H. E. PRIDMORE.

Knot-Tyers for Grain-Binders.

No. 212,154. Patented Feb. 11, 1879.

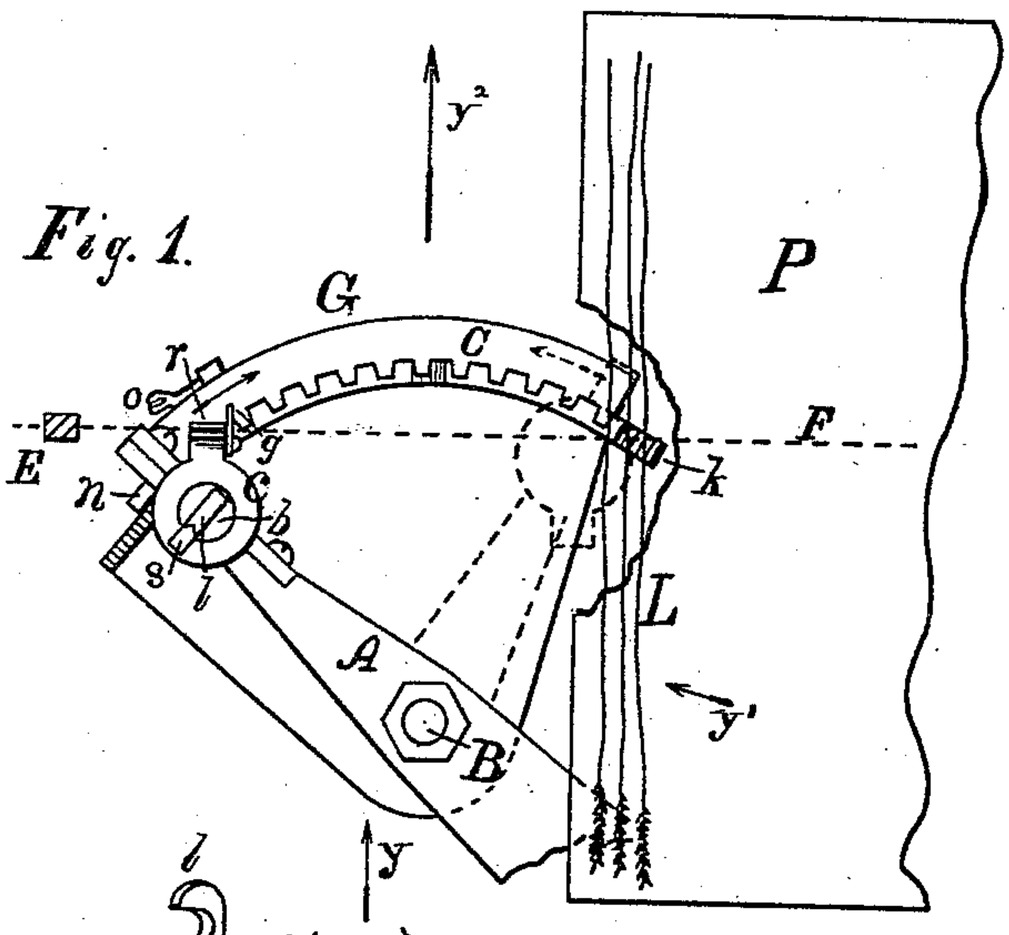


Fig. 1.

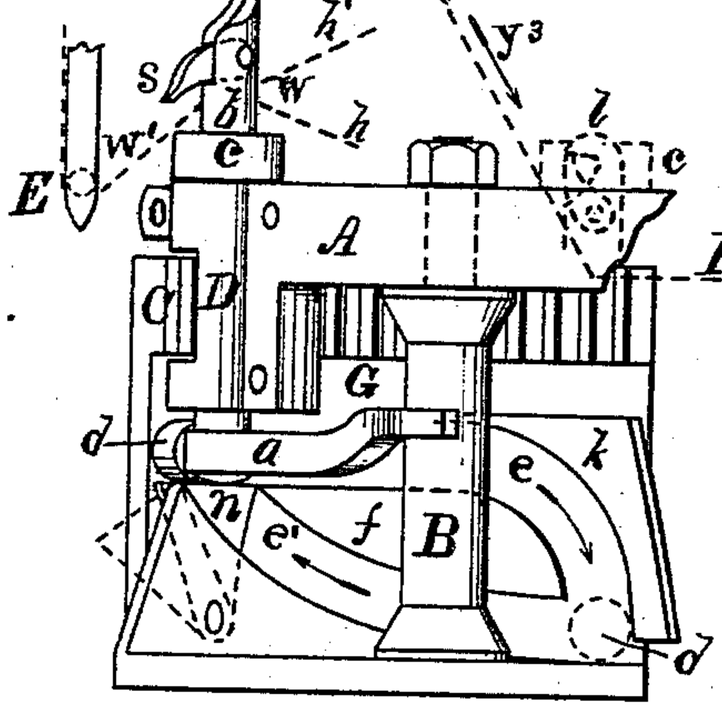


Fig. 2.

Fig. 3.

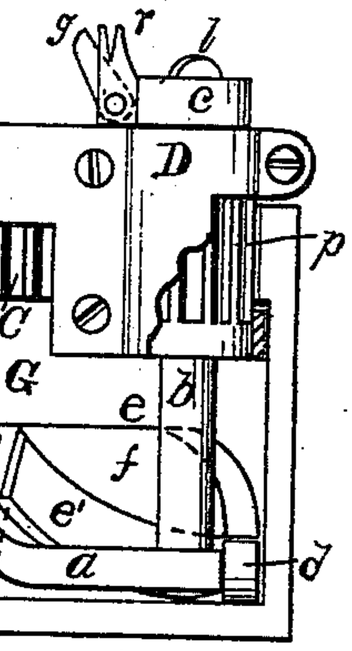


Fig. 4.

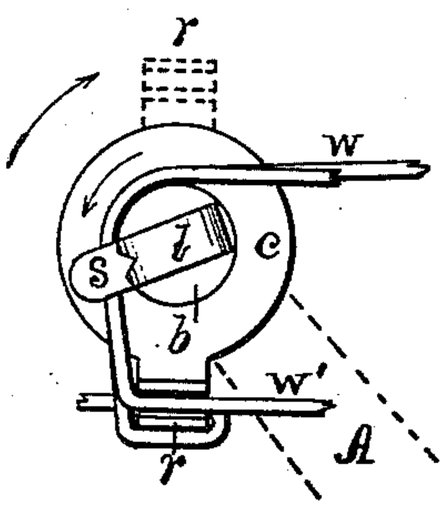


Fig. 5.

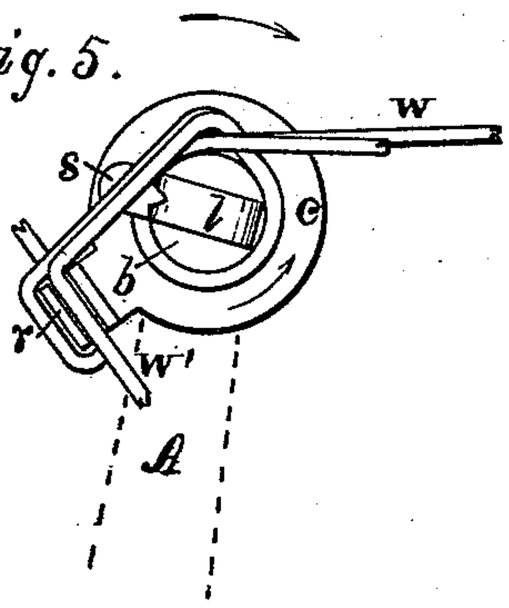
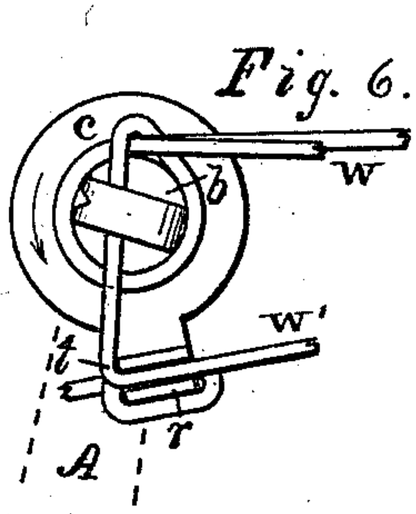


Fig. 6.



Attest:

John W. Dowling

Atty. Ross

Inventor:

Henry E. Pridmore.

by E. B. Whitmore, Atty.

UNITED STATES PATENT OFFICE.

HENRY E. PRIDMORE, OF BROCKPORT, NEW YORK.

IMPROVEMENT IN KNOT-TIERS FOR GRAIN-BINDERS.

Specification forming part of Letters Patent No. **212,154**, dated February 11, 1879; application filed March 1, 1877.

To all whom it may concern:

Be it known that I, HENRY E. PRIDMORE, of Brockport, in the county of Monroe and State of New York, have invented a new and useful Improvement in Knot-Tiers for Grain-Binders, which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 shows a plan of my invention; Fig. 2, an elevation, indicated by arrow *y;* Fig. 3, an elevation, indicated by arrow y^1; and Figs. 4, 5, and 6 show, in detail, the process of forming the knot.

The object of my invention is to furnish a device adapted to the automatic binding of grain, mounted upon a reaper, and operating in connection with a binding-arm, by means of which to tie two parts of a string or twine together in an unyielding knot; and its nature consists mainly in the employment of a swinging radial arm and concentric segment of gear, in which rolls a pinion, by the rotation of which the ends of the twine band are carried around a post and tied, said post being provided with a tongue and loop, and caused to rise and fall by means of a roller traversing a curved track.

In the drawings, the arrow y^2, Fig. 1, indicates the advance of the reaper, and the binding-arm E moves in a vertical plane over the dotted line F, the whole tying device resting partially beneath and to the left of the grain-receptacle P, onto which the cut grain is precipitated by the elevating-carrier, as indicated by the arrow y^3 in Fig. 2.

A is a horizontal radial arm forming a tier-carrier, pivoted at the upper end of the vertical fixed standard B, upon which it may freely turn, and contains within the head D a pinion, *p*, Fig. 3, which rolls along the concentric segment C as the tier-carrier A swings to the right or left. The collar *c*, being a part or extension of the pinion, turns with it. The vertical tie-post *b* passes freely through the collar *c* and pinion, and is fixed rigidly at its foot to the bar *a*, forked loosely upon the standard B, which construction prevents the said tie-post from rotating with the pinion.

The bar *a* is provided with a roller, *d*, which travels in the circuitous track or camway *e e'*, formed on the inner surface of the segmental shell G, and as the roller makes a circuit therein the post *b* is carried down and up through the pinion, its uppermost and lowermost positions being represented in Figs. 2 and 3, respectively. The tie-post *b* is provided at its upper end with a hook, *l*, and tongue *s*, Fig. 2, the latter of which is capable of being folded upward into the loop of the hook, and is caused to so fold and close by the descent of the tie-post through the collar *c*, as above described. When the post is again carried upward and raises the tongue out of the collar, it (the tongue) falls open by gravity, its position being, when the post is at its uppermost position, some little distance above the collar *c*, as shown in Fig. 2.

n is a switch, of simple construction, held in position by the spring *o*, Fig. 1, and yields to the roller *d* (see dotted position, Fig. 2) as said roller moves upward in the track *e'*. When the roller has passed the switch springs back to its normal position, forming then a part of the upper track, *e*, for the roller.

The catch or gripe *r* extends upward from the side of the collar *c*, and serves to hold the binding-twine while being tied and cut, *g* representing a cutter of simple form.

In the operation of binding grain, the twine being held by the gripe *r* is drawn backward and upward by the raised binding-arm, on and against which twine is piled the cut grain, and as the arm moves forward and down, dividing off a gavel, it brings the twine around the gavel and a second time into the gripe *r*, which operation may be understood by inspecting Figs. 1 and 2, in which *h* and *h'* represent the parts of the twine *w* respectively under and over the encircled gavel, and *w'* the twine extending from the gripe around the roller in the point of the binding-arm. The tie-carrier A now swings to the right and toward the gavel L lying upon the receptacle, rotating the collar *c*, which carries the twine held by the gripe around the tie-post, forming the knot.

The manner of forming the knot will be readily understood by inspecting Figs. 4, 5, and 6, drawn to a larger scale. In Fig. 4 the dotted position of the gripe *r* shows it, as in Fig. 1, before rotation has commenced, and the full lines show the collar as having made a half-rotation, carrying the twine partially around the post *b* and under the tongue *s*. Fig. 5 shows the same

after having made another nearly complete rotation, in which the twine is folded across itself, the post having in the meantime descended, as above described, far enough to cause the twine now to pass over the tongue, as shown. Fig. 6 shows the rotation as carried a little farther and completed, the twine having been brought under the hook *l*, and closed in by the now folded tongue, closed by the complete descent of the post. The twine being cut at *t*, the weight of the sheaf draws it off the top of the post, in doing which the cut end, held moderately by the tongue, is pulled through the coil of twine, which completes the knot.

In the operation of binding, the twine is caught by the gripe *r*, as above described, at a slight distance from the sheaf, and the tier-post *b* is carried by the carrier-arm A toward the sheaf while the knot is being formed, finishing the same tight up against the straw, the twine between the point at which it is held by the gripe *r* and the sheaf being consumed in forming the knot. This operation of the parts secures a tight band upon the bundles, and is of much importance in practice.

The tie-carrier arm A is designed to be oscillated by a suitable driving mechanism applied at the end opposite the head D.

The tying-post *b*, as shown at Fig. 6, when the arm A has been swung by its automatic driving machinery to the extreme right position, rests tightly against the side of the bundle L, as will be understood from the dotted position of the arm in Fig. 1, having coiled the twine to form the knot, as above described, during its approach to the bundle from its extreme left position. The diameter of the said post is designed to be such as to take up the two strands of twine extending from the bundle as fast as they are overtaken by the post as it is carried from left to right or toward the bundle, and the knot is completed when the post has reached the side of the bundle, as described.

I claim as my invention—

1. In a grain-binding harvester, a vibrating radial arm, A, with suitable driving mechanism to operate it, in combination with a rotary reciprocating tying-post, *b*, for the twine, pinion *p*, and rack C, substantially as described and shown.

2. The combination, in an automatic grain-binder, of a vibrating knotter-carrier arm, A, vertically-moving tying-post *b*, carrying-bar *a*, with its roller *d*, cam-tracks *e* and *e'*, and fixed standard B, substantially as set forth.

3. A knot-tying post, *b*, of an automatic grain-binder, constructed and operating substantially as shown and described, in combination with automatic mechanism arranged and adapted to carry it positively and laterally toward or against the sheaf while forming the knot, for the purpose set forth.

HENRY E. PRIDMORE.

Witnesses:

E. B. WHITMORE,

HORACE L. BENNETT.