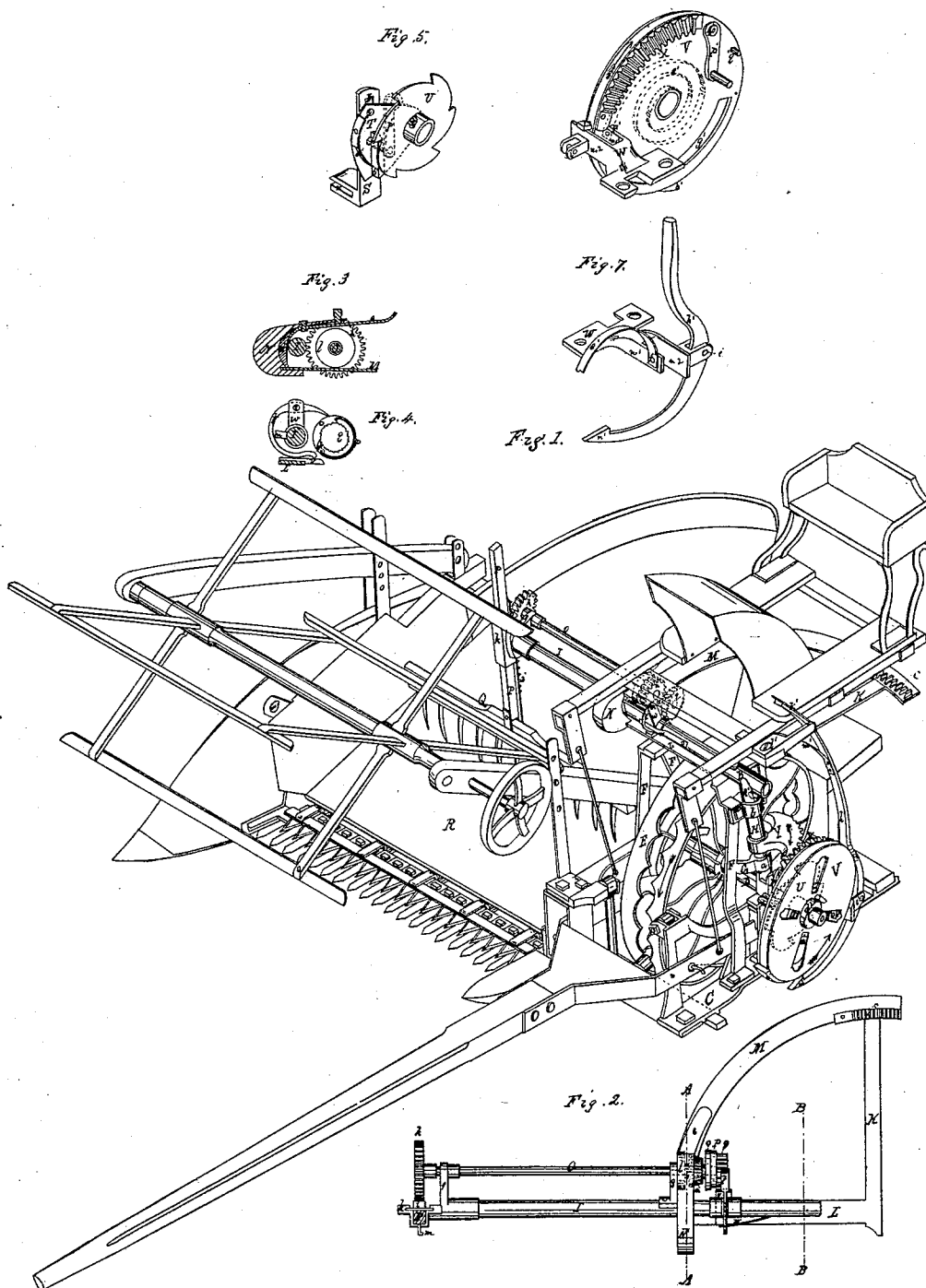


A. H. CARYL.  
 RAKING ATTACHMENT FOR REAPING MACHINES.  
 No. 18,188.  
 Patented Sept. 15, 1857.



# UNITED STATES PATENT OFFICE.

A. H. CARYL, OF SANDUSKY, OHIO.

## IMPROVED RAKING ATTACHMENT FOR REAPING-MACHINES.

Specification forming part of Letters Patent No. 18,188, dated September 15, 1857.

### *To all whom it may concern:*

Be it known that I, A. H. CARYL, of Sandusky, in the county of Erie and State of Ohio, have invented certain new and useful Improvements in Raking Attachments for Reaping-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a view of a reaping-machine with my improved rake attached; Fig. 2, a detail of a portion of the rake apparatus; Fig. 3, a section on the line A A of Fig. 2; Fig. 4, a section on the line B B of Fig. 2; Figs. 5, 6, 7, details to be referred to hereinafter.

In the said drawings, C is the frame of the machine, which is hung in suitable bearings on the shaft D of the main or driving wheel E. Attached to the frame C, and rising therefrom, are four standards, F, which carry the raking attachment. A brace, G, extends from one of the standards F to another one near the middle of their length. The middle of this brace G is formed into a step, a, for a vertical shaft, H, which has its upper bearing at b between the heads of this pair of standards F. Secured to the head of the shaft H is the horizontal shaft I. These shafts are connected in the following manner: A cap, A', fits on the head of the vertical shaft H, and can be moved up and down on it a short distance, and is secured thereto by a screw. Attached to the top of the cap A', and lying at right angles thereto, is a sleeve, B', into which fits the horizontal shaft I, which can be turned round in the sleeve, and is secured thereto by a pin passing through the sleeve into holes in the shaft.

Supported on the heads of the standards F is a flat bar, L, (see Fig. 2,) to one end of which is connected another bar, K, which extends out from it at right angles toward the rear part of the machine. The outer ends of these two bars are connected by the flat circular way M, forming a quadrant. On the outer end of the way M, over where it is attached to the bar K, is secured a short rack-bar, c. Attached to the other end of the way M is a block or stop, N, Fig. 3, against which the shaft I brings up when swung toward the front of the machine.

A cushion, d, of india-rubber, is attached to

the inner edge of the block N to relieve the concussion of the shaft I, and to check its speed as it is swung round before it strikes the block the latter has attached to its upper side an adjustable spring-brake, e. Secured to the shaft I, and projecting horizontally therefrom toward the back of the machine, are two arms, f and g, one near the end and the other near the middle of the length of the shaft. These arms carry in bearings at their outer ends a smaller shaft, O, to the outer end of which, beyond the arm f, is attached a cog-wheel, h, which engages with a rack, i, on the face of a bar, P, which slides up and down longitudinally in a box, K, attached to the outer end of the shaft I. The plate to which the rack i is attached projects on each side of the bar P, and enters grooves in the side of the box K, as seen in Fig. 2, and serves to steady the motion of the bar. A pin, m, regulates the distance to which the bar P shall descend. To the lower end of this bar is attached, by the middle of its length, the rake Q, the longer axis of which is in the same plane as the axis of the shaft I. The pin m is so placed that the points of the rake-teeth may descend to within a very short distance of the table R, on which the cut grain falls.

On the shaft O, near its bearing in the arm g, is a roller, l, Figs. 2 and 3, which revolves on the shaft and traverses on the way M. As the shaft I is swung toward the block N the roller l is pressed between the spring-brake e and the way M, and the motion of the shaft is checked before it strikes the block. Alongside of the roller l there is running on the shaft O a pinion-wheel, n, Fig. 2, of a little less diameter than the roller, which, as the shaft I is swung toward the back of the machine, rises onto and engages with the short rack c. This pinion n, when traversing the rack c, toward the outer end of it, is clutched with the shaft O in the following manner:

Secured to the pinion n is a disk, o, to the outside of which is pivoted a dog, r, which is held by its spring p in contact with a ratchet-wheel q, secured to the end of the shaft O. By this arrangement, as the pinion is revolved, as above mentioned, it revolves the shaft O, and through the cog-wheel h and rack i lifts the rake up vertically, or nearly so, clear of the grain. When the pinion n has reached the

outer end of the rack *c*, and the shaft I, with its attachments, is required to be swung back again, as will be hereinafter explained, the ratchet-wheel *q* is held by the dog *t*, pivoted at S to a short standard, *w*, attached to the shaft I, Fig. 4, a spring, *u*, attached to the shaft I, serving to keep the dog in contact with the wheel. Thus the shaft O is prevented from revolving, and the pinion *n* is allowed to revolve on the shaft as the pinion passes over the rack *c* on its return from the end of it. As the shaft O is held and prevented from turning, the rake will be held up and carried back toward the front of the machine as the shaft I swings round toward the block N. Just before it strikes this block the foot of the dog *t* strikes on a block, *v*, on the bar L, and the dog is lifted out of the ratchet-wheel *q*, (see Fig. 4,) when the shaft O is free to revolve, and the weight of the rake causes it to descend into the position seen in Fig. 1, ready to sweep the grain off the table.

The manner in which the vertical shaft H is revolved a quarter-turn, or thereabout, and the shaft I is swung round, will now be explained. Attached to and rising vertically from the frame C is a short adjustable standard, S, Fig. 5, the foot of which is formed with a slit, *x*, which embraces the frame C. A flat quadrant-shaped piece, T, is hung upon the main shaft D, the shaft turning freely in it. A screw-pin, *y*, with a nut, passes through a slot, *z*, in the standard S, and secures the piece T in position. This slot and the sliding of the standards S in the frame C allows the piece T to be adjusted as required. Near the outer edge of the piece T is secured to its face a curved spring, *a'*, and a little farther in from its edge is a block, *b'*.

Secured to the shaft D is a ratchet-wheel, U, Fig. 5, and dotted in Fig. 1, which revolves with the shaft, bearing against a shoulder and against the block *b'*. A screw, *c'*, passing through the hub of the wheel U secures it to the shaft D. Adjoining the wheel U, and hanging loosely on the shaft D, is a box-wheel, V, Fig. 1, and detached in Fig. 6, which runs in contact with the hub of the wheel U, and is retained in place by the sleeve *d'*, which is attached to the shaft by a screw. The wheel V, which is hollow or formed like a box, contains a coiled spring, *e'*, Fig. 1, and dotted in Fig. 6, the inner end of which is secured to the hub of the wheel, and the other end at *f'* to a piece, W, (detached in Fig. 7,) which is secured to the frame C by suitable screws. This piece extends laterally from the frame C, and is forked at its outer end into two parts, Nos. 1 and 2, the former of which enters a circular slot, *g'*, in the inner face of the box-wheel V, and has attached to it at *f'* one end of the spring *e'*. Thus as the wheel is revolved in the direction of the arrow the spring is wound up.

Pivoted at *i'* to the part 2 of the fork of the piece W is a long bent lever, *h'*, the longer arm of which extends up within reach of the driv-

er's foot. It is widened out at this end at *h'* to accommodate the foot, and is steadied in a forked arm, *l'*, attached to the upper part of the frame of the machine. A spring, *m'*, throws out this end of the lever, and keeps the other end in contact with the periphery of the wheel V. The lower end of the lever *h'* is furnished with a hook, *n'*, which catches a stop, *o'*, secured to the edge of the wheel V, and retains the wheel against the resistance of its spring *e'* after it has been wound up, as will be explained. Pivoted to the inner face of the wheel V at *r'* is a pendent dog, *p'*, which vibrates freely in a plane parallel to the face of the wheel. The lower end of this dog *p'* is bent out at right angles, and rests upon and engages with the ratchet-wheel U, as seen in red, Fig. 5. A pin, *q'*, on the face of the wheel V prevents it from swinging out too far.

A beveled cogged segment, X, on the inner face of the wheel V engages with another beveled cogged segment on an arm, Y, secured to the vertical shaft H. Thus as the wheel V revolves the shaft H is caused to turn in its bearings.

The manner in which the reach of the rake toward the front of the machine is adjusted will now be explained.

When it is desired to incline the box K at the end of the shaft I, so that the bar P, as it slides through the box, shall descend in a line inclined to the perpendicular, the shaft I is turned a short distance in the sleeve B', and is secured by the pin passing through the sleeve into the shaft. As turning the shaft I raises or lowers the shaft O and parts connected therewith, it becomes necessary to alter the height of the shaft I above the plate L, that the roller *l* may be kept in contact with the curved way M. This is adjusted by means of the movable cap A' on the top of the vertical shaft H.

Operation: The parts being in the position seen in Fig. 1, as the main or driving wheel E revolves in the direction of its arrow when the machine is being drawn along, a tooth of the ratchet-wheel V, which is fast to the main shaft D, catches the dog *p'*, and carries it round between the wheel U and the curved spring *a'* on the stationary piece T, revolving the wheel V about a quarter-turn and winding up the spring *e'*, when the stop *o'* is caught by the hook *n'* on the end of the lever *h'*, and the dog *p'*, being forced out from under the tooth of the wheel U by the block *b'*, escapes from under the end of the curved spring *a'*, and the ratchet-wheel U revolves without turning the wheel V, which is loose on the shaft D. The adjustment of the piece T regulates the length of time that the dog *p'* shall be kept in contact with the wheel U, and consequently the distance that the wheel V shall be revolved. As the wheel V is turned in the direction of its arrow it revolves (by the connection of the cogged segments) the shaft H, which swings round the shaft I, attached to the head of it, the roller *l* running on the way M. By this movement of

the shaft I the rake Q, pendent from the outer end of it, sweeps the cut grain back off the table R and leaves it on the ground in the required position behind the machine. When the shaft I has swept over an arc of nearly ninety degrees the cog-wheel *n* is turned by the rack *c* on the way M, and, as before explained, when the wheel *n* is turned in this direction it is locked with the shaft O. The latter is caused to revolve a distance proportionate to the length of the rack *c*, and, through the cog-wheel *h* and rack *i*, the rake Q is lifted up vertically, or nearly so, clear of the grain which it has just swept off the table. The dog *t*, engaging the ratchet *q* on the end of the shaft O, prevents it from turning in the opposite direction, and holds the rake suspended while the shaft I is being swung back toward the front of the machine, the cog-wheel *n* turning freely on the shaft O when passing in this direction over the rack *c*. After the rake has swept the grain off the table and it is lifted up out of the grain, as explained, the wheel V being locked by the lever *h'*, the machine proceeds until sufficient cut grain has fallen on the table R to make another gavel or bunch for binding, when the driver presses with his foot on the end K' of the lever *h'* and sets free the wheel V, when by the uncoiling of the spring *e'* the wheel is turned in the direction opposite to that indicated by its arrow, and swings back the shaft I toward the block N on the end of the way M. The instant before this shaft strikes against the rubber cushion *d* on the block N the dog *t* is tripped by the block *v*, and the shaft O being set free, the weight of the rake Q causes it to descend, its rod P sliding in the box *k* until arrested by the pin *m* in the rod, which pin supports the rake suspended with its teeth within a short distance of the table R. The brake *e* retards the latter part of the swing of the shaft I, and graduates the force with which it strikes the block N. When the wheel V is being turned back by its spring *e'* the bent end of the dog *p'* is carried upon the outside of the curved spring *a'* out of the way of the teeth of the ratchet-wheel U, until the shaft I brings up against the block N, when the dog *p'* again swings into contact with the wheel U and is caught by one of its teeth, and the rake is again swept over the table.

When the machine is intended to be operated in grain the straw of which is shorter than usual the reach of the rake is adjusted by turning the shaft I, as before explained, so that the bar P descends in a line inclined to the vertical and reaches the rake out nearer to the front of the table R, the pin *m* in the bar P being adjusted to allow the rake-teeth to descend near enough to the table. If, on the contrary, the straw is longer than usual, the bar P may be similarly inclined in the opposite direction.

It will be seen that by the above arrangement of parts I place the movements of the rake entirely under the control of the driver, who can keep it suspended at the back of the machine until a quantity of cut grain has fallen on the table sufficient to make a gavel of a required and uniform size, without reference to the thickness of the standing grain through which the machine may be cutting, when by simply pressing his foot on the treadle *h'* the cut grain will be swept off and laid smoothly behind the machine, the rake leaving it without scattering or tangling the grain in the least; or, if it is preferred to lay the grain in a continuous or nearly continuous swath in the path of the machine, the driver need only hold down the treadle *h'*, when the hook *n'* at the other end of the lever *h'* will not detain the wheel V, and the vibratory motion of the rake will be regular and rapid, effecting this end, and by the adjustment of the reach of the rake the machine can be made to work equally well in either long or short straw.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. Raising the rake in the plane in which it is inclined by means of the devices above described, for the purpose specified.
2. Operating the raking attachment back and forth over the platform by means of the mechanism substantially as herein set forth.
3. Inclining the rake from a vertical plane to correspond with the length of the grain being cut by means of the devices herein described.

A. H. CARYL.

Witnesses:

P. E. TESCHEMACHER,  
THOS. R. ROACH.