

12 **EUROPEAN PATENT APPLICATION**

21 Application number: 88305488.4

51 Int. Cl.⁴: **E04F 15/024**

22 Date of filing: 16.06.88

30 Priority: 17.06.87 GB 8714214

43 Date of publication of application:
21.12.88 Bulletin 88/51

64 Designated Contracting States:
AT BE CH DE ES FR GB GR IT LI LU NL SE

71 Applicant: **JACK FLOORING COMPANY LIMITED**
Unit 10 Albion Industrial Estate Halley Street
Yoker Glasgow G13 4DT Scotland(GB)

72 Inventor: **Morrison, Ronald Frank**
29 Colquhoun Street
Helensburgh G84 8UX Scotland(GB)

74 Representative: **Pacitti, Pierpaolo A.M.E. et al**
Murgitroyd and Company Mitchell House 333
Bath Street
Glasgow G2 4ER Scotland(GB)

54 **Floor panel support system.**

57 A floor panel support system comprises a tubular steel sleeve 1 which extends through a floor-panel 2 and is supported by a ridge 13 which engages a washer 4. The lower end of the sleeve 1 has a threaded adjuster 5 through which a correspondingly threaded jack 6 extends. The lower end of the jack 6 has an insulator cap 7 and is supported in a silicone rubber foot 8 by an abutment 9. The jack 6 has a slot 10 which can be engaged by a screwdriver for adjustment of the jack 6 and in addition a slotted locknut 11 is also provided.

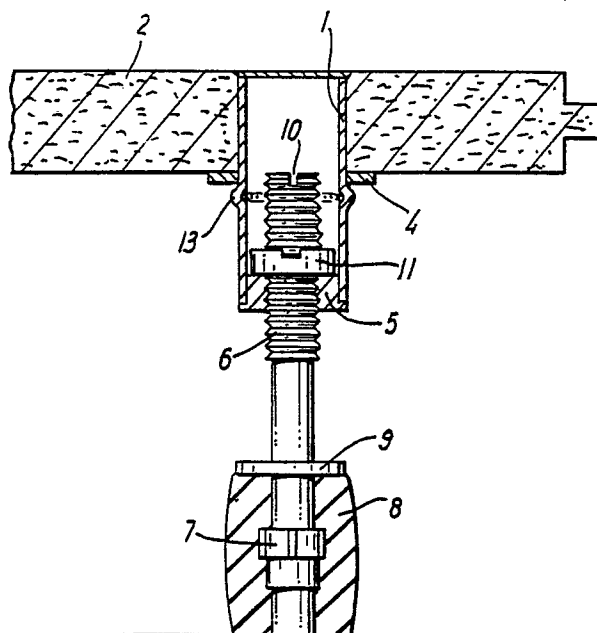


Fig. 2

"Floor Panel Support System"

This invention relates to a floor panel support system.

It is common building practice to provide floors in the form of raised panels which are mounted above the basic floor structure, usually of concrete.

Conventionally these floor panels, which are often of chipboard construction, are supported by a series of wooden battens with levelling provided by wedges or packers placed beneath the battens at appropriate positions. Such floors are time consuming to install and the battens restrict access to the cavity formed beneath the floor which is used for service installations.

To overcome these problems it has been proposed to support floor panels with a series of small adjustable jacks. These may for example be provided by a series of threaded rods which are inserted in a correspondingly threaded insert extending through the floor. After the floor has been levelled the excess length of rod extending above the floor is removed and the end of the rod ground flat. This installation is time consuming, adjustment of height requires access to the length of rod extending beneath the floor and there is generally no provision for locking the rods in position when the desired length has been achieved.

According to the present invention there is provided a floor panel support system comprising a tubular sleeve for engaging a through-hole in a floor panel, the sleeve having abutment means for engaging flange means on the panel for supporting the panel and having threaded adjustment means for engaging a correspondingly threaded elongate support member.

Preferably the flange means comprises a washer.

Preferably also a locknut for the elongate support member is provided in the tubular sleeve.

Preferably also a closure member is provided for the through-hole in the floor panel, support means for said closure member being provided by an end surface of the tubular sleeve.

Preferably also a resilient foot member is provided for the elongate support member.

Alternatively the elongate support member may be provided with a rigid foot member.

Embodiments of the present invention will now be described by way of example, with reference to the accompanying drawings, in which:

Fig. 1 is a sectional side view of a first embodiment of a floor panel support system in accordance with the present invention;

Fig. 2 is a sectional side view of a second embodiment of a floor panel support system in accordance with the present invention;

Fig. 3 is a sectional side view of a third embodiment of a floor panel support system in accordance with the present invention; and

Fig. 4 is a sectional representation illustrating a floor panel support system of the present invention in use.

Referring to Fig. 1 of the drawings, a floor panel support system comprises a tubular steel sleeve 1 which extends through a floor-panel 2 and is supported by a shoulder 3 which engages a washer 4. The lower end of the sleeve 1 has a threaded adjuster 5 through which a correspondingly threaded jack 6 extends. The lower end of the jack 6 has an insulator cap 7 and is supported in a silicone rubber foot 8 by an abutment 9. The jack 6 has a slot 10 which can be engaged by a screwdriver for adjustment of the jack 6 and in addition a slotted locknut 11 is also provided.

A typical installation sequence of floor panels incorporating the support system of the present invention will now be described.

A number of floor panels 2, which are of tongue and groove construction for ease of interfitting, are provided to cover the area to be floored. Each floor panel 2 has twelve sleeves 1 already fitted during manufacture ready to accept the jacks 6. The sleeves 1 are visible on the underside of the floor panel 2 and on the top side provide a 15 mm countersunk hole for the locknut 11.

Each floor panel 2 is positioned upside down, for example on a pair of trestles, and twelve jacks 6 are threaded into the sleeves 1 to approximately the desired depth.

A series of spacers of some 12-15 mm width are produced from scrap material and used to space the floor panels 2 from the walls at the edge of the floor. A first floor panel 2 is laid in position and levelled using two or three of the jacks 6. The jacks can be easily adjusted by engaging the slots 10 with a screwdriver. The remaining jacks 6 are then turned down in a similar fashion to engage the subfloor.

Subsequent floor panels 2 are laid in a similar fashion. When all the floor panels have been laid and levelled an appropriate tool is used to tighten the locknuts 11 and the floor panels 2 are finished by inserting a steel cap 12 over the end of each sleeve 1.

Edge seals can then be fitted around the edge of the floor-panels 2 and other finishing completed.

The caps 12 are removable to allow subsequent re-levelling of the floor-panels as a simple operation from above by raising or lowering the jacks 6 with a screwdriver.

The embodiment shown in Figure 2 is similar to that shown in Figure 1 except that the shoulder 3 has been replaced by a ridge 13 formed by a kink in the sleeve 1. In all other respects this embodiment is identical to that shown in Figure 1.

The silicone rubber feet 8 provide the floor panels 2 with a degree of resilience which does not deteriorate significantly in time due to the excellent ageing characteristics of the silicone rubber. The feet can compress some 2-3mm and under full load providing a stable yet more comfortable walking surface when compared to a solid floor. Excessive deflection under gross overload conditions is prevented and full recovery takes place on removal of the overload.

The embodiment shown in Fig. 3 is similar to that shown in Fig. 2. However, the silicone rubber foot 8 is replaced by a rigid foot member 14. This provides for a more solid construction which is particularly suitable for more heavily loaded applications.

Fig. 4 illustrates a floor panel support system in use. A series of floor panels 2 are supported above a concrete subfloor 15 by a number of jack assemblies 16. Electrical cables 17 and the like are positioned in the space between the floor panels 2 and the sub-floor 15 and access ports 18 are provided in the floor panels to provide easy access to the cables 17.

Modifications and improvements may be incorporated without departing from the scope of the invention.

Claims

1. A floor panel support system comprises a tubular sleeve for engaging a through-hole in a floor panel, the sleeve having abutment means for engaging flange means on the panel for supporting the panel and having threaded adjustment means for engaging a correspondingly threaded elongate support member.

2. A floor panel support system as claimed in Claim 1, wherein the flange means comprises a washer.

3. A floor panel support system as claimed in Claim 1 or 2, wherein a locknut for the elongate support member is provided in the tubular sleeve.

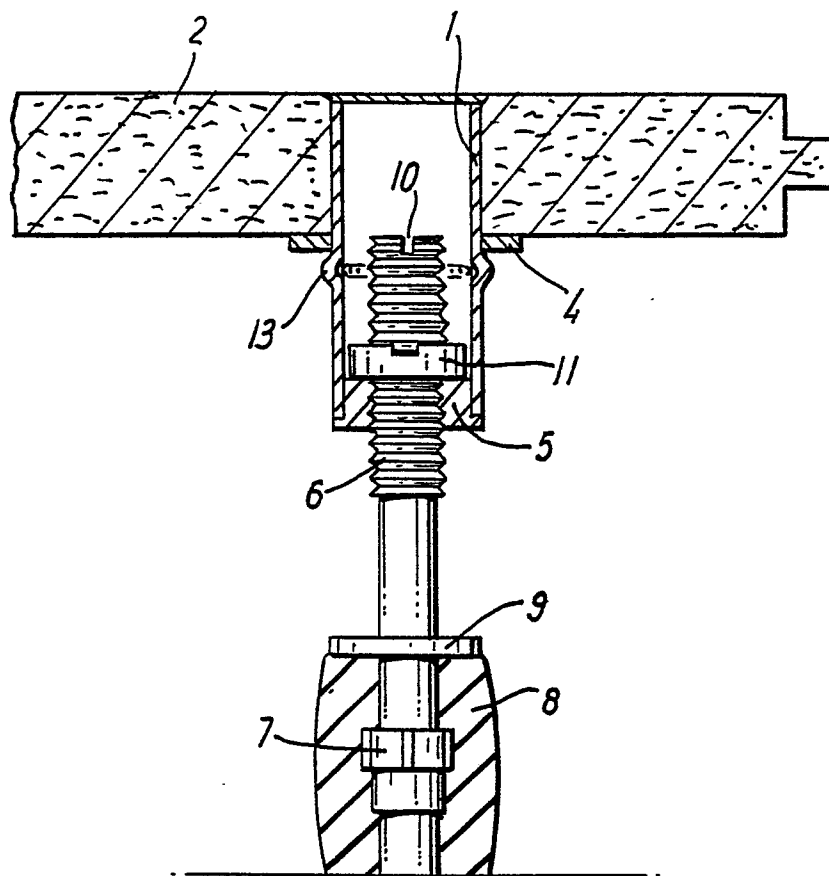
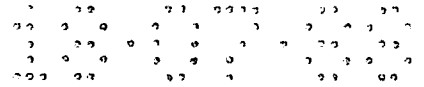
4. A floor panel support system as claimed in any one of the preceding Claims, wherein a closure member is provided for the through-hole in the floor panel.

5. A floor panel support system as claimed in Claim 4, wherein support means for said closure member are provided by an end surface of the tubular sleeve.

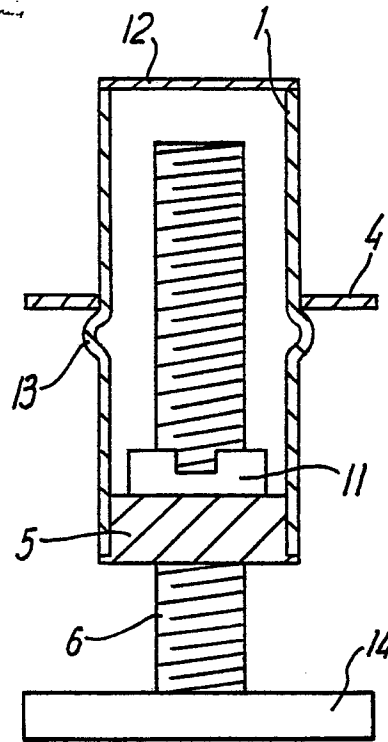
6. A floor panel support system as claimed in any one of the preceding Claims, wherein a resilient foot member is provided for the elongate support members.

7. A floor panel support system as claimed in any one of Claims 1 to 5, wherein the elongate support member is provided with a rigid foot member.

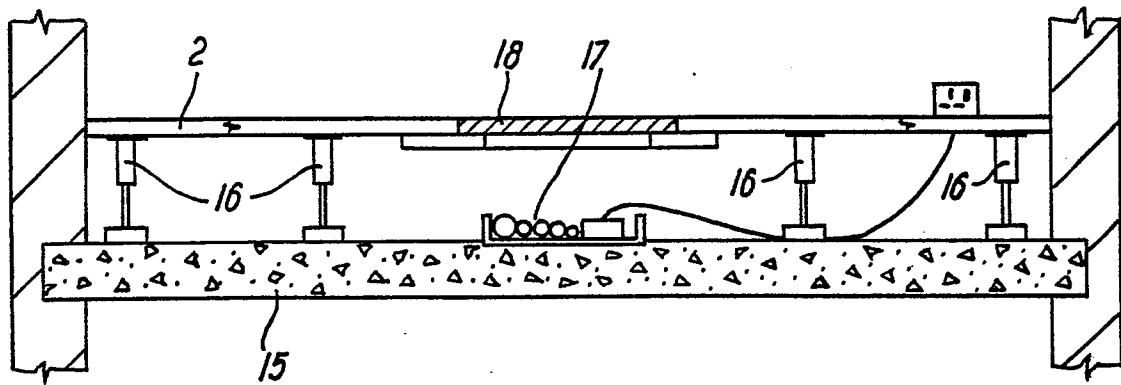
8. A floor panel support system substantially as hereinbefore described, with reference to and as shown in the accompanying drawings.



File 2



FILE 3



FTE.4