

No. 778,426.

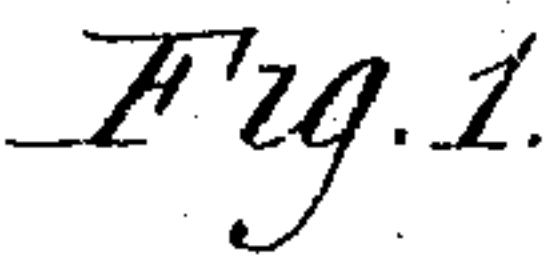
PATENTED DEC. 27, 1904.

J. NICHT.


COUNTING MECHANISM FOR GRAIN HARVESTERS.

APPLICATION FILED MAR. 23, 1904.

3 SHEETS—SHEET 1.



Witnesses:
E. A. Volk.
P. W. Rumer.

 *Inventor.*
By Joseph Nicht
Wilhelm, Parker & Hard
Attorneys.

No. 778,426.

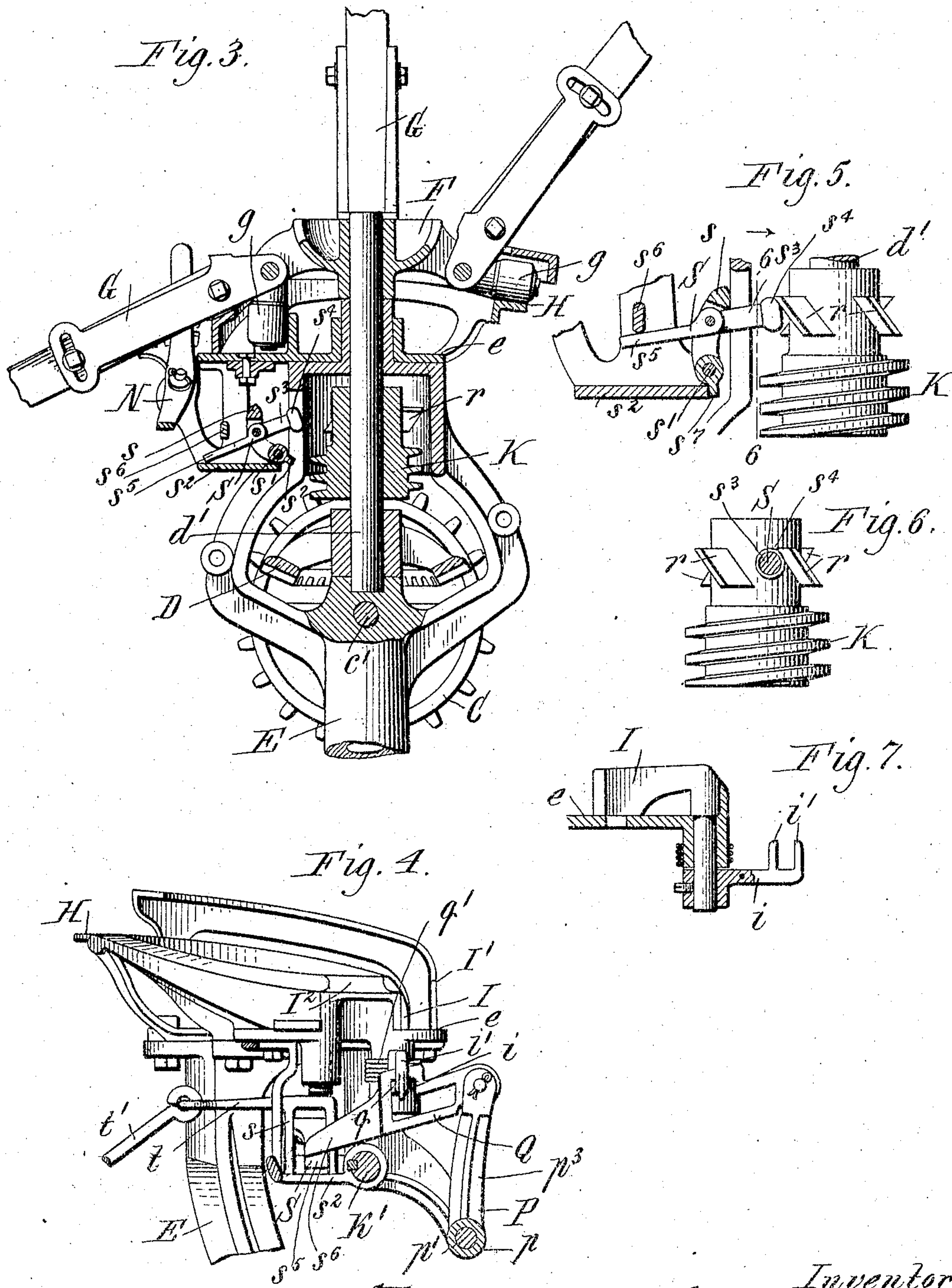
PATENTED DEC. 27, 1904.

J. NICHT.

COUNTING MECHANISM FOR GRAIN HARVESTERS.

APPLICATION FILED MAR. 23, 1904.

3 SHEETS—SHEET 2.



Witnesses:

E. A. Volk.

P. W. Turner

Inventor
Joseph Nichte
By Wilhelm Paskind Hard
Attorneys.

No. 778,426.

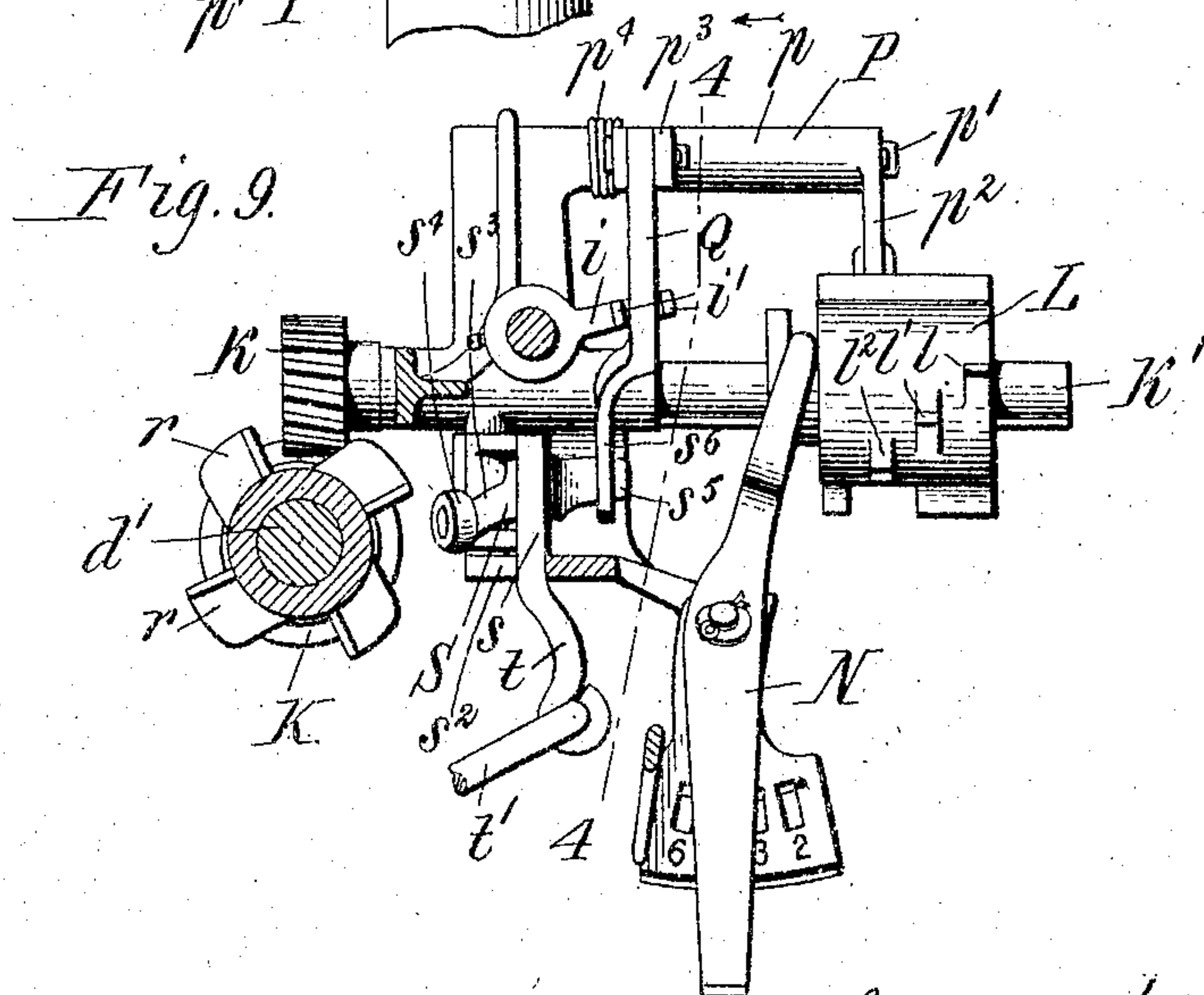
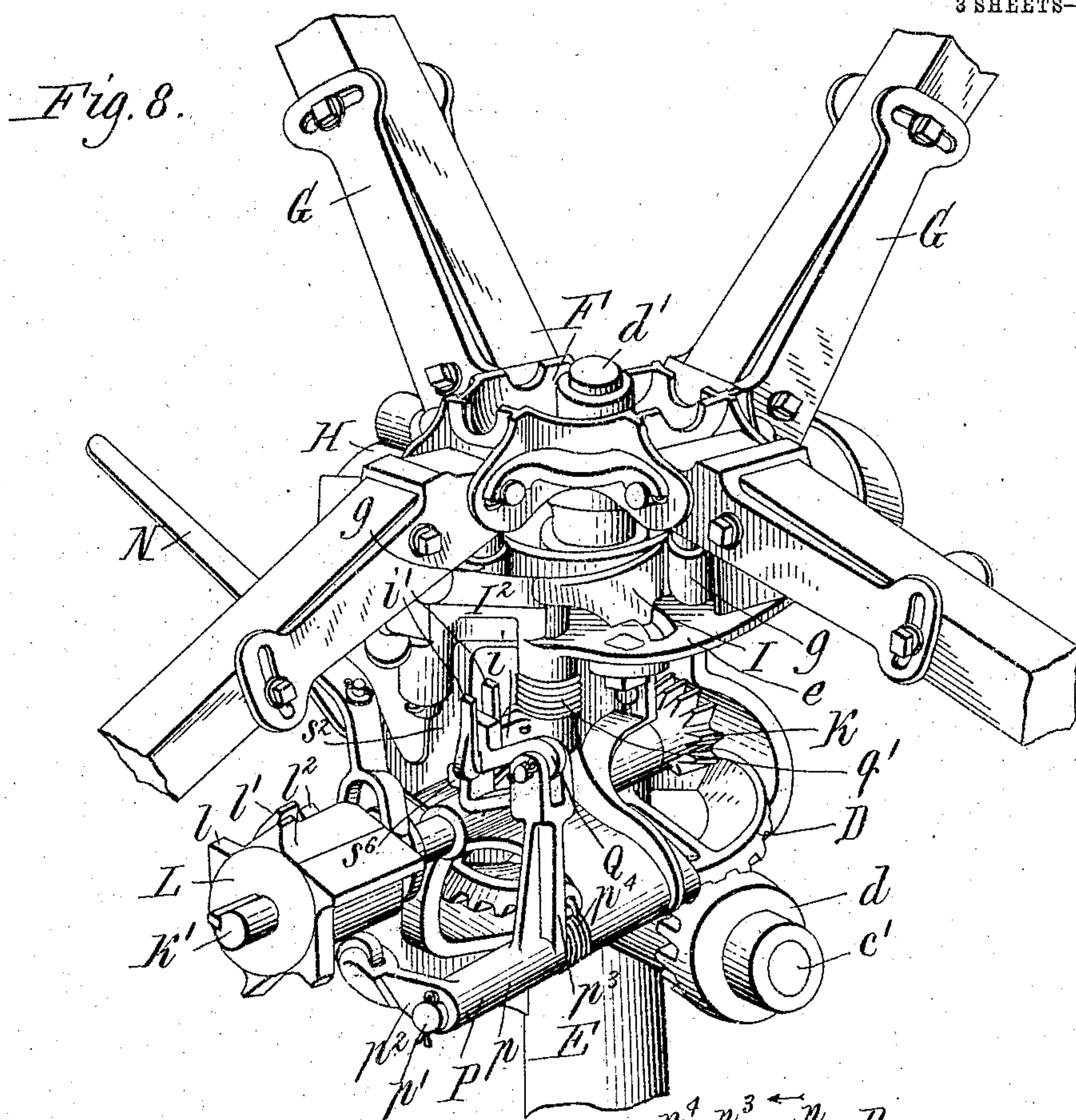
PATENTED DEC. 27, 1904.

J. NICHT.

COUNTING MECHANISM FOR GRAIN HARVESTERS.

APPLICATION FILED MAR. 23, 1904.

3 SHEETS—SHEET 3.



Witnesses:

E. A. Volk.

B. W. Pinner

Inventor,
By Joseph Kiehl
Wheeler, Parker & Hard
Attorneys.

UNITED STATES PATENT OFFICE.

JOSEPH NICHT, OF POUGHKEEPSIE, NEW YORK, ASSIGNOR TO ADRIANCE, PLATT & COMPANY, OF POUGHKEEPSIE, NEW YORK.

COUNTING MECHANISM FOR GRAIN-HARVESTERS.

SPECIFICATION forming part of Letters Patent No. 778,426, dated December 27, 1904.

Application filed March 23, 1904. Serial No. 199,644.

To all whom it may concern:

Be it known that I, JOSEPH NICHT, a citizen of the United States, and a resident of Poughkeepsie, in the county of Dutchess and State of New York, have invented a new and useful Improvement in Counting Mechanism for Grain-Harvesters, of which the following is a specification.

This invention relates to the counting mechanism which is used in grain-harvesters in connection with the rotary rake-head and rakes and the switch for controlling the frequency of the raking action, and has particular reference to an improved counting mechanism which is described and claimed in an application for Letters Patent filed by Isaac Trolley March 23, 1904, Serial No. 199,643, in which the motion is transmitted from the rake-shaft to the toothed counting-wheel and from the latter to the switch-arm by positively-acting devices. The mechanism shown in said Trolley application for patent is provided with means in the control of the driver for rendering the switch-actuating mechanism temporarily inoperative when it is not desired to rake. This throw-off mechanism is directly operated by the operator, and this presents the difficulty that the operator may throw off the action of the counting device at the moment when one of the rake-rollers is in such a position that before the switch can cross the track the roller would strike the point of the switch, in which case a breakage is liable to happen.

My invention has the object to avoid this difficulty by operating the throw-off mechanism automatically, so that the switch can be moved only at a time when no interference with a rake-roller can take place, the operator simply setting the throw-off mechanism ready for action, while the operation of the throw-off mechanism is effected at the proper time by automatically-operated means.

In the accompanying drawings, consisting of three sheets, Figure 1 is a fragmentary top plan view, partly in horizontal section, in line 1 1, Fig. 2, of a grain-harvester having a counting mechanism provided with my improvements. Fig. 2 is a sectional longitudinal ele-

vation in line 2 2, Fig. 1, looking in the direction of the arrow. Fig. 3 is a sectional elevation of the rake-head and connecting parts, on an enlarged scale, in line 3 3, Fig. 1, looking in the direction of the arrow. Fig. 4 is a sectional elevation, on a still further enlarged scale, of the slotted plate and connecting parts in line 4 4, Fig. 9, looking in the direction of the arrow. Fig. 5 is a fragmentary elevation of the throw-off lever and connecting parts, on an enlarged scale, as compared with Fig. 3. Fig. 6 is a sectional elevation in line 6 6, Fig. 5, looking in the direction of the arrow. Fig. 7 is a sectional elevation of the switch and its support. Fig. 8 is a perspective view of the rake-head and connecting parts. Fig. 9 is a top plan view, partly in horizontal section, of the counting-wheel and connecting parts as shown in Fig. 1, but on an enlarged scale.

Like letters of reference refer to like parts in the several figures.

A represents the platform, *a* the finger-bar, *a'* the pole, and B the main wheel, of a grain-harvester.

b represents a sprocket-wheel which is driven from the main wheel in any suitable manner and from which the power is derived for operating the counting mechanism. As shown, the sprocket-wheel *b* is driven from the main wheel by gear-wheels *b'* *b''*, the wheel *b''* being secured to the same transverse shaft on which the sprocket-wheel *b* is mounted and which is journaled in a bearing *b'''*. The motion is transmitted from the sprocket-wheel *b* to a sprocket-wheel C by a chain belt *c*, Figs. 1 and 2. The wheel C is mounted on one end of a transverse shaft *c'*, which is provided at the opposite end with a bevel-pinion *d*, driving a horizontal bevel-wheel D, which latter is secured to the lower end of the vertical rake-shaft *d'*.

E represents the fixed standard, which supports the rake-head F and connecting parts and in which the shafts *c'* and *d'* are journaled.

G represents the rake-arms, pivoted to the rake-head F and provided with the usual rollers *g*, which run on the track H, provided with the switch I and the stationary guides I' I'' in front and rear of the switch.

All of the foregoing parts may be of any suitable or well-known construction and may be modified in various ways.

The switch is pivoted in the usual way upon the horizontal plate or table *e* of the standard and has its pivotal portion extending below the table *e* and provided at its lower end with a rearwardly-extending arm *i*, Figs. 2, 4, 7, and 8.

K, Figs. 2, 3, 5, 6, and 9, represents a worm which is secured to the vertical rake-shaft below the table *e* of the standard and which drives a worm-wheel *k*, secured to the forward end of a shaft *k'*, on the rear end of which the counting-wheel L is mounted. This wheel may be of any usual or desirable construction and is preferably provided with teeth *ll'*, arranged in several series side by side, each series containing a different number of teeth for actuating the switch more or less frequently. The teeth indicated in the drawings are designed to open the switch for every second, third, fourth, or sixth arm. The wheel can be shifted on its shaft *k'* by a lever N, provided with the usual locking device, so that the wheel is held in the desired position for producing the desired frequency of raking.

P represents the actuating-lever, which receives motion from the counting-wheel and which transmits the motion, by means of a slotted link or pawl Q, to the switch-arm *i*. The actuating-lever is composed of a hub *p*, mounted on a stud *p'*, a horizontal arm *p²*, which is actuated by the teeth of the counting-wheel, and an upright arm *p³*, to which the slotted pawl Q is pivoted. The lever is pressed with its arm *p²* against the counting-wheel by a coiled spring *p⁴*. The switch-arm *i* is provided at its end with two upwardly-projecting jaws *i'*, Fig. 7, between which the free end of the slotted pawl Q is hung, Fig. 4. This pawl is provided in the upper side of its slot, near its free end, with an actuating shoulder or recess *q*, which straddles the switch-arm *i* between the projections or jaws *i'*, so that the forward movement of the pawl produces an oscillating movement of the switch-arm in the direction of the arrow, Fig. 4, and opens the switch. The latter is yieldingly held in a closed position by a coiled spring *q'*, which bears against the switch and the standard or other fixed support and which closes the switch during the return movement of the pawl.

In the operation of this counting mechanism the rock-lever P is actuated by the teeth of the counting-wheel, and this motion is transmitted to the switch-arm by the slotted pawl in the proper direction to open the switch. The switch is returned to its open position by its spring. The actuating rock-lever is held with its lower arm yieldingly against the counting-wheel by the spring applied to the rock-lever.

Above the worm K the rake-shaft is provided with spiral or inclined wings *r*, arranged around the shaft and corresponding in number and arrangement with the rakes on the rake-head, four rakes and rollers being shown on the rake-head and four wings on the upright rake-shaft.

A throw-off lever S, Figs. 1, 3, 4, 5, and 9, is provided which can be moved into and out of the rotary path of the wings to be actuated thereby or not and which is so arranged with reference to the slotted pawl Q that when the lever is actuated by a wing the pawl is raised so high that its actuating shoulder or recess is lifted above the switch-arm *i*, and therefore produces no movement in the same. The throw-off wings *r* are so arranged on the rake-shaft that they actuate the throw-off lever every time a rake-roller *g* arrives at the switch. The actuating-pawl is thereby rendered inoperative at the time the roller arrives at the switch, and any movement which may be imparted to the pawl by the counting-wheel at this time has no effect upon the switch. The latter therefore remains closed, and the roller passes outside of the switch, and no raking action takes place.

As shown in the drawings, the throw-off lever S is mounted in a rocking frame *s*, Figs. 3, 4, 5, and 9, which is pivoted at its lower end by a horizontal pivot *s'* to a support *s²*, depending from the table *e* of the standard E. The rock-lever has an arm *s³*, which projects toward the wings *r* and is preferably provided with a rounded roller *s⁴* for engagement therewith and with an arm *s⁵*, which projects underneath a nose or extension *s⁶* on the pawl Q, so that when a wing depresses the arm *s³* of the throw-off lever the arm *s⁵* of the lever raises the pawl sufficiently to lift the actuating shoulder or recess *q* thereof above the switch-arm *i*.

The frame *s*, in which the throw-off lever is pivoted, is preferably provided at its lower end with a stop *s⁷*, Fig. 5, for limiting the movement of the frame toward the rake-shaft and throw-off wings.

The movement of the frame *s* toward and from the rake-shaft may be produced by any suitable mechanism under the control of the operator. The mechanism shown for that purpose in the drawings is constructed as follows: *t*, Figs. 1, 4, and 9, is an arm which projects stubbleward from the frame *s* above the pivot-line thereof, and *t'*, Figs. 1, 2, 4, and 9, is a rod which extends from said arm to a rock-arm *t²*, mounted on a horizontal shaft *t³*. The latter is provided with a treadle *t⁴* in convenient reach of the operator sitting on the seat *t⁵*, so that by operating the treadle the operator throws the throw-off lever into the path of the throw-off wings, as shown in Fig. 5, and thereby prevents the switch from being opened and the rake from operating. The treadle-shaft may be provided with a re-

turn-spring t^6 for returning the parts to their normal position if they should not return by gravity, in which position the throw-off arm stands outside of the path of the wings, as shown in Fig. 9, and the counting mechanism operates in the normal manner.

It will be seen from the foregoing that the operator simply shifts the throw-off lever into and out of the path of the automatically-operating devices and that the operation of the throw-off lever is effected automatically by devices which are so timed that their action can take place only at a time when no interference between the rake-rollers and a switch can take place.

I claim as my invention—

1. The combination of a rotary rake-head, a switch therefor, a counting-wheel, means for actuating the switch from said counting-wheel, throw-off mechanism actuated in unison with the rake-head and adapted to render the switch-actuating means temporarily inoperative, and means in control of the operator for rendering said throw-off mechanism operative or inoperative, substantially as set forth.

2. The combination of a rotary rake-head, a switch therefor, a counting-wheel, a lever actuated by said wheel, a pawl connecting said lever with said switch, and throw-off mechanism actuated in unison with the rake-head and adapted to render the pawl temporarily inoperative, substantially as set forth.

3. The combination of a rotary rake-head, a switch therefor, a counting-wheel, a lever actuated by said wheel, a pawl connecting said lever with said switch, throw-off mechanism actuated in unison with the rake-head and adapted to render the pawl temporarily inoperative, and means in control of the operator for rendering said throw-off mechanism operative or inoperative, substantially as set forth.

4. The combination of a rotary rake-head, a switch therefor, a counting-wheel, a lever actuated by said wheel, a pawl connecting said lever with said switch, throw-off wings rotat-

ing in unison with the rake-head, a throw-off lever adapted to shift said pawl, and means for moving said throw-off lever into and out of the path of said wings, substantially as set forth.

5. The combination of a rotary rake-head, a switch therefor, a counting-wheel, a lever actuated by said wheel, a pawl connecting said lever with said switch, throw-off wings rotating in unison with the rake-head, a throw-off lever adapted to shift said pawl, a movable support on which said throw-off lever is mounted, and means in the control of the operator for shifting said support toward and from said wings, substantially as set forth.

6. The combination of a rotary rake-head, a switch therefor, a counting-wheel, a lever actuated by said wheel, a pawl connecting said lever with said switch, throw-off means moving in unison with the rake-head, a throw-off lever having one of its arms adapted to be engaged by said throw-off means and its other arm adapted to engage said pawl for shifting the same, a movable frame on which said throw-off lever is mounted, and means in the control of the operator for shifting said frame toward and from said wings, substantially as set forth.

7. The combination of a rotary rake-head, a switch therefor, an upright rake-shaft, a worm on the same, throw-off wings arranged on the rake-shaft, a counting-wheel driven from said worm, a lever actuated by said wheel, a pawl connecting said lever with said switch, a throw-off lever adapted to shift said pawl, and means for moving said throw-off lever into and out of the path of said wings, substantially as set forth.

Witness my hand this 16th day of March, 1904.

JOSEPH NICHT.

Witnesses:

ISAAC TROLLEY, Jr.,
G. M. PATTEN.