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LEVELING DEVICE FOR CONCRETE SCREEDS

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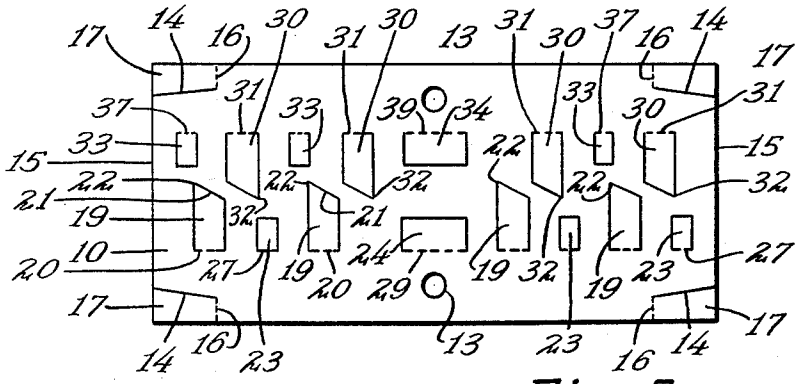


Fig. 5

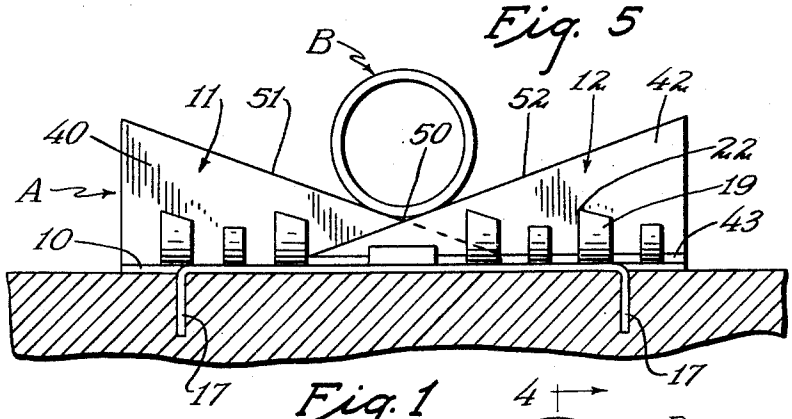


Fig. 1

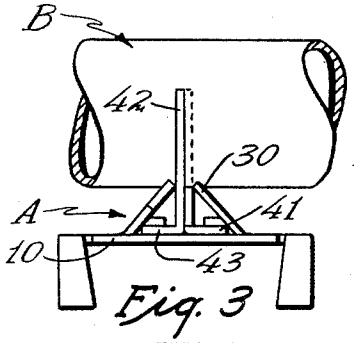


Fig. 3

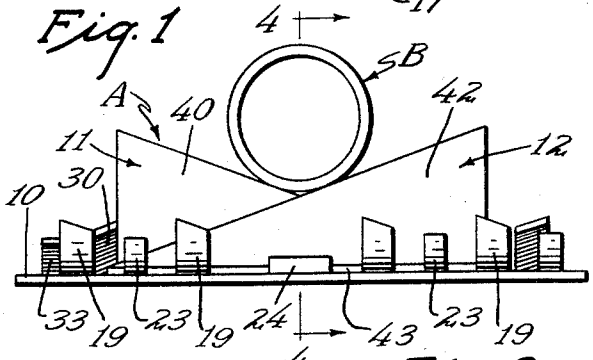


Fig. 2

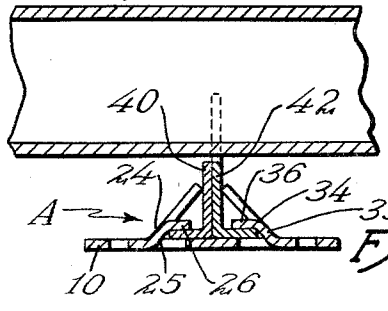


Fig. 4

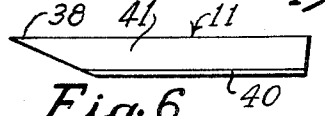


Fig. 6

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LEVELING DEVICE FOR CONCRETE SCREEDS

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8 Claims. (Cl. 254—104)

This invention relates to an improvement in leveling device for concrete screeds and deals particularly with an apparatus for simplifying the construction of flat concrete floors and the like.

In the production of floors made of concrete or similar material, considerable difficulty is experienced in making the floor smooth and flat over a substantial area. Various means have been provided for accomplishing the purpose, but most such devices are complicated to employ and require considerable time to use. For example, in many instances a subfloor is formed of concrete and this subfloor is made as level as is possible without the use of complicated instruments. Surveying instruments are then employed to measure the elevation at spaced points along the surface of the floor and blocks of wood or other material are placed at the measured points for use as a gauge in mounting rails which are used as screeds for the concrete slab. While this method is accurate, the surveyor's marks sometimes are obliterated and the surface of the floor is often quite uneven so that even a variation of a short distance in position might result in a considerable error. Other usual methods are also inclined to be quite inaccurate unless utmost continual care is taken.

An object of the present invention lies in the provision of a simple and effective support for a pipe which may be employed as a screed. The device is designated to support lengths of pipe of common size of the type normally found on construction jobs or in any event easily available. As a result the floor surface can be made level with a minimum of equipment.

A feature of the present invention lies in the provision of a leveling device which is extremely inexpensive and simple and which is embedded within the floor when the concrete is laid. The device includes a base plate and a pair of wedge-shaped elements which are slidably supported by the base plate to extend vertically therefrom. The inclined upper edges of these wedge-shaped elements are opposed and the lower pointed ends of the two elements are in overlapping relation. Accordingly, the upper edges of the wedge-shaped elements diverge and form a V-shaped notch, the apex of which may be raised by overlapping the wedge-shaped elements to a greater extent. By mounting base plates of the type described in regularly spaced relationship and by use of a surveying or other leveling instrument, the apex of the notch formed by the overlapping elements may be adjusted to support a pipe screed on a level plane. The upper surface of the pipe screed may be used as a guide for the striking board used in leveling the slab.

A further feature of the present invention lies in the simplicity with which the leveling devices may be adjusted. In usual practice the base plates are first applied to the subfloor at substantially regular intervals either by embedding downwardly projecting portions of the base plates in the subfloor when it is formed or by nailing or otherwise securing the base plates in position. The two wedge-shaped elements are slidably supported

to project upwardly from the base plate forming a shallow V-shaped notch between the inclined supporting surfaces. A pipe is placed upon the wedge-shaped elements at the apex of the notch formed therebetween. The wedge-shaped elements are then tapped toward one another until the upper surface of the pipe is at the desired elevation.

The other end of the pipe section is placed upon the next adjacent leveling device and the same procedure followed, driving the wedge-shaped elements together until the pipe reaches the desired elevation. Usually the pipe rests upon three spaced leveling devices at a time. By following this procedure through a complete line of supports, all of the supports may be properly adjusted so that the pipe screed will be level when positioned between any pair of adjoining supports.

A feature of the present invention lies in the fact that as each slab of concrete is laid, the pipe screeds may be slid longitudinally and moved to a new position. The striking board used for leveling the concrete may rest upon spaced parallel pipe screeds to provide a smooth level surface. Alternatively, in constructions where seams or joints are not objectionable, the concrete may be poured between two parallel pipes forming alternate strips of concrete with unpoured sections therebetween. The intermediate areas can then be filled to complete the operation.

A further feature of the present invention lies in the fact that the leveling devices may be similarly produced in a number of sizes. These devices may be used to produce a variety of floor thicknesses without making the devices of excessive size. The same base plates may be used for wedge-shaped members of different sizes.

These and other objects and novel features of my invention will be more clearly and fully set forth in the following specification and claims.

In the drawings forming a part of the specification:

Figure 1 is an elevational view showing the leveling device in place upon a subfloor.

Figure 2 is a view similar to Figure 1 but showing the wedge-shaped elements in a different position.

Figure 3 is a side elevational view of the device removed from the concrete.

Figure 4 is a sectional view of the construction, the position of the section being indicated by the line 4—4 of Figure 2.

Figure 5 is a plan view of the base plate of the apparatus.

Figure 6 is a top plan view of one of the wedge-shaped elements.

The leveling device is indicated in general by the letter A. Each such device includes three main parts in preferred form. The first part is indicated at **10** and comprises a base plate on which the structure is mounted. The other two elements are identical in form and are indicated by the numerals **11** and **12** for ease of description. While the two devices are identical, they are reversed in position upon the base plate.

The base plate is shown as generally rectangular in outline and is provided with a pair of apertures **13** extending therethrough on opposite sides of the center of the plate for the accommodation of nails or other fastening means where such are used. The corners of the base plate are provided with slits or cutlines **14** extending inwardly from the ends **15** of the base plate in slightly diverging relation. As a result, the portions of the base plate outwardly of the slits **14** may be folded along potential lines of fold **16** indicated by dotted lines in Figure 5. This arrangement is provided to protect four anchoring lugs **17** which may be bent downwardly as indicated in Figure 1 of the drawings to be embedded in the concrete of the subfloor if this arrangement is con-

venient. As the lower extremities of the lugs 17 are wider than the upper ends thereof, the lugs will hold the base plate firmly in place when the subfloor has hardened and set. A series of ears 19 are struck from the plate 10 to incline upwardly and inwardly toward the center of the plate. These ears 19 are bent from the plate along a common line of fold and each such ears is provided with an angularly inclined extremity 21. This extremity provides a pointed end 22 on each ear which is directed toward one end of the base plate. In the particular construction illustrated, the pointed extremities 22 of the ears 19 are on the edge of the ear closest to the left hand side of the base plate.

Intermediate the ears 19 are arranged smaller ears 23. These ears 23 are alternated with the ears 19 at each end of the base plate and are also struck upwardly from the body of the plate to incline upwardly and inwardly toward the center of the plate.

At the longitudinal center of the base plate an elongated tongue 24 is struck from the body of the plate. The tongue 24 as indicated in Figure 4 of the drawings, includes an inclined portion 25 and a horizontal portion 26 in spaced parallel relation to the plane of the plate. The fold lines 27 connecting the ears 23 with the plate and the fold line 29 connecting the tongue 24 to the plate are aligned with the previously described bend lines 20.

The opposite side of the base plate is also provided with a series of elongated tongues 30 connected to the base plate along lines of bend 31 which are aligned. The ears 30 are provided with pointed ends 32 on the edge thereof nearest the right hand end of the base plate in the construction shown.

Smaller ears 33 are also struck from the base plate 10 to incline upwardly and inwardly toward the center of the plate. A tongue 34 is struck from the body of the plate near the longitudinal center thereof and includes an inclined portion 35 and a horizontal extremity 36. The lines of fold 37 connecting the ears 33 to the base plate as well as the line of bend 39 connecting the tongue 34 to the base plate are aligned with the fold lines 31.

Figure 5 of the drawings shows the outline of the various ears and tongues before they are struck upwardly from the plate. The remaining figures show these ears and tongues in the position they actually assume in the finished structure.

The wedge-shaped element 11 includes a vertical triangular web 40 and a horizontal flange 41 extending at right angles thereto along the lower edge of the triangular web. At the pointed end of the triangular web, the flange 41 is also pointed as indicated in Figure 6 at 38. The wedge-shaped member 12 is similarly formed with a triangular vertical web 42 and a horizontal flange 43 which is pointed at the forward end of the triangular web but which is otherwise generally rectangular in form.

The two wedge-shaped elements 11 and 12 are mounted upon the base plate in such a way that the ears 19 and 23 extend upwardly over the flange 43 of the wedge-shaped member 12 and with the pointed ends 22 of the ears 19 in contact with the surface of the triangular web 42 the wedge-shaped element 11 is also mounted upon the base plate 10 with the flange 41 resting in surface contact upon the plate. The triangular webs 40 and 42 are arranged as shown in Figures 1 and 2 with their pointed ends in overlapping relation. The ears 30 and 33 of the base plate extend over the flange 41 and the pointed ends 32 of the ears 30 engage against the surface of the web 40. The tongue 34 also overlies the flange 41 as indicated in the drawings.

Having now described the construction, the manner of its use will be described. The base plates 10 are positioned in parallel relation upon the subfloor either by nails or anchoring means extending through the apertures 13 or by embedding the lugs 17 in the subfloor.

A pipe B of suitable length is placed to rest upon two

or more leveling devices A and the elevation of the top of the pipe B is adjusted by tapping or driving the wedge-shaped elements forwardly into a position of greater overlap. As each wedge is driven inwardly the apex 50 between the inclined upper edges 51 and 52 of the triangular webs 40 and 42 increases in distance from the subfloor or increases in elevation. The next adjacent leveling device is similarly adjusted and in the same manner each entire row of leveling device is adjusted so that the apex of each is at the desired elevation. The pointed extremities on the ears are designed to dig into the wedge-shaped elements sufficiently to prevent them from moving in a reverse direction so that the structure will remain in adjustment.

The two wedge-shaped elements are supported by the various ears and tongues with sufficient friction so that they must be tapped or struck to provide the adjustment. As a result there is little likelihood that any such leveling device will move out of adjustment between the time it is adjusted and the time it is actually employed.

In laying the floor a strip of concrete may be poured and leveled between two parallel pipe screeds B, the upper surfaces of the pipe forming a support for the striker board used in smoothing or leveling the surface. Similarly, the slab of concrete may be poured between a series of parallel pipe screeds or may be poured between concrete slabs previously poured, if visible joints between the slabs is not objectionable.

As each slab of concrete is leveled and smoothed, the pipe screed used is slid longitudinally and moved to a new position. The leveling devices A are at all times embedded into the concrete beneath the surface. The pipe screed B is of sufficient diameter so that its upper surface will be above the upper edges of the wedge-shaped elements regardless of the adjustment thereof. The screeds usually rest upon three spaced levelling devices in each position used.

In accordance with the patent statutes, I have described the principles of construction and operation of my leveling device, and while I have endeavored to set forth the best embodiment thereof, I desire to have it understood that obvious changes may be made within the scope of the following claims without departing from the spirit of my invention.

I claim:

1. A leveling device for concrete screeds comprising a sheet metal base plate of readily deformable material, a pair of wedge shaped elements comprising generally triangular panels of sheet material having a substantially right angular flange along their lower edges, the wedge shaped elements having inclined upper edges and being arranged with the triangular panels in surface contacting overlapping relation and with the flanges directed outwardly in opposed relation, the inclined edges converging to form a V-shaped pocket, and means on said base plate frictionally engaging said flanges and holding said elements in adjusted relationship.

2. The structure of claim 1 and in which said means on said base plate comprise spaced ears struck upwardly from the base plate between which the flanges of said elements may be driven.

3. The structure of claim 1 and in which said means on said base plate comprise spaced ears struck upwardly in inclined relation toward said elements, and including a wedge-shaped end on each of said flanges which may be driven beneath said spaced ears.

4. The structure of claim 1 and in which said means on said base plate include two rows of ears struck upwardly and inwardly toward said elements, and including a wedge shaped end on each of said flanges adjoining the lower end of said inclined upper edge of said triangular panels which may be driven beneath said ears.

5. A levelling device for concrete screeds comprising a sheet metal plate of readily deformable material including two spaced rows of ears struck from the body of the

plate and inclining upwardly toward a center line between said rows of ears, a pair of wedge-shaped elements including generally triangular upright panels and generally horizontal flanges along the lower edges thereof, said flanges being arranged to support said triangular panels in overlapping surface contact with their inclined edges opposed to provide a generally V-shaped pocket, said flanges extending in opposite directions from said panels and frictionally engaging beneath said ears.

6. The structure of claim 5 and including a wedge-shaped end on each of said flanges adjoining the lower end of said inclined edges.

7. The structure of claim 5 and including ears substantially aligned in said rows with said first named ears and near the center of each row having offset extremities

substantially parallel to said base plate and spaced therefrom to accommodate said flanges.

8. The structure of claim 5 and in which said ears include pointed ends engageable with said triangular panels to resist movement thereof.

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