

(No Model.)

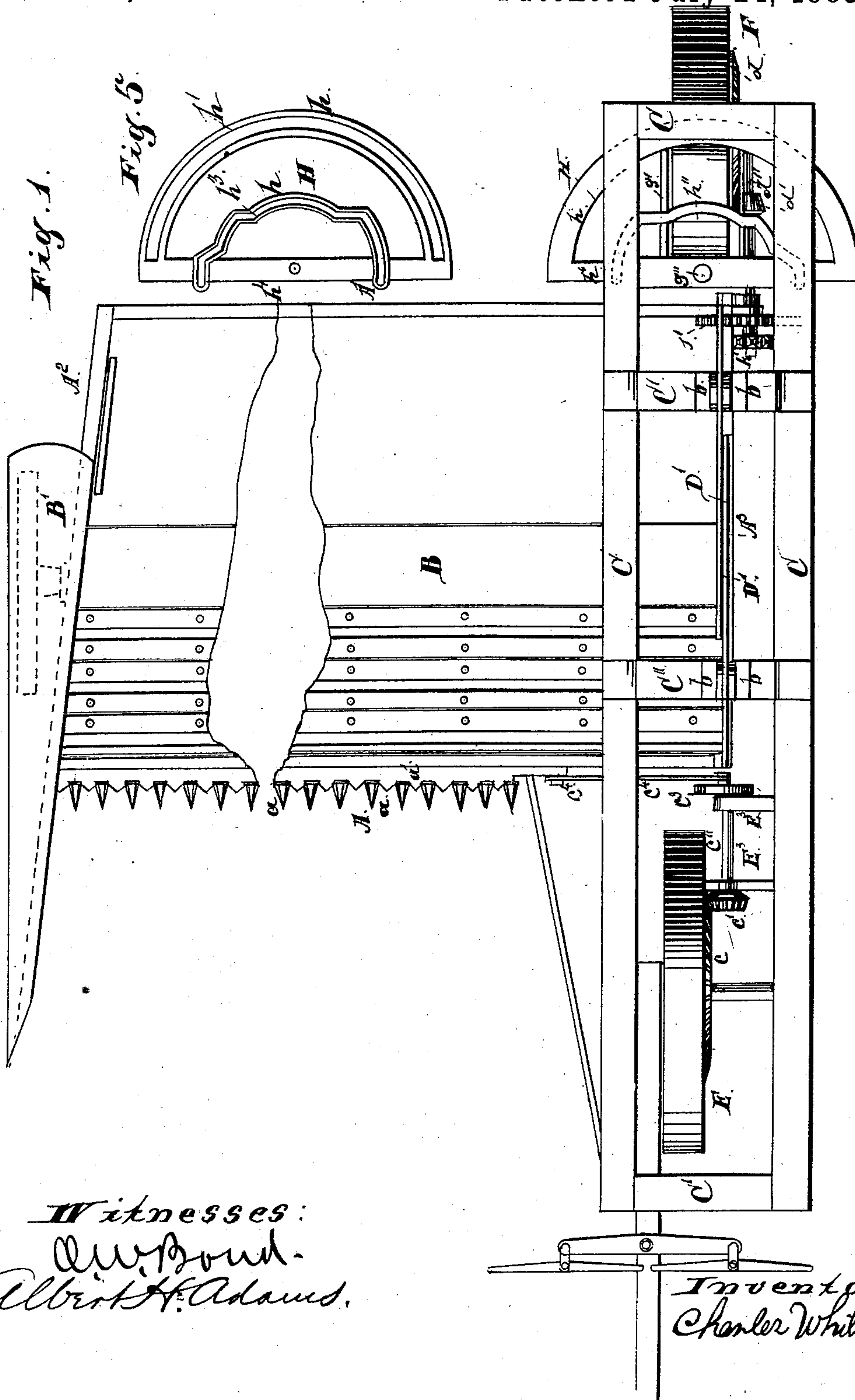
3 Sheets—Sheet 1.

C. WHITNEY.

GRAIN HARVESTING MACHINE.

No. 281,811.

Patented July 24, 1883.



Witnesses:  
A. Bond.  
Albert H. Adams.

Inventor:  
Charles Whitney.



(No Model.)

3 Sheets—Sheet 3.

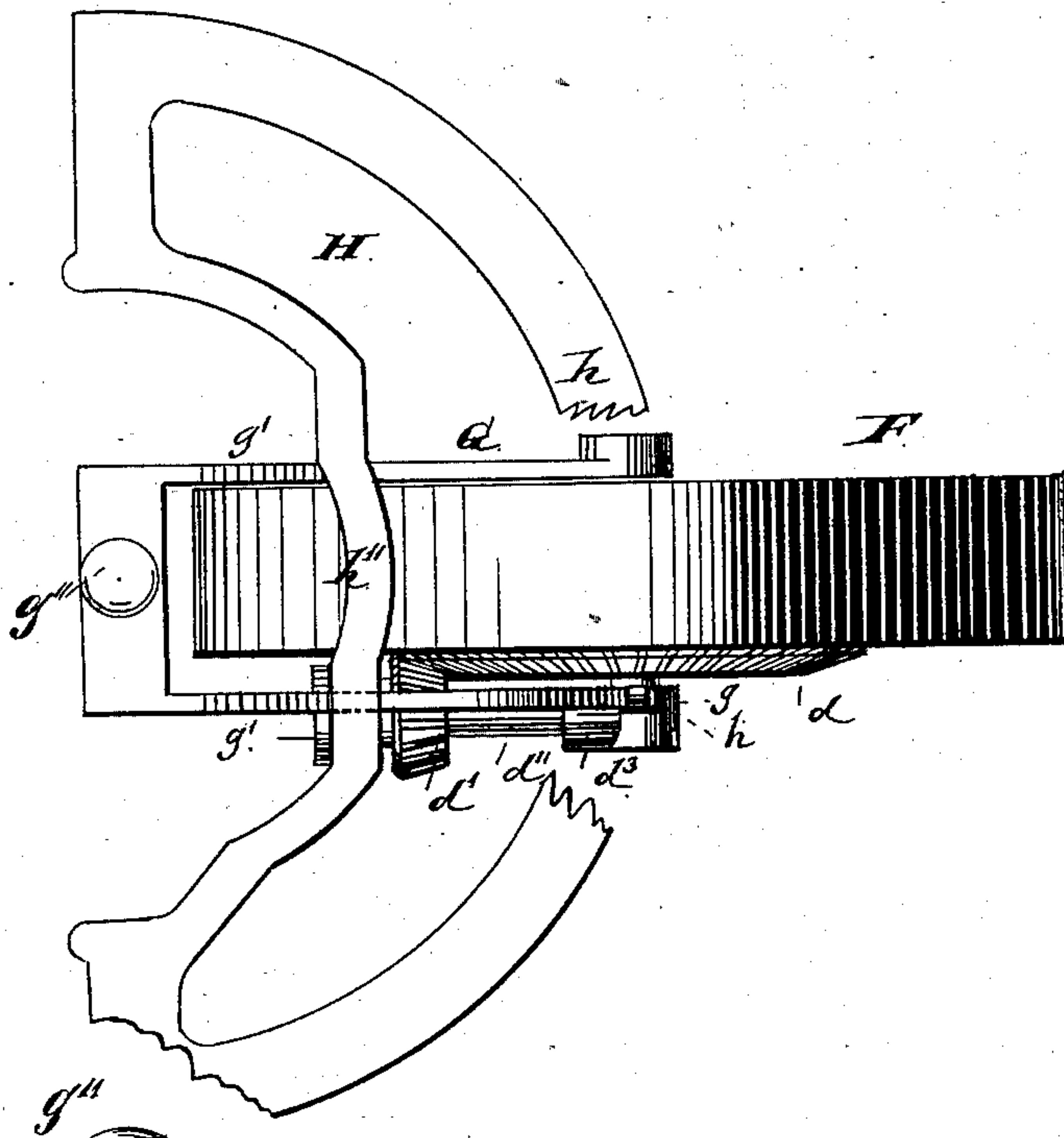
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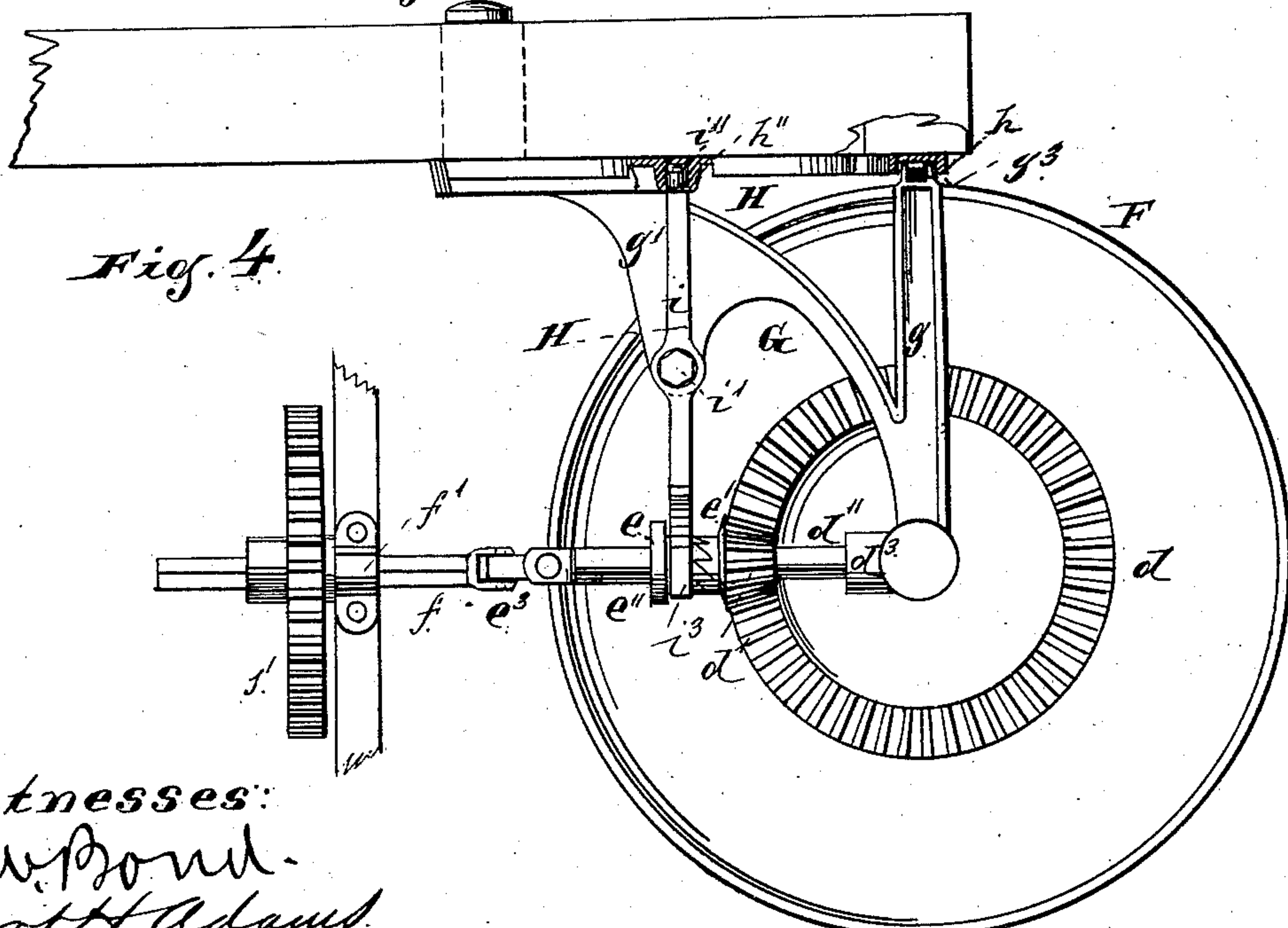
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*Fig. 3*



*Fig. 4*



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# UNITED STATES PATENT OFFICE.

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## GRAIN-HARVESTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 281,811, dated July 24, 1883.

Application filed May 1, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES WHITNEY, residing at Sycamore, in the county of De Kalb and State of Illinois, and a citizen of the United States, have invented new and useful Improvements in Grain-Harvesting Machines, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is a top or plan view with the receiving-platform broken out. Fig. 2 is an end elevation; Fig. 3, a detail of the caster-wheel and its fork and of the guideway or track which coacts therewith; Fig. 4, a side elevation, with the track or guideway in section, of the caster-wheel and its fork and devices coacting therewith and operated therefrom; and Fig. 5, Sheet 1, an under side view of the track or guideway, which coacts with the caster-wheel. Figs. 3 and 4 are enlarged as compared with the remaining figures.

This invention relates to means for operating the platform-carrier and other devices from the rear or caster wheel of grain-harvesting machines; and its nature consists in the several parts and combinations of parts hereinafter more specifically described, and pointed out in the claims as new.

In the drawings similar letters of reference indicate corresponding parts.

The form of machine shown is of that class in which the grain is delivered from the sickle onto the carrier-platform, to be thence delivered to a self-binder for binding purposes, if so desired, or delivered to a binder-platform; but the devices are adapted for use with other styles of harvesting-machines.

The receiving-platform is formed of a front sill or finger-beam, A, a rear sill, A', an outer cross-girth, A'', for supporting the divider and grain-wheel, and an inner cross-girth or sill, A<sup>3</sup>, in the form of construction shown; but the platform-frame may be of some other form of construction. The front sill is provided with the usual fingers, a, to furnish the support for a sickle, a'.

The platform B is located within the framework A A' A'' A<sup>3</sup>, and its front portion may be slotted, as shown, for the operation of toothed

chains, when chains are used to carry the grain, or it can be constructed in such other form as may be necessary to suit the style of carrier.

The divider B' is located at the outer end of the platform, and may be of any of the usual and well-known forms of construction.

The carrier-platform and its frame are supported from a frame-work consisting of side sills, C, end sills, C', and cross-pieces C'', as shown in Figs. 1 and 2, and the platform and its frame are supported or suspended from the frame C by bars or hangers D, the upper ends of which are connected to the short ends of levers D', which levers are pivoted in ears or brackets b on the cross-piece C'', as shown in Fig. 2, so that by means of the levers the inner or delivery end of the carrier-platform and its frame can be raised or lowered, as required for use.

The frame C C' C'' is supported at the front by a drive-wheel, E, and at the rear by a caster-wheel, F. The wheel E has its shaft mounted in suitable bearings in brackets depending from the side pieces, C, one of which, E', is shown in Fig. 2, and depends from a plate, E'', secured to the under side of the frame-piece C. This plate E'' has depending arms E<sup>3</sup>, the lower ends of which are turned inward at right angles, and furnish the bearing or support for the shaft from which the sickle is driven. The sickle is driven from a gear, c, on the face of the wheel E, which meshes with a pinion, c', on the end of the shaft c'', which shaft, at its opposite end, has a crank-wheel, c<sup>3</sup>, to which is connected one end of a pitman, c<sup>4</sup>, the other end of which is connected with the sickle, so that, as the wheel E is rotated, it will drive the shaft c'', which is mounted in the arms E<sup>3</sup>, and through the crank-wheel c<sup>3</sup> and pitman c<sup>4</sup> give the sickle a reciprocating movement.

The caster-wheel F is located at the rear of the machine, and is mounted or supported between the arms of a fork or stirrup, G, which fork or stirrup, as shown, consists of a vertical or upright portion, g, and a curved portion, g', the curved portion having at its upper end an upwardly-projecting pin, g'', by means



of which the frame or fork G and the caster-wheel are pivotally connected so as to swing around the pin or pivot  $g''$ . The pin or pivot  $g''$  passes through an opening in the front bar,  $h^t$ , of a guide or track-way, H, which is formed of an outer curved bar,  $h$ , in which is a groove,  $h'$ , and an intermediate bar,  $h''$ , in which is a groove,  $h^3$ , and the front bar,  $h^t$ , which parts  $h$   $h''$   $h^t$  may be cast or formed in a single piece, or the several bars may be of separate pieces suitably secured to each other. The intermediate bar,  $h''$ , is of peculiar construction; and it consists of a curved central portion, at each end of which is a straight portion with a curved portion at one end, and a curved and diagonal portion at the other end, as shown in Figs. 3 and 5, and the groove  $h^3$  in this bar  $h^t$  conforms to the shape of the bar. The groove  $h'$ , as shown, receives the roller  $g^3$  on the upper end of the vertical portion  $g$  of the frame or fork G to facilitate the turning of the caster-wheel.

The groove  $h^3$  of the fan  $h''$  receives a roller,  $i^2$ , on the upper end of an arm or lever,  $i$ , pivoted at  $i'$  to the fork or frame G, which lever or arm at its lower end is provided with a fork,  $i^3$ , which straddles one section,  $e$ , of a clutch, the other section,  $e'$ , of which is secured to or formed with a pinion,  $d$ , on a shaft,  $d''$ , which shaft has its bearings in a projection,  $d^3$ , on the lower end of the fork or stirrup G, as shown in Fig. 4. The pinion  $d'$  meshes with a gear,  $d$ , on the face of the wheel F, and when the clutch is engaged imparts a rotary motion to a shaft,  $e''$ , on which the sliding section  $e$  of the clutch is mounted, so as to be free to slide longitudinally. This shaft  $e''$  is connected by a universal joint,  $e^3$ , with a shaft,  $f$ , which is free to slide in its bearing or support  $f'$ , and this shaft  $f$  has mounted thereon a gear-wheel,  $j'$ , and a sprocket-wheel,  $k'$ , as shown.

The gear-wheel  $j'$  meshes with a pinion,  $j$ , on a shaft, I, having pulleys thereon for driving the platform-chains or other platform-carrier, and the sprocket-wheel  $k'$  operates a chain,  $k''$ , which runs over a sprocket-wheel,  $k$ , on a shaft, J, to impart rotation to such shaft, for the purpose of operating the devices of a self-binder, or for such other purpose as may be required.

The caster-wheel is free to turn on its pin or pivot  $g''$  to suit the travel of the machine, as usual, and in such turning no injury can occur to the devices driven from the gear  $d$ , for the reason that as the caster-wheel turns in either direction and passes the limit of the curved central portion of the track or guide  $h''$ , the roller  $i''$  passes therewith and enters the straight portion of the groove  $h''$  which turns the lever or arm  $i$  on its pivot and throws the movable section of the clutch  $e$  out of engagement, allowing the shaft  $d$  to rotate without rotating the shaft  $e''$ .

The universal joint  $e^3$  allows the wheel to swing right or left, to the extent of a right angle, if necessary, by means of this universal joint  $e^3$  and the sliding shaft  $f$ , which, as the

wheel turns farther from its center, lengthens accordingly, allowing the universal joint to be operative.

It will be noticed that one side of the guide or camway  $h''$  is curved simply, while the opposite side is curved and has a diagonal portion in addition, and the object of this is to disengage the clutch at the time or before the time that the wheel passes to a position where injury will occur if the clutch were not disengaged, and in order to do this that portion of the track or camway which is nearest to the roller when the wheel is straight or parallel is provided with a diagonal portion to insure disengagement, which portion is not necessary on the opposite side, as the roller  $i''$  has a much longer distance to travel before reaching the point where the central curve terminates, which travel will disengage the clutch as the roller passes into the straight portion.

The operation is as follows: When the machine is running straight and the caster-wheel is running straight also, or deviates but slightly from a straight line of travel, the clutch  $e$   $e'$  is engaged and the shaft  $d''$ , through the clutch, drives the shaft  $e''$ , the shaft  $f$ , and the wheels  $k'$ ; but when the machine is turned for any purpose the caster-wheel swings to the right or left accordingly as the machine is turned, and with such swinging in either direction the cam-groove  $h^3$  in the guideway  $h''$ , through the roller  $i''$  and arm or lever  $i$ , disengages the clutch  $e$   $e'$ , allowing the wheel F to rotate without driving the shaft  $e''$   $f$ , and when the machine is brought into position to run straight the caster-wheel assumes its normal position, and by the arm or lever  $i$ , roller  $i''$ , and cam-groove  $h^3$  the clutch  $e$   $e'$  is again engaged to drive the shafts.

It will thus be seen that the caster-wheel can be turned to the right or left and such turning will disengage the clutch and stop the rotation of the shafts driven from the caster-wheel without any attention from the operator of the machine, and this arrangement is one which enables the machine to be turned at the end of the field or other point, and be operated in any position where the caster-wheel will not run straight without breaking or injuring any of the devices which are driven from the caster-wheel.

The groove  $h'$  holds the roller  $g^3$  in its travel around the plate H; but such groove might be dispensed with and the roller run on a plane surface on the plate  $h$ , as the roller is simply for the purpose of lessening the friction as the caster-wheel swings around.

What I claim as new, and desire to secure by Letters Patent, is as follows:

1. A caster-wheel for driving purposes, in combination with a shaft having a universal joint and a sliding sleeve or section for enabling the wheel to swing without impairing the action of the universal joint, substantially as specified.

2. A caster-wheel for driving purposes, in combination with a shaft having a universal



joint and a sliding sleeve or section, and with means whereby the clutch on the power-transmitting shaft may be automatically operated, substantially as and for the purposes described.

5 3. A caster-wheel, F, provided with a gear, *d*, on its face, and a fork or stirrup, G, in combination with a lever, *i*, and a cam-groove, with which the lever coacts for automatically shifting the clutch, substantially as specified.

10 4. A caster-wheel, F, having a gear, *d*, on its face, in combination with a yoke or stirrup,

G, having a standard, *g*, plate or frame H, having a curved bar, *h*, and a bar, *h'*, having a cam-groove, *h<sup>2</sup>*, lever *i*, roller *i'*, and clutch *e e'* located on a power-transmitting shaft for 15 automatically shifting the clutch, substantially as and for the purposes specified.

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Witnesses:

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