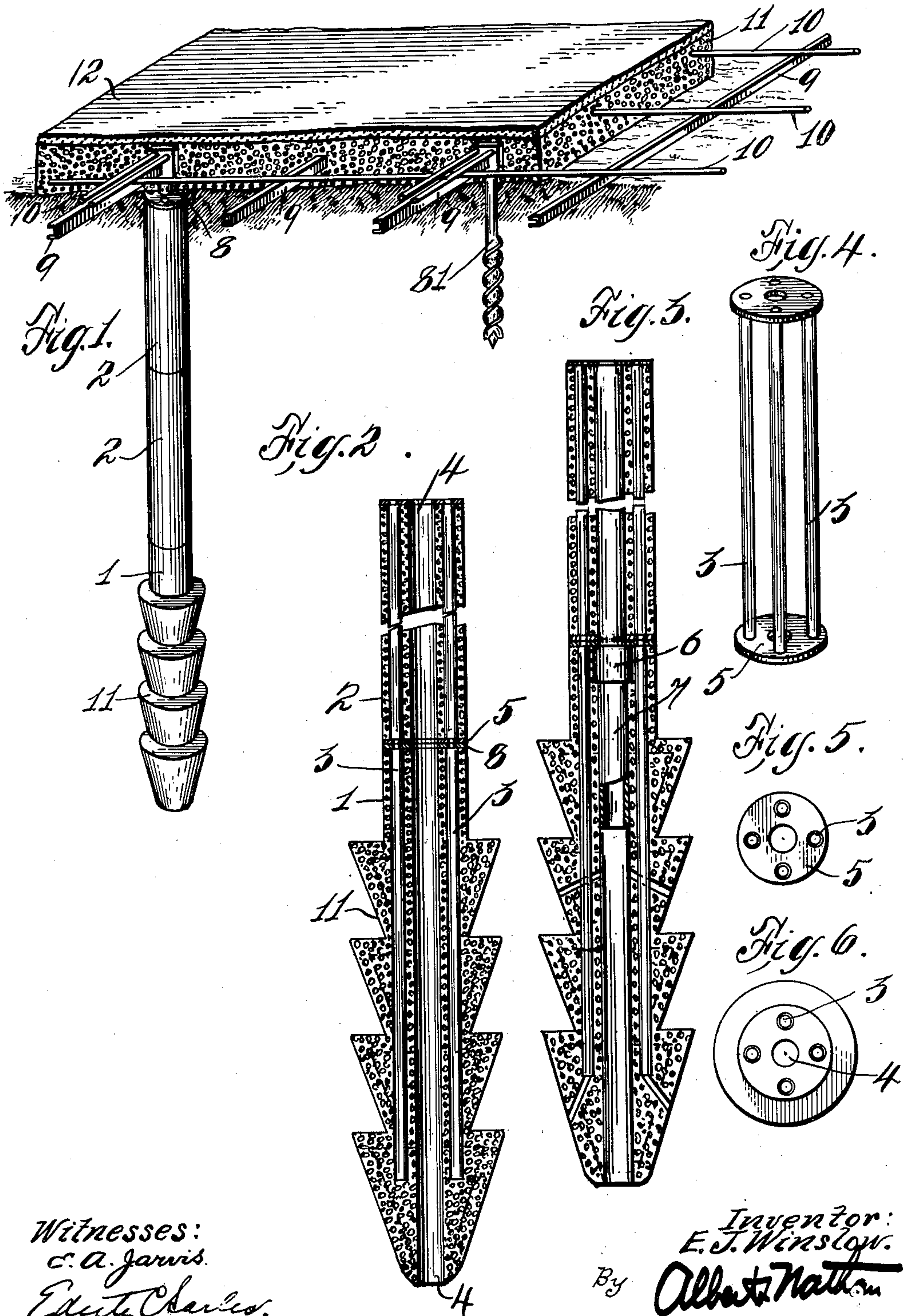


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E. J. WINSLOW.  
BUILDING CONSTRUCTION.  
APPLICATION FILED OCT. 19, 1905.



Witnesses:  
C. A. Jarvis.  
Edw. Charles.

Inventor:  
E. J. Winslow.  
By *Albert Nathan*  
his Attorney.



# UNITED STATES PATENT OFFICE.

EDWARD JARVIS WINSLOW, OF CHICAGO, ILLINOIS.

## BUILDING CONSTRUCTION.

No. 844,294.

Specification of Letters Patent.

Patented Feb. 12, 1907.

Application filed October 19, 1905. Serial No. 283,431.

*To all whom it may concern:*

Be it known that I, EDWARD JARVIS WINSLOW, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Building Construction, of which the following is a specification.

This invention relates, broadly, to improvements in the construction of impervious floors whereby they are fixed against upheaval, and more particularly it also concerns an inexpensive and effective means for so anchoring the same that they may be securely supported against settling or rising under hydrostatic heads.

Heretofore great difficulty has been experienced in constructing impervious floors, especially in subterranean work, upon loose and watery soil, such as usually obtains in reclaimed land. Soil of this nature does not afford a suitable foundation for the usual forms of construction, inasmuch as it readily yields under any considerable pressure, and, furthermore, such soil at periodic times usually becomes supersaturated with water, which with respect to excavations therein produces a very considerable upward pressure upon the floors and walls in such excavations.

This invention has for one of its objects to produce a means particularly adapted for service in overcoming the difficulties of the aforesaid conditions.

Among the primary objects of this invention may be included the provision of a cellar earth bottom with an overlying impervious cementitious floor embodying means for anchoring it against upheaval under water-pressure.

A further object of this invention is to produce a floor-anchor of an enduring nature which will not be subject to disintegration or decay under the trying conditions usually had in moist loose ground, such as silt or the like.

Another object of this invention is to obtain an anchor of such form and construction as to be especially adapted for insertion into the soil without the use of cumbersome and expensive implements or machines especially adapted for the purpose.

Still another object of this invention is to devise an anchor of such form that when

once inserted into the soil it will be securely affixed against any displacement therein.

This invention has for a further object to devise an anchor of such construction as to be extensible in length, whereby the same may be readily adapted for any particular conditions arising.

An additional object of this invention is to attain a mode of inserting a pile or anchor into the subsoil which will possess in the highest degree the elements of simplicity and cheapness.

Further objects and advantages of this invention will be in part obvious and in part pointed out hereinafter.

With these and other ends in view my invention accordingly consists in the features of construction, combination of parts, and arrangement of elements hereinafter set forth as an exemplification of a preferred embodiment of the invention.

That the same may be more fully understood and made comprehensible to others skilled in its relating arts I have appended as a part of this specification drawings of the same, and while the underlying principle of the invention may be otherwise applied in various modifications falling under the scope of the claims the herein-stated form is that which I prefer to employ in ordinary practice and regard as an improvement over many of the other forms which will be implied from the foregoing description, and now upon referring to such drawings by means of reference characters it will be observed that like characters denote corresponding parts throughout all of the views, of which—

Figure 1 is a view in sectional perspective showing the application of my invention to an impervious reinforced floor. Fig. 2 is a medial section, taken through the concrete anchor, showing the central pipe removed. Fig. 3 is a view similar to Fig. 2, showing the anchor assembled with an internal supporting-pipe firmly and permanently embedded in the same. Fig. 4 is a view in perspective of one form of reinforcing means that may be resorted to within this invention. Fig. 5 is an end view of the skeleton framework shown by Fig. 4. Fig. 6 is a top plan view of the anchor as embodied in Fig. 2.

Broadly, the anchor comprises an end section 1 and a suitable number of super-



posed sections 2. The material employed for such anchor is preferably plastic and of a durable nature in order that the same may be readily molded into any preferred form and proportions during manufacture and that it, furthermore, may be imperishable in use. The end section 1 is preferably so shaped as to be well adapted for a ready insertion into the subsoil to be and therein clenched and securely retained against either withdrawal or further entry. To this end such section is provided with one or more arrow or barb shaped enlargements 11, which are arranged to form a series of conical frustums with the portions of lesser diameter being nearer the end of the section. It will be observed that this shape is quite well adapted for being forced into the subsoil, particularly through the employment of the hydraulic agency, hereinafter more particularly stated, and that when in place such barb-like head will so interfit with the adjacent soil and be embedded thereby as to effectively prevent its withdrawal. An advance is also well resisted by the inclined faces after the soil has hardened and otherwise set around such section. The superposed sections 2 preferably constitute units and are adapted for being brought together endwise and, as will usually be desired, firmly secured together. Such sections will usually be made of a plastic material similar to that comprising the head, and for this material many suitable cements are available. The sections may be made in diverse lengths, though for purposes of convenience in both assembling and inserting into the soil they will usually be made of an even size in order that the circumferential exterior will be smooth and flush throughout the length of the assembled anchor. When assembled from such sections, the anchor provides one or more longitudinally-extending channels or perforations for the passage of water therethrough during the sinking of the anchor. Such water will be forced in a steady stream through the length of the anchor and will be emitted at the end of the same, and, if so preferred, also through openings leading to the circumferential exterior of the lower portion, as I have illustrated by Fig. 3. The function of this stream of water is to soften and so emulsify the subsoil abutting the pile or anchor during its sinking that the resistance to such movement will be greatly lessened. When the anchor has been inserted to a sufficient extent, such flow will be stopped, the surplus water will be absorbed into the adjacent soil, and the latter will then set about the anchor and firmly retain the same against any subsequent displacement. While this mode of sinking anchors so reduces the resistance of the operation that but comparatively little pressure or impact upon

the protruding end is necessary, it is generally nevertheless of advantage to reinforce and otherwise strengthen the anchor, which is usually constructed of a cementitious material adapted to withstand without deterioration the moisture and dampness of the soil in which it is embedded.

Since the aforesaid anchor is ordinarily constructed of plastic material which by nature is comparatively brittle and of low tensile strength, although possessed of a very high compression strength, I prefer to incorporate into the anchor a suitable strengthening means. In the preferred embodiment of this invention, as shown by the drawings, I resort to a plurality of rods or, preferably, pipes 3, which are embedded in the wall of the anchor intermediate the perforation 4 and the circumferential surface, such rods or preferably pipes generally extending longitudinally with the anchor. At their ends they are preferably connected by means of some suitable device, such as the end plates 5, which are provided with apertures corresponding to the anchor-channels 4 in order that the flow of water through such channels may not be impeded and to allow the central connected pipe or reinforcement to be used. These brace rods or pipes will ordinarily extend the full length of each section. In constructing the anchor it will be found convenient to first form a skeleton framework (illustrated in Fig. 4) and then insert the same within a suitable mold, into which is rammed the plastic material, so as to set around and thoroughly embed said skeleton. If preferred, the end plates of the latter may also be embedded; but ordinarily they will also constitute the end of each section, as shown by Fig. 2. In assembling the sections it will in most cases be advisable to securely affix them together, and this may be done in any satisfactory manner, such as by resorting to various interlocking engagements afforded by bolts, screws, or the like; but of these I regard the hereinafter more specifically-stated expedient as the most improved and readily-applied form.

Circumstances attending each particular use will naturally decide the best manner of carrying out my invention. In some instances the anchor-sections need not be secured together and in others it will be advisable to do so. In employing the form more specifically shown by Fig. 2 a relatively close fitting pipe would be inserted into channel 4, so as to terminate at the lower end of the barb section or shoe, and through this pipe water will be forced so as to loosen up the ground in advance of the shoe during the sinking of the anchor. As the sinking continues such pipe will be elongated, fresh sections of the anchor will be added, and pressure will be then brought to bear upon



the uppermost section. When sufficient resistance to sinking is offered by the pile, the central pipe may be either withdrawn or, as will be usually best, left in place, as the preference may be. If it be desired to additionally brace and secure together the sections of anchor, such pipe may constitute a permanent feature of the anchor, and in this case a coupling-sleeve 6 would join together sections of each pipe, and as such coupling-sleeve may be embedded in a section and be also retained by an end plate the pipe 7 will be securely retained against displacement and at the same time serve to bond all the sections of the anchor together.

Having appropriately positioned the desired anchors, a uniting member 8 will be suitably affixed to the uppermost section. Through appropriate perforations in such member 8 a series of reinforcing-rods is passed. Such rods may preferably comprise a U or otherwise shaped channel-bar 9, together with a series of tensioned members 10. Any desirable variations in this respect may be resorted to. In certain cases where portions of the underlying soil are sufficiently solid an anchor having the form shown by 81 may be employed. This consists in a shank provided with wide flaring flanges spirally disposed and adapted for being screwed into the subsoil to a proper depth to securely be affixed in position therein. The aforesaid arrangement having been set in place, the whole will be embedded within the floor material 11, which will ordinarily be of a cementitious nature, in such a way as to form a composite structure thoroughly supported and restrained by the anchored reinforcements, and such floor constructions may be additionally finished by a thin coating 12 of hard-wearing or other suitable material. It will accordingly be seen that I have thus provided a construction well adapted to attain the ends sought for by this invention and that its embodiment may be accomplished in a practical manner without undue expense by ordinary unskilled labor. The resultant structure is neat in appearance as well as durable and efficient in service. Since many changes could readily be made in the above construction and many embodiments of this invention might be made without departing either from the spirit or the scope thereof, although a cursory inspection might lead to the belief that such variations differed widely from the invention, I propose that all matter contained in the foregoing description or shown in the accompanying drawings shall be interpreted merely in an illustrative, but in no wise a limiting, sense. Furthermore, I desire it to be understood that the language in the following claims is intended to cover all of the generic and specific features of this inven-

tion and all statements of the scope thereof which as a matter of language might be said to fall therebetween.

I accordingly claim, and desire to secure by Letters Patent, the following:

1. In a building construction, a floor-anchor consisting of a plurality of like superposed sections and an end section having a plurality of annular projections disposed in a barb-like manner.

2. In a building construction, a floor-anchor consisting of a plurality of like superposed sections and an end section having annular barbs, said sections being of tubular form.

3. In a building construction, a floor-anchor comprising a plurality of like sections having longitudinally-extending perforations, and a barb-shaped head having perforations matching therewith.

4. In a building construction, an impervious floor of plastic material, transversely-extending rods embedded therein and adapted to reinforce the same, tie-pieces affixed to said reinforcements at spaced intervals and depending therefrom, and an underlying anchor of plastic material affixed at its upper end to each of said pieces, said anchor being of tubular form and comprising a plurality of connecting-sections each having embedded therein longitudinally-extending tubes connected at their ends to plates having apertures corresponding to said tubes and lying flush with the ends of the sections, said end section having a plurality of annular projections disposed in a barb-like manner.

5. A building construction comprising in combination, an impervious floor, supported directly upon underlying soil, a layer of hard-wearing material surfacing said floor, reinforcing means extending transversely through said floor, an underlying anchor having an enlarged head, said anchor being embedded in soil, and means securing said anchor to said floor whereby an elevation of the latter will be resisted.

6. A building construction comprising in combination, an impervious floor of plastic material, a plurality of reinforcing-strips spaced apart and embedded in said floor, an anchor embedded in the underlying soil and having an enlarged head, and tensioned means securing said anchor to said reinforcing means, whereby an upheaval of said floor will be prevented.

7. A building construction comprising in combination, an impervious floor of plastic material, reinforcing-rods spaced apart and transversely embedded in said floor, an underlying anchor having an enlarged head embedded in the soil beneath said floor, and means directly connecting said anchor to said reinforcing-rods, whereby an upheaval of said floor will be prevented.



8. A building construction comprising in  
combination, an impervious floor of con-  
crete, supported directly upon underlying  
soil, a layer of hard-wearing material surfac-  
5 ing said floor, and an anchor affixed to said  
floor and extending from the same into the  
underlying soil, said anchor being contoured

to resist upward movement whereby an ele-  
vation of said floor will be resisted.

EDWARD JARVIS WINSLOW.

Witnesses:

ALBERT F. NATHAN,  
EDITH C. SARLES.