(No Model.)

H. A. & W. M. HOLMES.

NEEDLE OR BINDER ARM FOR AUTOMATIC GRAIN BINDING MACHINES.

No. 305,819. Patented Sept. 30, 1884.

FIG. 1.

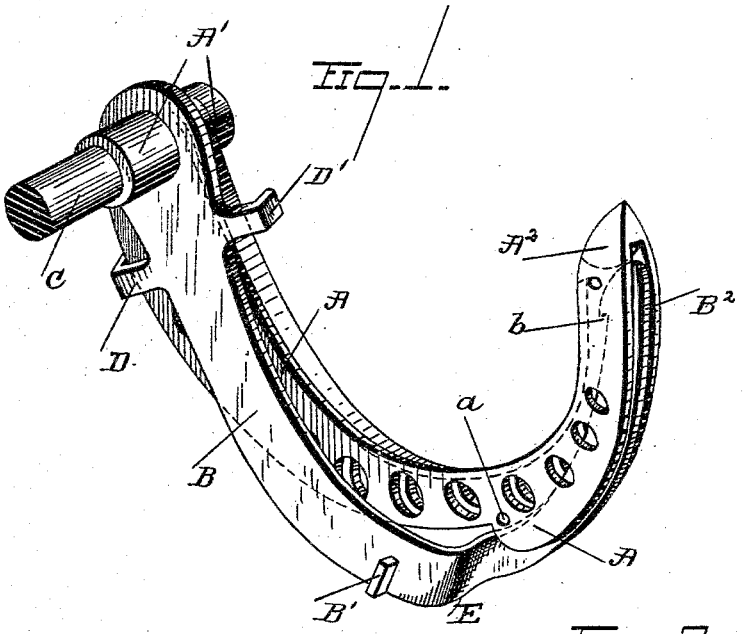
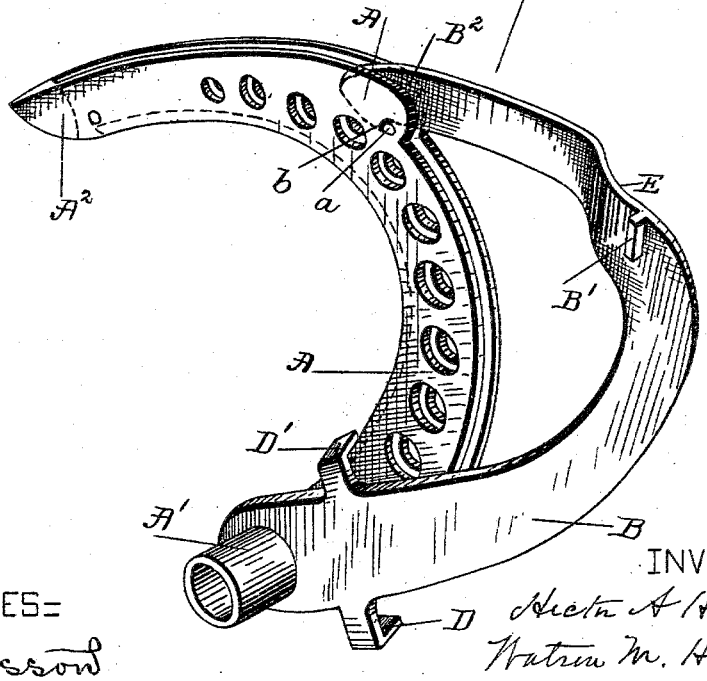


FIG. 2.



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UNITED STATES PATENT OFFICE.

HECTOR A. HOLMES AND WATSON M. HOLMES, OF HOOSICK FALLS, N. Y.

NEEDLE OR BINDER-ARM FOR AUTOMATIC GRAIN-BINDING MACHINES.

SPECIFICATION forming part of Letters Patent No. 305,819, dated September 30, 1884.

Application filed February 21, 1884. (No model.)

To all whom it may concern:

Be it known that we, HECTOR A. HOLMES and WATSON M. HOLMES, of Hoosick Falls, in the county of Rensselaer and State of New York, have invented a new and useful Needle or Binder-Arm for Automatic Grain-Binding Machines; and we declare the following to be a full, clear, and accurate description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figures 1 and 2 represent in perspective two positions of the complete needle or binder-arm. Fig. 1 shows the two parts of the binder-arm when closed, and Fig. 2 the two parts when open.

Similar letters of reference represent the same parts in both figures.

Needles or binder-arms as heretofore constructed have been made with a swinging and sliding and also with a fixed curved back, the curved portion being added for the purpose of making a more perfect separation of the grain to be bound into a sheaf from the inflowing grain. Some harvesters and binders are so constructed that there is insufficient room for the action of the needle or binder-arm to work on account of the width of its base.

In a previous application now pending before the Patent Office we have shown and claimed a needle or binder-arm with the curved back pivoted at one end to the back part of the needle or binder-arm and its other end to a swinging link pivoted to some fixed portion of the machine.

The object of this invention is to construct a needle or binder-arm with the curved back so acting as to accomplish the desired result by a different means, and dispense entirely with any fixed connection upon the main portion of the needle or binder-arm, and also the swinging link and its connection to the frame of the machine.

A represents the main portion of the needle or binder-arm, and which carries the cord to the knot-tying device, fastened rigidly to the shaft C, which actuates it. The back of this arm is provided with a groove on its edge for carrying the cord, and this groove is made wide and deep enough to receive the edge of the curved back B within it for a portion of its length. The curved back B is made to swing loosely on shaft C and in close proximity to the part A, and is provided near its support on the shaft C with two projections, D and D′, which extend toward and beyond the outer and inner curved edges of A, and are sufficiently far apart to permit the requisite movement of the two parts A and B from and toward each other.

This device is applicable to binders when the needle or binder-arm is actuated from above as well as below the binder-deck; but in this case we will assume that it is actuated from below the binder-deck.

Near the forward or upper end of the curved back B it is provided with a notch, *b*, and the part A is provided at the proper place between its point and heel with a pin, *a*.

Fig. 1 shows the needle or binder-arm when it is below the binder deck or table and the two parts are closed together, the upper portion of B resting in the groove in A, the part B being bent or set off at E to bring it in the right position. The outer periphery of the part A is in contact with the projection D on the curved back B. When the needle or binder-arm is moved upward to encircle the sheaf with the cord, the portion B will remain at rest until the portion A has raised far enough to come in contact with the projection D′ on the part B, and at the same time the pin *a* on A has reached a point where the notch *b* will take over it, and the parts will then assume the position shown in Fig. 2, when the whole continues its motion, and the curved back B acts to separate the grain to be bound from the inflowing grain and to preserve the separation until the bundle is bound and the needle or binder-arm has resumed its position under the binder deck or platform, as shown in Fig. 1. The notch *b* and pin *a*, when in connection, serve to steady the movement of the part B, exercising a drawing force upon it, and not leaving the whole of the work to be done by projection D′. The arm B is provided with a projection, B′, on its outer surface, which is arranged so as to strike against two projections at the proper time on the frame, properly located, the object being to make the opening and closing positive in case the parts should become so gummed or stuck together

that the friction would prevent their working freely, the projection B′ striking against the upper projection on the frame or other fixed point on the machine to insure the opening, and against the lower projection on the frame or other fixed point to insure the closing. This projection, in its action, assists to overcome the friction simply, but if the parts are kept clean would not be necessary.

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

In an automatic grain-binder, the binder-arm shaft and the slotted binder-arm secured to said shaft, in combination with the curved back or guard loosely pivoted on said shaft and adapted to be folded close to said binder-arm, its free end sliding within the slot of the same, substantially as and for the purpose set forth.

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