

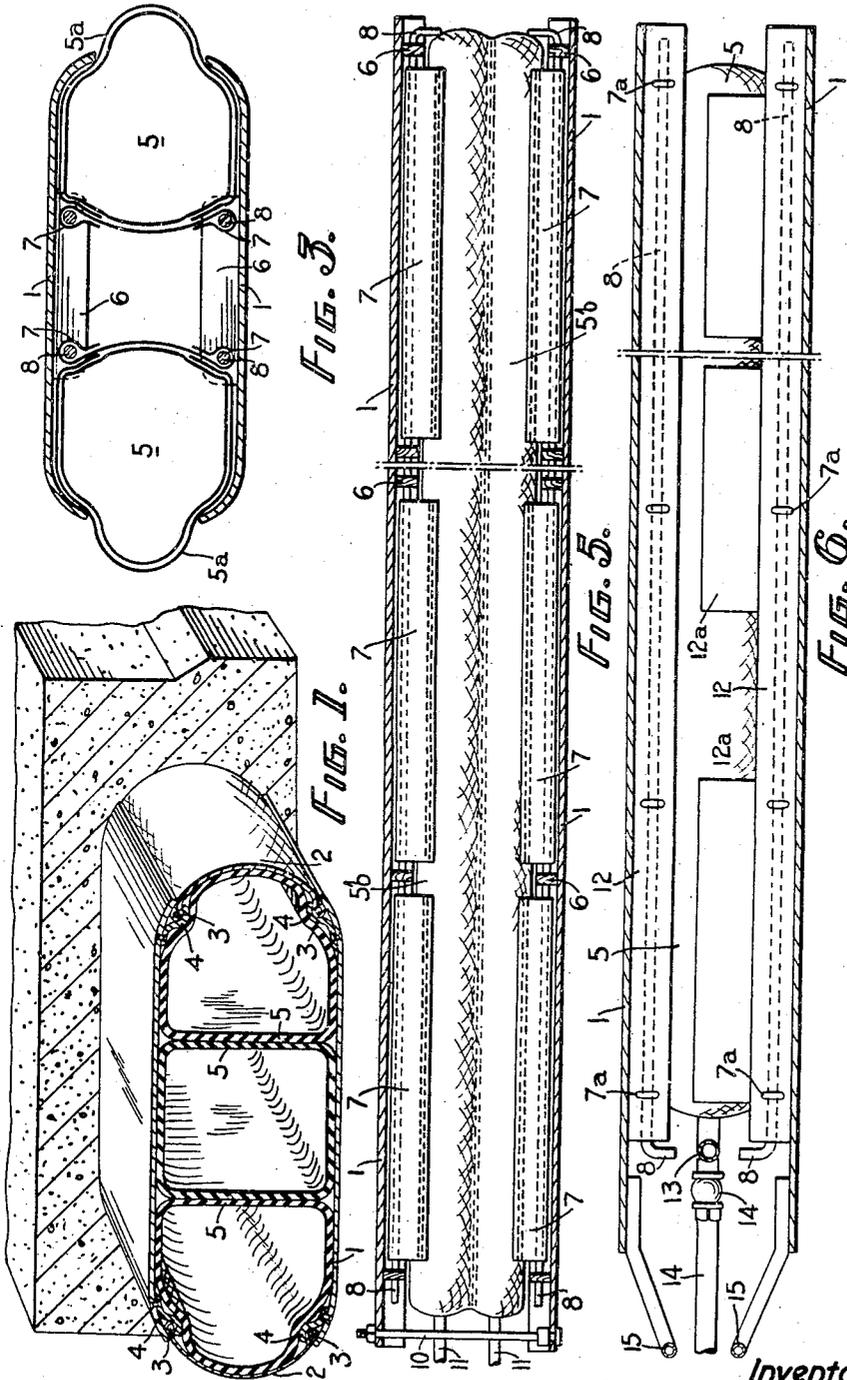
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C. B. MATHEWS ET AL
INFLATABLE CORE FOR USE IN CASTING
HOLLOW CONCRETE UNITS

2,485,898

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2 Sheets-Sheet 1



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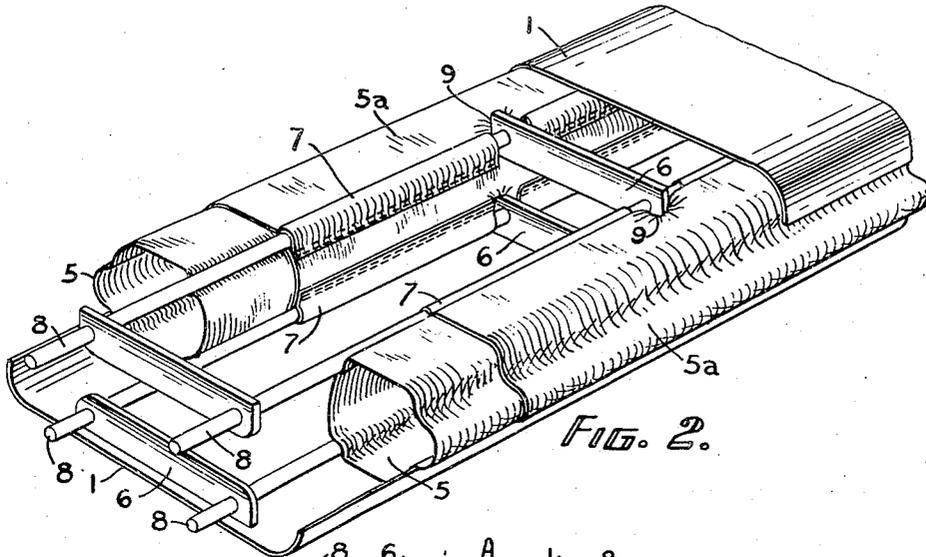


FIG. 2.

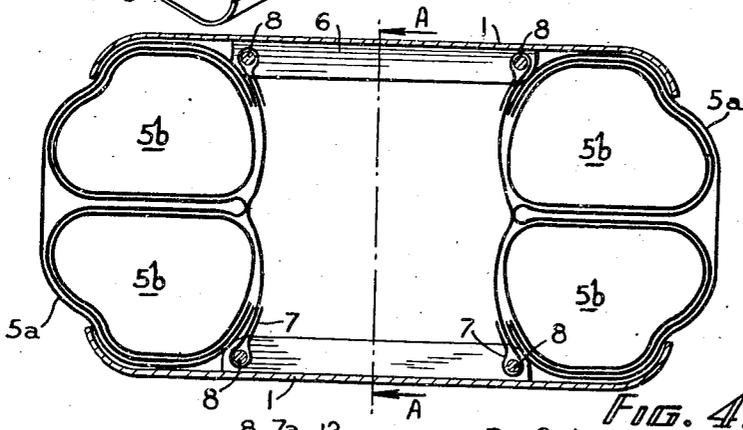


FIG. 4.

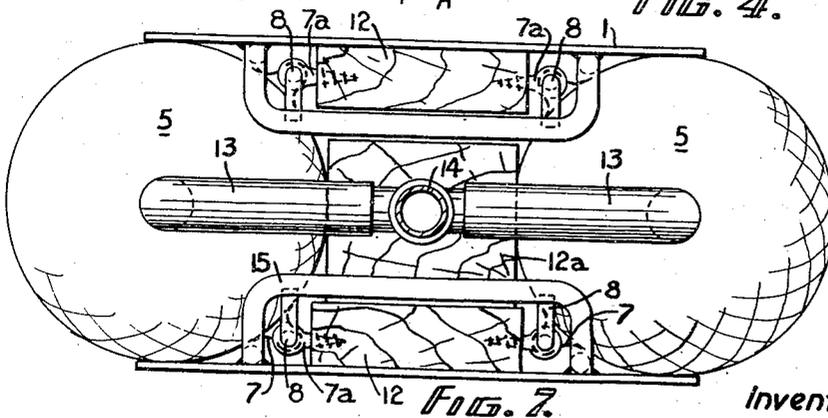


FIG. 7.

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INFLATABLE CORE FOR USE IN CASTING HOLLOW CONCRETE UNITS

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1

This invention relates to inflatable cores for use in casting hollow concrete units and in particular with non-circular cores.

Such cores consist, in general, of a number of inflatable tubes arranged longitudinally side by side. In some cases the tubes are separate tubes and in others they are formed by bending a single tube upon itself.

In any case the non-circular inflatable unit as a whole has to be enclosed in a cover.

It is necessary, for the successful operation of such cores, that when, after the casting operation has been completed and the concrete has to some extent set, the core on deflation will separate from walls of the hollow slab so as to permit withdrawal of the core.

The present invention is concerned primarily with an enclosing outer cover for such cores and has for its object so to construct this outer cover that on deflation the core can be easily and quickly withdrawn from the cast unit.

In accordance with the invention we construct the cover of two steel or like plates flexibly connected together throughout their length.

The invention consists broadly of a cover for containing the inflatable elements of inflatable cores for use in the casting of hollow concrete units comprising top and bottom metal plates flexibly connected together longitudinally, and further comprises an inflatable core for use in the casting of hollow concrete units comprising inflatable tubes located between and associated with top and bottom plates flexibly connected together so that the distance separating such plates transversely can be varied by the inflation and deflation of the inflatable tube.

The invention is illustrated in the accompanying drawing,

Figure 1 being a transverse sectional perspective view of one form of the invention.

Figure 2 is a similar view of another method of carrying out the invention.

Figure 3 is a transverse sectional view of the construction shown in Figure 2.

Figure 4 is a similar view of a modification of the arrangement shown in Figures 2 and 3.

Figure 5 is a section on the line A—A of Figure 4 and Figures 6 and 7 are longitudinal sectional and end views respectively of a further method of carrying out the invention.

Referring to these drawings and particularly to Figure 1, the numeral 1 indicates top and bottom plates which may conveniently be of steel. To the ends of these plates 1 flexible side walls 2 are connected. Such side walls may advan-

2

tageously be of rubberised cotton and may be provided with rods or beads 3 at their longitudinal edges to enable them to be clamped securely in position by means of the clamping strips 4.

The cover is shown in its distended position within a concrete unit, the numeral 5 indicating inflating tubes of which there may be any required number. In the drawing, three are indicated, but it will be understood that the central one might quite well be replaced by a solid separator.

Referring now to Figures 2 and 3, the plates 1, in this example, have bridge pieces or battens 6 attached to their inner faces, the inflating tubes 5 are encased in outer covers 5a that are provided with longitudinally spaced sleeves 7 that form eyelets and the plates 1 are connected together and to the inflating tubes by means of the longitudinal lacing rods 8 which pass through the bridge pieces 6 and the eyelet sleeves 7, which are cut away at the positions 9 to accommodate the ends of the bridge pieces 6. Figure 2 shows the inflation tubes 5 encased in their usual outer covers 5a operating to effect the separation of the top and bottom plates 1 and it will be understood that the inflation pressure, in all cases, need only be sufficient to support the weight of concrete resting on the top of the core during the casting operation.

Figures 4 and 5, so far as the invention is concerned, are precisely the same as the construction shown in Figures 2 and 3 but are included to show a case where four, instead of two, inflating tubes 5b are employed, the twin inflation tubes proper on each side being enclosed in a composite outer fabric casing as shown. Figure 5, however, also serves to show how a pulling handle 10 may be arranged to facilitate withdrawal of the core as a whole from the cast unit and also indicates at 11 the tubes for connection to the inflating pump or pumps.

Figures 6 and 7 show more or less diagrammatically a further method of carrying out the invention. In this case, wooden battens 12 are attached to the inner surfaces of the plates 1, screw type eyelet rings 7a are screwed into the side walls of the battens, and the plates 1 are connected together and to the inflation tubes 5 by longitudinal lacing rods 8 threaded or laced through rings 7a and eyelet sleeves 7, much in the manner previously described with reference to Figures 2 and 3.

Intermediate the two inflating tubes 5, wooden spacers or stop blocks 12a may be provided or,

3

of course, the whole lateral space between the plates 1 may be filled with inflation tubes. The inflation tubes may be connected together by a manifold device 13 so that they can both be inflated simultaneously by way of a common air inlet tube and valve device 14. Pulling handles 15 attached to the plates 1 may be provided.

It will be plain that, in all cases, on deflation of the inflatable tube or tubes, the top plate will fall away from the concrete and the flexible side walls will collapse sufficiently to loosen the whole core structure from the surrounding concrete and enable it to be withdrawn.

We claim:

1. An inflatable core for use in the casting of hollow units of concrete or like material comprising rigid plates constituting the top and bottom walls of the core, and inflatable flexible wall means hingedly connecting said plates at each side in a longitudinal direction and which constitutes the side walls of the core.

2. An inflatable core for use in the casting of hollow units of concrete and the like comprising rigid plates constituting the top and bottom parts of the core, inflatable elements located between the plates at each side thereof, outer fabric casings containing the inflatable elements and constituting the side walls of the core, and means for hingedly connecting said outer fabric casings to said plates.

3. An inflatable core for use in the casting of hollow units according to claim 2 and including a manifold connecting the inflatable elements, whereby the inflatable elements are inflated and deflated simultaneously.

4. An inflatable core for use in the casting of hollow units of concrete and the like comprising relatively rigid plates constituting the top and bottom walls of the core, tubular inflatable means extending longitudinally between said plates along each side thereof and which constitute the side walls of the core, a first set of longitudinally spaced eyelet means carried by said top and bottom plates, a second set of longitudinally spaced eyelet means carried by said inflatable means, and rods extending through and interlacing both sets of said eyelet means for connecting said inflatable means to said plates.

5. An inflatable core as defined in claim 4 wherein said inflatable means is comprised of an outer tubular cover member to which said eyelet means are secured and an inner tubular member adapted to be connected to a source of fluid pressure.

6. An inflatable core for use in the casting of hollow units of concrete and the like comprising relatively rigid plates constituting the top and

4

bottom walls of the core, tubular inflatable means extending longitudinally between said plates along each side thereof and which constitute the side walls of the core, a plurality of spaced sleeves secured to and extending longitudinally along said inflatable means, a plurality of spaced battens secured to the undersides of said plates, said battens being placed transversely of the longitudinal axis of said plates in the spaces between said sleeves and including eyelet means aligned with the latter, and rods extending through said sleeves and eyelet means for connecting said inflatable means to said plates.

7. An inflatable core for use in the casting of hollow units of concrete and the like comprising relatively rigid plates constituting the top and bottom walls of the core, tubular inflatable means extending longitudinally between said plates along the sides thereof and which constitute the side walls of the core, a plurality of spaced sleeves secured to and extending longitudinally along said inflatable means, a plurality of spaced battens secured to the undersides of said plates, said battens being placed transversely of the longitudinal axis of said plates and including eyelet rings located in the spaces between said sleeves, and rods extending through said sleeves and rings for connecting said inflatable means to said plates.

8. An inflatable core for use in the casting of hollow units of concrete and the like comprising relatively rigid plates constituting the top and bottom walls of the core, tubular inflatable means extending longitudinally between said plates along the sides thereof and which constitute the side walls of the core, a plurality of spaced sleeves secured to and extending longitudinally along said inflatable means, a plurality of battens secured to the undersides of said plates, said battens being placed transversely of the longitudinal axis of said plates in the spaces between said sleeves and being provided with apertures in alignment with the latter, and rods extending through said sleeves and the apertures in said battens for connecting said inflatable means to said plates.

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