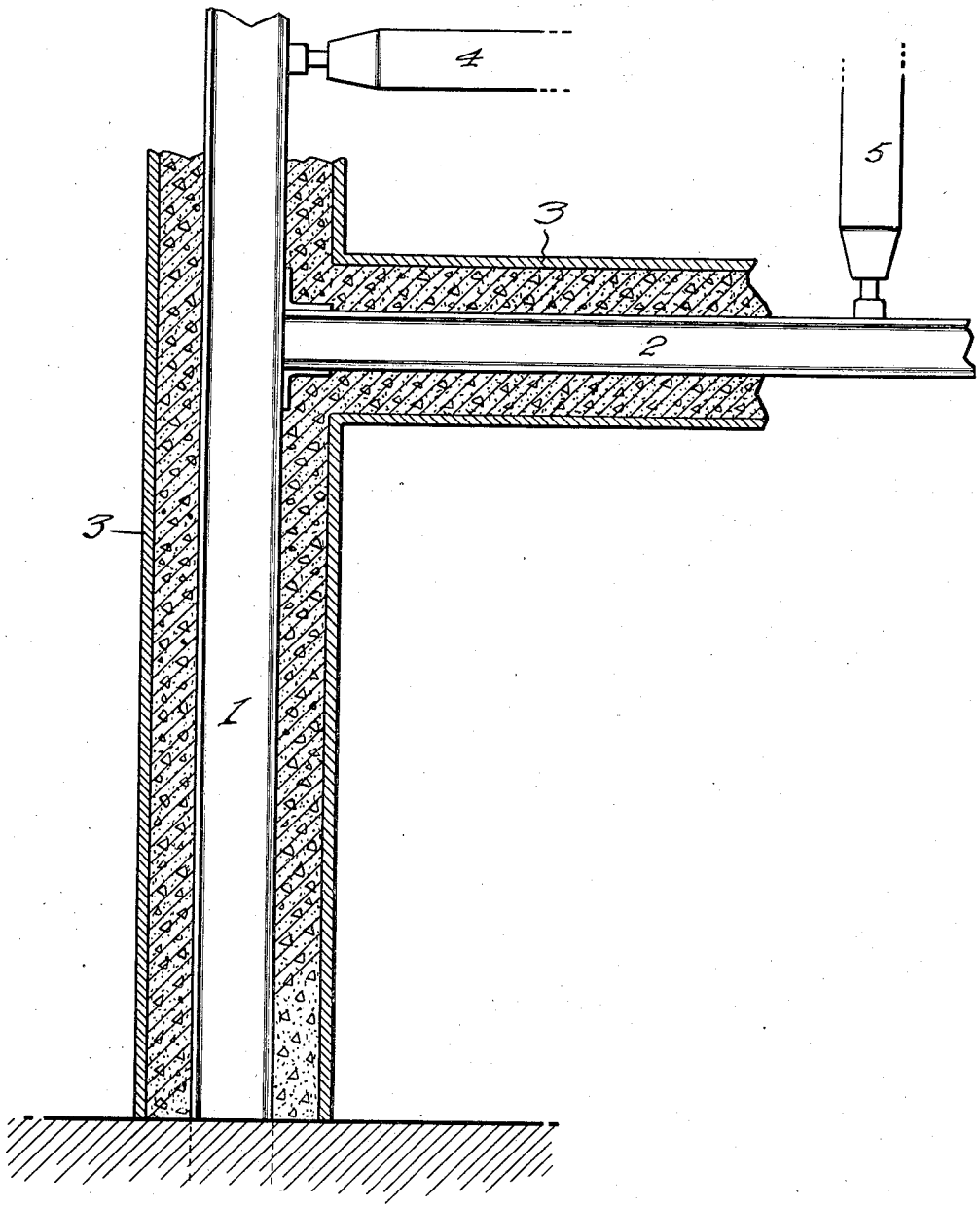
July 8, 1930. W. P. DAY 1,770,154

METHOD OF FORMING A REENFORCED CONCRETE CONSTRUCTION

Filed June 17, 1929



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Patented July 8, 1930

1,770,154

UNITED STATES PATENT OFFICE

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METHOD OF FORMING A REENFORCED CONCRETE CONSTRUCTION

Application filed June 17, 1929. Serial No. 371,334.

This invention relates to a method of forming a reenforced concrete construction and is of general application.

The main object of the invention is to provide a method of forming a steel reinforced concrete construction which will cause substantially all voids in the concrete to be eliminated and which will cause the concrete to adhere to or bond with the steel reenforcement in such a manner as to produce a very strong construction.

A further object of the invention is to provide a method of forming a steel reenforced concrete construction which is well adapted for use in connection with buildings, bridges, railway roadbed construction, and in fact, in any connection where it is desirable to make use of reenforced concrete.

A still further object of the invention is to provide a method of applying concrete to the steel work of a building, bridge or similar construction in such a manner as to cause the concrete to firmly bond with the steel and eliminate voids or air pockets.

Further and more limited objects of the invention will appear as the description proceeds and by reference to the accompanying drawing disclosing a vertical sectional view of a portion of a steel frame work of a building, bridge or similar structure.

Heretofore it has been quite difficult and practically impossible to obtain a reenforced concrete construction which contains no voids or air pockets. Moreover, in cases where the steel reenforcement projects out of the concrete, it has been very difficult and practically impossible to prevent water from seeping in adjacent the steel frame work. Water deteriorates the concrete construction and, due to the freezing and thawing action, tends to produce cracks or crevices. According to my improved method of forming the construction, I have eliminated this difficulty by vibrating or tamping the steel reenforcement while the concrete is still green or plastic; and continuing this vibration to cause the concrete to settle and to bond with the reenforcement. This vibration also causes the concrete and particles of stone to settle, thus eliminating air pockets and voids between the particles of stone. Moreover, by eliminating these voids and by providing a more perfect bond between the steel and concrete, I greatly increase the structure's ability to shed water and therefore greatly prolong the life of the structure as a whole.

According to the preferred embodiment of this invention, I first substantially enclose the steel reenforcement with a mold. Soft concrete is then poured into the mold and preferably simultaneously with the pouring of the concrete I vibrate or tamp the reenforcement, thus causing the concrete to settle and to flow evenly throughout the mold and to bond with the steel reenforcement. The vibration of the reenforcement may be produced in any desired manner, as for example, by means of a mechanical or pneumatic vibrator or pulsator. The vibration is continued until no further settling of the concrete is noticeable to cause the concrete to bond with the steel. The concrete will adhere to the steel and there will be no cracks or crevices adjacent the steel reenforcement. Hence there will be no chance of water seeping in.

In the drawing I have disclosed somewhat diagrammatically a portion of a building or other structure embodying steel beams or girders 1 and 2. In carrying out my method I first substantially enclose the beams or girders with a mold 3. Soft concrete is then poured into the mold and preferably simultaneous with the pouring operation I vibrate the beams by means of one or more vibrators 4 and 5 which may be operated either mechanically or pneumatically. The vibration is continued to cause the concrete to adhere to and form intimate contact with the steel and as the concrete settles in the mold additional concrete is added. This operation is continued until the mold is filled. The concrete is allowed to harden in this position and the mold is subsequently removed. If desired, the mold may be first partially filled with loose stone and cement-grout poured in on top of the stone, the reenforcement being vibrated during the pouring of the concrete and until the concrete has thoroughly permeated the stone and filled all

voids therein. The number and the force of the blows imparted to the steel reenforcement may be varied according to the nature of the construction. With this method, I am able to use from five to fifteen percent more concrete in the same space and thereby greatly increase the strength of the construction.

Various changes may be made in the specific manner of carrying out the several steps set forth, as well as in the manner of vibrating the reenforcement, without departing from the spirit of my invention; and while I have used the term "concrete" in this specification, I do not wish to be limited to any specific mixture of sand, stone, cement, or other material, but have used the term generically to mean any mixture of bonding material, such as cement, cement-grout or asphalt, with sand, gravel, stone or other material. It is, therefore, understood that the invention is limited only in accordance with the scope of the appended claims. It will now be clear that I have provided a method of forming a reenforced concrete construction which will accomplish the objects of the invention as hereinbefore stated.

Having thus described my invention, what I claim is:

1. The method of forming a steel reenforced concrete construction which consists in substantially enclosing the metal reenforcement with a mold, pouring soft concrete within the mold and simultaneously vibrating the reenforcement, and continuing such vibration to cause the concrete to settle and bond with the reenforcement, such vibrations being imparted directly to the reenforcement.

2. The method of forming a steel reenforced concrete construction which consists in substantially surrounding the metal reenforcement with a mold, pouring soft concrete within the mold and simultaneously tapping the reenforcement, and continuing such tapping to cause the concrete to settle and to bond with the steel reenforcement.

3. The method of forming a reenforced concrete construction which consists in substantially enclosing a metal reenforcement with soft concrete and vibrating the reenforcement while the concrete is setting to cause the concrete to settle and to bond with the metal reenforcement, such vibrations being imparted directly to the reenforcement.

4. The method of forming a metal reenforced concrete construction which consists in substantially surrounding the reenforcement with a mold, substantially filling the mold with loose particles of stone, then pouring soft concrete on the loose stone and simultaneously vibrating the reenforcement to cause the concrete to thoroughly permeate the stone and to eliminate voids, and vibrating the reenforcement to cause the concrete to thoroughly permeate the stone and to bond with the reenforcement, said vibrations being imparted directly to the reenforcement.

5. The method of applying concrete to a metal frame work which consists in enclosing the frame work with a mold, pouring concrete within the mold and vibrating the frame work while the concrete is soft, and continuing such vibration until the concrete begins to set, such vibrations being imparted directly to the framework.

6. The method of applying concrete to the steel girders or beams of a steel frame work which consists in enclosing the girders or beams with a mold, pouring soft concrete within the mold and simultaneously vibrating the girders or beams until the concrete begins to set, such vibrations being imparted directly to the girders or beams.

7. The method of forming a metal reenforced concrete construction which consists in embedding the metal reenforcement in wet concrete and, while the concrete is still green or plastic, vibrating reenforcement for a sufficient period of time to cause the concrete to settle and to bond with the reenforcement, such vibrations being applied directly to the reenforcement.

8. The method of forming a steel reenforced concrete construction which consists in covering the steel reenforcement with a mass of wet concrete and while the concrete is still plastic imparting sufficient pulsations or vibrations to the steel reenforcement to cause the concrete to settle and to bond with the reenforcement and to substantially eliminate voids in the construction, such vibrations being applied directly to the reenforcement.

9. The method of forming a concrete construction having a metal reenforcement which includes partially surrounding the reenforcement with wet concrete and then applying vibrations directly to the reenforcement and continuing such vibrations for a sufficient period of time to cause the concrete to settle and eliminate voids and to form a more perfect bond with the reenforcement.

In testimony whereof, I hereunto affix my signature.

WILLIAM P. DAY.