

D. ARGERBRIGHT.

Ladder.

No. 159,627

Patented Feb. 9, 1875.

FIG. 1.

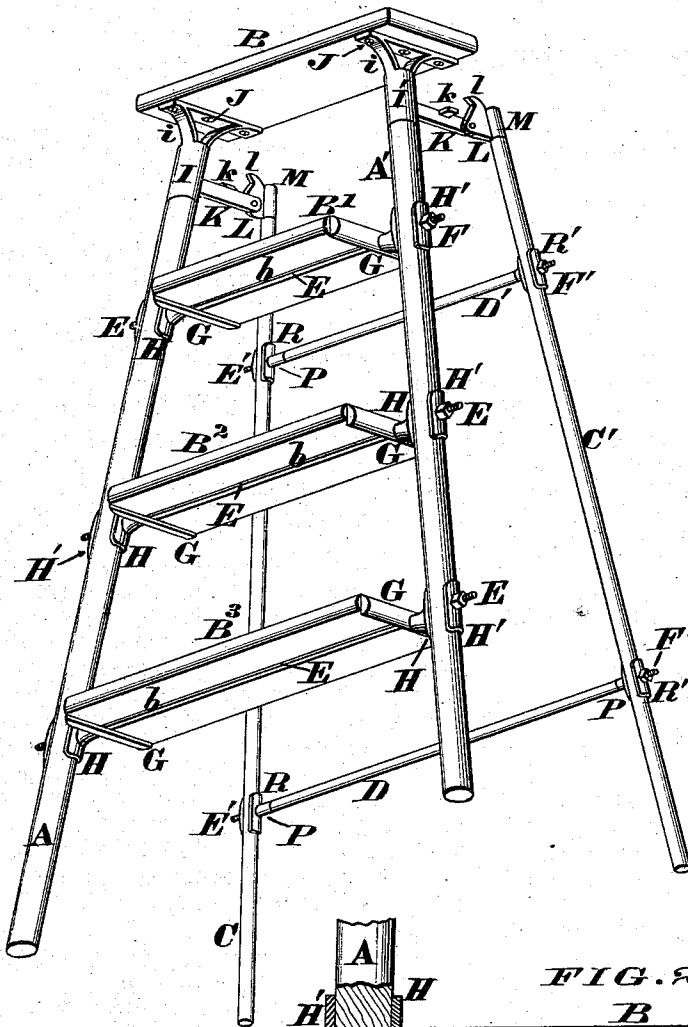


FIG. 6.

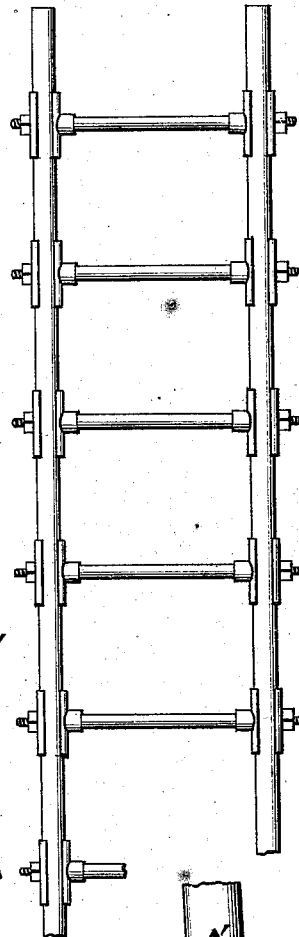


FIG. 3.

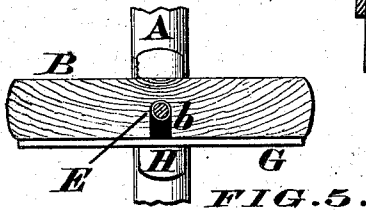
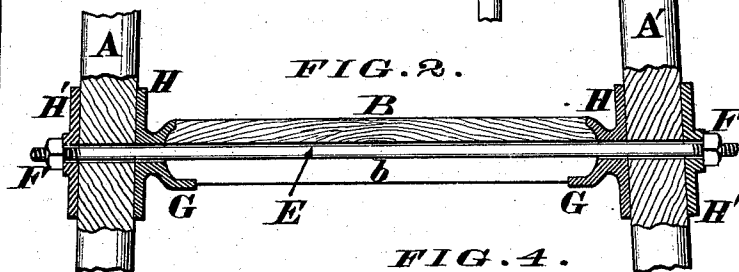
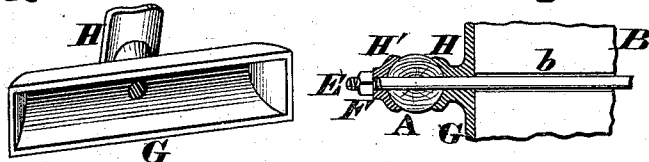


FIG. 4.



Attest.
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UNITED STATES PATENT OFFICE.

DANIEL ARGERBRIGHT, OF TROY, OHIO.

IMPROVEMENT IN LADDERS.

Specification forming part of Letters Patent No. 159,627, dated February 9, 1875; application filed August 12, 1874.

To all whom it may concern:

Be it known that I, DANIEL ARGERBRIGHT, of Troy, Miami county, Ohio, have invented a new and useful Improvement in Ladders, of which the following is a specification:

My invention has for its principal object a more secure and permanent connection between the steps and the sides of a ladder, while serving at the same time to brace and stiffen the parts attached. These objects I accomplish by means of a series of metallic sheaths or clips and tie-rods, as hereinafter more particularly explained.

In the accompanying drawings, Figure 1 is a perspective view of a step-ladder embodying my improvements. Figs. 2 and 3 are, respectively, longitudinal and transverse sections at the junction of one of the steps. Fig. 4 is a side elevation of a portion of a long ladder embodying the principal feature of my invention.

A A' represent the sides or stiles; B, the top-step, and B¹ B² B³ the other steps of a step ladder embodying my improvements. C C' represent the rods, and D D' the stretchers of the back prop.

The principal feature of my invention is the means by which I both connect and strengthen the steps and side pieces, and which I now proceed to describe.

Each step, except the top one, is grooved at *b* on its under side, to receive a wire rod, E, which, passing through the stiles, receives a nut, F, the end of the wire being properly screw-threaded for that purpose. Both ends of each of said steps have a metallic casing, G, from which projects a clip or sheath, H, adapted to embrace the inner side of the stile in the manner shown. H' is a similar clip for the outside of the stile, as represented. Both clips and casing are suitably perforated to permit the passage of the wire-rod E.

The advantages of this mode of construction are obvious. For example, instead of the large mortises for the wooden step-tenons, which always either seriously weaken the stile or necessitate unwieldy thickness, there is only required a small hole for the wire tie-

rod E, and even this slight diminution is much more than compensated for by the bracing action of the clips. The casings G, also, at the same time operate to strengthen and brace the steps, and even should either of the latter be broken, it could be quickly replaced by a new one, by merely unscrewing of the wire rod, without disturbing any other part of the ladder.

The top step is attached by means of ferrules I I', which engage over the tops of the stiles, and have perforated lugs *i*, through which wood-screws J pass into the under side of the step. Projecting from these ferrules are ears K, to which are hinged other ears, L, of ferrules M, which engage over the tops of the rear props. Lugs *k* on the ears K, engaging lugs *l* on ears L, prevent the props slipping out too far, and thus remove a cause of frequent accidents. The stretchers D of the props have ferrules P, whose clips Q enwrap the inner sides, while similar clips, R, enwrap the outer sides of the props, and a wire rod, E', passing through all these parts, and taking nuts F', operates to firmly connect the parts together, and to brace and stiffen the same.

The rounds of a long ladder will be secured in a similar way. (See Fig. 4.)

While describing the preferred form of my invention I reserve the right to vary the same in non-essential particulars—for example, the wire tie-rods may have their ends secured by riveting either in conjunction with or substitution of the nuts, or they may have a nut on one end merely, and a head on the other.

I claim as new and of my invention—

In a ladder, the combination of the stiles A A', steps B¹ B² B³, clip-casings G H, outside clips H', and tie-rod E, all constructed and arranged as herein set forth, for the purpose specified.

In testimony of which invention I hereunto set my hand.

DANIEL ARGERBRIGHT.

Attest:

GEO. H. KNIGHT,
GEORGE GREEN.