C. WEBER.

METHOD OF CONCRETE CONSTRUCTION.

APPLICATION FILED OCT. 25, 1915.

1,171,909.

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Fig. 1.

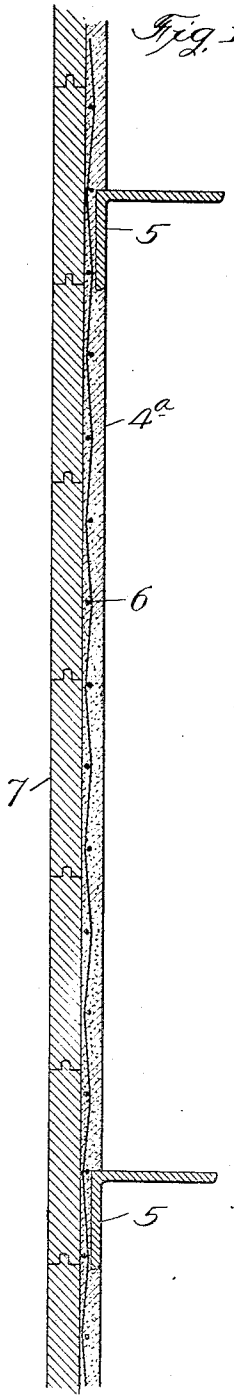


Fig. 2.

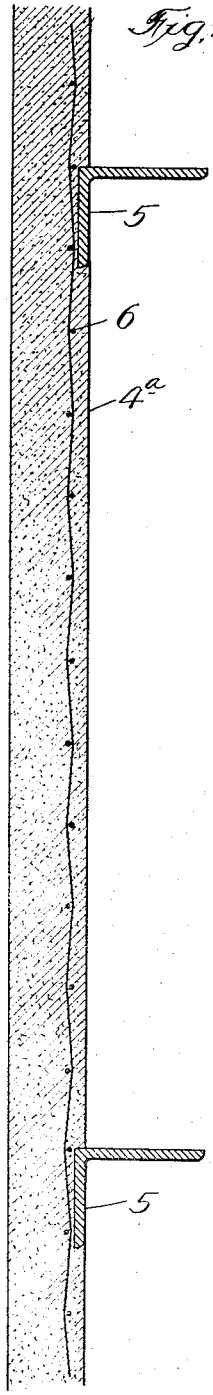
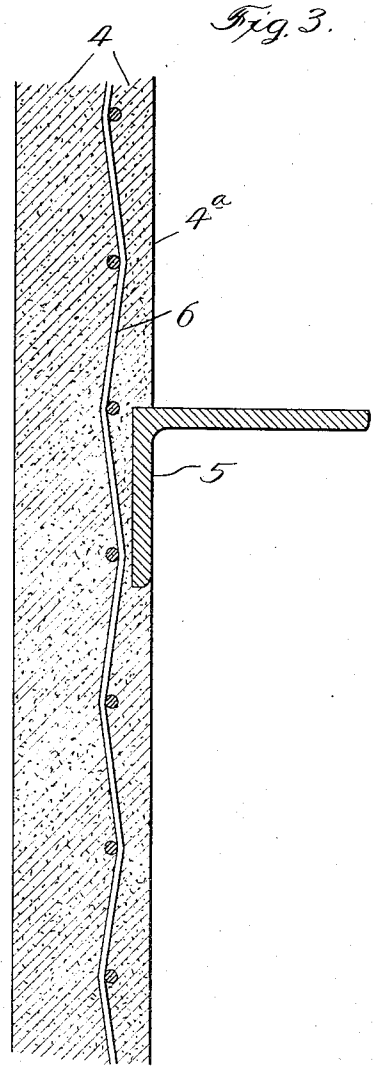


Fig. 3.



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UNITED STATES PATENT OFFICE.

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METHOD OF CONCRETE CONSTRUCTION.

1,171,909. Specification of Letters Patent. Patented Feb. 15, 1916.

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To all whom it may concern:

Be it known that I, CARL WEBER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Methods of Concrete Construction, of which the following is a specification.

My invention relates to an improved method of applying concrete or other plastic coating to the framework of buildings, such as warehouses, shops, and sheds, and other structures, to form the walls, roofs and other framework-covering.

The object of my invention is to provide an improved method of constructing such coverings of reinforced concrete, or other suitable plastic material, whereby the work may be performed at comparatively low cost and the covering shall be rendered particularly enduring and add strength to the structure, and shall remain intact in the sense of resisting tendency to check and crack, besides enabling the outer surface to be produced practically devoid of imperfections, such as form-marks, irregularities, and the like, which occur where, as heretofore, the reinforced covering is formed as a whole by impelling the material against one surface of a form. To this end, I form the covering consecutively in two portions by impelling the moist material against a suitable backing through the reinforcing medium fastened to a face of the framework of the structure, thereby to produce the first portion, and after the latter has become sufficiently hard by setting, I remove the backing and form the second portion of the covering by impelling in the relatively opposite direction more of the material against the hard surface of the previously-formed portion, thereby obtaining the advantages hereinafter pointed out.

In the accompanying drawing, Figure 1 illustrates a vertical section through a wall undergoing construction by my improved method; Fig. 2 is a similar view illustrating further steps in the practice of the same, and Fig. 3 shows a vertical section through the completed wall, of which only a broken part is represented.

To practice my invention in providing a reinforced-concrete wall 4 (roof, or other part of a structure to which it is applicable), I first cover one face of the framework 5 (girts in a wall and purlins in a roof) with reinforcing material, such as wire mesh 6, or other suitable interstitial metal, or lath, and fasten it to the framework at intervals, all in a usual or any suitable manner. I then apply to either face of this reinforcement, but preferably the outer face, as represented, a cheaply-formed backing 7 (Fig. 1), of wood, though it may be of sheet-metal, compressed paper-pulp, canvas, or other suitable material; and its surface opposed to the reinforcing means may be even, as shown, or more or less uneven. This backing is removably secured in place in any suitable manner to render it an adequately rigid abutment. With the backing in place, the prepared concrete is applied through the mesh 6 against the backing-surface to embed, more or less, the mesh for its reinforcing purpose and form one portion 4^a, say one-third, more or less, of the entire wall 4 of desired thickness. The application of the concrete to the backing should be sufficiently forcible to cause the impact, in the first instance, to separate out more or less of the contained sand and the coarser constituents, leaving only or mainly the cementitious constituents against the backing-surface and spread more or less uniformly over it to form thereon a layer of finer composition than that of the material applied in continuing the operation of forming the wall-portion 4^a, which added material remains substantially of its original relatively-coarse composition, since the impact fails to throw out of it any considerable part of its sand and coarser constituents. The best, because cheapest and most practical manner of thus applying the concrete, is by the use of any known or suitable apparatus for the purpose, whereby the concrete is blown or sprayed through the medium of fluid pressure. In that way, the impact of the impelled material immediately against the backing 7 not only produces the desirably effective separating out of the sand and coarser constituents, but it causes densification of the aforesaid thin layer of substantially neat cement about the reinforcement. When the wall-portion 4^a, thus produced, has become sufficiently hard by setting, the temporary backing 7 is removed and may be applied to another area or part of the framework for repeating there the described operation. The surface of the densified layer thus formed, and uncovered by the

removal of the backing, then affords the abutment-surface or backing for impelling against it, but in the direction relatively opposite that described, sufficiently more of the concrete to form the added or second, portion 4^c of the wall in desired thickness. The impact against that surface also separates out of the concrete more or less of its sand and coarser constituents, and produces, first, a thin layer, like that hereinbefore described, adhering to and supplementing the first-formed layer, after which the continued application of concrete completes the second wall-portion in desired thickness.

Of course, the outer or both surfaces of a wall or roof thus produced may be smoothened or finished, in any desired manner.

By my improved method, thus described, a very strong, enduring, fireproof and waterproof wall (roof or the like), may be constructed at the minimum cost, no expensive forms being required for the work. It possesses strength due to the embedment of the reinforcing medium in the densified cementitious intermediate part of the wall whereby, also, the metal is more effectively protected against corrosion; and, besides, owing to its monolithic character and intimate union with the framework, the covering adds greatly to the strength of the structure by stiffening it and by its effect of distributing the stresses over larger areas. Moreover, my improved method avoids imperfections in the outer wall-surface such as occur in a wall made as a whole by impelling concrete, or the like, continuously in one direction against a form, whereby that surface is disfigured with form-marks, irregularities, and the like, requiring it to be gone over to finish it; and a wall made in accordance with my invention is peculiarly resistant to checking, cracking and disintegration.

As will be understood from the foregoing description, the gist of my invention lies in constructing the covering consecutively in two parts, one part being formed by impelling the wet material against a backing, and the other part being formed by impelling more material against the surface of the first-formed part, after the latter has become adequately set to present a hard surface exposed by removal of the backing.

What I claim as new and desire to secure by Letters Patent is:

1. The method of constructing a wall, or the like, of plastic material, which consists in forming the same in two sections or portions by impelling said material against a backing to form the first portion, removing the backing from the hardened portion thus formed to uncover its surface, and thereafter forming the other portion by impelling plastic material against said uncovered surface.

2. The method of constructing a reinforced concrete wall, or the like, which consists in securing concrete-reinforcing means to a side of the framework of the structure, applying a backing to said reinforcing means, impelling concrete against said backing through said reinforcing means to form one portion of the concrete covering, removing the backing and, after the said portion thus formed has hardened, similarly impelling concrete against the surface from which the backing was removed, to form the other portion of said covering.

3. The method of constructing a reinforced-concrete wall, or the like, which consists in securing concrete-reinforcing means to a side of the framework of the structure, applying a backing to said reinforcing means, impelling concrete against the backing-surface covered by said reinforcing means to form a thin inner cementitious layer of relatively fine composition and one portion of the concrete covering against said surface, removing the backing, and, after hardening of the covering-portion thus formed, similarly impelling concrete against its surface from which the backing was removed, to form thereon a similar inner layer and the other portion of said covering.

CARL WEBER.

In presence of—
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