

(No Model.)

3 Sheets—Sheet 1.

C. COLAHAN.
CORD KNOTTER FOR GRAIN BINDERS.

No. 476,519.

Patented June 7, 1892.

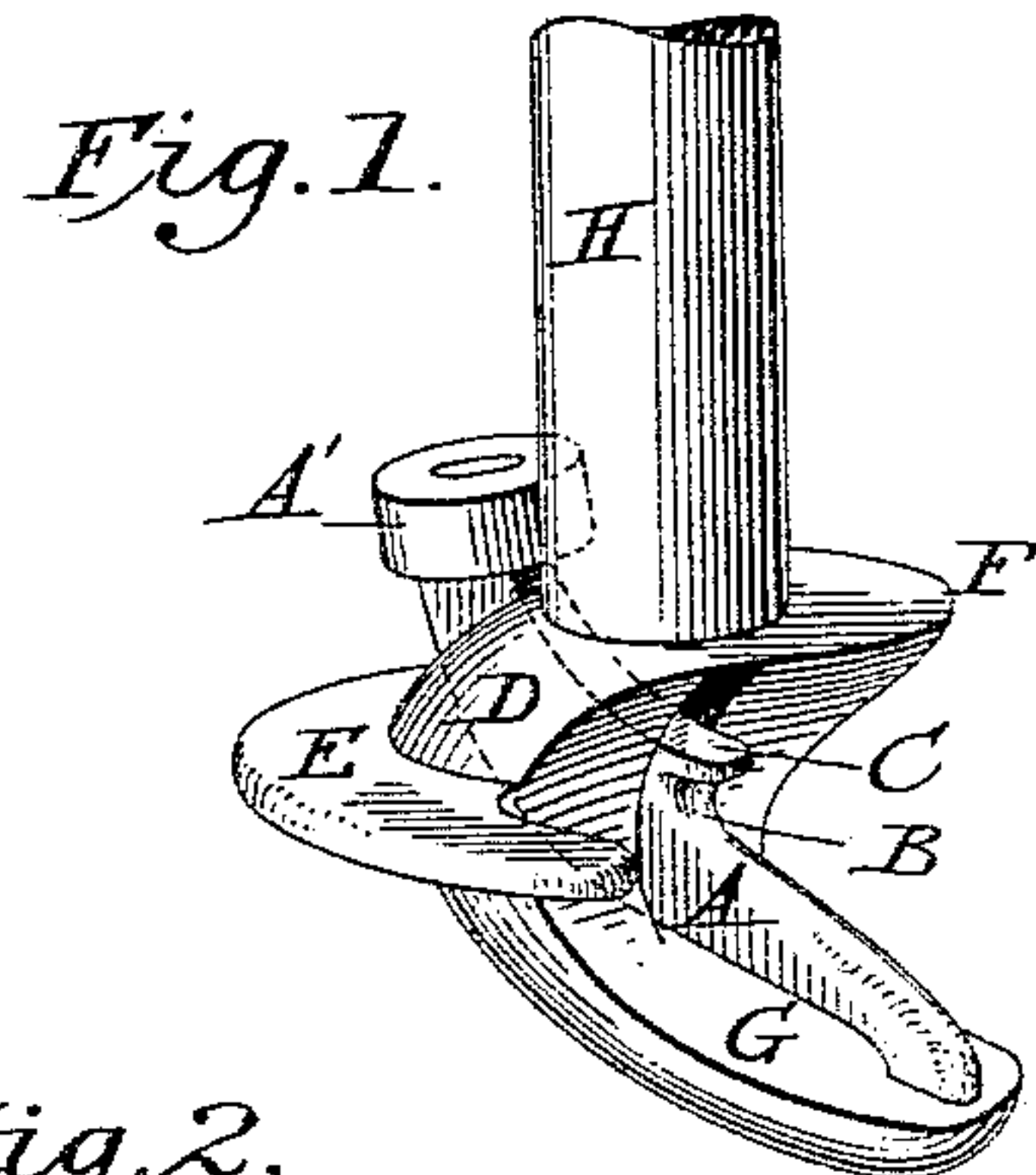
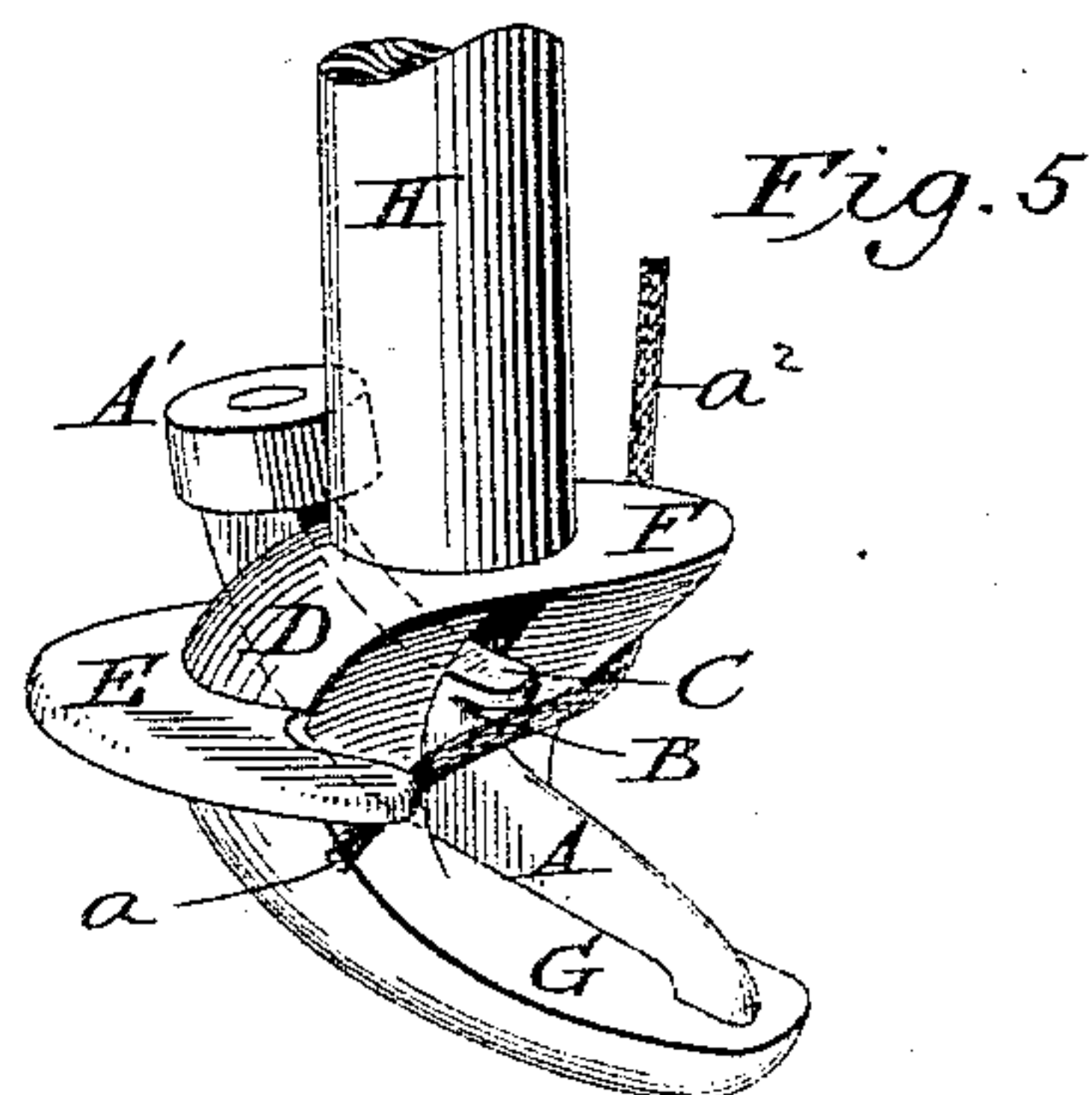
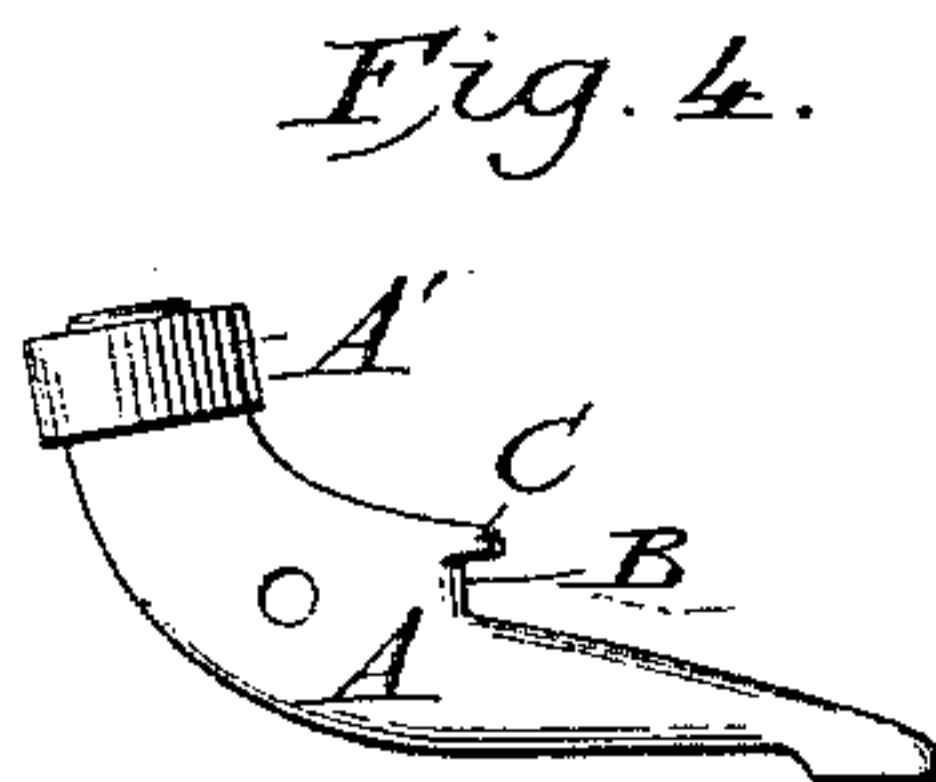
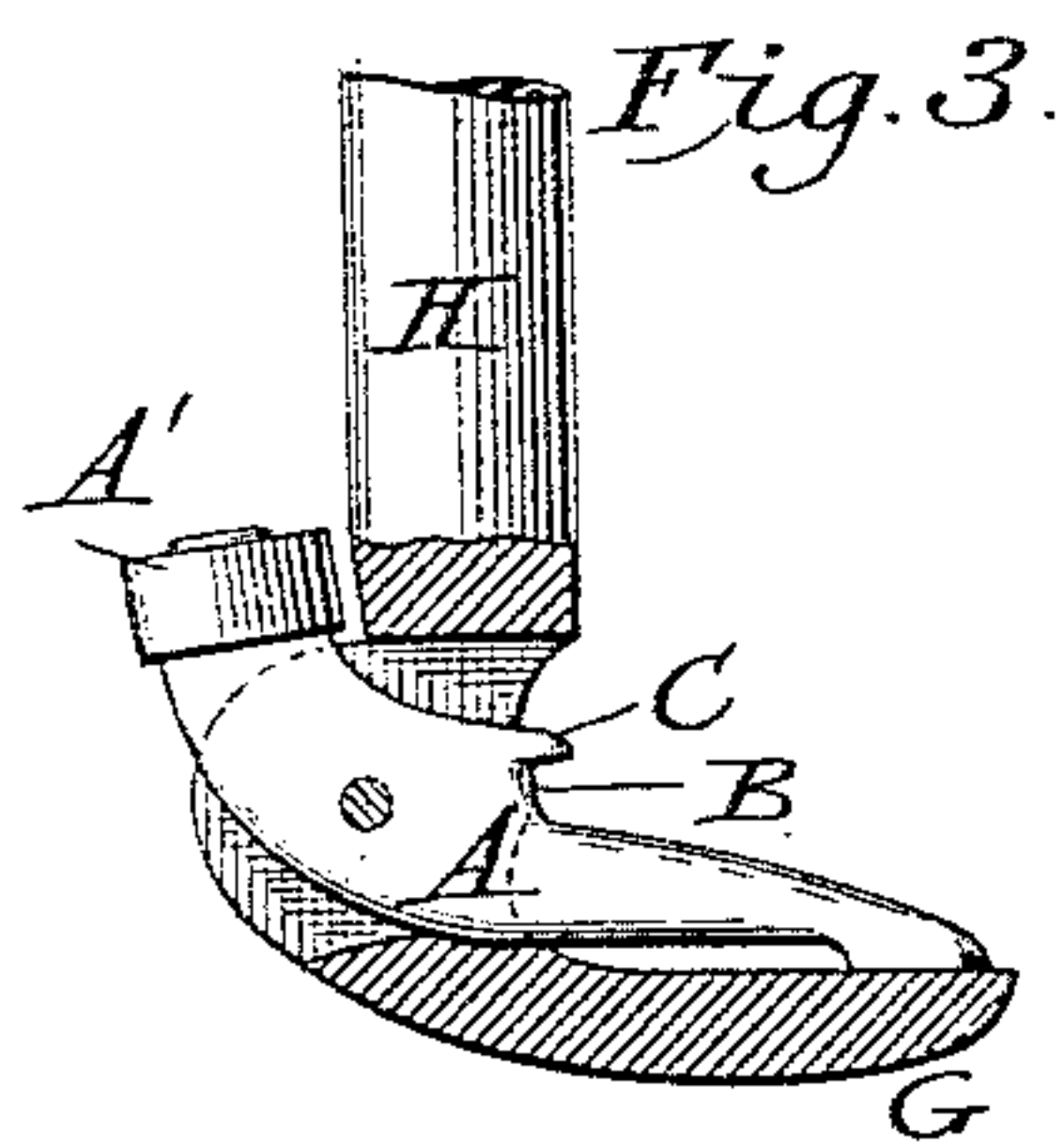
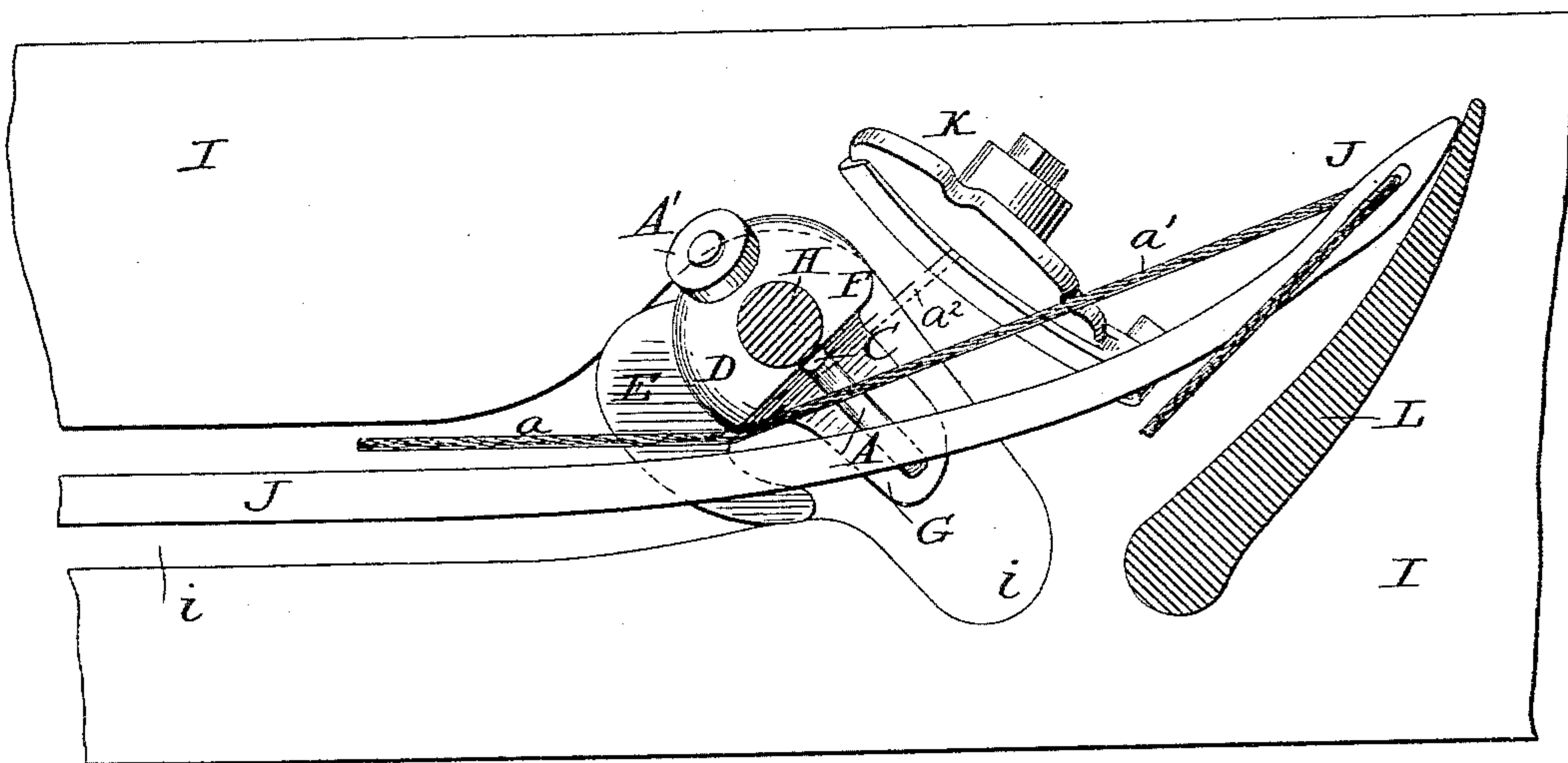


Fig. 2.



Attest
Baltus DeLong
J. M. Coppenhaver.

Inventor
Charles Colahan
by Henry P. Hollingsworth
att'y

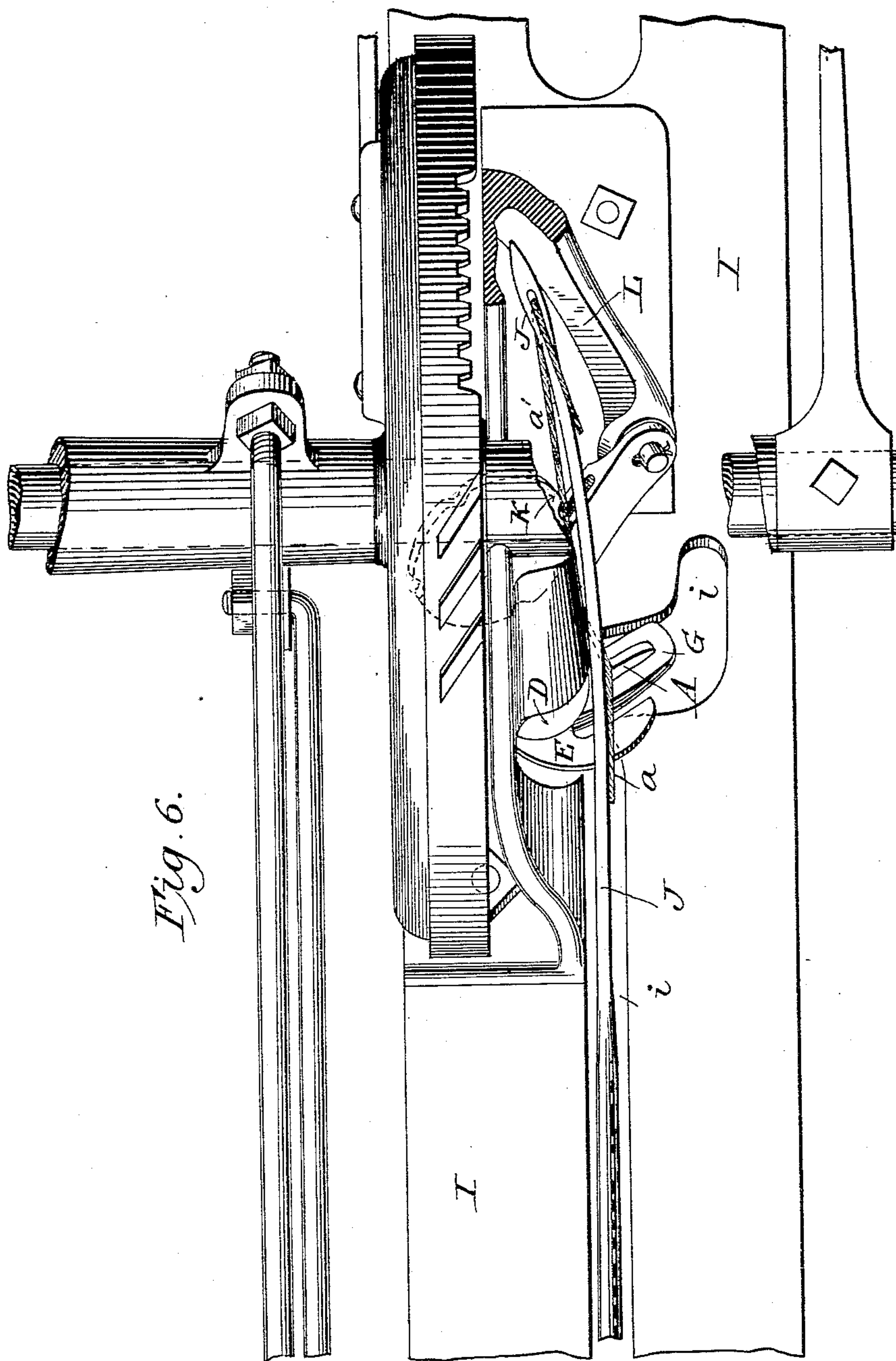
(No Model.)

3 Sheets—Sheet 2.

C. COLAHAN.
CORD KNOTTER FOR GRAIN BINDERS.

No. 476,519.

Patented June 7, 1892.



Witnesses
M. H. Colahan
H. Gilbert

Inventor
Chas. Colahan

3 Sheets—Sheet 3.

No. 476,519.

Patented June 7, 1892.

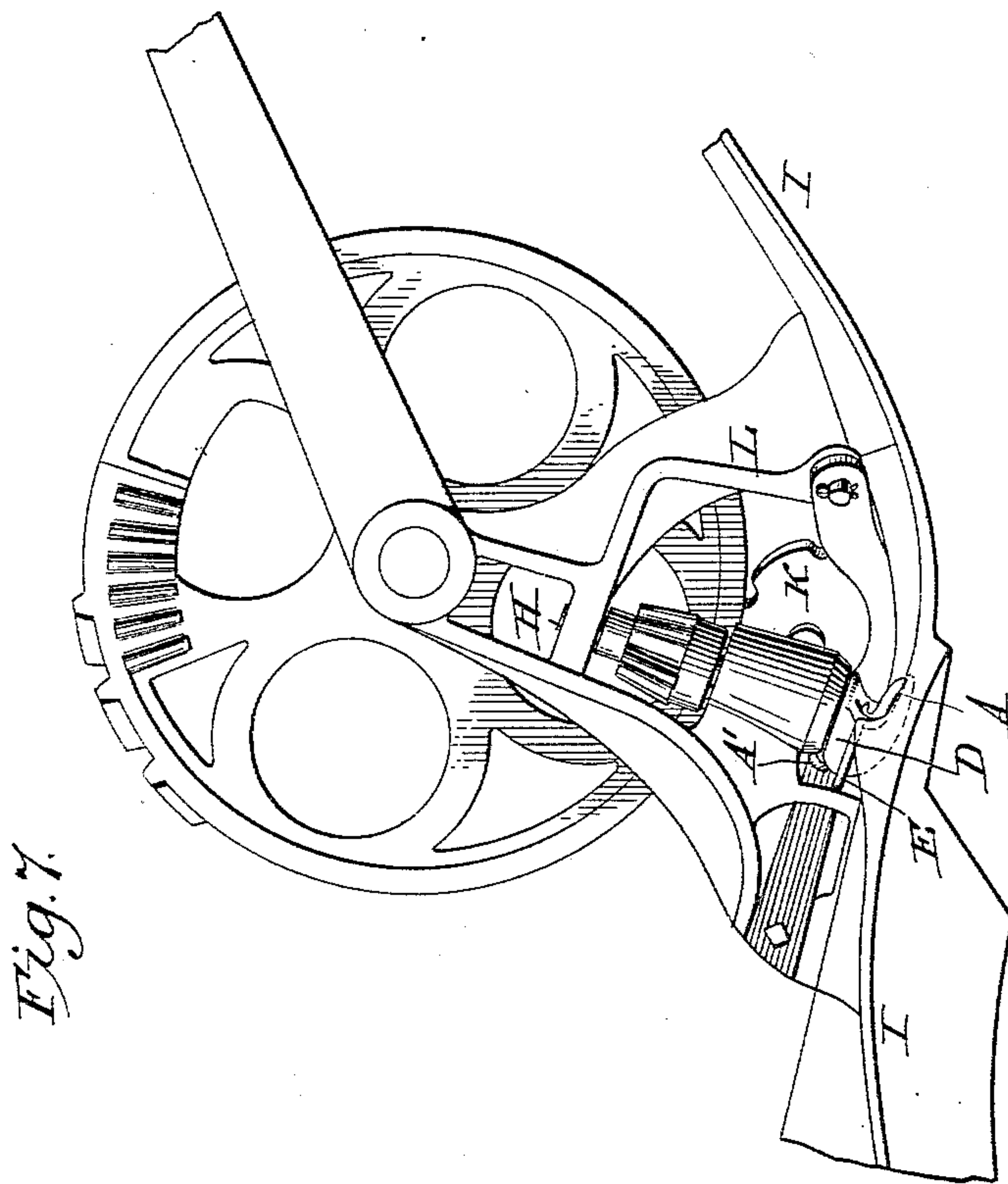


Fig. 7.

Witnesses

Sidney P. Hobbingsworth
Wm. H. Calhoun

Inventor

Charles Colahan

UNITED STATES PATENT OFFICE.

CHARLES COLAHAN, OF CLEVELAND, OHIO.

CORD-KNOTTER FOR GRAIN-BINDERS.

SPECIFICATION forming part of Letters Patent No. 476,519, dated June 7, 1892.

Application filed March 10, 1891. Serial No. 384,489. (No model.)

To all whom it may concern:

Be it known that I, CHARLES COLAHAN, a citizen of the United States, residing at Cleveland, county of Cuyahoga, and State of Ohio, have invented certain new and useful Improvements in Cord-Knotters for Grain-Binders, which are fully set forth in the accompanying specification, reference being had to the accompanying drawings, forming a part thereof.

This invention relates to the use of a flexible binder-arm and knotter mechanism of the "Appleby binder," so called, that is constructed with an open-slotted breast-plate, a tying-bill pointing outwardly to discharge the knot and remaining in this normal position during the formation of the bundle and placing the cord around the same. While the knotter remains in this position the cord is supported on the finger that projects across the slot in front of the knotter, and as it revolves takes the cord in the formation of the knot in the usual manner, the loop being formed around both jaws and the pivoted upper jaw being forced open as its friction-roller is brought in contact with its cam and its open jaw passes over that portion of the cord between the knotter and the cord-holder, when it is forced down or closed by being brought in contact with another elastic cam-surface, and thus seizes and holds the ends of the cord as the knot is formed in the usual manner by the Appleby knotter.

My present invention has reference to the pivoted upper jaw and its operation, in combination with the several parts alluded to. As this jaw is opened and closed positively by means applied to its friction-roller A', the cord is liable to be injured or cut as the jaw opens and the fiber enters the slot of the rigid jaw, and thus interferes with the successful operation of the knotter. This misplacement of the cord occurs at times when the binder-arm rises and places the cord in the cord-holder, that is located in substantially the same relative position as shown in my application filed December 26, 1888, Serial No. 294,607, and receives the cord from the laterally-flexible binder-arm, that bends at its point to deliver the cord to the cord-holder, that is located at one side of the slot out of the

line parallel with the direct movement of the binder-arm, that is made flexible at its point and caused to bend laterally as it places the cord in the cord-holder, which carries it toward the tying-bill to be in position to meet the opening of the pivoted jaw as it is acted upon by its cam, and should the strands of cord not be held down below the upper surface of the pivoted jaw as it is forced open by its extended arm and friction-roller it is liable to be cut or injured, so as to prevent the securing of the band, in which instance the grain would be discharged in a loose unbound condition.

In my invention I provide the upper pivoted jaw, that extends through the mortise of the fixed jaw, with a depression that is made in proper relation to the cord-supporting finger, that it will receive the cord from the cord-supporting finger as it escapes therefrom as the knotter revolves and causes the withdrawal of the finger from across the slot, and thus hold and maintain the cord in proper position as the cord-holder carries the same to a point when the knotter-jaw may open to receive the ends in formation of the knot without liability of injuring the same.

In the drawings, Figure 1 is an elevation of the knotter or tying-bill. Fig. 2 is a plan view of the same, showing the cord-holder and the position of the flexible binder-arm placing the cord therein, also the breast-plate and its open slot. Fig. 3 is an elevated sectional view of the knotter. Fig. 4 is a view of the pivoted knotter-jaw provided with its friction-roller and showing the depression thereon that operates in the combination of the several parts, as will be fully described. Fig. 5 is a perspective view of my knotter, showing its position as it has revolved across the slot and received the cord from the cord-supporting finger in the progress of forming the loop. Fig. 6 is a plan view showing how the binder-arm places the cord over the knotter-jaws and into the cord-holder and also showing the knotter-operating wheel. Fig. 7 is an elevation of the knotting mechanism.

Referring to the letters in the drawings, A represents the pivoted knotter-jaw; A', its friction-roller.

B is the depression made in the upper por-

tion of the jaw on a line with its pivot and extended in a plane parallel therewith to the outer point of the jaw.

C is a projecting guard extending outwardly over the depressed portion and on a plane above a line parallel with the cord-supporting finger.

D is a flange on the knotter for guiding the cord to the cord-supporting finger E, which is the same as shown in my patent, No. 425,565, dated April 15, 1890. F is also a cord-guiding flange that in its revolution forces the cord down on the finger E.

G is the rigid knotter-jaw.

H is the knotter-shaft.

I is the breast-plate. i is the cord-slot therein.

J is the flexible binder-arm placing the cord in the cord-holder K.

L is a guiding-standard that is located in the path of the rotation of the point of the binder-arm and causes the flexible arm to bend laterally at its point as it rises through the slot as it is forced forward by its shaft.

a represents one strand of the cord.

a' is the end extended from the binder-arm.

a² indicates the location of the cord when it is carried across the slot to the point where the knotter-jaw opens to seize its ends in completion of the knot.

In operation of my invention the cord is placed over the supporting-finger across the slot and extending to the cord-holder, which carries the ends to a point where they may be seized as the jaw opens in the revolution of the knotter, and as the knotter revolves in formation of the loop the cord is taken from the finger that supports it in the open slot and it is then supported on the knotter-jaws, as shown in Fig. 5, and held under the guiding-flange F and projecting guard C in the depression B on the pivoted jaw G, and thus the ends, being held by the cord-holder, are in proper place, and as the pivoted jaw is caused to vibrate to open and close in seizing the ends of the cord the knot is formed with certainty, and as the bound bundle is discharged as the jaws point outwardly the knot is carried from the knotter in perfect form. The flexible binder-arm as it rises will bend laterally at its point as its shaft forces it forward and its point comes in contact with the guiding-standard L and thus carries and places the cord in the notches of the cord-holder. A lug on the knotter-frame has the usual aperture for the passage of the binder-arm, that prevents the binder-arm from coming in contact with the knotter-shaft.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination of the breast-plate pro-

vided with an open slot that permits the entering of the cord-carrying arm in placing the cord over the knotter-jaws to the cord-holder, said slot extending beyond the knotter to permit the free discharge of the knot outwardly in the direction of the outgoing bundle, and the outwardly-pointing knotter having its pivoted jaw extending beyond the face of the fixed jaw, provided with a depression B and guard C, projecting over the depression B, wherein the cord is received as the knotter revolves and held in position to prevent its injury as the finger rises to grasp the ends in the formation of the knot, substantially as described.

2. The combination of a knotter that in its normal position has its jaws pointing outwardly to permit the discharge of the knot that is stripped therefrom by the outgoing bundle, the pivoted knotter-jaw A, extending beyond the face of the fixed jaw, and its friction actuating-roller A', said knotter-jaw having the depression B, projecting guard C, and the rigid jaw G, provided with the cord-guiding flange F, all mounted on the vertical revolving shaft H, operating substantially as described.

3. In a grain-binder, a flexible cord-carrying arm and means for deflecting the point of said arm after passing the knotter to carry the cord to the cord-holder located at one side of the slot in the breast-plate.

4. The combination of the open-slotted breast-plate I, the vertical revolving knotter provided with a cord-supporting finger extending across the cord-slot to receive and support the cord as the knotter-jaw points outwardly, the pivoted jaw A, and its depression B, that receives the cord from the cord-supporting finger as the knotter revolves and holds the same in proper position for the ends to be grasped by the open jaw without liability of injuring the cord in the formation of the knot.

5. The combination of the breast-plate I, the vertical revolving knotter-shaft H, its rigid jaw G, guiding-flanges D F, and cord-supporting finger E with the vibrating jaw A, depression B, and guard C, operating substantially as described.

6. In combination with the guiding-standard L, a laterally-flexible binder-arm, and the cord-holder arranged to receive the cord therefrom and carry the same in position to be grasped by the knotter as it revolves in the formation of the knot, substantially as shown and described.

CHARLES COLAHAN.

Witnesses:

M. H. COLAHAN,
L. D. BENEDICT.