(No Model.) 3 Sheets—Sheet 1.

R. BROWN.

HARVESTER FRAME.

No. 401,127. Patented Apr. 9, 1889.

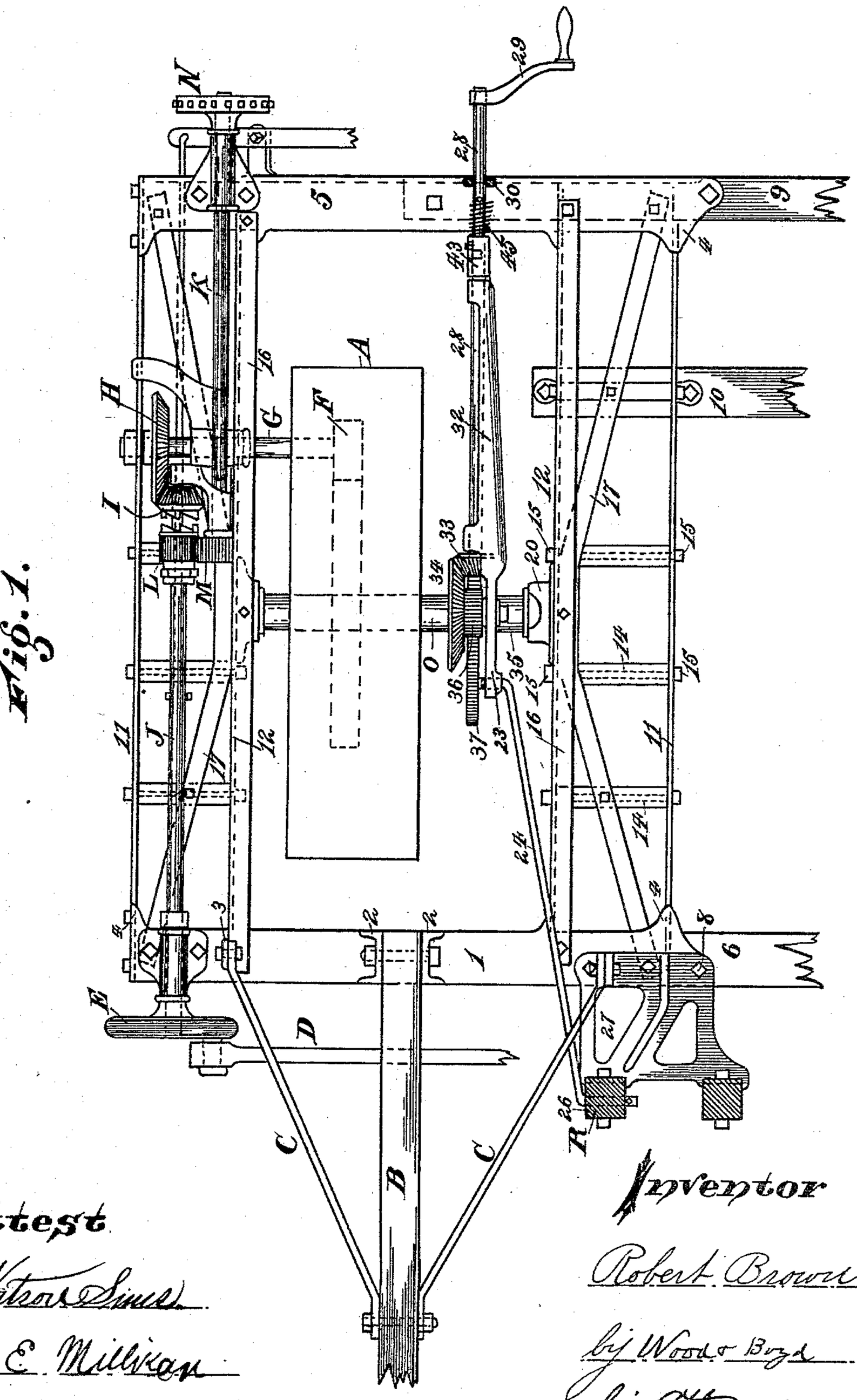

Fig. 1.

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N. PETERS, Photo-Lithographer, Washington, D. C.

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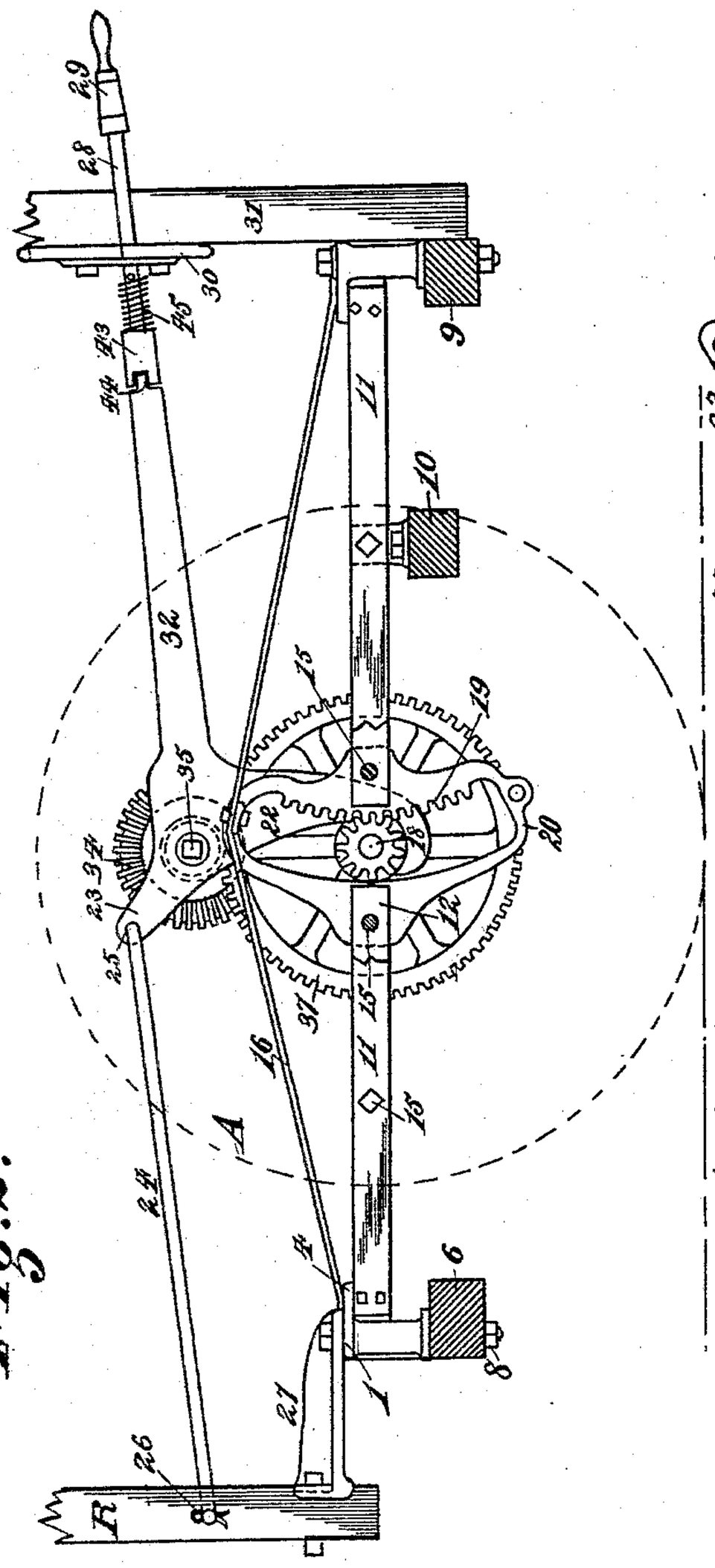

Fig. 2.

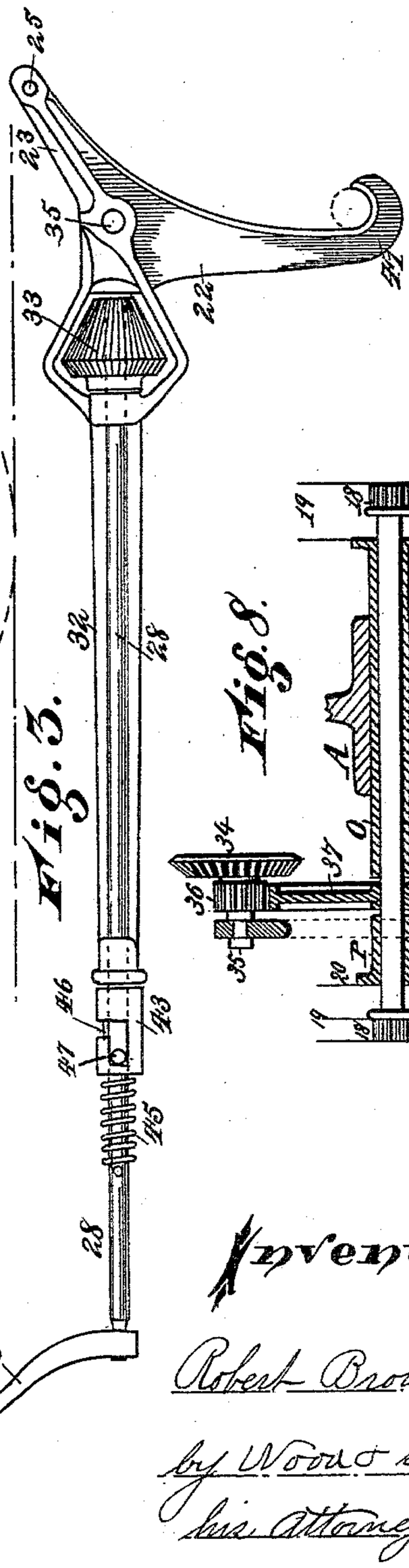

Fig. 3.

Fig. 8.

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Fig. 4.

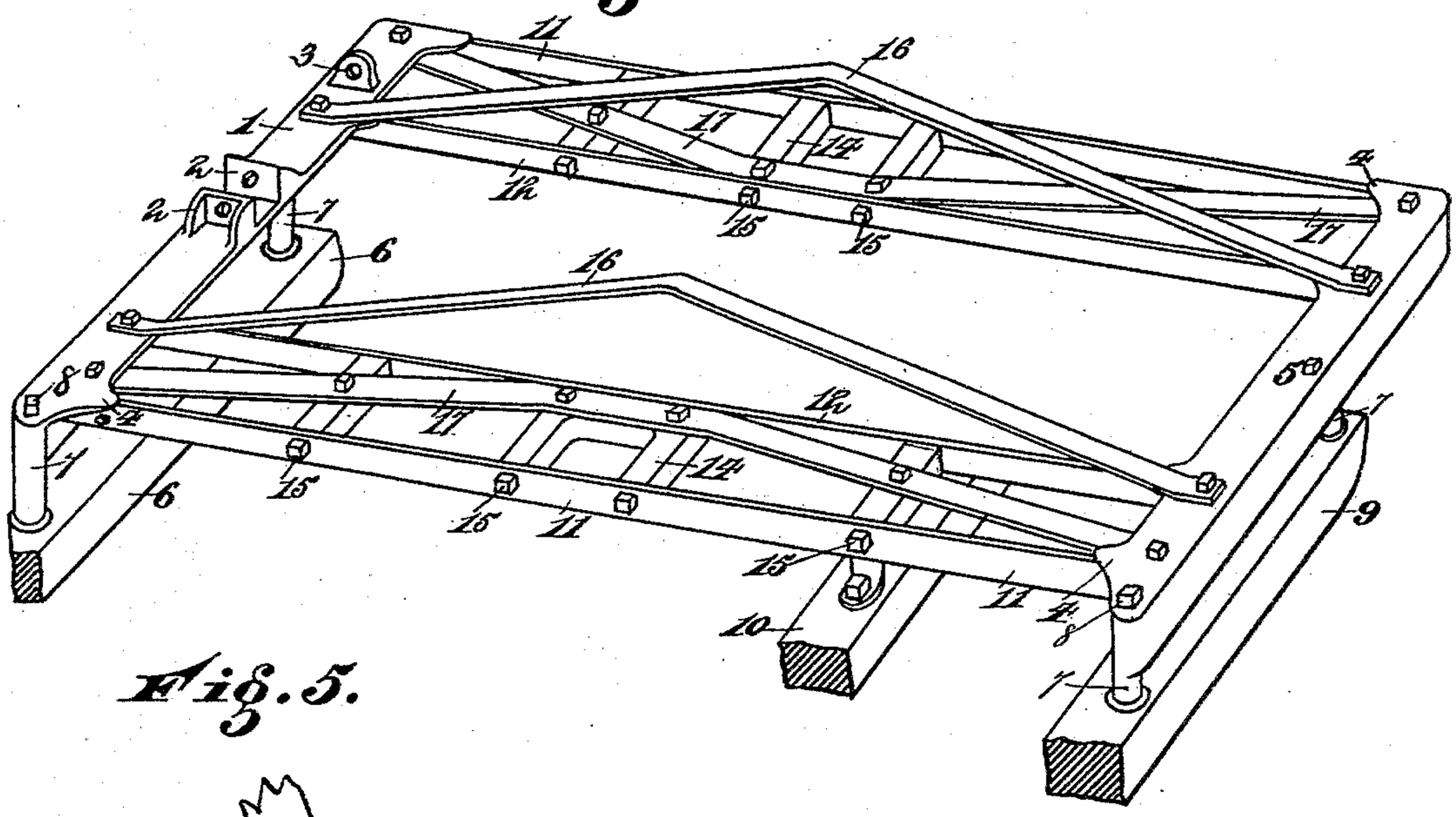


Fig. 5.

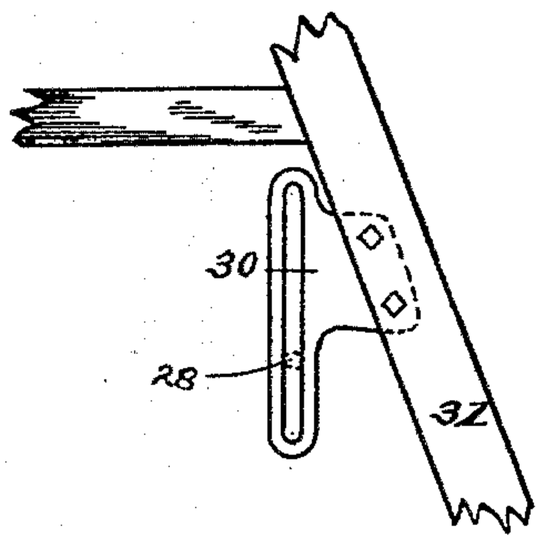


Fig. 6.

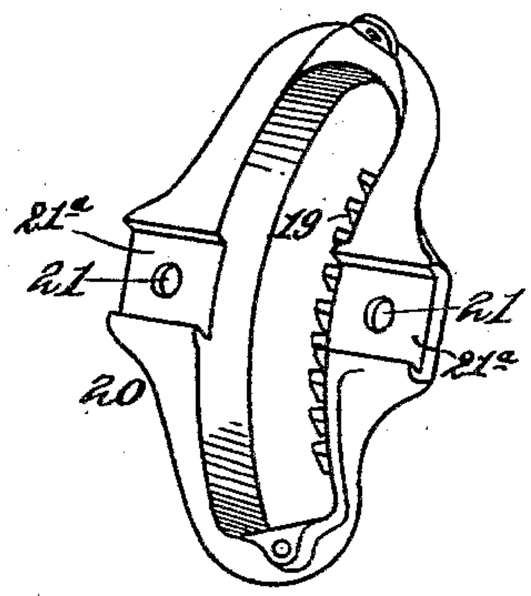
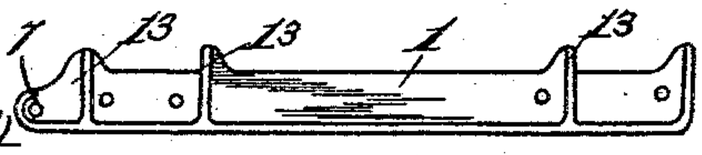


Fig. 7.



Attest

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UNITED STATES PATENT OFFICE.

ROBERT BROWN, OF MIAMISBURG, OHIO, ASSIGNOR TO HOOVER & GAMBLE, OF SAME PLACE.

HARVESTER-FRAME.

SPECIFICATION forming part of Letters Patent No. 401,127, dated April 9, 1889.

Application filed April 4, 1887. Serial No. 233,633. (No model.)

To all whom it may concern:

Be it known that I, ROBERT BROWN, a resident of Miamisburg, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Harvester-Frames, of which the following is a specification.

My invention relates to a harvester-frame.

The object of my invention is, first, to strengthen the construction of the frame and obtain one which will be more durable. It is desirable to have a durable and very rigid frame upon which is mounted the binding mechanism, in order to carry the weight and resist the strain imparted to it by the harvester mechanism.

Another object of my invention is to combine with the harvester-frame raising and lowering devices, which will be cheap, strong, and durable, and also allow a greater range of vertical adjustment of the harvester-frame, so that the grain may be cut higher than has been accomplished by the construction hitherto employed.

The various features of my invention will be fully explained in the description of the accompanying drawings, making a part of this specification, in which—

Figure 1 is a top plan view of my improvement. Fig. 2 is a broken sectional elevation showing the elevating devices. Fig. 3 is a detail view of the crank and connecting-hook. Fig. 4 is a perspective skeleton view of the frame. Figs. 5 and 6 are detail views of parts of the frame. Fig. 7 represents a bottom plan view of one of the frame-rails. Fig. 8 is a central vertical section through the main shaft with some of the driving-pinions in elevation.

A represents the master-wheel of an ordinary single-wheeled harvester; B, the tongue; C, brace-rods; D, the pitman; E, the crank-wheel driving the cutter-bar. In dotted lines, Fig. 1, F represents a spur-wheel meshing with the driving-gear. G represents the driving-shaft journaled on the frame; H I, bevel-wheels for transmitting motion to the crank-shaft J, to which is attached crank E. K represents a driving-shaft taking its motion from spur-gear L on shaft J by gear M on said shaft K. N represents a sprocket-wheel adapted to drive the knotting and binding mechanisms. These parts are of the usual construction, and need not be more fully described.

The main frame is made of iron, and is constructed as follows:

1 represents an angle-iron forming the front rail of the frame. It is preferably made of malleable iron, with ears, 2 for securing the tongue, and with ears 3, for securing the tongue-braces, cast integral therewith. Upon the under side of said rail are suitable flanges, 13, which serve as abutments against which the longitudinal side rails rest and to which they are bolted.

5 represents the rear rail, which is of similar construction to the front rail, provided with suitable flanges and lugs rigidly secured to or cast with it to receive and hold the driving mechanism and furnish flanges against which the longitudinal rails abut and to which they are bolted.

6 represents the finger-bar beam secured to rail 1 by means of sleeves 7 and bolts 8, passing through said sleeves.

9 and 10 represent the platform-bars. To rail 5 is bolted the platform-bar 9. Rail 10, which is the middle sill of the platform, is rigidly bolted to the longitudinal rails of the frame.

11 12 represent longitudinal rails, the ends of which abut against the vertical flanges of the front and rear rails and against the side flanges, 13, to which they are securely bolted. These bars are made of thin iron placed edgewise, and they are secured together and prevented from spreading by means of sleeves 14 and bolts 15, passing through said sleeves and through said rails 11 12 to tie them together. Thus I make the side rails of two pieces and secure them by bolts, which serve as braces to increase the rigidity of the frame.

16 represents arched brace-bars, the ends of which are bolted to the front and rear rails, 1 and 5.

17 represents laterally-bracing bars, which extend from the inner rail, 12, at the center to the outer rail, 11, at the ends, and are securely bolted to the side rails. Thus the frame is laterally and vertically braced, making at once a cheap, strong, and very durable frame.

O represents a sleeve attached to the hub of

the master-wheel. Through this sleeve passes the axle journaling therein, which is provided at either end with pinions 18, each of which engages with segment-teeth 19, formed in the slots of brackets 20. The brackets 20 are rigidly attached to the inner rails, 12, on each side of the frame, preferably by the bolts 15. The brackets 20 and pinions 18 are the counterparts of each other, and the segmental bracket is provided with gains 21ª, which fit the rails 12.

The numeral 21 represents bolt-holes through which the bolts 15 pass.

The axle is supported by the main wheel A, and the frame is sustained on the axle by means of the segmental brackets 20, to which the side pieces, 12, of the frame are bolted, the segments of gear-teeth 19 on said brackets meshing with the pinions 18, mounted on the axle.

The numeral 22 represents a depending arm, preferably cast in one piece with the arms 23 and 32, and pivotally connected at one end to the arm 23, by means of an opening, 25, is a rod, 24, having its other end connected with a post, R, on the frame. The arm 22 is provided with a hook, 41, which engages with the sleeve P, surrounding the axle, the hook being supported by the gear 36, riding upon the gear 37.

The numeral 33 denotes a beveled pinion keyed on the inner end of the crank-rod 28, which is journaled in the arm 32, and 35 denotes a center bolt, on which is journaled the miter-gear 34, rigid with spur-gear 36, journaled on the same bolt, 35. The spur-gear 36 meshes with the spur-gear 37, rigid on the axle. A crank, 29, is attached to the crank-rod 28, and the latter is supported by a slotted bracket or plate, 30, mounted on a post, 31, of the frame. The raising and lowering of the frame are effected in the manner following: Upon revolving the crank 29 rotation is imparted through rod 28 and bevel-gear 33 to the miter-gear 34, and thence through spur-gear 36 to the gear 37 on the axle, thereby rotating the gears 18, which mesh with segmental gears 19. This causes the frame to rise or fall according to the direction of rotation. As the bracket 23 on arm 22 is pivotally connected to rod 24, and as spur-gear 36 rests on the gear 37 and is held in mesh therewith by the hook 41, said arm turns upon the sleeve P as the frame rises and falls, the sleeve P being the point on which said arm oscillates.

It will be seen that as the frame rises and falls it is necessary to retain the gear 36 in proper relation to the gear 37, with which it meshes. This is accomplished by means of the hook 41, which is supported by the gear 36, resting on gear 37, and by the rod 24. As the frame sinks, the rod draws upon the arm 23, causing the gear 36 to move in the arc of a circle of which the axle is the center, and the arm 32 is raised, the crank-shaft 28 moving in the slot of the plate 30. The oscillation of arm 22 is caused by the rise and fall of the part to which the rod 24 is connected, the hook 41 on said arm having no vertical movement. It will be seen that the wheel 36 remains at all times upon the crest or highest point of the gear 37 as the frame is adjusted up and down. As the frame rises and falls, it must move in the arc of a circle corresponding with the curvature of the segment of rack-teeth 19. For example, as the frame is lowered, the arm 22 is turned in the arc of a circle upon the sleeve P, this movement being permitted by the longitudinal and vertical adjustment of the crank-rod 28 in the bracket 30, as already set forth. The arm 22 being pivotally connected to rod 24, and the pinion 34 being journaled on the arm, and the rod 24 being secured against longitudinal movement at the point 26, it will be seen that as the frame is raised and lowered the arm 22 will oscillate in the arc of a circle, the hook 41 turning on the sleeve P, while the spur-gear 36 rides through the arc of oscillation upon the periphery of gear 37, being held concentric with said gear by the arm 22. By this construction the gears are always held in mesh, the frame is retained in horizontal position, and may be raised and lowered to any extent within the limits prescribed by the segmental gears 19.

In order to lock and hold the frame in any desired adjustment, I have provided the following instrumentalities:

43 represents a bayonet-sleeve lock sliding on the crank-rod 28. It is mortised to fit the lugs 44, which are projected from the journal-arm 32.

45 represents a coiled spring seating against the lock-sleeve 43. These parts are shown in Fig. 2 with the crank-shaft locked in position so that it cannot revolve.

46 represents a bayonet-slot, and 47 a stop-pin projecting from rod 28. When it is desired to change the adjustment, lock-sleeve 43 is forcibly retracted by hand, compressing the coiled spring, and is held back by turning it on the shaft 28 until the forward projection engages the pin 47, by which it is hooked or held back, thereby releasing the lock-sleeve from engagement with the lugs 44 on the arm 32, Fig. 2, when the crank-rod may be turned to adjust the frame. Then the sleeve-lock is released to engage with the lug of the arm 32. The lugs 44 on journal-arm 32 appear in Fig. 2, and the stop-pin 47 and bayonet-slot 46 in Fig. 3, these figures showing opposite sides of the same mechanism, while Fig. 1 shows a top view thereof. The sleeves 14 may be round or square.

I claim—

1. A harvester-frame composed of the angle-iron end plates, 1 and 5, having their horizontal flanges turned inward, the compound side rails consisting of parallel members braced and united by sleeves 14 and bolts 15, the ends of said side rails underlying the horizontal and abutting against the vertical flanges of the end rails, the arched braces 16,

and the lateral braces 17, substantially as described.

2. The combination, with a harvester-frame having gear-segments 19 centrally mounted thereon, of pinions on the axle meshing with said segments, an arm, 22, having a hook embracing the lower side of a sleeve surrounding the axle, said arm having a projection, 23, connected by a rod, 24, to the frame, a crank-shaft having bearing in the arm 32, and a spring-actuated sleeve, 43, on the end of the arm 32 extending from said arm 22, a miter-gear, 33, carried by said crank-shaft, a miter-gear, 34, rigid with a pinion, 36, both journaled on the arm 22, with the gear 36 meshing with the crest of a gear, 37, on the axle, and the gear 34, meshing with miter-gear 33, the spring-actuated locking-sleeve 43 being provided with a bayonet-slot with which a pin on the crank-shaft engages, substantially as described.

3. The combination, with the crank-arm 32, having lug 44, of the shaft 28, the lock-sleeve 43, having bayonet-slot 46 and notches engaging with lugs 44, the stop-pin 47 on shaft 28, and the spring 45, substantially as described.

In testimony whereof I have hereunto set my hand.

ROBERT BROWN.

Witnesses:
A. J. EMINGER,
FRANK SMITH.