

DEVICE FOR SHUTTERING CONCRETE FLOORS

Description:

The invention concerns devices for shuttering concrete floors according to the preamble of claim 1 such is are known, for example, from EP-A 0 678 637.

Such devices, so-called floor tables, are used in building construction for the erection of structures having the same spatial dimensions if the floors are shuttered locally. Floor tables consist of a supporting structure and a superstructure. The superstructure consists of longitudinal beams, cross beams resting on them and of the superposed shuttering skin. The two systems mainly employed at the moment have the following properties.

The first system uses special spindle supports which, with the aid of stiffening frames of identical height but of different lengths, are connected to form a falsework the stiffness and load-carrying capacity of which are adapted to the building object. The superstructure is placed onto the head plates of the spindle supports. A disadvantage of this system is its complicated erection. The spindle supports are first put on the ground with relative spacing and are connected with each other by one stiffening frame each. Next, the stiffening frames which are to be fitted at right angles to it are added on edge, the second layer of spindle supports is fitted and the second layer of stiffening frames is fitted. Finally, the falsework pre-mounted in this way must be changed from its lying mounting position into the vertical working position. At least two persons are necessary for erecting the falsework and they will require approx. half an hour for this work.

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Dismantling the falsework takes place in inverse order and essentially with the same time requirement.

Finally, both the spindle supports and the stiffening frames are special elements adapted to each other the purchase of which is rather expensive.

The second system uses commercial steel floor supports the points of which are equipped with special retaining heads to make the connection to the superstructure. Since the commercial steel floor supports are not free-standing, at least two persons and a crane are required for making a floor table. The crane must keep the superstructure in position until the retaining heads are firmly connected with the superstructure. During this period, one of the persons must hold the floor support while the other person makes the connection.

As this system of construction is lacking additional stiffening elements between the floor supports or between the floor support and the superstructure, the structure is rather unstable.

The present invention is based on the task to further develop the floor tables in such a way that the supporting structures can be erected in a few minutes by a single person.

This task is solved by a device having the features according to claim 1.

The essential advantage of the present invention results from the fact that the stiffening frame proper is standing safely as soon as the fixed frame portion and the slewing frame portion have been slewed into their working positions and show a relative angle of approx. 90° . Next, the gap is filled with a stiffening frame of the same type. Since all elements are standing firmly on the ground with their feet, the ends

of the two stiffening frames can be hooked up with each other safely and fast. One floor support after the other can then be fastened to this firmly standing and very stable stiffening frame square by means of the holding fixtures provided. All work can be done by a single person within a few minutes. A crane is not required. There is no problem in using commercial steel floor supports. Commercial-type lifting and conveying equipment can be employed for moving the floor table according to the invention.

Another advantage lies in the fact that the slewing frame portion, while not in use, can be slewed in a flat position close to the fixed frame portion so as to save space.

By putting planks onto the stiffening frame square it is possible to create a safe operating platform within little time, e.g., for working on the superstructure.

Finally, the stiffening frames according to the invention can easily be employed also with the second floor table system as described in connection with the state of the art.

Due to the extremely short mounting and dismounting times, the expenses of the floor table according to the invention will be paid off already after a few applications. Consequently, the application of the floor table according to the invention is already indicated if only a few floor sections have to be concreted at a construction site.

According to a preferred embodiment of the invention, the holding fixtures for the removable fastening of the floor supports to the connecting frames include a prism and a clamping hook. Both the prism and the clamping hook are adapted to each other in such a way that floor supports with different diameters can be fitted. A suitable design is known, for example, from DE-C 3 120 125.

The fixed frame portion advantageously has two feet and the slewing frame portion at least one foot.

According to one embodiment of the invention, the stiffening frame consists of tubular elements. As a result, the stiffening frame consisting of two portions becomes so lightweight that it can still be transported by a single person even if steel is used for the tubular elements.

However, the stiffening frame advantageously consists of light metal. This will allow even large-sized frames to be transported by a single person.

The fixed frame portion and/or the slewing frame portion can be variable in length, e.g. telescoping. As a result, it is possible to flexibly adapt the floor support distances to the local conditions at the site.

With the aid of the drawing, the invention will now be described in more detail in the form of example embodiments.

Fig. 1 shows a purely diagrammatic view of the front of a device for shuttering concrete floors, reinforced by a stiffening frame.

Fig. 2 shows the front view of a stiffening frame.

Fig. 3 shows the side view of the stiffening frame according to Fig. 2.

Fig. 4 shows a plan view of the stiffening frame according to Fig. 2.

Fig. 5 shows a plan view of a first floor table with six supports and

Fig. 6 shows a plan view of a second floor table with six supports.

Fig. 1 is a diagrammatic view of the front of a floor table, i.e. a device for shuttering concrete floors. The supporting structure essentially consists of four floor supports 1, of which only two are depicted here, and of a stiffening frame 10, comprising a fixed frame portion 11 and a slewing frame portion 21. The floor supports 1 support the superstructure consisting of longitudinal beams 2, cross beams 3 and a shuttering skin 4.

Of the stiffening frame 10, only the fixed frame portion 11 has essentially been depicted. On both ends it has prismatic holding fixtures 18 retaining the floor supports 1. The connection is fixed by clamping levers 19.

The fixed frame portion 11 is standing on the ground with two feet 12.

Fig. 2 as a front view, Fig. 3 as a side view and Fig. 4 as a plan view show details of the stiffening frame 10. With the aid of joints, a slewing frame portion 21 is fastened to the fixed frame portion 11 with its two feet 12 and the end-side holding fixtures 18, 19 for the supports 1. The slewing frame portion 21 has at least one foot and in the present example of embodiment two feet 22. At the end opposite the joints 14 there are arranged holding fingers 23 that correspond to eyes 13 on the fixed frame portion 11.

At the end of the slewing frame portion 21 a securing lever 24 is provided to prevent the unintentional coming off of the holding fingers 23 from the retaining eyes 13.

As can be seen from Fig. 4, the fixed frame portion 11 and the slewing frame portion 21 are at right angles to each other in working position. As a result, the connecting frame 10 rests very safely and firmly on the ground. For transport and storage, the slewing frame portion 21 is slewed towards the fixed frame portion 11 which is indicated by position 21'.

As can be seen from Fig. 3, the slewing frame portion 21, if necessary also the fixed frame portion 11, can be reinforced additionally by diagonal struts 25.

Fig. 5 shows a plan view of the supporting structure of the first floor table with six supports 1.

First, two stiffening frames 10, 10' have been connected with each other by suspending the connecting fingers 23 at the ends of the slewing frame portions 21 in the eyes 13 at the corresponding other fixed frame portion 11. Four supports 1 were fastened one after the other to the holding prisms 18 of this frame square. Next, two further stiffening frames 10'', 10''' were connected to form a frame square. Its holding prisms 18 were shifted close to the supports 1 already erected. The connection is made with the aid of the clamping hooks 19.

Then, the remaining two supports 1 were fastened to the free holding prisms 18.

If it should be necessary for the fixed and slewing frames 11, 21 to be exactly at right angles to each other, this can be guaranteed by suitable diagonal struts 26.

In this way, a very stable and, above all, true-to-size supporting structure is formed for a floor table.

Fig. 6 shows a plan view of the supporting structure of a second floor table with six supports 1.

As in the example of embodiment according to Fig. 5, two stiffening frames 10, 10' are first connected to form one frame square, four floor supports 1 being fastened to its four holding prisms 18. Next, another stiffening frame 10" has been erected such that its fixed frame portion 11 extends in parallel with the fixed frame portions 11 of the two other stiffening frames 10, 10'. The fifth and sixth floor supports 1 were fastened to the holding prisms 18 of the third stiffening frame 10" and the point of the slewing frame portion 21 to the frame square 10, 10' already erected. A simple plug-in frame 27 which is suspended into the eyes 13 of the fixed frame portions 11 is used for closing the second frame square.



Patent claims:

1. Device for shuttering concrete floors, essentially comprising

- a number of supports (1),
- supporting a superstructure consisting of
 - longitudinal beams (2),
 - cross beams (3),
 - and/or a shuttering skin (4)
- and stiffening frames (10) between the supports (1),
- holding fixtures (18, 19) enabling a removable connection between the stiffening frames (10) and the supports (1),

characterized in that:

- the stiffening frame (10) comprises
 - a fixed frame portion (11) with
 - feet (12),
 - the holding fixtures (18, 19) at both ends,
 - retaining eyes (13) near one end
 - and joints (14) near the other end
 - and a slewing frame portion (21) with
 - feet (22),
 - holding fingers (23) at one end that correspond to the retaining eyes (13),
 - and pivot pins at the other end which correspond to the joints (14),
- fixed and slewing frame portions (11, 21) being arranged approximately at right angles relative to each other in working position.

2. Device according to claim 1, characterized in that:

- the joints (14) and the pivot pins are arranged in such a way that the slewing frame portion (21) can be slewed flat against the fixed frame portion (11).



3. Device according to claims 1 or 2, characterized in that:

- the holding fixtures comprise
 - a prism (18)
 - and a clamping hook (19).

4. Device according to one of the claims 1 to 3, characterized in that:

- the fixed frame portion (11) has two feet (12),
- the slewing frame portion (21) has at least one foot (22).

5. Device according to one of the claims 1 to 4, characterized in that:

- the stiffening frame (10) consists of tubes.

6. Device according to one of the claims 1 to 5, characterized in that:

- the stiffening frame (10) consists of light metal.

7. Device according to one of the claims 1 to 6, characterized in that:

- the fixed frame portion (11) and/or the slewing frame portion (21) is telescoping.