

(No Model.)

S. D. LOCKE.
GRAIN BINDER.

No. 249,248.

Patented Nov. 8, 1881.

Fig. 1.

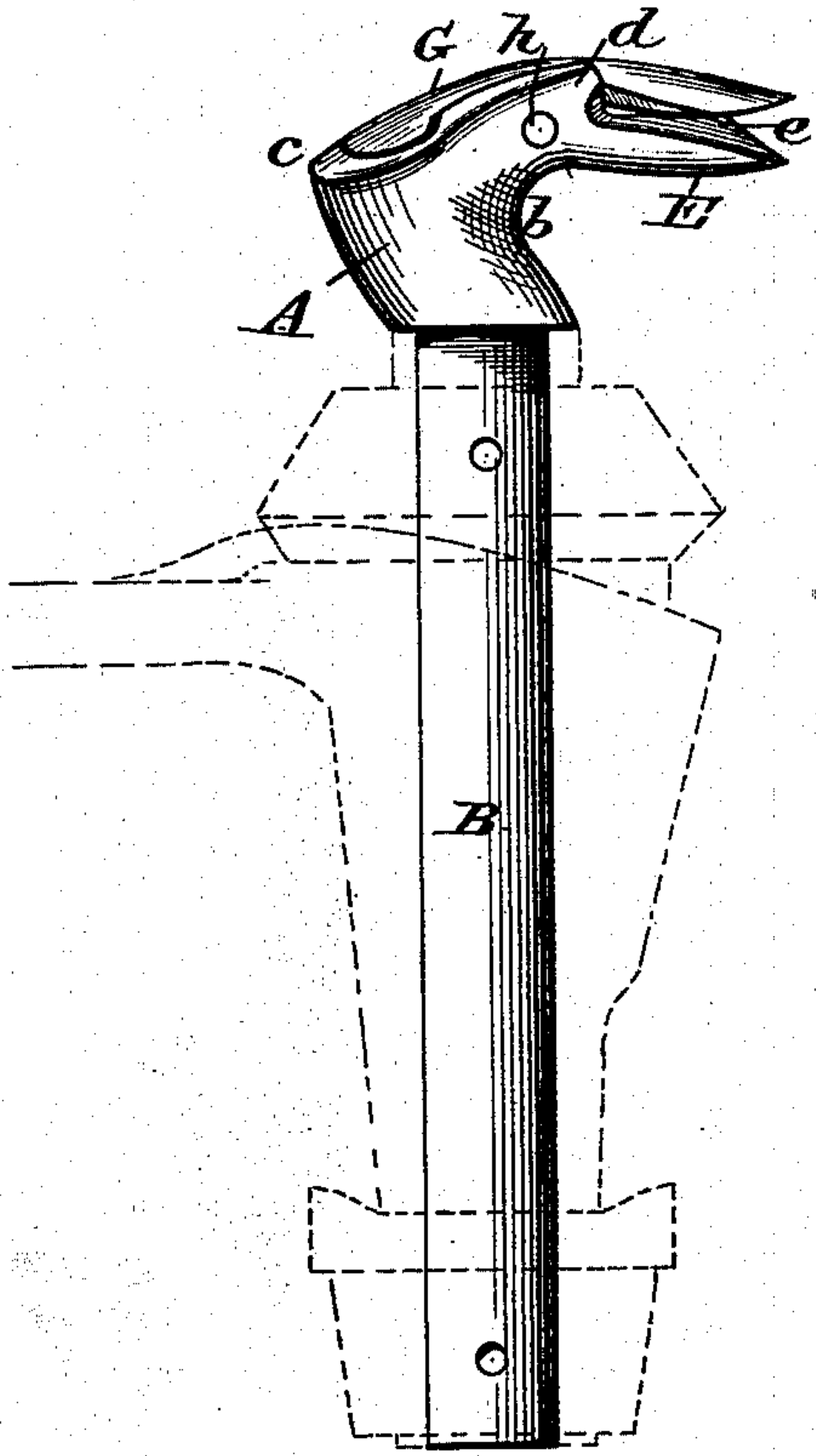


Fig. 2.

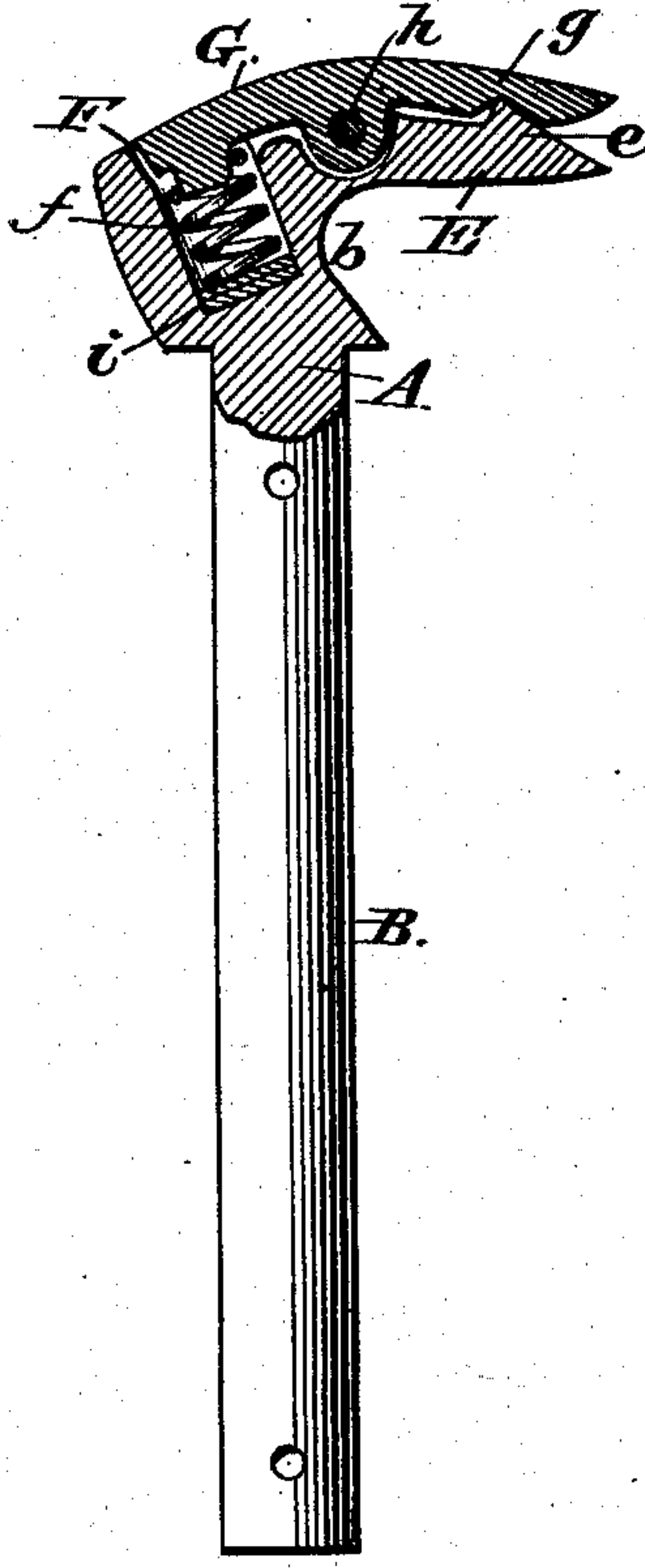


Fig. 3.

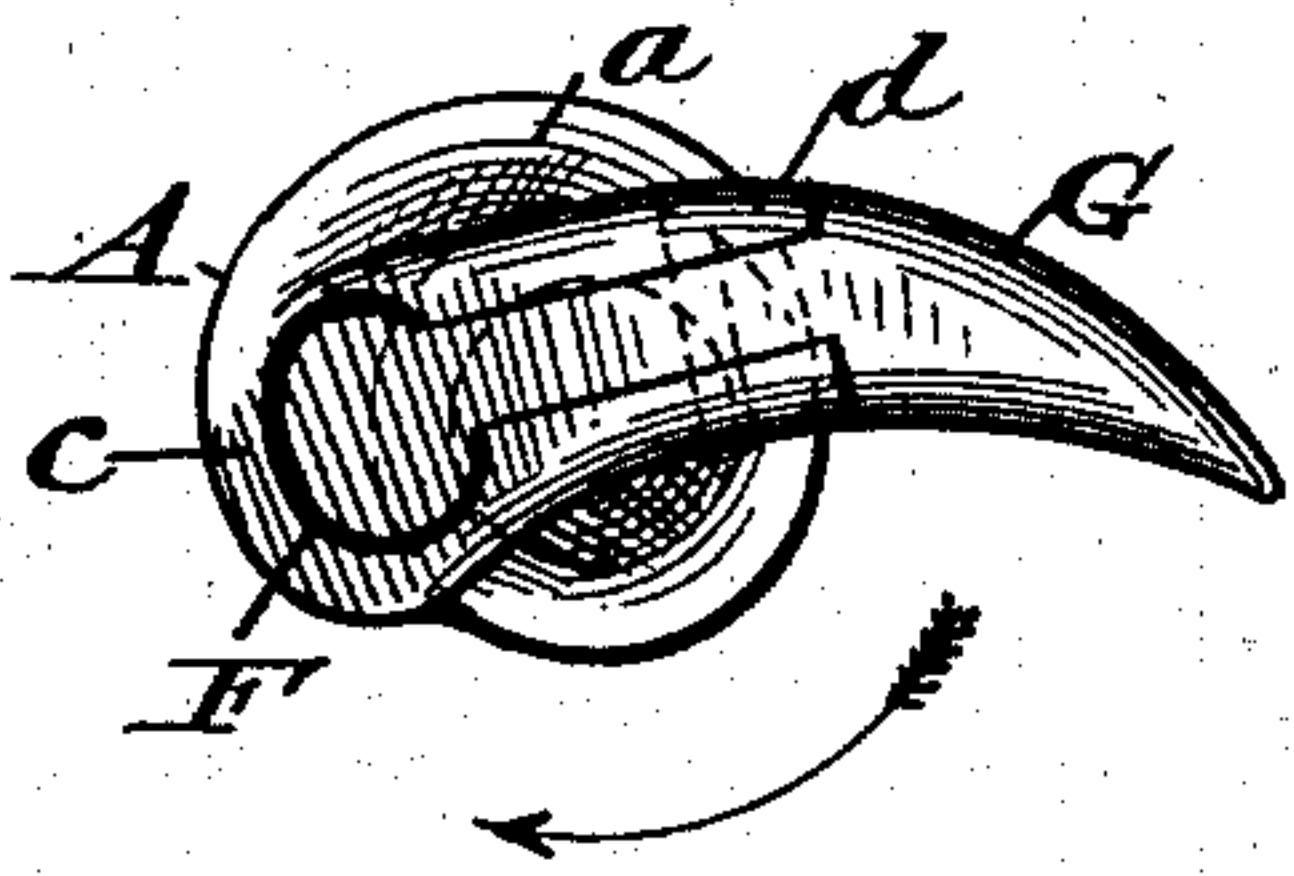
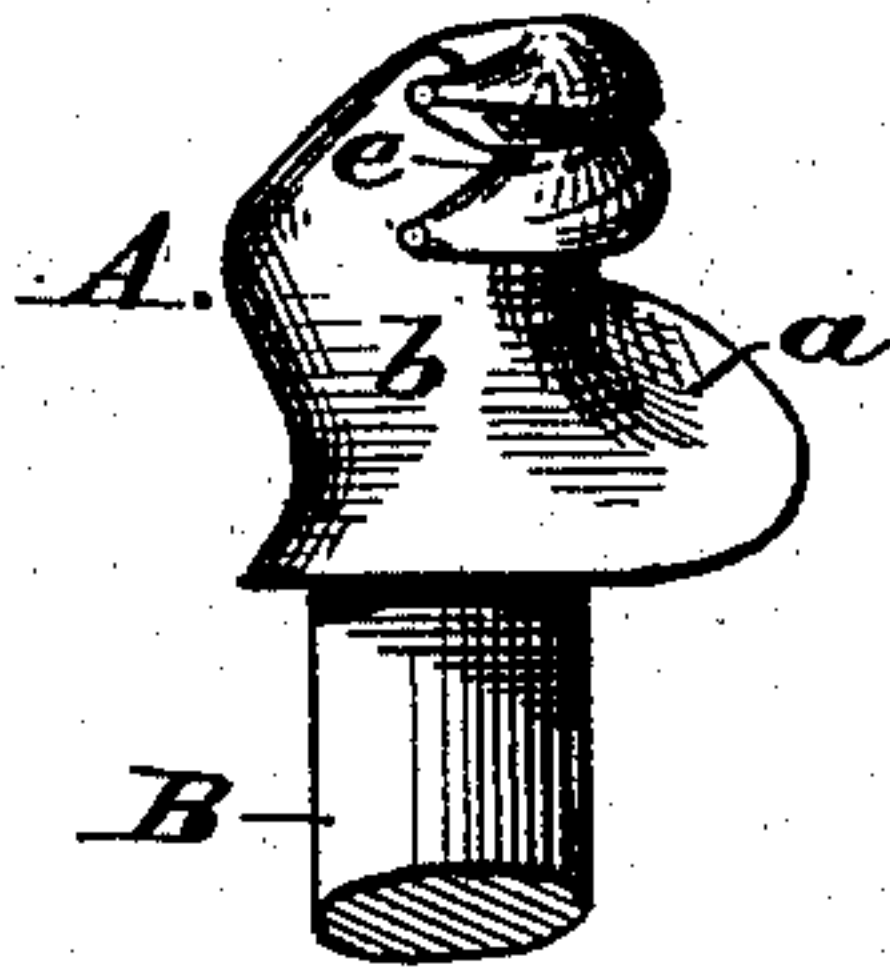


Fig. 4.



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SYLVANUS D. LOCKE, OF HOOSICK FALLS, NEW YORK.

GRAIN-BINDER.

SPECIFICATION forming part of Letters Patent No. 249,248, dated November 8, 1881.

Application filed September 23, 1880. (No model.)

To all whom it may concern:

Be it known that I, SYLVANUS D. LOCKE, of Hoosick Falls, in the county of Rensselaer and State of New York, have invented certain new and useful Improvements in Grain-Binders, of which the following is a specification.

In Letters Patent No. 51,600, granted to me December 19, 1865, I have shown and described a knotter or tying-bill for grain-binders, so constructed that after the loop has been formed the jaws come against and force themselves over the stretched ends of the cord, which, by their wedging action alone, press aside and pass in between the faces of said jaws. In a later construction, made the subject of Letters Patent No. 139,008, May 20, 1873, also granted to me, the tying-bill is formed with a solid lower jaw and elastic upper jaw, the latter having a downwardly-projecting lug which takes into a recess in the former, and past which the cord is forced by the wedging action aforesaid, so as to be caught and retained until the loop is drawn off and tightened. As the bow of the knot must be pulled out of the jaws after the loop has been tightened upon the strands, I long since recognized the undesirability of having the lug upon the only jaw which would yield, and hence suggested in this last-mentioned patent that the position of lug and recess might be reversed; but in practice I found that the elastic piece could not be safely or cheaply made with a recess, and therefore in a subsequent patent, No. 218,038, granted me July 29, 1879, described and claimed a tying-bill wherein the lug projects upward from the solid jaw, while the elastic jaw is made plain. This, although having meritorious features, requires an undue strength of spring in the upper jaw in order to sufficiently resist the escape of the cord. The elastic piece is also, in both of the last-mentioned constructions, liable to lose temper and to break, thus disabling the knotter.

The object of my present invention is to remove these objections, while at the same time preserving an unobstructed upper surface or crown, which is essential in this class of knotters; and it consists in a tying-bill formed with an inelastic spring-pressed pivoted upper jaw, the heel of which is sunk into the body of the

bill, so as to be flush therewith when the jaws are closed; in a tying-bill having a pivoted upper jaw formed with a recess into which a projection upon the lower jaw directly takes; in novel means for adjusting the stress of the spring which closes the pivoted upper jaw, and in the various combinations and details of construction hereinafter described and claimed.

In the drawings, Figure 1 is a perspective view of a tying-bill constructed according to my invention. Fig. 2 is a vertical section lengthwise of the bill; Fig. 3, a top-plan view, and Fig. 4 a front view.

This device may be used in connection with any suitable mechanism for carrying the band about the bundle and properly presenting it, and for holding and cutting its ends; and such it is unnecessary to describe.

A is the body part of the knotter or tying-bill, mounted upon a spindle, B, by which it is supported and driven. It is shaped substantially as shown in the drawings, having curved and cam surfaces, by which the ends of the cord are gathered in and guided as the bill revolves, so as to be carried up and slipped over the crown and crossed upon the strands leading to the gavel. The cam-surface *a*, by which the ends of the cord are lifted, starts from a point in the base in advance of and below the neck *b* of the knotter, and from thence runs up and back until it reaches the extreme rear edge of the crown at *c*. From the point *c* the crown rises in an easy curve to the point *d*, when the metal is cut away for about half its thickness to form the under jaw, E, of the knotter. This is made tapering, and has near its nose or point a spline or rib, *e*, inclined on its front edge and vertical, or nearly vertical, on its rear edge, as in my former patent last above referred to, in order to retain the ends of the binding-cord when they have been passed between the jaws.

The body part has near its heel a cylindrical recess, F, trending downward from the crown, and adapted to receive a spiral spring, *f*, and reaching from this recess to the point *d*, at which the under jaw commences, is a groove or channel of sufficient width and depth to receive the shank of the upper jaw, G, and permit of its being pivoted therein. Said jaw is curved and tapering, to correspond with the

curves and taper of the body and lower jaw, and has near its point a recess, *g*, which shuts over the rib *e* upon the jaw beneath, to guard against the escape of the cord. Its shank is
 5 of such size and shape as to fit snugly between the walls of the channel in the body portion and to bring its top normally flush with the upper surface or crown of the latter, and at its heel end it has a cap or enlargement, which
 10 fits into and closes the top of the cylindrical recess in the body portion and sits upon the spring therein. A pivot pin or screw, *h*, passes through the side walls of the channel and through the shank of the upper jaw at a point
 15 sufficiently in advance of the neck *b* to insure that the forming of the loop in the cord shall take place entirely behind it. The spiral spring will be dropped into its socket before the parts are united by the pivot, and when the latter
 20 has been put in place will be held from escape and in position for action by the cylindrical walls of its socket and by the enlarged heel of the movable jaw. Should it become slack or weak from any cause, or should it be neces-
 25 sary to compensate for a change in the size of the cord, the upper jaw may be removed and the face of the spring quickly adjusted by the insertion of washers *i*, of any convenient material.
 30 The upper surface of the shank and heel portion of the pivoted jaw is, as already stated, normally flush with the crown of the body portion of the knotter. The arrangement of the pivot is also such that when the jaw is opened
 35 its heel will sink beneath said crown. Therefore the stress of the cord, which in the process of forming the knot is laid in a tight loop about the bill behind the pivot, can neither interfere with the opening and closing of the jaw
 40 at the proper moment to receive the ends, nor itself cause its premature opening, and the jaw will offer no obstruction to the removal of the loop to complete the knot, or to the action of the stripper-arm, by which this removal is
 45 sometimes accomplished. At the points both jaws are beveled outwardly, in order that, as they come against the ends of the cord after the loop has been formed, the latter may wedge itself between them, lifting the pivoted upper
 50 jaw and passing in behind the rib on the lower. When the bight of the cord is pulled from the jaws after the knot is tied it will be bent up into and retarded, but not positively stopped, by the recess in the upper jaw, so that the
 55 strands will be drawn tight.

I claim as my invention—

1. A tying-bill or knotter consisting of a rigid lower jaw and body part having curves or cam-surfaces, whereby the strands of cord
 60 are deflected toward its crown as it revolves, and a pivoted upper jaw having its shank sunk

into the body part, so as to lie normally flush with the crown and form a continuation of the cord-guiding surface, said jaws having their ends beveled to permit the strands to enter be- 65
 tween and force them apart.

2. A tying-bill formed with an inelastic spring-pressed pivoted upper jaw, the heel of which is sunk into the body of the bill, so as to be flush therewith when the jaws are closed un- 70
 der the force of the spring, and operated by the binding-cord, as set forth and described.

3. A tying-bill or knotter consisting of a rigid lower jaw and body part having curves or cam-surfaces, whereby the strands of cord 75
 are deflected toward its crown as it revolves, and a pivoted upper jaw having its shank sunk into the body part and kept normally flush with the crown thereof by the force of a spring, said jaws being opened by the action of the bind- 80
 ing-cord, as described.

4. A tying-bill formed with a rigid lower jaw having an upwardly-projecting rib or shoulder near its point, and a pivoted upper jaw re- 85
 cessed immediately above said rib or shoulder to take over it.

5. A tying-bill formed with a rigid lower jaw having an upwardly-projecting rib or shoulder near its point, and a pivoted upper jaw re- 90
 cessed to take over said rib or shoulder, and sunk as to its shank normally flush with the crown of the bill.

6. The combination, in a tying-bill, of the body part, socketed and channeled from its crown, and bearing the rigid lower jaw, the 95
 coiled spring sitting in said socket, and the pivoted upper jaw having its shank sunk flush in said channel, and its heel formed with a cap to close said socket and confine the spring.

7. The combination, in a tying-bill, of the 100
 body part, socketed and channeled from its crown, and bearing the rigid lower jaw, the coiled spring sitting in said socket, one or more washers, whereby the stress of the spring is adjusted, and the pivoted upper jaw having 105
 its shank sunk flush in said channel, and its heel end formed with a cap to close the socket and confine the spring.

8. The combination, in a tying-bill, of the socketed and channeled body part, the lower 110
 jaw, rigid therewith, and formed with a shoulder near its point, the coiled spring sitting in the cylindrical socket in said body part, the upper jaw having near its point a recess to sit over the shoulder on the lower jaw, and at its 115
 heel a cap to shut into the socket and confine the spring, and the pivot-pin serving to unite all the parts together for operation.

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Witnesses:

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