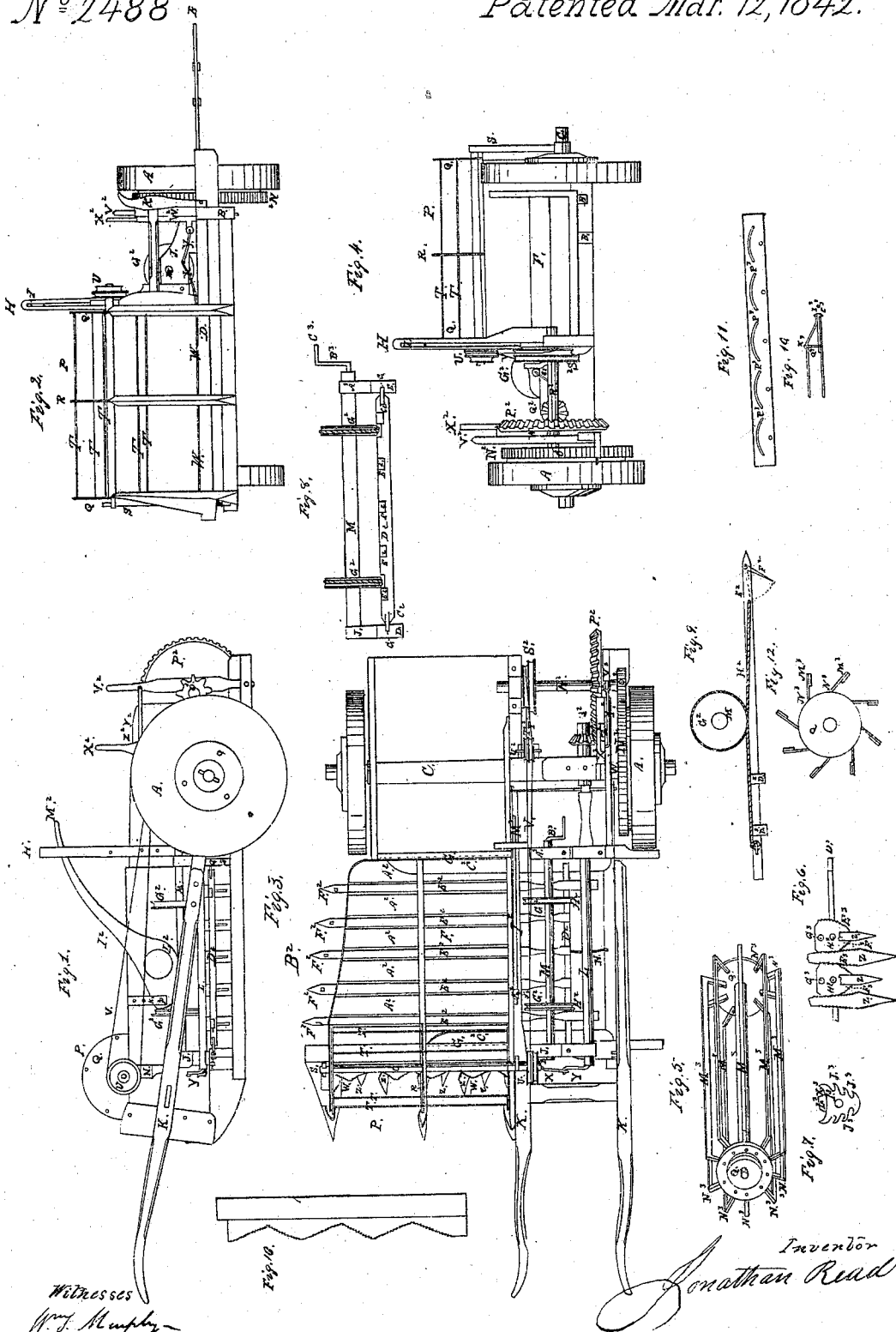


Harvester Rake.

N^o 2488

Patented Mar. 12, 1842.



Witnesses
W. J. Murphy -
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UNITED STATES PATENT OFFICE.

JONATHAN READ, OF NEW YORK, N. Y.

IMPROVEMENT IN REAPING-MACHINES.

Specification forming part of Letters Patent No. 2,488, dated March 12, 1842.

To all whom it may concern:

Be it known that I, JONATHAN READ, of the city, county, and State of New York, have invented a new and useful Improvement for Reaping; and I do hereby declare that the following is a full and exact description thereof.

This invention is called "Read's horse-power reaper."

The nature of it consists in a cutter or cutters of peculiar shapes, with sickle-teeth upon the cutting-edges. These cutters are vibrated by means of a crank, acted on through a shaft by one of the supporting-wheels of the carriage, and cut the grain as they are drawn forward against it.

To enable others to make and use my invention, I will proceed to describe its construction and operation, reference being had to the drawings hereunto annexed and forming a part of this specification.

This machine is moved, like an ordinary cart, on two wheels, which are placed back of the center to give room for the grain, when cut, to fall into the bed of the machine, as hereinafter described. The machinery is driven by gearing attached to the rear supporting-wheel, A. Several longitudinal bars, B B B, are placed beneath the bed of the machine, and extend from behind the axle C front to the front cross-bar, D. These bars are parallel with each other, and are used as supports for the machinery above them. The front cross-bar, D, is placed at the front end of the machine and runs across it. The axle C is placed near the back end of the machine. At a short distance in front of the axle is an upright plank, E, which runs parallel with the axle and the front cross-bar, D. This plank is twelve to eighteen inches high, and stands upon its edge. The intermediate distance between the plank and the front cross-bar is occupied by the bed of the machine and the rake. On the inner side of the front cross-bar, and on the front side of the plank, are grooves G G, extending entirely across the machine, and in these grooves the slides of the rake work, as hereinafter described.

The bed F is formed by slats A² A² A² A² A², running across the bottom of the machine, immediately under the rake B², with small spaces between them, in which the fingers of the rake pass when drawing the grain off. The bed is sufficiently wide to admit the longest

grain when cut. Where the near side of the bed F and the plank E come together is an upright standard, H, having a slot, I, in it, in which slot is placed the handle end of the regulating-lever I², hereinafter described.

On the front cross-bar is a block, J, that is placed between the horse-shafts K K. The rear end of this block holds the forward end of the cutter-shaft L, and the other end of the block holds the front end of the rake-shaft M. To the off end of this block is attached the lower end of the upright standard N, which, at about half its height, extends over the off-horse shaft, and is attached to the near side of the bed. From this point it continues sufficiently above the side of the bed to admit and hold the near end of the shaft O of the creel P. The standard N by extending over the off-horse shaft leaves room between the lower part of it and the side of the bed for the said horse-shaft to rise and fall as required by the regulating-lever I², hereinafter described.

The creel P, Figures 1, 2, 3, and 4, is made with two heads, Q Q, and one or more central disks, R, with the shaft O running through the whole. The near end of this shaft is held, as already described, and its off end is held by a standard, S. This last standard is fastened to the off side of the bed, and its lower end is attached to the off end of the front cross-bar beyond the off side of the bed. Several wires, T T T T, pass from one head of the creel through the disk to the other head, and are intended to draw the grain in upon the cutter. They may run straight across the machine, as represented in the drawings, or may be placed diagonally from the heads to the disk, bearing outward. The near end of the creel-shaft O runs through the standard N on the block J, and to this end of the shaft is attached a pulley, U, over which runs a band, V, connected with the back gearing, hereinafter described, and by which the creel P is turned.

The cutter W is one piece of plate-steel, lying flat on the front cross-bar, D. The front edge of this cutter presents long and shallow indentations or waves. These indentations have sickle-teeth direct and reverse on each other angle or side of the indentations, so that each side cuts the grain when drawn against it. The cutter lies directly across the front end of the machine from the off-horse shaft to the off side of the bed. The indentations are four

times as long as they are deep. There is an arm or pitman, X, attached to the near end of the cutter. The pitman connects with the cutter-crank Y, which last is on the front end of the cutter-shaft L. The crank and pitman are of the ordinary construction, and through them the vibrating motion is given to the cutter.

The shoulders or partitions Z Z Z Z Z, though represented in Fig. 3, may be more clearly understood from Fig. 6. They are projections of different lengths, some six inches and others twelve inches in length. The back ends of these shoulders are set in and fastened on the top of the first cross-bar below the cutter, and the front and pointed ends extend forward to divide the grain as it comes to the cutter. These shoulders are of plate-steel, and on either side are provided with notches or saw-teeth that hold the grain while it is cut.

The rake B² may be clearly understood by reference to Fig. 8. It is formed of two wide pieces of thin wood, to be used as slides, C² C². These slides are connected by two bars of wood, D² D², (only one of which is seen in the drawings,) running lengthwise of the machine. From these bars five or more arms, E² E² E² E² E², extend over the bed. On the extended end of each arm is a finger, F² F² F² F² F², Fig. 9. The extreme edges of the slides pass into the grooves G G, Fig. 8, in the front cross-bar, D, and the plank E, Fig. 8, and the wood of these slides must be of sufficient strength to sustain the rake. The fingers are held by a bolt through the ends of each arm, and allowed to hang loosely, though so secured that they never can form an angle of more than forty-five degrees with the arms outward, though they may double up quite close to the arms inward from the ends to which they are attached. These fingers have this play so that (as will be seen and understood by reference to Fig. 9) when the rake is passed in they give to the grain that is on the bed and pass over it. The extended ends of the arms pass far enough beyond or through the off side of the bed as to allow these fingers to drop down when in passing the rake in they get beyond the grain. Having reached this point and fallen, they remain at an angle of about forty-five degrees, and as the rake is drawn out they hold and bring out the grain on the bed of the machine. As the rake is drawn out, when the grain reaches the near side of the bed, it falls in a bundle to the ground directly behind the horse and inside of the near wheel, where it remains, ready for the binder.

Reference to Fig. 9 will explain the manner in which the rake is controlled. Here G² is one of the pulleys (both of which, G² G², may be seen in Fig. 8 more distinctly as to position) that move the rake. A band, H², passes round the pulleys, crossing under it. One end of this band is attached to the near end of the rake, and the other end is fastened to one of the arms near the finger. In this figure (9) may also be seen the finger as it hangs down at an angle of forty-five degrees, the dotted lines show-

ing the manner in which it doubles up when the rake is run into the bed over the grain. The two bands H² H² may be seen more clearly in Fig. 8. The pulleys G² G² are placed on the rake-shaft M, one end of which is in the block J, already described, and the back end of which is in the back upright plank, E, mentioned above. This shaft lies between the thills or horse-shafts K K, and back of the horse.

The regulating-lever I² is used for raising or depressing the front end of the machine, so as to make the cutter W strike the grain at any given distance from the ground, as described below. The front end of this lever (which may be clearly seen by reference to Fig. 1) is attached to the near side of the bed by a pin, J², and hasp K², and works free. On the under side of this lever, and near the front end, is a shoulder, L², that rests on the off shaft. The other end or handle, M², of the lever runs through a standard, H, already described. Holes are made in this standard to receive a movable pin that holds the handle at any given point. The horse-shafts are only fast at their back extremity near the axle. By depressing the handle of the lever the shoulder is forced down upon the off-horse shaft, and the bed, cutter, and rake all raised together, while by raising the handle of the lever all these are depressed, the pressure of the shoulder on the shaft being taken off. The shafts can so hang on the horse as to bring the cutter within eight or nine inches of the ground, and the regulating-lever may at any moment increase this distance to two feet or more, if required.

The near main or driving wheel A is permanently connected with a large cog-wheel, N², which is on its inside. This cog-wheel drives a small pinion, O². On the same shaft with this pinion is a large bevel cog-wheel, P², that works into a small bevel-pinion, Q², on the back end of the cutter-shaft L. The shaft R² of the first pinion extends crosswise of the machine, and near its off end is a pulley, S², connected by the cord or band V with the pulley U on the near end of the reel-shaft O. The cord or band V passes over two small friction-rollers, T² T², that are held in an upright standard, U², attached to the axle C and on a line between the said two pulleys. The near end of the first pinion-shaft, R², passes through an upright standard, V², attached at the lower end and behind the driving-wheel, to the near longitudinal sill B. Above this sill is a short rave, W², and on the inside of it is attached the lower end of another upright standard, X², passing through a groove in the rave. The upper ends of these last standards, V² and X², are connected by a small connecting-bar, Y², and they are used for throwing the machine in or out of gear. There is a small wedge, Z², which fits in the groove of the rave on either side of the standard X². To throw the machine into gear, the upper end of the standard X² is pressed forward. This draws the standard V² forward so that the small pinion is brought into the cogs of the large cog-wheel,

and by placing the wedge Z^2 back of the stand X^2 the whole machine is held in gear.

The back end of the rake-shaft M is held by a bearing and cap A^3 on the back cross-plank, E , and to the end of this shaft, beyond the bearing, is attached a crank, B^3 , and handle, C^3 , which the conductor turns to throw the rake in or out.

During the past summer I have had a large machine in the harvest-field, which operated to the entire satisfaction of a number of respectable witnesses; and as that differed in some respects from the present model, I deem it necessary, in accordance with the sixth section of the act of Congress of 1836, to state these differences, although they are fully marked in the drawings accompanying this specification. On the large machine, instead of one vibrating cutter, I have one vibrating bar, D^3 , Fig. 6, to which a number of small cutters, E^3 E^3 , Fig. 6, are attached, each made of plate-steel and nearly in the shape of a heart, the points being presented to the grain. Both sides of these cutters are sharp, with sickle-teeth F^3 F^3 reversed or cutting backward. The back of each cutter is fastened to the top of the front cross-bar, D , by a bolt, G^3 , on which it plays freely. A little forward of the center of each cutter is another bolt, H^3 , connected with the vibrating bar D^3 , also playing freely. As the bar D^3 vibrates the points of these small cutters E^3 E^3 are thrown to and fro, cutting the grain against the shoulders Z Z Z . The distance between the bolt H^3 and G^3 is sufficient to allow the points of the cutters to play nearly twice as far as the vibrating bar D^3 moves. A flat plate, O^3 , of thin iron rests on the cutters, and is permanently attached to the top of the front cross-bar, D . (This plate is better seen in Fig. 11.) Above each cutter a semicircular slot, P^3 , Fig. 11, is cut through the iron plate. A small iron stud, Q^3 , Fig. 10, is permanently fastened to the top of each cutter, and extends up a short distance above the iron plate through each slot.

On the top of each stud is a clearing-plate, Fig. 7, I^3 , of the same size as the cutter E^3 , Fig. 6, but having deep circular notches J^3 , Fig. 7, on each side curved backward from the point. The back of each clearing-plate beyond the notches at K^3 , Fig. 7, is bent down, so that the back end is held by the same bolt that holds the back of each cutter, passing through the bolt-hole L^3 , Fig. 7. By this arrangement the clearing-plates move with the cutters and throw the butts of the grain back onto the bed F of the machine, keeping the cutters always clear of the falling grain.

The creel P , instead of being formed with wires, as represented in the model and Figs. 1, 2, 3, and 4 of the drawings, is constructed, as represented in Figs. 5 and 12, with floats M^3 . From the periphery of each head Q extend a number of arms, N^3 , straight, as in Fig. 5, or forming an angle of not more than twenty-two degrees with a line drawn through the center of each head, as represented in Fig. 12,

and these arms lean down and forward. On the ends of these arms are placed the floats M^3 , of thin wood or other suitable material, extending the whole length of the creel, and wide enough to draw in the grain.

Operation: The machine being thrown into gear, and drawn forward by horse or other power, the large cog-wheel N^2 drives the small pinion O^2 with its shaft R^2 and the large bevel cog-wheel P^2 . This last works the bevel-pinion Q^2 and the cutter-shaft L , while the crank Y on the front end of the cutter-shaft gives a vibrating motion to the cutter W . The pulley S^2 on the small pinion-shaft R^2 starts the cord or band V , and this, passing over the pulley U of the creel-shaft, gives a motion to the creel P which draws the heads of the grain down, bringing them to a closer contact with the cutter, which latter cuts the grain that falls lengthwise into the bed F . When a sufficient quantity of grain has fallen upon the bed the conductor turns the handle C^3 of the crank B^3 of the rake-shaft M , and the cords H^2 H^2 of the rake-pulleys G^2 G^2 bring out the rake B^2 , while the fingers F^2 of the rake, having dropped down from the arms E^2 , draw out all the grain from the bed, dropping it on the ground behind the horse. The conductor then reverses the motion of the crank B^3 , when sufficient grain has fallen into the bed to make a bundle, throws the rake again across the bed, the fingers F^2 shutting up and passing over the grain until they get beyond it, when they again drop down, and the rake is ready for a fresh operation.

In the drawings, Fig. 1 is a view of the near or working side of the machine. Fig. 2 is a front view of the same; Fig. 3, view of the same from above; Fig. 4, a back view; Fig. 5, view of the fan-creel as operated in the field. Fig. 6 represents the cutters of the large machine with their bolt-holes, vibrating bar, and long and short shoulders; Fig. 7, clearing-plate with its bolt-holes and notches; Fig. 8, a sectional view of the rake, with its slides, shaft, and grooves in the front cross-bar and back upright plank; Fig. 9, another view of the rake with the arm extended, and showing the manner in which the fingers rise and fall, also the manner in which the cord passes over the pulley. Fig. 10 shows one of the small cutters and one of the clearing-plates, with the iron plate above the cutter. The drawing shows the manner in which all these are connected by one bolt behind, and the small stud Q^3 passing through the iron plate, and attached to the cutter below and the clearing-plate above; Fig. 11, the iron plate between the cutters and clearers, with its slots P^3 ; Fig. 12, one head of the fan-creel, showing the positions of the arms and floats; Fig. 13, the cutter as represented generally in the drawings and seen in the model, being one cast-steel plate with indentations and sickle-teeth.

A is the near supporting and driving wheel; B B , the longitudinal bars; C , the axle; D , the front cross-bar; E , upright cross-plank;

F, the bed; G G, grooves for slides of the rake; H, upright standard with slot I, through which the handle of the regulating-lever passes; J, block that holds the near ends of cutter and rake shafts L and M; K K, horse shafts or thills; L, cutter-shaft; M, rake-shaft; N, upright standard that holds the near end of creel-shaft O; P, creel; Q Q, heads of the creel; R, disk of the creel; S, standard on the off end of cross-bar D, that holds the off end of creel-shaft; T T T T, wires of the creel; U, pulley of the creel; V, band that carries the creel running over pulleys U and S²; W, the cutter; X, pitman of cutter with its crank Y; Z Z Z Z Z, shoulders attached to the front cross-bar, running into and dividing the grain; A² A² A² A² A², slats running across the bottom of the machine on the longitudinal bars B B, and forming the bed; B², rake; C² C², slides of the rake; D² D², bars of the rake connecting the slides, and from which extend the arms E² E² E² E² E² of the rake. These bars can be seen by referring to Fig. 9. F² F² F² F² F², fingers of the rake at the ends of the arms, (see Fig. 9;) G² G², pulleys of the rake with their bands H² H²; I², regulating-lever with its pin J² and hasp K²; L², shoulder of the regulating-lever; M², handle of said lever, passing through slot I of upright standard H; N², large cog-wheel fastened on inside of driving-wheel A; O², pinion working into large cog-wheel N²; P², large bevel-cog wheel with its bevel-pinion Q² on back of cutter-shaft L; R², shaft of pinion O² with its pulley S²; T² T², friction-rollers over which passes band V of the creel; U², standard to hold the friction-rollers; V², movable standard attached to the near longitudinal bar B, and holding the near end of the pinion-shaft R²; W², rave on near end of longitudinal bar B; X², movable standard passing through the groove of the rave W² and attached to the inside of said rave; Y², bar connecting standards V² and X², by which the machine is thrown in or out of gear; Z², wedge fitting either side of standard V² to

hold the machine in or out of gear; A³, cap overbearing on back plank, E, to hold the back end of rake-shaft M; B³, crank of rake-shaft with its handle C³; D³, vibrating bar, (see Fig. 6;) E³ E³, small cutters on the large machine, (see Fig. 6;) F³ F³, sickle-teeth on sides of cutters, Fig. 6; G³ G³, bolts on the back of the above small cutters; H³ H³, bolts where the small cutters are connected with the vibrating bar D³; I³, Fig. 7, clearing-plate with its circular notches J³ J³ J³; K³, spot where the clearing-plate bends down to join the cutters below. This spot may be better seen in Fig. 10. L³, hole in the bent part of clearing-plate to fasten it to the cutters, (see Fig. 10;) M³, floats of fan-creel, (seen clearly in Figs. 5 and 12;) N³, arms of fan-creel, (seen also in Figs. 5 and 12 more clearly;) O³, Fig. 11, iron plate over the cutters with its slots P³ P³ in which play and through which pass the small iron studs Q³ Q³, connecting the cutters below with the clearing-plates above.

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

1. The construction of the vibrating cutters with serrated edges, whether said cutters be connected together so as to form a vibrating bar or be placed separately on a bar of this kind, as set forth, in combination with stationary teeth or blades serrated in a similar manner and arranged below the former, as described.

2. The mode of constructing the rake and combining it with the bed of the machine by forming it with pointed fingers on the ends of the arms and arranging the fingers in spaces formed in the bed, as set forth.

3. The manner of discharging the grain from the bed by means of said rake and in the manner already described.

JONATHAN READ.

Witnesses:

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