(No Model.) 2 Sheets—Sheet 1.

W. N. WHITELEY & W. BAYLEY.

KNOTTER FOR SELF BINDERS.

No. 415,754. Patented Nov. 26, 1889.

Fig. 1.

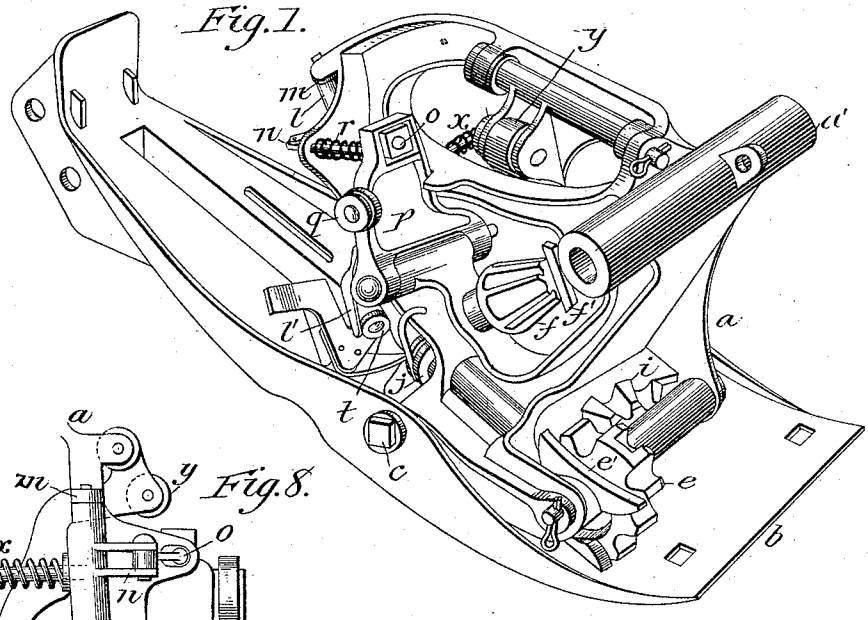


Fig. 8.

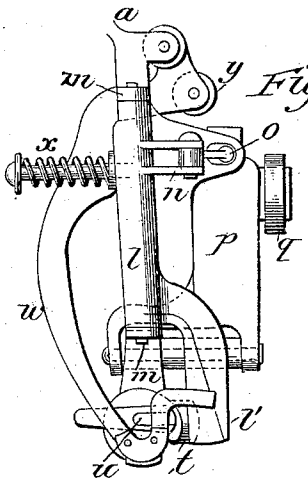
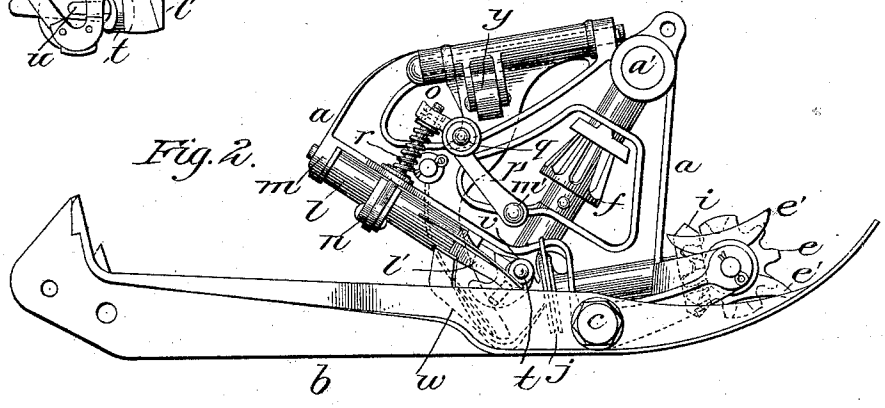


Fig. 2.



Witnesses.
J. B. McGinn.
Edward Stuntevant.

Inventors.
William N. Whiteley
and William Bayley
by Smith & Low attys

(No Model.) 2 Sheets—Sheet 2.

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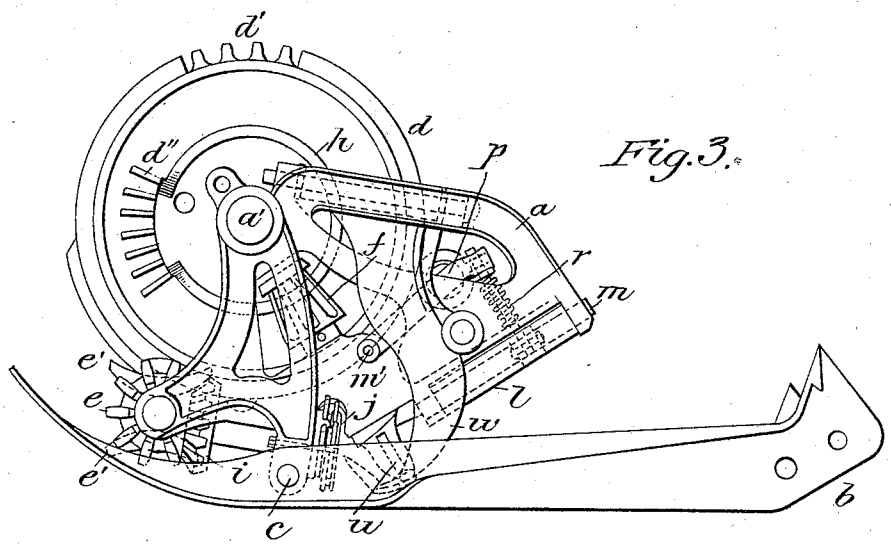


Fig. 3.

Fig. 4.

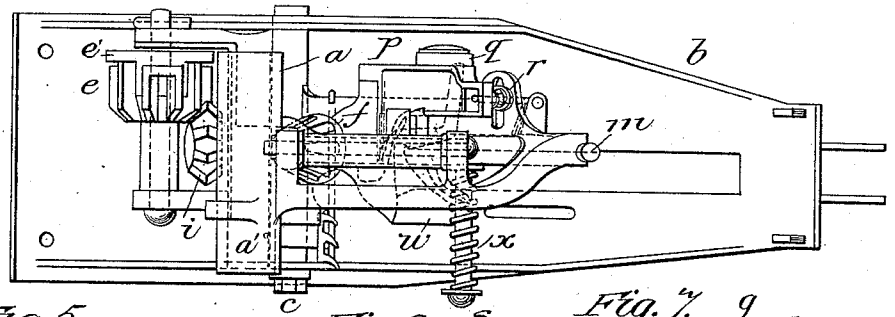


Fig. 5.

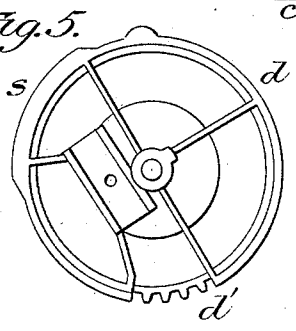


Fig. 6.

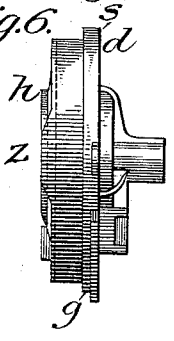
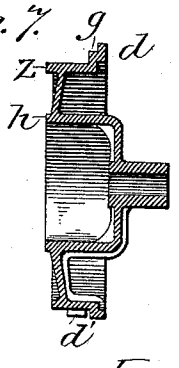


Fig. 7.



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UNITED STATES PATENT OFFICE.

WILLIAM N. WHITELEY AND WILLIAM BAYLEY, OF SPRINGFIELD, OHIO, ASSIGNORS TO WHITELEY, FASSLER & KELLY, OF SAME PLACE.

KNOTTER FOR SELF-BINDERS.

SPECIFICATION forming part of Letters Patent No. 415,754, dated November 26, 1889.

Application filed September 6, 1883. Serial No. 105,737. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM N. WHITELEY and WILLIAM BAYLEY, of Springfield, county of Clark, State of Ohio, have invented a new and useful Improvement in Knotters for Self-Binders, of which the following is a specification.

In the accompanying drawings, Figure 1 is a perspective view of a knotter mechanism and breast-plate embodying our improvements, with the cam and gear wheel which actuates it removed. Fig. 2 is a side elevation of the same with the cam and gear wheel also removed. Fig. 3 is an elevation taken from the opposite side of that from which Fig. 2 is taken. Fig. 4 is a plan view. Fig. 5 is a view of the back of the cam and gear wheel that actuates the knotter-hook, cord-holder, and yielding lever for closing the jaw of the knotter-hook. Fig. 6 is an edge view, and Fig. 7 a sectional elevation, of the same; and Fig. 8 is a view of the combined stripper and cutter and lever for closing the jaws of the knotter-hook.

In each of the figures letters of like character indicate corresponding parts.

The invention consists in driving the cord-holder by means of a suitable number of teeth arranged on the cam and gear wheel which operates the knotter-hook, meshing into a pinion having a delay-shoe, which in its turn meshes with a pinion upon the shaft of the cord-holder, as hereinafter described and claimed, whereby we obtain a positive movement of said cord-holder and obviate its liability to move past its intended place of rest, there being combined with the cord-holder a pivoted-jaw knotter-hook and a swinging or vibrating lever for actuating said jaw of the knotter-hook.

It further consists in a yielding vibratory lever that is actuated by a cam-track upon the cam and gear wheel which operates the knotting mechanism, so as to bring said lever to and from the path of the roller that is upon the heel of the pivoted jaw of the knotter-hook in a suitable manner to cause said jaw to grasp the ends of the cord after the knotter-hook has completed its revolution and to remain closed until the hook has so completed its movement, and, finally, to open to release the ends of the band-cord, as hereinafter described and claimed.

In order that others skilled in the art to which our invention belongs may be able to make and use the same, we will now proceed to describe its construction and operation.

The knotter-frame *a* is joined to the breast-plate *b* at *c*, and the sleeve *a'* on said frame supports the shaft (not shown) that carries the cam and gear wheel *d*. The teeth *d'* on the cam and gear wheel *d* actuate the pinion *e* in a suitable manner to give to it a half-revolution for each revolution of said cam and gear wheel, and the teeth *d''* of said cam and gear wheel actuate the pinion *f*, so as to give it a complete revolution for each revolution of the aforesaid cam and gear wheel. The pinions *e f* are each provided with delay-shoes *e' f'*, that come to rest, respectively, against the periphery *g* and the laterally-projecting ring *h* of the cam and gear wheel *d*, and these delay-shoes act against said periphery and lateral ring in a suitable manner to prevent the pinions above mentioned from moving except while being operated by the teeth *d' d''* on the cam and gear wheel in the usual manner. The pinion *e* meshes with a pinion *i*, that is fast to the shaft of the cord-holder *j*, and in this way said cord-holder gets its movement. It may be well to state here that the cord-holder may be of any suitable construction for the purpose intended. The rock-shaft *l* is journaled to the frame *a* at *m m*, and it is provided with a laterally-projecting arm *n*, that is connected by a rod *o* to the lever *p*, pivoted on the knotter-frame. The lever *p* is provided with a friction-roller *q*, and the rod *o* is surrounded by a spring *r*, for the purpose of keeping the aforesaid friction-roller up to the peripheral cam-track *s* upon the cam and gear wheel, from which it derives its vibratory movement. The rock-shaft *l* is provided with an arm *l'*, which, through the agency of the arm *n*, rod *o*, and lever *p*, moves to or from the path of the roller *t* of the pivoted jaw *u* at proper times to leave the jaw open until the revolution of the knotter is completed, so as to insure its grasp on the ends of the band-cord, and to close said

jaw upon the cord when grasped. After the knotter has completed its rotation the arm on the rock-shaft *l* moves up into the path described by the roller *t* and forces it so as to close the jaw *u*. While the jaw *u* is closed the roller *t* rests in a recess *v* upon the knotter-frame, so as to render the knotter more positive in its movement and less liable to derangement from the wear of essential parts, such as the delay-shoe on the knotter-pinion *f*.

The combined cutter and stripper *w* cuts the cord and strips the loop with a positive movement, and is retracted instantaneously by the action of a spring *x*. This positive action is accomplished by means of a friction-roller *y*, that works on a laterally-projecting cam *z* on the cam and gear wheel *d*, and the quick return by the spring *x* is intended to obviate the liability of the band-cord from slipping below the knotter while the loop is being stripped therefrom and the binder-arm is receding to its place of rest below the binding-table.

Having thus described our invention, what we claim is—

1. In a grain-binder knotting mechanism, the combination of the tyer-wheel *d*, provided with a knotter-operating segment and delay-rim and a cord-holder-operating segment and delay-rim, with the knotting and cord-holding devices arranged upon the knotter-frame, said frame being mounted upon and held in its proper position by the tyer-wheel shaft, the cord-holder disk provided with a gear-wheel, a secondary gear engaging the latter, and teeth upon the tyer-wheel for driving the secondary gear to operate the said rotating cord-holder disk at intervals in one direction by means of said gear, substantially as and for the purposes described.

2. In a grain-binder knotting mechanism, a knotter-frame, a knotter-operating wheel *d*, and the knotter, and the spring-cam for closing the pivoted knotter-jaw located upon the knotter-frame and pivoted thereto, adapted to be opened by a cam-track on the tyer-wheel *d* at each revolution and released by the same to close the knotter-jaw on the cord at each revolution of the knotter by the pressure of the spring-cam, as described.

In testimony whereof we have hereunto set our hands this 3d day of September, 1883.

WILLIAM N. WHITELEY.
WILLIAM BAYLEY.

Witnesses:
SOL J. HOUCK,
E. V. BOWMAN.