

(No Model.)

D. R. PRESTON.
GRAIN BINDING HARVESTER.

No. 330,422.

Patented Nov. 17, 1885.

Fig. 1.

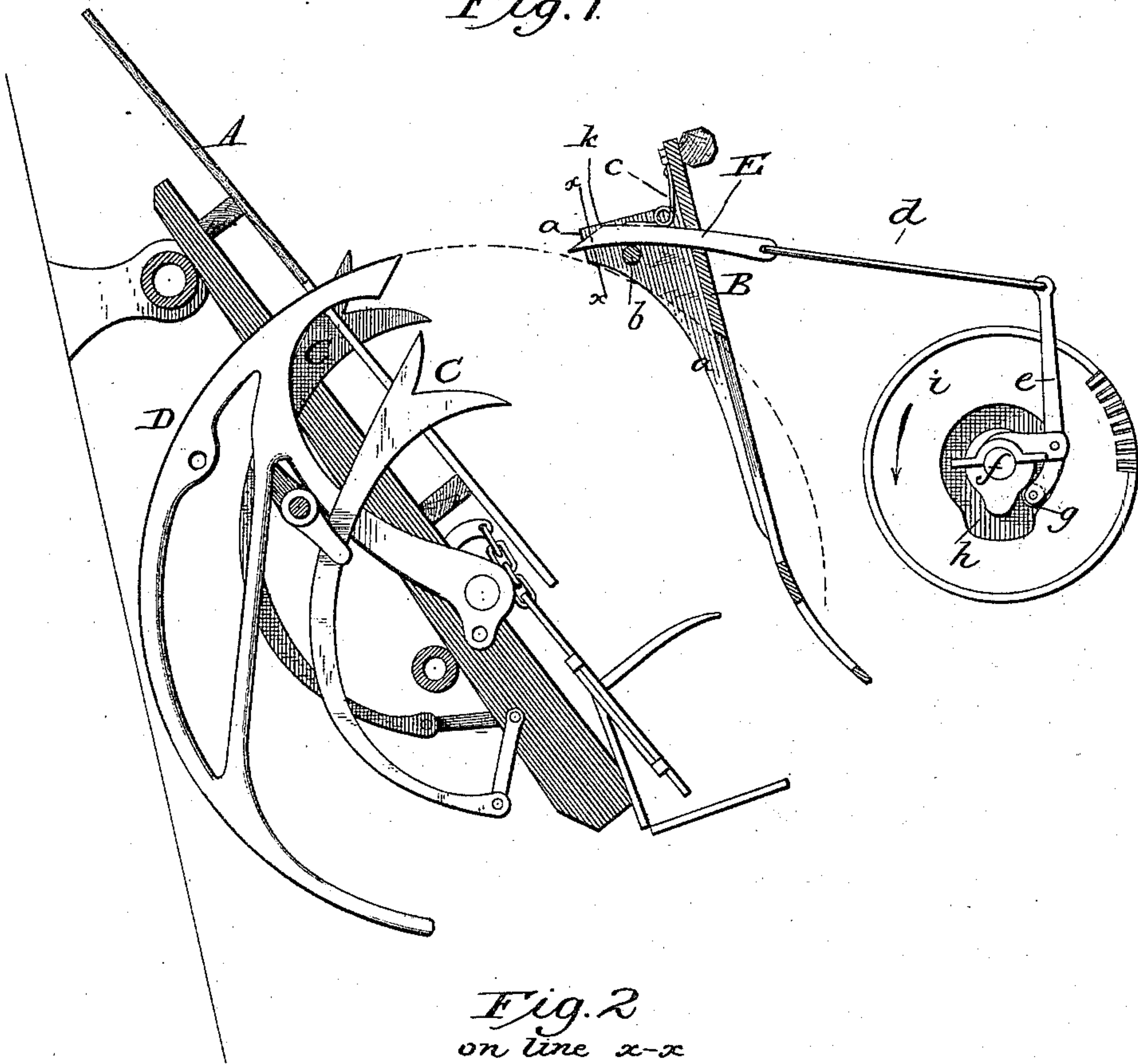
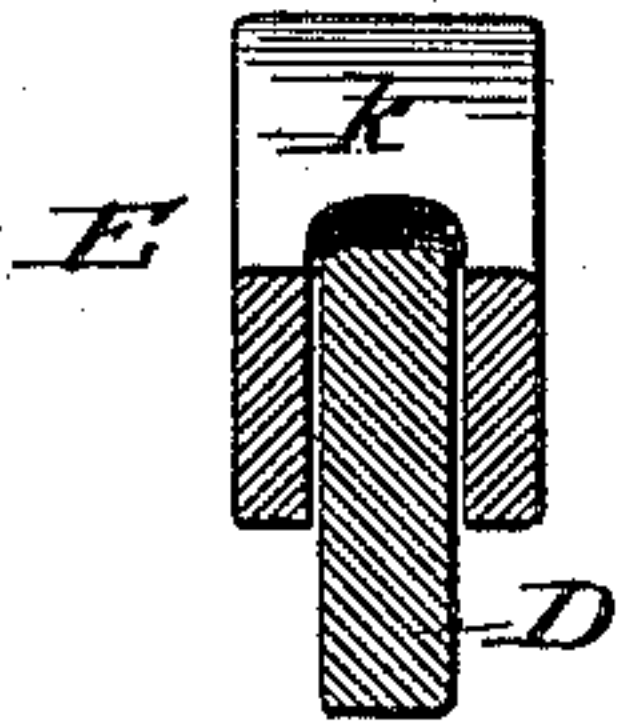


Fig. 2
on line x-x



WITNESSES

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GRAIN-BINDING HARVESTER.

SPECIFICATION forming part of Letters Patent No. 330,422, dated November 17, 1885.

Application filed December 17, 1884. Serial No. 150,575. (No model.)

To all whom it may concern:

Be it known that I, DAVID R. PRESTON, of Whitewater, in the county of Walworth and State of Wisconsin, have invented certain new and useful Improvements in Grain-Binding Machines, of which the following is a specification.

This invention relates more particularly to machines employing what is commonly known as the "Appleby" type of binder arm or needle—that is to say, an arm having its outer edge practically concentric with its axis in order that it may pierce the inflowing stream of grain, remove the gavel, and hold back the accumulating mass on its outer edge or periphery. These binder-arms after passing through the grain pass through a slotted breast-plate overlying the grain-passage to the tying devices in its rear.

In practice great difficulty is encountered by reason of the grain which bears on the outer edge of the needle being carried therewith into and through the breast-plate.

It is the aim of my invention to lift the superincumbent grain from the outer edge or periphery of the needle as the latter enters the breast-plate; and to this end it consists, generally speaking, in a movable finger or guard arranged to override the outer edge of the needle in the direction of its length and in the opposite direction from that in which the needle advances, in order to lift the straw clear of the needle immediately in front of the breast-plate.

The details of the stripper and of the devices for operating the same may be modified; but I prefer to make use of the particular construction represented in the drawings.

Referring to the accompanying drawings, Figure 1 represents a vertical central section through the principal operative parts of a binding-machine of the Appleby type, which may be in all respects, except as to the stripper, identical with those at present known in the art. Fig. 2 is a cross-section on the line $x x$ of Fig. 1.

In the drawings I have omitted the grain-delivering, cord-tying, and bundle-ejecting mechanisms, which have no direct connection with the devices forming the subject-matter of the present invention.

A represents the receiving or binding table, arranged in an inclined position and receiving the grain in a continuous stream from the elevating mechanism at its upper end.

B represents a fixed breast-plate above and substantially parallel with the binding-table to assist in confining and compressing the grain.

C C represent the circulatory packers, which ascend through the grain-table for the purpose of forcing the grain downward through the throat or passage between the binding-table and breast-plate.

D represents the needle or binder arm, mounted on a shaft below the table and vibrating in a vertical plane through the table, across the grain-passage, and through a slot in the breast-plate, in order that its point may separate the gavel from the grain in its rear, assist in compressing the gavel, and present the cord to the tying devices located above the breast-plate. The outer edge of the needle is extended rearward from its point in the arc of a circle concentric or essentially concentric with its axis, whereby it is adapted to serve as a guard or support to sustain and hold back the inflowing grain while the gavel is being carried forward and separated therefrom.

The foregoing parts are constructed and operated as in existing machines, and are familiar to those skilled in the art.

The breast-plate is provided, as usual, on the under side with parallel ribs or flanges a along the sides of the slot through which the point of the needle passes. The ribs are curved on the lower edge, as usual, and designed to prevent the superincumbent grain from being carried backward through the slot in the breast-plate by the needle.

In the practical operation of the machine in green or damp grain it is found that the grain adheres or clings to the outside of the needle with such tenacity that it is frequently doubled over the needle and carried therewith between the ribs and through the slot.

My device, to avoid this difficulty, consists of the stripper or clearer E, in the form of a bar or finger grooved longitudinally on the under side and arranged to play through a slot or opening in the top of the breast-plate lengthwise over the upper or outer edge of

the needle, as shown in the drawings. The stripper slides at its rear end through a hole in the breast-plate, and is sustained at its forward end by a pin or pivot, *b*, on which it rests, and against which it is held by a pressure-spring, *c*, secured to the breast-plate and bearing on the stripper. The rear end of the stripper is connected by a rod, *d*, to a lever, *e*, pivoted to one of the bearings of the main binder-shaft *f*, or other fixed support, and operated by means of a roller, *g*, at its rear end, entering a cam-groove, *h*, in the face of the wheel *i*. This wheel may be the one commonly employed for operating the tyer-pinion in this class of machines, and the groove may be the one which is commonly used for operating the cord-guiding and knife-carrying arm.

The operation is as follows: When the required amount of grain has accumulated in advance of the packers, the binder is thrown into gear and the needle rises, compressing the stream of grain and separating the gavel. As soon as the point of the needle passes into the breast-plate, the stripper *E* is moved backward—that is to say, in the opposite direction from that in which the needle is advancing—riding over the upper edge of the latter in such manner as to lift or strip from the back of the needle the grain lying thereon adjacent to the breast-plate. The result is that the needle, relieved from the weight and pressure of the grain at this point, is permitted to pass easily and cleanly through the plate unaccompanied by the grain. After the needle has reached the tying devices the stripper is retracted to its original position, with its point inside of the flanges *a*, so that it will not obstruct the inflowing grain. The pin *b* may be so located as to permit the stripper to bear directly on the edge of the needle or to be adjusted in such manner as to maintain a slight compression between them. It is preferred to incline or bevel the stripper on the upper forward side, as shown at *k*, in order that it may the more readily lift the grain; but this is not a necessary feature.

The essence of the invention consists in combining with the needle and breast-plate a device which overrides the needle on the outer side to hold the grain therefrom.

I am aware that in a machine having special rotary arms to divide the grain and sustain

the accumulating mass above the path of the needle-point during the descent of the latter, a swinging arm or plate has been employed to act on one side of the gavel and push all loose grain in front of it within the path of the needle-point, as in Letters Patent to G. F. Green, No. 188,125, and to such construction I lay no claim.

Having thus described my invention, what I claim is—

1. In combination with the breast-plate and the vibratory binding-needle of the type herein shown, arranged to divide the gavel from the inflowing grain, the stripper overlying the path of the needle, and mechanism, substantially as described, for advancing said stripper longitudinally over the outer edge of the needle.

2. The combination of the breast-plate, the vibratory needle having the substantially concentric outer edge, the reciprocating stripper grooved or flanged to receive the needle-point in its under edge, and mechanism, substantially as described, for advancing said stripper through and beyond the breast-plate along the outer edge of the needle.

3. In combination with the vibratory binding-needle of the type herein shown, the grooved stripping device having the beveled forward end, and operating mechanism, substantially as described, for causing said device to override the point of the needle on the outer side in the opposite direction from that in which the point advances.

4. In combination with the vibratory binding-needle of the type herein shown, and the reciprocating stripper overriding its point on the outer side, the cam-wheel *i*, lever *e*, and connection, substantially as shown, from the lever to the stripper.

5. In combination with the vibrating needle of the type herein shown, the reciprocating stripper to act on the outer edge of the needle, and the spring acting to depress said stripper, substantially as shown.

In testimony whereof I hereunto set my hand, this 11th day of November, 1884, in the presence of two attesting witnesses.

DAVID R. PRESTON.

Witnesses:

J. H. PAGE,
E. T. CASS.