

I. Reynolds.

Harvester Rake.

N^o 11086

Patented Jun. 13, 1854.

Fig. 3.

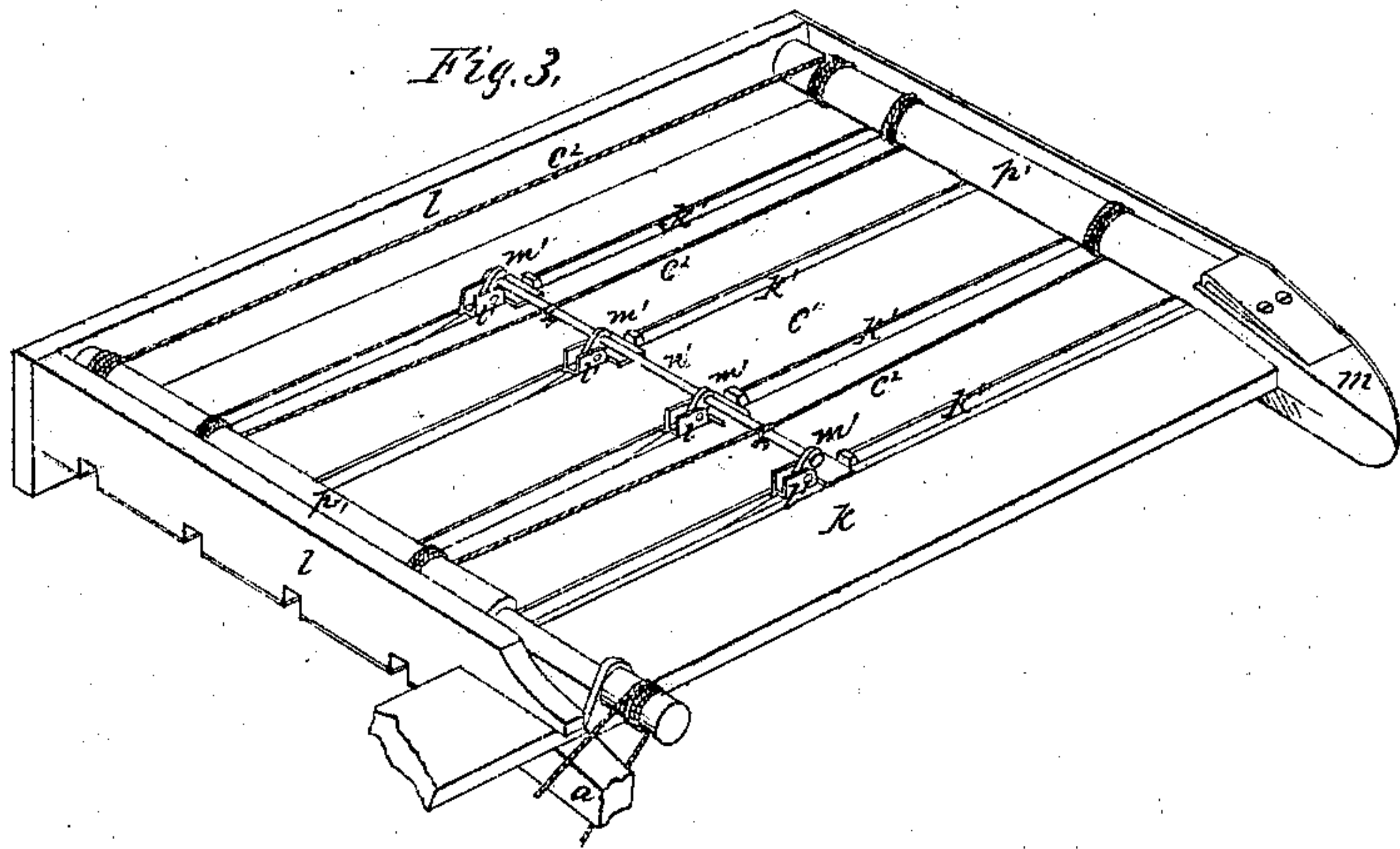


Fig. 7.

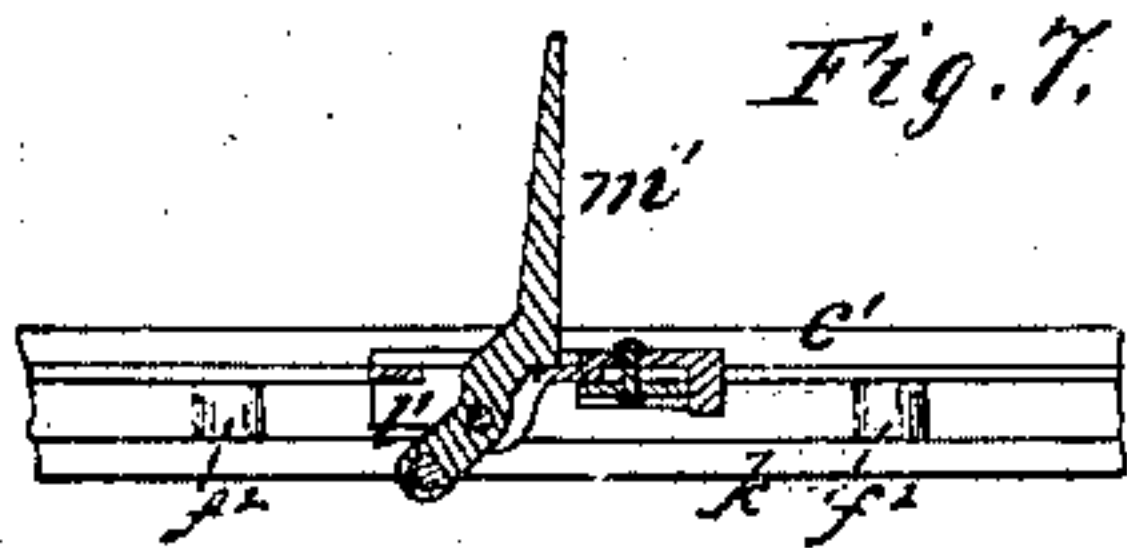


Fig. 2.

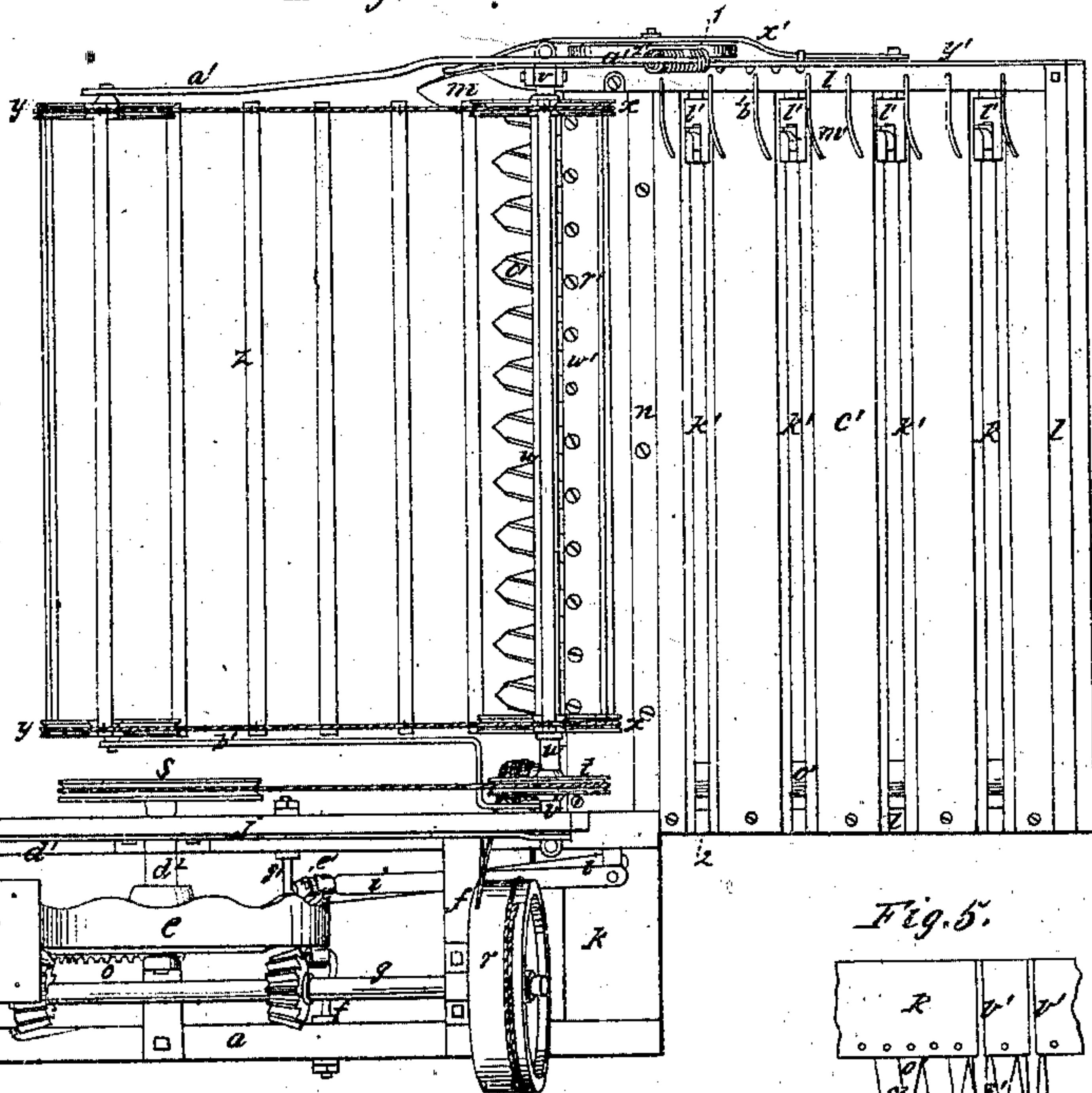


Fig. 6.

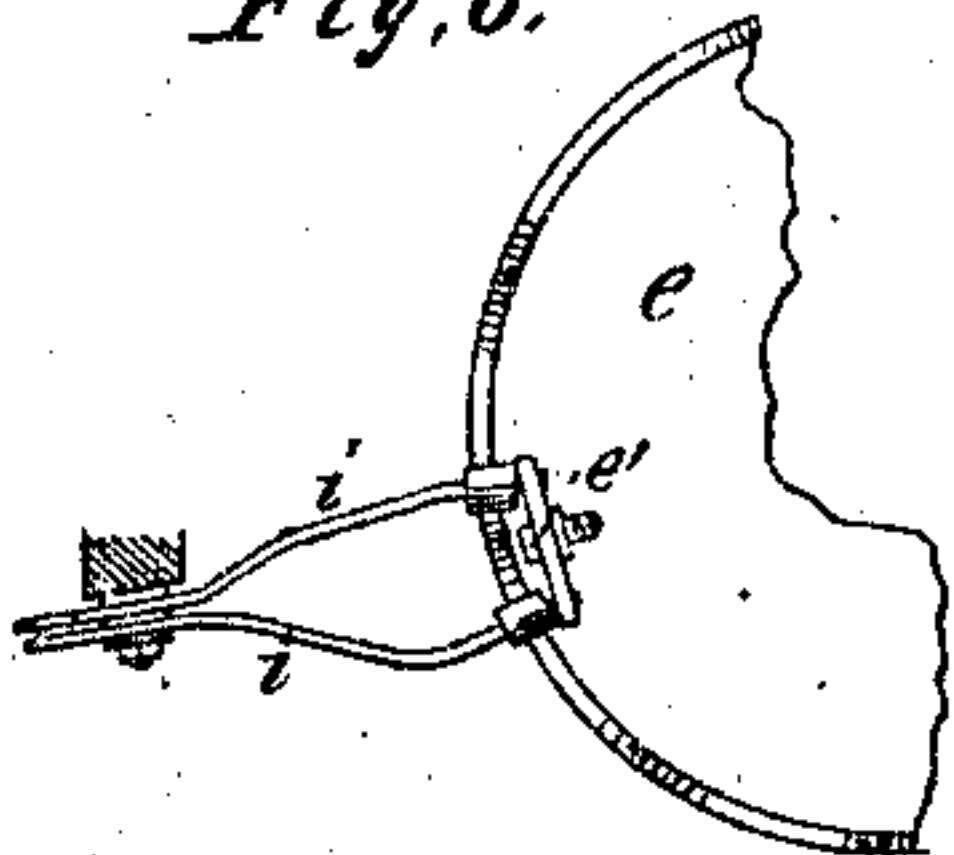


Fig. 5.

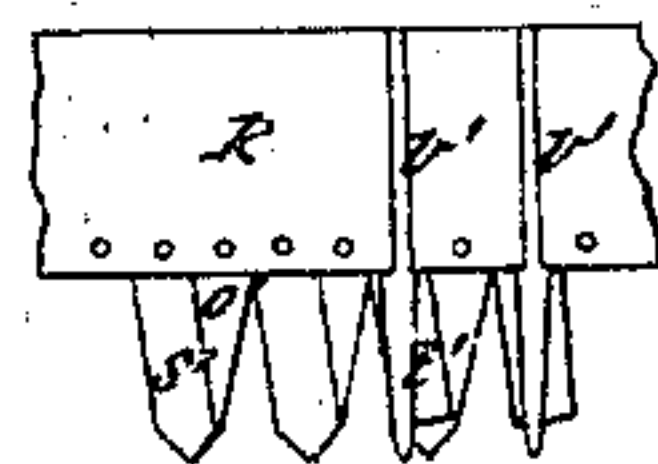


Fig. 1.

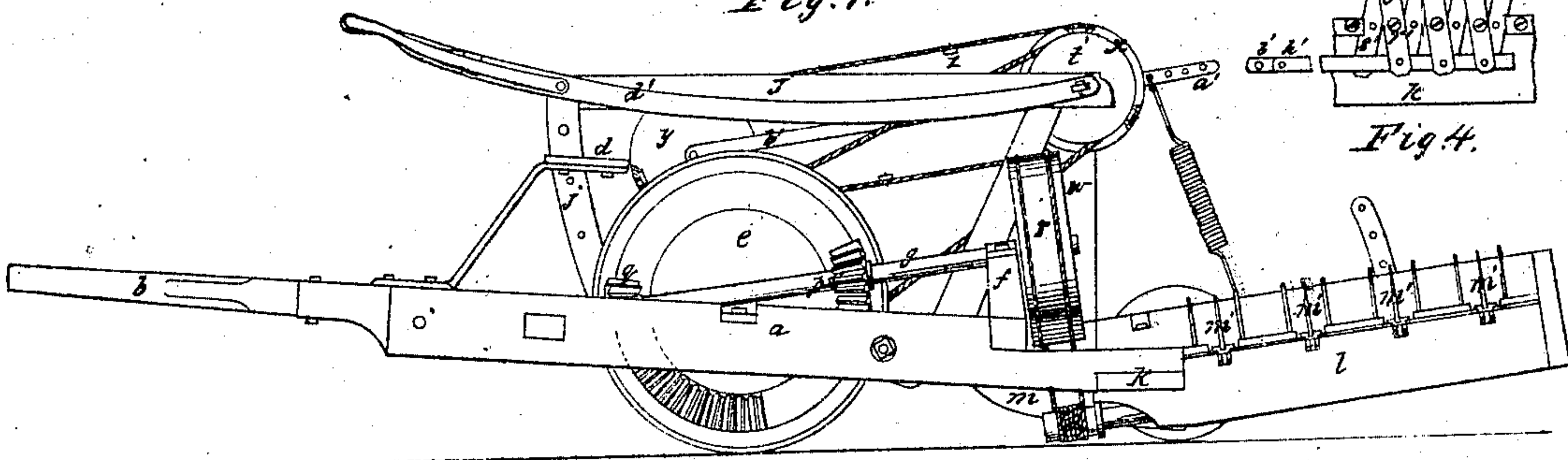
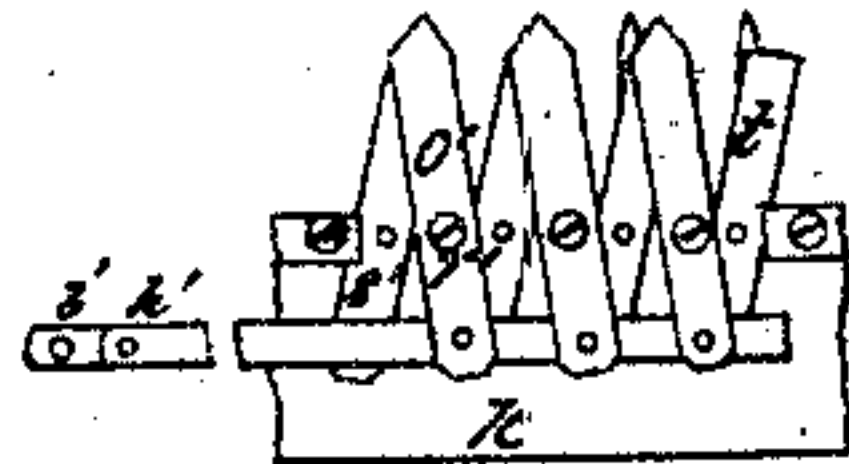


Fig. 4.



UNITED STATES PATENT OFFICE.

IRA REYNOLDS, OF REPUBLIC, OHIO.

IMPROVEMENT IN HARVESTERS.

Specification forming part of Letters Patent No. 11,086, dated June 13, 1854.

To all whom it may concern:

Be it known that I, IRA REYNOLDS, of the town of Republic, in the county of Seneca and State of Ohio, have invented certain new and useful Improvements in Reaping and Mowing Machines; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a left-hand side elevation. Fig. 2 is a top view. Fig. 3 is a perspective view of the under side of the receiving-platform. Fig. 4 is a top view of a portion of the cutting apparatus without the top plate. Fig. 5 is a bottom view of the same, showing the guards. Fig. 6 is a right-hand side elevation of a portion of the driving-wheel. Fig. 7 is a transverse section of the platform in the line 1 2, to show a rake-tooth and the opening between the arm and top plate.

The letters of reference refer to the same parts in the different figures wherever they occur.

The principal frame, *a*, of the machine may be made of wood or cast-iron of suitable strength and dimensions.

b is the pole attached to the frame-work by the rod *c*.

d is the driver's seat, which may be set on springs or otherwise.

f is a piece extending across and attached to the frame-work by bolts for the purpose of supporting the shaft *g* and attaching the levers *i i*.

j is a frame to support one side of the grain-gatherer, and fastened to the main frame *a* by bolts.

k is an iron arm secured by bolts to the frame *a*, and extends out on the right side of the machine a sufficient distance to secure the desired width of cutting apparatus. To this arm is attached the frame *l* of the receiving-platform *c'*, the guard *m*, and the front portion, *n*, of the platform *c'*.

The driving-wheel *e* is made of cast-iron, with its laterally-projecting rim formed in regular curves and beveled off, so as to form a thin edge. This wheel is secured to the shaft *d²*, which has its bearings on the right side of the frame *a*, and on a piece projecting inward from the opposite side of the frame depressed, so as to admit of the shaft *g* passing the cen-

ter of the wheel *e*. There is on the left side of this wheel a section of beveled cog-work, *o*, so arranged that when the wheel revolves it alternately gears into the bevel-pinions *p* and *q* upon the shaft *g*, and gives it and the drum *r*, fixed thereon, a rotary reciprocating motion with intervals of rest. There is also upon the shaft of the driving-wheel *e* a pulley, *s*, around which a cord, band, or chain is passed extending up and around the pulley *t*, which is secured to the cylinder-shaft *u* and forms the driving part of the grain-gatherer. The cylinder-shaft *u* revolves upon a rock-shaft, *v*. This shaft is supported on the left by the frame-work *j*, while the opposite end is supported by an upright, *w*, which is bolted to the guard *m*. There are also two other pulleys, *x*, fixed to the cylinder-shaft *u*, with notches in their peripheries to force the rotation of the slats *z* for the purpose of gathering the grain.

The rock-shaft *v* is formed with two arms, *a'* and *b'*, projecting forward, carrying at their extremities two other pulleys, *y y*, which are connected respectively with the pulleys *x x* by bands. The slats *z* cross from one of these bands to the other, and are attached thereto at equal distances and fall into the notches in the pulleys. The arm *a'* projects to the rear of the rock-shaft, and is connected with the platform *c'* by an adjustable spiral spring of sufficient strength to balance the grain-gatherer and partially support the platform *c'*, to which it is attached at its lower end. To the other end of the rock-shaft *v* is fixed a lever, *d'*, extending to the driver's seat and furnished with a spring latch or stop, which takes into holes in the frame *j*, constituting, with the before-described parts, an adjustable spring-balanced grain-gatherer, to be raised or lowered by the driver at pleasure to accommodate it to the grain in whatever position it may be, whether lodged or otherwise, catching the heads of the grain at the lowest point and gradually raising them as the machine advances, thus bringing the operation of gathering the grain entirely under the control of the driver.

The levers *i i* are placed longitudinally and work on one common fulcrum near their center. The forward portion of these levers are supplied with friction-rollers, and are connected by a vibrating lever, *e'*, the friction-rollers working upon the rim or edge of the regularly

curved or corrugated driving-wheel *e*. This edge is sharpened to prevent the accumulation of earth or other substances; or it may be made square and the friction-rollers brought to an edge for the same purpose. The rollers, being connected by the vibrating lever *e'*, move the levers *i i*, which, being pivoted at their other extremities to two bars, *h'* and *i'*, to which the double share-blades are attached, produce a transverse motion of the same. The vibrating lever *e'* is pivoted at its center to an arm, *g'*, projecting from the frame *a*. Another friction-roller supports the wheel *e* on the opposite side. Both of these can be dispensed with by working the levers *i i* with friction-rollers in a slot in the rim of the wheel with the same curvatures.

The double-edged share-blades or cutters *o'* and *s'* are made of steel of suitable size, a portion of their length being beveled off, so as to form keen cutting-edges on both sides at an angle from their inward surfaces, which are smooth and flat. These blades are arranged one above the other alternately, with their flat surfaces together. The lower portions, *s'*, are bent downward, so as to receive the bars *h'* and *i'* between them and the upper blades, *o'*. The blades *s'* are pivoted near their centers to the arm *k*, and at their rear ends to the reciprocating bar *i*, and pointed at their forward ends when used without the guards *v'*. Should they be used with the guards the pointed portion is cut off, leaving the blade slightly rounded, as seen at *t'*, Fig. 4.

The upper portions are left straight and flat on their inward surfaces, and made pointed at their forward ends, whether used with or without the guards. They are fitted down closely to the reciprocating bar *k'*, to which they are pivoted, and secured to the arm *k* by means of temper-screws *r'*, which depress and hold their several cutting-edges firm against the lower blades and act as fulcrums, upon which they turn. They also pass through and secure the guard-plate *w'* close to the top of the blades, thus securing them from the accumulation of any substances which may prevent their free action. Fig. 4 is a top view of a portion of the cutting apparatus, showing the blades with the plate *w'* detached. Fig. 5 is a bottom view, showing the guards or fenders *v'*, which are arranged under the centers of the lower blades.

The platform *c'* is made of strips of thin iron and plank secured to each other, and extend from one side of the frame-work *l* to the other, and are so arranged and secured thereto as to form channels for the rake-teeth *m'* to pass between them. The strips of plank, being narrower than the iron, leave flanges extending out beyond the plank, on which the tooth-carrier *l'* freely traverses. The front portion of this platform is secured to the arm *k* by means of screws or bolts which pass through the iron portion and guard-plate *w'*, as seen in Fig. 7; also through several short pillars, *f²*, as seen in the same figure. These pillars are intended

to support the guard-plate and keep it from the cutter-blades; also to keep the space in the rear of the cutter-blades open for the free egress of any substance which might otherwise accumulate. The guard *m* is firmly secured to the arm *k*, and forms a support for one end of the adjustable lever *x'*, which supports the carrying-wheel *z'*, which bears up the arm *k* and rear portion of the platform. There are small fenders *b²* attached to the frame *l* and the strips of the platform. They are intended to guide the grain as it falls upon the platform, thus leaving the space in rear of the teeth open and clear. The shield *y'* is for the protection of the frame *l*.

The carriers to which the rake-teeth *m'* are attached are made of cast-iron, with apertures in which the fulcrums of the teeth are placed. In front they have each a downward projection, which traverses between the iron portions of the platform, which act as guides. The upper portion rests upon them, and the carriers are held down by spring cross-pieces, which bear upon the underside of the platform.

The rake-teeth are made of iron and bent to an angle of about one hundred and thirty-five degrees at their fulcrums, where there are small heels resting on the carrier when the upper portion of the tooth is perpendicular. The lower portions of the teeth are connected below the platform with each other by a rod, *n'*, extending through holes in the lower ends thereof. To the rod *n'* are attached two cords, *c²*, wound in different directions round the rollers *o'* and *p'*, to which their ends are attached. There is also another cord, *e²*, wound round the rollers *o'* and *p'* in opposite directions to those attached to the rod *n'*. The drum *r* receives its rotary reciprocating motion from the driving-wheel *e* by the means before described, and moves the roller *o'*, which, by means of the cord *e²* and the cords *c²*, wound also round the roller *p'*, produces the motion in the rake which causes it to traverse from side to side of the receiving-platform. The peculiar shape of the teeth causes them, when drawn back by the rod *n'*, to be laid down in the channels of the platform and pass under the grain, and the reverse motion, which draws them forward, elevates them at the same time to a perpendicular position, thus carrying or pushing the grain off at the side of the platform. The reciprocating motions described above may be produced by gearing.

The operation of the machine is as follows when put in motion: The driver upon the seat *d*, by means of the lever *d'*, raises or depresses the forward part of the gatherer, according to the height of the grain. If any portion of it is lodged or bent forward, it lifts the heads by its slats, and gradually raises it to an upright position and deposits it when cut upon the platform. Another advantage of this gatherer is the great saving in leverage, by using radii of less length than those heretofore employed in the ordinary reel; and, also, the extension of the arm *a'* to

the rear not only balances the gatherer, but also supports a portion of the weight of the platform.

The double-edged shear blades or cutters, operated by the driving-wheel, which communicates a reciprocating motion to the bars to which the blades are pivoted, cut the grain, which then falls upon the platform. The reciprocating rake, advancing with its teeth elevated, clears the platform of the cut grain, and deposits it in bundles on the ground at the side of the machine, ready for the binder, and then returns with the teeth depressed to repeat the operation.

When used for mowing the gatherer, platform, and rake may be removed.

Having thus fully described my improvements, what I claim as my invention, and desire to secure by Letters Patent, is—

1. The arrangement of a double series of double-edged shear-blades supported at their rear ends by the reciprocating bars to which they are pivoted, and regulated by temper-screws, substantially as described, and for the purposes set forth.

2. The grain-gatherer, so arranged that its forward portion can be elevated or depressed from the driver's seat without stopping the machine, substantially in the manner and for the purposes set forth.

In testimony whereof I have hereunto subscribed my name this 30th day of January, 1854.

IRA REYNOLDS.

Witnesses:

CHAS. EVERETT,
A. DUVALL.