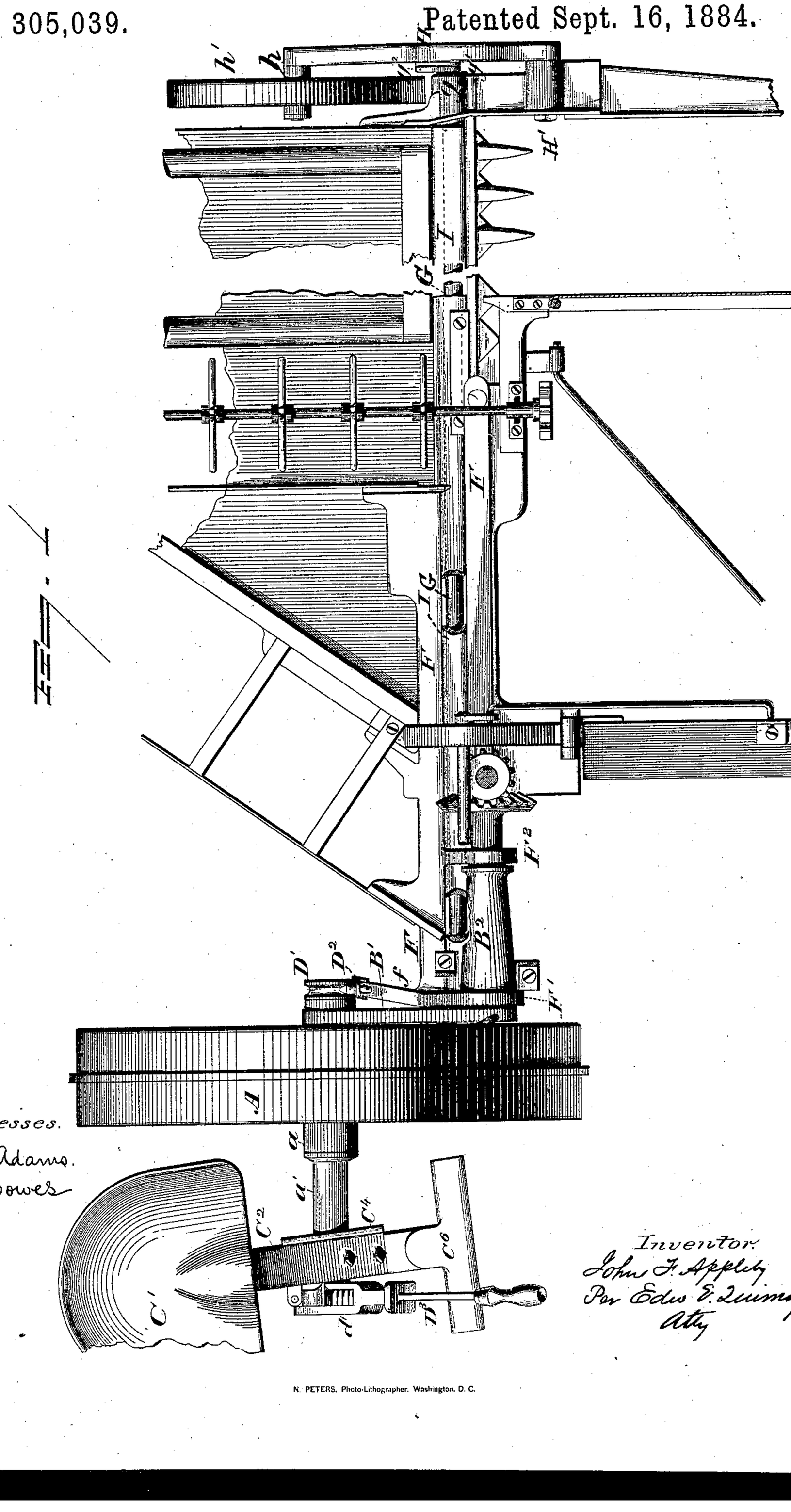
(No Model.)

3 Sheets—Sheet 1.

J. F. APPLEBY.

HARVESTER.

No. 305,039. Patented Sept. 16, 1884.



Witnesses.
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(No Model.) 3 Sheets—Sheet 2.

J. F. APPLEBY.

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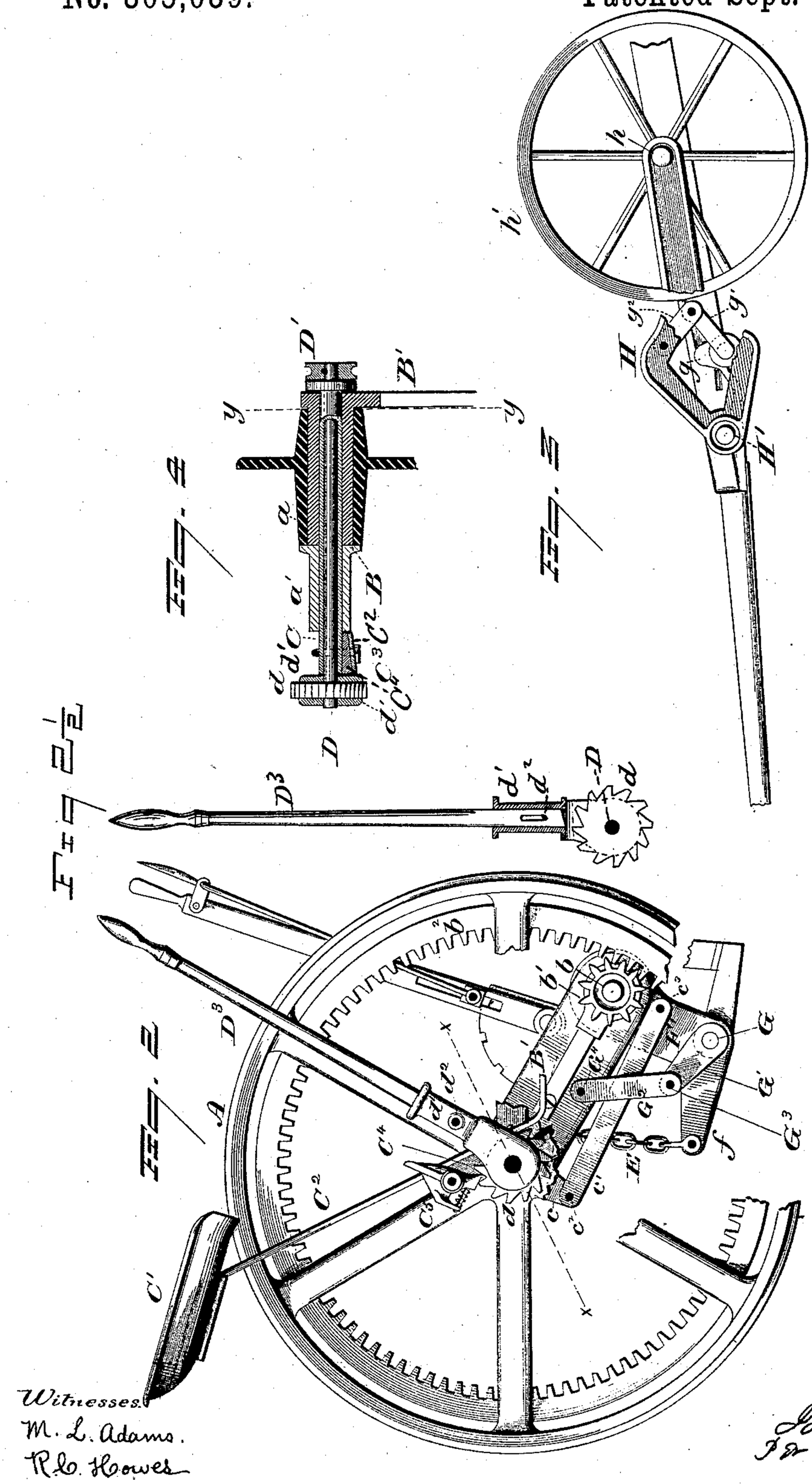

(No Model.) 3 Sheets—Sheet 3.

J. F. APPLEBY.

HARVESTER.

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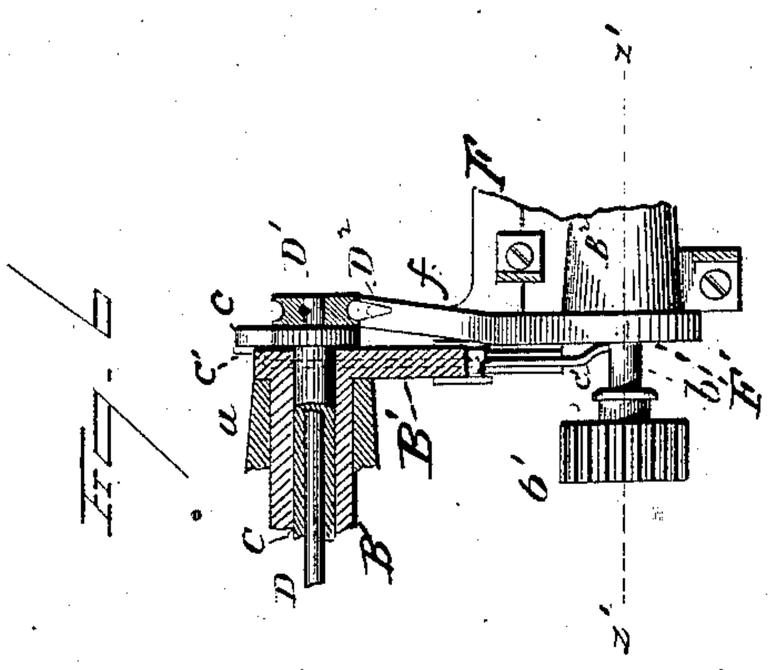

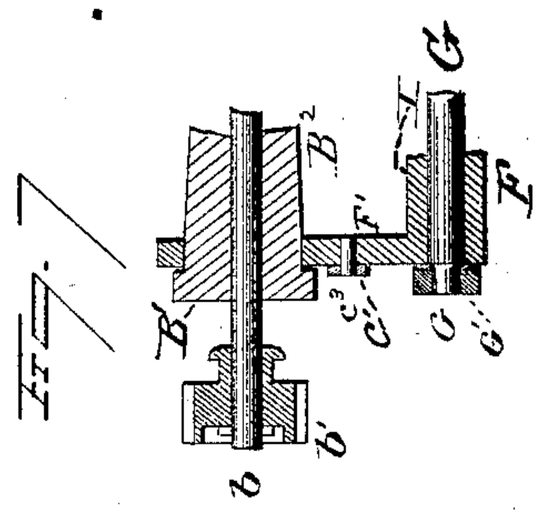

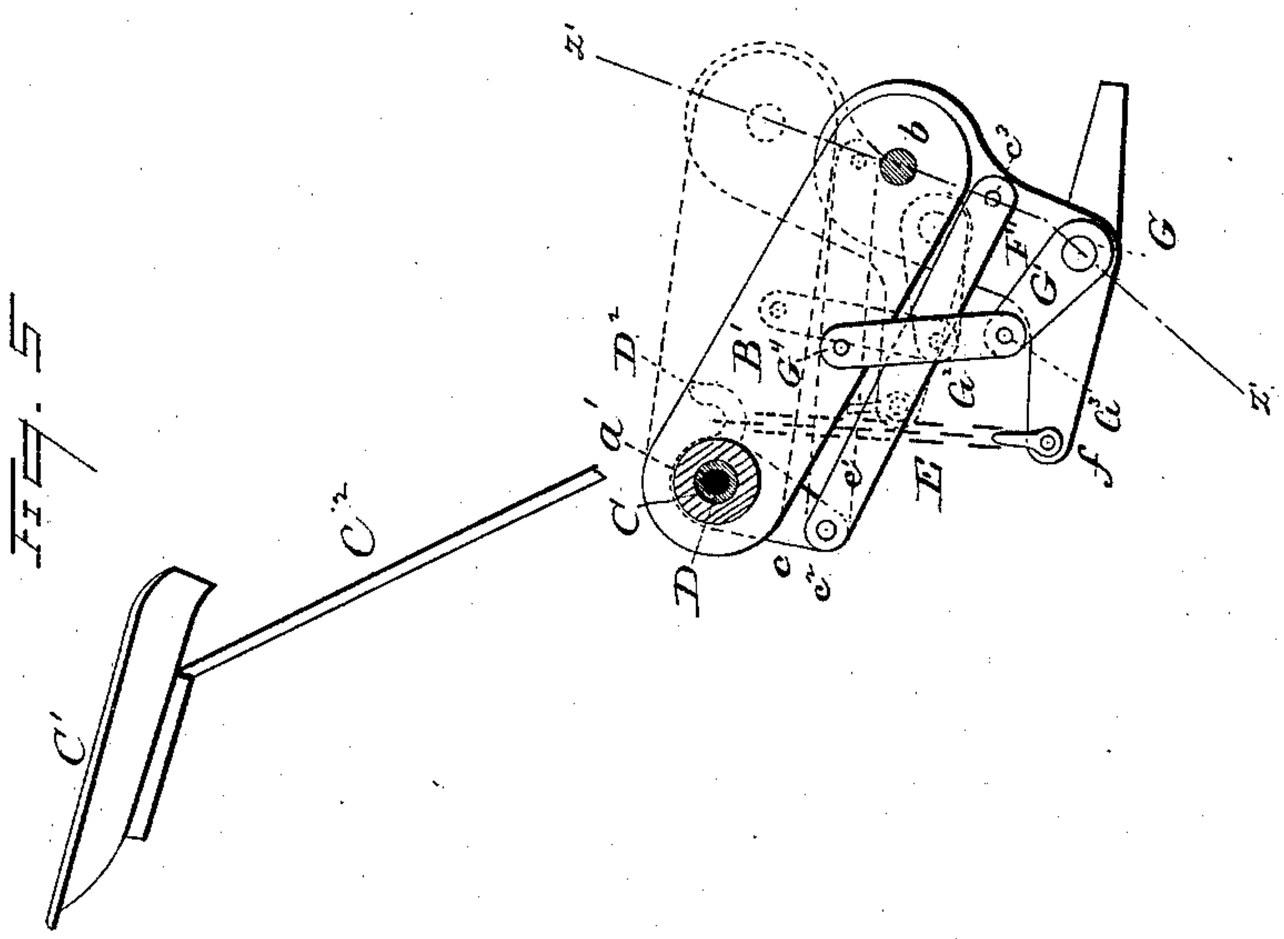

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UNITED STATES PATENT OFFICE.

JOHN F. APPLEBY, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR TO THE MINNEAPOLIS HARVESTER WORKS, OF SAME PLACE.

HARVESTER.

SPECIFICATION forming part of Letters Patent No. 305,039, dated September 16, 1884.

Application filed November 9, 1883. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. APPLEBY, of Minneapolis, Minnesota, have invented certain Improvements in Harvesters, of which the following is a specification.

My improvements, which are especially useful in self-binding harvesters, relate to the organization of the metallic frame of the machine, to the mechanism for raising and lowering the platform, and to the mechanism for supporting the driver's seat upon the axle outside the drive-wheel and preserving it in the proper position at all times, whatever may be the height of the platform.

One distinguishing characteristic of my improved metallic frame consists in the employment of a hollow metallic finger-bar, which may be prolonged to the drive-wheel end of the machine, and through which passes the metallic rock-shaft, by means of which the raising and lowering motion initiated at the drive-wheel end of the machine is transmitted to the grain-wheel end. Heretofore this rock-shaft has been arranged in the rear of the finger-bar; but by passing it through a hollow finger-bar the front edge of the platform-belt can be carried forward nearer to the cutters. For the finger-bar I use a wrought-iron tube, which is inserted in or through and firmly secured to a cast-iron bed-plate. This bed-plate and the finger-bar constitute together the principal horizontal member of the platform-frame, and take the place of the heavy wooden timbers heretofore employed in the frame, and greatly diminish the weight of the machine, while imparting the necessary strength and rigidity thereto. I arrange the driver's seat outside the drive-wheel, and support it upon a hollow shaft extending through the main axle of the drive-wheel. The raising and lowering operation is performed by the driver by means of a pawl-lever acting upon a ratchet-wheel affixed to the outer end of a windlass-shaft extending through the hollow seat-supporting shaft, the inner end of which windlass-shaft has affixed to it the drum to which the lifting-chain is attached. The inner end of the seat-supporting shaft is provided with a downwardly-projecting arm, which is linked by means of an eye-bar to a standard on the bed-plate or drive-wheel end of the platform. The connection of the driver's seat with this standard holds the seat-shaft, and thus controls the position or angle of the seat when the platform is raised or lowered.

The accompanying drawings, representing so much of a harvester as is essential for illustrating the application of my present improvements, are as follows:

Figure 1 is a top view, with portions of the machine broken away for the purpose of permitting the remaining parts to be represented. Fig. 2 is an elevation of the drive-wheel end of the machine, with portions of the drive-wheel broken away in order to show the system of arms and links by which the raising and lowering of the platform is performed. Fig. 2½ is a side elevation, partly in section, of the ratchet-wheel and endwise-sliding pawl-lever for raising and lowering the platform. Fig. 3 is an elevation, partly broken away, of the grain end of the machine. Fig. 4 is an axial section through the hub of the drive-wheel, upon the inclined plane indicated by the dotted line X X in Fig. 2. Fig. 5 is an elevation of the system of arms and links employed in the raising and lowering operation, the solid lines showing the positions of the parts before the platform is elevated, and the dotted lines indicating their positions when the platform has been elevated. Fig. 6 is a top view of the system of arms and links shown in Fig. 5, partly in horizontal section through the center of the drive-wheel axle, with a portion of one of the arms broken out for more clearly showing the parts underneath. Fig. 7 is a vertical section through the lines Z′ Z′ in Figs. 5 and 6.

The drive-wheel A is provided with the hollow hub *a*, which has its bearing upon the hollow axle B, to which is affixed the radially-projecting arm B′, carrying the box or journal B^2, through which is passed the counter-shaft *b*, provided at its inner end with the pinion *b*′, which meshes into and is driven by the internal gear, b^2, affixed to the drive-wheel. Through the hollow axle B there is inserted the hollow shaft C, the outer end of which affords the support for the driver's seat C′. The seat C′ is affixed to the upper end of the inclined bar C^2, which is secured to the hollow shaft C by the clamp C^3. Pivoted to the sad-

dle C^4 of the clamp is a spring retaining-pawl, C^5, which engages the teeth of the ratchet-wheel *d*, affixed to the outer end of the windlass-shaft D, and thereby holds the platform at any height to which it may be adjusted. The lower end of the bar C^2 has affixed to it the foot-rest C^6. The windlass-shaft D extends through the hollow shaft C, and has affixed to its inner end the grooved windlass-wheel D′, which is provided with a projecting hook, D^2, for engaging the upper end of the chain E, the lower end of which is connected to the arm *f*, projecting rearward from the cast-iron bed-plate F of the gear-frame, which plate sustains the inner end of the platform. Power to operate the windlass-shaft is applied by means of the pawl-lever D^3, which is loosely inserted in the tubular pawl-carrier *d′*, mounted loosely upon the windlass-shaft D astride the ratchet-wheel *d*. The portion of the pawl-lever D^3 carried within the pawl-carrier *d′* is longitudinally slotted, and the pin d^2, inserted transversely through the pawl-carrier, passes through this slot, and prevents the pawl-lever from being detached from the pawl-carrier, at the same time affording it a sufficient range of endwise movement to permit its inner end to be engaged with or to be disengaged from the teeth of the ratchet-wheel *d*. It will be seen that if the pawl-lever D^3, when engaged with the ratchet-wheel *d*, is pulled toward the driver's seat, the chain E will be wound up upon the windlass-wheel D′, and the bed-plate F and platform will thereby be elevated. The elevation of the bed-plate F carries up the standards F′ and F^2, in which the journal B^2 and the counter-shaft *b* have their bearings, thus changing the positions of the arms and links of the elevating mechanism from the positions represented in solid lines in Fig. 5 to those represented in dotted lines in Fig. 5.

In order to prevent the tilting of the seat in either direction when the windlass-shaft is turned in the act of elevating or lowering the platform, the seat-shaft C is provided upon its inner end with the downwardly-projecting arm *c*, the lower end of which is linked, by means of the eye-bar *c′*, to the standard F′ of the bed-plate F. One end of the eye-bar is hung upon the pin c^2, inserted in the arm *c*, and the other end of the eye-bar is hung upon the pin c^3, inserted in the standard F′. When the platform is raised or lowered, the pin c^2 remains stationary, or nearly so, because the pin c^3 in the standard F′ moves in a path which is substantially concentric with the pin c^2. By thus linking the arm of the seat-shaft to the bed-plate of the machine, the position of the seat is preserved without material change in whatever position the platform may be adjusted.

Power to raise and lower the grain-wheel end of the machine is transmitted through the horizontal rock-shaft G, the drive-wheel end of which projects through the standard F′ of the frame, and has affixed to it the radial arm G′. This arm is connected with the arm B′ by means of the eye-bar or link G^2, the lower end of which is hung upon the pin G^3 of the arm G′, while the upper end is hung upon the pin G^4, inserted in the side of the arm B′. On referring to Fig. 5 it will be seen that when the standard F′ is elevated in the act of raising the platform the arm G′ is rocked downward. At its opposite end the rock-shaft G projects through the bearing *g* on the grain-wheel side of the machine, and is provided with the arm *g′*, which is connected, by means of the link g^2, with the pivoted lever H, hung at its forward end upon the horizontal pin H′, inserted in the side of the frame. The rear end of the lever H has attached to it the axle *h* of the grain-wheel *h′*. The proportions and arrangements of the arms and link-connections of the opposite ends of the rock-shaft G are such that the raising and lowering of the drive-wheel end of the platform is accompanied by a like raising or lowering of the grain-wheel end thereof, and the whole operation of raising or lowering the platform can be effected by the driver while sitting in a seat which is outside the drive-wheel, and is carried upon a shaft supported within the axle of the drive-wheel by means of a pawl-lever acting upon the outer end of another shaft extending through the center of the drive-wheel axle and connected with the chain by which the drive-wheel end of the platform is suspended.

The rock-shaft G, instead of being in the rear of the finger-bar, is inserted in a tubular metallic finger-bar, I, the grain-wheel end of which is fastened in the side of the frame, while its opposite end is secured to the bed-plate F, which may have a hole cast or bored through it to receive the hollow finger-bar I; or, if the finger-bar is not prolonged to the drive-wheel end of the machine, the bed-plate may be provided with a suitable seat to receive the drive-wheel end of the finger-bar, and with suitable appurtenances for fastening the same.

I claim as my invention—

1. In a harvester, the combination, with the drive-wheel, the axle, and the adjustable platform, of a shaft passing through the axle and having a projecting arm upon its inner end, a driver's seat attached to the outer end of said shaft outside of the drive-wheel, and a link connected to the arm on said shaft and to the platform-frame, whereby the seat is maintained in position, in whatever position the platform may be adjusted, substantially as described.

2. The combination, with the drive-wheel and adjustable platform, of a hollow shaft passing through the main axle and provided at its inner end with a projecting arm, a link-connection between said arm and the platform-frame, the driver's seat supported on the outer end of said shaft, a windlass-shaft passing through said seat-supporting shaft, the pawl-and-ratchet mechanism, substantially as described, at the outer end of said windlass-shaft for actuating the same, and the supporting-chain connected with the inner end of said

shaft and the platform-frame, substantially as set forth.

3. In a harvester, the combination of the drive-wheel having the hub *a*, the hollow axle B, forming a bearing for said hub, and provided with the arm B′, connected to the platform-frame, the hollow shaft C, passing through the axle, the driver's seat supported on said hollow shaft outside of the drive-wheel, the windlass-shaft passing through said seat-supporting shaft, and means situated outside of the wheel to rotate said windlass-shaft to raise and lower the platform, substantially as and for the purpose set forth.

4. In combination with the drive-wheel and the adjustable platform, the hollow axle B, having the arm B′, provided with the journal B^2, the standards F′ F^2, secured to the platform-frame and forming bearings for said journal, the counter-shaft *b*, passing through said journal, the pivoted lever H, provided with the axle *h*, the grain-wheel *h*′, the rock-shaft G, seated in the platform-frame, and provided with the radial arms G′ *g*′, the links G^2 g^2, connecting said arms, respectively, to the arm B′ and lever H, and a windlass for raising and lowering the drive-wheel end of the platform, substantially as and for the purpose set forth.

5. The combination of the drive-wheel, the platform, the hollow axle B, provided with the arm B′, the cast-metal bar F, jointed to said arm and supporting the platform, and the metallic finger-bar secured to said bar F and to the side piece on the grain side of the platform, substantially as and for the purpose set forth.

6. In combination with the platform, the drive-wheel, and the grain-wheel, the hollow axle B, provided with the arm B′, connected to the platform-frame, the pivoted lever H, provided with the axle for the grain-wheel, the tubular metallic finger-bar I, the rock-shaft G, passing through the tubular finger-bar and provided with radial arms at its ends, and links connecting the radial arms to the arm B′ and lever H, respectively, substantially as and for the purpose set forth.

JOHN F. APPLEBY.

Witnesses:
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W. H. PENOTT.