United States Patent [19]

Mochizuki

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[54] **FRAMING ELEMENT AND ITS SUPPORTING DEVICE FOR LAYING INTERIOR BOARDING ON FOUNDATION STRUCTURE**

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[52] **U.S. Cl.** ..... **52/126;** 52/347; 52/403; 52/488; 52/665; 52/678; 52/754; 52/758 C

[51] **Int. Cl.**[2] **E04F 15/024**

[58] **Field of Search** ..... 52/665, 347, 402, 678, 52/488, 483, 350, 686, 126, 394, 127, 122, 403, 758 A, 758 C, 754; 403/384, 400

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Assistant Examiner—Leslie A. Braun
Attorney, Agent, or Firm—Holman & Stern

[57] **ABSTRACT**

A framing element and its supporting device, in which prefabricated framing elements of the same shape and structure are arranged cross-wise to form a suitably spaced lattice or grid framework to be firmly supported by a desired number of vertically adjustable supporting devices of same construction fixed onto a concrete foundation of a building, after which interior boarding is laid on the framework, with said framework and supporting device being both protected from shock and vibration through the provision of a plurality of intermediate elastic means.

9 Claims, 18 Drawing Figures

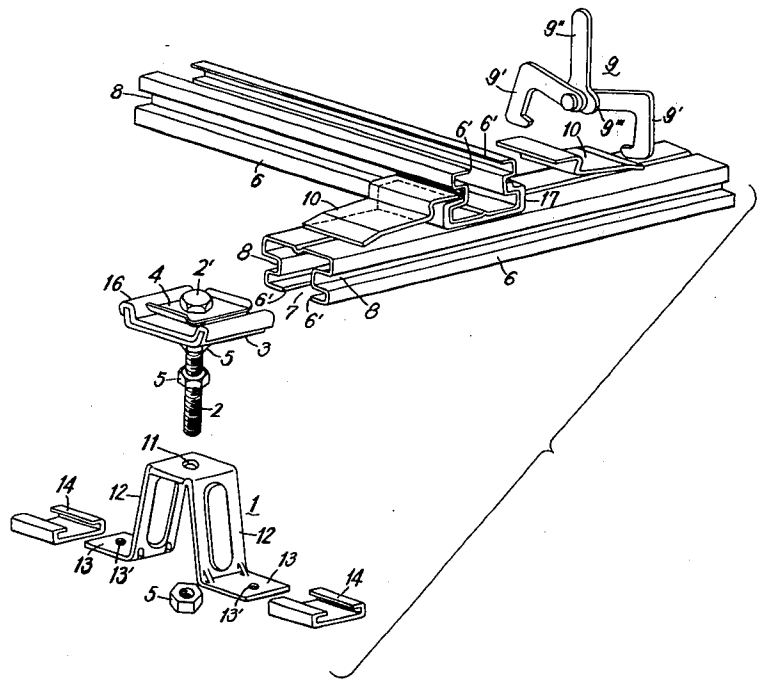


FIG. 1

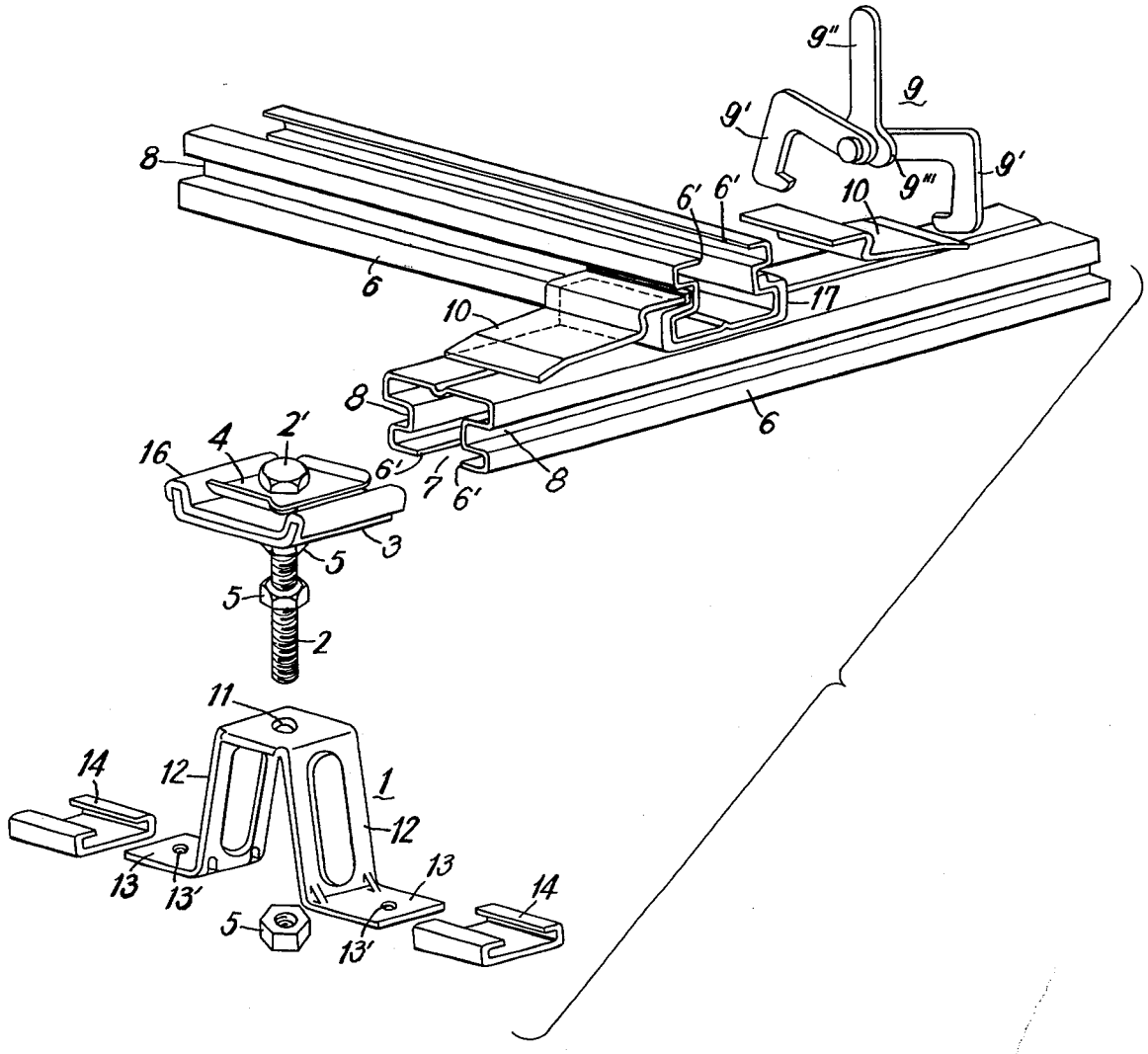


FIG. 2

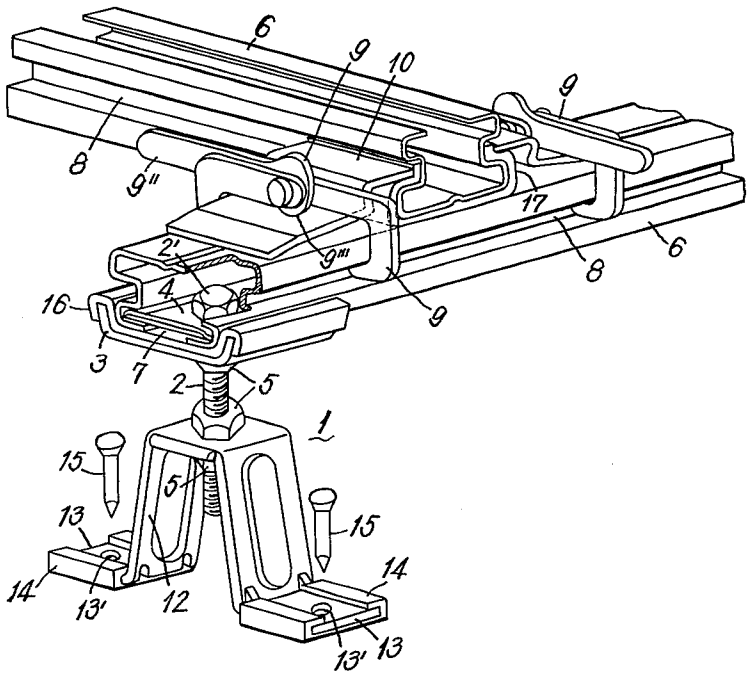


FIG. 3

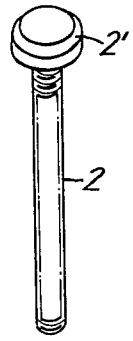


FIG. 4

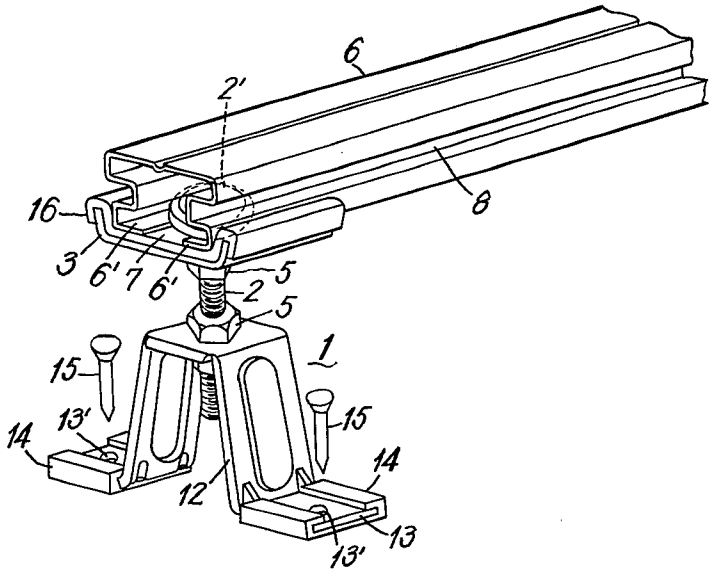


FIG. 5

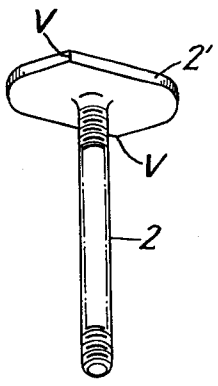


FIG. 6

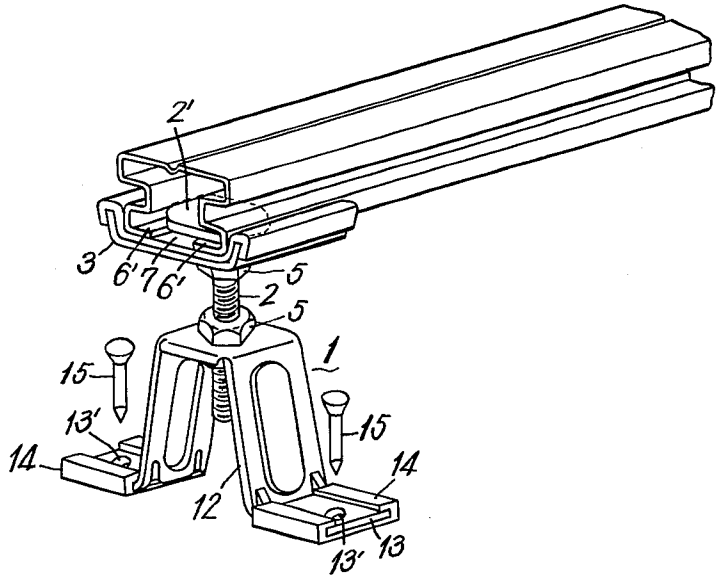


FIG. 7

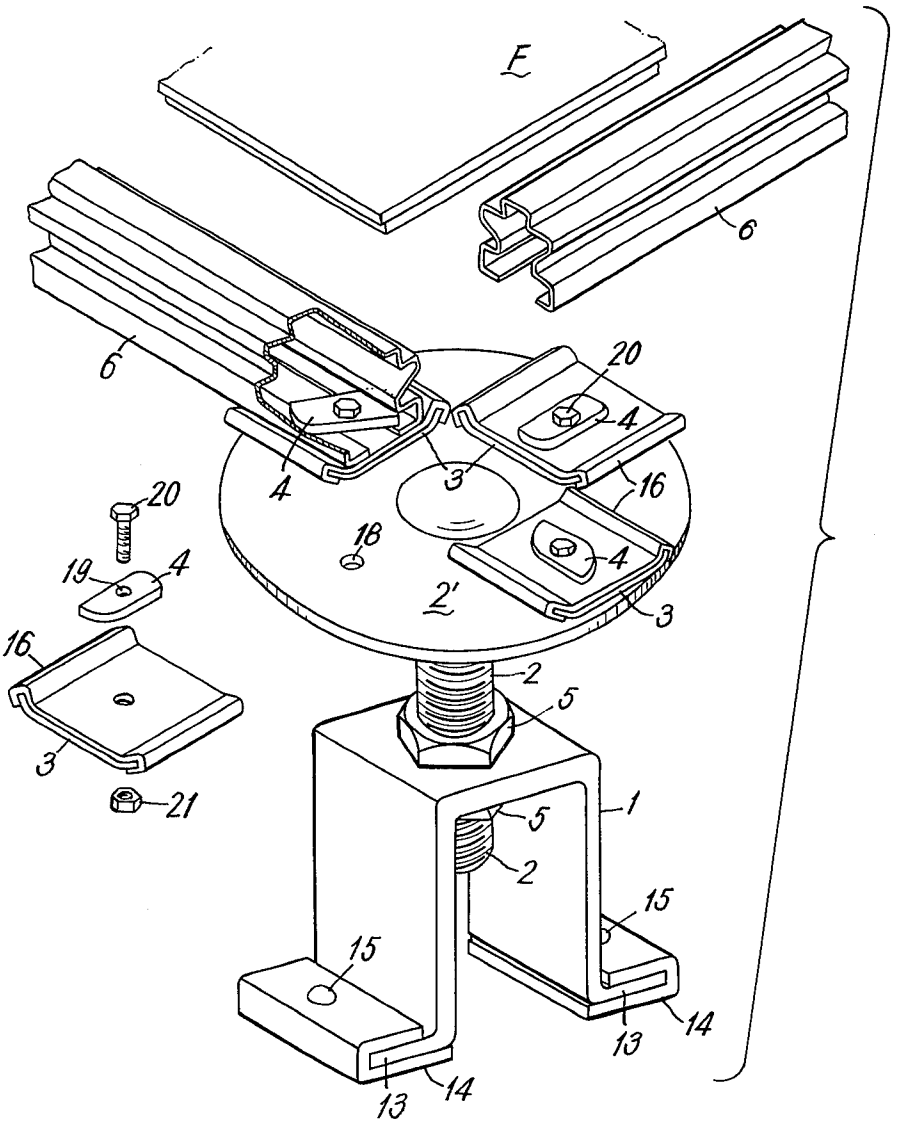


FIG. 8

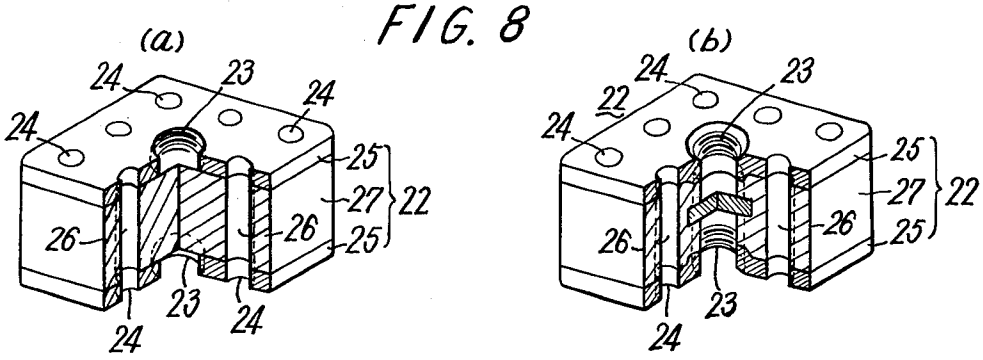


FIG. 9

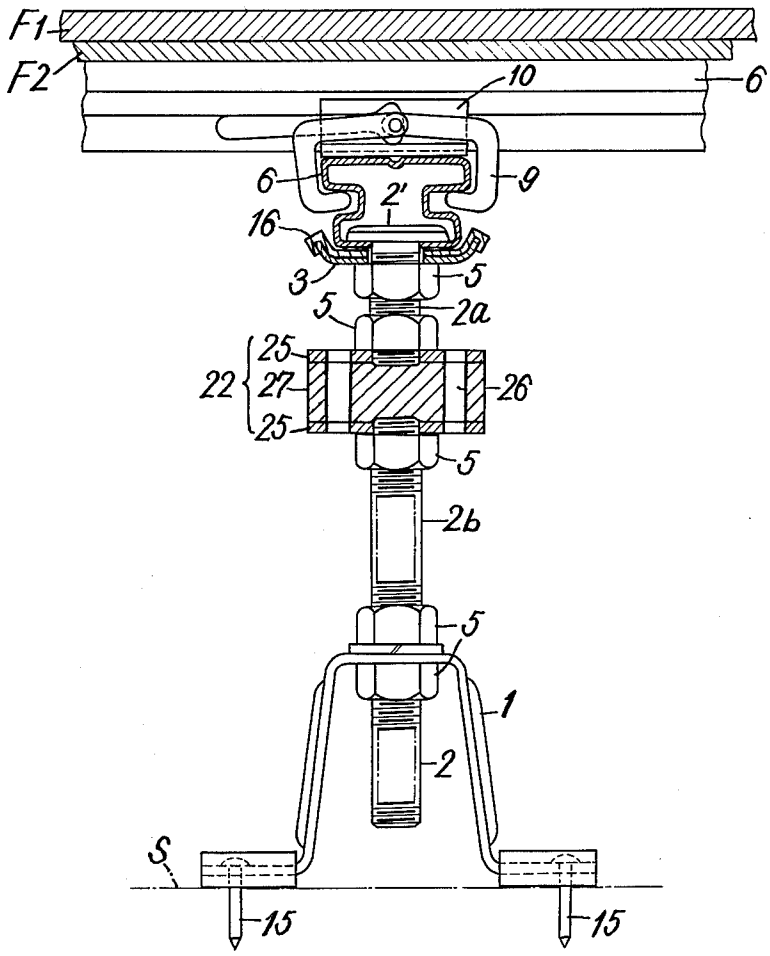


FIG. 10

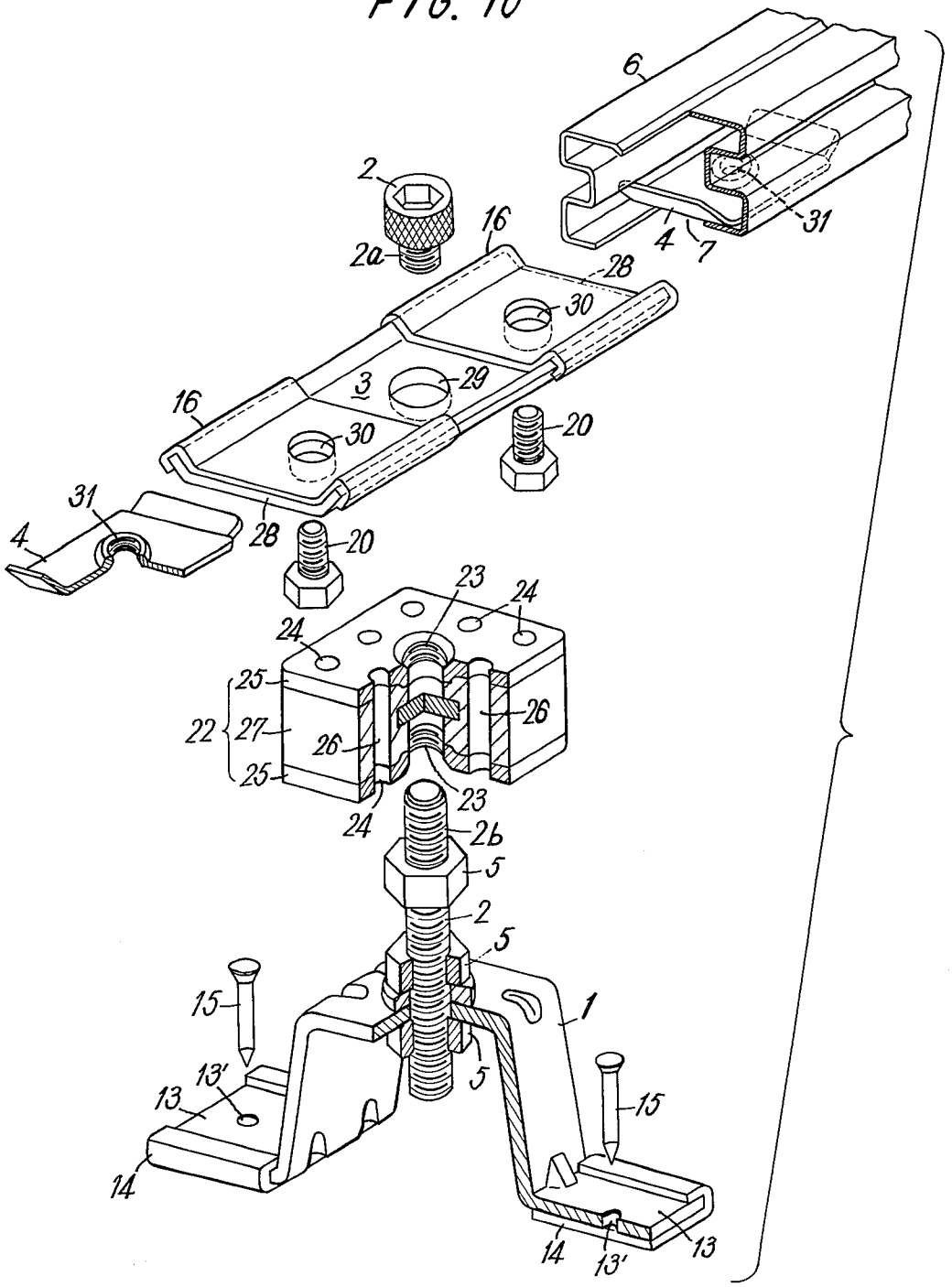


FIG. 11

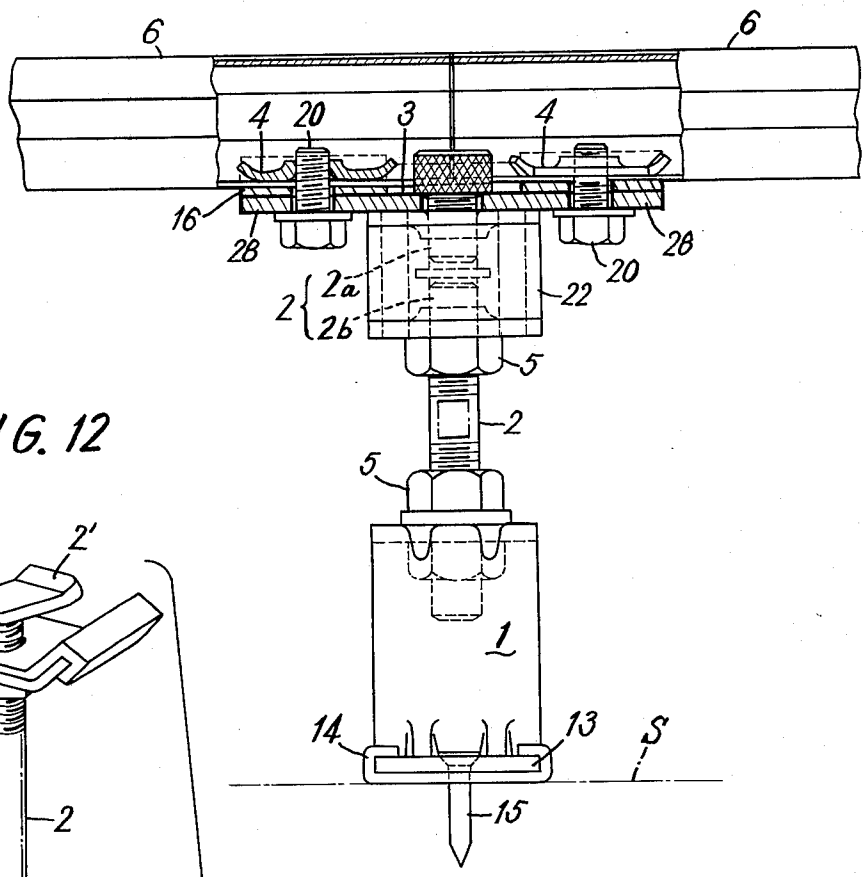


FIG. 12

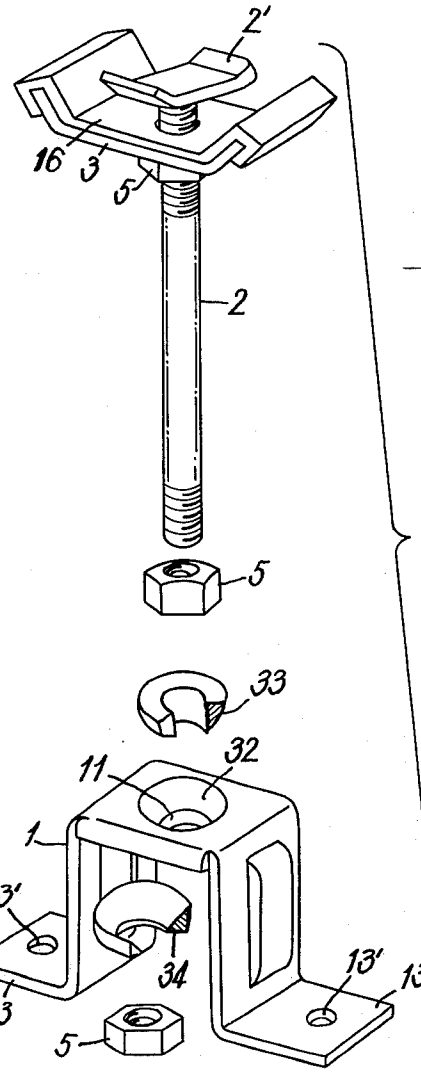


FIG. 13

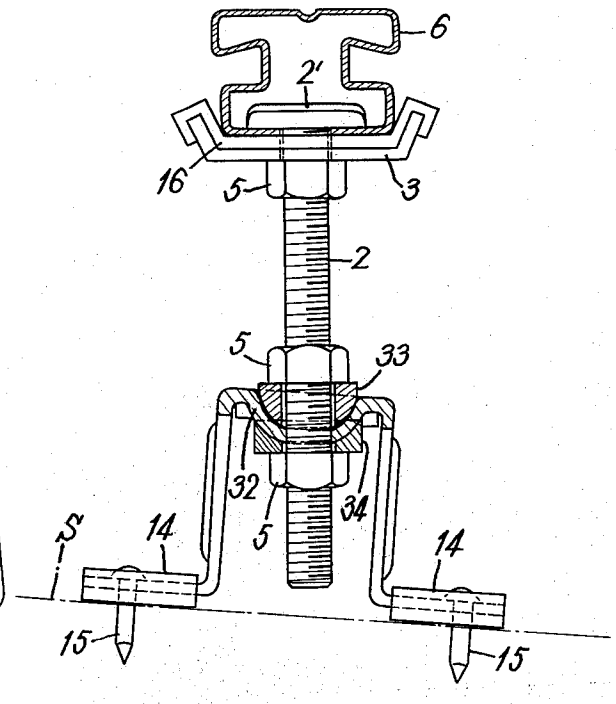


FIG. 14

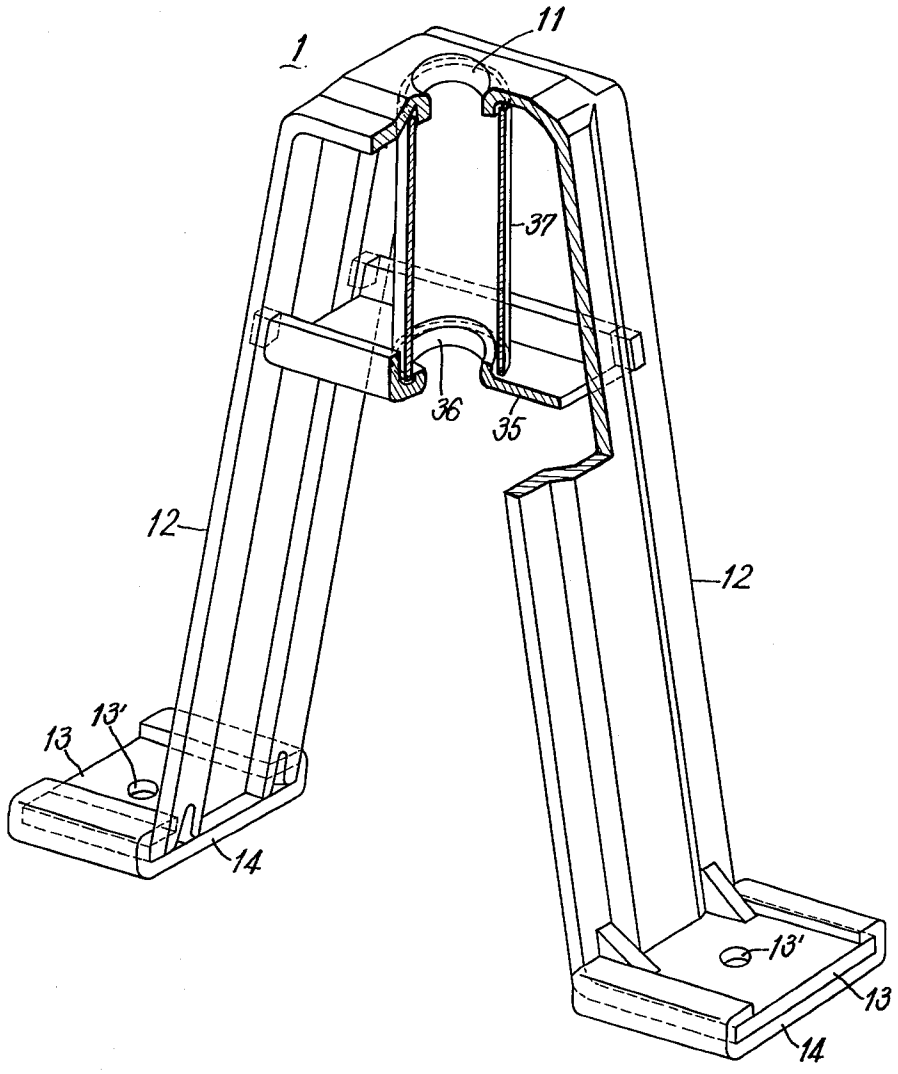


FIG. 15

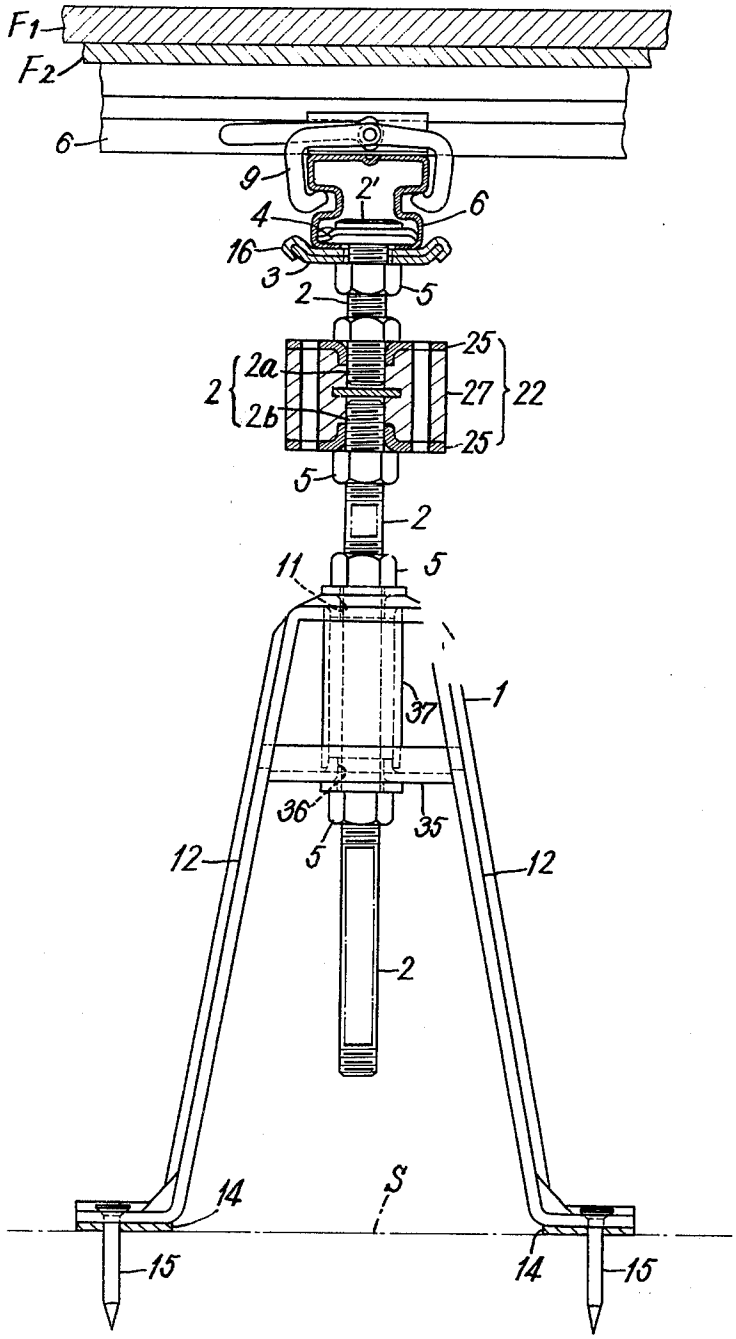

F1
F2
6
9
2'
6
4
16
3
2
5
25
2
2a
2b
27
22
25
5
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11
5
1
37
36
35
5
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2
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S
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15
15

FIG. 16

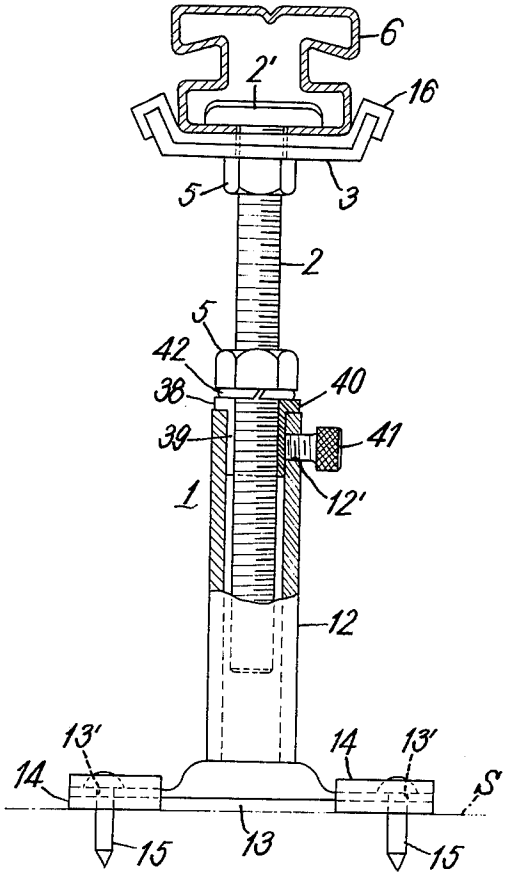
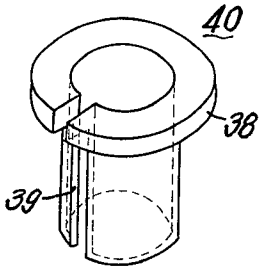


FIG. 17



FRAMING ELEMENT AND ITS SUPPORTING DEVICE FOR LAYING INTERIOR BOARDING ON FOUNDATION STRUCTURE

BACKGROUND OF THE INVENTION

This invention relates to the structure of a framing element and its supporting device to be used in combination for laying principally a floor framework on the slab of a foundation structure of mainly a concrete building, on the framework of which, interior boarding is laid to finish a flooring or ceiling.

PRIOR TECHNIQUES

According to the known art, wooden floor posts are erected on the rugged slab surface of a concrete foundation with their top ends levelled to form a plane on which wooden floor joists are transversely laid and then floor boards are laid on said floor joists to finish the interior flooring or ceiling work.

Such labor required a great amount of manual work for the adjustment of the length of the floor posts to be erected on the slab surface for securing them to the slab surface and for fixing the floor posts onto the floor joists.

The conventional method had, therefore, such inherent drawbacks that a fairly large number of steps were required for floor framing as above, that the finishing result tended to be irregular depending on the skill of the worker involved and that the durability of the finished floor was unsatisfactory.

OBJECT AND SUMMARY OF THE INVENTION

In order to overcome these defects, this invention provides prefabricated metallic component parts for a floor framework, namely, floor framing element and its supporting device components, so as to offer framing parts which are uniform in quality, more durable and easy to handle for site fabrication.

This invention has for its principal object to provide a novel structure of a framing element and its supporting device in combination for laying a floor or ceiling framework and thence interior boards thereon on a concrete foundation without requiring any planing or other time-consuming work at a construction site.

A further object of this invention is to provide a floor framework which is protected from shock or vibration through the use of intermediate elastic means.

The nature and other advantages of this invention will be apparent from the following detailed description of the embodiments taken thereof in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF DRAWINGS

FIG. 1 is an exploded cutaway perspective view of a set of a floor framing element and its supporting device forming the essential point of this invention,

FIG. 2 is a partially cutaway perspective view of the embodiment shown in FIG. 1 in an assembled state,

FIGS. 3 and 4 are respectively a perspective view of an adjusting bolt with a modified head portion for adjusting the height at which the above-mentioned framing element is supported, and a perspective view of a set of a framing element and its supporting device in an assembled state as corresponding to that shown in FIG. 1 and FIG. 2,

FIGS. 5 and 6 are respectively a perspective view of the adjusting bolt shown in FIG. 3 with a further modification of its head portion, and a perspective view of a set of framework elements in an assembled state as corresponding to FIG. 4, using said bolt,

FIG. 7 is a partially cutaway exploded perspective view of another embodiment so devised as to permit framing elements to be linked with one another crosswise on a plane,

FIGS. 8*a* and 8*b* are respectively partially cutaway perspective views of shock absorber means interposed between the upper and lower adjusting bolts constituting an adjusting bolt means for adjusting the height at which framing elements are supported, and FIG. 9 is an elevation partly in section of a fully assembled supporting device using said shock absorber,

FIGS. 10 and 11 are respectively a cutaway exploded perspective view of a set of a supporting device to support framing elements at the latters ends, which supporting device being so devised as to link framing elements in the direction of lateral extension, and an elevation of the supporting device in an assembled state.

FIGS. 12 and 13 are respectively an exploded perspective of a set of modified supporting device for use in the case where the surface of foundation structure is inclined, and an elevation of the corresponding device in an assembled state,

FIGS. 14 and 15 are respectively a partially cutaway perspective view of a long-legged support stand for use in the case where a greater supporting height for framing elements is required, and a front elevation of the supporting device in an assembled state, using said support stand, and

FIGS. 16 and 17 are respectively a partially cutaway elevation of still another embodiment in an assembled state, and a partially cutaway perspective view of a bush member used therein.

DETAILED DESCRIPTION OF THE INVENTION

A set of a supporting device which forms the essential part of this invention comprises a support stand secured at its leg portions to the slab surface by means of rivets, an adjusting bolt piercing the top of said support stand downward to determine the height of support for a floor by adjustment of the piercing depth of said bolt through said stand, and a supporting plate secured to the upper end of said bolt by means of a nut member so as to support framing elements from below with all of the above-described components being made of metallic material.

Each of the framing elements supported by said supporting device at a moderate distance from the slab surface is provided with a groove or channel to accommodate said adjusting bolt between its longitudinal edges, with said groove or channel being formed on either the upper side or under-side of said framing element. This element, made of steel in deformed C-shape, has its longitudinal sides bent and folded to form a U-shape side groove and its inner edges inserted between the head of said adjusting bolt and a supporting plate mounted on said bolt therebelow, whereupon the framing element is fastened between the two members by turning a nut on the bolt to press said supporting plate from below. Depending on the structure of the floor framing desired, these framing elements may be arranged crosswise to form a grid-like framework. In the manner described, a suitable number of the supporting devices are disposed on the slab surface, suitably

spaced from each other, in the longitudinal direction of the framing elements to be supported thereby.

Referring now to the drawings, FIGS. 1 and 2 show a set of the supporting means, the framing element to be supported thereby and a fastening means to rigidly secure cross-arranged framing elements at their cross-linking points, in which 1 denotes a supporting stand, 2 an adjusting bolt, 3 a supporting plate, 4 a presser plate or a washer which is mounted on said adjusting bolt 2 together with the supporting plate 3, and 5 nuts mounted on said adjusting bolt 2. A framing element 6 of deformed C-shape construction is provided with a groove or channel 7 formed between its opposed longitudinal edges 6', to accommodate the head of said bolt 2 therein. The longitudinal sides of the framing element 6 are bent inwardly and then outwardly to form opposed lateral U-shaped groove, 8, on the exterior. 9 denotes generally a fastening means which clamps both of the cross-laid framing elements at their crossing point through the intermediary of washer plates 10, to fasten them together.

The support stand 1 has, on its upper end, a hole 11 through which the adjusting bolt passes and a pair of legs 12 having their lower ends bent outward to form ground-contact parts 13, to which rubber i.e. resilient, anti-vibration members 14, formed as illustrated in FIG. 1, are fitted. Said supporting stand 1 is fixed onto a slab surface S together with a anti-vibration members 14, by means of rivets 15, which are driven into the foundation structure through holes 13', 13' of the ground-contacts 13.

The adjusting bolt 2 carrying a required number of nuts 5, the supporting plate 3 and the washer 4 is inserted at its head into the framing element from the latter's end, so that the head 2' of said bolt and washer 4 are accommodated inside the groove 7. By tightening the nut 5 which is screwed on the upper part of said bolt 2, the opposed edges 6', on the lower surface of the framing element 6 is caused to be fastened between the supporting plate 3 and the washer 4 to fix them firmly in position. In the drawings, a member 16 denotes an anti-vibration rubber plate member so disposed as to cover the upper surface of the supporting plate 3.

The framing element 6 is, as described, fixed onto the adjusting bolt 2 as above. The lower end of the bolt 2 thrusts the hole 11 of each of the support stands 1 which are disposed on the slab surface S in a line, suitably spaced from one another. By tightening the nuts 5, which are mounted on the bolt 2 respectively at positions above and below said hole 11, the framework 6 is held firmly in position at a given height from the slab surface S. At this time, minute adjustment of height of the framework above the slab surface S can be effected by the rotation of the upper and lower nuts 5, on the adjusting bolt 2.

Since a joist or framing element is supported by a plurality of the supporting devices, it is desirable that the same number of adjusting bolts 2 as that of the stands 1 be mounted beforehand in the framing element 6 so that the above-described securing operation may be simultaneously carried out.

Then, when assembling the framing element 6 in crosswise arrangement as shown in the drawings, the framing elements 6 of same shape and construction are placed crosswise on the previously-secured framing element 6 with its upside down, and a pair of washer plates 10, 10 are placed suitably on both sides of the element 6 at their crossing point in such a manner that their front ends in the side grooves 8, provided at both sides of the upper framing element 6, whereupon a pair of the clamping means 9, each with a pair of hooked ends 9', are applied from over the washers 10, 10 in their open state. By turning said hooked ends 9', in the direction of closing, the hook tips are pressed to engage in the grooves 8, formed on both sides of the lower framing element 6. Then, a lever 9'' which is hinged to the upper end of the hooked ends 9' is pressed sideways so that a cam 9''' formed at the hinged end of said lever 9'' comes into press-contact with the washers 10, thereby fastening the crossed point or junction of the two framing elements 6, rigidly. In the drawing, 17 denotes an antivibration rubber plate member covering the under-surface of the upper framing element 6 and having its bent ends engaged in the side groove 8.

The examples shown in FIGS. 3 to and 6 are further embodiments of the invention, characterized by the larger head portion 2' of the adjusting bolt 2. These embodiments provide improvements in which, without using the presser plate 4 mentioned in the case of the first embodiment, the reverse side of the head portion 2' is brought into direct contact with the inner peripheries of the side edges 6', of the framing element 6, upon which the element 6 is clamped between the head 2' of the bolt 2 and the supporting plate 3 which is fastened by the nut 5 therebelow, with the result that its connection with the framework is thus completed. The head portion of the bolt shown in FIGS. 5 and 6 is characterized by its rectangular shape with its opposite angles rounded into arc shape.

The adjusting bolt 2 with the head portion 2' is turned when the longer side of the head 2' has been inserted into the inner wall of the framing element 6 in parallel, thereby causing the angular portion V of the head 2' to abut against the inner wall of the element 6. In so doing, the element 6 is prevented from rotation when the nut 5 is tightened and at the same time, the head 2' is engaged by the longitudinal side edges 6', on the inner side of the element 6.

Furthermore, because of the anti-vibration plate member 14 interposed between the slab surface S and the under-surface of the ground-contacting plate 13 of the supporting stand 1, of the anti-vibration plate 16 interposed between the upper surface of the framing element 6 and the upper surface of the supporting plate and further of the anti-vibration plate plate 17 interposed between the under-surface of the upper framing element 6 and the front end of the washer 10 which is pressed and tightened by the fastening means 9 onto the crossing point of the framing elements, friction between the contacting metallic elements at each point of contact is absorbed, thereby absorbing a vibration transmitted thereto from a floor board and hence preventing the occurrence of any squeaking noise.

Further, the operation of the clamping means 9 to secure the crossed portion of the upper and lower elements 6, 6 through the intermediary of the washers 10, 10 is extremely easy inasmuch as it can be effected by one touch.

Referring next to the embodiment shown in FIG. 7, the head 2' the adjusting bolt 2 can be made even larger in diameter than those shown in FIGS. 3 through 6, whereby the under-surface of the framing element 6 is fixed directly to the upper surface of the enlarged

head 2' and furthermore, as illustrated, the framing elements 6 can be connected with each other in cross-wise arrangement on the same plane.

This supporting device 1 carries thereon a pair of holes 18 disposed on two diametral lines crossing with each other at right angle on the enlarged head 2'. It has the same number of supporting plates 3 with anti-vibration plate members 16 as that of the holes 18, the rectangular presser plate 4 with a centrally-disposed hole 19 and the desired numbers of set bolts 20 and set nuts 21 for securing the framing elements together.

Regarding an example of operation of securing the framing element 6 to the bolt head 2', the supporting stand 1 to which the adjusting bolt 2 is secured, after an adjustment of supporting height has been made, is secured rigidly to the slab surface S, and then the bolt 20, with the presser plate 4 and supporting plate 3 mounted thereabout beforehand, is extended through the hole 18 provided on said bolt head 2'. The set nut 21 is mounted on the set bolt 20 loosely underneath the head 2' of the bolt 2. Subsequently, the set bolt 20 is lifted up a little from the upper surface of the head 2' together with the presser plate 4, thereby causing a clearance to be provided between the presser plate 4 and the supporting plate 3. Into the clearance is inserted the side edges 6', of the framing element 6 in such a manner as to make the ends of the presser plate 4 engage both edges 6', of the framing element 6, whereupon the nut 21 is tightened up to complete the securing operation.

This supporting device is, as described, so designed that the end of the framing element 6 can be secured rigidly onto the bolt head 2' of enlarged diameter and moreover, the framing elements 6, crossing each with other at a right angle can be secured on the same plane. All the necessary framing elements 6 are similarly laid and linked in a cross-wise arrangement with one another with their respective crossing points or junctions rigidly secured to the supporting device, whereupon a grid-like framework is formed.

This framework is suitable for a floor of such structure as parquet in which square flooring material F of asbesto or other substances and provided with tiered sides and edges is used. This embodiment is suitable for use also as a linking means for framing elements.

Referring to the embodiment shown in FIGS. 8 and 9, the adjusting bolt 2 is constructed in separate units, i.e., an upper bolt 2*a* and a lower bolt 2*b*, between which is interposed a buffer member 22. This buffer member 22, having a central threaded hole 23, is composed of an assembled block comprising a set of upper and lower metal plates 25, with small holes 24 along their peripheral edges and a layer of rubber material 27 interposed between the upper and lower plates 25 said said rubber member 27 carrying a plurality of vertical holes 26 disposed to communicate with the oppositely-provided holes 24 on the metal plates 25. Into the threaded holes 23 of the metal plates or layers 25 are screwed respectively the lower end of the upper bolt 2*a* and the upper end of the lower bolt 2*b*.

The above supporting device with this buffer member 22 interposed between the upper and lower bolts 2*a* and 2*b* can stand, the transmitted thereto vertically by the deflection of the rubber member 27, making it suitable for a use for gymnasium floor in which the floor board is subject to severe vibration.

The buffer member 22, of which the rubber layer 27 carries numerous vertical holes 26, gives a greater surface area in vertical direction and is caused to deflect uniformly throughout its entire length or height against the vertical load imparted thereto. Furthermore, the provision of the vertical holes 26 which communicate with the outside air prevents the formation of any enclosed space and hence the deformation of said pores 26, thereby providing ideal elasticity to the floor. In FIG. 9, F2 is an under-floor board such as plywood which is fixed directly to the upper surface of a floor framework by means of a tap bolt and F1 is a floor board nailed to the under-floor board F1.

The embodiment shown in FIGS. 10 and 11 uses an adjusting bolt 2 comprising, as shown in the preceding embodiment, an upper bolt 2*a* and a lower bolt 2*b* with a buffer block 22 interposed therebetween, but in this instance, a supporting plate 3 having a center hole 29 through which the upper end of said upper bolt 2*a* passes is provided with lateral extensions 28, 28, extending laterally from the supporting plate 3, said extensions having anti-vibration members 16, rigidly placed thereon respectively and central holes 30, communicating with the holes of said members 16.

The presser plate 4 which engages inside the framing element 6 is provided with a female screw hole 31 into which the upper end of the set bolt 20 is screwed from below through the hole 30 of the extension 28 of the supporting plate 3, passing through the groove 7 of the framing element 6. This supporting device in which the supporting plate 3 is provided with the lateral extensions 28, is conveniently used for the linear linking of the framing members 6 since the extensions 28, are respectively provided with a means for securing themselves to the framing element 6.

The embodiment shown in FIGS. 12 and 13 shows a supporting stand 1 having its upper part down-curved or caved at its center to form a semi-spherical surface 32 and carrying at its center, a hole 11 of a diameter slightly larger than that of the adjusting bolt 2 passing therethrough. Nuts 5, mounted on the extended adjusting bolt 2 at positions above and below said hole 11 are tightened to press said hole 11 between a pair of opposed semi-spherical washers 33 and 34 from upward or downward, with said washer 33 having a downwardly rounded surface to engage in the surface 32 from above and the other washer 34 having also a downcurved surface to fit in the under surface of the surface 32 from below.

This supporting device can support floor framework horizontally against inclined slab surface as shown in FIG. 13 since, while the supporting stand 1 is fixed to the inclined slab surface S at a right angle, the adjusting bolt 2 can be secured in a position perpendicular to the horizontally-held floor framework through the engagement at a suitably adjusted angle of the nuts 33 and 34 in the surface 32 of the supporting stand 1 to fix the bolt 2 in that position rigidly against the inclined slab surface. Accordingly, this supporting device is suitable for use in the construction of a floor framework on the inclined slab surface.

Referring to the embodiment shown in FIG. 14 and 15, a supporting stand 1 is provided with a pair of longer legs 12 than that for ordinary use and further, internally with a rack 35 between the two legs 12 at a suitable distance below the upper end of the supporting stand 1 and fixed at its both ends to the legs 12. The

rack carries a central hole **36** disposed coaxially with the bolt-penetrated hole **11** of the stand **1**. Numeral **37** in FIG. **14** indicates a reinforcing cylinder member fitted between said holes **11** and **36**.

This supporting device in which the rack **35** is provided and carries the central hole **36** for accommodating the bolt **2** therethrough is designed to hold the lower end of the substantially long-length lower bolt **2**. As shown in FIG. **15** also, the bolt **2''** is tightened at two points, namely, at the upper hole **11** and the hole **36** of the rack **35** by means of the nuts **5** which engage said hole **11** from above and said hole **36** from below, respectively.

Although this stand **1** has substantially long legs **12**, its structure is given extra strength by the provision of the internal rack **35**, and furthermore through the firm engagement of the adjusting bolt **2** with the supporting stand **1** at said two points of said bolt **2** which are suitably spaced from each other, lateral movement of the supporting stand **1** can be prevented despite the greater height of the floor framing supported thereby.

Accordingly, this modification is suitable for use in the construction of a floor framing at a substantially great height above the slab surface S or alternatively, for use in constructing tiered floor framing through the combined use of a supporting device of ordinary height.

The embodiment shown in FIG. **16** shows a further modification of the embodiment of FIG. **15**, and is provided with an improved structure of the supporting stand **1**. This stand **1** comprises a ground-contacting plate **13** carrying nail holes **13'** on its lateral extensions and a cylindrical support **12** extending from the center of said plate by having its base welded to the latter. It is provided also with an open upper end, a screw hole **12'** at the side of the stand **12**, a bushing member **40** of synthetic resin material fitted into the upper end of said cylindrical support **12**, with said bushing member carrying a flange **38** formed at its upper end and a slit **39** extending longitudinally at one side, a side bolt **41** fitted into said screw hole **12'** and a spring washer **42** mounted above said bolt **2** at a position adjacent to the flange **38** of the bushing **40**.

With this modified supporting stand **1**, the adjusting bolt **2** supports the framing element **6** at its upper end and has its lower end inserted in the bushing member **40**. After it has been pushed to the desired depth to determine the height of the framing **6**, said bolt **41** is tightened in the screw hole **12'** to press the peripheral surface of the synthetic resin bushing **40** sideways against the adjusting bolt **2**, whereupon said adjusting bolt **2** is temporarily set in position. Then, the upper nut **5** mounted on the adjusting bolt **2** at a position above the supporting stand **1** is turned so as to press the spring washer **42** tightly against the upper end of said cylindrical support **12** to complete the operation of fixing the supporting bolt **2**.

In the embodiment shown and described, it is possible to move the adjusting bolt **2** upward after releasing the side bolt **41** and to move further downward after releasing the nut **5**. Accordingly, this supporting device facilitates a minute adjustment of the framework height against the standard height after completing the framing operation.

When compared with the supporting stand in the other modifications of the present invention, this supporting stand using the side bolt **41** provides the advantage of an easy floor framing operation. It is to be noted that this embodiment does not necessarily require the use of synthetic resin bushing **40** with the flange **38** and the side slit **39** above described. The use of the bushing **40** may be eliminated by providing a cylindrical support **12** of an inside diameter slightly larger than the outside diameter of the adjusting bolt **2** and carrying a side bolt **41** which has its internal end in press-contact the inserted part of the adjusting bolt directly through the screw hole **12'** so as to temporarily set the latter.

As described, the present invention provides a novel structure of floor framing and its supporting device, all made of metallic material prefabricated at the factory instead of wood as heretofore, comprising a supporting stand fixed at its lower end to the slab surface, an adjusting bolt having its lower end fixed to said supporting stand and its upper end secured to a framework through a supporting plate, nuts mounted on said bolt to cooperate with the latter and a framing element of substantially C-shaped steel construction to be supported by the bolt from below.

Accordingly, the present floor framing and its supporting device require no planing work at the site fabrication and are conveniently used for a minute adjustment of the framework height against the standard height above the slab surface.

Although the descriptions so far made have referred to the use of the invention for floor framing, it is naturally possible to use the device and elements for other interior purposes such as ceiling framework, wallboarding work.

I claim:

1. A supporting device comprising a metal supporting stand having an upper end provided with a central hole and a leg portions having ground-contacting plates for attachment to a slab surface, a framing element provided with a longitudinal under-groove on its underside and supported by the stand at a desired height above the slab's surface, an adjusting bolt accommodated in the central hole of the upper end and rigidly fixed to the stand, supporting the framing element by means of a set of nuts contacting said upper end about said central hole from both above and below, another nut member disposed on said bolt fastening the underside of said framing element between the head end of said bolt, which is accommodated in the under-groove of the framing element, and a supporting plate disposed on said bolt underneath said bolt head, and said supporting plate coacting with the framing element to support the framing element from below.

2. The supporting device as claimed in claim **1**, wherein said framing element is C-shaped and is provided with longitudinal side walls having side edges, a lengthwise channel between the longitudinal side edges folded and bent inwardly from both sides, said channel accommodating the adjusting bolt and rigidly fixed to the supporting device, and a U-shaped groove formed longitudinally on both outer sides of said framing element folded and bent at the opposed longitudinal side walls of said framing element inwardly and then outwardly.

3. The structure as claimed in claim **2**, comprising a presser plate member and fastening means, the presser plate member being laid on each side of an upper-laid framing element at the point of its cross-contact with a lower-laid framing element and the fastener means being applied thereon with clamps thereof straddling

the presser-plate member and engaging in an U-shaped groove of the under-laid framing element, said fastening means including a lever of said fastening means displacable to fasten and secure a contacting point of the two framing elements between tips of the clamps and a cam formed on an internal end of the lever of said fastening means.

4. The supporting device claimed in claim **1,** including anti-vibration structure comprising a first anti-vibration plate member interposed between a slab surface and the under-surface of a ground-contacting plate of the supporting stand, a second anti-vibration plate member interposed between the under-surface of said framing element and the upper surface of the supporting plate, and a third anti-vibration plate member interposed between the under-surface of an upper-laid framing element and the upper surface of an underlaid framing element in cross contact and at the point of their cross-contact so as to prevent and absorb the friction between the contacting surfaces of the framing elements, with the underlaid framing element being rigidly fixed to the supporting device.

5. The supporting device claimed in claim **1,** wherein at least the supporting plate member having its upper end in engagement with the under-surface of the framing element and its lower end secured to the adjusting bolt, is provided with a lateral extension extending in the lengthwise direction of the framing element, said extension carrying a set of holes for accommodating a set of bolts and nuts to be inserted therein from the end of said framing member.

6. The framework supporting device claimed in claim **1,** wherein the adjusting bolt is composed of two separate members, namely an upper member and a lower member, said upper and lower members being linked into one unit through the intermediary of a shock-absorbing means interposed between said upper and lower members, and shock-absorbing means comprising a pair of upper and lower metal plates carrying a female screw hole and a rubber block disposed between the upper and lower plates.

7. The framework supporting device claimed in claim **1,** wherein the upper end of the supporting stand carrying the central hole for the adjusting bolt is provided with a semi-spherical shape, said adjusting bolt accommodated in said central hole of the stand being provided with a pair of washers thereon at positions above and below said hole to be pressed by a pair of nuts provided thereon to engage in said semi-spherical central hole of the stand from above and below, said washers having their one side shaped to match the semi-spherical shape of the central hole of said supporting stand so that the adjusting bolt may be fixed in an inclined position against the supporting stand.

8. The framework supporting device claimed in claim **1,** wherein the supporting stand is provided with a rack member between its legs portion, said rack member being provided with a central hole coaxial with the central hole of the supporting stand so that the lower end of the adjusting bolt may be extended and held therein, a pair of nuts mounted on said bolt at positions immediately outside the abovementioned central holes so that upon turning of the nuts, the lower portion of the adjusting bolt may be rigidly fixed to the supporting stand at two points, namely at the upper end of the stand and at its contacting point with the rack.

9. The framework supporting device claimed in claim **1,** wherein the ground-contacting plates of the supporting stand are formed in one unit, a cylindrical stand having a bottom, the bottom being welded to the center of the ground-contacting plates, and the lower end of the adjusting bolt being inserted into said cylindrical stand a side bolt being screwed into a screw hole provided on one side of the stand to temporarily set the adjusting bolt in position and then the nut mounted on said adjusting bolt being tightened up to the upper end of the stand to fix the adjusting bolt firmly in position.

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