W. W. KNOWLES.

Carriage Step.

No. 105,876. Patented July. 26, 1870.

Fig. 1.

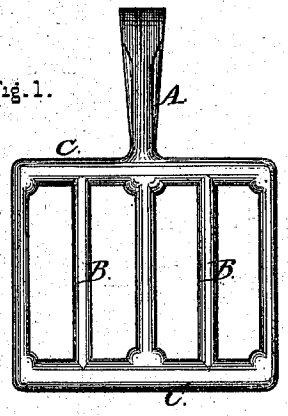


Fig. 2.

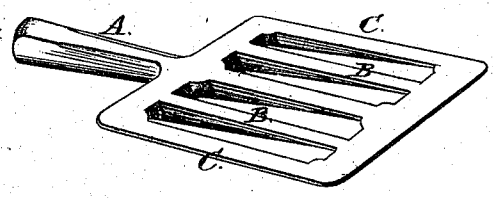


Fig. 3.

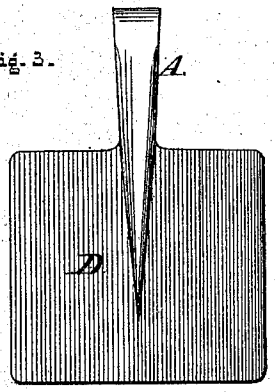
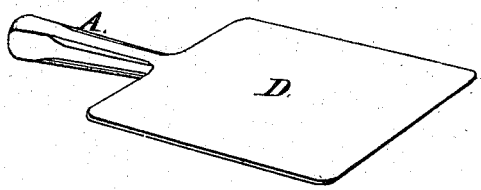


Fig. 4.



Witnesses.

Chas. H. Poole

Jas. J. Mason

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Atty's.

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WILSON W. KNOWLES, OF PLANTSVILLE, CONNECTICUT.

Letters Patent No. 105,876, *dated July* 26, 1870.

IMPROVEMENT IN CARRIAGE-STEP.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, WILSON W. KNOWLES, of Plantsville, in the county of Hartford and in the State of Connecticut, have invented a certain new and useful Improvement in Carriage-Steps; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making a part of this specification, in which—

Figure 1 is a plan view of the lower side of a step having an open-work center;

Figure 2 is a perspective view of the upper side of the same;

Figure 3 is a plan view of the lower side of a solid step; and

Figure 4 is a perspective view of its upper side.

Letters of like name and kind refer to like parts in each of the figures.

Heretofore, carriage-steps have been constructed of two pieces, the plate and shank, which were first cut and forged to nearly the required dimensions, riveted together, and then welded, as a result of which the finished article was rendered quite expensive by the amount of time and labor involved in its production, and by the loss and waste occasioned by the not infrequent burning of the iron while the parts were being welded.

In addition to the large cost of the steps, their strength and durability were frequently impaired by the imperfect welding together of their parts.

To remove these objections is the design of my invention, which consists in a carriage-step formed of or from a solid bar of iron, without welding, as is hereinafter set forth.

In the construction of steps from a solid bar of iron, I make use of the following described process, which is believed to be most desirable, although a like result might be produced by other means.

A bar of iron two and a half inches wide by five-eighths of an inch thick, is heated at its end, the same necked down under a drop-hammer, so as to roughly form the shank A, which is completed under or between suitable forming-dies, after which the piece designed for the step is cut from the bar, all at one heat.

The blank thus formed is reheated, and the step end plated or roughly drawn out into the general form of the finished step, between two plane dies, when it is ready for finishing, either as an open-work or as a solid step.

In order to complete the open-work step, a sample of one form of which is shown in figs. 1 and 2, the blank is again heated, placed within a female die having a suitable design sunk within its face, and forced into the same by means of a few blows of a plane-die, attached to a drop, after which the fin connecting the two bars, B, and rim C, is removed by corresponding punch-dies, the step returned to the forming-dies and completed by a single blow of the drop.

To complete the plain step, the blank before described is heated and placed upon a finishing die, having sunk within its face the form of the perfect step D and shank A, and is completed by means of a single blow of the drop.

The advantages possessed by this step over those in common use, are—

First, the fibers of the iron composing the shank and step are continuous, and, passing forward from the former into the latter, are spread out in the form of a fan, so as to give to the step the greatest possible strength and rigidity.

Second, being without weld or joint of any kind, concealed flaws resulting from the carelessness of workmen, or from an imperfect union between the shank and step, are rendered impossible, and a sound smooth appearance of the exterior will always indicate a corresponding solid interior.

Third, there being no loss from imperfections in the finished step, and a great saving in the time and material required in its manufacture, the step can be furnished at a much lower cost than has heretofore been possible.

Having thus fully set forth the nature and merits of my invention,

What I claim as new is—

As a new article of manufacture, a carriage-step, formed from a solid bar of iron without welding, substantially as hereinbefore set forth.

In testimony that I claim the foregoing, I have hereunto set my hand this 13th day of June, 1870.

WILSON W. KNOWLES.

Witnesses:

SIMEON H. NORTON.

JNO. D. QUILL,