(Model.)

O. O. STORLE.

AUTOMATIC TRIP FOR HARVESTER RAKES.

No. 266,063. Patented Oct. 17, 1882.

Fig. 1.

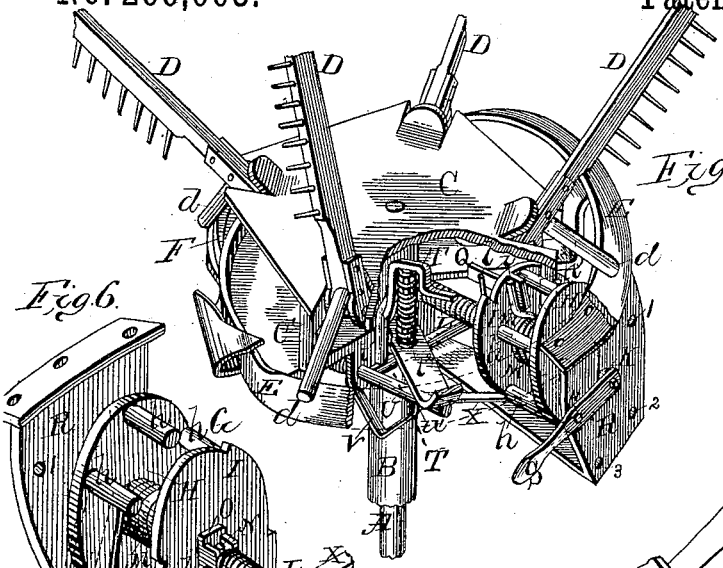


Fig. 6.

Fig. 3.

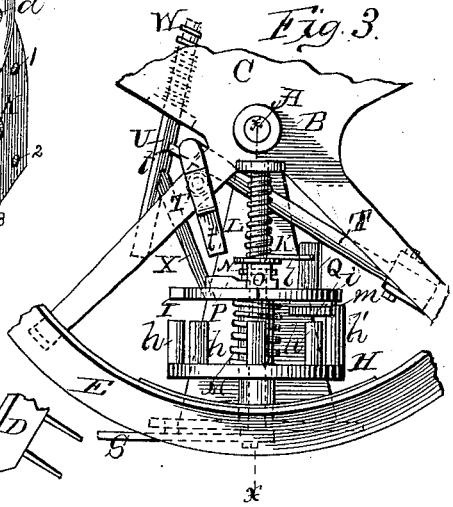


Fig. 2.

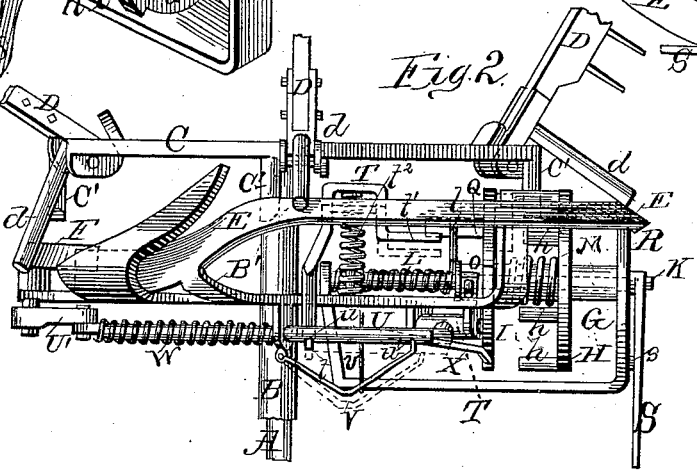


Fig. 4.

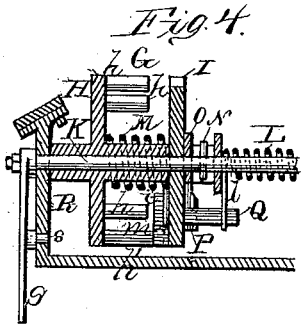
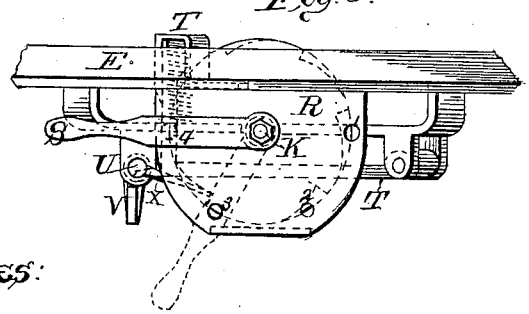


Fig. 5.



Witnesses:
E. L. Asmus
Henry Dawson

Inventor:
Ole O. Storle
By Stout & Underwood
Attorneys:

UNITED STATES PATENT OFFICE.

OLE O. STORLE, OF MILWAUKEE, WISCONSIN.

AUTOMATIC TRIP FOR HARVESTER-RAKES.

SPECIFICATION forming part of Letters Patent No. 266,063, dated October 17, 1882.

Application filed October 18, 1881. (Model.)

To all whom it may concern:

Be it known that I, OLE O. STORLE, of Milwaukee, in the county of Milwaukee, and in the State of Wisconsin, have invented certain new and useful Improvements in Automatic Trips for Harvester-Rakes; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to an improvement in automatic trips for harvester-rakes; and it consists in certain details of construction more fully set forth hereinafter.

In the drawings, Figure 1 is a perspective view of a portion of a rake, partly broken away, showing my improved device in proper position. Fig. 2 is a side elevation of the same. Fig. 3 is a partial top view with the rake-head removed. Fig. 4 is a section of the tripping device. Fig. 5 is a front view of the face-plate of the trip, and Fig. 6 is a perspective of the tripping device from the center of the rake.

The object of my invention is to secure a proper size to the bundles of grain preparatory to binding, which are collected upon the platform of a reaper to which my rake is attached in the usual way; and this I accomplish by means of an adjustable tripping device, whereby the machine may be adapted to rake off with every third, fourth, fifth, or sixth arm by simply shifting a lever from one point to another on the face-plate of the trip, which will diminish or increase the frequency of the tripping, and consequently vary the number of arms that pass the trip between each raking off, all as hereinafter clearly specified.

A represents the shaft by which power is communicated to the rakes, which shaft revolves within the sleeve B, that serves as a support for the track and the operating mechanism of my device.

C is the rake-head, and D D the rake-arms, with the usual projections, *d d*, (ordinarily provided with rollers at their ends,) to move along the track E and operate the switch F, all as well known in machines of this class.

From the sleeve B extend various plates or branches, (either cast solid with or attached to it,) forming a frame, which serves, as stated, to support the track and the tripping mechanism. The tripping device G is attached to this frame and operated by the revolving of the rake-head. The said device consists, primarily, of a pin-wheel, H, and notched wheel I, connected by a shaft, K, supported by a frame, and held in position and thrown back in place after each operation by the spring L *l*, as hereinafter described.

Between the spring L *l* and the wheel I the shaft is provided with a pin or stop, N, and surrounded by a housing, O, open at opposite sides to permit the pin to pass through, which openings are large enough to give sufficient play for the pin-wheel H to make an entire revolution, if desired. This housing has a projection, P, and the wheel I has a projection, Q, and when the spring L *l* throws back the wheel I the projection on the latter strikes against the projection P on the housing and carries the housing back against the pin or stop N on the shaft, stopping its progress backward.

The outer end of the shaft K projects through a face-plate, R, and is connected to the lever S, and the latter has an inward projection, *s*, adapted to fit into holes 1, 2, 3, and 4 in the face-plate. The pin-wheel H has a number of pins on its inner face, six being here shown, five of which are marked *h*, and are shorter than one marked *h'*, which latter is adapted to strike against a stop, *i*, on the inner side of the wheel I, while the other or shorter pins clear it. The wheel I has, in the illustration shown, five notches, or one less than the number of pins on the pin-wheel.

T represents a latch, which consists of a bent arm hinged to the frame and brought around so as to latch a bolt, U, when the rake is gathering a bundle, and to be unlatched by the operation of the trip. The bolt U is hinged by an arm, U', to the switch F, and controlled by a spring, W, and has a projecting pawl, X, at its free end, which engages with the notched wheel I and keeps it from flying back by the force of the spring L *l* until freed by the release of the bolt U.

I have shown the latch T with a projection, *t*, which fits into a groove, *u*, in the bolt U, and having its free end bent over, so as to form another projection, *t'*, which encounters the projection Q on wheel I, and is thus depressed, freeing the bolt U, when it may be restored to its original position by aid of a spring, t^2. The bolt U has another groove, *u'*, and an addi-

tional latch, V, is connected to the frame, and provided with a cord, *v*, (indicated in Fig. 2 by a vertical line crossing the horizontal lines in the said figure,) whereby this latch may be raised by the driver and its free end pressed into the groove *u'* in the end of the bolt U whenever desired to keep the bolt U from flying back when the trip strikes the latch, so that the trip will not operate, but will be held until released by the driver, and the spring L *l* will only force the trip back the distance of one pin, and will keep repeating this until the driver chooses to release the tension of the cord, when the bolt will be instantaneously released at the proper time by the trip and pulled back by its spring W, and the arm D will rake off the bundle. This is a very important feature of my improvement, because heretofore the bolt has been unlatched by the driver's foot, and this motion was necessarily slow, and frequently not done at the proper time, so as to usually cause interference with the switch F, and a breakage of the rake was the result.

The rake-head C is provided with depending pegs or cogs C'—one for each rake-arm to come in contact with the pins *h h'* on the wheel H—and these cogs are slightly beveled on their rear edges, as shown in Fig. 2, so that they will not catch on the said pins *h h'* when the rake is turned back. The function of the springs M *m* is to restore the wheel H to its original position after it has been turned back, if it is desired to reverse the rake-head at any time.

The adjustment of my tripping device is as follows: When the lever S is adjusted so that its projection *s* is within the hole 1 in the face-plate every third arm will rake off a bundle. By moving the lever to hole 2 every fourth arm rakes off. By moving to hole 3 every fifth arm, and to hole 4 every sixth arm, rakes off—that is, (in a rake with four arms, such as shown in the present drawings,) when the lever is at hole 1 there will be a rake-off at every three-fourths of a revolution of the rake-rake, at hole 2 at every revolution, at hole 3 at every one and one-fourth revolution, and at hole 4 at every one and one-half revolution of the rake-head. It is apparent that when I speak of the "fifth" and "sixth" arms I allude to the fifth or sixth time that an arm has passed a given point since tripping, no matter how many actual arms there may be on the rake-head. It is also apparent that if I make a rake with more than four arms, while the proportion of the number of revolutions to the rake-head would be different, the principle would be exactly the same. For the sake of illustration I have shown a rake-head having four arms and with the lever S (in Figs. 4 and 6) adjusted to the hole 2 in the face-plate, whereby, as explained, every fourth arm rakes off, or once to every complete revolution of the rake-head. The stop N is rigid on the shaft K and follows the lever S around, always maintaining the same relation to the lever, no matter to what hole in the face-plate the latter is adjusted. The housing O is carried against this stop by the projection Q on wheel I, (through contact with projection P of the housing,) operated by spring L *l*, and the position of the stop in relation to the face-plate determines the number of pins *h* which are to precede the tripping-pin *h'* in each particular operation, according to the particular hole in the face-plate to which the lever S is adjusted, and hence also determines the number of cogs C' that operate the pins *h* on the wheel H each time before a trip. This being understood, I will now proceed to describe the working of my invention in detail.

As already stated, my device is shown adjusted so as to rake off with every fourth arm—that is, with the lever S adjusted to hole 2 in the face-plate. The trip is to be understood as just having operated and been thrown back to place by the spring L *l*. Power is applied and the rake-head begins to revolve, its cogs C' coming in contact with the pins *h* on the wheel H, and the projection *d* on the arm just in advance of the cog which has freed the trip moves along the track inside of the switch F, and, striking its further end, forces the bolt U forward through the arm U', hinged to the switch, (while the bundle is being raked off,) forcing the hinged end of the switch outward and its free end in, so that the succeeding cogs will pass outside of the switch, and causing the pawl X to enter a notch in the wheel I and the projection *t* on latch T to enter groove *u* in the bolt U. The several parts all remain in this condition while the rake-head is revolving, except that each cog C', in striking against the pins *h* on pin-wheels H, forces the notched wheel I around, advancing the pawl X one notch for each cog, until the tripping-pin *h'* is reached, which has no corresponding notch, and therefore when the cog C' beside the last arm set to trip the device (the fourth in the illustration) strikes against the tripping or long pin *h'* the latter encounters the stop *i* on the inner side of the wheel I, (which stop is substantially opposite the projection Q on the outer side of wheel I,) and as this wheel is thus turned forward its outer projection, Q, bears against the projection *t'* on the end of latch T and depresses the latch. This depression frees the groove *u* in the bolt U from the other projection, *t*, of the latch T, and as the switch F has nothing between it and the track the spring W on bolt U encounters no resistance, and so instantly pulls the bolt back, and the hinged end of the switch moves in toward the track, opening the free end of the switch, ready for the projection *d* of the next rake-arm, while at the same moment, as the pawl X is drawn back by the bolt U free from contact with the notches in the wheel I, the force of the spring L *l* will automatically send the trip back again to the original position in which it was set by the lever S. When, however, the latch V is brought into operation by means of the cord *v* in the hands of the driver,

the free end of the latch V is, as heretofore stated, forced into the groove *u'* in the end of the bolt U. By this means the bolt is kept from operating and the spring L *l* can only force the trip back to the last or fifth notch on the wheel I, instead of to the original position, and the continued revolution of the rake-head only serves to continuously repeat the motion of tripping, releasing the projection *t* from groove *u* in bolt U, and as often restoring it to that position by means of spring t^2, while the pawl X is likewise continuously released from and returned to the last notch in wheel I, until the driver eases up on the cord *v*, when the latch V will drop downward, and the next operation after such release will be a complete trip. In this way the rake can be kept from tripping and delayed at will—a feature of great importance under certain circumstances, especially in turning corners.

If desired, the separate wheel H may be dispensed with, and the pins *h* cast directly on the inner side of the notched wheel I, the stop *i* and spring M *m* being also dispensed with. In that event the cogs C' might be hinged to the rake-head instead of being rigid, so as to yield when the rake was turned back; but by making the device as described all possibility of breakage when turning the rake back is avoided.

In place of the adjustable lever and face-plate shown, it is obvious that any equivalent device might be employed—such as a rack and pinion, cogged circle or segment and wheel, crank movement or screw, or similar device—which would accomplish the same result.

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

1. In a harvester-rake, a tripping device consisting essentially of a notched wheel, spring for throwing the wheel back into place, shaft having rigid stop and pins or projections, in combination with the depending cogs of a rake-head, adapted to mesh with the aforesaid pins, and a latching device for holding and freeing the switch-bolt, all substantially as shown and described, and for the purpose set forth.

2. In combination with the depending cogs of a rake-head, a notched wheel, spring for throwing the wheel back into place, shaft having rigid stop, pins or projections for meshing with the cogs, latching device for holding and freeing the switch-bolt, and an adjusting-lever or equivalent device, all substantially as shown and described, and for the purpose set forth.

3. A tripping device consisting essentially of notched wheel I, spring L *l*, shaft K, with rigid stop N, housing O, projections P Q, and projections or pins *h h'*, adapted to strike against the depending cogs of a rake-head, whereby the tripping device is actuated, all combined and operating as shown and described.

4. The trip G, consisting of the notched wheel I, pin-wheel H, shaft K, stop N, springs M *m* and L *l*, housing O, and projections *i*, P, and Q, as shown and described.

5. In combination with the depending cogs of a rake-head, a tripping device having pins or projections to move it forward by contact with said depending cogs and a spring to throw it back, as and for the purpose set forth.

6. In combination with the depending cogs of a rake-head, a tripping device having pins or projections to move it forward by contact with said depending cogs and a spring to throw it back, a switch-bolt connecting with the trip, and a depending latch to hold the bolt from sliding back, whereby the tripping can be delayed, as and for the purpose set forth.

7. In combination with the depending cogs of a rake-head, a tripping device having a backwardly-yielding wheel provided with pins or projections to mesh with the cogs, a spring to throw the said wheel back, and another spring to throw the wheel forward into position, as and for the purpose set forth.

8. The combination, with the tripping device and operating mechanism of a rake-head, substantially as described, of the switch-bolt U, having groove *u'* and spring W, with the latch V and cord *v*, as and the purpose set forth.

9. The combination, with the depending cogs of a rake-head, of a tripping device consisting essentially of a notched wheel, spring for throwing the wheel back into place, shaft with rigid stop, pins or projections for meshing with cogs on a rake-head, adjusting-lever secured rigidly to the shaft, and a dial or face-plate for holding the lever at the point required, all substantially as shown and described, and for the purpose set forth.

10. The combination, with the depending cogs of a rake-head, of a tripping device having a wheel and pins or projections for meshing with the cogs of a rake-head to move the wheel forward, with a releasing-latch and a spring to throw the wheel back into place, as and for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 12th day of October, 1881.

OLE O. STORLE.

Witnesses:
S. S. STOUT,
HAROLD G. UNDERWOOD.