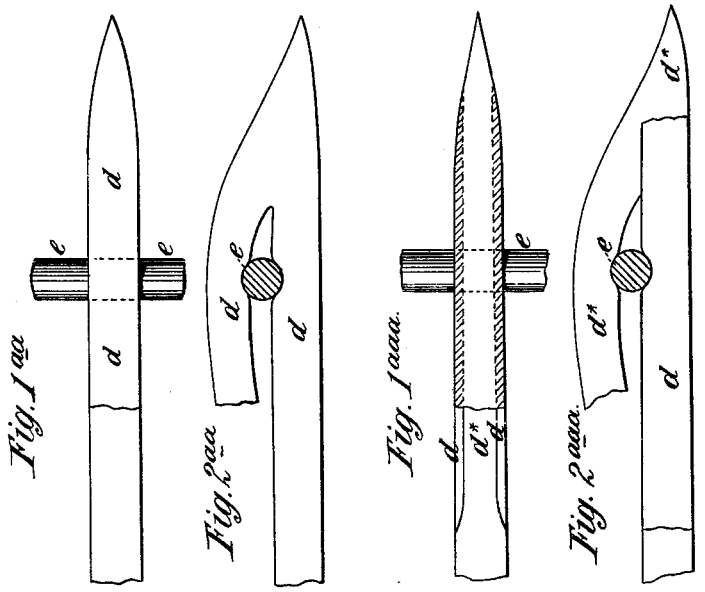
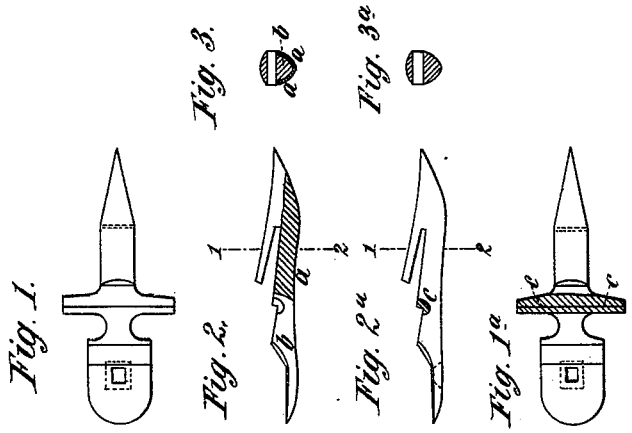
B. SAMUELSON & W. G. MANWARING.

Method of Manufacturing the Fingers of Harvesting Machines.

No. 201,052. Patented March 5, 1878.





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UNITED STATES PATENT OFFICE.

BERNHARD SAMUELSON AND WILLIAM G. MANWARING, OF BANBURY, ENGLAND.

IMPROVEMENT IN METHODS OF MANUFACTURING THE FINGERS OF HARVESTING-MACHINES.

Specification forming part of Letters Patent No. **201,052**, dated March 5, 1878; application filed November 16, 1877; patented in England April 28, 1876.

To all whom it may concern:

Be it known that we, BERNHARD SAMUELSON and WILLIAM GEORGE MANWARING, both of Banbury, in the county of Oxford, England, have invented certain Improvements in the Manufacture of the Fingers of Harvesting-Machines, of which the following is a specification:

This invention has reference to the method of manufacturing the fingers of harvesting-machines. These are manufactured, by preference, of forged steel, which, however, requires to be and is of such quality as to be capable of being hardened when brought to shape. This hardening process has hitherto had the effect of rendering the guard or cross-piece of the finger in front of the cutter-bar so brittle that it would not unfrequently break in the hands of the workman employed in fitting up the machine, or when it is subsequently in use in the field.

Now, the object of our invention is to remove this objection; and in order that the guard shall possess the requisite toughness we propose to introduce into or between the steel bars that are to compose the finger a cross-piece of wrought-iron or mild steel, of suitable proportions and in the proper position to form the guard in front of the knife or cutter-bar. When, therefore, the metal is wrought into shape and submitted to the hardening process, the guard will, from the nature of the material of which it is composed, have no tendency to become brittle; or, instead of making the bars from which the fingers are formed entirely of steel, we use for that purpose a fagoted bar having iron or mild steel in the center and steel sides, and between these fagoted bars we introduce a cross-piece of wrought-iron or mild steel, as in the former case, to form the guard. By using this fagot the cutting-edges of the finger, when hammered out, will be capable of being hardened, while the other parts of the finger retain the requisite toughness.

In the accompanying drawing, Figure 1 represents, in plan view, the finished finger. Fig. 2 is a side view of a finger made from a fagot of iron and steel; and Fig. 3 is a cross-section of the same, taken in the line 1 2 of Fig. 2.

The steel introduced into the fagot from which this finger is forged becomes, under the forging process, a veneer or coating to the iron which forms the core of the finger. This is clearly illustrated at Fig. 3, where *a a* represent the steel coating, and *b* the core of iron.

When the slit is made in the finger for the passage of the cutters, square edges of hard steel will be presented by the steel coating *a a* to the cutting sections, while the guard in front of the cutter-bar is of wrought-iron or soft steel. When the finger is made entirely of hard steel, with the exception of the cross-piece of iron or soft steel, the finger will show in cross-section, corresponding to that of Fig. 3, the same character of metal throughout, as indicated in the section 3^a, which is taken in the line 1 2 of Fig. 2^a, that figure being supposed to represent a finger made of hard steel and a cross-piece of wrought-iron or mild steel after our first-described method, and this same character of metal will be preserved throughout the finger except at the sectioned part marked *c c* in the plan views, Fig. 1^a and Fig. 2^a, which sectioned part consists of iron or mild steel, and constitutes the tough guard or cross-piece.

Figs. 1^{aa} and 2^{aa} show the hard-steel bars with the cross-piece of wrought-iron or mild steel previous to their being wrought into shape under the hammer or stamp. In these figures *d d* indicate the hard steel, and *e e* the wrought-iron or mild steel from which the cross-piece is formed.

Figs. 1^{aaa} and 2^{aaa} show another arrangement of fagoted bars previously to their being wrought into shape. In this case the cross-piece *e* is introduced between a fagoted bar composed of hard-steel sides *d* and an iron or mild steel center, d^*.

Having now set forth the nature of our invention, and explained the manner of carry-

ing the same into effect, we wish it to be understood that we claim—

The within-described method of manufacturing the fingers of harvesting-machines by first incorporating with the steel bars or steel-cased fagot, capable of being hardened, and of which the finger is composed, a cross-piece or bar of softer metal, to form the guard in front of the cutter; afterward forging or fashioning the whole into shape; and subsequently subjecting it to a hardening process, whereby the fingers present hard-steel cutting-edges while the guard in front of the cutter-bar is of tougher or less brittle material, substantially as specified.

Dated the 24th day of September, 1877.

B. SAMUELSON.
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