June 3, 1930. E. B. SELWAY 1,761,055

ADJUSTABLE METALLIC FORM FOR CONCRETE WALLS

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FIG. 1.

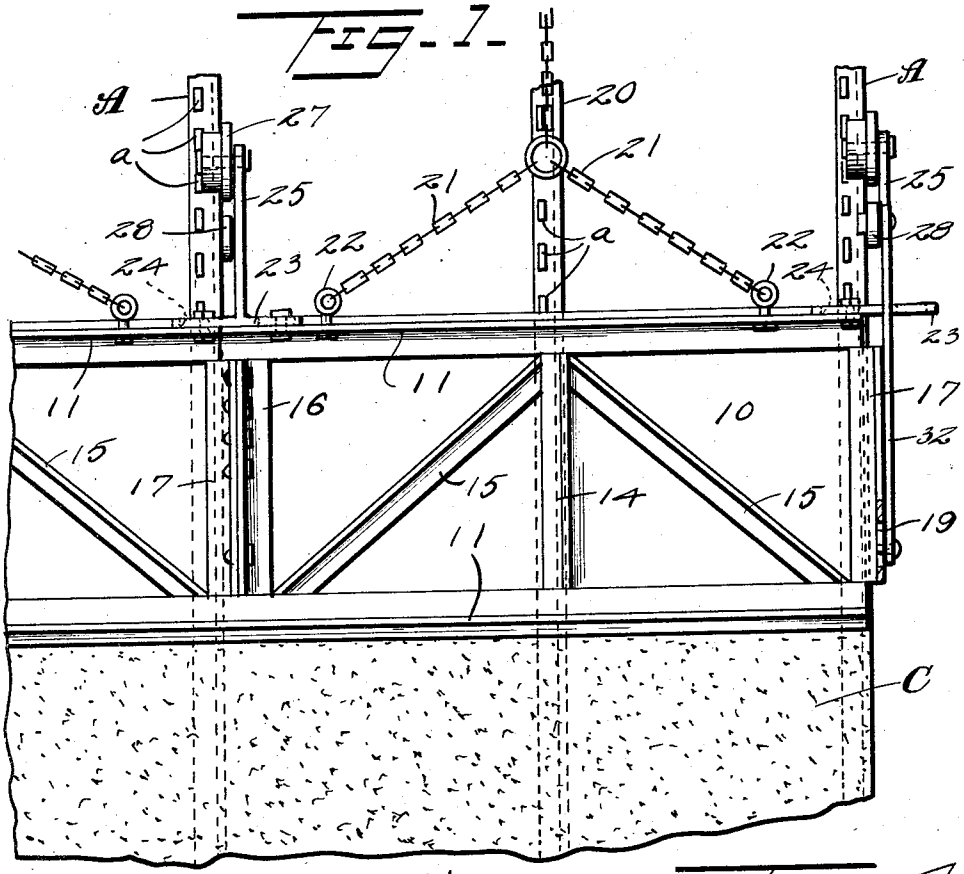

FIG. 4.

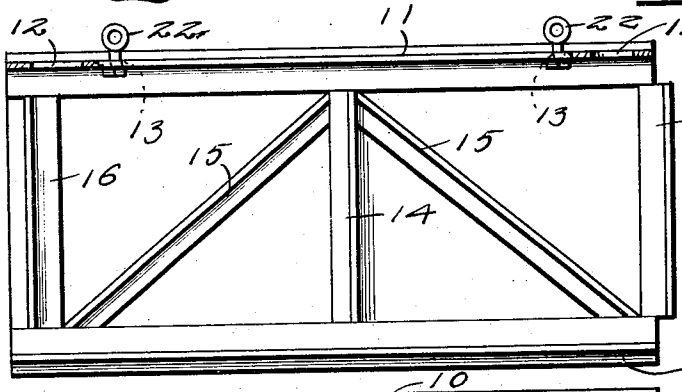

FIG. 5.

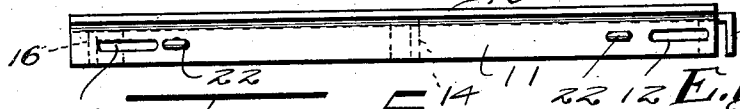

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Fig. 2.

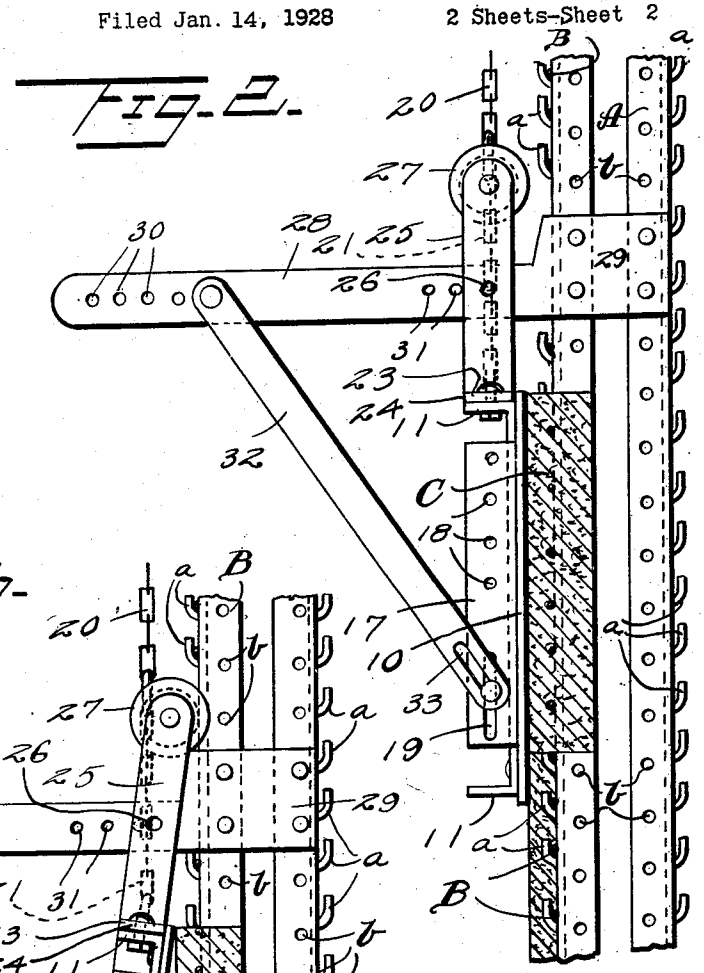
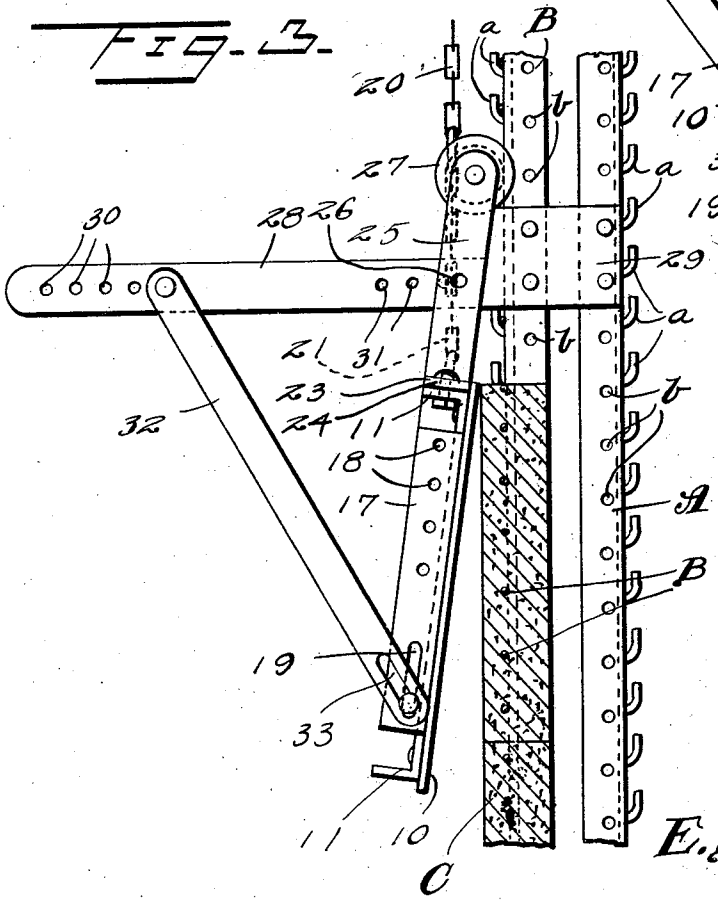


Fig. 3.



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Patented June 3, 1930 1,761,055

UNITED STATES PATENT OFFICE

EDWARD B. SELWAY, OF LEETSDALE, PENNSYLVANIA

ADJUSTABLE METALLIC FORM FOR CONCRETE WALLS

Application filed January 14, 1928. Serial No. 246,858.

This invention relates to forms for casting reinforced concrete walls and, while the form may be used in other connections, it is particularly designed to be used in connection with the steel studding which forms the subject-matter of my application for patent, Serial #235,005, filed on the 22nd day of November, 1927.

A further object is to provide a form which may be used either for forming a concrete wall surface upon the steel studding referred to and the reinforcing wires carried thereby or may be used, for instance, in connection with the form shown in my patent granted on December 6, 1927, #1,652,056, for the formation of concrete walls.

A more specific object of the invention is to provide a form which is light, which is simple in structure, which is made of metal and thus will do away with the ordinary wood forms now in use, and which is so constructed as to permit the ready removal of the form after the concrete has set.

A further object is to provide a form unit of this character which is adapted to be connected to other units and to be lifted step by step as the work progresses, and which is so constructed that rollers are provided adapted to bear against the steel studding or other studding of the wall and rolled thereagainst as the form is lifted.

Other objects have to do with the details of construction and arrangement of parts as will appear more fully hereinafter.

My invention is illustrated in the accompanying drawings, wherein:—

Figure 1 is a front elevation of a metallic form constructed in accordance with my invention;

Figure 2 is a side elevation of the form, the studding being shown in elevation and the concrete partly in section;

Figure 3 is a like view to Figure 2 but showing the form lifted off the partially set concrete;

Figure 4 is a front elevation of one of the forms by itself;

Figure 5 is a top plan view thereof.

Referring to these drawings, it will be seen that each unit of my improved form consists of the sheet metal body, designated generally 10, having any desired length and width. Attached to the upper and lower margins of the sheet metal body or plate are the angle irons 11, the outwardly projecting flange of the upper angle iron being provided with the slots 12 and inward of these slots with the holes 13. The sheet metal plate is further braced by medially disposed, downwardly extending angle irons 14 and by the diagonally extending angle irons 15. Attached to the lateral margins of the plate are the angle irons 16 and 17. It is to be noted that the angle irons 11 extend at both ends to the edge of the plate and that the angle iron 17 projects beyond the plate. Both the angle irons 16 and 17 have outwardly projecting flanges formed with a vertical series of bolt holes 18 and at the lower margin of this outwardly projecting flange is formed the slot 19.

Designed for supporting each unit is a chain 20 with the downwardly divergent chains 21 which extend to the eye-bolts 22, these eye-bolts extending through the openings 13 in the upper flange of the unit. The cables, chains or other flexible connections 20 may be connected to any suitable hoisting means. Attached to the upper angle iron 11 are T-shaped irons 23. These irons have a base 24 and a vertical shank 25 formed with an aperture 26 intermediate the ends of the shank. The upper end of the shank carries a flanged roller 27 which is adapted to bear against the vertical angle irons of the steel studs of the building.

Coacting with the shanks 25 of the members 23 are the two outwardly projecting arms 28, each of these arms or bars being of metal and having a base portion 29 formed with four bolt holes and having the outwardly projecting portion of the arm formed adjacent its end with a plurality of apertures 30 and adjacent the base with a plurality of apertures 31. A bolt may be passed through the hole 26 in the shank 25 of an iron 23 and through one of the apertures 31, this bolt acting as a pivot bolt and also connecting the form proper to the outwardly projecting arm on that side. A bolt passing through

any one of the apertures 30 connects the arm 28 to a downwardly extending brace 32, the lower end of this brace being slotted, as at 33. A bolt, pin or like connection may pass through this slot 33 and through the slot 19 of the adjacent angle iron 17.

It will be seen that the brace 32 may be connected in any one of the apertures 30 and that the lower end of the brace may be adjusted up or down with relation to the angle irons 17. At the same time the shanks 25 which support the rollers may be each adjusted so as to bring its aperture 26 into correspondence with any one of the apertures 31. Thus the form proper which consists of the sheet metal plate 10 and its bracing angle irons may be disposed nearer to or further from the studding upon which the concrete is to be cast.

As before stated, this device is designed to be used in connection with the steel studding which forms the subject-matter of my application for patent before referred to. Each stud consists of a pair of angle irons, designated A, the flanges of which are connected at intervals by cross pieces, the outer flanges of the studs being formed with outwardly projecting tongues *a* designed to support the horizontally extending reinforcing wires or like members B.

In the use of the device, the arms 28 are fastened as, for instance, to every other stud. These may be fastened by pins or bolts passing through the bolt apertures *b* in the studding. The shanks of members 23 are then pinned or bolted to the arms 28, the bolts passing through any one of the apertures 31, and then the brace 32 is attached and so adjusted that it will hold the form proper 10 in parallel relation to the studding. Concrete C is then filled in in the usual manner, as shown in Figure 2. When this concrete has set, the form may be lifted. At this time the lower end of the form is shifted outward, as shown in Figure 3, thus bringing the rollers 27 against the outwardly projecting flanges of the angle irons A and the form may be then pulled up for the next course, and so on. It will be understood that any number of these forms may be attached end to end by bolts passing through the holes 18 and thus forms extending across an entire wall may be thus connected and these forms raised together to mold each course, and after the concrete has partly set and the forms are ready for moving, then the forms may be shifted outward, as heretofore explained, so that the wheels bear against the studding and then the form raised. Thus the form will not scrape against or otherwise disturb the partially set concrete. This form may be so adjusted as to regulate the thickness of the wall to be cast.

My improved form does away with the use of wood forms and the bracing now in common use where reinforced concrete walls are to be cast. Each section or form is relatively light, thus permitting them to be raised or lowered with a low operating cost. Obviously, the forms or sections may be made of various sizes and each form will have a range of adjustment permitting its size to be varied within a certain range. It will be seen that it is only necessary, after a course has become partially set, for the operator to remove the bolts holding the bases of the arms 28 upon the studding and then the forms may be hoisted by means of the cables or other hoisting connections 20 until they have arrived at the new position and then the arms 28 are again attached at their bases to the studding.

Attention is called to the fact that the form formed of the plate 10 and the angle irons 11, 14, 15, 16 and 17 is adjustable outward by shifting the bolt 26 into any one of the apertures 31 so as to build a wall from two inches thick to any thickness desired within the range of the apparatus, and that when the forms are placed together side by side, the angle irons 17 of one plate overlie the adjacent plate 10 and are bolted to angle iron 16 of the next adjacent form. Thus by using two or more forms together at the splice, as shown in Figure 1, a continuous form is made around the building.

Obviously the structure may be modified in minor ways without departing from the spirit of the invention as defined in the appended claims.

I claim:—

1. A metal wall form of the character described comprising a form proper consisting of a metal sheet, angle irons attached to the upper and lower margins of the sheet, the upper angle iron being formed with slots at its ends, lateral angle irons attached to the sheet and having a vertical row of perforations, means connected to the upper angle iron whereby the form may be raised or lowered, and T-shaped members having bolts passing through the slots of the upper angle irons, the members being formed to provide a base projecting out beyond the ends of the angle irons, and an upwardly extending shank, each shank carrying a roller.

2. An adjustable wall form of the character described comprising a form proper consisting of a metal sheet, upper and lower angle irons attached to the sheet, lateral angle irons attached to the sheet and having outwardly projecting, perforated flanges whereby two forms may be connected to each other, the lower end of each of the outwardly projecting flanges being formed with a vertical slot, T-shaped members attached to the ends of the upper angle iron and having bases projecting laterally beyond the angle iron for attachment to the upper angle iron of adjacent forms, each of said T-shaped members

carrying a roller at its upper end, arms having means whereby they may be detachably engaged with studding and project outward therefrom, means adjustably connecting the shanks of the T-shaped members to said arms adjacent the base thereof, said means constituting pivots for the T-shaped members, the outer ends of said arms having a longitudinal series of perforations, a brace having a bolt extending through one of the perforations of each arm, the lower end of the brace being slotted, and a bolt passing through the slotted end of the brace and through the slotted lower end of the corresponding lateral angle iron.

3. An adjustable sectional wall form comprising a form proper consisting of a sheet of metal having upper and lower marginal angle irons and lateral angle irons, the lateral angle irons being perforated for the passage of bolts whereby a plurality of forms may be placed side by side and connected to each other, the upper angle iron being apertured, hoisting means connected to the upper angle iron, arms formed for detachable engagement with studding and to project out therefrom, braces adjustably connecting the lateral angle irons at the end of the form with said arms, members mounted upon the upper flanges of the angle irons and extending above the same and carrying rollers, said members being detachably bolted to said arms, the bolt of said members constituting a pivot permitting the forms to be swung outward upon the arms and the rollers brought in contact with studding.

4. A wall forming device comprising a pair of arms adapted to be attached to wall studding and extend out therefrom, a wall form proper having upwardly extending members pivoted to said arms for outward swinging movement, and braces connected to the outer ends of the arms and to the lower portion of the wall form and normally holding the wall form in a position at right angles to the arms.

5. A wall forming device comprising a pair of arms adapted to be attached to wall studding and extend out therefrom, a wall form proper having upwardly extending members pivoted to said arms for outward swinging movement, and braces connected to the outer ends of the arms and to the lower portion of the wall form and normally holding the wall form in a position at right angles to the arms, the wall forms being provided with lateral flanges vertically slotted at their lower ends, said braces being formed with slots at their lower ends whereby the braces may be adjustably connected to the lower ends of the lateral flanges of the wall forms.

6. A wall forming device comprising a pair of arms adapted to be attached to wall studding and extend out therefrom, a wall form proper having upwardly extending members pivoted to said arms for outward swinging movement, and braces connected to the outer ends of the arms and to the lower portions of the wall form and normally holding the wall form in a position at right angles to the arms, the wall forms being provided with lateral flanges vertically slotted at their lower ends, said braces being formed with slots at their lower ends whereby the braces may be adjustably connected to the lower ends of the lateral flanges of the wall forms, and spaced supporting members for the wall forms extending above their point of pivotal connection to the arms and being provided with rollers.

7. A wall forming device comprising a pair of arms adapted to be attached to wall studding and extend out therefrom, a wall form having upwardly extending members adjustably pivoted to said arms for outward swinging movement and adjustable nearer to or further from the arms, and braces connected to the outer ends of the arms and to the lower portion of the wall form and adjustable at their outer ends upon said arms nearer to or further from the wall, said braces holding the wall form in a position at right angles to the arms and parallel to the face of the wall to be made.

8. A wall forming device comprising arms adapted at their inner end to be detachably engaged with wall studding and extending out therefrom, a wall form having upwardly extending members pivoted to said arms for outward swinging movement and having means whereby the wall form and the arms when detached from the studding may be raised or lowered, and detachable means for holding the wall forms in an approximately vertical position.

9. A wall forming device comprising a plurality of arms adapted at their inner ends to be detachably engaged with wall studding and extending out therefrom, a wall form having upward extending members pivoted intermediate their ends to said arms to permit the form to be swung outward, means attached to said members whereby the form and the arms when detached from the studding may be raised or lowered, detachable means for holding the wall formed in a vertical position, and rollers carried upon the upper end of said upwardly extending members and above said arms and adapted to contact with the studding and roll thereon when the wall forms have been swung outward.

10. A wall forming device comprising a plurality of arms adapted at their inner ends to be detachably engaged with wall studding and extend out therefrom, a wall form disposed entirely below engaged with and supported by said arms when the arms are attached to the studding, the arms extending inward beyond the wall forms whereby they may be attached to the studding above the

concrete being poured and means whereby the arms and the wall forms may be raised or lowered as a unit when the arms have been detached from the studding.

11. A wall forming device comprising arms adapted at their inner ends to be detachably engaged with wall studding and extend out therefrom, a wall form operatively connected to the arms between the ends of the arms whereby said form may be disposed in a plane adjacent the plane of the studding, the wall form being movable outward, and means connected to the form and to the arms whereby the form may be held supported in a vertical position.

12. A wall forming device comprising arms adapted at their inner ends to be detachably engaged with wall studding and extend out therefrom, a wall form operatively connected to the arms between the ends of the arms whereby said form may be disposed in a plane adjacent the plane of the studding, the wall form being movable outward, means connected to the form and to the arms whereby the form may be held supported in a vertical position, and flexible means operatively connected to the arms whereby the arms and the wall forms may be raised or lowered as a unit when the arms have been detached from the studding.

13. A wall forming device comprising a plurality of arms adapted at their inner ends to be detachably engaged with wall studding and extending outward therefrom, a wall form having upwardly extending members pivotally engaged with the arms adjacent their inner ends, said upwardly extending members extending beyond the arms and having rollers at their upper ends adapted to engage the studding when the wall forms are shifted outward from the studding, and flexible means operatively engaged with said arms and wall forms whereby the wall forms and the arms may be raised or lowered as a unit when the arms have been detached from the studding.

In testimony whereof I hereunto affix my signature.

EDWARD B. SELWAY.