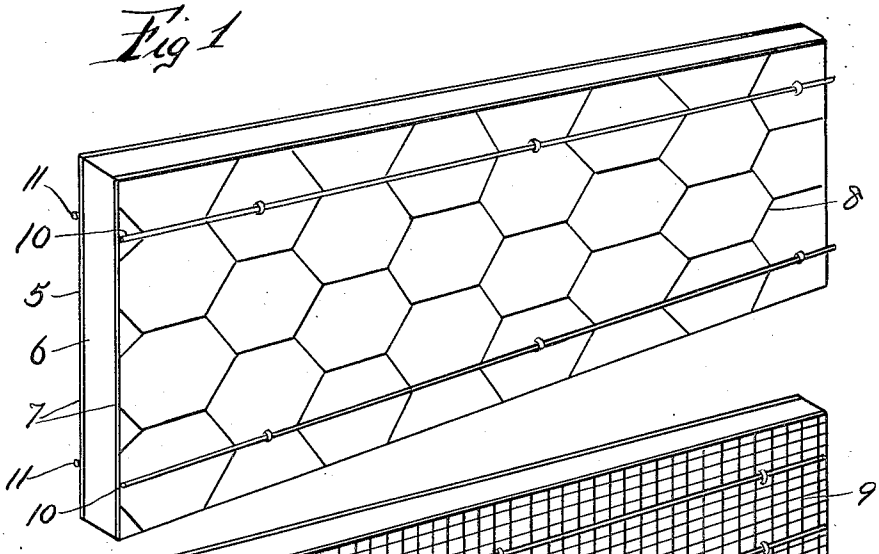
Oct. 28, 1930. J. S. RAYNOR 1,779,949

WIRE KEY FOR PLASTER AND MEANS TO SECURE SAME TO PLASTER BOARD

Filed March 20, 1928

Fig. 1



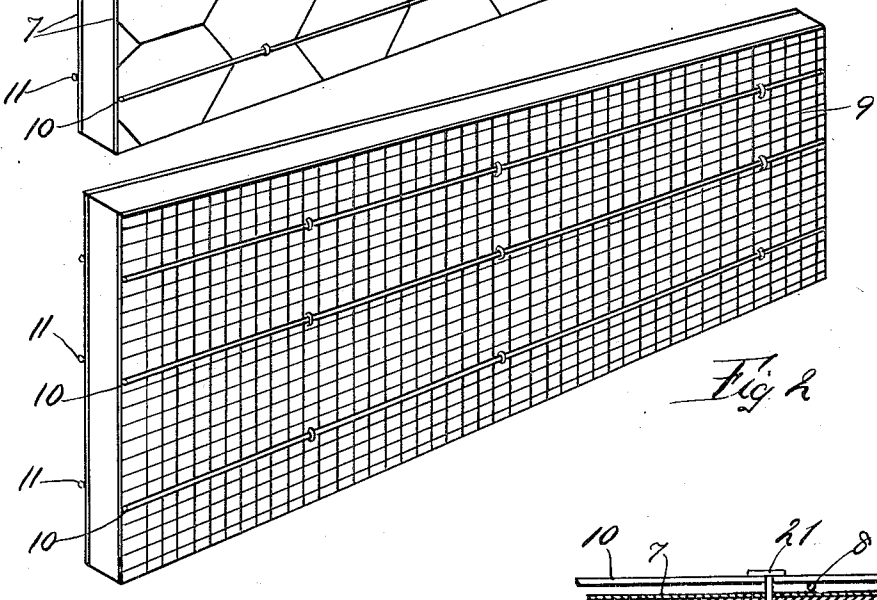
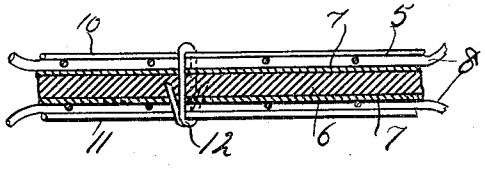


Fig. 2

Fig. 3



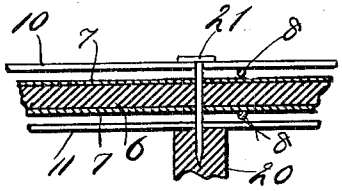


Fig. 4

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UNITED STATES PATENT OFFICE

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WIRE KEY FOR PLASTER AND MEANS TO SECURE SAME TO PLASTER BOARD

Original application filed June 2, 1927, Serial No. 195,946. Divided and this application filed March 20, 1928. Serial No. 263,084.

My invention relates to new and useful improvements in a wire key for plaster and means to secure same to plaster board, the same being a division from my application bearing Serial No. 195,946, under date of June 2, 1927, and has for its primary object to fix wires of any shape and of any arrangement to the surface or surfaces of plaster board or other stiff base element supporting means, commonly called compo board, etc., to offer a bed for receiving and holding the troweled applied plaster against the stiff supporting element.

Another object of the invention is to provide a key on a stiff supporting member for applied plaster which will be embedded in said plaster after the work has been completed.

A further object of the invention is to provide a sure and safe method of holding the applied plaster to a stiff supporting member thereby eliminating the possibility of said plaster falling off, even though cracked.

Plaster boards as now made and offered to the trade generally have a paper wrapper encasing the entire mass of base or core materials. The said base or core materials generally being made of wood fibre and presenting a felt-like appearance, and this paper wrapper or surface of the board offers the only key or grip for holding the applied plaster.

The manufacturers of this board specify that hard wall or gypsum quick-setting plaster must be used to cover the browing or evening-up coat, as the sand that enters into the mix of the applied plaster must be obtained at a point near where the work is being done. This sand at different places throughout the country has more or less loam in its body, and this loam when worked into hard wall or quick-setting gypsum plaster does not give the same result as will a clean sharp sand. Such a plaster mixture is commonly called a "poor mix" or "short mix". A poor or short mix will not adhere to the wood fibre surface with the intended grip.

The disadvantages above enumerated are entirely overcome when wire keys of such forms as herein described are fixed to the surfaces of the stiff supporting element, and will prevent the plaster from leaving the bed base.

From experience and from the study of work from which the applied plaster has fallen, I have learned that the bed or surface to which the applied plaster was intended to adhere changes its condition or contour during the drying period. The substance of the supporting member including wood or an analogous material in its make-up swells or expands when wetted by the application of the first coat of plaster. This has been noted under a strong magnifying glass, and the movement or swelling of the supporting element is clearly visible when a glass magnifying 250 times is used. This swelling or expansion which increases the thickness of the supporting member remains for a considerable length of time, often lasting for many days after the applied plaster has finally set. It is well known that quick-setting or hard wall plaster will set within two hours in fair weather. During this setting period the applied plaster will hold its position until hard, but the supporting element on which it has been troweled being of a wood base or having a wood substance in its make-up begins to swell or expand and pushes the setting plaster outward, then as the supporting member begins to dry out, it again contracts, leaving the plaster and forming a space or void between the surface of the supporting member and said plaster.

This plaster is now unsupported except where it rests upon a floor and where it may connect with a ceiling, so that very little jarring tends to crack it, and finally causes it to leave the base and fall away.

The breaking of the adhesive tendency of the plaster on the supporting base and the formation of the void or air space leaves the plaster as though hanging in the air, and it must and will break away and fall.

Another feature of my invention is that any kind of plaster can be applied to the base, some of those plasters being made from lime mortar, slow setting lime and hydrated nature, and the like. Any of these can be applied because I do not depend upon the

paper surface of the plaster board base for adhesion of the two bodies. By securing the wire key with devices which pass entirely through the base or plaster board, there is no possible chance of the keys leaving the board on moving from the position in which they are mounted, except the entire board be moved.

A very important feature of my invention is the arrangement which permits a workman to fasten the plaster board to wood joist or wood studding without breaking the surface or possibly driving the nail entirely through the plaster board. Up to this day, a workman must be exceedingly skilled in the use of a hammer or hatchet so that the head of the nail will not be driven any further than just to the surface of the plaster board, and said nail must be driven absolutely straight and even, or it will cut into the plaster board, and thus cause said board to fall when wetted by an application of the first coat of plaster. With my invention the nail may be placed alongside of or close to any of the wires that are held with the fastening devices, so that when driven home, the head will rest upon such wire. In fact it has been found that the nail may be driven in only part way, and then bent over the wire without in any way affecting the supporting quality thereof.

My invention provides a substantial method of securing or fastening a safe and sure key for applied plaster to a plaster board or supporting member of stiff material.

It might be well to mention at this time that the key produced by my invention also acts as a reinforcement for the plaster, holding it in place during the drying period and adding strength to the finished wall.

One way in which this invention may be carried out is to provide a gang row of stapling or stitching machines spaced at suitable intervals dependent upon the kind of key and reinforcing desired. By the kind of key and reinforcing desired I mean the different kinds needed for straight wall work and that for ceiling and other overhead work such as spandrel angle surfaces where the plaster is in constant downward pull and totally dependent upon adhesive friction between the plaster and the paper or other casing of the plaster board. In the latter case I sometimes use wire screening of closer mesh than when the device is to be used for vertical work. Wherever wire screening is referred to, it is to be understood that it covers poultry wire, expanded metal, screening such as used on cellar windows or other foraminous metal structures.

The sheet of plaster board or other stiff supporting member is inserted in the stapling or stitching machines with the primary and selected secondary wires, located against both faces of the plaster board with the primary wires on one face directly above those on the other face, so that as the staples or stitches are inserted, they will pass about the oppositely disposed primary wires. Where staples such as herein illustrated are used, they are driven through the plaster board with the legs straddling the wires, and when clinched the ends return back into the plaster board on opposite sides of the wire on the reverse face of the plaster board.

With these and other ends in view, this invention consists in the details of construction and combination of elements hereinafter set forth and then specifically designated by the claims.

In order that those skilled in the art to which this invention appertains may understand how to use and make the same, I will describe its construction in detail, referring by numerals to the accompanying drawings forming a part of this application.

Fig. 1 is a perspective view of a plaster board showing my improvements applied thereto.

Fig. 2 is a view similar to Fig. 1, of a modified form of the invention.

Fig. 3 is an enlarged fragmentary horizontal section of Fig. 2.

Fig. 4 is a fragmentary sectional view of the plaster board with the reinforcing key showing the manner in which it may be secured by nails to studding.

In carrying out my invention as herein embodied, 5 represents a plaster board of any suitable dimensions and constructed of the usual materials in a well known manner comprising a base or core 6 enclosed in a covering 7 of paper or an analogous material.

On both faces of the plaster board are imposed, what I term secondary wires or wire structures for purposes of description, and in Fig. 1 the secondary wire structure or element is shown as poultry wire designated by the numeral 8 while in Fig. 2 said secondary element is illustrated as wire screening 9, of rather small mesh, such as used in cellar windows and the like. It is to be understood that where the terms "secondary element" or "secondary wire structures" are used, these are to cover such other structures, as expanded metal, lathing and foraminous metal sheets or articles.

Superimposed on the secondary elements are a plurality of substantially parallel primary or holding wires 10 and 11. Corresponding wires on opposite sides of the structures are in the same horizontal plane when considered in connection with Figs. 1 and 2 of the drawing and these wires are fastened in place by stitching or staples 12 driven through the plaster board, so as to straddle adjacent wires on opposite sides of the structure, and the ends of the staple legs are clinched or bent back with said ends passing over opposite sides of the wire on the reverse

side of the plaster board and returned into or embedded in the plaster board as plainly shown in Fig. 3.

In Fig. 4, I have shown a section of plaster board having my invention applied thereto, secured to a stud 20 by a nail 21, which passes through the plaster board in the usual manner, but the head rests upon one of the primary wires and is thus prevented from entering the plaster board or breaking its surface, and because of the extended bearing of the primary wire on the plaster board, it cannot be pulled through the plaster board, and therefore the latter will remain in place indefinitely, and it does not require the services of a skilled mechanic to carry out the nailing operations, since the head of the nail can never be driven into the plaster board so long as the nail is positioned beside a wire.

In actual practice, when the plaster board with my invention applied thereon is erected and the plaster applied thereto, the several wires will be embedded in the plaster and act as keys, as well as reinforcing for said plaster.

Now when the plaster board dries out, even though it shrinks and leaves the plaster, the latter cannot fall away because it is keyed to the wires, and the shrinking has no effect whatsoever upon the staying qualities.

The practicability of the invention is quite apparent when heavy bodies of plaster are to be used on both sides of the plaster board for a solid wall partition because the plaster will hold firmly and arch itself from one stitching or stapling point to another.

Of course I do not wish to be limited to the exact details of construction as herein shown as these may be varied within the limits of the appended claims without departing from the spirit of my invention.

Having thus fully described my invention, what I claim as new and useful is:

1. As an article of manufacture, a supporting structure, foraminous elements imposed on opposite faces of said supporting structure, means disposed over the foraminous elements in juxtaposed position, and means passing through the supporting structure and the foraminous elements and positively engaging the first mentioned means at opposite sides of the supporting structure.

2. As an article of manufacture, a sheet of material, foraminous elements imposed on opposite faces of the sheet of material, wires disposed over the foraminous elements, and means passing through the sheet and the foraminous metal and positively engaging the wires at opposite sides of the sheet to fix the foraminous elements and wires to said sheet.

3. As an article of manufacture, a sheet of stiff material, wire mesh elements imposed on opposite faces of the stiff material, wires disposed over the wire mesh elements in juxtaposed positions at opposite sides of the stiff material, and means passing through the sheet of stiff material, the wire mesh elements and positively engaging opposite wires to fix the latter and the wire mesh elements and the sheet of stiff material.

4. As an article of manufacture, a sheet of stiff material, wire mesh imposed on opposite faces of the stiff material, substantially straight wires disposed over the wire mesh with the substantially straight wires on one side of the structure in parallel juxtaposed position to the similar wires on the other side of the structure, and staples embracing substantially straight wires on one side of the structure and passing through the sheet of material and the wire mesh and bent over corresponding wires at the other side of the structure to fix said substantially straight wires and the wire mesh on the sheet of material.

In testimony whereof, I have hereunto affixed my signature.

JOHN S. RAYNOR.