

(No Model.)

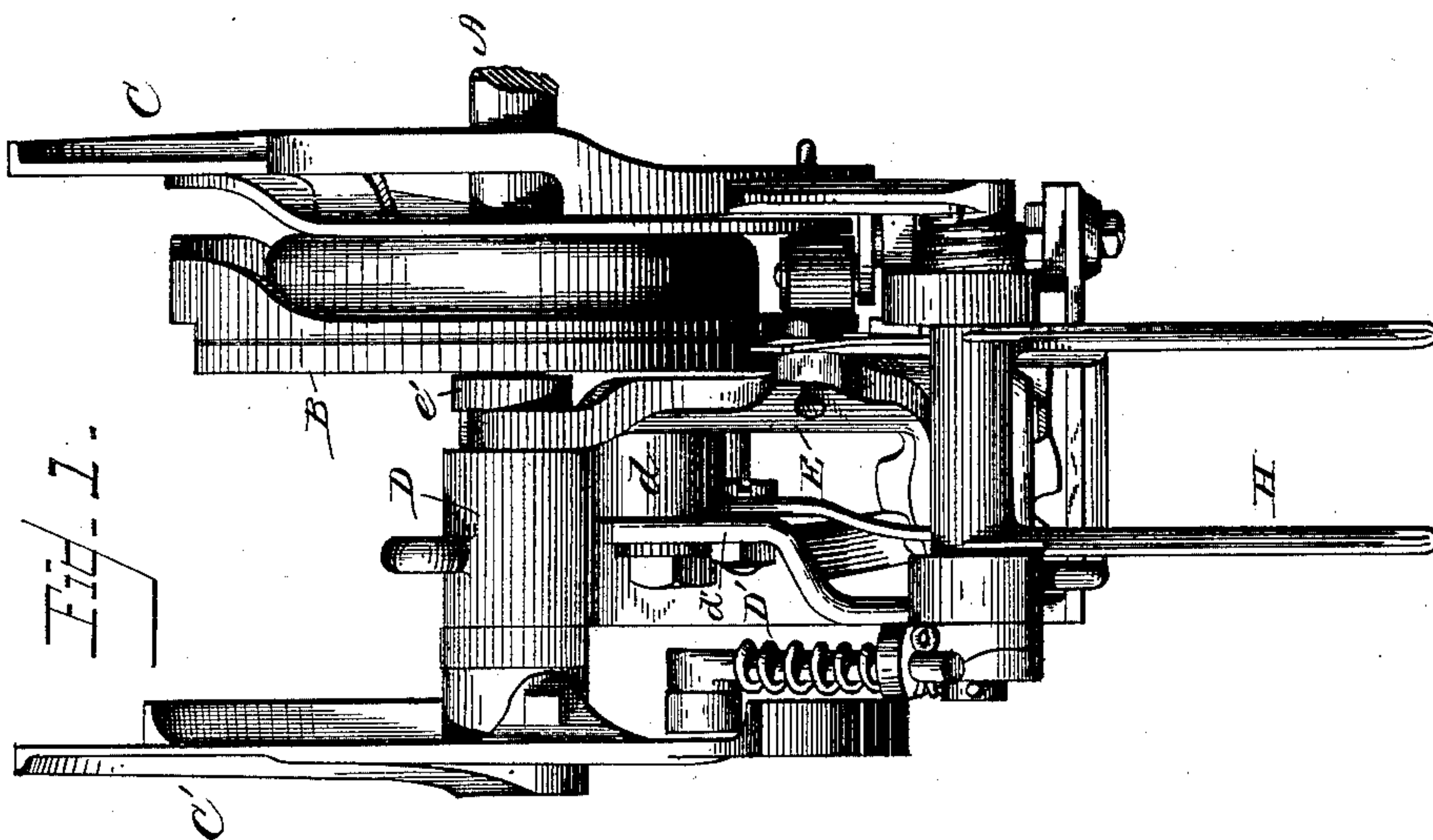
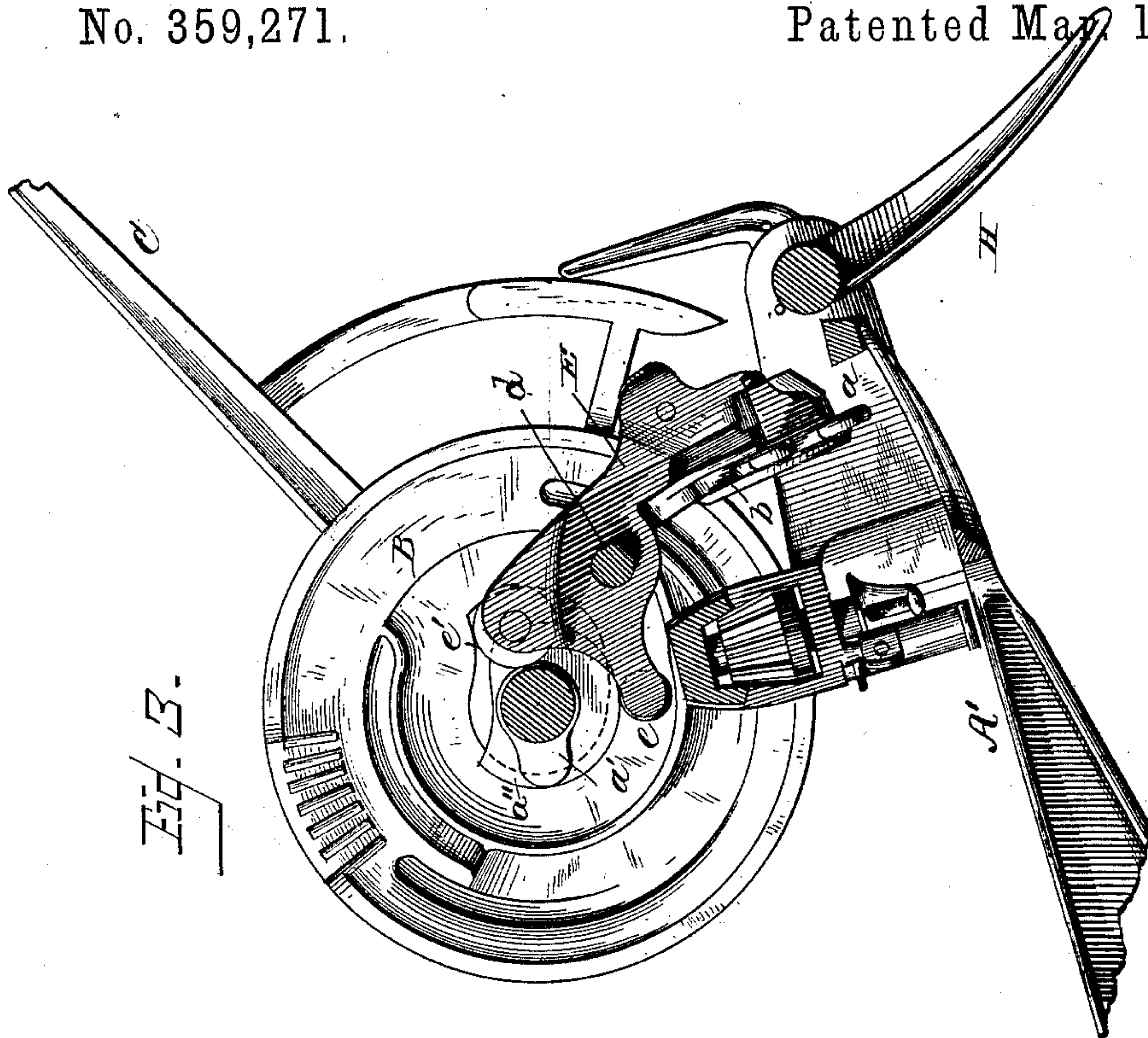
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L. MILLER & A. E. ELLINWOOD.

GRAIN BINDER.

No. 359,271.

Patented May 15, 1887.



WITNESSES

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(No Model.)

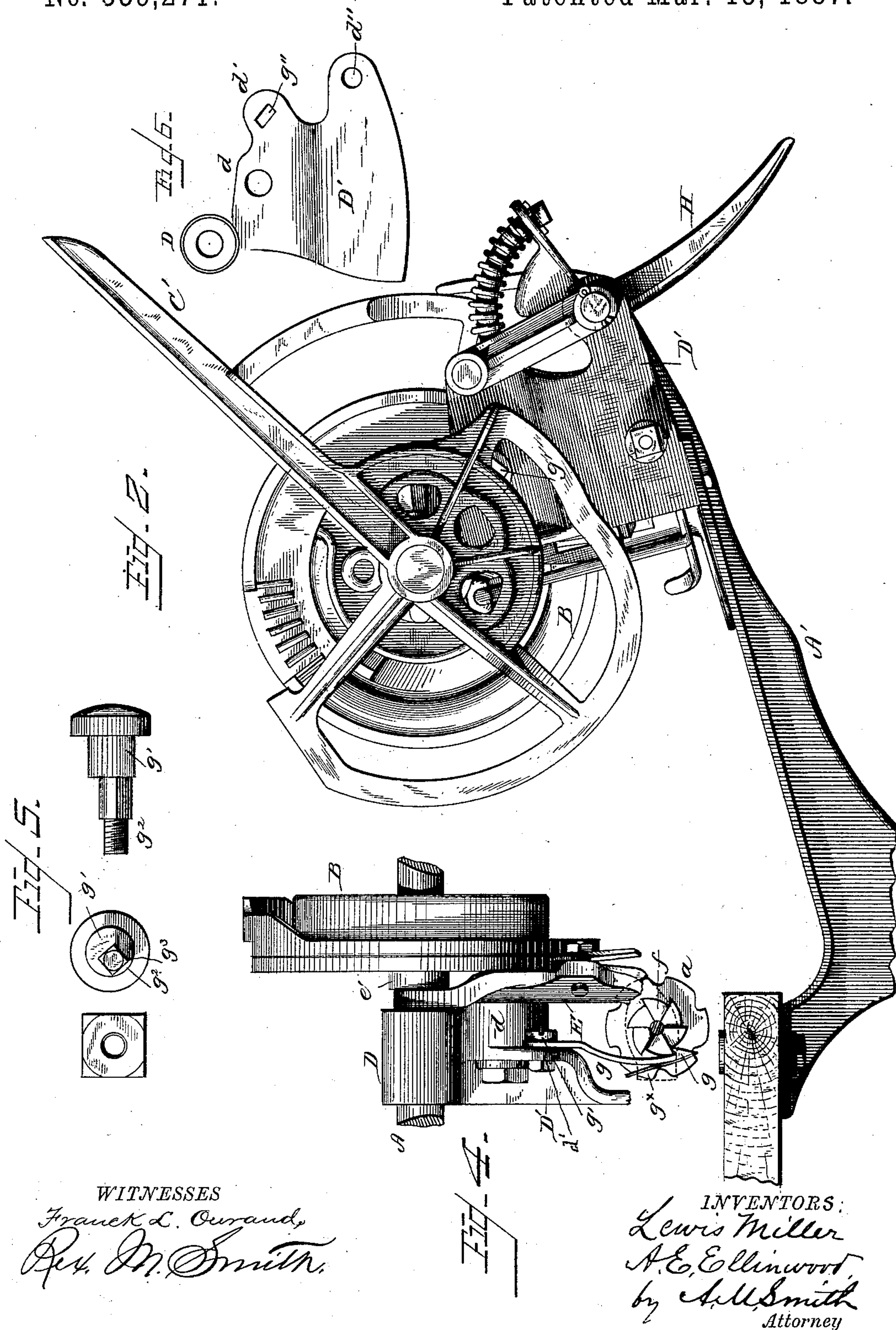
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UNITED STATES PATENT OFFICE.

LEWIS MILLER AND AUGUSTUS E. ELLINWOOD, OF AKRON, OHIO.

GRAIN-BINDER.

SPECIFICATION forming part of Letters Patent No. 359,271, dated March 15, 1887.

Application filed April 17, 1884. Serial No. 128,208. (No model.)

To all whom it may concern:

Be it known that we, LEWIS MILLER and AUGUSTUS E. ELLINWOOD, both of Akron, in the county of Summit and State of Ohio, have
5 invented a new and useful Improvement in Grain-Binders, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

10 Our invention relates to the cord-holder and to the means for actuating the same for adapting it to grasp the cord from the needle, and to yield cord to the knotting devices, and to means for adjusting the pawl through which
15 an intermittent rotary motion is imparted to the cord-holding disk for varying the position of the pawl relatively to the vibratory or cord-yielding movement of the cord-holder, as hereinafter explained.

20 In the accompanying drawings, Figure 1 represents an outer side elevation of a knotting mechanism or knotter-head and upper compressor embracing our improvements. Fig. 2 is an end elevation of the same. Fig. 3 is a
25 sectional view with the parts which in Fig. 2 hide the vibrating cord-holder arm and its actuating-cam removed. Fig. 4 is a side elevation of the cord-holder and the pawl and ratchet for imparting an intermittent rotation to the cord-
30 holding disk. Fig. 5 represents views in detail, some of the parts hereinafter referred to enlarged, to show more clearly their construction; and Fig. 6 is a side view of the knotter-supporting plate, showing the relation of the
35 points of support for the pivots of the vibrating cord-holder arm, the pawl for actuating the cord-holding disk, and of the upper compressor.

40 The knotting mechanism is similar in its general character to the well-known Appleby mechanism, and it is unnecessary therefore to describe it in detail, further than to explain our improvements.

45 A represents the knotter-actuating shaft mounted in a tubular bearing-sleeve, which in practice is formed on and projects from the gear-standard either above or below the binder-table. The shaft projects beyond the sleeve and carries the wheel B, provided with a cam-
50 groove in its periphery and with a short toothed segment on its side for actuating the cord-placing finger and the knotter-hook, and

upon its side with a cam-groove for actuating the knife in any usual manner. To the outer face of this wheel is secured one of the revolving bundle-discharging arms, C, a second arm, C', arranged in the same longitudinal radial plane with arm C and working in unison therewith, being secured to the extreme end of shaft A. 55

60 On the shaft A, between the wheel B and arm C', is mounted a sleeve, D, provided with a pendent arm or plate, D', which in practice is secured at its lower end to the knotter-shield A', the latter in turn being secured to some fixed part of the machine for preventing rotation of the parts with the shaft A, which turns freely in the sleeve D. 65

70 The plate D' has the usual bearings for the shaft of the knotter hook or bill, and to a flange or lug, d, formed upon its side adjacent to the cam and gear-wheel B, is pivoted an arm or lever, E, (see Fig. 3,) in the lower end or arm of which is pivoted the notched cord-holding disk a, which at one side enters and works within a grooved shoe, b, for grasping and holding the cord in the usual manner. 75
The upper end of this arm or lever above its pivot is forked, and each arm of the fork has a stud or pin on which is mounted a friction-roller, e and e', the arms striding the shaft A between the sleeve D and the wheel B, at which point the shaft has a cam or cams a' and a'', formed upon or secured to it, which act alternately on the friction-rollers e and e' in each revolution of the shaft A, for imparting a vibratory movement laterally to the cord-holder a b—viz., from the position in which it receives the cord from the needle toward the knotting devices for yielding up cord to the latter, and then back to its normal position. 80 85 90

95 The disk a has on its rear face relative to the direction of movement of the grain a ratchet disk or wheel, f, either formed in one with the disk a or made separate and secured thereto in any suitable manner and provided with teeth corresponding in number to the number of notches in the cord-holding disk a and with which a hooked pawl, g, engages for imparting an intermittent rotary motion to the disk a. 100

The pawl g is pivoted at g' to a lug, d', on the stationary plate D', and its hooked end lies between the outer side of the disk a and the arm of lever E, in which the pivot of said

disk is supported in such manner that as the lever E and the cord-holding disk and shoe secured thereto are vibrated the outer hooked end of the pawl will be vibrated with them, the latter vibrating upon a different center and about a fixed point, g' .

The hooked pawl is on the opposite side of the axis of the ratchet-disk f from the shoe b , and as the disk a and shoe b are vibrated toward the knoter-hook for yielding cord to the latter, they vibrate away from the fixed pivotal point g' of the pawl g and cause a relative shortening of the pawl, the disk and ratchet-wheel being thrust outward, in which movement the pawl acts on the ratchet-wheel and rotates the disk a distance equal to the distance apart of the notches, carrying the cord from the needle into the cord-holder and adapting the portion coming from around the bundle to the cord-holder to be severed between the knoter and cord-holder in any usual manner.

As the arm E with the cord-holding devices is moved outward again to its normal position, the end of the pawl slides inward relatively over the face of the notched wheel and again assumes a proper position for acting on the ratchet-wheel and disk when the latter is again moved inward for yielding cord. The shank of the pawl may be in the form of a spring, adapting the cam-faced hook-pawl on its end to pass over the inclined faces of the ratchet-teeth and to be held engaged therewith as the arm E is vibrated away from the pivot of said pawl, or a spring, g^x , may be applied to the pawl for that purpose.

The pawl g is made adjustable for varying its position relatively to the throw of the cord-holder, in such manner as to insure the proper throw or movement of the disk a , and to compensate for wear of the parts, and for this purpose we prefer to make its fixed center of vibration or pivot g' in the form of a hub or of a collar, eccentric to its fastening-bolt g^2 , (see Fig. 5,) in such manner that by loosening and turning the bolt or the collar g' , on which the pawl g vibrates, the relation of the latter to the ratchet-disk may be adjusted as desired. The eccentric hub or collar g' may be loose on the bolt g^2 , to adapt it to be adjusted thereon, as required, and to be held clamped between the head of the bolt and the lug d' ; or it may be provided with a square socket, g^3 , fitting a rectangular portion of the bolt or projection on its head, so that it may be set in any of four different positions relative to said fastening-bolt for adjusting the pawl, as desired. Other means, however, may be employed for adjusting the pawl—as, for example, a slot at g'' for its pivotal bolt in the lug d' , for permitting said bolt, when loosened, to be moved in or out with the pawl, as desired.

The upper compressor, indicated at H, the pivot of which is journaled at d'' in the plate

D', is similar in its arrangement and mode of operation to that described in an application filed by Lewis Miller, one of the parties hereto, June 2, 1883, No. 96,910, and, together with other parts shown in the drawings, the operation of which are well known, need not be here described.

Having now described our invention, we claim as new—

1. The cord-holding disk mounted on a vibrating arm or lever and provided with a ratchet-disk, in combination with a vibrating pawl mounted on a fixed pivot eccentric to the center of motion of the vibrating cord-holder arm, whereby the disk has an intermittent rotary motion imparted to it, due to the vibratory movement of the cord-holder arm and pawl upon different centers, substantially as described.

2. The pawl for imparting a rotary movement to the cord-holding disk, mounted on a fixed or stationary pivot on the knoter plate or arm, eccentric to and in combination with the vibrating arm or lever carrying said disk and its shoe, also pivoted in said knoter plate or arm, whereby an intermittent rotary movement is imparted to the disk in the vibratory movement of the latter, substantially as described.

3. The combination, in a knotting mechanism, of the vibrating arm carrying the cord-holder, a pawl having a fixed stationary pivot eccentric to the pivot of said cord-holder arm, means for vibrating said cord-holder arm relatively to said pawl, and a ratchet-disk acted upon by said pawl in the vibratory movement of the cord-holding disk for rotating the latter with a positive movement, substantially as described.

4. The combination, with the vibrating arm carrying the cord-holder, of a pawl for actuating the cord-holding disk mounted upon a stationary pivot, but adapted to vibrate with the disk, but in eccentric relation thereto, whereby a relative longitudinal movement of the pawl and disk is produced for giving an intermittent rotary movement to the latter, substantially as described.

5. The combination, with the pivoted and vibrating cord-holder arm and the cord-holding disk journaled thereon, of a pawl arranged to vibrate laterally with the cord-holder arm upon a different center or pivot, made adjustable for changing the throw of the pawl relative to that of the cord-holder arm, substantially as described.

In testimony whereof we have hereunto set our hands this 11th day of April, A. D. 1884.

LEWIS MILLER.

AUGUSTUS E. ELLINWOOD.

Witnesses:

O. L. SADLER,
N. A. MEANS.