Nov. 27, 1923. 1,475,570

G. R. DYE

PACKED WALL CONSTRUCTION

Filed Dec. 28, 1921

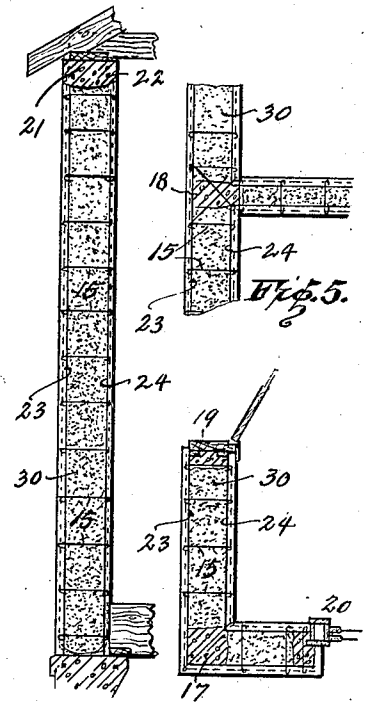


Fig. 5.

Fig. 3.

Fig. 6.

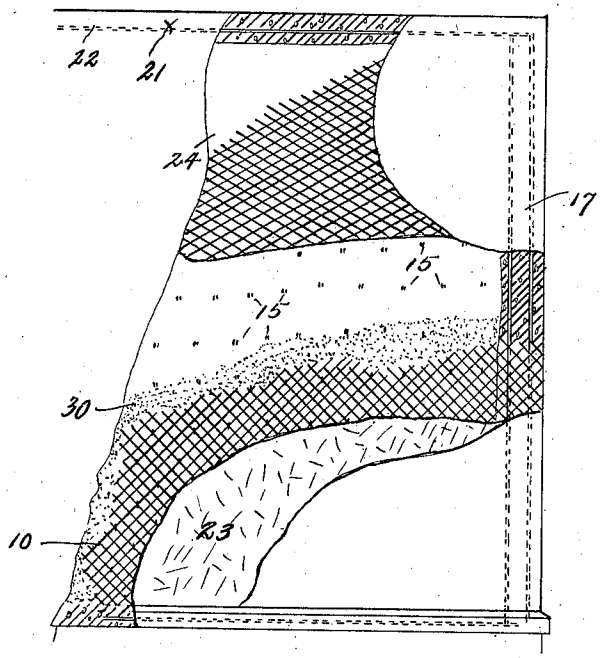


Fig. 4.

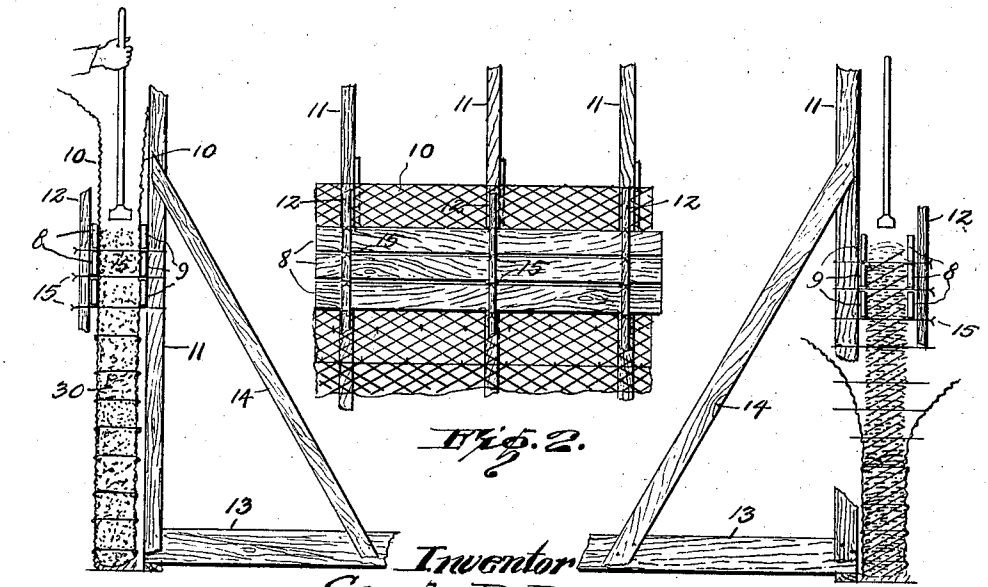


Fig. 2.

Fig. 1.

Fig. 7.

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UNITED STATES PATENT OFFICE.

GEORGE R. DYE, OF INDIANAPOLIS, INDIANA.

PACKED WALL CONSTRUCTION.

Application filed December 28, 1921. Serial No. 525,317.

To all whom it may concern:

Be it known that I, GEORGE R. DYE, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented new and useful Improvements in Packed Wall Construction, of which the following is a specification.

The object of this invention is to provide a wall for buildings and method for constructing same, which will be less expensive in cost of material than stone, brick, wood, and materials heretofore commonly used; which will require less skilled labor and less time to construct; which will be as good or a better non-conductor of heat and moisture, fire-proof, and as durable in all respects as walls erected from any of said usual materials.

I accomplish the above, and other objects which will hereinafter appear, by the means illustrated in the accompanying drawing, in which—

Fig. 1 is a vertical section showing the forms which I use, in operative position, and a filling of cinders being tamped therein to make the body of a wall. Fig. 2 is an outside elevation of the construction illustrated in Fig. 1, showing the outside form and uprights and retaining wire-mesh. Fig. 3 is a vertical section of a finished wall with stucco exterior and plastered interior surfaces. Fig. 4 is a side elevation of the wall shown in Fig. 3, viewed from the outside, and showing the vertical wall-strata or layers successively removed, starting from the outside, to reveal the inside layers. Fig. 5 is a horizontal section of a completed wall, at the junction of a partition wall therewith. Fig. 6 is a like view illustrating a pillar at the corner of a building, and a door and a window jamb, and Fig. 7 is a vertical section illustrating a modified method of wall construction.

Like characters of reference indicate like parts throughout the several views of the drawing.

My construction is based upon the fact that rammed cinders, earth, or the like, without any cementitious or mortar binder, make a good wall if retained by suitable surface coverings, just as the unstable contents of a sack will bear a load and retain its shape so long as the sack retainer lasts.

In carrying out my invention I provide an outside form 8, approximately three feet high and as long as the wall, made out of inch by twelve inch boards, and a like inside frame 9. These are spaced apart a distance equal to the desired wall-thickness and are lined on their adjacent sides with expanded metal or woven wire fabric 10. The wall is plumbed by inside vertical timbers 11, and outside vertical timbers 12, the latter of which may be of smaller dimensions as the inner ones are preferably strengthened by being nailed to floor-joists 13, and by diagonal braces 14 connecting the vertical members with said horizontal joists.

The vertical timbers 11 and 12 are tied together at vertical intervals approximating a foot each and separated about two feet in their horizontal distances, by wires 15 which are passed above and below, and through cracks between the boards of frames 8 and 9, and are tied to the respective vertical timbers 11 and 12, as shown in Figs. 1 and 2.

In the operation of building a wall, the bottom row only of wires 15 is put in, and a filling of cinders, crushed slag, broken stone, earth, or the like, is introduced between the frames and the space there is filled and tamped to the top of the first board. Then the second row of tie-wires is inserted and the filling material is carried up to the top of the second board. As the wall is carried up the lower form-boards are removed by clipping the wires, which are left in the wall and are later bent to form end-hooks in them which are hooked into the wire-mesh. The removed boards are placed on top of the form to carry the form higher and this operation is repeated until the desired height of wall has been obtained.

As the wall progresses concrete is poured into the corners of the building to form columns 17 and at intersecting walls to form columns 18, and also around the door and window jambs 19 and 20. This requires no other forms than those already described for the packing operations.

When the top of the wall is reached a concrete header-beam 21, with the usual metal reinforcements 22, is run into the space between the frames on top of the tamped packing material, as a support for the roof timbers.

Fig. 7, is a modified construction wherein a filling 30 of earth, or sod, or other suitable material, is tamped between the forms, but without the expanded metal or wire-mesh material being then positioned against the

inner faces of the forms. The transverse ties are placed through the wall as it is formed, with the straight ends protruding, and as the form is carried up and removed the expanded metal or wire-mesh is laid against the packed earth and wires or bent into it so as to hold it in place.

In all of the above operations, after the tamped wall has been carried to the desired height and the inner and outer metal mesh coverings have been bound together by the wire-ties, cement plaster is applied to both outer and inner surfaces. The first coats 23 and 24, respectively, will be treated as scratch coats, and their outer surfaces will be plastered with any kind of usual and desirable cement, pebble, sand or other finish, half timbered or stuccoed in any form; it being understood that the kind of outer finish is not material, and that the inner surface may be finished in any preferred kind of plaster.

When completed my improved wall will comprise an outer and an inner slab of cement and plaster, reinforced by a metal mesh embedded in each of them and tied together through the wall with transverse metal-ties having end-hooks engaging the wire-mesh which are also embedded in the mortar slabs, and the wall will have a core of rammed non-cementitious material 30 filling all of the space between the surface slabs and pressing outwardly against said slabs and holding them in place. The transverse ties hold against any pressure coming through the rammed material and serve materially in giving rigidity to the wall structure.

It will thus be seen that a fireproof building may be constructed which will be frostproof and damp-proof, durable, non-decaying, and economical in cost of construction. It will be a good non-conductor of heat and will insure equitable temperature in all seasons of the year.

While I have described the best form of my invention now known to me, it is obvious that it is capable of many variations in details of construction, some of which I have referred to, and I therefore do not desire to be held strictly to the construction here shown and described, or any more than is required by the appended claims.

Having thus fully described my invention what I claim as new and wish to secure by Letters Patent, is—

1. A one-piece wall comprising surface members of tenacious, strongly united material extending substantially in a single plane from top to bottom of the wall, ties connecting the member of one surface with that of the other, and a filling between them of a material which is normally loosely adherent but which is closely compacted in the wall.

2. A one-piece wall comprising surface members of tenacious, strongly united material extending substantially in a single plane from top to bottom of the wall, a material of loose particles compacted by pressure to fill the space between said surface members, and means to hold the surface members from spreading away from each other.

3. A one-piece wall comprising cementitiously united surface members extending substantially in a single plane from top to bottom of the wall, ties connecting the two surface members of the wall, and a granular non-cementitious filling packed between the surface members.

4. A one-piece wall comprising cementitiously united members in substantially a single plane in each surface, metal reinforcements in said surface members, ties connecting the surface members to keep them from spreading away from each other, and a filling of granular material compacted between the surface members.

5. A one-piece wall comprising cementitious members extending substantially in a single plane on each wall surface, metal reinforcements in said members, metal ties connecting a member on one side of the wall with the opposite member to keep them from spreading apart, and a filling of cinders or like granular material compacted by tamping to fill the space between the two surface members.

6. A one-piece wall comprising cementitiously united members in substantially a single plane in each surface, metal reinforcements in said surface members, ties connecting the surface members to keep them from spreading away from each other, a filling of granular material compacted between the surface members, and concrete members at the wall corners, wall intersections, wall openings and tops.

Signed at Indianapolis, Indiana, this the 21 day of December, 1921.

GEORGE R. DYE.