Nov. 26, 1957

R. W. HYRE

2,814,459

ALIGNING DEVICE

Filed Sept. 14, 1954

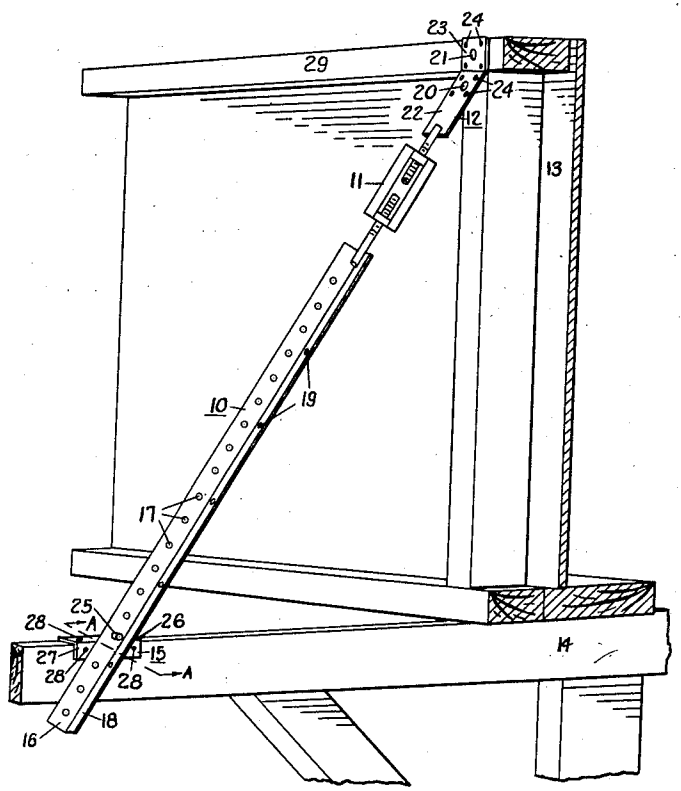


Fig. 1

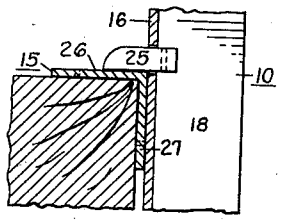


Fig. 2

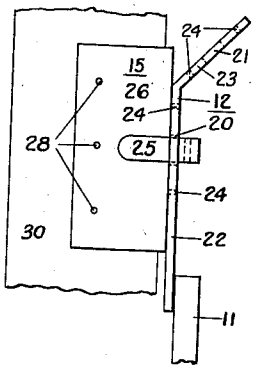


Fig. 4

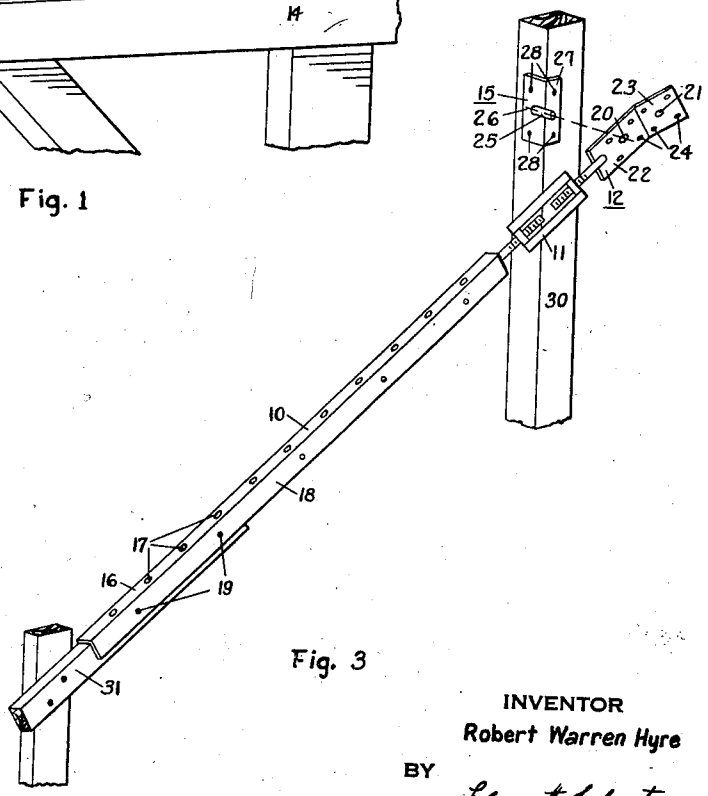


Fig. 3

INVENTOR
Robert Warren Hyre

BY
Lamont Johnston
ATTORNEY

United States Patent Office 2,814,459 Patented Nov. 26, 1957

2,814,459

ALIGNING DEVICE

Robert Warren Hyre, Chattanooga, Tenn., assignor to Concrete Forms Corporation, Chattanooga, Tenn., a corporation of Tennessee

Application September 14, 1954, Serial No. 456,036

2 Claims. (Cl. 254—100)

This invention relates to aligning devices and more particularly to those devices employed in aligning or adjusting structural members relative to other structural members.

The problem of aligning structural forms and specifically forms for concrete beams, columns, walls, and other concrete structure has been a serious one. Heretofore, such alignment has been accomplished with unadjustable wooden braces nailed to the forms, and has proved highly unsatisfactory.

An object of the invention is to overcome the disadvantages enumerated and provide a simple, inexpensive device for quickly and truly aligning structural forms.

Another object of the invention is to provide an aligning device which is longitudinally adjustable.

Another object of the invention is to provide an aligning device which is adaptable to align walls, beams, or columns.

A further object of the invention is to provide an attachment to quickly secure either or both ends of the aligning device to the member to be aligned and to other supporting structure.

Further objects and advantages of the invention will be apparent from the following description taken in conjunction with the drawings, wherein:

Fig. 1 is a perspective illustrating one application of the invention;

Fig. 2 is an elevational section on the line AA of Fig. 1;

Fig. 3 is a perspective of a modification of the invention;

Fig. 4 is an elevation showing a segment of the modification.

Briefly stated, the invention involves a bar, preferably a length of angle iron having uniform apertures spaced from one end along one of the flanges. The other end is attached to means for adjusting the length of the device, such as a turnbuckle. On the other end of the adjusting means is an attachment head consisting of an angle plate, each face of the plate containing an aperture the same size as the apertures in the bar, and one of the faces being generally in alignment with the bar. An attachment comprising a short section of angle iron having a cylindrical stud fixed to one flange of the angle iron and extending beyond and perpendicular to the plane of the other flange is fixed to the edge of a beam, column, or member to be aligned. The cylindrical stud is adapted to fit within any of the above-described uniform apertures on either end of the aligning device. Thus the attachment may be fixed to the top edge of a T-head by nails or other securing means and the stud may be inserted into an aperture on the bar while the other end of the aligning device is attached to a concrete beam form supported by the T-head. Or the attachment may be fixed to the corner edge of a column form to be aligned so that the attachment stud will engage the aperture of the plate face of the attachment head which is in alignment with the bar. A bar made of angle iron will be more rigid for the amount of metal used than other bars of solid cross-

section. Also the angle iron bar is adapted to fit a rectangular supporting member such as a wooden brace so that the effective length of the aligning device may be extended.

Referring now to the drawings in detail, the aligning device comprising a bar 10, adjusting means 11, and attachment head 12 is shown operating on the form for a concrete beam side 13 and supported by the T-head 14 through the attachment 15 in Fig. 1.

The bar 10 is preferably a length of angle iron, one flange 16 having spaced apertures 17 of uniform dimensions and the other flange 18 having apertures 19 of smaller dimensions for receiving nails, screws, bolts, or other securing means.

The adjusting means 11, such as a turnbuckle, is employed to vary the length of the aligning device and is preferably connected in alignment with and between the bar 10 and the attachment head 12.

The attachment head 12 comprises an angle plate having an aperture 20, 21 in each plate face 22, 23. The apertures 20 and 21 have the same uniform dimensions as apertures 17 in the flange 16. As a matter of practice, it has been found that an angle of approximately 135° between the plate faces 22 and 23 is most effective, although any angle may be used. It is also possible to employ an attachment head having a series of plate faces at various angles to each other so that several positions are possible for the aligning device in supporting concrete forms. The attachment head 12 may also be provided with smaller apertures 24 for receiving nails or other securing means.

The attachment 15 comprises a comparatively short section of angle iron having a cylindrical stud 25 attached flush against one of the flanges 26 and extending slightly beyond and perpendicularly to the other flange 27. The stud 25 is formed to universally fit within any of the apertures 17, 20 and 21. The flanges 26 and 27 are adapted to fit against the corner sides of any structural member having the same configuration as the inside of the attachment 15, such as a beam, column, door, or end of a wall, and are provided with means for securing the attachment to these structural members such as apertures 28 for receiving nails or other securing means.

From the above description it is apparent that the invention is adapted to quickly and simply align and support structures of various types, and in particular, concrete forms. Fig. 1 illustrates the device operating upon a beam side form 13 supported on a T-head 14. The attachment 15 is nailed or otherwise secured to the T-head near its end, where it may remain for the life of the T-head for repeated alignments or where it may be easily removed and applied to other structural members as desired. The attachment head 12 is nailed or otherwise secured to a plate 29 on the beam form 13 so that the plate 23 is flush against the plate 29. If the angle between the plates 22 and 23 is 135°, then the aligning device will extend at an angle of approximately 45° to the beam side 13, down to the T-head 14 where it is fixed to the T-head by the stud 25 registering with the appropriate aperture 17. The apertures 17 make the device adjustable for beams of different heights. For closer and more accurate adjustment, the adjusting means 11 is employed.

Figs. 3 and 4 disclose the attachment 15 secured to a column 30 where the stud 25 engages the aperture 20 of the plate 22 so that the plate is flush against the flange 27. In this modification the attachment head 12 has been rotated through 90° from its position shown in Fig. 1. The bar 10 is also in an alternative position as being secured to a beam 31 to extend the effective length of the aligning device. Thus the angle-shaped cross-section of the bar 10 serves as a bracket as well as increasing the strength and rigidity of the aligning device.

Because the bar **10** will ordinarily be subjected to compressive forces in the alignment of concrete forms, the stud **25** preferably is firmly secured flush against plate **26** which provides an additional bearing surface to the forces transmitted from the bar **10** transversely through the stud **25**. Shearing forces will be acting through the solid portion of the stud **25** instead of through a welded joint which might be the case if stud **25** extended perpendicular from plate **27**. Bending moments will be at a minimum since flange **16** of bar **10** will be flush against plate **27** when it is attached to stud **25** through an aperture **17**. An additional reason for locating the stud **25** on plate **26** is to provide an unobstructed surface on plate **27** to allow the flange **16** when disengaged from attachment **15** for adjustment, to slide freely along plate **27** without damaging member **14**.

It will be obvious to those skilled in the art that various changes may be made in the invention, without departing from the spirit and scope thereof, and therefore the invention is not limited by that which is shown in the drawings and described in the specification, but only as indicated in the appended claims.

What is claimed is:

1. A device for adjusting two structural members relative to each other comprising a bar of angle iron having uniform apertures spaced along one flange of the bar; an attachment head comprising a plate having a first plane face in line with the longitudinal axis of the bar and a second plane face forming a dihedral angle with the first face greater than 90° and less than 180°, each face having apertures therein for attachment to a first structural member, said first face having an aperture therein of the same size as the apertures in the bar; means for adjustably connecting the bar with the attachment head; an attachment comprising a section of angle iron for attachment to a second structural member and a stud attached flush against the outside of one flange of the attachment and extending beyond and normal to the other flange, said stud being adapted to fit within any of said apertures in the bar.

2. A device for adjusting two structural members relative to each other comprising a bar of angle iron having uniform apertures spaced along one flange of the bar; an attachment head comprising a plate having a first plane face in line with the longitudinal axis of the bar and a second plane face forming a dihedral angle with the first face greater than 90° and less than 180°, each face having apertures therein, said first face having an aperture therein of the same size as the apertures in the bar; means for adjustably connecting the bar with the attachment head; an attachment comprising a section of angle iron for attachment to a first structural member and a stud attached flush against the outside of one flange of the attachment and extending beyond and normal to the other flange, said stud being adapted to fit within an aperture in said first face of the attachment head; and means for attachment of said bar to a second structural member.

References Cited in the file of this patent

UNITED STATES PATENTS

168,630	Fleming	Oct. 11, 1875
467,589	Finegan	Jan. 26, 1892
835,835	Schumacher	Nov. 13, 1906
1,231,462	Tutwiler	June 26, 1917
1,409,755	Morrow	Mar. 14, 1922
2,411,900	Seward	Dec. 3, 1946
2,498,816	Ness	Feb. 28, 1950
2,532,168	Jabaubek	Nov. 28, 1950
2,684,824	Hillberg	July 27, 1954
2,725,210	Swartz	Nov. 29, 1955
2,777,660	Albrecht	Jan. 15, 1957