

Dec. 19 1922.

1,439,281

N. F. AMBURSEN.  
APPARATUS FOR CONSTRUCTING CONCRETE FLOORS.  
FILED SEPT. 4. 1917.

2 SHEETS-SHEET 1

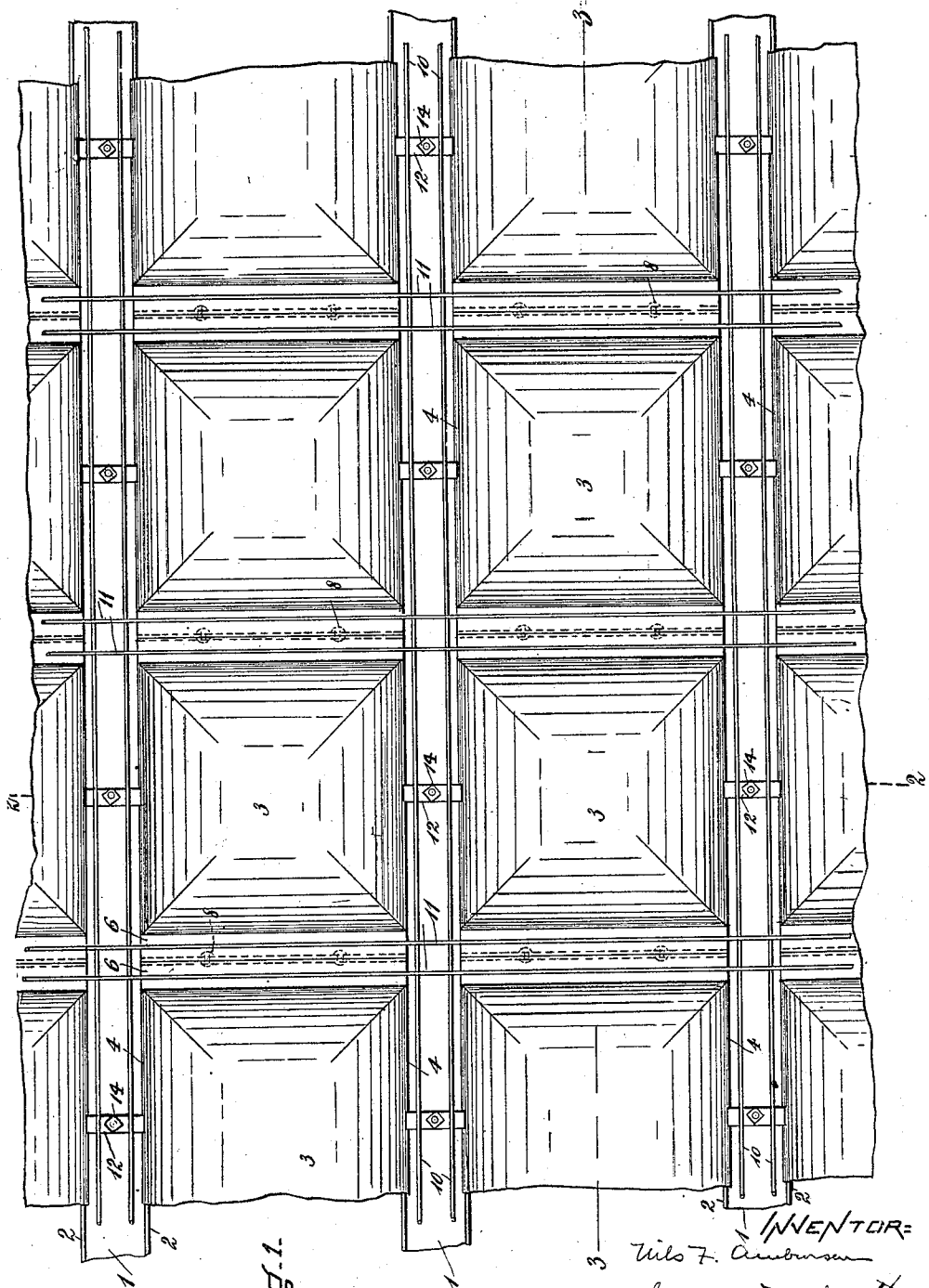


Fig. 1.

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Nils F. Ambursen  
By Geo. K. Woodworth  
HIS ATTORNEY =

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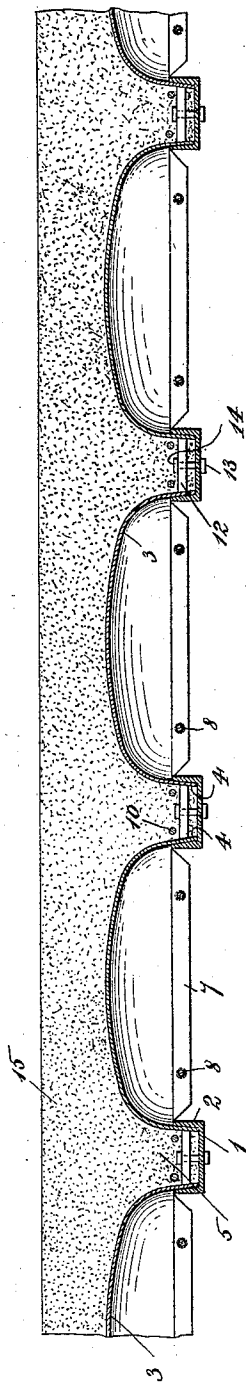


FIG. 2.

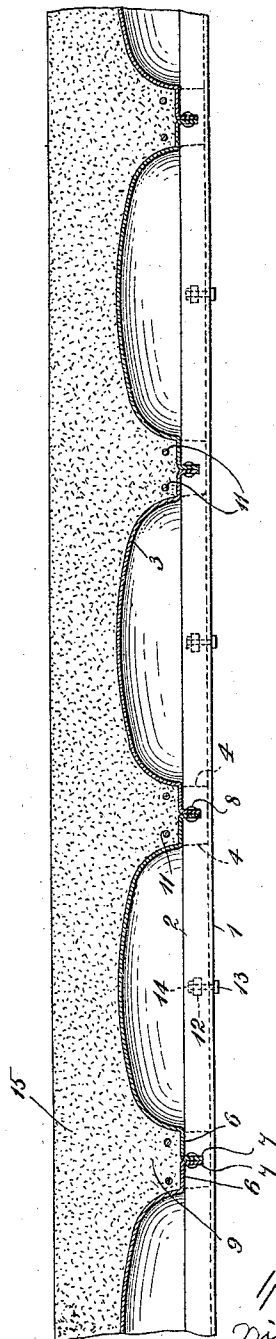


FIG. 3.

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## UNITED STATES PATENT OFFICE.

NILS FREDERICK AMBURSEN, OF NEWTON, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO AMBURSEN ENGINEERING COMPANY, A CORPORATION OF DELAWARE.

## APPARATUS FOR CONSTRUCTING CONCRETE FLOORS.

Application filed September 4, 1917. Serial No. 189,447.

*To all whom it may concern:*

Be it known that I, NILS FREDERICK AMBURSEN, a citizen of the United States, and resident of Newton, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Apparatus for Constructing Concrete Floors, of which the following is a specification.

10 The object of the present invention which is an improvement on the apparatus for constructing concrete floors described in my United States Letters Patent, No. 1216644, dated February 20, 1917, is to provide  
15 means whereby the floor beams may be reduced in depth without weakening the molded structure, thereby effecting a saving in the material required to make a floor of given strength.

20 With these and other objects in view my invention comprises laterally-spaced concrete-form support-members, which may be channel-irons as described in my Letters Patent aforesaid, and concrete forms which  
25 preferably are sheet metal domes spanning the space between each pair of support members and having the lower edges of two opposite sides resting on the webs thereof so that the support members and the sides of each  
30 pair of adjacent domes resting thereon form longitudinal beam boxes, the lower edges of the other two sides of the domes extending horizontally outwardly and being placed in contact with the corresponding edges of the  
35 adjoining forms so that the last mentioned sides of each pair of adjacent domes and the outwardly extending lower edges thereof form transverse beam boxes of substantially the same width as the longitudinal  
40 beam boxes. If desired, the outwardly extending lower edges which do not rest on the support members may terminate in down-turned lips and means may be provided for temporarily securing them to the  
45 corresponding lips of the juxtaposed forms to increase the strength of the mold.

My invention further comprises the parts and combinations of parts set forth in the appended claims.

50 An illustrative embodiment of my invention is shown in the accompanying drawings wherein—

Figure 1 is a plan view showing the forms

in position before the concrete has been poured.

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

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

In the particular drawings selected for  
60 more fully disclosing my invention, 1, 1, represent light channel-irons having flanges 2, 2, such as described in my patent above referred to, said channels being temporarily supported by false work (not shown) in the  
65 usual manner. Spanning the space between each pair of channels are integral dome-shaped concrete forms 3, 3; preferably of sheet metal, the lower edges 4, 4 of two opposite sides of each dome resting upon  
70 the webs of two adjacent channels to form the longitudinal beam-boxes 5, the said sides being plane and diverging downwardly to facilitate the removal of the form after the concrete has hardened. The lower edges of  
75 the other two sides of each dome extend horizontally outwardly and are placed in contact with the corresponding edges of the adjoining domes, as shown at 6, 6, so that the sides of each pair of adjacent domes  
80 and said outwardly extending lower edges thereof form transverse beam boxes 9, 9 of substantially the same width as the longitudinal beam boxes 5. It will be apparent that by means of this construction the longi-  
85 tudinal and transverse beams may each be much lighter than if longitudinal beams only were employed in the manner described in my Letters Patent aforesaid, and that the material required for both sets of beam  
90 boxes may be considerably less than that required for a floor of given strength constructed in accordance with said Letters Patent. In order to increase the strength of the mold the lower edges 6, 6 may terminate  
95 in down-turned lips 7, 7 and said lips may be temporarily secured to the corresponding lips of the juxtaposed domes by any suitable means such as the bolts 8.

As shown in Fig. 2, the ends of said lips  
100 7, 7 are beveled so as to form a space between each end of a lip and the flanges of the adjacent channels and thereby prevent said lips from interfering with the ready  
105 positioning of the domes between a pair of adjacent channels. The outwardly extend-

ing lower edges 6, 6 of the domes rest on the upper edges of the flanges 2, as illustrated in Fig. 3.

Reinforcing members such as the rods 10 may be employed as shown in the longitudinal beam-boxes and transverse reinforcing members such as the rods 11 preferably are placed in the beam-boxes 9, both sets of reinforcing rods extending throughout the length of their respective beam-boxes which for this reason must be unobstructed. Clamping members 12 arranged transversely of the channels and located between the flanges thereof force the lower edges 4, 4 of the domes against the channel flanges, bolts 13 passing through the channels at suitable intervals and either having threaded engagement with the clamps 12 as described in said patent or else having the nuts 14 threaded to their ends which project above the clamps as shown in Fig. 2.

After a floor mold had been constructed in the manner above described concrete 15 is poured therein and allowed to harden, whereupon the bolts 8 and 13 are removed and the forms and supporting members taken down for further use.

As will be obvious, the depth of the longitudinal and transverse beams which are formed in the boxes 5 and 9 respectively may be considerably less than where floors having longitudinal beams alone are used without weakening the molded structure, thereby saving a comparatively large amount of material and also increasing the head-room of the floor below, and inasmuch as the channels or concrete-form support-members which, as above stated, form part of the longitudinal beam-boxes, constitute the sole supports for the domes, no transverse supporting members are necessary thereby eliminating an element, which so far as I am advised, heretofore has been found essential. Furthermore by making the longitudinal beam-boxes 5 deeper than the transverse beam boxes 9, as shown in Figs. 2 and 3, I am enabled to effect a saving in material as more fully explained in my application Serial No. 306,553, filed June 25, 1919, in which I claim the concrete floor produced by the apparatus claimed herein.

It will be understood that various modifications may be made in the particular apparatus above described without departing from the principle of my invention.

Having thus described an illustrative embodiment of my invention without, however, limiting the same thereto, what I claim and desire to secure by Letters Patent of the United States is—

1. Apparatus for constructing concrete

floors, comprising in combination removable laterally-spaced concrete-form support-members, and removable sheet metal, integral, dome-shaped concrete forms, each being supported solely by having the lower edges of two opposite sides resting on a pair of adjacent support-members, said support-members and the sides of each pair of adjacent forms resting thereon forming unobstructed longitudinal beam-boxes arranged to receive reinforcing members extending throughout the length thereof, the lower edges of the other two sides of each form extending horizontally outwardly and terminating in down turned lips, said lips being placed in contact with the corresponding lips of the adjoining forms, the last named sides of each pair of adjacent forms and the outwardly extending lower edges thereof forming unobstructed transverse beam-boxes of substantially the same width as said longitudinal beam-boxes and arranged to receive reinforcing members extending throughout the length thereof.

2. Apparatus for constructing concrete floors, comprising in combination removable laterally-spaced channels, removable sheet-metal integral dome-shaped concrete forms each being supported solely by having the lower edges of two opposite sides resting on a pair of adjacent channels, said channels and the sides of each pair of adjacent forms resting thereon forming unobstructed longitudinal beam-boxes arranged to receive reinforcing members extending throughout the length thereof, means for clamping the adjacent lower edges of each pair of forms to the flanges of a channel, the lower edges of the other two sides of each form extending horizontally outwardly and terminating in down-turned lips, and means for clamping together the juxtaposed lips of each pair of forms, the last named sides of each pair of adjacent forms and the outwardly extending lower edges thereof forming unobstructed transverse beam-boxes of substantially the same width as said longitudinal beam-boxes and arranged to receive reinforcing members extending throughout the length thereof.

3. In an apparatus for constructing concrete floors, a concrete form consisting of a sheet-metal integral dome having the lower edges of two opposite sides extending horizontally outwardly and terminating in down-turned lips, the ends of each lip being beveled.

In testimony whereof, I have hereunto subscribed my name this 1st day of Sept. 1917.

NILS FREDERICK AMBURSEN.