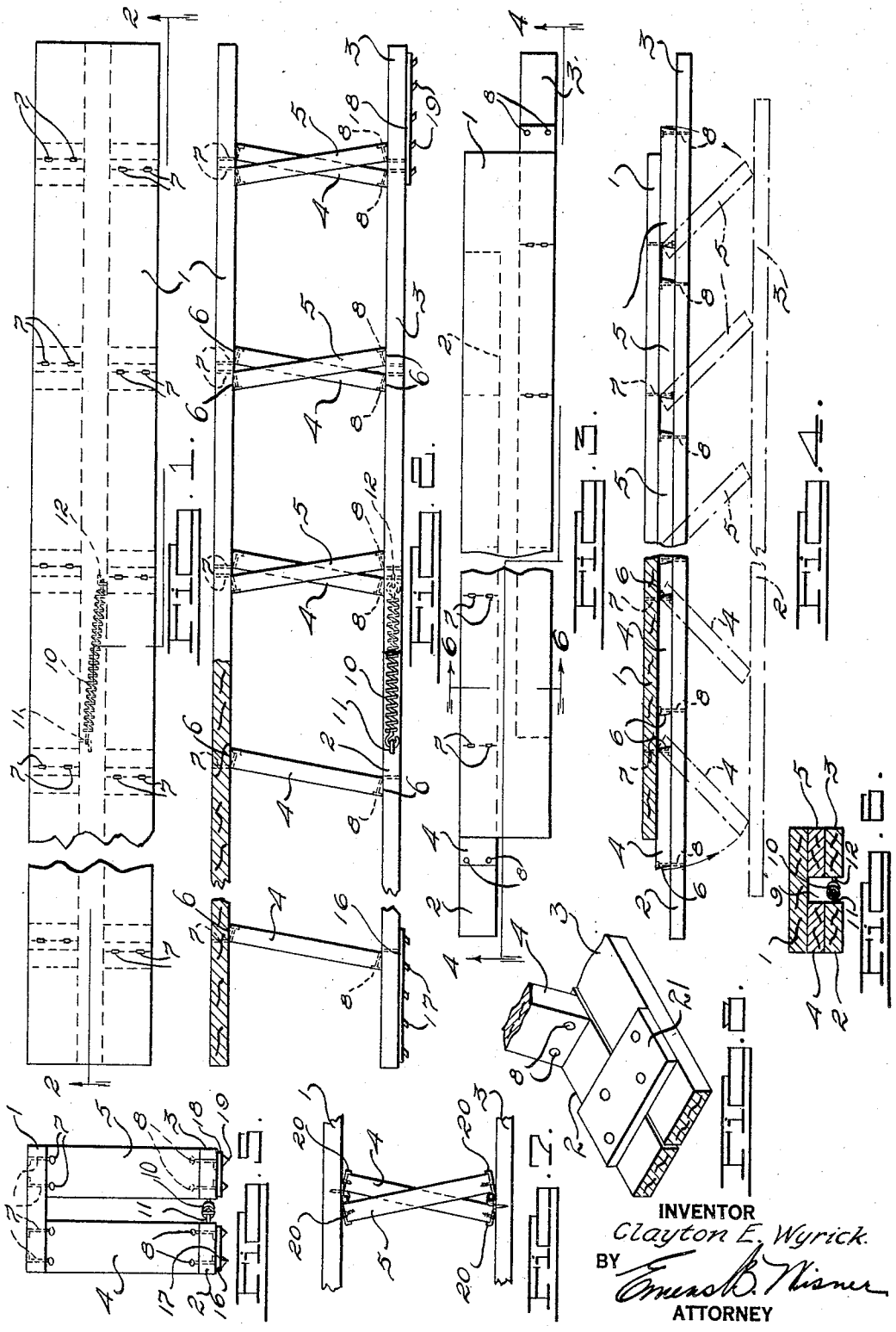
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EXPANSION BRACE

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EXPANSION BRACE

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This invention relates to expansion braces and an object of the invention is to provide a brace particularly adapted for use in packing freight cars and spacing articles in boxes and the like and further adapted to take up the looseness in the load in order to prevent breakage.

One of the objects of the invention is to provide an expansion brace for use between bulk heads and arranged so that pressure may be applied to the bulk heads by means of the expansion brace to take up looseness in packing and provide a firmly packed load which will not loosen in transit.

Another object of the invention is to provide an expansion brace which may be expanded to place a pressure on the load and which, after being placed in position, will automatically take up any further looseness of the load developing during transit.

Another object of the invention is to provide a cheap and efficient expansion brace by means of which the load may be maintained under pressure at all times so that the load cannot become loose in the vehicle in which the load is carried.

A further object of the invention is to provide an expansion brace which, during expansion, moves the sides of the brace in parallel relation and which will automatically take up any looseness of the load as soon as the looseness develops.

Still another object of the invention is to provide a fully assembled expansion brace which may be stored or shipped in a collapsed condition thereby requiring minimum space for such storage or shipping.

These objects and the several novel features of the invention are hereinafter more fully described and claimed and the preferred form of construction by which these objects are attained is shown in the accompanying drawing in which—

Fig. 1 is a plan view of an expansion brace embodying my invention.

Fig. 2 is a section taken on line 2—2 of Fig. 1.

Fig. 3 is a plan view of the expansion brace in the collapsed position.

Fig. 4 is a section taken on line 4—4 of Fig. 3 and showing the movement of the brace members during expansion.

Fig. 5 is an end view of the expansion brace taken from the left of Fig. 2.

Fig. 6 is a section taken on line 6—6 of Fig. 3.

Fig. 7 is a detail showing an alternative method of connecting the brace members to the parallel strips.

Fig. 8 is a perspective view of an alternative method of securing the brace in the expanded position.

As shown in Figs. 4, 5 and 6 the device comprises a base strip 1 and a pair of expansion bars 2 and 3. A series of short brace members 4 are provided for connecting the expansion bar 2 with the strip 1 and a series of similar brace members 5 are provided for connecting the bar 3 with the member 1. These brace members are each provided with beveled ends 6 as shown and in assembling the device the brace members 4 and 5 have two nails 7 driven through one end of each. The brace members 4 are arranged on the expansion bar 2 with the ends carrying the nails 7 extending in one direction while the brace members 5 are arranged on the expansion bar 3 with the ends carrying the nails 7 extending in the opposite direction. These brace members 4 and 5 are laid on their respective expansion bars 2 and 3 with the points of the nails 7 extending upwardly. At this time two nails 8 are driven through the end of each brace member opposite the nails 7 and into the respective expansion bar 2 and 3 as the case may be.

This secures the brace members 4 and 5 to the expansion bars 2 and 3 and the expansion bars with the brace members thereon are laid in parallel spaced relation and the wood base strip 1 is pressed down onto the upwardly extending ends of the nails 7 and the ends of the nails 7 are clinched over as shown in Figs. 1 and 3. The ends of the nails 8 are also clinched over the undersides of the expansion bars 2 and 3 as shown in Fig. 5. The device when thus assembled appears as shown in Figs. 3, 4 and 6 which is the collapsed position of the device for shipment. In the collapsed position, as

shown in Figs. 3 and 4, the ends of the expansion bars 2 and 3 extend beyond the opposite ends of the base strip 1. To expand the device, these extending ends of the expansion bars 2 and 3 are pressed downwardly in the direction of the arrows shown in Fig. 4. This turns the brace members 4 in one direction and turns the brace members 5 in the opposite direction, as shown in dotted lines in Fig. 4. As these brace members are turned the nails 7 and 8 are bent at the ends of the brace members, as shown in dotted lines in Fig. 2. It will be noted particularly from Figs. 2 and 4 that the nails are driven through the beveled ends of the brace members so that the nails extend practically through the pivotal point of the brace members on the expansion bars and on the base strip. These beveled ends provide sufficient material to hold the nails 7 and 8 and at the same time provide faces for engagement against the opposite sides of the expansion brace as will be understood from Fig. 2.

After the expansion bars 2 and 3 have been pressed downwardly sufficiently to start the brace members 4 and 5 in their pivotal movement, the device may be placed between two bulk heads in a load and the expansion bar 2 may be driven or forced toward the right of Fig. 4 while the expansion bar 3 may be driven or forced toward the left of Fig. 4. This exerts a very powerful leverage for expansion and forces the bulk heads apart to place a pressure on the load. In this movement of the expansion bars 2 and 3 it will be noted more particularly from Fig. 2 that the direction of thrust of the brace members is toward the heads of the nails 7 and 8 and as these nails are bent by the brace members at the points where they enter the base strip and expansion bars there is no pulling action on the nails but merely a bending movement. It will also be noted that in expanding the device, should one expansion bar be moved ahead further than the other, the other may be very readily brought up to the same plane.

As will be noted from Figs. 5 and 6, the expansion bars and brace members are spaced apart to provide a space 9 for a stiff coiled spring 10. This coiled spring is attached at one end to the expansion bar 2 by the hook 11 when in the collapsed position and the other end is free. As the device is expanding to the dotted position shown in Fig. 4 the opposite end of the coiled spring 10 may be hooked over a hook 12 provided therefor on the expansion bar 3 and this spring 10 tends to draw the expansion bars 2 and 3 in opposite directions to expand the device. By this arrangement when the device is placed between two bulk heads any shift in the load which will allow greater clearance is immediately taken up by the spring 10 which further expands the expansion brace to take up the accumulated clearance.

A plate 16, shown in Figs. 2 and 5, is secured at each end of the expansion bar 2 and is provided with struck up points 17 which extend in the same direction on both plates 16. As the expansion bar 2 is expanded by movement in the direction of the arrow, shown at the left of Fig. 4, the points 17 engage against the bulk head at this side of the expansion brace and movement of the expansion bar 2 to the right of Fig. 2 over the surface of the bulk head may be readily accomplished but due to these points 17 being all struck up in the same direction the expansion bar 2 cannot subsequently be moved to the left of Fig. 2 to collapse the expansion brace. For the same reason, a plate 18 is secured to each end of the expansion bar 3 and is provided with struck up points 19 extending in the direction opposite to that in which the points 17 of the plates 16 extend and these points 19 may move over the surface of the bulk head during expansion movement of the expansion bar 3 toward the left of Fig. 2 but by their engagement with the bulk head the points 19 prevent subsequent movement of the expansion bar 3 toward the right of Fig. 2 to collapse the expansion brace. With the brace properly positioned between two bulk heads, the spring 10 constantly urges the expansion bar 2 toward the right of Fig. 2 and also constantly urges the expansion bar 3 toward the left of Fig. 2 and should any looseness or clearance develop in the load, the expansion bars 2 and 3 are instantly moved by this spring to further expand the brace and spread the bulk heads apart to take up the clearance or looseness.

The device shown and described is made of cheap wood construction and may be discarded when the load has reached its destination. However, it is sometimes desirable to provide an expansion brace which may be used over and over again. To meet this requirement I preferably provide an expansion brace in which the brace members 4 and 5 are connected by hinges 20 to the base strip 1 and to the expansion bars 2 and 3, as shown in Fig. 7. With hinges 20 provided at these points, the brace may be readily collapsed after use and shipped back to the loading point to be used over again.

In most cases, the base strip 1 does not move but if it is desired to anchor the base strip 1 firmly in place, it may be nailed to the member against which it is used.

If desired, the spring 10 may be left off and the expansion bars 2 and 3 may be made wider as shown in Fig. 8 in order to come closer together. With this construction the expansion bars 2 and 3 may be moved up to position to put a pressure on the load and a cleat 21 may be nailed to both expansion bars 2 and

3 as shown in Fig. 8 to lock the expansion bars in the expanded position.

From the foregoing description, it becomes evident that the device is very simple and efficient in operation, will not easily get out of order, is composed of few parts and is of consequent low manufacturing cost and provides a device which accomplishes the objects described.

Having thus fully described my invention, its utility and mode of operation, what I claim and desire to secure by Letters Patent of the United States is—

1. In an expansion brace, a base strip, a seires of brace members each nailed at one end to the base strip and arranged in longitudinal alignment, a second series of brace members extending in the opposite direction to the first series and each nailed at one end to the base strip and arranged in longitudinal alignment, an expansion bar nailed to the free ends of each series of brace members, the arrangement being such that as the expansion bars are moved away from the base strip, the brace members are turned to bend the nails and a spring positioned between the expansion bars and urging the expansion bars in opposite directions.

2. In an expansion brace, a base strip, a series of brace members each nailed at one end to the base strip and arranged in longitudinal alignment, a second series of brace members extending in the opposite direction to the first series and each nailed at one end to the base strip and arranged in longitudinal alignment, an expansion bar nailed to the free ends of each series of brace members, the arrangement being such that as the expansion bars are moved away from the base strip, the brace members are turned to support the base strip and the expansion bars in the expanded position.

3. In an expansion brace, a series of brace members each having a pair of nails driven through one end thereof, a pair of expansion bars, the brace members being arranged longitudinally of the expansion bars with the nails extending upwardly, the opposite ends of the brace members being nailed to the expansion bars, a base strip pressed onto the upwardly extending nails of the brace members and yieldable means urging the expansion bars in opposite directions.

4. In an expansion brace, a series of brace members each having a pair of nails driven through one end thereof, a pair of expansion bars arranged in spaced parallel relation, the brace members being arranged longitudinally of the expansion bars with the nails extending upwardly, the opposite ends of the brace members being nailed to the expansion bars, a base strip pressed onto the upwardly extending ends of the nails of the brace members and a series of toothed plates secured to the outer faces of the base strip and expansion bars.

5. In an expansion brace, a series of brace members each having a pair of nails driven through one end thereof, a pair of expansion bars, the brace members being arranged longitudinally of the expansion bars with the nails extending upwardly, the opposite ends of the brace members being nailed to the expansion bars and a base strip pressed onto the upwardly extending nails of the brace members.

6. In an expansion brace for use between movable bulk heads, a base strip, a series of brace members each pivotally secured at one end to one side of the base strip, an expansion bar pivotally secured to the opposite ends of the brace members, a toothed plate on the outer side of the base strip for engaging one bulk head and a toothed plate on the outer side of the expansion bar for engaging the other bulk head, the toothed plate on the expansion bar allowing movement of the expansion bar over the face of the bulk head during expansion and preventing movement of the expansion bar in the opposite direction to collapse the expansion brace.

7. In an expansion brace, a base strip, a series of brace members each pivotally secured at one end to the base strip, an expansion bar pivotally secured to the free ends of the brace members, a toothed plate secured to the outer face of the base strip and a toothed plate secured to the outer face of the expansion bar.

8. In an expansion brace, a base strip, a series of brace members extending in one direction and each pivotally secured at one end to the base strip, a second series of brace members extending in the opposite direction, the second series of brace members being each pivotally secured at one end to the base strip, an expansion bar pivotally secured to the free ends of each series of brace members and yieldable means tending to move the expansion bars in opposite directions.

In testimony whereof I sign this specification.

CLAYTON E. WYRICK.