J. UNDERWOOD.

Babbiting and Drilling Jig.

No. 70,294. Patented Oct. 29, 1867.

Fig. 1.

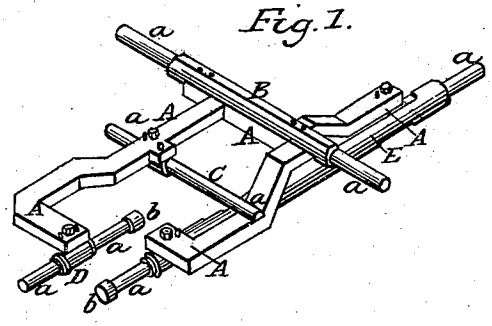


Fig. 2.

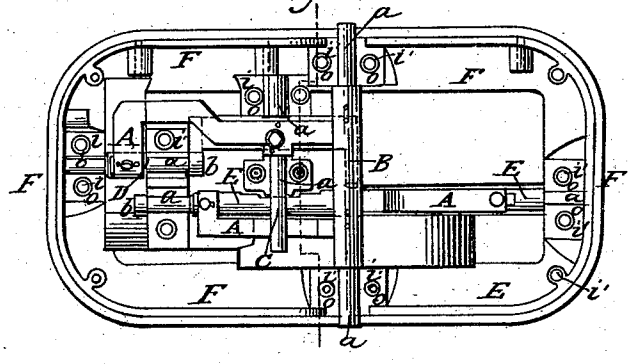


Fig. 3.

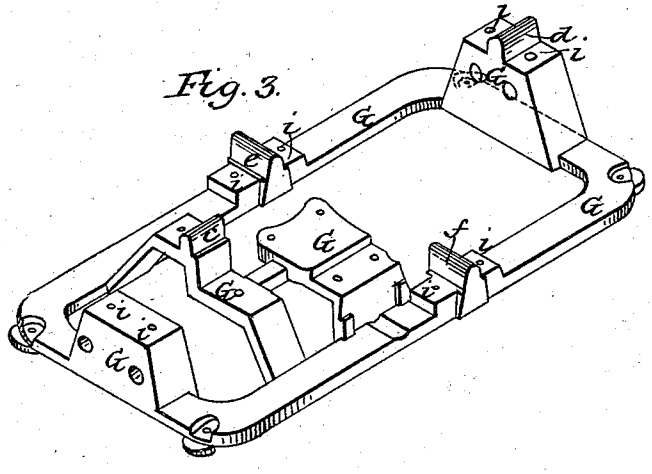
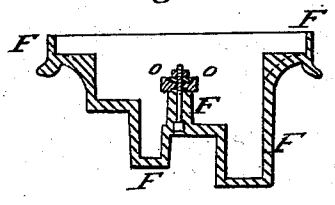


Fig. 4.



Witnesses:

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Letters Patent No. 70,294, *dated October* 29, 1867.

IMPROVED BABBITING AND DRILLING JIG.

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, JOHN UNDERWOOD, of Muscatine, Muscatine county, and State of Iowa, have invented a certain new and useful Improvement in a Babbiting and Drilling Jig, for fitting up journal-boxes and bearings on a cast-iron frame for harvesting machines; and I do hereby declare the following to be a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a perspective view of the "Babbiting" jig, showing its form and construction.

Figure 2 represents a top plan of the "Babbiting" jig, placed in or upon a cast-iron frame, preparatory to the pouring or casting of the "Babbit" or other soft metal on to or around its journals, to form journal-bearings in said cast-iron frame.

Figure 3 represents, in perspective, a drilling jig, for boring uniform holes in the cast-iron frame for the screws of the caps of the journal-boxes, &c.

Figure 4 represents a transverse section through the cast frame, taken at the red line *x x* of fig. 2, and showing the manner of counter-boring, to make seats for the male portion of the caps to fit, so as always to hold the caps absolutely in their proper positions, so that they may not bind the shafts, and also to make seats for thin washers on the screws which hold the caps of the journal-boxes.

In some of the smaller instruments, or implements, or machines, such as clocks, watches, and fire-arms, it has been common for many years to so make the various parts as to be interchangeable, or so that they may be made anywhere, and assembled at any other place, and so that a piece or part may be had at any time to take the place of a similar piece or part that may have become damaged by any accident or casualty. But no such attempt, so far as I can learn, has ever before been made to apply this principle of construction to large machines, and yet it is equally as valuable, if not more so, when applied to larger as to smaller things.

The object and purpose of my present invention is to make the frame of a harvesting machine, and so arrange and perfect the shafts, journal-bearings, or boxes thereon, and so accurately bore and fit the screws for holding the caps, that in the event of any part or piece getting lost, broken, or worn out, a duplicate may be had that will fit its place accurately and precisely, and without delay.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

The "Babbiting" jig, shown separately in the fig. 1, is composed of a frame, A, to which are united the formers B C and D E, the latter being at right angles to the former, and all arranged in such planes as the axes of the shafts or drawing-gear of the machine shall require or demand. The frame F of the harvesting machine is cast in one piece, and hollow, and with recesses and depressions for the shafts, journals, and gears that it is to contain, and so that when the cover, which may be also cast in one single piece, is put on, the whole machinery will be encased therein. To prepare the journal-boxes or bearings in this frame F, the jig (fig. 1) is laid into the frame, as shown in fig. 2, there having been cast in said frame suitable and proper depressions where the journal-bearings or boxes are to be placed, and whilst so placed and supported the soft metal (usually termed "Babbit metal") is poured around all the journal portions *a a a*, &c., and thus one-half of the journal-box for each and every journal is made, and perfectly made and located, not only as to height, but longitudinally; and any number of such hollow frames, F, may thus, by this same jig, have all their journal-bearings exactly alike, so that a shaft-gear or journal made to fit one, or one set of these boxes or bearings, would fit any one of them. The caps for these journal-boxes or bearings may be Babbited by this same jig, and they would, of course, exactly conform to the other portions of the bearings in the frame. The cross-section of the frame, as shown at fig. 4, shows some of the depressions for the gears, &c. That the shafts, gears, and journal-box caps may fit, and accurately fit, and be interchangeable, or assembled into any frame thus made, I next use a drilling jig, G, as shown in fig. 3. This drilling jig is a negative of the interior of the frame. It has two sets of bearings, *c d* and *e f*, which are at right angles to each other, and which set in the longitudinal and transverse bearings that have been made and "Babbited" in the cast frame, and thus steady and hold it. The "drilling jig" is fur-

nished with the number of holes, *i*, corresponding to the screw-bolt holes *i* necessary to hold all the caps to the journal-boxes, as well as other holes to fit and fasten the cover to the frame. These holes *i* are made to receive regulated sizes of bolts, and are in accurately-defined places, so that any cap and any screw-bolt will fit any journal-bearing. There still remains one thing that must be provided against, viz, the wearing of the journal or of the bearing. This I effect as follows: Every screw-hole that is to receive bolts for holding the caps of journal-boxes or bearing is counter-bored, as shown in fig. 2, so that their metallic or other washers (by preference made of tin) may be used in the counter-bores, as seen at *o*, fig. 4, so that, by putting on or taking off washers, the cap may be raised, lowered, or otherwise made to fit the journal.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

A Babbiting jig or former, constructed and arranged substantially as herein described, which, in conjunction with the bearings on a cast-iron frame, shall control the position of and give shape to the Babbit linings of said bearings, as and for the purpose herein set forth.

I also claim the drilling jig, herein described, as and for the purpose set forth.

And, finally, I claim the combination of the Babbiting jig and the drilling jig, for arranging and fitting the journal-bearings and boring the screw-bolt holes of the caps of the journal-boxes, as herein described and represented.

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