April 30, 1935. H. C. RIESBOL 1,999,783

CONCRETE FLOOR FORM

Filed April 17, 1931 3 Sheets-Sheet 1

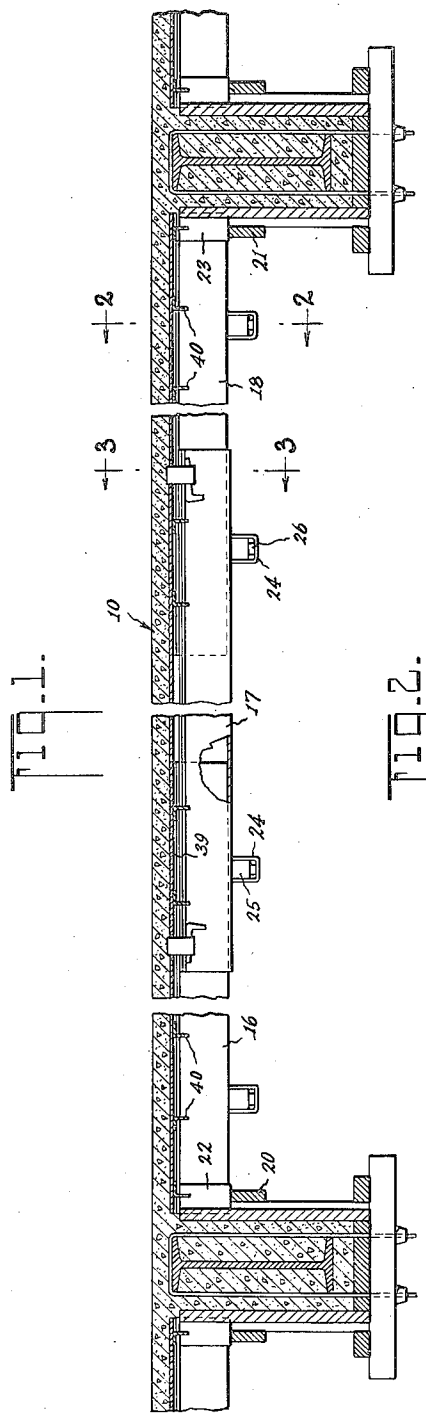


Fig. 1.

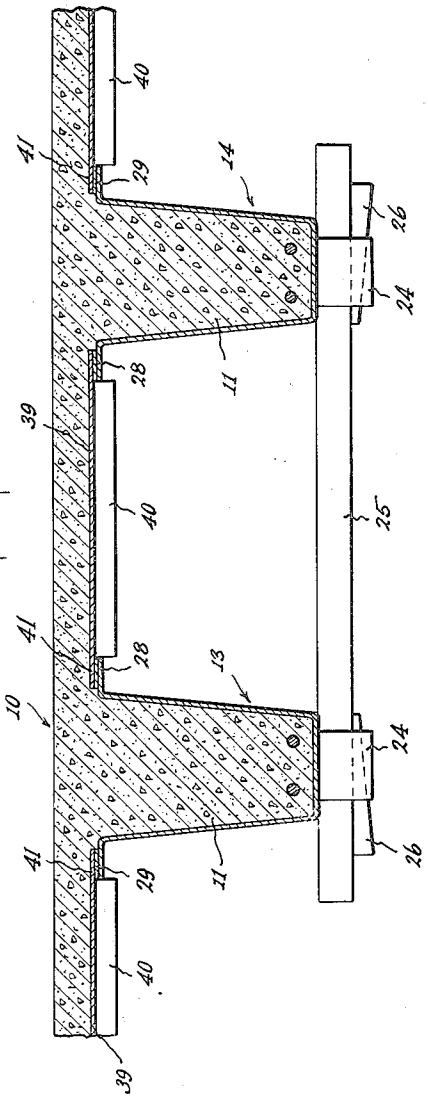


Fig. 2.

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CONCRETE FLOOR FORM

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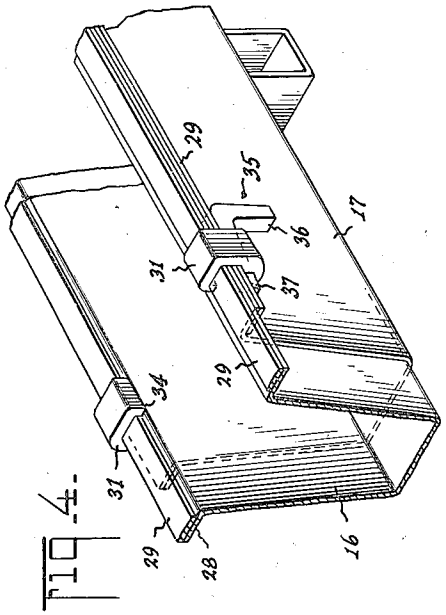


Fig. 4.

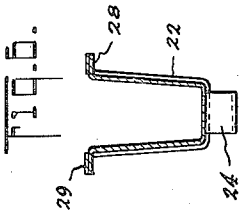


Fig. 6.

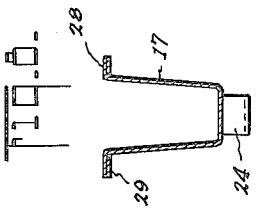


Fig. 8.

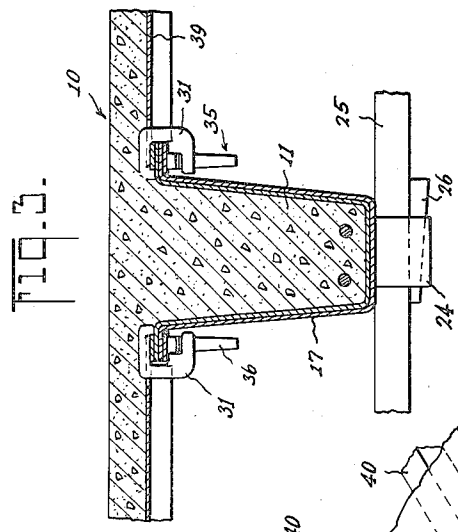


Fig. 3.

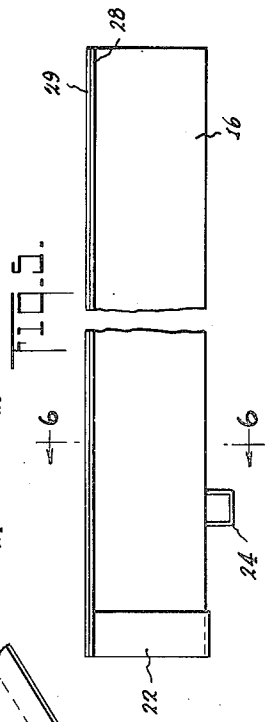


Fig. 5.

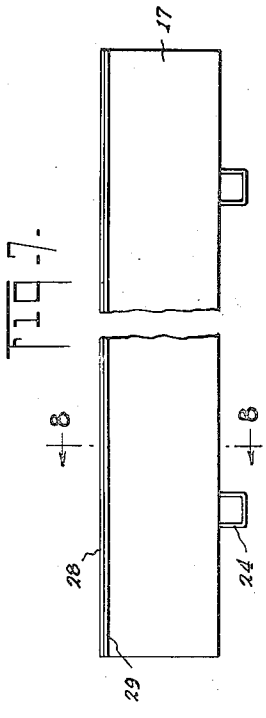


Fig. 7.

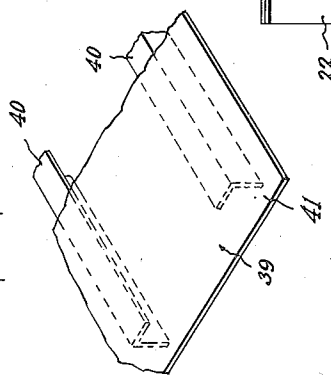


Fig. 9.

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CONCRETE FLOOR FORM

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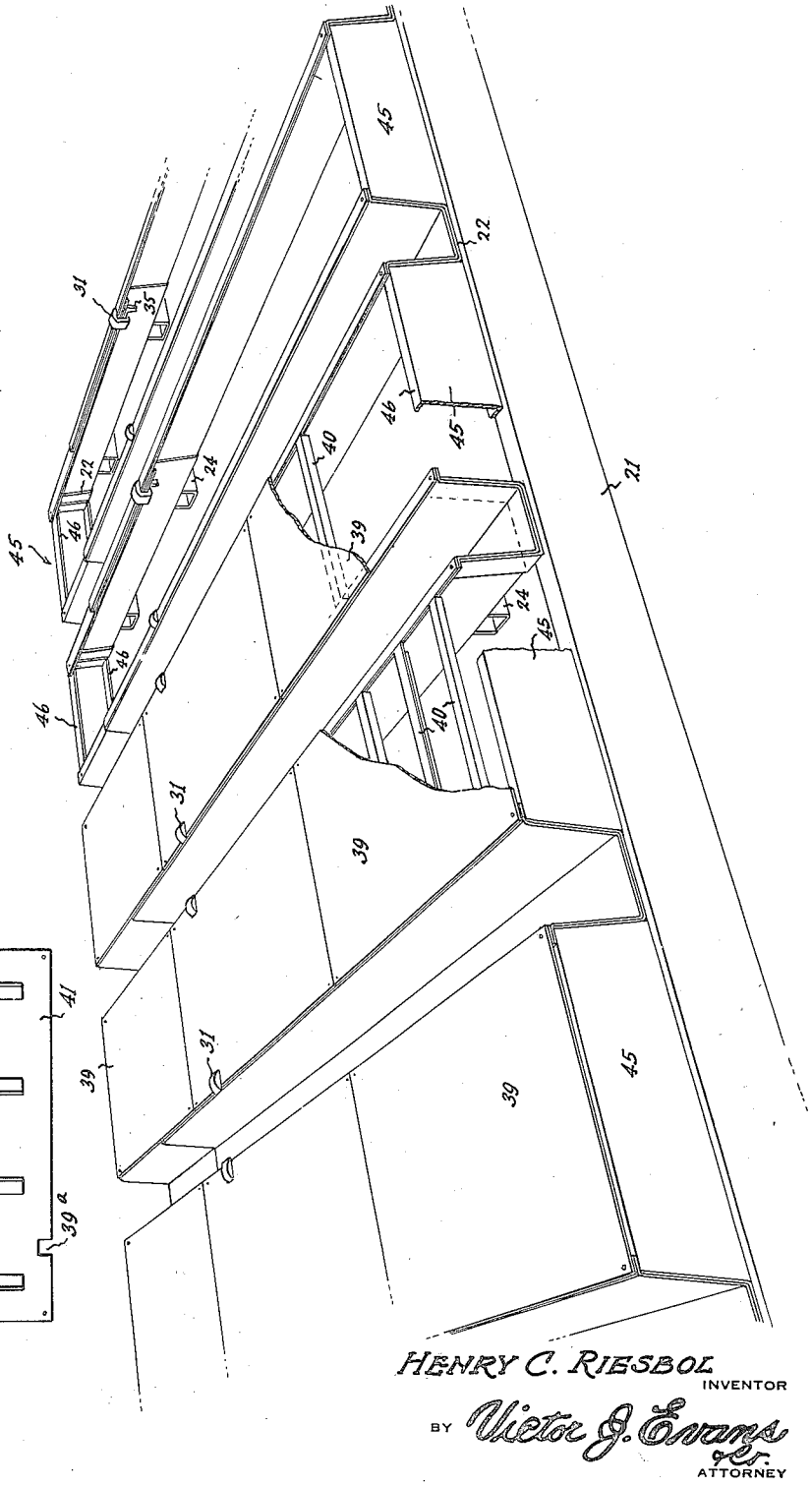


FIG. 11.

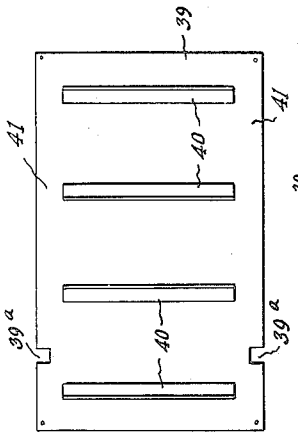


FIG. 10.

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Patented Apr. 30, 1935

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# UNITED STATES PATENT OFFICE

1,999,783

## CONCRETE FLOOR FORM

Henry C. Riesbol, New York, N. Y.

Application April 17, 1931, Serial No. 530,957

4 Claims. (Cl. 25—131.5)

This invention relates to concrete metal forms and more particularly to concrete forms for concrete joist floors.

The invention has for one of its objects the provision of a concrete form comprising channel members provided with reinforced shouldered flanges for securing C-shaped clamps thereto.

Another object of the invention is the provision of novel reinforced plate concrete forms for forming slabs adapted to cooperate with concrete forms of channel formation for the formation of joists.

A further object of the invention is the provision of novel channel forms with novel plate forms and novel arrangements of clamps and wedges coacting to interlock channel forms together as a beam.

Other objects will be appreciated by those skilled in the art upon reading the following specification.

The disclosure contained herein is an improvement on my Patent No. 1,888,181 and co-pending applications Sr. No. 362,251, filed May 11, 1929.

The invention will be fully and comprehensively understood from a consideration of the following detailed description when read in connection with the accompanying drawings which form part of the application, with the understanding, however, that the improvement is capable of extended application and is not confined to the exact showing of the drawings nor to the precise construction described and, therefore, such changes and modifications may be made therefrom as do not affect the spirit of the invention nor exceed the scope thereof as expressed in the appended claims.

In the drawings:

Fig. 1 is a vertical section through a concrete floor and showing the devices of my invention in connection therewith.

Fig. 2 is a vertical transverse section taken on line 2—2 of Fig. 1.

Fig. 3 is a vertical transverse section taken on line 3—3 of Fig. 1.

Fig. 4 is a fragmentary perspective view of overlapping channel members secured together by clamps and wedges.

Fig. 5 is a broken elevational view of an end channel member of a beam, showing a reinforcing plate at one end thereof.

Fig. 6 is a transverse section taken on line 6—6 of Fig. 5.

Fig. 7 is a broken elevational view of a channel form employed intermediate the ends of the beam comprising a plurality of channels.

Fig. 8 is a vertical section taken on line 8—8 of Fig. 7.

Fig. 9 is a fragmentary perspective view of a plate form having reinforcing members secured to the bottom thereof, such forms being employed to bridge the space between the spaced parallel beams comprising channels.

Fig. 10 is a bottom plan view of the plate form shown in Fig. 9; and

Fig. 11 is a perspective view of an assembly of forms partly broken away and certain parts uncovered.

Referring to the drawings for a more detailed description thereof, numeral 10 indicates a concrete floor having concrete beams 11 formed on the bottom thereof and integral therewith. The concrete beams 11 are formed in spaced parallel rows of metal channels, the rows being designated by the numerals 13 and 14. The rows are alike and so only one row need be described. A row of metal channels is shown in Fig. 1 as comprising three interfitting one-piece channels designated respectively by the numerals 16, 17 and 18. Each channel includes a bottom wall and flexible upstanding side walls integral therewith. The channels 16, 17 and 18 interfit and are clamped together to form the beam as shown in Fig. 1 as spanning the space between supports 20 and 21. The end channel members 16 and 18 are provided at their outer ends with reinforcing plates 22 and 23 respectively, which are welded to the channels, as shown in Figs. 5 and 6 on the outer faces thereof. It will readily be understood that the plates 22 and 23 strengthen the channel forms.

Transverse brackets 24 are secured as by welding to the bottoms of the channel forms 16, 17 and 18 of each row of channel forms. These brackets are adapted to receive members 25 extending from one row of forms to another row of forms to keep the forms rigid and in alignment. Wedges 26 cooperate with the brackets 24 to hold the members 25 tightly in the brackets, this feature being shown in Figs. 2 and 3. The channels are provided with laminated flanges which are thicker than the sides and bottoms of the channels, these flanges comprising flanges 28 integral with the channels. To form the laminated flanges flat bars 29 are welded to the flanges 28. The bars 29 are welded to the tops of the flanges 28 on the end channels 16 and 18 and to the bottoms of the flanges 28 on the intermediate channel 17.

The bars 29 are narrower than the flanges 28 for a purpose presently to be described. Adja-

cent channels overlap and these overlapping sections are clamped together by means of C-shaped clamps 31, the upper faces of the bottoms of which are sloped for a purpose presently to be described. The clamps 31 are oppositely disposed near an end of one of the channel forms where it overlaps another channel form. The clamps 31 are provided with downwardly extending vertical sections or flanges 34 which abut against the inner edges of the plates 29 of the channels 16 and 18, these plates having their inner edges set in from the inner edges of the flanges 28 to form longitudinal shoulders. The inner edges of the plates 29 thus function to hold the clamps 31 securely in place. L-shaped wedges 35 are disposed in the bottoms of the clamps 31 to cooperate with the clamp in clamping together the overlapping sections of the channel forms. Each wedge 35 comprises a vertical portion 36 and horizontal portion 37. It will now be seen that the sloping bottoms of the clamps 31 are thus formed to accommodate the horizontal tapered portions 37 of the wedges 35.

Between the rows of channel forms are disposed plate forms which abut and overlap the flanges of the channels, one of these forms being fragmentarily shown in perspective in Fig. 9 and in bottom plan in Fig. 10 as comprising a flat plate 39 to the underside of which are secured L-shaped reinforcing members 40 which are parallel and spaced apart and are shorter than the width of the plate to provide marginal portions 41 which lie on the laminated flanges of the channels as clearly shown in Figs. 2 and 11, while the reinforcing members 40 have their ends tightly abutting against the outer edges of the laminated flanges of the channel forms. The plates 39 at the clamps are notched at 39a to accommodate the clamps 31. The reinforcing members 40 function to hold the plate forms in position between the metal channel members and hold the flexible side walls thereof in spaced and braced rigid position. End plates 45 shown in Fig. 11 are disposed between and secured to the channel beams at the ends thereof and serve to confine the poured concrete within the forms. These plates, as shown, are provided with inwardly extending flanges 46 at the tops, sides and bottoms.

It will readily be appreciated that the structures described function in a manner to fulfill the objects of the invention.

From the foregoing description, it will be seen that the channels are self supporting between their outer end supports, which supports may be the wood forms for girders 20, 21, as shown in Figure 1 of the drawings. For example, should it be desired to produce a sixteen foot floor span with a ten inch deep joist, the sheet metal used in the form is generally not more than no. 14 gauge metal, the slab form plates and their reinforcing cleats being substantially the same thickness of material. To erect the forms for any span between ten and sixteen feet, all that is required is to arrange two channels of nine foot length with the end of one telescoping the end of the other to the required length desired. In the event that a fifteen foot length mold is desired, it is only necessary to lap the end of one channel into the end of the other for a distance of three feet, and place the C-clamps over each overlapping flange of the channels near the end of the inner end of the outside channel. After so positioning the clamps over the overlapped flanges of the channels, the wedges 35 are inserted between each flange of the outside channel and the lower jaw of each C-clamp. With the channels thus connected together, the same may be lifted as a unit into mold position with their outer ends resting on the spaced supports which as above stated may be the wood forms for girders.

After placing the channel forms in position and suitably spacing the same, the end of the channel forms may be fastened to the supports with nails or other like fastening elements. The horizontal beams 25 are then placed in the brackets 24 to span the space between pairs of spaced channels as shown in Figure 2 of the drawings. Wedges 26 are inserted in the brackets to hold the ends of the horizontal beams 25 tightly in position. The slab form plates 39 are next placed in position between adjoining spaced pairs of channels so that the ends of the plates are supported upon the flanges of the channels with the ends of the cleats 40 in abutting engagement with said flanges. Plates 39 provided with the notches are placed relative to the C-clamps, so that the notches accommodate said C-clamps, thus the plates will lie flat upon their supporting flanges.

After the forms have thus been erected, the concrete is poured, and after same is set, the forms may be quickly and easily taken down. In order to remove the forms, the channel supports are first taken down, and the wedges 26 are pulled out and the beams 25 taken from the brackets 24. The wedges 35 are next removed from the C-clamps and the clamps removed from the overlapped flanges of the channels, or if desired, the channels may be taken down as a unit with the clamps in clamping engagement with the over-lapped flanges of the channels. By removing the channels as a unit, the same may be employed for molding the joist of the same length on the next floor above to be formed without necessitating the adjustment of the channel forms. After the channels on a joist have been removed, a row of slab form plates 39 are taken down, after which the operation is repeated, that is, another row of channels are removed and then another row of plates until the entire form structure has been separated from the molded structure.

While I have shown and described what I deem to be the most practical embodiments of my invention, I wish it to be understood that such changes as come within the scope of the appended claims may be resorted to if desired.

What is claimed as new is:

1. A longitudinally adjustable concrete building form comprising substantially U-shape one piece channels formed with outwardly horizontally extending flanges, said channels being adapted for assembly into a self-supporting beam structure in which the end of one channel is telescopically lapped in the adjacent end of the next, shoulders provided on the flanges of the inner lapping channels and extending the length thereof, locking means engaged with the top and bottom flanges of the telescoped portions of the channels and comprising C-clamps engaging behind the shoulders on the top face of the flanges of one channel and beneath the bottom of the flanges of the adjacent lapped channel, and wedges inserted through the C-clamps and bearing against the flanges of the last mentioned channel.

2. In an adjustable self supporting building form for concrete joist construction, a pair of telescoping overlapping substantially U-shape channel members, each channel member being provided with opposed horizontal outwardly extending flanges at the top of its sides, longitudi-

nal inwardly facing shoulders provided on the top faces of the opposed flanges of the upper lapping channel member, C-shaped clamps removably fitting upon the overlapped flanges of said channel members, one of the ends of said C-shaped clamps terminating in a vertical downwardly extending flange, the downwardly extending flanges of said C-shaped clamps engaging behind said shoulders, and wedge members seated between the bottom of said C-shaped clamps and the underside of the horizontal flanges of the lower lapped channel member for rigidly wedging the lapped end of the lower channel member against the upper channel member.

3. In a metal self supporting concrete joist floor building form, two or more spaced parallel substantially U-shaped metal channels supported at opposite ends, outwardly extending flanges formed integral with and at the top of the upstanding side walls of said metal channels, plates supported upon said flanges on the facing side walls of adjacent channels for bridging the space therebetween, and means on the underside of said plates engageable with said flanges for preventing transverse sliding of said plates upon the supporting flanges and for rigidly bracing the side walls of said metal channels.

4. In a self supporting concrete joist floor building form, two or more fixed spaced parallel substantially U-shaped metal channels having a bottom wall and integral upstanding side walls which are outwardly flexible at their juncture with the bottom wall, outwardly extending horizontal flanges at the top of and integral with said side walls, slab form plates supported upon said flanges on the facing side walls of adjacent channels for bridging the space therebetween, and transverse cleats provided on the underside of said slab form plates and terminating short of the longitudinal edges thereof, the ends of said transverse cleats abutting the outer edges of the flanges on which the plates are supported to brace the side walls of the U-shaped channels against outward flexing.

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