March 8, 1927. 1,619,944

F. P. LEONARD

NAIL

Original Filed Jan. 25, 1923

Fig. 1.

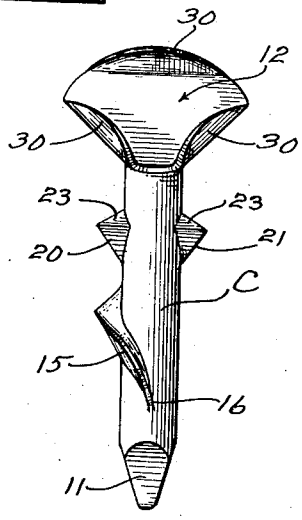


Fig. 4.

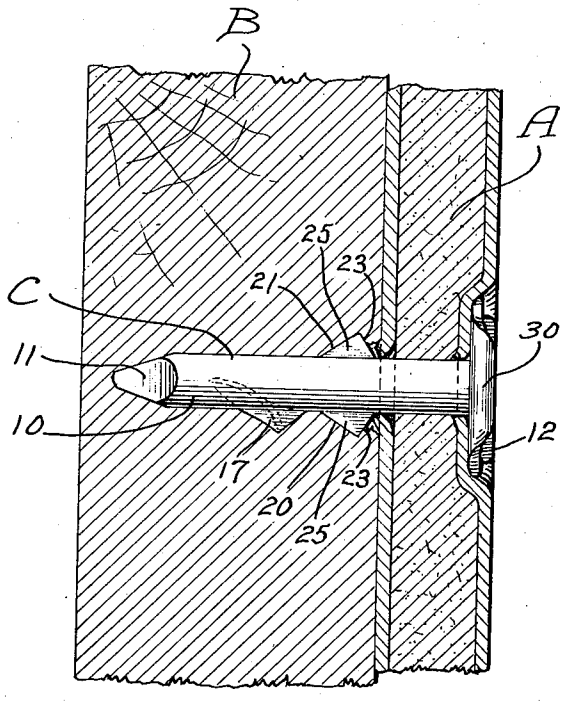


Fig. 2.

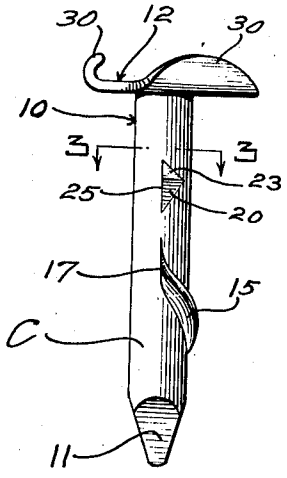
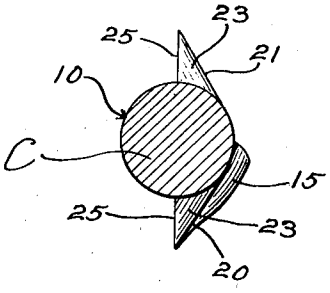


Fig. 3.



Inventor
Frank P. Leonard

Lancaster and Allwine
Attorneys

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UNITED STATES PATENT OFFICE.

FRANK P. LEONARD, OF TROY, NEW YORK, ASSIGNOR OF ONE-HALF TO FREDERICK C. CLAESSENS, OF TROY, NEW YORK.

NAIL.

Original application filed January 25, 1923, Serial No. 614,900. Divided and this application filed September 18, 1925. Serial No. 57,206.

This invention relates to improvements in nails or analogous fastening elements, and is a divisional application upon case Serial Number 614,900; filed by me on January 25, 1923, which application matured into Letters Patent #1,557,711, dated October 20, 1925.

The primary object of this invention is the provision of a nail particularly well adapted for the securing of composition wall materials, such as plaster board, fiber board, wood board, and the like.

A further object of this invention is the provision of a nail or analogous fastening element which is adapted to interlock with an article into which the same is driven, in such a manner as to prevent the same from working loose incident to ordinary shocks and vibrations.

A further object of the invention is the provision of a driven headed fastening element embodying an arrangement of barbs or projections on the shank thereof, so arranged, as to permit of the nail being economically constructed in one operation, as by means of a die, so that there are no features of the fastening element which would make the cost of the same prohibitive.

Other objects and advantages of this invention will be apparent during the course of the following detailed description.

In the accompanying drawing, forming a part of this specification, and wherein similar reference characters designate corresponding parts throughout the several views.

Figure 1 is a perspective view of the improved nail.

Figure 2 is a side elevation of the improved nail.

Figure 3 is an enlarged transverse section on line 3—3 of Figure 2, looking in the direction of the arrows; and,

Figure 4 is a cross sectional view taken through a composition wall material such as plaster board, showing the manner in which the same is secured upon studding or analogous foundation members by means of the novel fastening nails.

In the drawing, wherein for the purpose of illustration is shown but the preferred embodiment of the invention, the letter A may generally designate plaster, fiber, or analogous composition wall or board material, which is adapted for attachment to studding or analogous framing B, as by means of an improved fastening element or nail C.

It is well known to carpenters, plasterers, and others skilled in building construction, that composition board or wall material is very difficult to maintain in a secure and durable manner upon studding and analogous framing, primarily incident to the fact that nails which ordinarily fasten the same work loose either during the attachment of the composition board or wall material, or incident to shock or vibrations of the wall material which are placed upon the same when placing the trim, finishing coatings, or performing other like operations. Such loosening of the ordinary fastening nail element not only loosens the board material from the studding or framing, but also cracks the finishing coating upon the composition boarding or material, due to moving engagement of the head of the ordinary fastening nail therewith.

Referring to the construction of the improved fastening element C, the same includes a shank 10, preferably cylindrical, and of any desired length, having the inserting end 11 thereof pointed, and having a relatively wide head 12 on the opposite end thereof.

Referring now more specifically to the shank 10, the same is provided with a rib 15, spiralled about the outer surface of the shank intermediate the pointed end 11 and head 12, for a distance one quarter of a turn about the shank, or for 90° of the total circumference of the shank. This rib 15 may be wedge-shaped in cross section and have the lower end 16 thereof preferably tapering into the outer surface of the shank 10, in spaced relation above the shank point 11. At the upper end of the spiral rib 15, the same provides a flat triangular-shaped face 17, disposed in a plane coincident with the axis of the shank, and at a point on the circumference of the shank, 90° from the tapered lower end 16 of the spiral rib, and as is clearly illustrated in Figure 3. Formed on the shank 10 above the spiral rib 15, are diametrically opposed barbs 20 and 21, which may be polygonal in formation, and which lie wholly to one side of the diametrical plane of the shank, and to that side at which the spiral rib 15 is disposed. These

barbs 20 and 21 provide upper, rather abrupt shoulders 23 in facing relation toward the nail head 12, and may have their lower rear surfaces taper into the shank 10 in any approved manner. The barb 20 is preferably disposed directly above the upper end of the spiral rib 15. The barbs 20 and 21 each provide flat triangular shaped faces 25, lying in the same plane with the face 17 of the spiral rib 15, and facing in the same direction therewith. The upper abrupt shoulders 23 of the barbs 20 and 21 may taper gradually away from the faces 25, so that the nail may be readily driven, without undue restriction by the barbs and without liability of excessive mutilation of the fiber of the material in which the nail is driven. It is to be noted that the spiral rib 15 is substantially midway of the barbs and the pointed end 11 of the shank 10, while the barbs 20 and 21 are spaced sufficient distance below the nail head 12 that when the nail is "driven home" through the wall material, the barbs will be disposed but a slight distance below the surface of the studding or framing into which the nail is driven.

The head 12 may be of any approved formation for anchoring of a finishing coating placed thereover, and in the example shown is provided with upturned edge portions 30 which may be slightly arcuated over the outer surface of the head as illustrated in Figure 2.

The function of the nail in maintaining the composition wall material upon studding or framing is illustrated in Figure 4 of the drawing. The nail upon being driven into the studding B is rotated, by engagement of the spiral rib 15 with the wood fibers, for substantially 90°, and after the barbs 20 and 21 have passed into the material of the stud B, the same will neatly cut the fiber of the wood, without unduly mutilating the same, and merely push the fibers back, so that said fibers will spring in closing relation over the shoulders 23 of the bars 20 and 21, when the nail is entirely driven, as is illustrated in Figure 4. The head 12 of the nail may be slightly countersunk into the outer surface of the composition wall or board material A, substantially as is illustrated in Figure 4, and be retained in such countersunk relation incident to the effective locking function of the nail in the studding B. Due to the fact that the nail is in secure locked relation to maintain the material A firmly against the studding B, there will be no liability of loose play of the nail head upon the composition material A.

It will be observed that by so disposing the spiral rib 15, and barbs 20 and 21; wholly to one side of a plane coincident with the axis of the shank, that the nail may be economically constructed in one operation, as by means of a die, and thus eliminating features which would make the cost of the nail prohibitive.

Various changes in the shape, size, and arrangement of parts may be made to the specific form of invention herein shown and described, without departing from the spirit of the invention or the scope of the claims.

I claim:

1. As an article of manufacture, a nail having a shank portion having a spiral rib extending laterally of the outer surface thereof and terminating inwardly of the ends of said shank, said rib having the lower end thereof merging into the shank of said nail and having the upper end thereof providing a flat surface disposed in a plane parallel with the longitudinal axis of the shank, said spiral rib being formed for not more than 90° about said shank.

2. As an article of manufacture, a nail including a shank portion having a spiral rib extending laterally from the outer surface thereof and continuing for substantially one-quarter turn about said shank, said spiral rib providing an abrupt flat side surface at the upper end thereof, said shank having laterally extending barbs disposed at diametrically opposed points in spaced relation above said spiral rib, said barbs providing flat side surfaces facing in the same direction circumferentially as the flat side surface of said spiral rib.

3. As an article of manufacture, a nail including a shank portion having a spiral rib of wedge shape in cross section and polygonal shaped barbs extending laterally therefrom, said spiral rib and barbs providing triangular shaped flat surfaces disposed in a diametrical plane of the shank and facing in one general direction, and said barbs having inclined surfaces providing wedges facing in the direct opposite direction from the triangular surfaces and lying wholly to that side of the diametrical plane of the shank to which the spiral rib is disposed.

4. As an article of manufacture, a nail including a shank portion having a spiral rib and barbs extending laterally therefrom, said rib and barbs providing triangular shaped flat surfaces facing in one direction and disposed in a like plane, said plane passing through the longitudinal axis of the shank.

FRANK P. LEONARD.