Nov. 4, 1924. 1,514,245

N. F. AMBURSEN

MOLD FORM FOR CONCRETE WORK

Filed Oct. 7, 1919 2 Sheets-Sheet 1

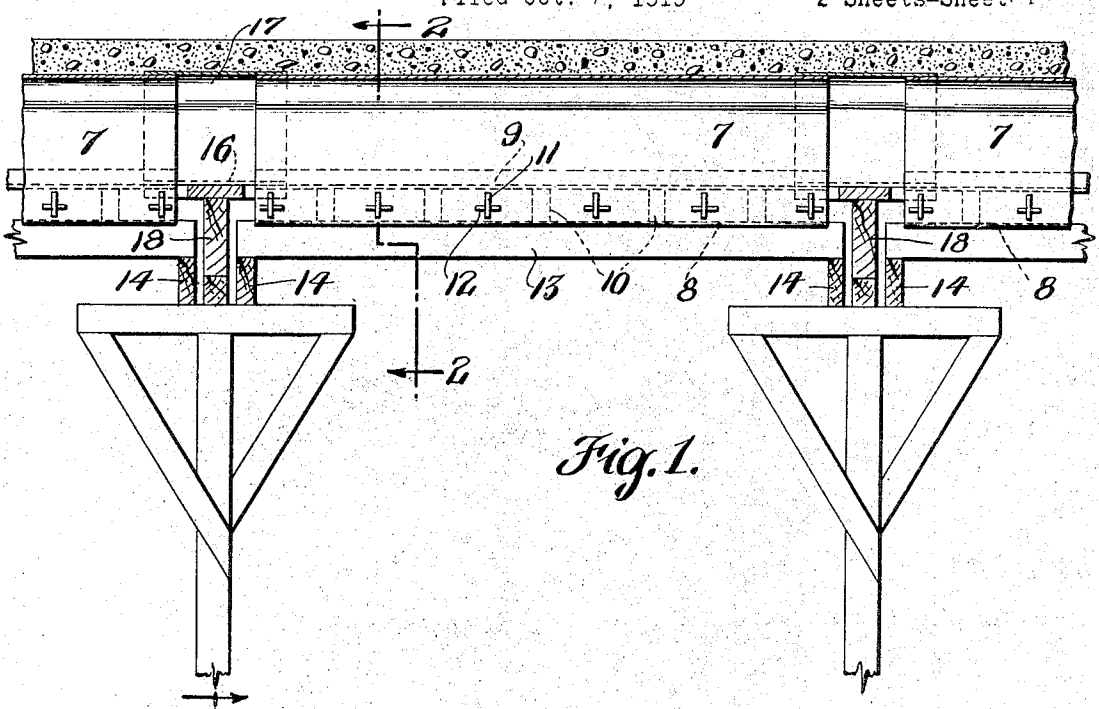



Fig. 1.

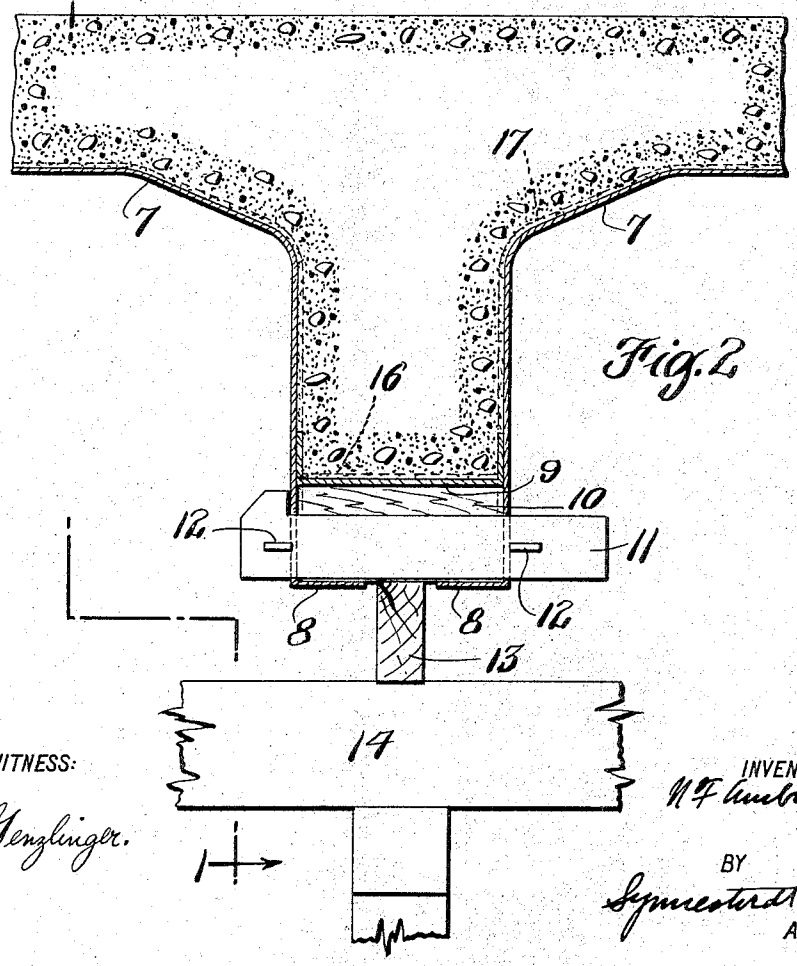



Fig. 2.

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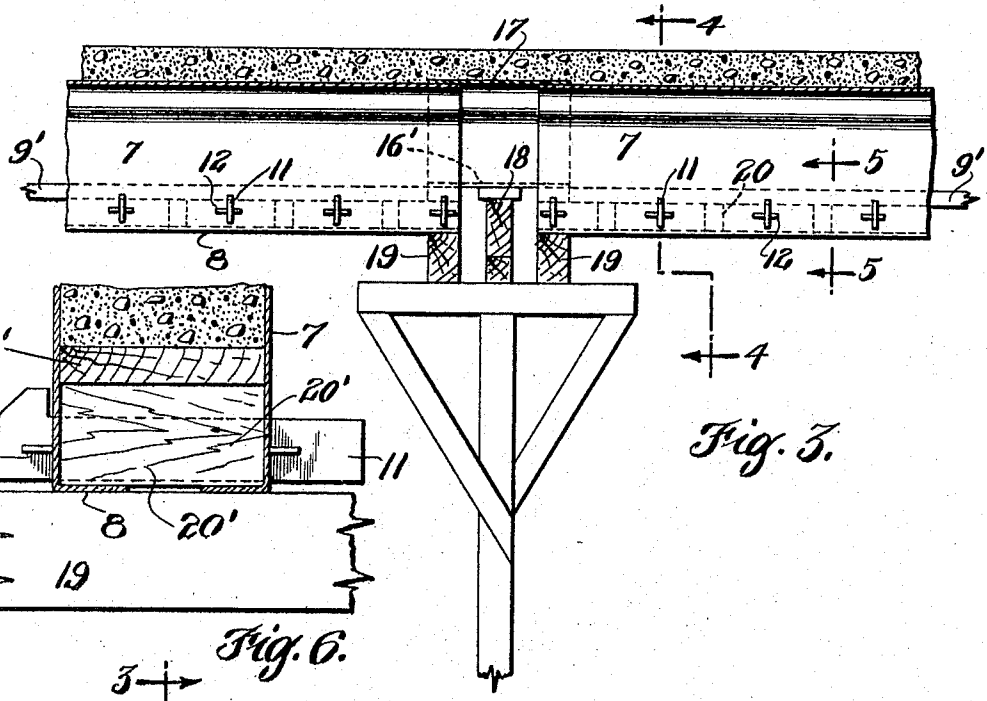



Fig. 3.




Fig. 6.

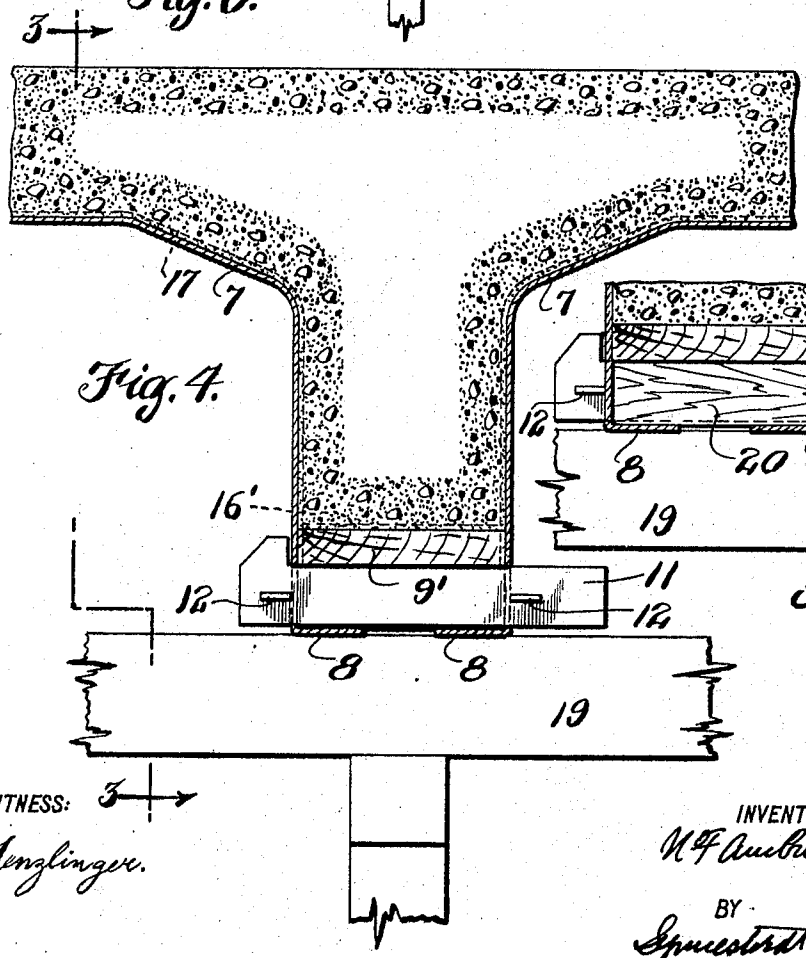



Fig. 4.




Fig. 5.




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Patented Nov. 4, 1924. 1,514,245

# UNITED STATES PATENT OFFICE.

NILS F. AMBURSEN, OF PITTSBURGH, PENNSYLVANIA, ASSIGNOR TO UNI-FORM COMPANY, A CORPORATION OF MASSACHUSETTS.

## MOLD FORM FOR CONCRETE WORK.

Application filed October 7, 1919. Serial No. 329,066.

*To all whom it may concern*:

Be it known that I, NILS F. AMBURSEN, a citizen of the United States, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Mold Forms for Concrete Work, of which the following is a specification.

This invention relates to mold forms for concrete work, particularly to forms adapted for the construction of floors or ceilings.

One of the primary objects of my invention resides in the provision of an improved form apparatus of the pan type in which the pans are self supporting and the structure otherwise simplified.

Another of the objects of my invention resides in the provision of an improved form, the major portions of which may be taken down a comparatively short time after the concrete has been poured whereby the initial plant investment is materially reduced and it is possible to carry out the work expeditiously with a minimum amount of equipment.

Another object of my invention resides in the provision of improved form apparatus of the character specified in which the parts may be readily assembled and taken down.

The foregoing, together with such other objects as may hereinafter appear, or are incident to my invention, I obtain by means of a construction, the preferred embodiment of which I have illustrated in the accompanying drawings, wherein

Figure 1 is a longitudinal section through my improved form as applied to the construction of a floor or ceiling; Figure 2 is an enlarged section taken on the line 2—2 of Figure 1; Figure 3 is a longitudinal section similar to Figure 1, illustrating a modification of my invention; Figure 4 is an enlarged section taken on the line 4—4 of Figure 3; Figure 5 is an enlarged fragmentary section taken on the line 5—5 of Figure 3; and Figure 6 is a sectional view illustrating how the form is adapted for the construction of joists or beams of varying depth.

Heretofore in joist floors or ceilings, it has been customary to mold the bottom of the joist with channels or similar members which are supported on the false work or shoring, such channels, in addition to constituting a portion of the mold, serving as the means for supporting the pans. I propose to make the pans self supporting, that is to dispense with intermediate supporting mechanism such as described, and to this end I construct the pans 7 with flanges 8 at the bottom thereof. The sides of the pans are spaced apart the desired distance by means of filler strips which in the construction shown in Figures 1 and 2 take the form of channels 9, preferably coextensive in length with the pans. The filler strips also serve to constitute the bottom of the joist mold, and in the construction shown in Figures 1 and 2 they are supported at suitable intervals by such means as the blocks 10, which in turn are supported from portions of the shoring or false work, as will hereinafter appear. In erection, the sides of the pan are clamped against the filler strips 9, to which end I provide a plurality of ties 11 which are adapted to be passed through apertures formed in the sides of the pans immediately above the flanges 8. As shown in Figs. 1 and 3, the ties 11 are of plate form, and the mold side apertures for receiving them are in the form of vertical slots. The ties 11 are also apertured to receive keys 12 which take against the sides of the pans as illustrated in Figure 2, clamping the same against the filler strips 9. The filler strips and ties are so proportioned that when the parts are assembled in the position shown in Figure 2, the flanges 8 will be spaced apart in an amount sufficient to clear the longitudinally extending mold support members 13. The supporting members 13 are carried on the stringers 14, which are supported in turn on the false work beyond and clear of the ends of the pans. It will be seen from inspection of Figure 2 that the pans 7 are supported from the members 13 through the medium of the ties 11 and that the channel members 9 are also supported from the members 13 through the medium of the blocks 10. The joist load is therefore directly transmitted to the members 13 and the only load supported by the pans 7 is that of the floor slabs. Since the floor slabs are relatively thin, the load is not great and it may be safely taken up by the pans themselves if the latter are supported by a suitable number of the ties 11. It will also be noted

that the blocks 10 serve as spreaders, preventing the bottom portions of the pans from being pinched in by the ties 11.

The space between the ends of the pans is closed by stretcher members 16, which are preferably in the form of channels lapping the ends of adjacent fillers 9, and by the cover plates 17, which conform to the shape of the pans. These cover plates extend downwardly between the sides of the pans and the fillers 9, in which connection it is to be observed that the cover plates are made of thin sheet metal, making it possible to dispose the parts in this manner without bringing them out of alinement. In the drawing the thickness of the sheet metal plate is exaggerated for the purpose of clarity. The stretchers are supported by the stringers 18, which may be wedged or blocked up if necessary.

By the arrangement just described I am enabled to take down the pans within about 24 hours after the concrete has been poured, the concrete being sufficiently supported by the filler members 9 and the stretchers 16 which are left in position until the concrete is thoroughly set. The pans are thus made available for further use.

In taking down the form, the keys 12 are driven out and the ties 11 removed, after which the pans may be dropped directly down, the arrangement of the stringers and shoring being such as to present no obstacle to this operation.

Attention is now directed to the construction shown in Figures 3 to 6 inclusive. In this construction the pans 7, instead of being supported from the members 13 through the medium of the ties 11, are supported directly from stringers 19 carried on the shoring. The flanges 8, in this case, rest directly on the stringers 19, and may be turned in or out.

The bottom of the joists is molded by filler members which may be of the construction previously described or may be composed of wooden boards 9′. The filler members are supported on the ties 11, and if desired, they may be provided at suitable intervals intermediate the ties 11 with blocks 20, which also serve in conjunction with the filler members as spreaders against which the sides of the pan 7 are clamped by the ties.

The gap between the pans is closed by stretcher members, which in this instance are preferably in the form of sheet metal plates 16′, overlapping the adjacent ends of the fillers 9′; and by the cover plates 17, which, as before, extend down between the sides of the pans and the filler members 9′. The stretchers are supported by stringers 18.

The fillers 9′ can be adjusted in elevation to suit varying depths of joists, by substituting for the blocks 20 shown in Figures 3, 4 and 5, other blocks 20′ of greater depth as shown for example in Figure 6, and in the construction shown in Figures 1 and 2 this result may be achieved by inverting the channels 9, for example.

The construction shown in Figures 3 to 6 inclusive, while not having the advantage of making it possible to take down the pans 7 at an early stage of the operation, as is the case with the structure shown in Figures 1 and 2, is equally simple in other respects for the reason that the pans 7 are self supporting and the intermediate supporting mechanism ordinarily employed is eliminated. It is to be observed that while the pans serve to support the bottom of the joist mold through the medium of the ties and thus eliminate the need for any intermediate supporting mechanism, the load is taken at the bottom of the pans and in fact almost directly by the flanges 8, which are supported on the stringers, from which it will be seen that the pans are not subjected to marked load thrusts, such as cannot be adequately withstood by the thin sheet steel from which the pans are ordinarily made.

From the foregoing it will be apparent that the pan mechanism is so constructed that I am enabled to support it in either of two ways, namely directly on the sides of the pans themselves, in which case the pans are not taken down immediately, or indirectly through the medium of the ties 11, in which case the pans may be taken down at an early stage. Also it is possible to support the fillers for the bottom of the joists directly on the flanged bottoms of the pans, or resting on the ties, as a result of which a wide variation in depth of joists can be met with a minimum number of parts. In this connection, when channels are used as fillers, a further range of adjustment is provided by virtue of the fact that the channels may be supported either face up on the ties or on blocks carried by the pans.

I claim:

1. A mold form for concrete joist floors and the like comprising in combination a plurality of pans, the sides of which forming the joist mold are spaced apart and flanged at the bottom, filler means between the sides forming the bottom of the joist mold, and means below said filler means extending between and engaging the sides above said flanges, so that the filler means may be supported either independently through such last mentioned means or from the pan flanges, and the sides may be supported either directly or through the medium of such last mentioned means.

2. A mold form for concrete joist floors and the like comprising a plurality of pans with flanged sides for forming the joist mold apertured just above their flanges, filler means between said sides forming the

bottom of the joist mold, and ties for preventing spreading of said sides extending through their apertures below said filler means.

3. A mold form for concrete joist floors and the like comprising a plurality of pans with flanged sides for forming the joist mold vertically slotted just above their flanges, filler means between said sides forming the bottom of the joist mold, and tie plates extending through the pan slots aforesaid below said filler means.

4. The combination in a concrete joist floor mold or the like of a plurality of pans, filler means between the sides of adjacent pans forming the bottom of the joist mold, said sides being provided with a plurality of apertures below the filler means, and a plurality of ties extending through the apertures in adjacent sides, said filler means comprising a channel capable of being supported on said ties either face up, and said sides having outwardly projecting portions, so that the filler means may be supported therefrom.

5. The combination in a concrete joist floor mold or the like of a plurality of pans, filler means between the sides of adjacent pans forming the bottom of the joist mold, means extending longitudinally of the pan for supporting the filler means independently of the pans, and means beyond and clear of the ends of the pans for supporting said filler supporting means, so that the pans may be directly dropped.

6. The combination in a concrete joist floor or the like of a plurality of pans, filler means between the sides of adjacent pans forming the bottom of the joist mold, means extending longitudinally of the pans for supporting the filler means independently of the pans, means for supporting the pans from said longitudinally extending filler supporting means, and means beyond and clear of the ends of the pans for supporting said filler supporting means, so that the pans may be directly dropped.

In testimony whereof, I have hereunto signed my name.

NILS F. AMBURSEN.