Sept. 2, 1924. 1,507,046

B. F. COCKERELL ET AL

ADJUSTABLE FORM

Filed Oct. 8, 1923

Fig. 1.

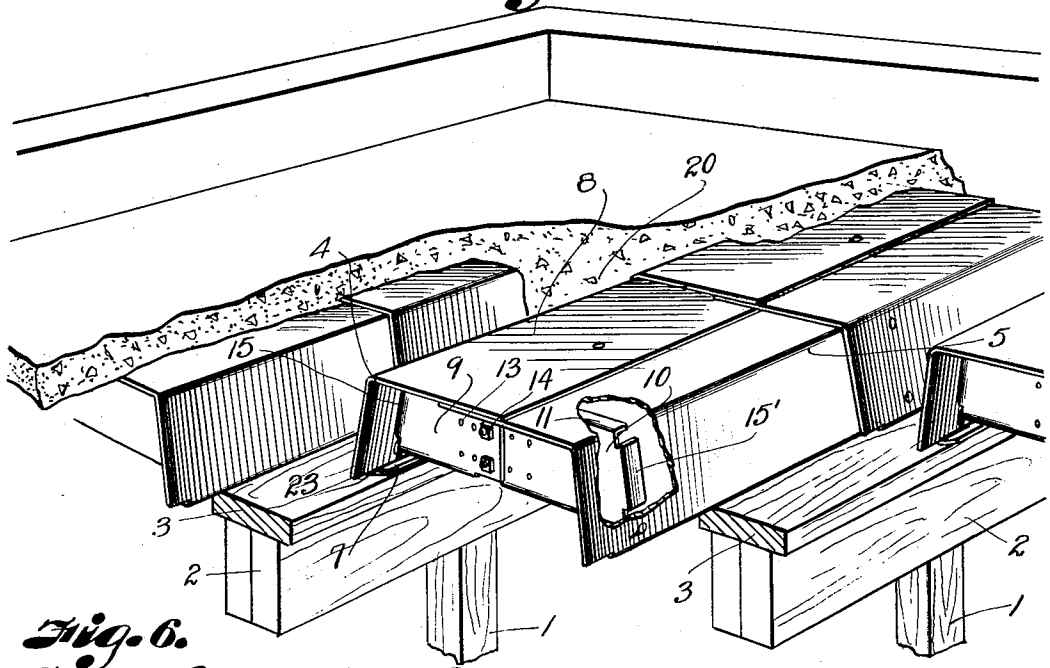


Fig. 6.

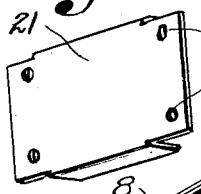


Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

INVENTORS
Benjamin F. Cockerell.
BY Albert Comer.
ATTORNEY

Patented Sept. 2, 1924. 1,507,046

UNITED STATES PATENT OFFICE.

BENJAMIN F. COCKERELL AND ALBERT COMER, OF KANSAS CITY, MISSOURI.

ADJUSTABLE FORM.

Application filed October 8, 1923. Serial No. 667,207.

To all whom it may concern:

Be it known that we, BENJAMIN F. COCKERELL and ALBERT COMER, citizens of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Adjustable Forms; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

This invention relates to an adjustable form for concrete structures and particularly to a form support for floors and ceilings of a building. The primary object of the invention is to provide a simple inexpensive, durable structural form which can be set up and taken down in a convenient manner. The form is so constructed that it can stand rough usages to which devices of this kind are subjected, and we preferably construct the form of sheet metal, because sheet metal may be easily shaped and it possesses sufficient strength to meet the requirements encountered. The form can be set up on the soffit boards which are supported by the beams and the shoring and after the concrete has partly set the forms can be taken down without removing the soffit boards, the beams or the shoring. The soffit boards, beams and shoring are left in place to support the concrete structure while the forms can be removed to be used elsewhere.

The novel construction of our invention will be apparent by reference to the following description in connection with the accompanying drawings, in which—

Fig. 1 is a perspective view of part of a concrete structure set up in accordance with our invention, parts being broken away to better illustrate other parts.

Fig. 2 is an enlarged bottom perspective view of part of a form constructed in accordance with our invention.

Fig. 3 is a fragmentary sectional view through one of the main members of the form showing a brace end secured thereto.

Fig. 4 is an end view of one of the members of the form.

Fig. 5 is a fragmentary perspective view of one end of a brace, and

Fig. 6 is a detailed perspective view of a splice plate.

Referring now to the drawings by numerals of reference.

1 designates the shoring, 2 the beams and 3 the soffit boards, all of which are old and well known. Supported on the soffit boards in spaced relation are the forms, each form is illustrated as comprising two angular sheets 4 and 5, having substantially upright wings and substantially horizontal wings. The upright wings 6 preferably having inturned horizontal flanges 7 which rest upon the soffit boards and which tend to brace the form members longitudinally. The upper wings 8 of the members 4 and 5 preferably overlap one another, but in some cases their edges may be spaced apart and inserts in the form of sheets or strips of metal may be used to rest upon the transverse braces which hold the members 4 and 5 together. The transverse braces preferably consist of sheets or plates 9 and 10, each of which is provided with a right angularly extended lip 11 and 12 and while we recommend the use of the flanges 11 and 12, it is obvious they may be eliminated if desired. The members 9 and 10 are provided near their inner ends with bolt openings 13 to receive securing bolts 14 whereby the plates 9 and 10 may be fastened together. The outer edges of the members 9 and 10 are provided with right angularly projecting tongues 15 and 15′ which engage loops formed by the upright walls of the members 4 and 5 and the bars 16 which are fastened to the side walls of the members 4 and 5 by fastening devices 17 the bars 16 being held in spaced relation with the walls of the members 4 and 5 by spacing washers 18 and 19. It will be noticed that the tongues 15 and 15′ are of slightly less width than the plates 9 and 10 so that the tongues 15 and 15′ may engage in the space between the bars 16 and the side walls 4 and 5.

When it is desired to construct the floor and the ceiling the shoring beams and soffit boards will be put in place and the forms will be set up as indicated in Fig. 1 preparatory to pouring the concrete. When the concrete is poured the beam portions 20 will rest upon the soffit boards because the forms will be spaced relation to provide a space slightly less than the widths of the soffit boards.

After the concrete has dried somewhat the forms can be knocked down or dis-assembled, so that the plates 4 and 5 and their co-operating braces can be removed. To dis-assemble the forms, the transverse brace formed by the plates 9 and 10 will be knocked out permitting the members 4 and 5 to collapse. The floor or ceiling however will still be supported upon the soffit boards. By leaving the shoring beams and soffit boards in place the ceiling and flooring can dry out without liability of sagging or distortion. In some instances the distances between soffit boards will be greater than others, so we have provided a splice plate 21 provided with openings 22 through which the fastening device 14 can be introduced to fasten the splice plate to the respective ends of the members 9 and 10, and if there is a gap between the edges of the members 4 and 5, an insert plate or strip may be placed between the edges of the members 4 and 5.

Attention is called to the fact that the form members 4 and 5 are so constructed that the inturned flanges 7 terminate short of the ends to provide extending overlapping ends 23 so that one form can overlap the other form, the extent of overlapping being limited by the edges of the inturned flanges 7 whose ends abut, and in this connection, attention is called to the fact that the inturned flanges serve a dual purpose, in that they serve as stops to limit the overlapping engagement of the form members and they also constitute re-enforcing members to strengthen the substantially upright portions 6 of the form members 4 and 5, thereby extending considerable rigidity to the form members.

It will also be apparent that the end 23 overlaps similar ends on longitudinally complementary angle plates to make the form structure continuous.

It will be apparent from the foregoing that a form structure made in accordance with our invention is simple, durable and efficient and easy to set up and take down.

What we claim and desire to secure by Letters-Patent is:

1. An adjustable form for concrete structures comprising two members, each consisting of an angle plate, each plate having an upright portion and a horizontal portion, the upright portions having stiffening members at their lower edges to rest upon soffit boards and pairs of brace members connecting the first two members, one brace member of each pair engaging an upright portion of one of the first two members, the inner ends of the brace members of each pair overlapping one another and means for adjustably connecting the brace members.

2. An adjustable form for concrete structures comprising two members, each consisting of an angle plate, each plate having an upright portion and a horizontal portion, the upright portions having stiffening members at their lower edges consisting of inturned flanges and pairs of bracing plates having their outer end portions engaging the upright members and their inner end portions adjustably connected together, the bracing plates having lateral stiffening flanges.

3. An adjustable form for concrete structures comprising two members, each consisting of an angle plate, each having an upright portion and a horizontal portion, the upright portions of the two members having inturned flanges at their lower edges, the flanges terminating short of the ends of the members on which they are located, and adjustable bracing plates arranged in pairs between the upright portions, the outer ends of the bracing plates engaging complementary members on the upright portions, the inner ends of the bracing plates being adjustably secured together.

4. An adjustable form comprising two angle plates, each having an upright portion and a horizontal portion, the upright portions having brace engaging bars secured in spaced relation thereto and brace members having right angular tongues on their respective ends for engaging the bars.

5. An adjustable form comprising two angle plates, each having an upright portion and a horizontal portion, the upright portions having brace engaging bars secured in spaced relation thereto and brace members having right angular tongues on their respective ends for engaging the bars, said brace members being adjustably secured together.

6. An adjustable form comprising two angle plates, each having an upright portion and a horizontal portion, the upright portions having brace engaging bars secured in spaced relation thereto and brace members having right angular tongues on their respective ends for engaging the bars, said brace members being adjustably secured together in overlapping relation.

7. An adjustable form for concrete structures comprising two angle plates, each having an upright portion and a horizontal portion and transverse brace plates, vertically arranged between the two angle plates, the outer ends of the brace plates having right angular flanges engaging parts on the upright portions and means for fastening the two plates together.

8. An adjustable form comprising two angle plates, each having an upright portion and a horizontal portion and transverse brace members for securing the angle plates together, the brace members comprising two main plates and means for fastening the two main plates together, in combination with a splice plate to connect the ends of the main plates.

9. An adjustable form comprising two angle plates having re-enforcing flanges at one edge of each plate, the opposite edges of the channel plates overlapping, bars connected to but spaced from the angle plates and braces connecting the angle plates, each brace comprising channel members having overlapping ends, means for securing the overlapping ends together and right angularly projecting tongues on the channel plates to engage the bars on the angle plates.

10. A form for concrete structures comprising two members, each consisting of an angle plate, a flanged brace member removably engaging each of the first two members, the flange brace members being arranged in pairs and means for removably connecting the inner ends of complementary brace members in adjustable relation.

In testimony whereof we affix our signatures.

BENJAMIN F. COCKERELL.
ALBERT COMER.