W. M. & G. H. HOWE.

Grain-Binders.

No. 147,940. Patented Feb. 24, 1874.

Fig. 1.

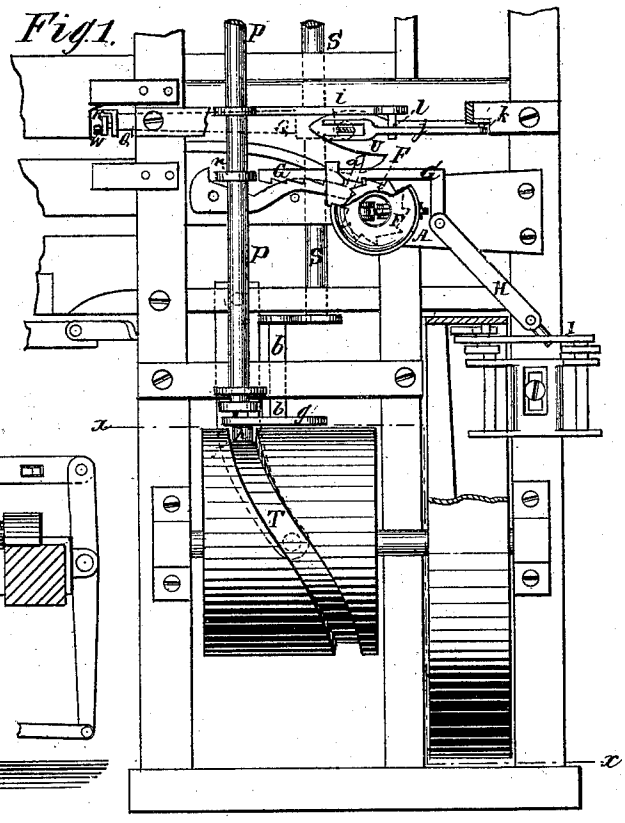


Fig. 2.

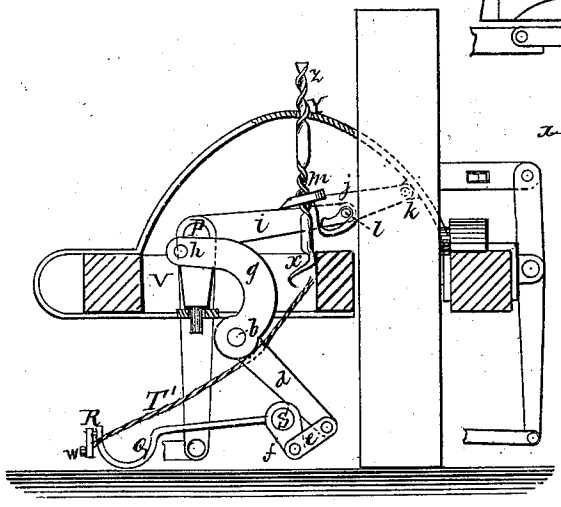


Fig. 3.

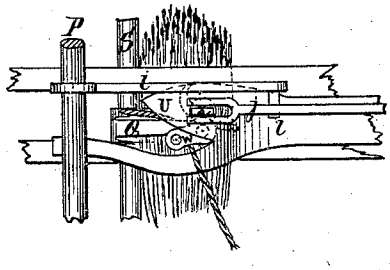
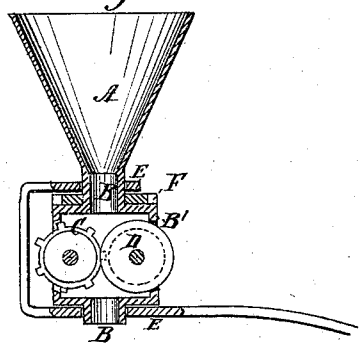


Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM M. HOWE AND GEORGE H. HOWE, OF LANSING, MINNESOTA.

IMPROVEMENT IN GRAIN-BINDERS.

Specification forming part of Letters Patent No. **147,940**, dated February 24, 1874; application filed December 12, 1873.

To all whom it may concern:

Be it known that we, WILLIAM M. HOWE and GEORGE H. HOWE, of Lansing, in the county of Mower and State of Minnesota, have invented a new and Improved Binding Attachment for Harvesters; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming a part of this specification, in which—

Figure 1 is a top view. Fig. 2 is a cross-section in line *x x* of Fig. 1, the twisting-funnel being left out. Figs. 3 and 4 are detail views.

The invention will first be fully described, and then pointed out in the claims.

A represents a funnel, mounted on the frame a little behind the traction-wheel and cam. This funnel terminates in a small cylindrical tube, B, in the middle portion of which is an enlargement, B′, in which there is a pair of vertical wheels, C D, between which the straw to be formed into the band passes, said straw being fed into the funnel by hand. Wheel D is grooved, and C is toothed, and faces the groove of the other wheel. The tubular part B is fitted in bearings E so as to revolve, and a ratchet-wheel, F, is fitted on the tube at the upper end for revolving the funnel and the wheels to twist the band, a reciprocating ratchet-bar, G, being arranged with said ratchet to turn it. This bar G is connected to the rock-lever H, and the latter is connected to the sliding bar I.

But we do not confine ourselves to this mode of rotating the rope-twister, for it may be operated by a belt and pulley or other suitable means. The end of the twisted rope is clamped to the end of a cam pressing-arm, Q, by a little clamping-piece, R, and the said arm Q, which is mounted on the rock-shaft S, is thrown down in the position represented in drawing below the platform, the rope with it, as represented at T′, to receive the gavel from the rake. The arm then swings up, carrying its head with the rope directly under the cam-shaped plate U and against the rope, where it is drawn down over the grooved bar V from the twister. Just before the head of the arm Q comes to rest in this position, the stud-roller W of the clamping-piece being acted on by the edge of the cam-plate U, the said clamp-piece is caused to open to release its hold of the rope, so that the tucker X can take the end of the rope from the clamp, twist it, together with the other portion of the rope, and tuck the twist under. At the same time that the clamp is thus opened to release the end of the rope, it receives the other portion of the rope coming from the twister between its jaws, so as to close on it and carry it down for the next bundle when the arm swings back. The tucker takes the rope at the side of the head of the binding-arm in a little notch in its end and twists it around the part coming from the twister, and then tucks it under the united band below the twist by revolving, and at the same time screwing downward through the nut Y, in which the upper spiral portion Z of the tucker works. The cutter *a* then swings forward and cuts the rope between the head of the arm Q and the bundle, and the arm and the tucker and cutter then return to their respective positions. The arm Q is worked by the rock-shaft *b*, which is connected to it by the arm *d*, link *e*, and arm *f*, and is itself worked by the cam-groove T, with which it is engaged by the arm *g* and stud-pin *h*. The tucker is worked by the rock-shaft P and by the arm *i* on it, working the forked arm *j*, pivoted to the frame at *k*, and connected with arm *i* by a stud-pin, *l*, in the latter, working in a slot in it, and embracing the screw-threaded portion *m* of the tucker.

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

1. A straw-rope twister consisting of the funnel A′, tube B B′, grooved roller D, and toothed roller *e*, combined and arranged, and provided with apparatus for revolving it, substantially as specified.

2. The combination of the compressing-arm Q and clamp R with the tucker and cutter, substantially as specified.

3. The combination of arms *i j* and stud-pin *e* with the tucker and the rock-shaft P, substantially as specified.

4. The combination of arm *n* with the rock-shaft P and the cutter *a*, substantially in the manner described.

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