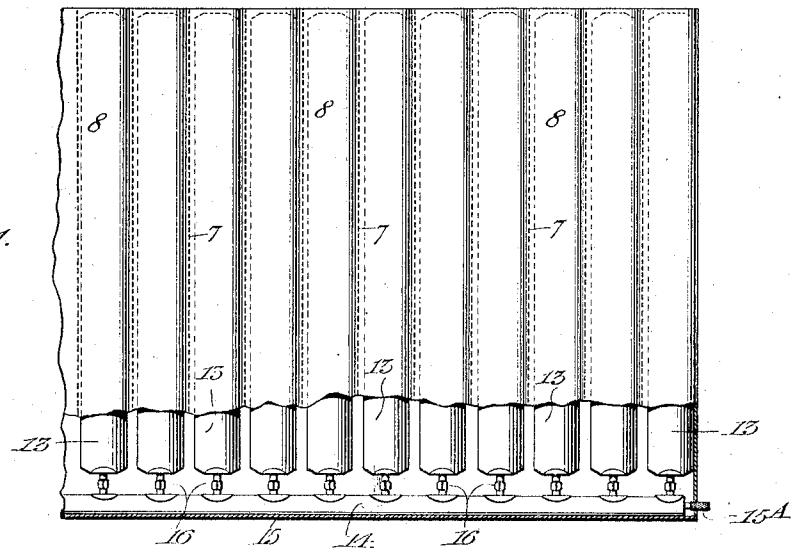


Fig. 5.

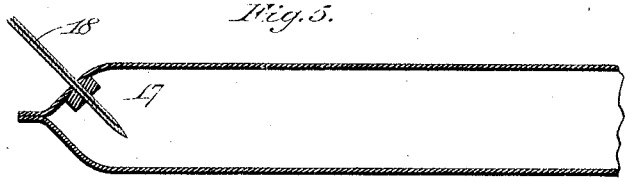
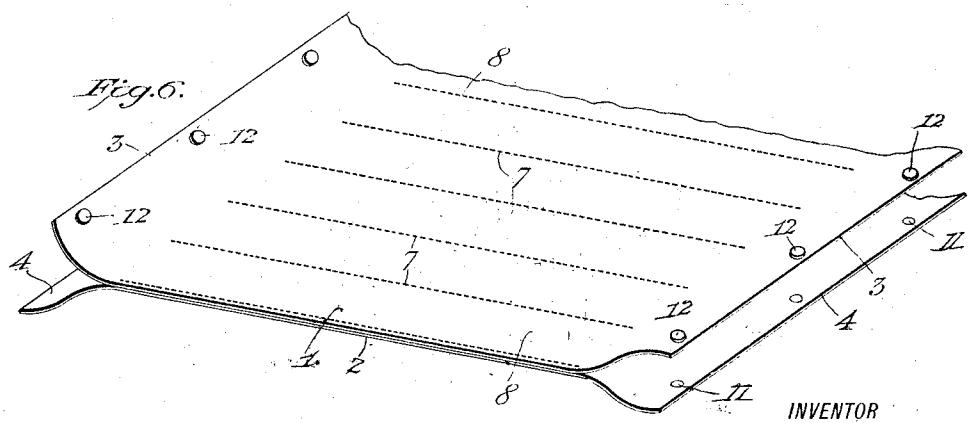


Fig. 6.



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UNITED STATES PATENT OFFICE.

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PNEUMATIC OR COMPRESSED-AIR-CUSHION BED.

1,351,480. Specification of Letters Patent. Patented Aug. 31, 1920.

Application filed October 2, 1919. Serial No. 328,020.

To all whom it may concern:

Be it known that I, RICHARD A. LEIGH, a citizen of the United States of America, residing at the city and county of Denver and State of Colorado, have invented a new and useful Pneumatic or Compressed-Air-Cushion Bed, of which the following is a specification.

My invention relates to a new type of pneumatic or compressed air cushion bed, and the objects of my invention are:

First: To provide a compressed air cushion bed in which one continuous length of an air receiving and retaining rubber tube is so circuitously arranged as to form an air cushioned bed surface when inflated under suitable air pressure.

Second: To provide an air cushioning bed in which independent outside coverings are provided with a plurality of air tube receiving pockets, and in which the opposite sides of said coverings are normally left open, but are attachably and detachably secured together when said bed is under air pressure.

Third: To provide a compressed air cushioning bed that can be filled with air under pressure, without the use of an air inlet valve.

Fourth: To provide a compressed air cushion bed having independent but coöperating outside cover members in which air tube portions or members are coöperatively or independently arranged to receive air and retain it under a suitable pressure.

Fifth: To provide a compressed air cushioning bed that is exceptionally light in weight, simple in construction, inexpensive to manufacture, easy to repair, and that is thoroughly practical for all kinds of uses, and especially for outing camps.

I attain these objects by the mechanism illustrated in the accompanying drawings, in which:

Figure 1 is a perspective view of the improved pneumatic mattress.

Fig. 2 is a sectional view, in diagram, on the line 2—2 of Fig. 1.

Fig. 3 is a sectional view, on an enlarged scale, on the line 3—3 of Fig. 1.

Fig. 4 is a plan view, partly broken away, of a portion of a modified form of mattress, in which a plurality of individual air tubes, are connected to, and supplied with air from a common filling tube.

Fig. 5 is a longitudinal sectional view of a portion of a tube, showing a modification in the manner of filling the same; and

Fig. 6 is a perspective view of a portion of the tube retaining covering of the mattress.

Similar letters of reference refer to similar parts throughout the several views.

Referring to the drawings:

My new type of air cushion bed has an outside supporting covering which may be made of any suitable material, but which I preferably make of strong, closely woven substantially water-proof canvas. I preferably make this covering of two separate sheets of canvas 1 and 2, both of which are preferably of the same size.

The side edges 3 and 4, of these two sheets of canvas are left open for several inches, in order that they may be overlapped and attachably and detachably secured together, as will be fully explained hereinafter.

The opposite ends 5 and 6, of these two sheets, however, are preferably closed by being sewed or otherwise secured together.

These two sheets are sewed or otherwise secured together crosswise of their lengths along the lines 7, which are placed at substantially equal predetermined distances apart. These sewed or otherwise formed lines form partitions and they will be designated as partitions hereinafter. The partitions 7, do not extend entirely across the covering, but all end at a short distance inside of the loose ends of the two canvas sheets.

The spaces between the sewed lines 7, form pockets 8, and in these pockets I preferably place a continuous length of rubber tube 9, which is especially adapted to hold and retain an air pressure sufficient to support several hundred pounds.

In placing this continuous length of rubber tubing in the pockets 8 of the outside covers of my air cushion bed, I do so when it is in a collapsed form; that is, when it is free from inflation by air pressure. Then I place one end of it in one end of one of the pockets at the opposite ends of the covers, and it does not matter which end of the covers the tube is started in, as both ends are preferably alike. Then after its end has been moved through the end pocket it is inserted in, its end is turned around the adjacent end of the partition line 7, into and through the next pocket 8, and around its forward dividing partition 7, into the next

pocket, and so on progressively through all of the pockets, to the opposite end of the covering. Around the ends of the partitions 7, from one space 8, to the next one, throughout the length of the canvas covering and in either one or both ends, or if desired, in the middle, of this continuous compressed air retaining tube, I place an air inlet valve 10, preferably using one of the automobile tire air inlet valves, in common use. I preferably use but one air inlet valve in the tube and secure it in one end of the tube, as illustrated in Fig. 1.

The side edges 3 and 4, of the two sheets of canvas that form the covering of my pneumatic air bed are arranged to be folded over each other, as shown in Fig. 3, and are fastened together. My invention contemplates any suitable kind of fastenings for these two edges of the covering sheets. I preferably use a frictional acting split plug 11, and a coöperating socket 12, into which the plug is sprung by hand pressure, the plugs 11, being fastened to the edge of one sheet and the sockets to the edge of the other sheet opposite to the plug, as shown in Fig. 3.

My invention contemplates, instead of the continuous piece of air holding tubing extending through the spaces 8, of the two sheets of canvas of the casing, a single and independent air retaining tubing 13, in each pocket 8, of the outside covering portion of the bed.

One end of each of these individual air tubes 13, is closed by any suitable means, but preferably by being pinched together and then cemented or vulcanized or otherwise securely fastened together.

At the opposite ends of the tubes, a long straight air tube 14, is placed longitudinally of the length of the bed, and a longitudinal pocket 15, is formed along one edge of the covering of the bed for it. This longitudinal air tube 14, is provided with an air inlet valve 15^A, which may be placed at either end or in the middle portion of it, or two or more air inlet valves may be used at different parts of its length if desired.

This longitudinal tube 14, is connected with the independent air tubes 13, that are in the numerous pockets 8, of the bed by couplings 16, a part of each coupling of which is secured to the longitudinal tube 14, and a part to the adjacent ends of the independent tubes.

In this independent tube arrangement of my air cushion bed the longitudinal tube 14, is used as a general air filling tube for all of the transversely arranged independent air tubes 13.

My invention, however, contemplates a method of filling the continuous length tube 9, that I preferably use, and thread or weave in a circuitous path throughout the length and breadth of the bed's covering portion, and also of the short independent transverse tubes in the pockets 8, without the use of an air inlet valve. This feature of my invention contemplates the application to the inside of the long tubes 9 and 14, and also to the short tubes 13, at a convenient and handy reached point in their length, of a plug or boss 17, as shown in Fig. 5, of inherently flexible rubber which, however, must be of such a character or quality of rubber that is free from any vulcanizing material or compound and that is of such a nature that it can be punctured by a small hollow air needle 18, shown in Fig. 5, which, when attached to a hand operating air pump and then pressed through the tubes and the boss or plug 17, allows the tubes to be pumped full of air which will flow through the air needle until the desired pressure is obtained in the tube or tubes. Then the needle is withdrawn and the puncture made by it will be closed by the plug or boss of flexible rubber, which, under the pressure of the air in the tubes, closes automatically the puncture made in it by the hollow needle.

The operation of my new type of compressed air cushioning bed is as follows: The bed is kept normally with its air tube or tubes non-inflated; that is, empty of air and rolled up, and it will roll up into a very small light weight bundle. When it is desired to use it, it is unrolled and its tube or tubes are filled with air with a hand or power pump, either through the air valve or the hollow air needle, until an air pressure, preferably of about from 5 to 10 pounds, depending on the weight of those about to use it. The free open side edges of the upper and lower coverings of the air tubes are folded over each other and buttoned together and the bed is ready for use.

After use, the free side edges are unbuttoned and the air is allowed to escape until the tube or tubes lie flat in their confining pockets; then the bed is rolled up until it is to be used again.

My invention provides a new, novel, and exceptionally simple bed that, owing to the character of the material of which I preferably make it, can be sold to the automobile traveling public and to camping parties for a very nominal sum, and it is strong enough to stand the roughest use and its tube or tubes can be quickly mended in case of puncture, and while I have illustrated and described the preferred construction and arrangement of my invention, I do not wish to be confined to it, as changes may be made without departing from the spirit of my invention.

Having described my invention, what I I claim as new and desire to secure by Letters Patent, is:

1. An air cushioning bed, comprising a

pair of similar sized outside cover portions and air receiving and retaining rubber tubes secured between said cover portions, said outside covers having loose and free side edges, said side edges on their opposite sides being arranged to be attachably and detachably secured together, said portions being formed by securing said covers together at predetermined distances apart lengthwise of said covers, and said partitions extending transversely across said covers to within a few inches of the loose and free edges of said covers.

2. In an air-cushioning bed, the combination of two separate outside bed covers, containing pockets arranged and adapted to hold and confine a circuitously arranged and a continuous piece of a round shaped compressed air holding tube that is arranged to turn around the opposite ends of said pockets in successive order from one end of said bed to its opposite end, the said pockets between said separate bed covers being formed by sewing the covers together transversely of their lengths and at equidistances apart throughout their lengths, and the two separate bed covers having their head and foot ends secured tightly together around the opposite end portions of said tube and having their opposite side edges separately free from each other but provided with means for securing said free side edges detachably together; with a single piece of a round shaped compressed air holding tube of a size to be inserted freely in the said pockets of said covers when deflated, said single piece of round tube being inserted and woven circuitously around the opposite ends of and through the pockets of said covers from one end of said bed to its opposite end, said pockets being formed and arranged to surround the circular outside surface of said round tube when inflated with compressed air, and having the several transverse pocket forming partitions of said covers arranged to stand at the opposite diametrical horizontal centers of each coil of said tube and of the horizontal plane of said bed throughout its length, and an air inlet valve in said tube.

In testimony whereof I affix my signature in presence of two witnesses.

RICHARD A. LEIGH.

Witnesses:
G. SARGENT ELLIOTT,
ELIZABETH SMITH.