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MOUNTING BRACKET FOR FURNITURE SPRINGS

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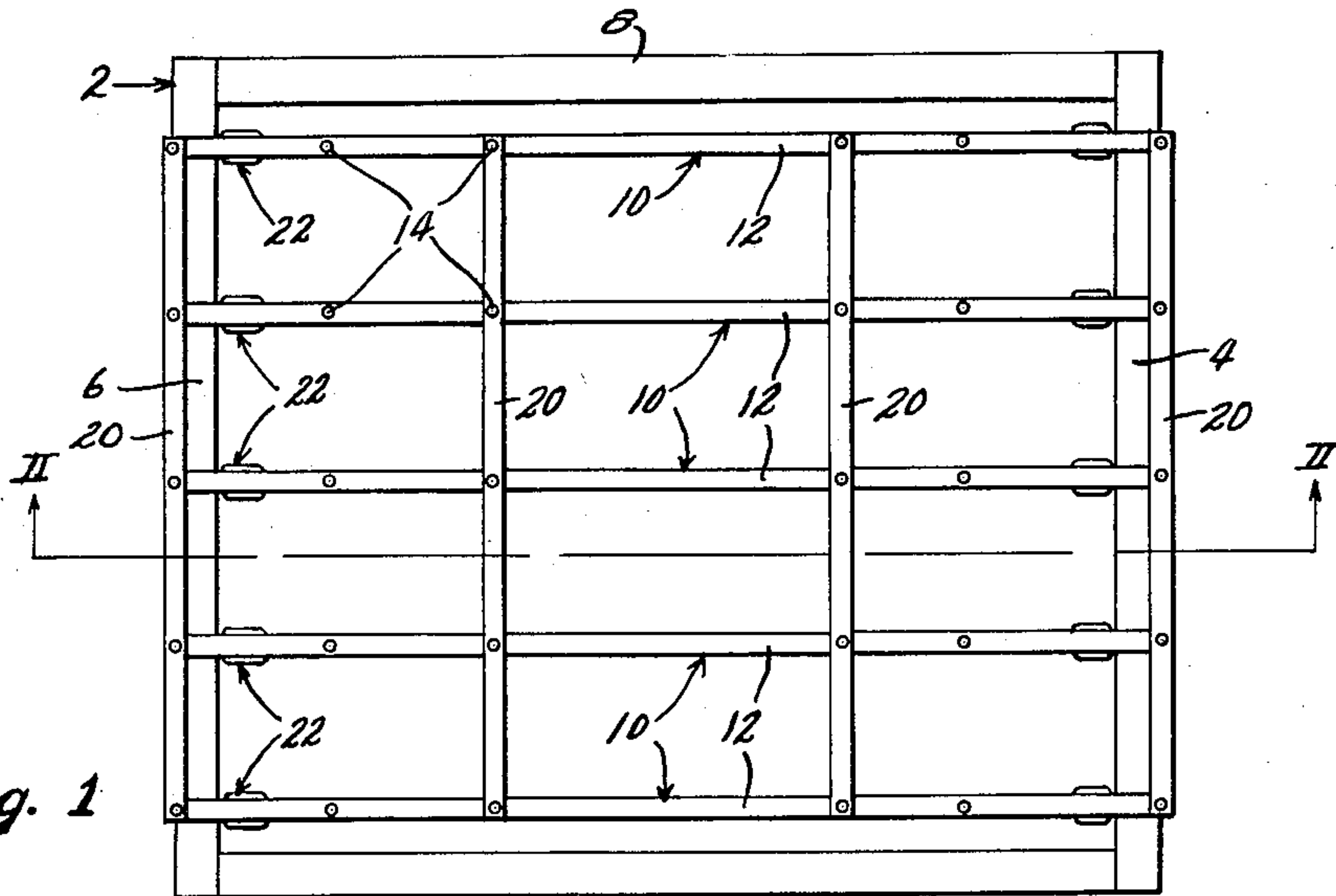


Fig. 1

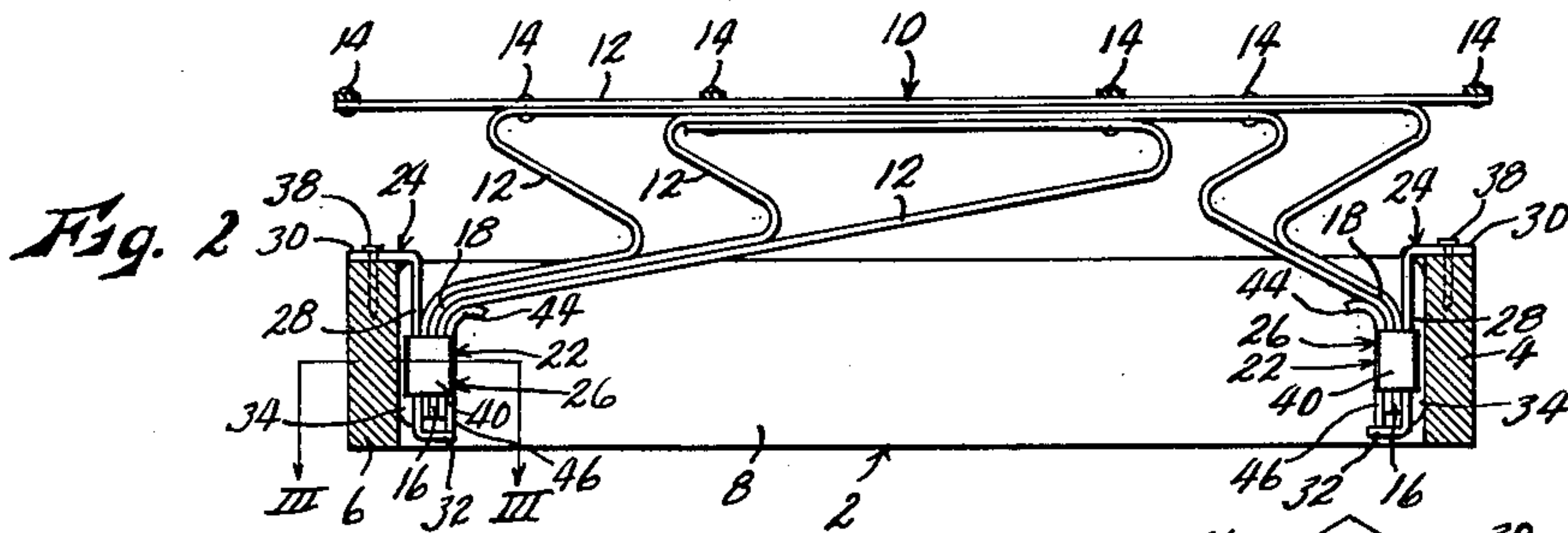


Fig. 2

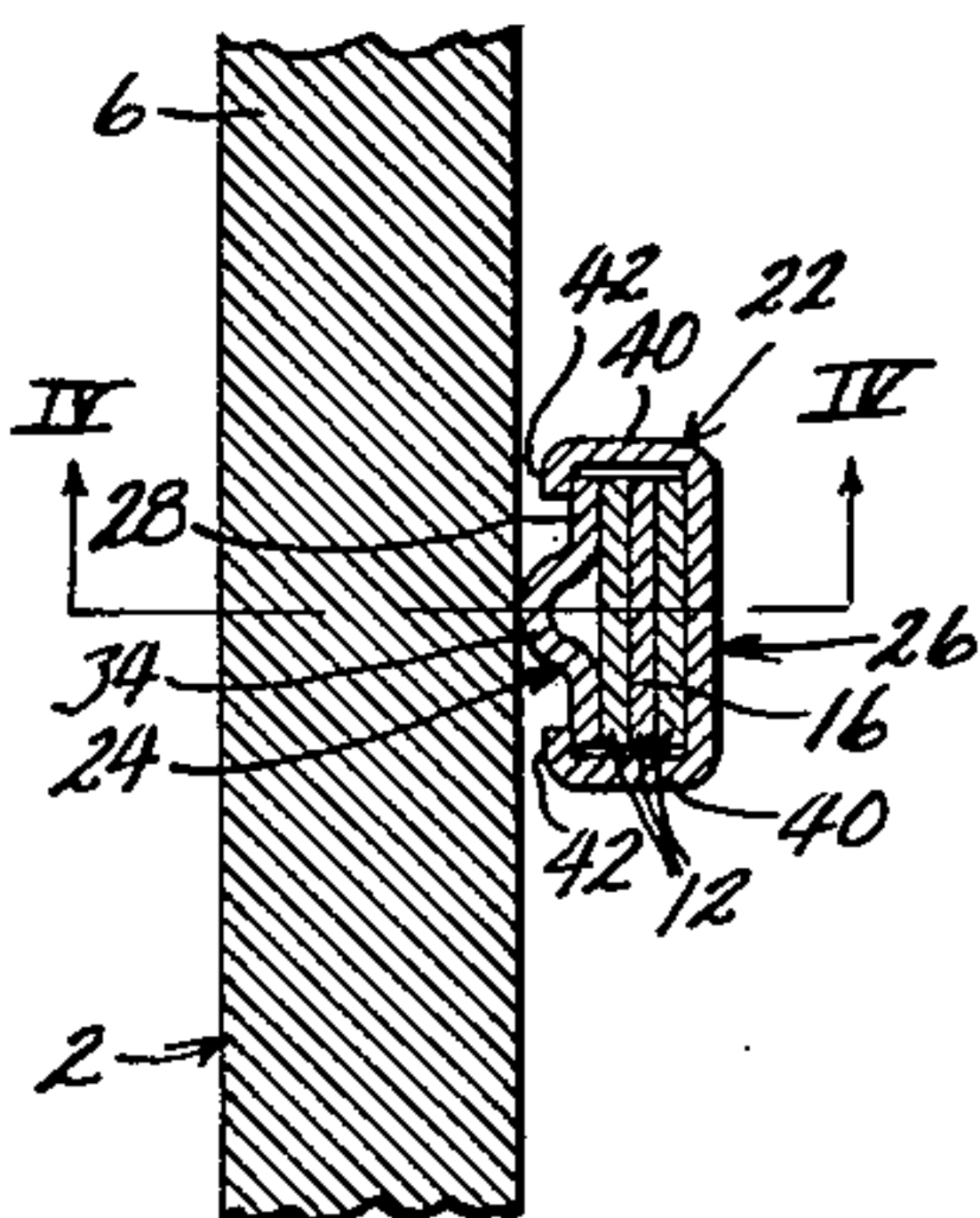


Fig. 3

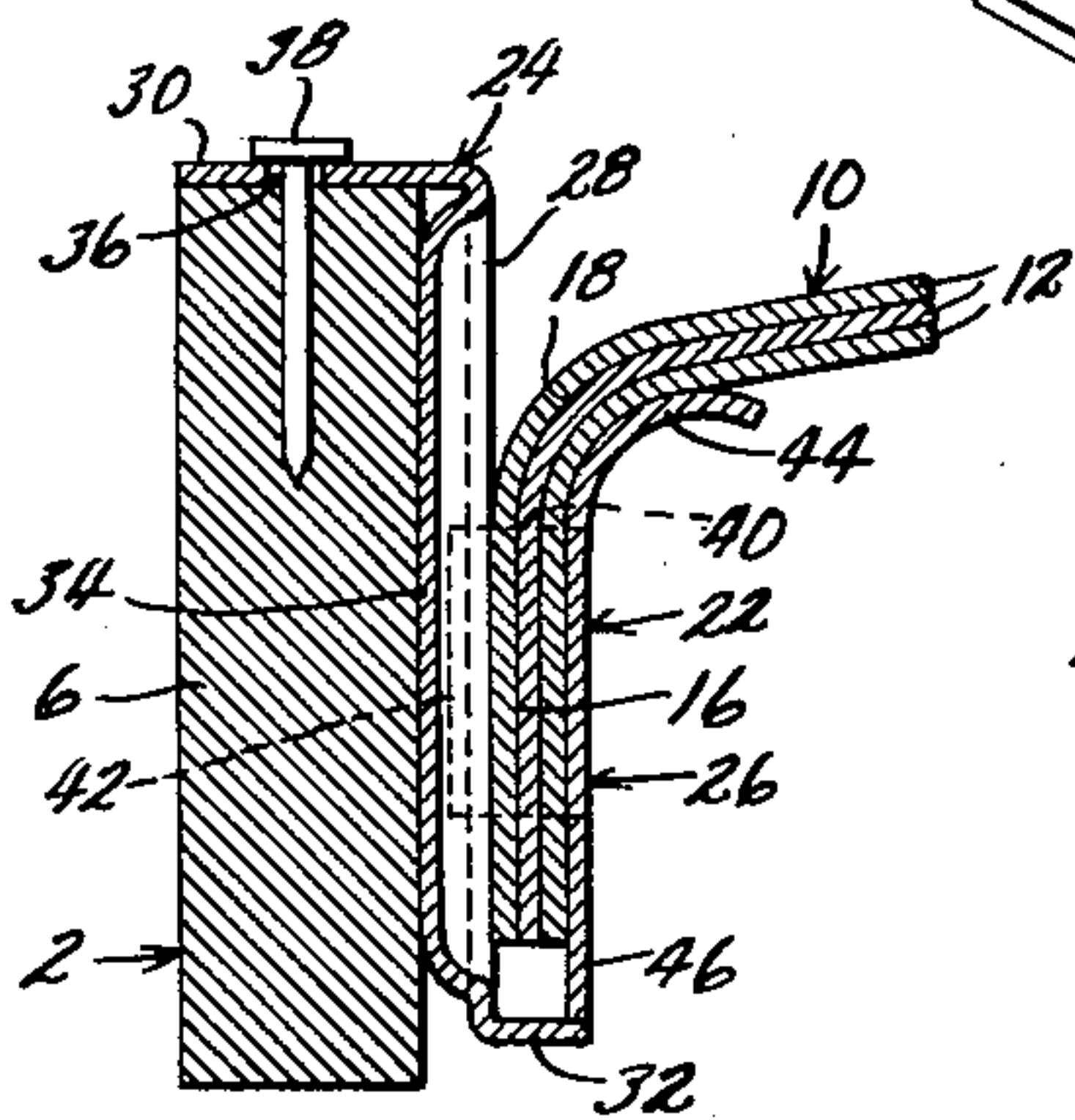


Fig. 4

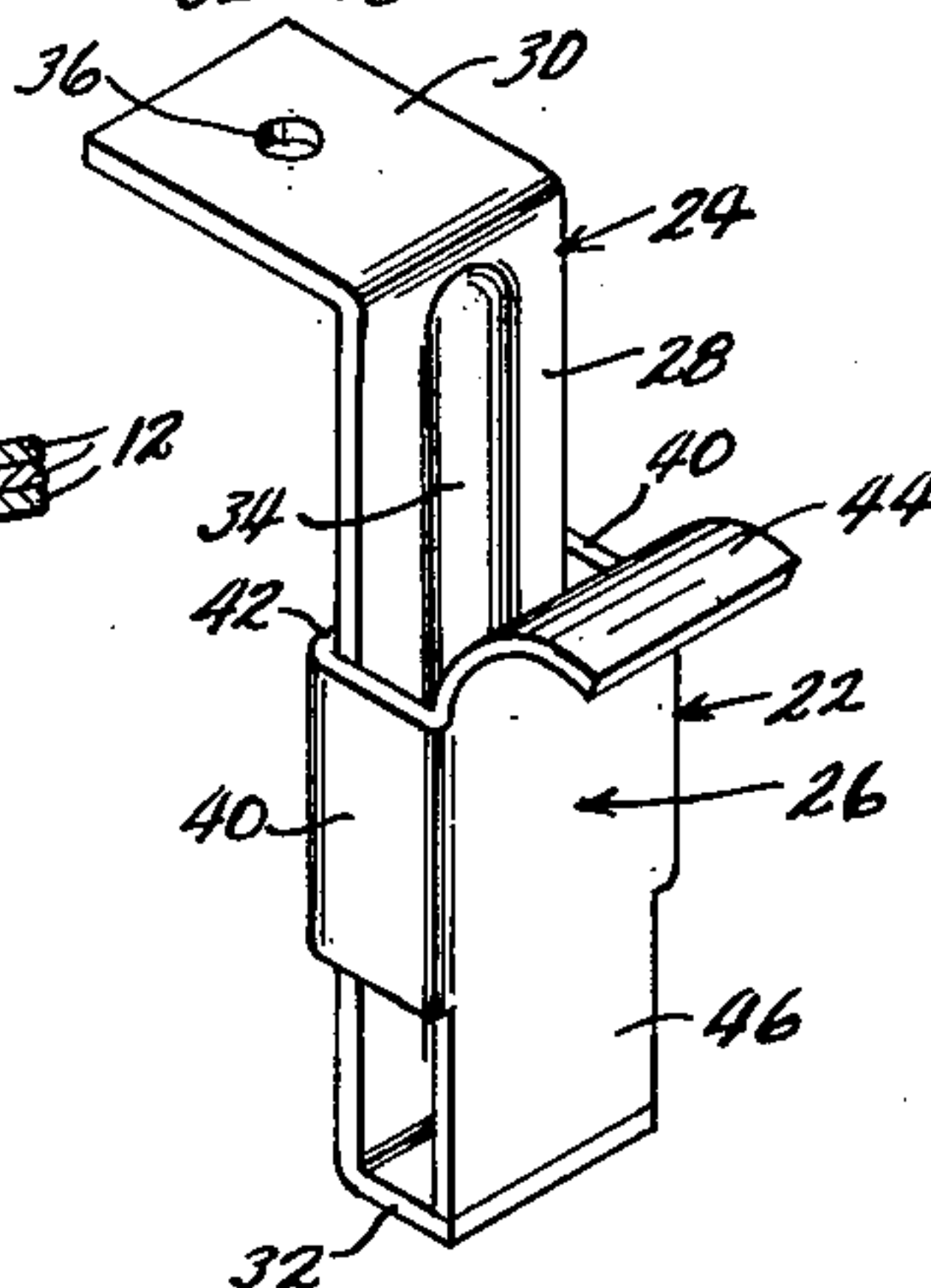


Fig. 5

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MOUNTING BRACKET FOR FURNITURE SPRINGS

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This invention relates to new and useful improvements in furniture accessories or hardware, and has particular reference to a bracket for mounting a particular type of spring unit in a furniture frame.

A type of furniture seating spring deck comprises a plurality of spring units, often called "drop-in" spring units, each formed of one or more flat leaf spring strips, said unit being disposed in a vertical plane with the ends of the spring strips secured respectively to opposite sides of a rigid furniture frame, and having a central portion which is vertically resiliently yieldable, the said central portions of all of the units, in conjunction, forming the load-supporting surface of the assembly, over which the usual layers of padding and upholstery are applied. The ends of each of these units must be rigidly supported and connected to the frame, and a novel bracket for this purpose forms the subject matter of the present invention.

An important object of the present invention is the provision of a bracket of the character described which tends largely to overcome the concentration of stress which normally occurs in the leaf springs at their points of rigid attachment, by distributing the stress over larger lengths of said leaf springs. This provision largely eliminates a common cause of failure of springs of this type.

Another object is the provision of a bracket of the character described which, while supporting the spring unit with sufficient rigidity to perform its functions properly, may nevertheless move adjustably relative to the frame to provide accurate alignment of the opposite ends of each spring unit. This provision avoids possible interference with the yielding characteristics of the spring unit in the event the brackets are not installed in the frame with perfect accuracy.

Another object is the provision of a bracket of the character described which is readily adaptable to receive and grip the ends of a variable number of leaf springs incorporated in one of said spring units, as may be required by the design of the particular spring unit being employed.

Another object is the provision of a bracket of the character described which will not release the spring ends even though the spring gripping members forming a part of the bracket might work loose during long periods of usage.

Other objects are simplicity and economy of construction, efficiency and dependability of operation, and adaptability for the use in a wide variety of applications.

With these objects in view, as well as other objects which will appear in the course of the specification, reference will be had to the drawing, wherein:

FIG. 1 is a top plan view of a furniture seating frame having a spring deck mounted therein by means of brackets embodying the present invention,

FIG. 2 is a sectional view taken on line II—II of FIG. 1,

FIG. 3 is an enlarged fragmentary sectional view taken on line III—III of FIG. 2,

FIG. 4 is a fragmentary sectional view taken on line IV—IV of FIG. 3, and

FIG. 5 is a perspective view of the bracket only.

Like reference numerals apply to similar parts throughout the several views, and the numeral 2 applies generally to a rectangular furniture frame such as the seat frame of a chair, said frame being formed of wood or the like

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and comprising a front rail 4, rear rail 6, and a pair of side rails 8, all rigidly joined together. Other parts of the frame, such as the legs, arms and back of the chair, are not pertinent to the present invention and are not here shown. Mounted in said frame is a spring deck consisting of a plurality (five as illustrated) of spring units 10 disposed generally in vertical planes spaced regularly between side rails 8. Each of said spring units comprises a plurality of leaf spring strips 12 joined together by rivets 14. The specific number, formation and arrangement of said strips 12 in each spring unit are not pertinent to the present invention, it being sufficient to an understanding of the present invention to know that each unit is provided at its respective ends with downwardly projecting terminal portions 16 each consisting of the stacked end portions of two or more of the spring strips 12, that said terminal portions extend downwardly from nested curved portions 18 of said strips disposed at the upper end of said terminal portion, and that the central portion of each unit is disposed above the plane of frame 2 and is adapted to yield resiliently downwardly. Said central portions of all of the units, in conjunction, form the load-supporting surface of the spring deck, over which the usual layers of padding and upholstery, not shown, are applied. Extending over the tops of units 10, transversely to the planes thereof and affixed thereto by rivets 14, are a series of leaf spring strips 20, which also form a part of the load-supporting surface, and which tend to prevent swaying of units 10 transversely to their planes. In particular unit 10 illustrated, the front terminal portion 16 thereof, adjacent rail 4, constitutes the ends of two of leaf spring strips 12, and the rearward terminal portion 16 thereof, adjacent rail 6, constitutes the ends of three of leaf spring strips 12.

Each of said terminal portions 16 is attached to the associated rail 4 or 6 by a bracket forming the subject matter of the present invention and designated generally by the numeral 22. Each of said brackets includes a body member 24 and a clamp member 26, both formed of sheet metal. Body member 24 includes a straight vertical leg 28 (see FIGS. 2—5) adapted to overlie the inner face of the frame rail 4 or 6 to which it is to be attached, an outwardly turned flange 30 at the upper end of said vertical leg and adapted to overlie the top of said frame rail, and an inwardly turned flange 32 at the lower end of said vertical leg. Vertical leg 28 is deformed to present a longitudinal rib 34 on the outer side thereof, said rib being of arcuate cross-sectional contour and having its convex outer surface resting against the frame rail. Flange 30 has a single hole 36 formed centrally there-through for receiving a nail 38 or the like for securing the bracket to the frame. Said nail fits loosely in said hole, for a purpose to be later described. Terminal portion 16 of the spring unit to be mounted lies against the inner face of vertical leg 28 of the bracket body.

Clamp member 26 of the bracket, also formed of sheet metal, is generally vertical and parallel to vertical leg 28, at the inner face of terminal portion 16 of the spring unit. It is provided at its opposite vertical edges with side arms 40 which extend outwardly past the sides of terminal spring portion 16 and past the vertical side edges of vertical leg 28 of the clamp body. The outer ends of said arms are turned toward each other to form lips 42 which engage the outer surface of leg 28. Lips 42 are preferably formed while terminal spring portion 16 is in position between leg 28 and clamp member 26, so that said terminal spring portion will be tightly and permanently clamped in the bracket. Clamp member 26 is provided at its upper end with an integral, arcuately curved lip 44, which curves away from body leg 28, and is provided at its lower end with a downwardly extending integral leg 46 which rests on flange 32 of the clamp body.

Thus it will be seen that a bracket having several advantages has been produced. Downward flexure of the central portions of spring units 10 presses the parts of spring strips 12 immediately above the brackets downwardly against lips 44 of said brackets, said lips being gradually engaged by longer lengths of the spring strips as the flexure increases. This action distributes the stress in said strips, which otherwise would concentrate directly at the point the strips enter the bracket, over a much longer length of said strips, and thus provides a longer life and better operation. Excessive stress at these points, resulting in permanent deformation and even breakage of the leaf spring strips, has been a common cause of trouble in spring mountings of this type. Also, since vertical leg 28 of the clamp body has only line contact between rib 34 thereof frame rail 4 or 6, and can thus rock slightly about a vertical axis with respect to said frame rail, this movement being permitted by the loose fit of nail 38 in hole 36, the brackets at the opposite end of spring unit 10 are free to align themselves accurately with the spring unit. If the brackets were not self-adjusting in this manner, and were not installed in the frame with precise accuracy, the spring unit 10 would be deformed or warped in installation, and the cushion characteristics of the spring deck would be disadvantageously affected. Lips 42 are thinner than the outward projection of rib 34, so that they are spaced apart from rail 4 or 6 and do not interfere with the rocking of the bracket about a vertical axis. Rib 34 also reinforces bracket body leg 28 against the considerable bending stresses exerted thereon. The bracket is adapted to mount and clamp therein a variable number of spring strips 12, as may be required by the design of the particular spring units 10 being employed, since lips 42 of the clamp member may be turned in any distance that may be required to clamp the spring ends firmly. Flange 32 of the bracket body is of sufficient extent to be engaged by leg 46 of the clamp member with the maximum number of spring ends engaged in the bracket. If the clamp lips 42 should work loose due to long usage, leg 46 of the clamp will still engage flange 32 to support the clamp member in its proper position, and all the parts will still be held in proper assembly. The brackets are disposed entirely within the frame and do not extend thereabove. This adapts said brackets for use in "thin-line" furniture wherein the vertical height of the assembly is severely limited. Also, the bracket does not overlie the outer surfaces of the frame rails 4 and 6. Said rails are usually covered by upholstery fabric, and the presence of brackets on the outer surfaces thereof have heretofore necessitated the use of extra padding to prevent the brackets from showing through the fabric.

While I have shown and described a specific embodiment of my invention, it will be readily apparent that many minor changes of structure and operation could be made without departing from the spirit of the invention as defined by the scope of the appended claims.

What I claim as new and desire to protect by Letters Patent is:

1. In combination, a furniture frame having a pair of generally parallel rails, a spring unit extending across

said frame and constituting resilient elongated members and having downwardly extending terminal portions respectively adjacent the confronting faces of said rails, and a bracket attaching each of said terminal portions to the adjacent frame rail, said bracket comprising a body member attached to said rail and having a vertical leg overlying the inner face of said rail, and a clamp member disposed adjacent and parallel to said vertical leg and attached thereto, said terminal spring portion being clamped between said vertical leg and said clamp member.

2. The structure as recited in claim 1 wherein said clamp member is provided at its upper edge with an arcuate lip forming an extension thereof, said lip being curved away from the vertical leg of said body member.

3. The structure as recited in claim 1 wherein said vertical leg is generally planar and said clamp member is generally planar and parallel to said vertical leg, said clamp member being provided at its lateral edges with arms extending outwardly past the lateral edges of said vertical leg, said arms each having a lip at its outer end which is turned in and engages the outer surface of said vertical leg.

4. The structure as recited in claim 3 wherein said vertical leg is provided at its lower end with a flange extending beneath said clamp member, and wherein said clamp member is provided with a depending leg engaging the upper surface of said flange.

5. The structure as recited in claim 3 wherein said clamp member is provided at its upper edge with an arcuately curved lip merging with the planar surface thereof and curving away from said vertical leg.

6. The structure as recited in claim 1 with the addition of means for attaching said bracket body member to said frame rail whereby said bracket is free to turn about a vertical axis to a limited degree.

7. The structure as recited in claim 1 wherein said vertical leg is provided with a longitudinal vertical rib of arcuate cross sectional contour, said rib having line contact with said frame rail and being the only portion of said vertical leg contacting said rail, and with the addition of means attaching said body member to said rail whereby to permit rocking thereof about the line of contact between said rib and said rail.

8. The structure as recited in claim 7 wherein said means attaching said body member to said rail constitutes a horizontal flange affixed to the upper end of said vertical leg and overlying the upper surface of said rail, said flange having a hole formed therethrough in a vertical plane transverse to said rail and including said rib, and a vertical fastener affixed in said rail and extending loosely through said hole.

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