

(No Model.)

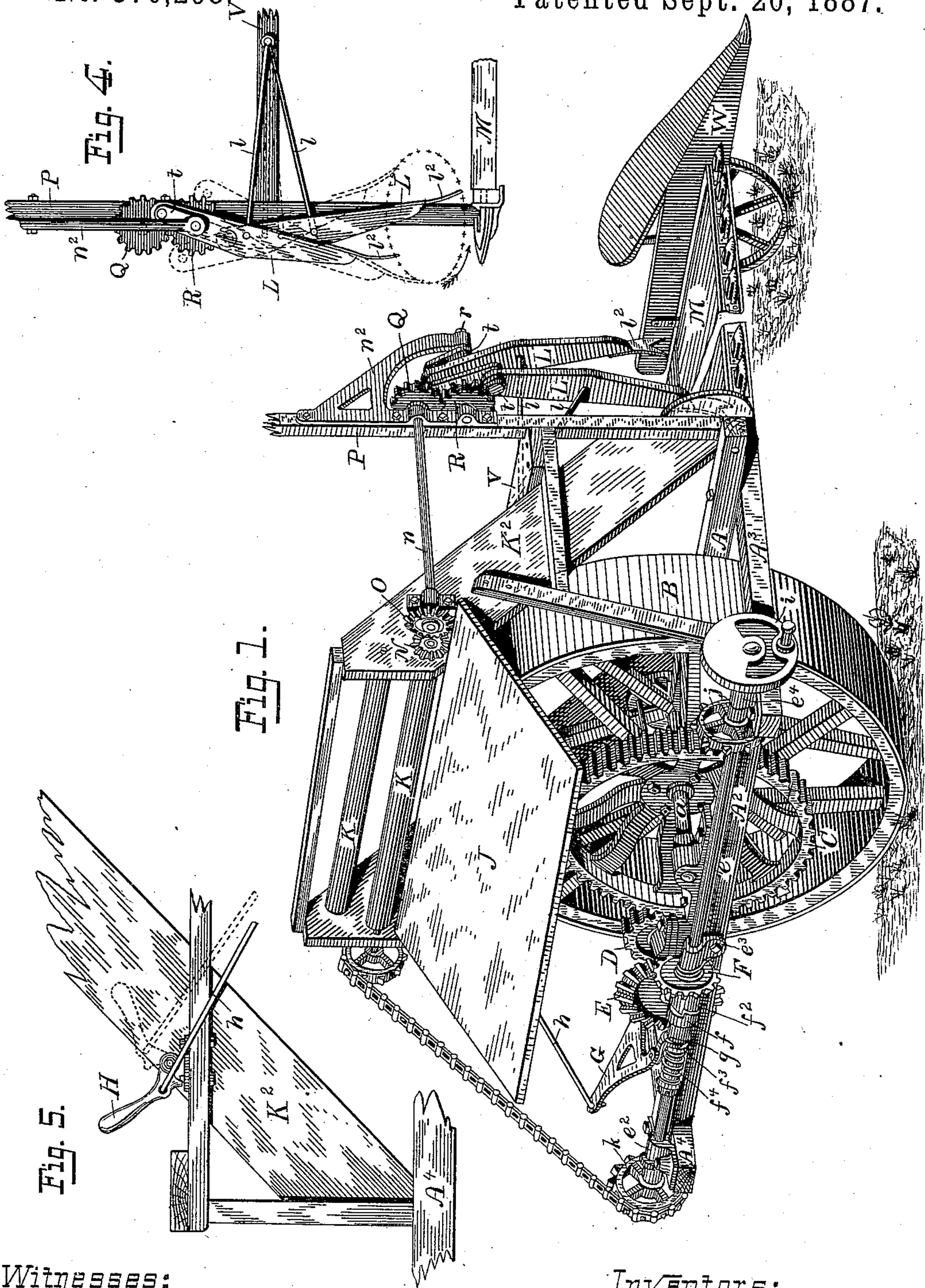
2 Sheets—Sheet 1.

W. N. WHITELEY & W. BAYLEY.

GRAIN HARVESTER.

No. 370,298

Patented Sept. 20, 1887.



Witnesses:

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Fred State

Inventors:

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(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

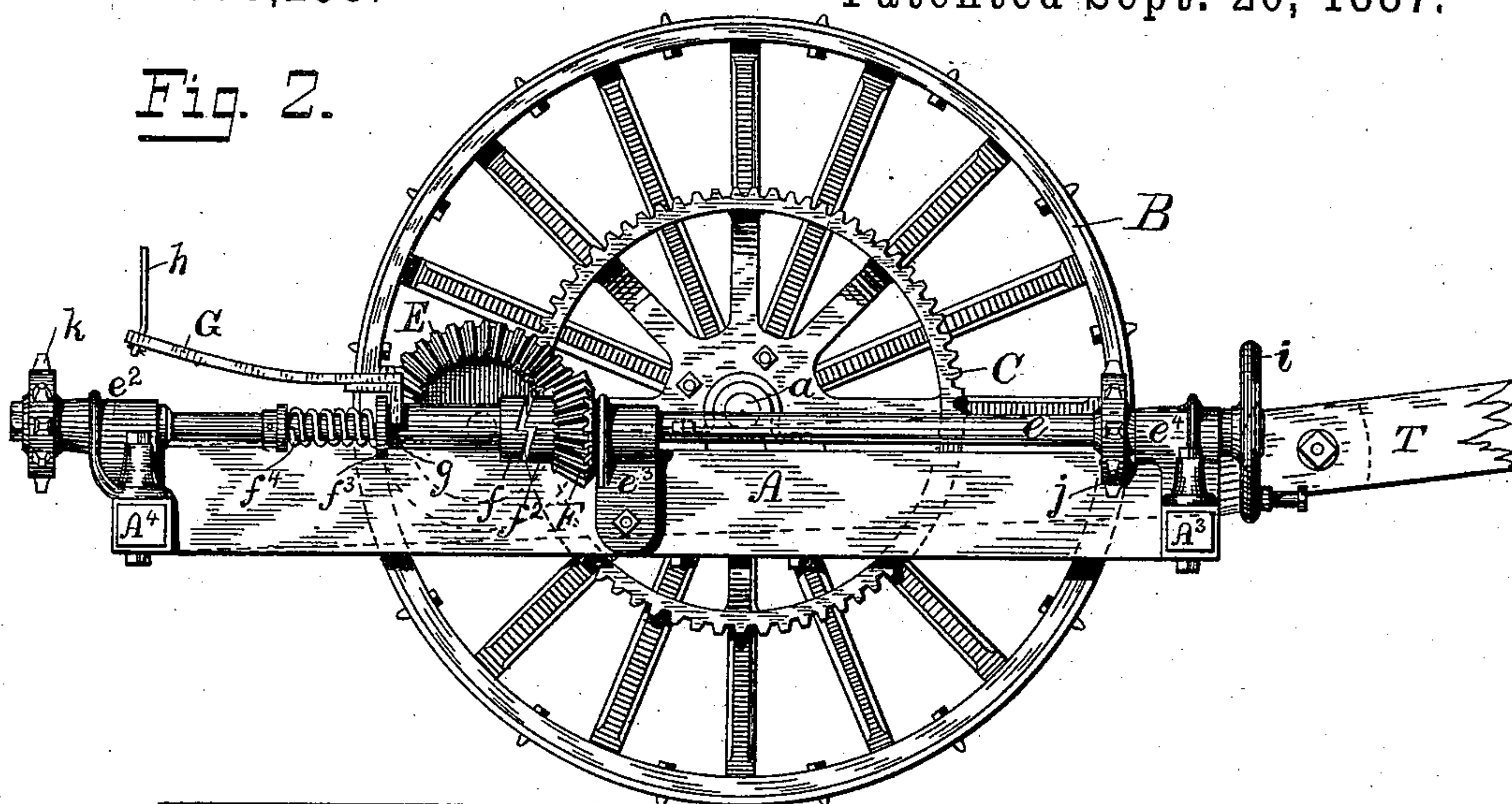


Fig. 3.

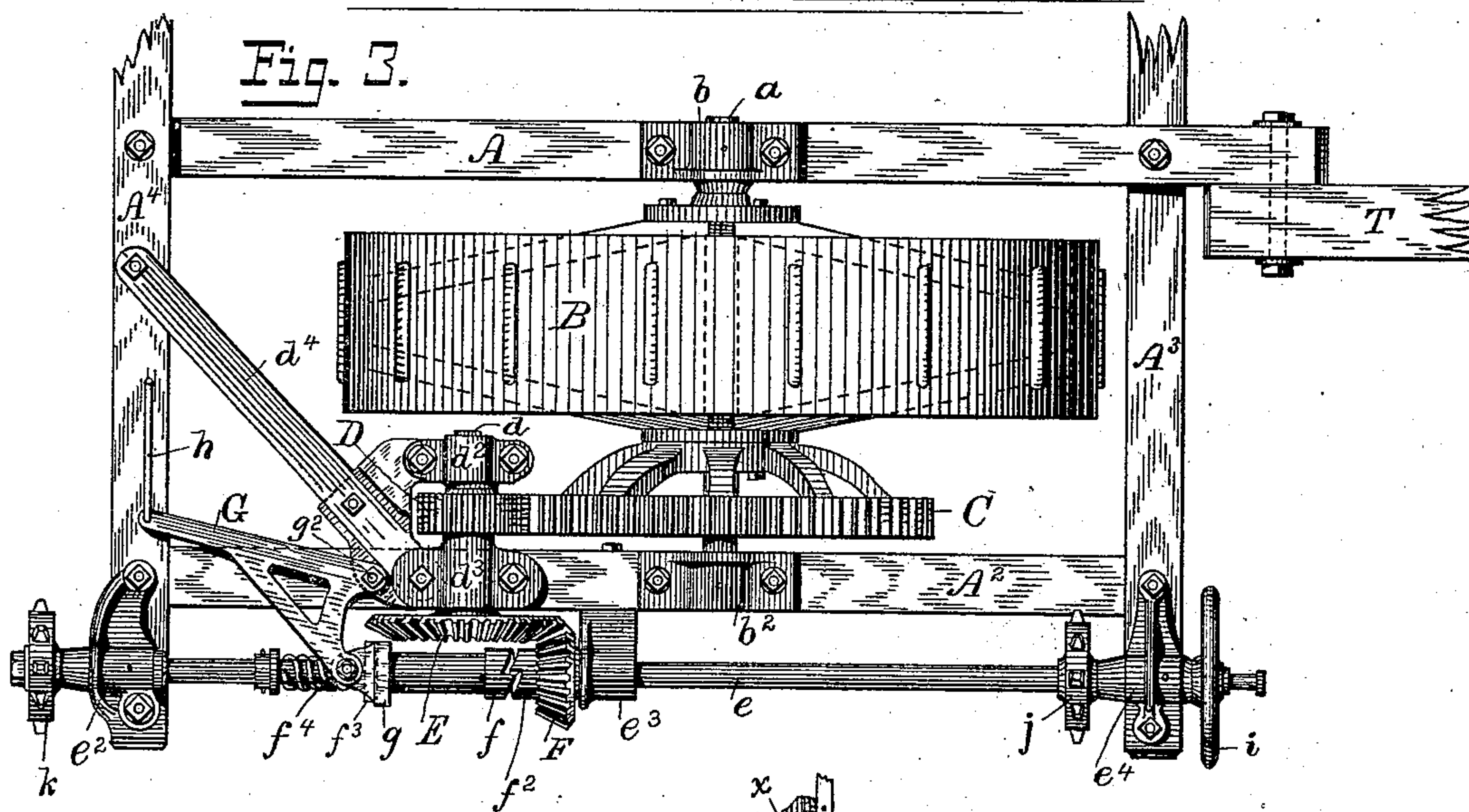


Fig. 6.

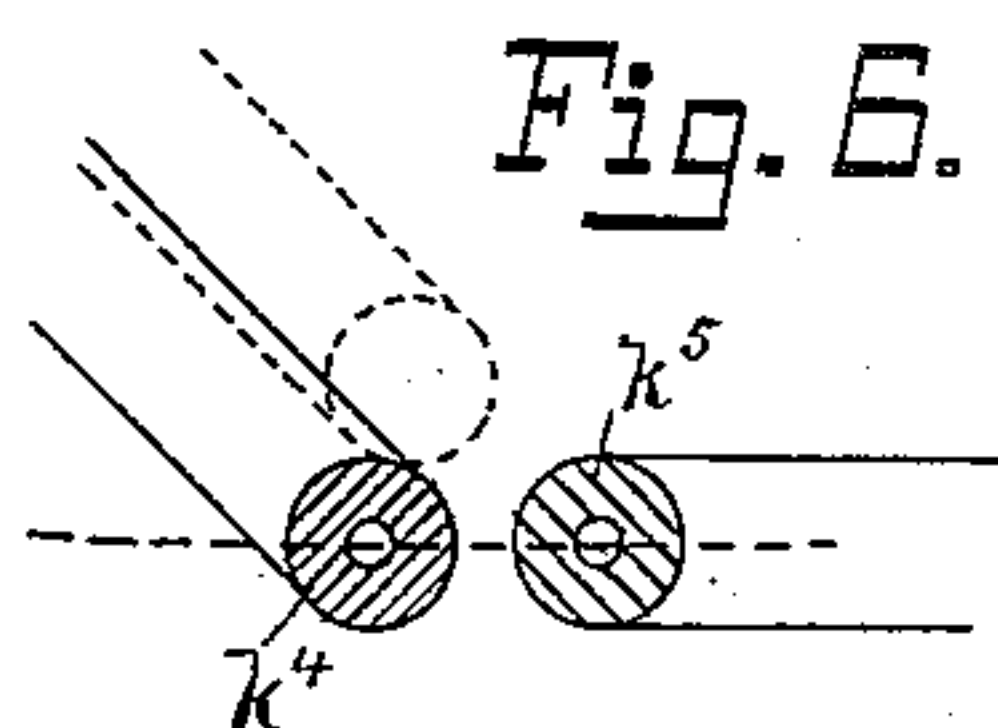


Fig. 8.

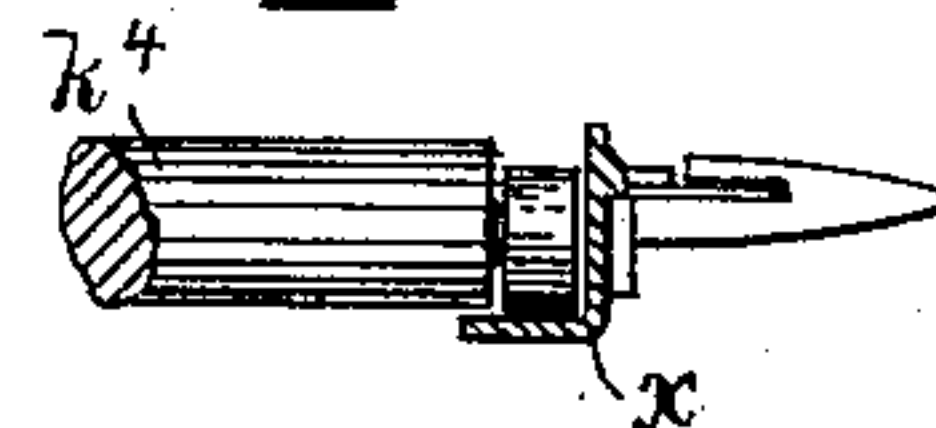
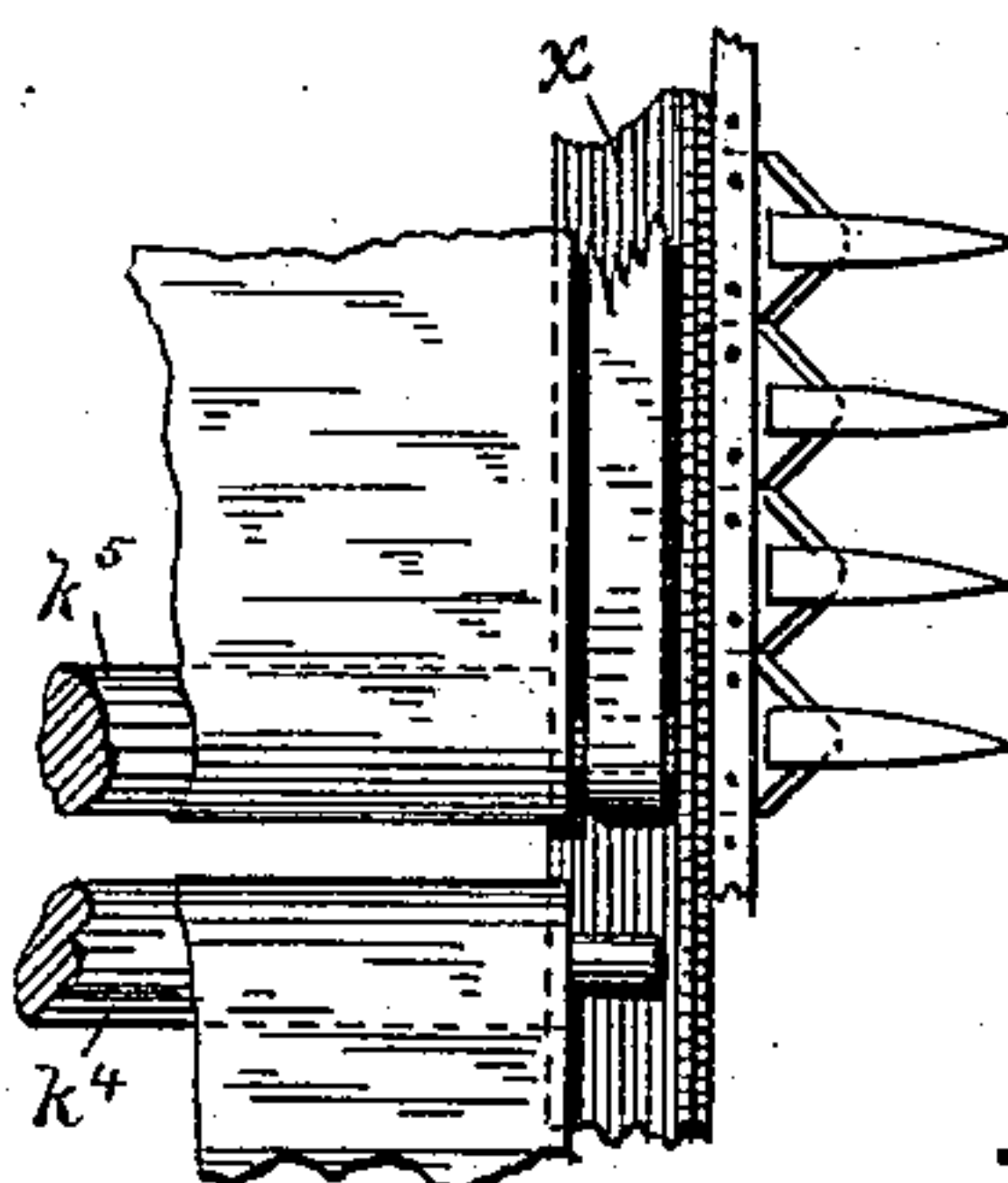


Fig. 7.



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UNITED STATES PATENT OFFICE.

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ASSIGNORS TO SAID WILLIAM N. WHITELEY.

GRAIN-HARVESTER.

SPECIFICATION forming part of Letters Patent No. 370,298, dated September 20, 1887.

Application filed November 12, 1886. Serial No. 218,740. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM N. WHITELEY and WILLIAM BAYLEY, citizens of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Grain-Harvesters—namely, Improved Driving-Gearing—of which the following is such a full, clear, and exact description as will enable any person skilled in the art to construct and use the same, reference being had to the accompanying drawings, forming a part of this specification.

Our invention relates to grain-binding harvesters, and is in the nature of improvements upon the usual form of construction and arrangement thereof.

It consists in so constructing the main driving-gearing that the transverse counter-shaft shall have a journal on each side of the pinion which engages the main driving-gear fixed to the main wheel. For this purpose the main driving-gear is an independent spur gear-wheel, so located that the inside line of the face is far enough from the line of the rim of the main driving and supporting wheel to admit of a journal-box being located between them. It is usual to use a gear-wheel either fixed to or cast upon the main driving and supporting wheel and placing the pinion engaging therewith upon the end of the transverse counter-shaft, with no supporting journal-box beyond it, thus supporting the said shaft only upon one side of the pinion. By this construction the friction and wear upon the inner journal-box was found in practice to be excessive, and hence the improved form of construction herein described was devised.

In the drawings, Figure 1 is a perspective view of a harvester embodying our improvements. Fig. 2 is a side elevation of the main frame, gearing, &c. Fig. 3 is a plan of the same. Fig. 4 is a side view of the relief-rakes; and Fig. 5 is a side view of a portion of the elevator, showing the device for throwing the machine into and out of gear. Figs. 6, 7, and 8 are diagrams illustrating the position of the lower elevator-roller in relation to the cutting apparatus.

Similar letters refer to like parts in the several views.

A, A², A³, and A⁴ are the sills composing the main frame, to which the main driving and supporting wheel B is journaled in the journal-boxes *b* and *b*² by the main shaft *a*, in the usual manner.

The draft-tongue T is pivoted to the sill A, and controlled in its relation to the main frame in any convenient manner.

Fixed upon the main-wheel shaft is the spur gear-wheel C, which drives the bevel pinion F through the pinions D and E, running loose upon the crank-shaft *e*, and connected therewith, when desired, by the clutch *f*, sliding on a splined portion of the shaft *e*, the bevel-pinion F having a half-clutch formed upon it at *f*². The clutch *f* is in the form of a sleeve, upon which is formed the collar *f*³, against which presses the fork *g*, which is pivoted to the right-angled lever G, which in turn is pivoted to the main frame or a fixed part thereof at *g*². The shipper-rod *h* extends from the lever G to the shipping-lever H, which is pivoted to the elevator apparatus, as shown in Fig. 5, and by which the machine is thrown into and out of gear. When in gear, the shipping-lever takes the position shown by dotted lines. The clutch *f* is held in gear by the spring *f*⁴ and out of gear by the shipping-lever H, passing over the center, as shown in Fig. 5.

The crank-shaft *e* is journaled in the boxes *e*², *e*³, and *e*⁴, fixed to the main frame, and has fixed upon it the crank-disk *i*, by the wrist-pin of which the cutter-bar is driven by a pitman-rod, as usual, the sprocket-wheel *j*, by which the binder is driven, and the sprocket-wheel *k*, by which the elevator-rollers K K, the reel, (not shown,) and the relief-rakes L L are driven.

The transverse counter-shaft *d* is journaled in the boxes *d*² and *d*³, both formed on one piece fixed to the sill A² of the main frame and supported by the brace *d*⁴, extending diagonally across to the rear sill, A⁴, of the main frame. The function of the brace *d*⁴ is to furnish a firm support for the box *d*², as far removed as possible, in order to prevent a torsional strain upon the sill A² of the main frame. By this construction we are also enabled to furnish the counter-shaft *d* with a bearing in the box *d*² beyond the spur-pinion D, whereby the great

strain and friction of an overhanging pinion is in a great measure relieved and the crank-shaft *e*, with its parts, brought nearer to the main driving-wheel B.

5 Referring to Fig. 1, J is the binder-deck. K² is the elevator sides. M is the grain-platform. W is the divider.

Upon the lower elevator-roller shaft is fixed the bevel gear-wheel N, which engages the
10 bevel gear-wheel O, fixed upon the shaft *n*, which is supported at this end by a bracket fixed to the elevator side K², and at the opposite end by the bracket *n*², fixed to the reel-standard P. Upon this end of the shaft *n* is
15 fixed the spur-pinion Q, which engages the spur-pinion R, fixed upon the crank-shaft *r*, also journaled in the bracket *n*² and provided with the cranks *t t*.

Pivoted upon the cranks *t t* are the two re-
20 lief-rakes L L, which are guided and held in their proper place by the rods *l l*, pivoted to the centers of the relief-rakes at one end and to the seat-board V at the other. The relief-rakes are provided at their lower ends with
25 the forked and curved iron plate *l*², as usual.

The motion communicated from the elevator-roller shaft, through the medium of the gears N O Q R and shafts *n r* to the cranks *t t*, operates the relief-rakes L L, whose lower
30 ends move in an elliptical path, as shown by dotted lines in Fig. 4, and in direction of the arrow, their movement resembling that of a human hand grasping the grain, grass, or other clogging matter, and pulling it forcibly
35 away from the inner shoe; and as the relief-rakes engage the clogging matter alternately, there is no opportunity for it to accumulate.

In Letters Patent No. 239,004, issued to W. N. Whiteley, a single relief-rake, like one of
40 the rakes L, is shown and described; but in using a single rake it frequently happens that in the interval during which the rake is not acting upon the grain some grain will pass by and not be affected by the rake. It is imprac-
45 ticable to increase the speed of the rake, because it would then strike and scatter the grain instead of pushing it gently. We therefore add another rake and make their motions alter-
50 nate with each other, so that practically the action is continuous.

By providing the two relief-rakes, whereby the clogging of the elevator-belt is avoided, it becomes practical to make the elevator-belt the same width as the platform-belt, as before stated. The lower roller, *k*⁴, of the
55 elevator-belt may therefore be placed on a level with the inner roller, *k*⁵, of the platform-belt, as shown in end elevation in Fig. 6, in plan in Fig. 7, and in side elevation in Fig. 8, the roller *k*⁴ being placed in the angle of the fin-
60 ger-bar *x*, instead of running above it, as it must necessarily do if the elevator-belt were wider than the platform-belt. The position of the lower elevator-roller, *k*⁴, in case of a wide
65 elevator-belt, is shown in dotted lines in Fig. 6, by which the advantage of its location as low as possible will be at once perceived, as in the case of its location as shown by dotted
70 lines there is much more opportunity for short grain to drop through the space between the elevator-belt and platform-belt to the ground.

Having thus described our invention, its construction, arrangement, and uses, and pointed out wherein our devices differ from
75 those usually employed for the purposes sought to be accomplished, what we claim as new, and desire to secure by Letters Patent, is—

In the main driving-gearing of a harvester, 80 the transverse counter-shaft *d*, having upon it the main pinion D, the two boxes *d*² *d*³, one on each side of said pinion, which engages the main gear-wheel fixed to the main driving and sup-
85 porting wheel, the said boxes being formed on one piece of cast metal, fixed to the main frame and projecting inwardly therefrom, said inwardly-projecting part being provided with a seat adapted to be secured to and supported
90 by diagonal brace *d*⁴, fixed to the side and rear sills of the main frame, substantially in the manner and for the purposes shown and described.

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