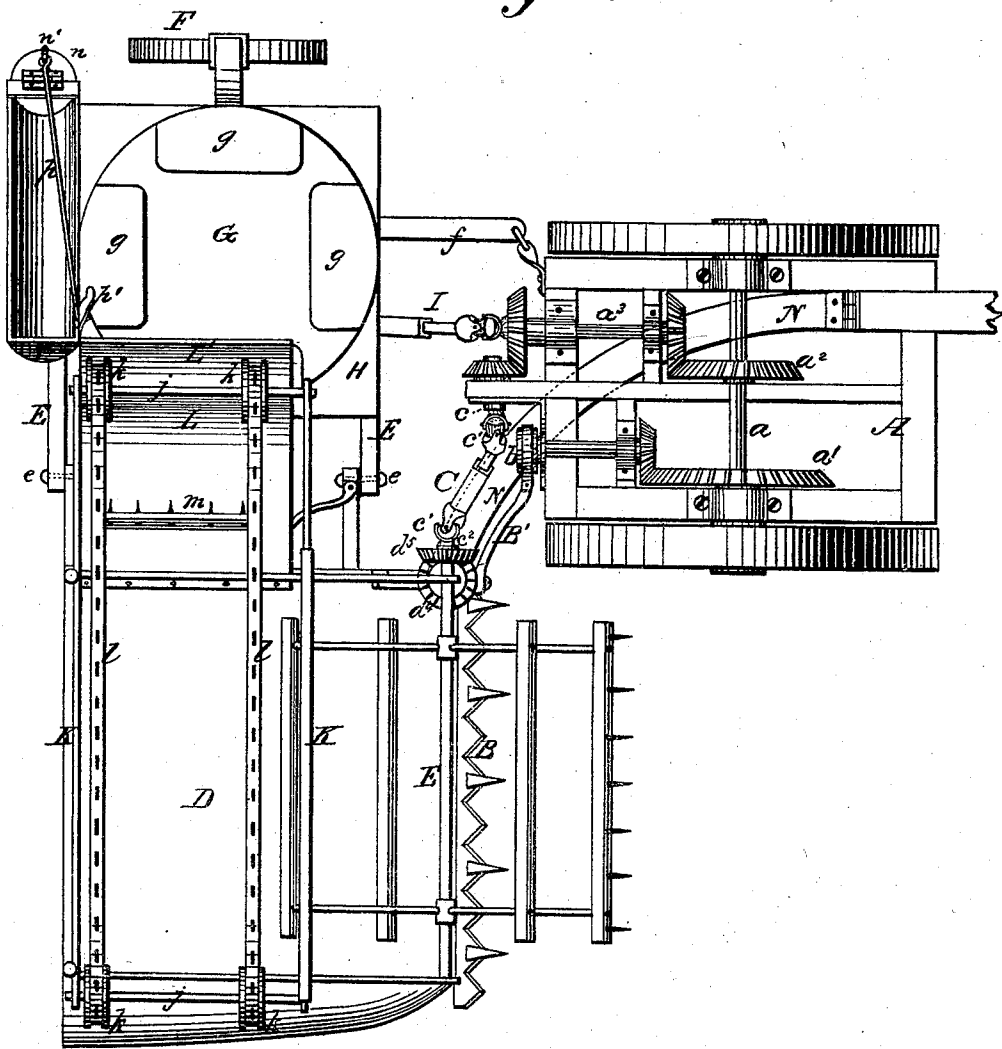


A. WILLARD.
Harvesters.

No. 150,923.

Patented May 12, 1874.

Fig. 1.



WITNESSES

E. A. Bates.
George B. Upham. By

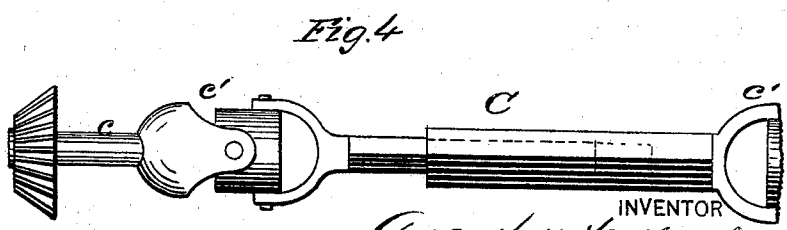
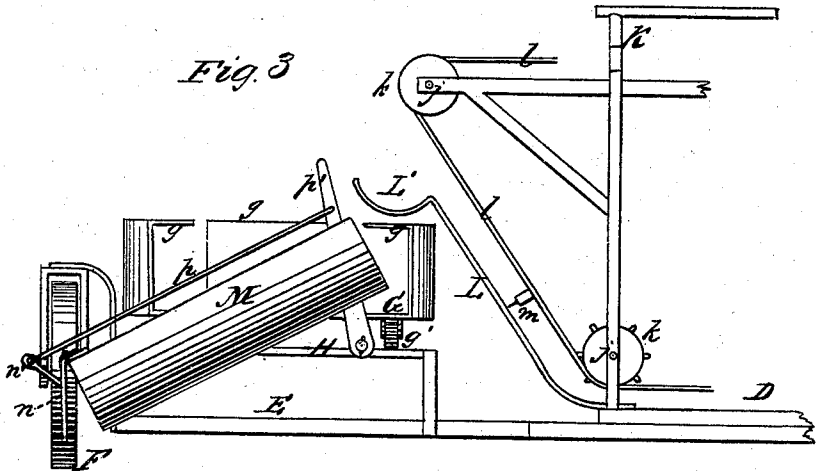
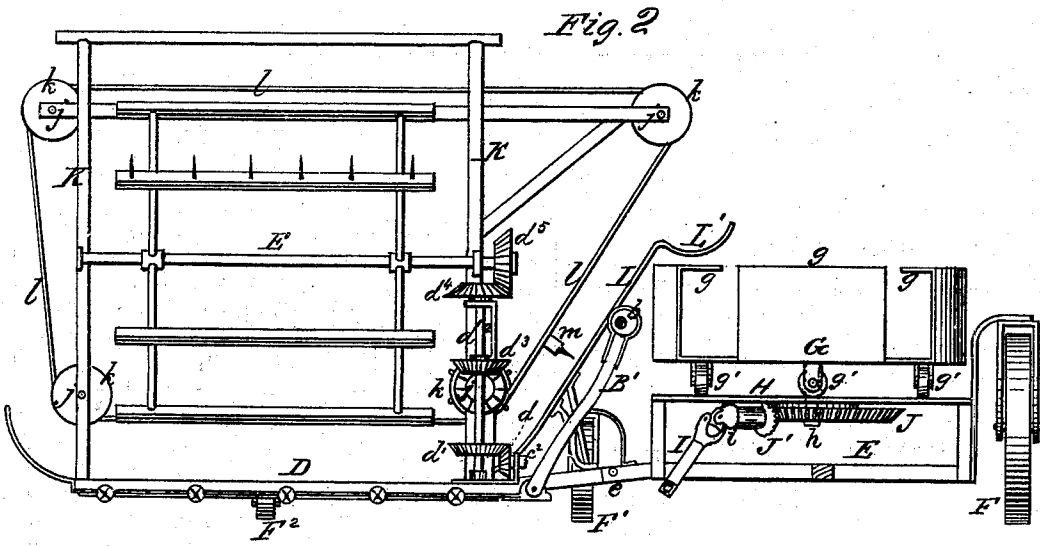
INVENTOR

Augustus Willard.
Chipman Hornum & Co.
ATTORNEYS:

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UNITED STATES PATENT OFFICE.

AUGUSTUS WILLARD, OF SPIRIT LAKE, IOWA.

IMPROVEMENT IN HARVESTERS.

Specification forming part of Letters Patent No. **150,923**, dated May 12, 1874; application filed February 7, 1874.

To all whom it may concern:

Be it known that I, AUGUSTUS WILLARD, of Spirit Lake, in the county of Dickinson and State of Iowa, have invented a new and valuable Improvement in Self-Raking Attachments for Reapers and Harvesters; 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 annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a plan view of a reaper having my binding attachment. Fig. 2 is a front view of the same. Figs. 3 and 4 are detail views of the same.

This invention has relation to reaping-machines having binding attachments applied to them; and it mainly consists in a revolving binders' station, arranged in rear of the draft-frame, and flexibly connected to this frame, and also to the grain-platform. It also consists in certain novel mechanism for actuating the said binders' station, the gavel-carrier, and the reel, when the binders' station is arranged in rear of the draft-frame, and is flexibly connected to it and to the grain-platform. It further consists in an inclined bundle receiver and discharger combined with a revolving binders' station, as will be hereinafter explained.

The following is a description of my improvements:

In the annexed drawings, A designates the draft-frame, which is sustained by two transporting-wheels, that are keyed on an axle, *a*, on which axle two bevel spur-wheels, *a*¹ *a*², are also keyed. The wheel *a*¹ gives rotation to a shaft carrying an eccentric, *b*, on its rear end, which eccentric gives a reciprocating motion to the sickle B by means of a pitman-rod, B'. The wheel *a*² gives rotation to a short shaft, *c*, to which one end of an extensible shaft, C, is connected by means of a universal coupling-joint, *c*¹. The other end of this shaft C is connected, by a similar coupling-joint, *c*², to a short shaft, C², which has its bearing on the front left-hand corner of the grain-platform D. Shaft C² carries a small bevel-wheel, *d*, which engages with a larger wheel, *d*¹, on a vertical shaft, *d*². This vertical shaft *d*² has two bevel-wheels, *d*³ *d*⁴, keyed on it above the wheel *d*¹, the upper

one, *d*⁴, of which wheels engages with a wheel, *d*⁵, on a reel-shaft, E, one of the reel-bars of which is armed with teeth for raking back the cut grain. The extensible shaft C and its joints will allow the platform D to articulate freely and accommodate itself to the undulations of the ground. The platform D is flexibly connected to the front left-hand corner of the main draft-frame A by means of a curved brace, N, which is hinged at its front end to said frame, and at its rear end to the front left-hand corner of the platform. This platform D is also connected to a frame, E, by means of hinges or pivots at *e*, which frame is arranged behind the draft-frame A, and connected to it by means of a suspension draw-bar, *f*. Frame E is mounted on two wheels, F F¹, applied at its ends, and arranged in line with a wheel, F², on which the platform D is supported. G designates a circular binders' stand, which is constructed with elevated binders' tables, *g*, and mounted on rollers *g*¹, which travel on a bed, H, raised above the frame E, and supported upon it. The binders' stand or station G has a vertical shaft, *h*, centrally fixed to it, which shaft passes through the bed H, and has a large bevel spur-wheel, J, keyed on it beneath this bed. Wheel J engages with a pinion, J', on a short shaft, *i*, which shaft is supported in a bearing fixed to the bottom of the bed H, and shown in Fig. 3. The front end of shaft *i* is connected to the rear end of shaft *a*³, on draft-frame A, by means of an extensible shaft, I, and universal joints, in the same manner the shaft C is connected to the shaft C² on the platform. It will thus be seen that the binders' carriage is free to articulate and accommodate itself to the undulations of the ground, independent of the draft-frame and the platform D. I erect on the platform D a frame-work, K, which affords bearings for four horizontal shafts, *j*, on which sprocket-wheels *k* are keyed in pairs. Around the wheels *k* are applied rag-chains *l l*, to which a rake, *m*, is secured. The chains and their wheels are so arranged that the rake *m*, in its revolution, will carry the grain in proper quantities to form a gavel from the platform D, then elevate it up an inclined plane, L, fixed to the delivery side of the platform, and deposit it into a concave gavel-receiver, L', which is arranged in close

relation to the binders' tables as they revolve beneath it. The binders can thus conveniently remove the gavels from the receiver *L'*, place these gavels upon their tables, then bind them, after which the gavels are deposited into an inclined trough, *M*, which is fixed to the rear end of the binders' carriage, as shown in Figs. 1 and 3. The lower end of this inclined trough *M* is provided with a hinged gate, *n*, which opens outwardly, and to which a short arm, *n'*, is fixed. This arm *n'* is connected, by a rod, *p*, to a hand-lever, *p'*, which latter is pivoted to the binders' carriage in a convenient position to the binders as they revolve. By means of this gavel-trough the grain can be delivered upon the ground out of the way of the team in succeeding rounds, and there will be no liability of scattering the grain.

What I claim as new is—

1. The combination, with a revolving binders' stand, its supporting-carriage, and a draft-carriage, of the main gear *J*, drive-shaft *a*³, and flexible extension-coupling *I*, substantially as specified.

2. The combination, with the binders' carriage, grain-platform carriage, and draft-carriage, of the flexible couplings *f*, *N*, and *e*, and the extensible shafts *I C*, for transmitting drive-motion, substantially as specified.

3. The draft-frame, binders' carriage, and grain-platform, flexibly connected together, in combination with the revolving rake *m*, inclined plane *L*, and gavel-receiver *L'*, substantially as described.

4. The combination, with a rotating binders' stand and its carriage, of the inclined gavel-trough, rigidly attached to said carriage, its hinged gate, connecting-rod, and operating-lever, extending above the binders' stand, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

AUGUSTUS WILLARD.

Witnesses:

HENRY LOUIS OWENS,
GERRIT SMITH NEEDHAM.