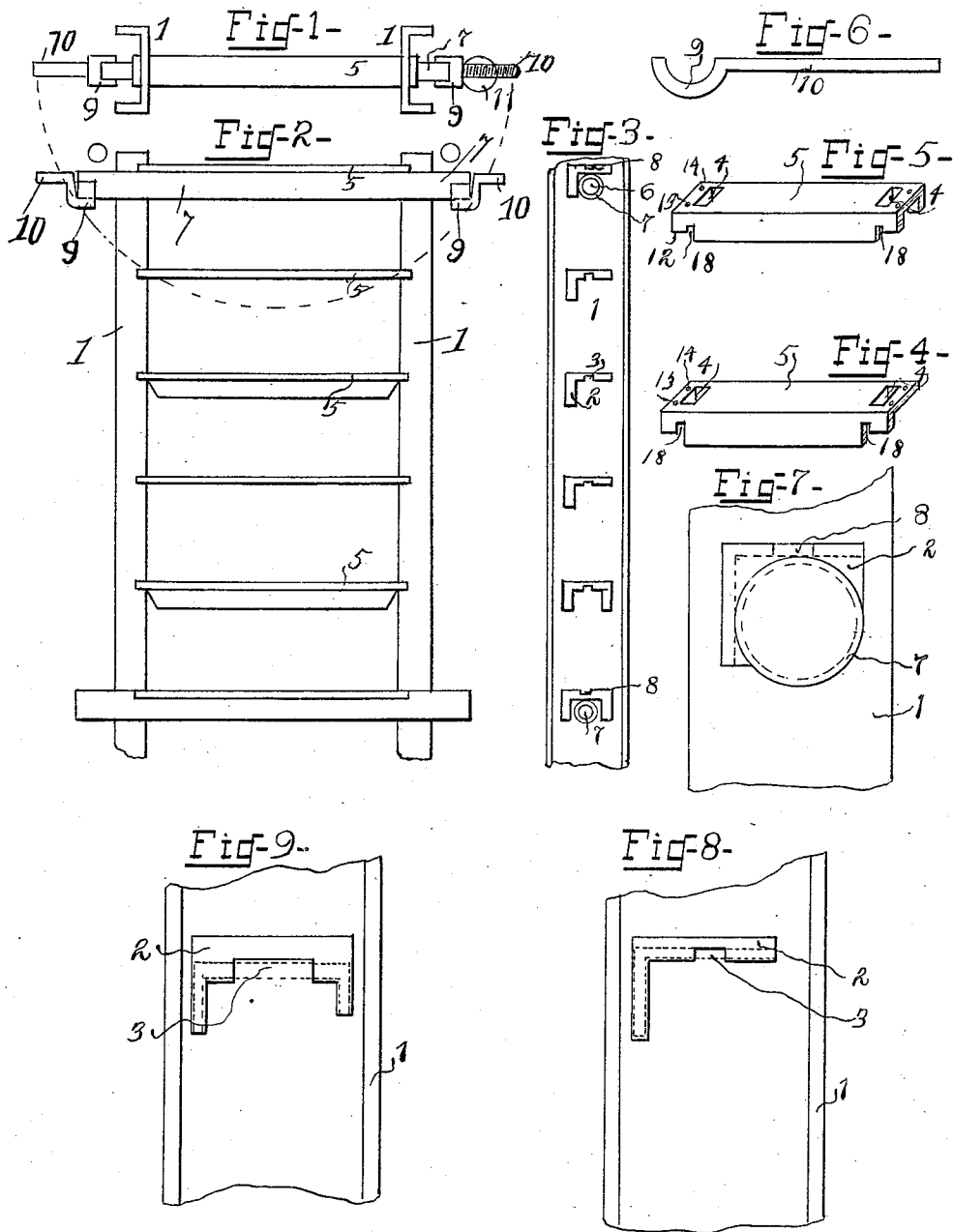


(No Model.)

F. JOHNSON.
METALLIC LADDER AND PARTS THEREFOR.

No. 532,965.

Patented Jan. 22, 1895.



WITNESSES:

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METALLIC LADDER AND PARTS THEREFOR.

SPECIFICATION forming part of Letters Patent No. 532,965, dated January 22, 1895.

Application filed February 23, 1894. Serial No. 501,297. (No model.)

To all whom it may concern:

Be it known that I, FERDINAND JOHNSON, a citizen of the United States, residing at New London, in the county of Chester and State of Pennsylvania, have invented certain new and useful Improvements in Metallic Ladders and Parts Therefor; and I do hereby declare the following to be a sufficiently full, clear, and exact description thereof as to enable others skilled in the art to make and use said invention.

This invention relates to fire proof ladders adapted to use for fire escape services, and for the general purposes of ladders requiring durability and strength for climbing, and to stand exposure to the weather or to heat, and has for its object the making of such ladders of interchangeable parts, of forms economically produced from bar metal, and easily erected by persons without any special mechanical skill.

The nature of this invention consists in a combination of step-plates, having notches and perforations therein, formed from flat bars, or angle, or channel iron, interlocked in the openings specially prepared in side strips from angle iron or channel bars, and further embraces cross bars adapted to fit in openings of special form made in the said side bars, and supporting devices whereby the same is easily attached to columns, walls, buildings or chimneys, and affording convenient means for the attachment of hand rails and casing, for guarding or surrounding the space contiguous to the ladder, and protecting persons on the ladder from flames, smoke or the weather.

The invention is hereinafter fully described, and illustrated in the accompanying drawings, in which—

Figure 1 shows a top view of the ladder embodying this invention, as attached to vertical columns or tubes; Fig. 2, a front elevation thereof; Fig. 3, a side elevation thereof; Figs. 4 and 5, two forms of step-plates; Fig. 6, a form of supporting hook; Fig. 7, an enlarged view of a portion of a side plate containing the aperture adapted to receive a step-plate, and a supporting cross piece; Fig. 8, an enlarged side view of a portion of a side-plate showing the aperture adapted to receive and hold the step-plates as cut from angle iron; Fig. 9, an

enlarged view of a portion of a side-plate showing the aperture adapted to receive and hold step-plates as cut from channel iron. In these three last views, Figs. 7, 8, and 9, the cross sectional form of the step-plate is indicated in dotted lines.

Referring to the drawings by numerals, 1 is a side plate, having openings cut therein marked 2, of angular form, and with a projection therein marked 3, adapted to fit in an opening 4, in the step-plates marked 5. The latter may be beveled, as shown, to save metal and make them lighter.

The opening 2 is of such dimensions that the end of the step-plate may be introduced horizontally over the projection or pin 3, and then dropped downwardly on the pin 3, which may be afterward riveted, or bent so as to secure the step-plate in position.

The terminal openings 6 (for the top and bottom step, for each series of steps) in each side plate are of a form adapted to fit a cross bar, or rod 7, which supports that series of steps.

When the steps 5 are made from angle or channel iron a part of the flange, at the point marked 18, may be cut out to make a notch which engages the terminal opening 2, as shown in Figs. 4 and 5.

The pins or projections in the terminal openings 2, project downwardly from the upper side of the openings, and are marked 8 in these openings, and enter openings in the step plates 5, which are held thereon by the cross bars 7 passing under them through the lower part of the opening 2.

The ends of the cross bars 7 are arranged to project sidewise beyond the plates, sufficiently to receive a support in the grooved bracket 9, which bracket may have a stem 10, which may be screw threaded or be of plain cylindric form to fit into openings in a column or upright tube 11, or it may be arranged and adapted to enter into the wall of a building or other structure.

The ends of the step plates 5 have perforations 13 and 14, in which may be inserted the ends of suitable stays or braces upon the wall of a building to support the ladders. Into these apertures 13 and 14, may also be secured the standards of hand rails.

The side plates 1 are made with definite

distances between the apertures 2, and may be made with different numbers of steps, so that material from the factory, made in interchangeable parts, may be easily assembled and a fire escape, adapted to almost any required situation and readily erected from stock on hand, instead of being constructed specially, and by reason of the arrangement of supporting it in brackets such escape can be readily applied to buildings and removed without any loss or deterioration of material.

The brackets 9 are preferably made with the center or the groove for receiving the ends of the bars or tubes 7, lower than the stem 10, so that there is no disposition to turn or slip with the weight of the ladder upon the brackets.

Having described this invention, what I claim is—

1. Side plates having apertures formed therein provided with projections adapted to engage corresponding apertures in transverse plates to form steps or ladders, substantially as described and for the purpose set forth.

2. In a metallic ladder the side plate 1, having apertures 2, formed therein with projections 3, in combination with step plates 5, having apertures therein engaging the projections 3, and notched to engage in the plates 1, substantially as described and shown.

3. A step plate for forming metallic ladders consisting of a metallic plate of channel or angle iron, notched on the flanges to en-

gage in the plates forming the sides of the ladders and having apertures 4 adapted to engage in projections formed in apertures in side plates, and also having perforations 13 and 14 in which are inserted the ends of stays to brace the latter, said perforations also adapted to receive standards of hand rails, substantially as described and shown.

4. Side plates 1 and step plates 5, perforated to engage in apertures 2, upon projections 3, in said side plates in combination with cross bars or tubes 7, arranged to hold the terminal steps in position of engagement with side plates 1, substantially as and for the purpose set forth.

5. The side frames 1 and steps 5, perforated and notched in the manner described, in combination with the cross bar and brackets 9 arranged to support the several parts as assembled and erected in the form of ladders, substantially as set forth.

6. A sectional ladder construction consisting of side plates 1, having apertures adapted to engage terminal step plates and cross bars as described, in combination with intermediate step plates having apertures and projections adapted to engage other perforations in the side plates 1 substantially as and in the manner set forth.

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Witnesses:

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