(No Model.)

T. COLDWELL.

KNIFE CASTING AND PROCESS OF MAKING SAME.

No. 594,170. Patented Nov. 23, 1897.

Fig. 1.

A

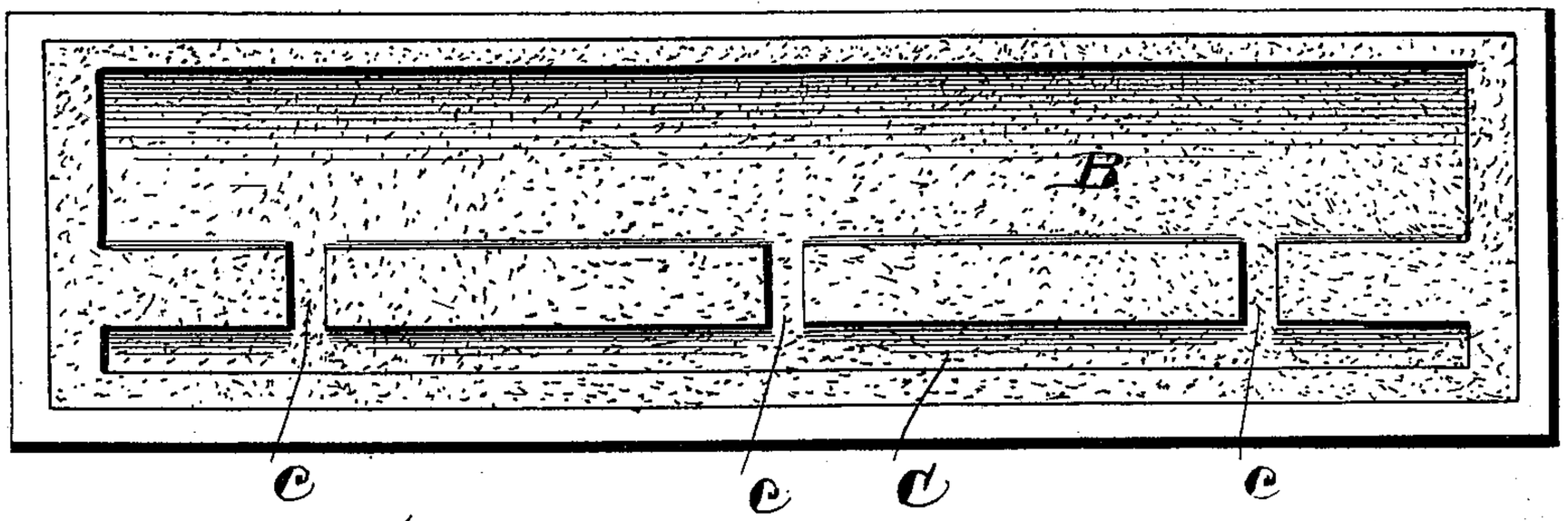


Fig. 2.

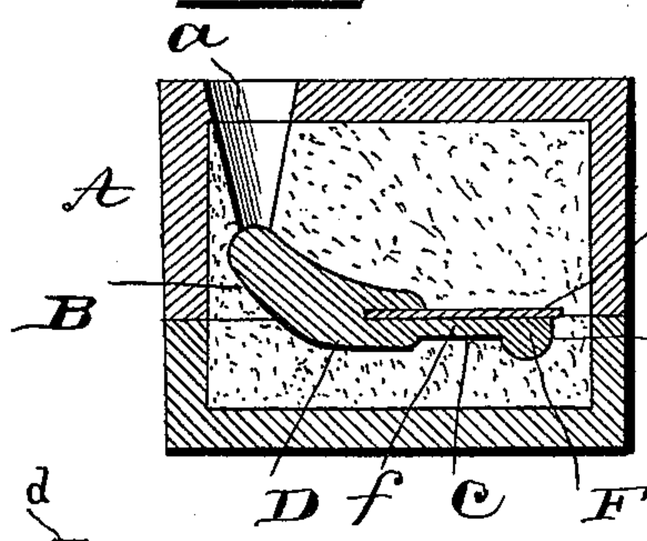


Fig. 3.

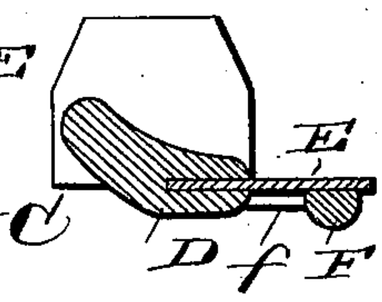
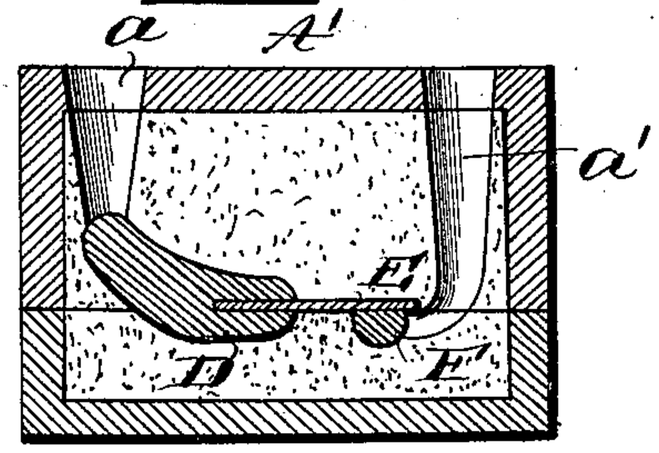


Fig. 4.

Fig. 7.



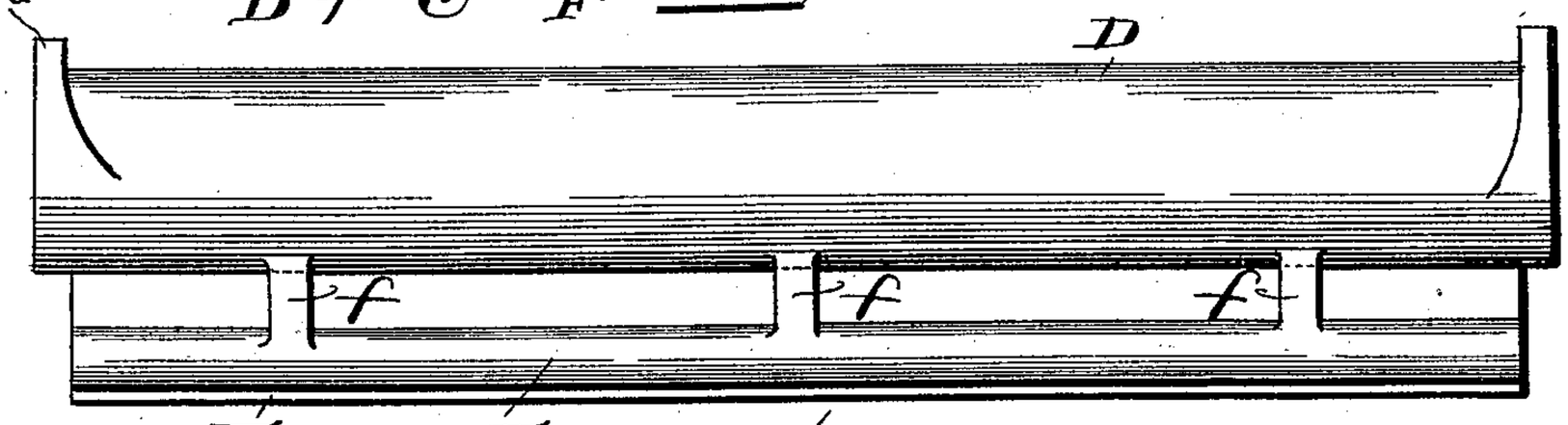


Fig. 5.

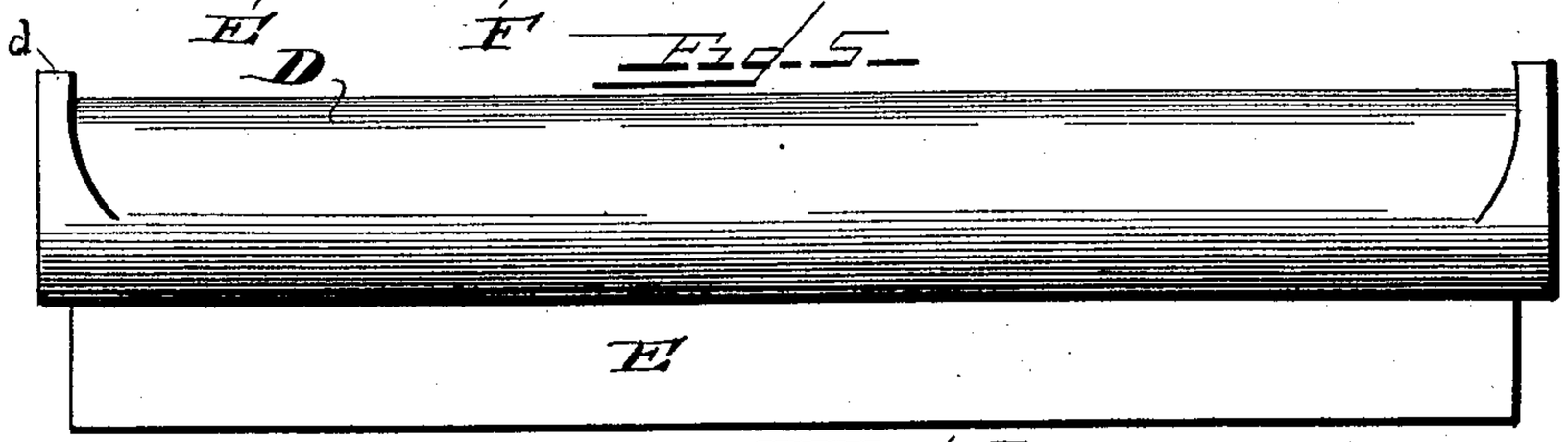
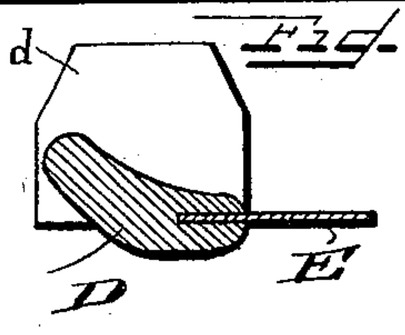


Fig. 6.



Witnesses.

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J. D. Kingsbury.

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UNITED STATES PATENT OFFICE.

THOMAS COLDWELL, OF NEWBURG, NEW YORK.

KNIFE-CASTING AND PROCESS OF MAKING SAME.

SPECIFICATION forming part of Letters Patent No. 594,170, dated November 23, 1897.

Application filed October 15, 1896. Serial No. 608,975. (No model.)

To all whom it may concern:

Be it known that I, THOMAS COLDWELL, a citizen of the United States, residing at Newburg, in the county of Orange and State of New York, have invented certain new and useful Improvements in Knife-Castings and Processes of Making the Same; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention consists in the novel features hereinafter described, reference being had to the accompanying drawings, which illustrate one way in which the invention may be carried into effect, and said invention is fully disclosed in the following description and claims.

In the manufacture of lawn-mowers the lower or stationary knife-blade is usually formed of two parts, a very strong cast-metal back and a thin sheet-metal blade, which is attached to the back by means of screws. This is open to serious objection, as the blade is clamped tightly only adjacent to the screws and the edge of the blade does not have a uniform degree of elasticity, which is necessary to the perfect operation of lawn-mower knives. It has been proposed to place a steel blade in the mold in which the back is cast and to cast the back upon the blade to remedy this defect, but it is found in practice that this is not desirable. The hot cast metal coming in contact with one edge of the knife causes it to expand more than the part which projects from the back, and the result is that when the casting cools the steel knife is warped and twisted so that it is difficult if not impossible to straighten it, and even if it could be straightened the additional labor required would make the knife too expensive. I avoid this objection by my improved process, by which I cast a dummy-bar beneath the outer edge of the steel blade, connected with the back by a series of webs, made by the passages which conduct the hot metal to the mold for the dummy-bar, and thus the entire width of the blade is exposed to the heating action of the molten metal, which causes it to expand uniformly throughout. When the casting cools, the knife-blade will be straight, and it is only necessary to break the webs to detach the dummy-bar, leaving the blade with one edge embedded in the solid cast-metal back and not requiring straightening.

In the drawings, Figure 1 represents a top plan of one-half of the mold used for casting the knife-bar and dummy-bar. Fig. 2 represents a sectional view of the mold, showing the blade in position with the metal back cast on it. Fig. 3 is a sectional view of the bar and blade as they come from the mold. Figs. 4 and 5 are respectively bottom and top plan views of the same. Fig. 6 is a sectional view of the bar and blade after removing the dummy-bar. Fig. 7 is a view similar to Fig. 2, showing the mold arranged to cast the dummy-bar separate from the back of the knife.

In the drawings, A represents the molding-flask prepared for casting the knife-bar.

B represents the mold for the back or bar proper, and C represents the mold for the dummy-bar, arranged parallel to the main-bar mold and connected with it by channels *c c c* for conducting the molten metal. The position of the steel blade E is indicated in Fig. 2.

It will be seen that when the bar is cast the molten metal will form about the rear edge of the steel blade E, and a portion will also pass through the channels *c c c* to the mold C beneath the front edge of the blade, thus forming the back or bar D, embracing the rear edge of the blade E and provided with the dummy-bar F, connected with the back D by the webs *f f*. The back D is also provided at each end with the usual attaching webs or flanges *d d*. It will thus be seen that the entire blade E is heated evenly by the molten metal and will be caused to expand uniformly, thus avoiding the twisting or warping of the blade.

The knife, as shown in Fig. 3, could be used, if desired; but as the dummy-bar would deprive the blade of its elasticity I break the webs *f f*, as indicated in dotted lines, Fig. 4, by striking them a blow with a hammer and remove the dummy-bar, as shown in Fig. 6, thus forming a knife composed of the cast back and steel blade united and with the blade perfectly true.

It is obvious that I may cast the dummy-bar separate from the main bar or back of the knife, if found desirable. In Fig. 7 I have shown a mold A′, arranged to cast the

dummy-bar in this manner. In this case the mold will be provided with the longitudinal groove or recess in which the dummy-bar is cast; but instead of providing the channels *c c* the mold will be provided with one or more separate filling-apertures *a'*, into which the metal to form the dummy-bar is poured. The molten metal will ordinarily be poured first into the aperture *a'* to form the dummy-bar F beneath the blade E, thereby heating the same, and will then be poured into the aperture *a* to form the main bar or back D. In this case no webs *f f* will be formed connecting the dummy-bar F and back D, and when the knife is removed from the mold the dummy-bar will simply remain in the mold and will be removed separately.

What I claim, and desire to secure by Letters Patent, is—

1. The herein-described process of uniting a sheet-metal blade to a cast-metal back which consists in placing the blade in a suitable mold, casting the back along and upon one edge of the blade, thereby heating this edge and causing it to expand, simultaneously heating the front or cutting edge throughout its length to cause it to expand at the same rate as the back edge, and allowing all portions of the blade to cool simultaneously with the cast back, substantially as set forth.

2. The herein-described knife-casting consisting of the metal blade, the cast-metal back embracing one edge of said blade, and a cast dummy-bar beneath the exposed portion of the blade and connected to the back by a fracturable connection, substantially as described.

3. The herein-described knife-casting consisting of the metal blade, the cast-metal back embracing one edge of said blade, and a cast dummy-bar beneath the exposed portion of the blade, connected to the back at intervals by integral fracturable webs, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

THOMAS COLDWELL.

Witnesses:

CLAUDE A. CONOVER,

FREDERIC W. BANKS.