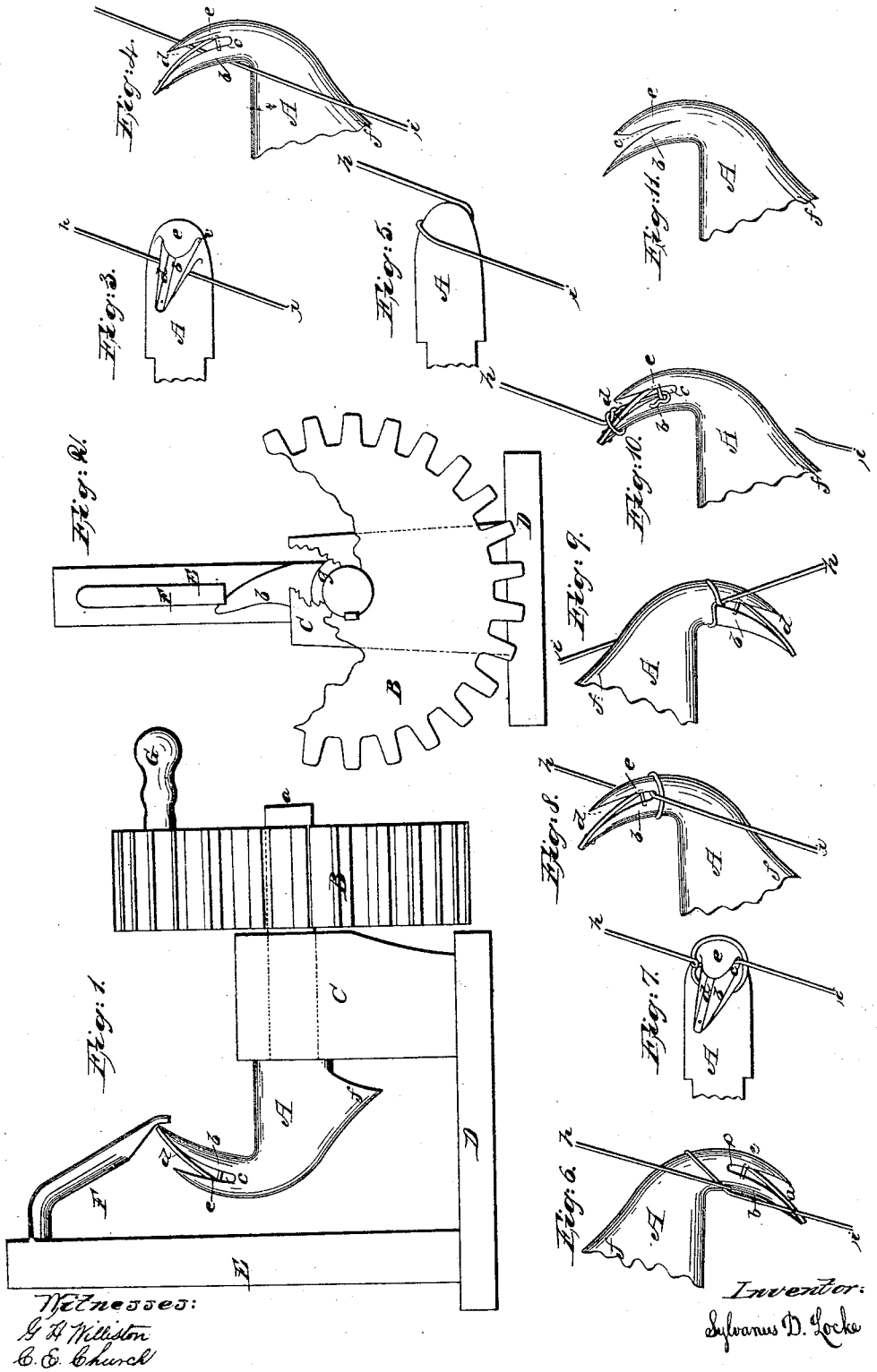
S. D. LOCKE.

Grain Binder.

No. 51,600. Patented Dec. 19, 1865.



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SYLVANUS D. LOCKE, OF JANESVILLE, WISCONSIN.

IMPROVEMENT IN GRAIN-BINDERS.

Specification forming part of Letters Patent No. **51,600**, dated December 19, 1865.

To all whom it may concern:

Be it known that I, SYLVANUS D. LOCKE, of the city of Janesville, county of Rock, and State of Wisconsin, have invented a new and useful machine known as a Rotating Tying-Hook; and I do hereby declare that the following is 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, like characters referring to like parts in each figure.

The nature of my invention consists in making a rotating hook with an open mouth or slot, with or without a spring closing device, so that thereby knots can be readily tied in cord or twine without the aid of a set of jaws or other complicated devices.

To enable others skilled in the mechanical arts to construct and operate my machine, I will refer to the accompanying drawings, in which—

Figure 1 is a side view of the machine, showing the slotted hook A and guide or shield F, which are here represented in position for the reception of the binding-cord. As the cord is carried downward into position it is guided over the end of the hook and prevented from passing into the slot or mouth *c* by the shield F. To show how these may be supported and the hook operated, I have introduced the pinion B, standard C, base D, standard E, and crank G. *c* is a slot in the end of the tying-hook, into which the cord enters as it is being tied. The spring *d* is employed to retain the cord in the slot. Fig. 2 is a view at right angles to Fig. 1, with the pinion B and the standard C cut away, so as to show the shoulder *g* and the under lip *b* of the hook. Figs. 3 to 10, inclusive, are top views, showing the different positions of the hook and binding-cord at the several progressive stages of the tying process. Fig. 3 shows the cord underneath the lower lip *b* of the hook, ready for tying. The position of the hook in this figure is the same as in Fig. 1, and is its original or first position. The cord should not be laid at right angles across the hook, but obliquely, as seen in the figure. Fig. 4 shows the position of the cord after the hook has completed one-fourth of a revolution. Fig. 5 shows the position of the cord after the hook has completed one-half of a revolution. Fig. 6 shows the position of the cord after the hook has completed three-fourths of a revolution. Fig. 7 shows the position of the cord after the hook has completed an entire revolution. Fig. 8 shows the position of the cord after the hook has completed five-fourths of a revolution, or one and one-fourth revolution. Fig. 9 is a view inverse to Fig. 8. Fig. 10 shows the hook in the same position as in Fig. 8, but with the end *i* of the cord cut and the knot being drawn off the hook, either by the hook receding or by a strain on the end *h* of the cord. Fig. 11 represents a different construction of the hook, so as to dispense with the spring *d*, or any spring closing device. As here constructed the slot *c* is made finer and narrower, as shown in the figure, so that the cord, as the hook revolves, is drawn or wedged into the slot sufficiently to retain the cut or free end and insure the tying. I prefer this mode of constructing the hook, as by so doing the tying device, while operating with a cord-holding device equally sure, is simplified to one piece of material which can be readily cast entire.

It will be seen that the object—to wit, the holding of the cord in the slot *c*, which is accomplished as in Fig. 11 without, and as in Fig. 9 with, a spring closing device, *d*—may be accomplished by a variety of closing or retaining devices, as by a tongue or dog operated by a spring, or by making the hook with one or both of its lips elastic; but I prefer making the hook as illustrated in the drawings, deeming it simpler and more durable.

To operate my machine it is only necessary that the cord be placed in the position shown in Fig. 3, with its ends *h* and *i* so held as to allow the upper lip *e* and the projection *f* to pass on the same sides of it, as shown in Fig. 4, and then to loop it around the body of the hook, as shown in Fig. 5. As the cord is being placed in position the shield F guides it over the point of the hook and removes all liability to enter the slot *c*. After the cord is placed as above described, and the hook revolved once around, the end to be cut or freed has passed down the slot, (crowding past the spring, if used, or wedging in the slot,) and is found securely retained in the slot at *c* until so cut or freed. The end, however, should not be cut or freed until the hook has made one-fourth of another revolution and

stopped in the position shown in Figs. 8, 9, and 10; and when the spring closing device is used, it is important that it be cut at the proper distance from the hook, to avoid a failure in the tying and to insure a perfect knot.

I will further observe that all of the accompanying drawings are enlarged in order to more fully show the construction and operation of the hook; and that the knot is as readily tied with two cords, or with the two ends of a cord passing around a bundle or package, as with one; and also that the rotating hook, constructed as herein described, is, among other things, particularly applicable to machines for binding grain. I apply it to grain-binding machines without difficulty, and without any complication of the operating mechanism, as all the motion required to be imparted to it to insure its complete and perfect operation is the rotary motion described. In the rotating or revolving tying devices heretofore used, other and more complicated mechanism is required to produce a second and more difficult motion, in addition to the rotary motion, before a practical application of the same can be made, which other mechanism and motion I entirely dispense with.

I am aware that a revolving tying-bill, as also two associate hooks, have been used, and I do not claim them, or either of them; but

What I do claim, and for which I desire Letters Patent, is—

A rotating slotted hook, constructed with or without a spring closing device, substantially as set forth.

S. D. LOCKE.

Witnesses:
G. H. WILLISTON,
C. E. CHURCH.