L. SPRING.

MANUFACTURE OF BLANK PLANE-IRONS.

No. 187,191. Patented Feb. 6, 1877

Fig. 1.

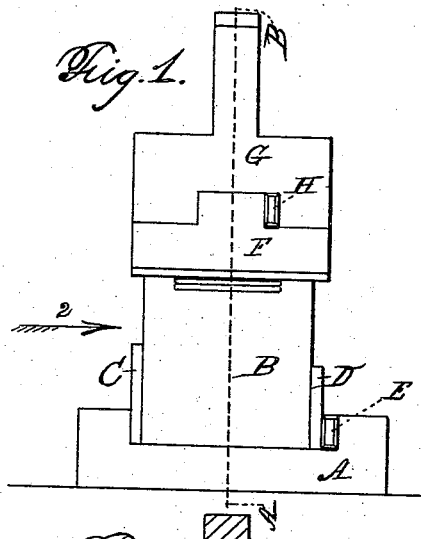

Fig. 2.

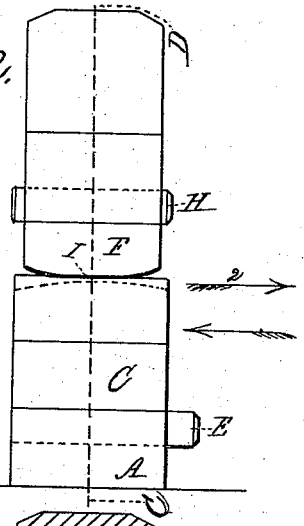

Fig. 3.

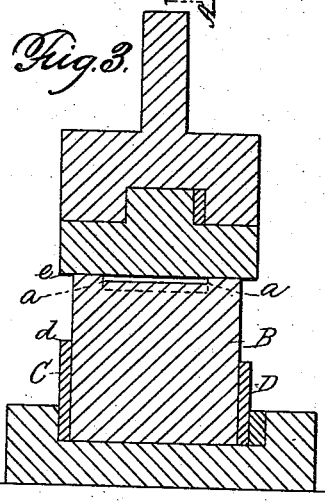

Fig. 4.

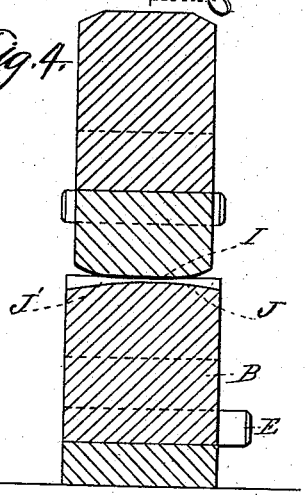

Fig. 5.

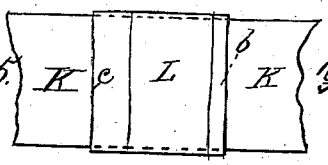

Fig. 7.

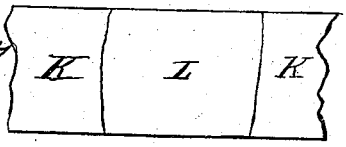

Fig. 6.

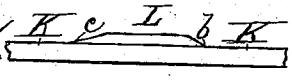

Fig. 8.

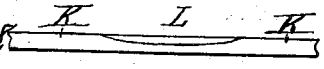

Fig. 9.

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LOUIS SPRING, OF MILLBURY, MASSACHUSETTS.

IMPROVEMENT IN MANUFACTURE OF BLANK PLANE-IRONS.

Specification forming part of Letters Patent No. **187,191**, dated February 6, 1877; application filed January 28, 1876.

To all whom it may concern:

Be it known that I, LOUIS SPRING, of Millbury, in the county of Worcester and Commonwealth of Massachusetts, have invented certain new and useful Improvements in the Mode of Manufacturing Blank Plane-Irons; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and in which—

Figure 1 represents a front view of the dies, looking in the direction of arrow 1, Fig. 2, by means of which my improved blank plane-irons are made. Fig. 2 represents a side view of Fig. 1, looking in the direction of arrow 2, Fig. 1. Fig. 3 represents a vertical central section on line C D, Fig. 2. Fig. 4 represents a vertical central section on line A B, Fig. 1. Fig. 5 represents, upon an enlarged scale, a top or plan view of a section of the bar of iron upon which the steel is welded to form my improved blank plane-irons, as will be hereafter explained. Fig. 6 represents an edge view of the parts shown in Fig. 5. Fig. 7 represents a top or plan view of the parts shown in Fig. 5, after the steel has been set into and welded to the iron bar, as will be hereafter explained. Fig. 8 represents an edge view of the parts shown in Fig. 7; and Fig. 9 represents a longitudinal central section through the blank plane-iron after it has been completed, ready to be cut off from the bar of iron.

To enable those skilled in the art to which my invention belongs to make and use the same, I will proceed to describe it more in detail.

In the drawings, the part marked A represents the base upon which the lower die B and edge-evener C and D rest, said parts being held together by means of a wedge, E. F is the upper die, being held in the hammer-head G by means of the wedge H, the lower edge of die F being rounded slightly, as seen at I, Figs. 2 and 4. The face of the lower die B is rounded, as shown at J J′, and is recessed down, leaving side flanges *a a*, the recess on the side J′ being the deepest. The parts marked K represent the iron bar upon which the steel L is welded to form my improved blank plane-iron. The iron bar K may be of any desired length, and the operation is as follows: A piece of steel, L, is laid upon one side of the bar, and a sufficient distance from the end thereof, so that the iron part which projects beyond the steel will be sufficient to form the tapering end M of the blank plane-iron after it has been drawn out, as shown in Fig. 9. The end of the iron bar, with the steel thereon, is run into a furnace, and both are brought to a sufficient heat to enable the operator, by means of a hand-hammer, to slightly weld the steel part L to the iron bar K.

The end of the bar, with the steel thus secured to it, is then returned to the furnace, and both brought to a welding-heat, after which the operator withdraws the iron bar, and the hammer G being set in motion, the operator runs the end of the bar in the direction of the arrow 1, between the flanges *a a*, and over the curved recessed face J J′ of the die B, so that the rounded face I of die F will first strike upon the upper side of the piece of steel L, and about equidistant from its ends *b* and *c*. He then moves the bar back and forth a few times over the curved face J J′, until the steel part L is welded to and set into the side of the iron bar, as shown in Figs. 7 and 8, after which he gradually draws the end of the iron bar, with the steel thereon, down into a wedge form, to form the upper tapering end of the plane-iron, as indicated in Fig. 9; and when this operation is completed, which can be effected at a single heat, the bar is cut off at 1, Fig. 9, or a short distance back of the end *b* of the steel. The operator now proceeds to repeat the operation until the iron bar is used up.

It may be remarked that the operator brings the steel and iron parts L and K to a uniform width by placing the bar occasionally edgewise upon the shoulder *d* of the evening-block C, so that when hammer G descends the projecting end *e* of the die F will come in contact with the iron and steel edges, and upset and hammer them to give the desired width to the plane-iron.

In practice I prefer to have the piece of steel L wedged or hammered so that its ends will be beveled or inclined off, as shown at *b* and *c*, the bevel *c* being at a less angle than the bevel *b*, while in placing the steel upon the

bar of iron the long beveled end *c* is placed toward the end of the iron which is to be drawn down to form the tapering end M. As the side J′ is recessed deeper than the side J the iron and steel are worked back toward the end M, as the operator draws the bar toward him, or in the direction of arrow 2, Fig. 2; consequently the iron and steel are gradually compressed and drawn out in such a manner as to render the process a refining one, thereby securing great perfection both in the weld and in the fibers of the iron and steel.

After the operator becomes expert in the process of handling the bar and welding the steel thereto, the first heat above referred to may be dispensed with, and the bar and steel both brought to a welding-heat the first time they are put into the furnace, and in which case, by my invention, a single heat suffices to complete the blank plane-iron.

Blank plane-irons were mostly manufactured in foreign countries previous to my invention, where labor was very cheap, and where the art of welding steel and iron by hand had been carried to a very high state of perfection; but even then the mode of operation was very different from that involved in the use of my invention, the piece of steel being placed directly upon the end of the iron bar instead of at a distance therefrom, as described above. This old mode of welding the steel to the iron bar necessitated cutting the bar up into short pieces or sections before the welding commenced, and of reversing the ends of the short piece of bar after the steel had been welded thereto, before the tapering end M could be formed; and it also required, by this old mode or process, two or three heats at least to complete an iron, and that, too, after the first heat had been given to enable the operator to stick the steel to the iron, whereas by my invention the whole operation requires but a single heat after the first heat required by both operations.

It will be understood that in Figs. 5, 6, 7, and 8, only a short portion of the iron bar K is shown, but that in practice the iron bar extends to a considerable length, and is used by the operator as a handle by which to manipulate the bar during the operation of welding the steel thereto, and of drawing out the tapering end M.

My invention has been fully tested, and the plane-irons have proved equal to, if not better than, those of foreign manufacture, while they can be manufactured at a cost which gives to the American manufacturer the advantage over the foreign manufacturer, even with his cheap and skilled labor.

Having described my improved mode of manufacturing blank plane-irons, what I claim therein as new and of my invention, and desire to secure by Letters Patent, is—

1. As an improvement in the art of manufacturing plane-iron blanks, the method herein specified, executed by dies, constructed substantially as described and shown.

2. The combination, in mechanism for manufacturing blank plane-irons, of the peculiarly-constructed die F, with the peculiarly-constructed die B, provided with the flanges *a a*, and eveners C and D, substantially as shown and described.

LOUIS SPRING.

Witnesses:
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THOS. H. DODGE.