METHOD OF FORMING CONCRETE SLABS, BEAMS AND THE LIKE

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3 Claims

ABSTRACT OF THE DISCLOSURE

This invention refers to a method of pouring elongated concrete beams with an extremely accurate surface and consists of the method of making an accurate steel sub mould, pouring a concrete negative sub mould from the steel mould, then pouring a plurality of concrete positive sub moulds from the concrete negative sub moulds. The plurality of positive sub moulds are then bolted together to form an elongated highly accurate upper surface and a work table is poured on this surface. This work table can then be used as the base for the pouring of the concrete beams or alternatively, this can become a master table and a plurality of production work tables can be passed upon this master table.

This invention relates to new and useful improvements in a method of manufacturing elongated concrete beams or the like, particularly beams used as floor beams in buildings requiring a clear span of many feet.

The difficulty encountered normally in the production of such beams is that of endeavoring to produce beams which not only have a highly accurate upper surface, but also as similar to one another as possible.

It is normal to place these beams in side by side relationship and then to pour a top floor on these beams in order to get a level surface upon which tar or the like may be laid.

It will be appreciated that this is extremely time consuming and expensive.

The present method produces any number of beams of the required length all of which are practically identical and which furthermore are provided with an upper surface that is extremely smooth and accurate so that when they are installed, it is not necessary to place the conventional topping thereon. Furthermore, these beams are manufactured with a slight positive camber from end to end, so that when instilled, the weight thereof brings the beams back into a planar position.

With the foregoing in view, and such other objects, purposes or advantages as may become apparent from consideration of this disclosure and specifications, the present invention consists of the inventive concept in whatsoever way the same may be embodied having regard to the particular exemplification or exemplification of some herein, with due regard in this connection being had to the accompanying figures in which:

FIGURE 1 is an isometric view of one example of a steel master.

FIGURE 2 is an isometric view of a concrete negative.

FIGURE 3 shows a plurality of concrete positives connected together.

FIGURE 4 shows schematically the structure for pouring the master table from the concrete positive.

FIGURE 5 shows schematically the method of pouring the work tables from the master table.

FIGURE 6 shows schematically one form of beam being cast upon a work table.

FIGURE 7 shows the end to end positive convexity of the master table.

FIGURE 8 shows schematically the end to end negative concavity of the work table.

FIGURE 9 shows schematically the positive convexity of the upper surface of the finished beam.

In the drawings like characters of reference indicate corresponding parts in the different figures.

Proceeding to describe the invention in detail, reference should first be made to FIGURE 1 which shows a steel master mould. It consists of the extremely accurate base surface 10 which is rectangular in configuration. The sides 11 preferably slope outwardly slightly (not illustrated) and the mould terminates with the base flanges 12 as shown.

This mould can either be built from solid material or, preferably, is made up from steel plate accurately machined and welded. However, as method of manufacture of this steel mould is not deemed to be part of the invention, it is not thought necessary to describe in detail.

From this steel master mould, a concrete negative sub mould 13 is formed, it being understood that conventional boxing or cribbing is used in order to produce the concrete negative sub mould shown in FIGURE 2.

The important point of this sub mould is the fact that the surface 14, although made of concrete, is mirror image of the surface 10 of the steel mould so that surface 10 is highly polished and accurately machined, then surface 14 will be highly polished and accurate.

It will also be appreciated that the concrete negative sub mould 13 can be reinforced in the conventional way.

From this concrete negative sub mould, I pour a plurality of concrete positive sub moulds 15 which are similar in configuration of course, to the steel master mould 10.

Here again the surfaces 16 of the sub moulds 15 are mirror images of the surface 14 of the concrete negative sub mould 13.

The concrete sub moulds 15 are aperture from end to end as at 17 so that rods 18 can be engaged through the apertures thus connecting the sub moulds in end to end relationship as shown in FIGURE 3. A sufficient number of sub moulds is bolted together to equal the length of the beam to be produced and this may be in the neighborhood of 15 feet up to 50 or 60 feet.

Due to the bolting together of the sub moulds 15, a continuous accurate mirrored upper surface 16 is produced.

FIGURE 4 shows a section of this concrete positive mould shown in FIGURE 3. Forms 19 rest on the flanges 20 formed at the base of the concrete mould shown in FIGURE 3 and a layer of concrete 21 is poured upon the highly accurate surface 15 of the concrete positive mould, it being understood of course, that conventional slip agents are used to prevent the concrete from sticking.

This slab 21 is reinforced and is secured to the table top 22 supported by legs 23 and bracing 24.

When cured, this master table now formed (collectively designated 25) is turned over and rests upon the legs 23. This means that I have now produced an elongated highly accurate and polished upper surface 26 of the slab 21, said surface corresponding to surface 10 of the steel mould.

Beams can be cast from the master table direct if desired, but I prefer to pour and manufacture a plurality of work tables 27 which are similar to the master table 25, conventional gripping and forms being used to pour the concrete slabs 28 of the work tables.

When cured these are then set up upon their legs as shown in FIGURE 6 and metal forming 29 may be used so that beams 30 may be cast upon the work table 27.
The forming and vibrating of the concrete to form these beams 30 is conventional and does not form part of this invention.

The surface 31 of the beams therefore becomes the mirror image of surface 32 of the work table which in turn is a mirror image of surface 26 of the master table.

FIGURES 7, 8 and 9 show a side schematic view greatly exaggerated of a master table, a work table and a finished beam respectively. It will be noted that the upper surface 26 of the master table is concavely curved from end to end thus producing a concavely curved work table upper surface 32 which in turn produces a concavely curved upper surface 31 of the beam. This means that when the beam is installed, the weight of the beam causes same to flex slightly in the center, thus finishing up with an exactly level surface 31.

By indexing one end of the master table 25, this corresponding indexing will show up on the ends of all the work tables produced therefrom.

By the same token, this identification mark or indexing (not illustrated) will be reproduced on all of the beams formed from all of the work tables.

By situating these identifications or indexing marks side by side when the beams are installed, any slight errors which might be inherent in the manufacture of the beams will all occur at the same point and therefore will not interfere with production of an extremely level and smooth floor surface on the upper side of the beams.

This method permits beams of some considerable length to be produced with an extremely accurate and smooth upper surface.

Therefore, this has not been possible as beams are usually cast in place upon steel sheeting which in itself is not accurate and cannot be machined accurate because of the extreme length required.

Various modifications can be made within the scope of the inventive concept disclosed. Accordingly, it is intended that what is described herein should be regarded as illustrative of such concept and not for the purpose of limiting protection to any particular embodiment thereof, but that only such limitations should be placed upon the scope of protection to which the inventor heretoof is entitled, as justice dictates.

What I claim to be the present invention is:

1. A method of forming concrete slabs, beams and the like, comprising the steps of making a steel positive master sub mould, then pouring a concrete negative sub mould from said steel master sub mould, then pouring a plurality of concrete positive sub moulds from said concrete negative sub moulds, securing said concrete positive sub moulds together to form a complete concrete positive mould, and then pouring a concrete master table onto said concrete positive mould.

2. The method according to claim 1 which includes the additional step of pouring a production work table on said master table.

3. The method according to claim 2 in which the upper surface of the said concrete work table is concavely curved from end to end.

References Cited

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