(No Model.)

W. W. BURSON.

KNOTTING HOOK FOR TYERS FOR GRAIN BINDERS.

No. 490,636. Patented Jan. 31, 1893.

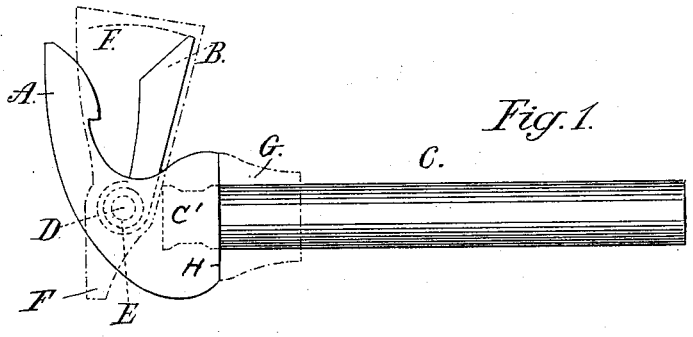

Fig. 1.

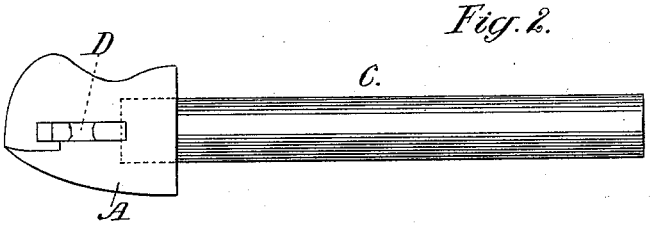

Fig. 2.

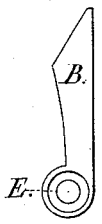

Fig. 3.

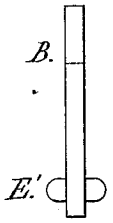

Fig. 4.

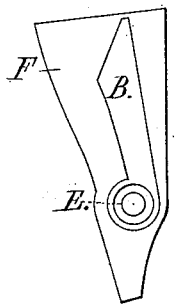

Fig. 5.

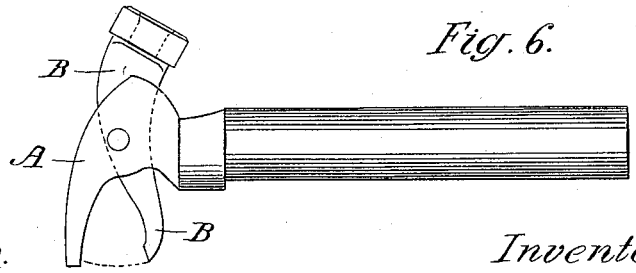

Fig. 6.

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WILLIAM WORTH BURSON, OF CHICAGO, ILLINOIS.

KNOTTING-HOOK FOR TYERS FOR GRAIN-BINDERS.

SPECIFICATION forming part of Letters Patent No. 490,636, dated January 31, 1893.

Application filed December 2, 1884. Serial No. 149,345. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM WORTH BURSON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Knotters for Grain-Binders, of which the following is a specification.

This invention is applicable to knotting hooks of the tying-bill type: that is of the type originated by Behel and afterward adopted and developed in the well known Locke and Appleby binders, consisting of a head or jaw rigidly connected with a spindle and another jaw hinged to said head, the two jaws together having an outline resembling that of a bird's head and bill, whence has come the designation of that type. Heretofore such bills have usually been constructed, so far as I am aware, by casting the fixed jaw integral with the spindle and then turning down the spindle, filing off and polishing the jaw, filing the seat or mortise for the pivoted jaw, drilling holes through both jaws and, finally, uniting them by a pivot-pin passing through both and riveted or clinched by hammering. Such tying bills are practically limited to malleable iron as the metal to be made from, because that only is sufficiently soft to permit of the hole for the pivot being drilled and of the shaft or spindle being properly turned down. I propose to employ a spindle made of turned or cold rolled iron or steel, and a head and fixed jaw of any suitable cast-metal, not necessarily malleable cast iron, united to said spindle in a practically integral manner, while the pivoted jaw is united to said fixed jaw either by ears or bearings formed in the process of casting, so as to omit altogether the independent pivot-pin and obviate the necessity of drilling and riveting.

In the drawings Figure 1 is a side view of a tying-bill (such as described in an application filed by me in the Patent Office of the United States on or about the 18th day of August, 1884, Serial No. 140,913,) but constructed according to my present invention, the dotted lines showing the form of a core and of a chill employed in its manufacture. Fig. 2 is a face view of the same with the pivoted jaw removed: Fig. 3 represents the hinged jaw detached and Fig. 4 a modification of said jaw: Fig. 5 represents a core used in casting the mortise in the fixed jaw, the hinged jaw being incorporated in and forming part of said core: and Fig. 6 represents the well known Appleby knotter to which my improvement may be applied, as above stated.

The invention will be better understood by comparing the process of manufacture of the Appleby and similar knotters, with the process employed by me, and explaining the structural changes which are, or may be brought about by the use of my process. To the latter, however I make no claim herein.

The usual way of making knotters of the modern tying-bill type, is to place a core in the mold, by which an opening or mortise passing through the neck from front to rear is made in the fixed jaw, to receive the pivoted jaw. The jaw with its spindle is then cast from malleable metal and when removed from the mold is rough, both externally and along the sides of the mortise, which latter must be considerably larger than would otherwise be necessary, or must, like the exterior surface of the jaw, be smoothed off with a file, until a proper shape and fit are obtained. The spindle must then be turned for its bearing and finally a rivet-hole must be drilled through the fixed jaw at right angles to the mortise and countersunk on both sides, and a hole drilled in the hinged jaw which is then placed in position, a rivet inserted through both to form the pivot and hammered down until upset and properly secured. In practice a poor fit is had sidewise for the hinged-jaw.

Sometimes instead of casting the spindle homogeneous with the fixed jaw and afterward turning it, a socket is drilled in the face of the fixed jaw and shaft inserted and pinned or fastened therein, which, however, does not make a strong or durable union of the two.

In the knotters depicted in the drawings, A is the fixed jaw, B the pivoted jaw, C the tyer-spindle, and D the pivot for the hinged jaw.

In the construction of my knotter the head and fixed jaw are made of any suitable cast metal. The spindle, however, is preferably of turned or cold rolled iron or steel, the upper end where it is united with the fixed jaw being flattened, drilled or roughened and being secured thereto in the operation of cast-

ing which is generally done by inserting this flattened drilled or roughened end a suitable distance into the mold and in its proper relation to the jaw when the latter shall have been cast therein. So far, however, as relates to other features of my invention, the fixed jaw and the spindle may be cast as one integral body. The hinged jaw is preferably made smooth, and of the desired shape at the outset, having at the pivotal point, a hole, E, of a proper size and countersunk on both sides. It is not, however, indispensably necessary that this hole should extend through this jaw as a countersink on both sides will serve the purpose. This jaw is then placed in, and becomes part of the core, F, which is to form the opening or mortise in the fixed jaw in which said hinged jaw is pivoted and has its movement. The core is not intended to entirely cover the hinged jaw, but only to inclose its edges, leaving its sides exposed and flush with the sides of said core. The part of the hinged jaw which is to come in contact with the metal of the fixed jaw when at work, is then blackwashed or thinly coated with any of the substances well known to foundrymen whereby it shall be prevented from adhering to the molten metal poured into the mold to form the fixed jaw and in the complete knotter will have proper clearance and play while being held accurately in position by the surrounding cast metal and integral pivots or bearings of the fixed jaw.

To insure a smooth, square and exceedingly durable surface upon the fixed jaw where it unites with the spindle, a metal collar or chill, G, is set upon said spindle when the latter is placed in the mold for casting, its effect being to produce a chilled wearing surface at the juncture of the spindle with the fixed jaw. This collar is readily removed when the casting is cool, and can be used continuously.

The spindle and the core containing the hinged jaw being placed in proper position, it will be understood that the molten metal is then poured into the mold to form the fixed jaw which is thus made fast to the spindle and secured to the hinged jaw, the fluid metal entering into the pivotal bearing formed in the latter or into the countersinks, and prevented from adhering by the blackwash, being chilled or case-hardened by the action of the cold metal of the hinged jaw. The bill is then removed from the mold with all parts united and ready for action, the only finishing required, if any, being the polishing of the surface of the fixed jaw.

Instead of a hole through the pivoted jaw to receive the fluid metal of the fixed jaw in the process of casting, for the purpose of replacing the rivet usually employed as a pivot, pintles or trunnions may be formed on the sides of the jaw as at E′ in Fig. 4, which will serve as pivots on which the jaw will vibrate, the bearings for said pintles being then formed in the fixed jaw when the latter is cast and being chilled or case-hardened in the act of casting round the cold metal of the pintles so as to give better wearing qualities.

It will be readily seen that the hinged jaw of the Appleby knotter as shown in Fig. 5 and the clasp of my knotter hook patented March 13, 1883, No. 273,811, may be constructed and secured in their positions according to this method. It will also be understood that the tying-bill thus produced is cheaper, more accurately fitted and more durable than those otherwise constructed, not being in any manner weakened by drilling or striking of the hammer in riveting and having its wearing surfaces partially chilled or case-hardened which it is not feasible to do by the ordinary method of constructing.

I claim:

1. In a knotter for grain-binders, the combination with the cast metal head and fixed jaw, having a slotted opening or mortise and pivotal bearings in said mortise integral with the head, of the movable jaw playing in said mortise and hinged upon said bearings, substantially as described.

2. In a knotter for grain-binders, the combination of a wrought metal spindle, a cast metal head and fixed jaw having a slotted opening or mortise, and a movable jaw playing in the opening and pivoted upon a bearing integral with the head and fixed jaw, and co-operating with said fixed jaw, substantially as described.

3. In a knotter for grain-binders, the combination of a wrought metal spindle, a cast metal head and fixed jaw having a chilled seat or bearing surface at its juncture with the spindle and a slotted opening or mortise through its body with chilled bearings in said opening integral with the body, and a movable jaw playing in the opening and hinged upon said bearings, substantially as described.

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