

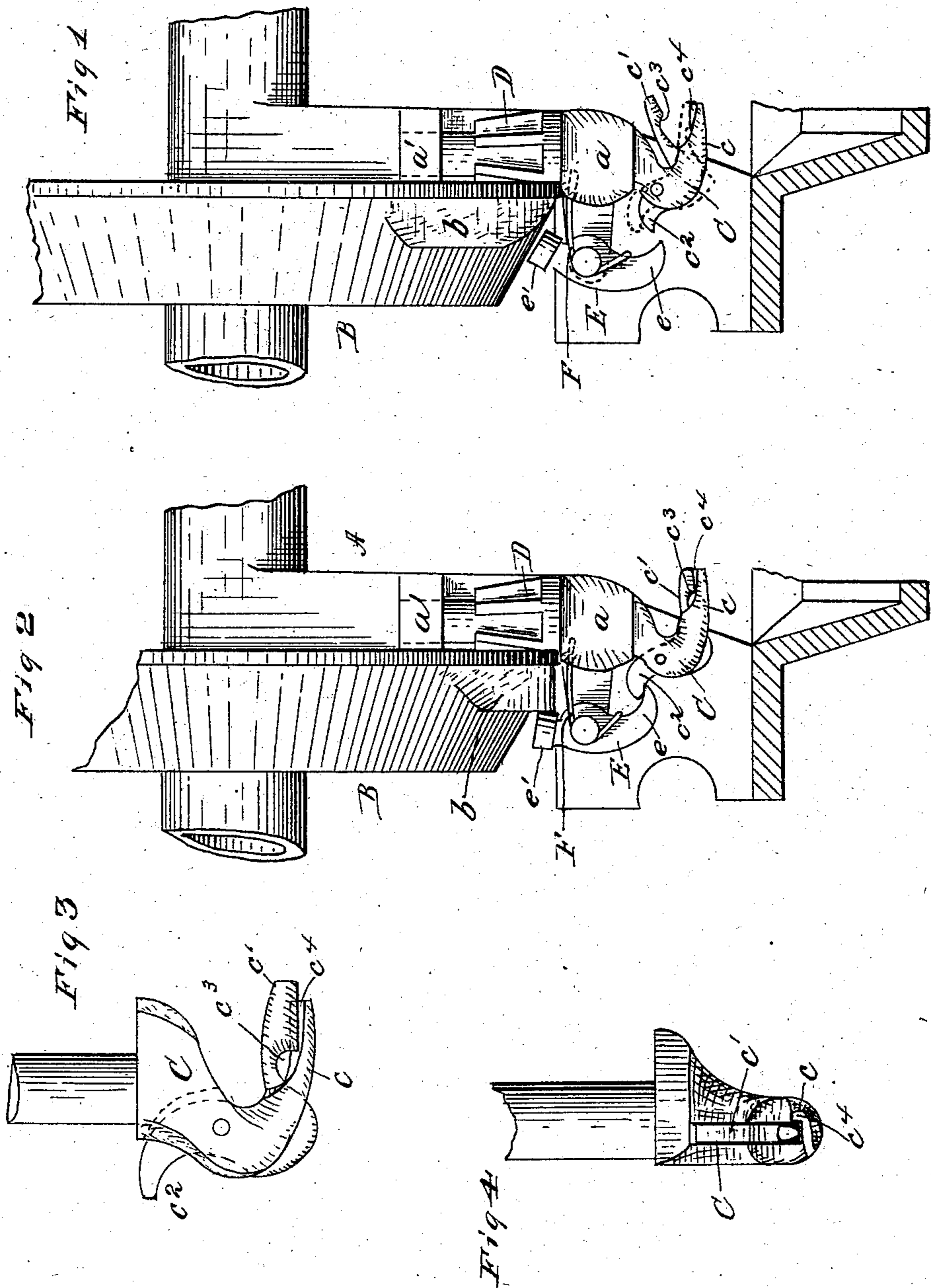
(No Model.)

G. G. HUNT.

KNOTTING HOOK FOR GRAIN BINDERS.

No. 290,184.

Patented Dec. 11, 1883.



Witnesses
W. C. Corlies
Thomas H. Pease

Inventor
George G. Hunt
By *Cedburn Wheeler*
Attorneys

UNITED STATES PATENT OFFICE.

GEORGE G. HUNT, OF BRISTOL STATION, ASSIGNOR OF ONE-HALF TO THE PLANO MANUFACTURING COMPANY, OF PLANO, ILLINOIS.

KNOTTING-HOOK FOR GRAIN-BINDERS.

SPECIFICATION forming part of Letters Patent No. 290,184, dated December 11, 1882.

Application filed January 8, 1883. (No model.)

To all whom it may concern:

Be it known that I, GEORGE G. HUNT, a citizen of the United States, residing at Bristol Station, in the county of Kendall, in the State of Illinois, have invented certain new and useful Improvements in Knotting-Hooks for Grain-Binders, which are fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a plan view of a portion of a grain-binder with my improvement applied; the parts being shown just after the hook has completed its revolution. Fig. 2 is a similar view showing the same parts after the hook is closed, just before the loop is shed. Fig. 3 is a detailed elevation of the hook detached, and on an enlarged scale; and Fig. 4, an end elevation of the same on the same scale.

My present invention relates to that class of grain-binders in which cord is used as the binding material, and particularly to the construction of the hook by which the knot is formed, and the devices by means of which this hook is operated to form the knot.

I will proceed to describe in detail the construction and operation of my invention, and will then point out definitely in the claims the special improvements which I believe to be new and wish to protect by Letters Patent. As the improvement relates only to the knotting-hook and the parts which operate it, I have only shown in the drawings, and shall only describe, so much of the grain-binder as is necessary for an understanding of the construction and operation of these parts, it being understood that they may be applied to any machine in which cord is used for the band.

In the drawings, A denotes a portion of the frame on which the knotting-hook is usually mounted, and B the usual wheel which rotates the hook. This wheel in grain-binders of the type mentioned has generally been called the "cam-wheel;" but with my improvement it is provided with only a short gear-section to give a single rotation to the knotting-hook and a small cam projection, which will be hereinafter explained. The usual cams which have heretofore belonged to this wheel in the Ap-

pleby grain-binder and others of similar construction are entirely dispensed with. The knotting-hook C is provided with a shaft, as usual, which is mounted in bearings *a* and *a'* on the frame-piece A, and on this shaft is the usual pinion, D, which is arranged to be rotated by a short gear-section on the wheel B, this section being of such length that, with each revolution of the wheel a single revolution will be given to the pinion and hook. The hook C has one outer fixed jaw, *c*, and an inner jaw, *c'*, which is pivoted to the former within a slot therein running back to the heel of the hook. The pivoted jaw *c'* is substantially of bell-crank form, and is pivoted to the fixed portion of the hook toward the heel end of the jaw, which terminates in a finger or kind of hook, *c''*, as shown in Fig. 3 of the drawings. This jaw is also provided with a notch, *c'''*, near its front end, the sides of which are preferably inclined or beveled, as shown in the drawings; and the shape of the jaw is such with reference to the fixed jaw that when the former is closed down on the latter, as shown in Figs. 2 and 3 of the drawings, the elbow of the jaw will project beyond the fixed part, as seen in the figures mentioned. The inner portion of this jaw is also cut out at its bend, so that when the jaw is closed, as stated, this portion of it will lie within the fixed portion of the hook, as shown in Fig. 2 of the drawings. The fixed jaw at its outer end is provided on one side with a slight rib, *c''''*, by the side of which the other jaw closes; but on the other side the fixed jaw is perfectly smooth.

An independent hook or dog, E, is pivoted to the frame at one side of the knotting-hook, and in such position that its hook end, *e*, when thrown forward, will catch under the finger at the heel of the pivoted jaw. The other end of this dog is provided with an anti-friction roller, *e'*, arranged in such position that the short cam *b*, on the outside of the wheel B, will strike against it and force it outward. A spring, F, is coiled around the pivot-pin of the dog and fastened at one end to the latter, while the other end, *f*, is extended inward and inserted in a suitable recess or opening in the knotter-shaft bearing *a*. The effect of the

spring is to turn the roller end of the dog inward, thereby throwing the hook end outward in the position shown in Fig. 1 of the drawings, which is the position of this device, except when acted upon by the short cam, as will presently be described.

In operation, the loop is formed upon the hook in the usual way by the revolution of the hook to take the two strands of the band material. As the string is wound about the hook, it is obvious that a strain will be brought upon the elbow portion of the pivoted jaw projecting beyond the fixed jaw, and that the effect of this strain will be to open this jaw, as shown in Fig. 1 of the drawings. This is done before the jaws reach the string on the back portion of the revolution of the hook, so that the open jaws will receive the string, thereby forming the cross-strands to make the knot, as usual, and in this condition the hook completes its single revolution and stops. Instantly the hook comes to rest, the cam *b* comes into action against the roller end of the dog, thereby throwing the hook end inward and causing it to engage with the finger on the heel of the pivoted jaw, which action closes the latter, as shown in Fig. 2 of the drawings. The loop is then at once shed from the hook, thereby forming the knot. The string is cut and the cam passes the dog, when the latter is at once thrown back by the action of its spring, thereby releasing the pivoted jaw, which will either open automatically, if properly weighted, or will yield to the least pull on the loop, so as to offer no resistance to the discharge of the bundle, which is now effected. The extension of the faces of the slot at the back of the fixed jaw, so as to project beyond the pivoted jaw lying within the same, permits the string to be wound upon the hook without pressing upon the inside of the pivoted jaw, and without interfering with the opening of the latter, as described above. The slight rib on the fixed jaw, at one side of the seat on which the pivoted jaw closes, assists in holding the string more securely when the pivoted jaw is closed down, and so avoids the danger of pulling it out when the loop is shed from the hook, as described.

It will be understood that the other parts of the machine may be of any ordinary description, and that this knotting device is applicable to all machines in which a knotting-hook is used, and, in fact, to all machines in which string is used for the band material, with such

suitable changes as may be necessary to provide for the proper holding and placing of the string.

I do not wish to be understood as limiting myself in details of construction to precisely the form and arrangement of the parts herein shown and described, but wish it understood that I include such changes as may be made without departing from the principle on which my present invention operates, as herein set forth.

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

1. In a grain-binder, a knotting-hook provided with a fixed and a pivoted jaw, in combination with an independent dog arranged to engage with and close the said pivoted jaw at the required point in forming the knot, substantially as described.

2. In grain-binders, a knotting-hook provided with a fixed and a pivoted jaw, in combination with an independent dog arranged to engage with said pivoted jaw, and mechanism whereby the dog is vibrated at the proper moment to engage with the pivoted jaw and close the latter, substantially as and for the purpose set forth.

3. In a knotting-hook for grain-binders, a fixed jaw, in combination with a loosely-pivoted jaw provided with a finger, *c*², at its heel, the pivoted spring-dog *E*, and the cam *b*, for vibrating the dog, substantially as and for the purpose set forth.

4. The loosely-pivoted jaw *c*² of the knotting-hook, provided with a finger, *c*², at its heel, in combination with the pivoted dog *E*, the spring *F*, and the shaft-bearing *a*, provided with an opening to receive the outer end of the spring, substantially as and for the purpose set forth.

5. In grain-binders, a knotting-hook, *C*, consisting of a fixed jaw, *c*, and a loosely-pivoted jaw, *c*², projecting at its elbow beyond the former, and having at its heel a finger, *c*², in combination with the independent spring-dog *E*, the wheel *B*, provided with a short gear-section and a short cam, *b*, and the pinion *D* on the knotting-hook shaft, all arranged and operating substantially as and for the purpose set forth.

GEORGE G. HUNT.

Witnesses:

W. H. JONES,
O. E. NASH.