

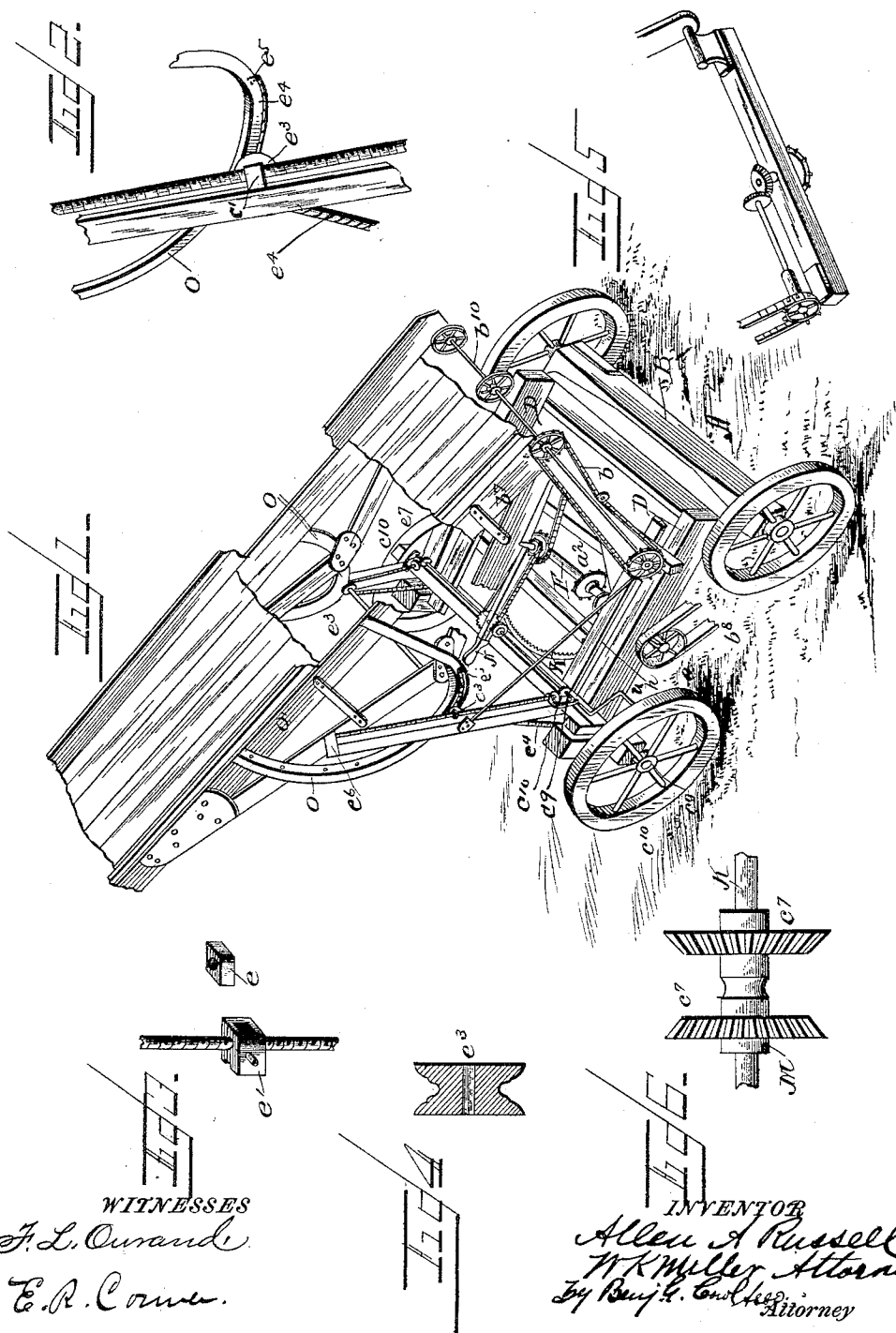
(No Model.)

3 Sheets—Sheet 1.

A. A. RUSSELL.
STRAW STACKER.

No. 460,889.

Patented Oct. 6, 1891.



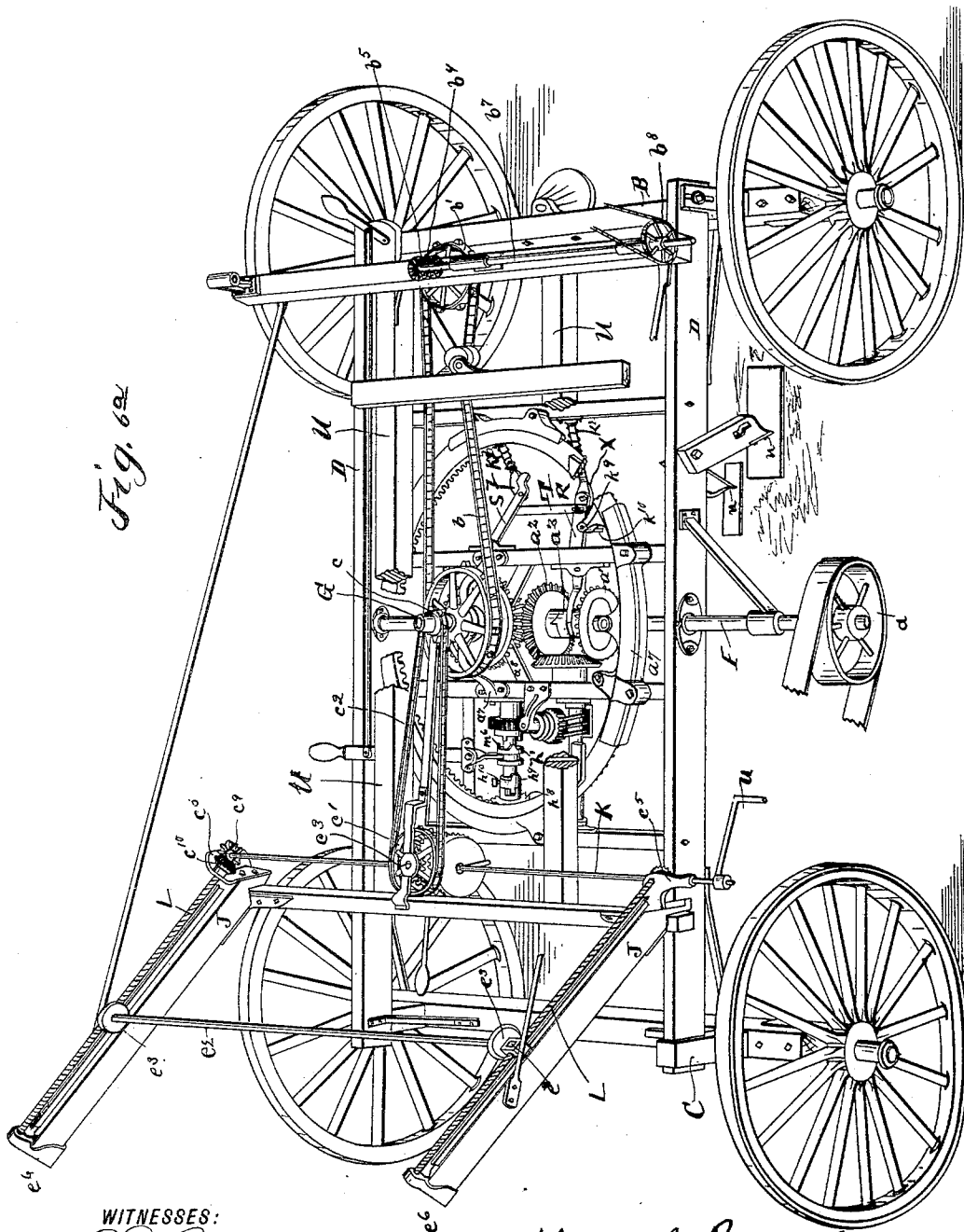
(No Model.)

3 Sheets—Sheet 2.

A. A. RUSSELL.
STRAW STACKER.

No. 460,889.

Patented Oct. 6, 1891.



WITNESSES:
E. Cross
Chas. R. Milles

Allen A Russell
BY
W. K. Miller
ATTORNEY.

(No Model.)

3 Sheets—Sheet 3.

A. A. RUSSELL.
STRAW STACKER.

No. 460,889.

Patented Oct. 6, 1891.

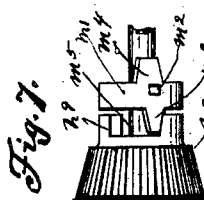
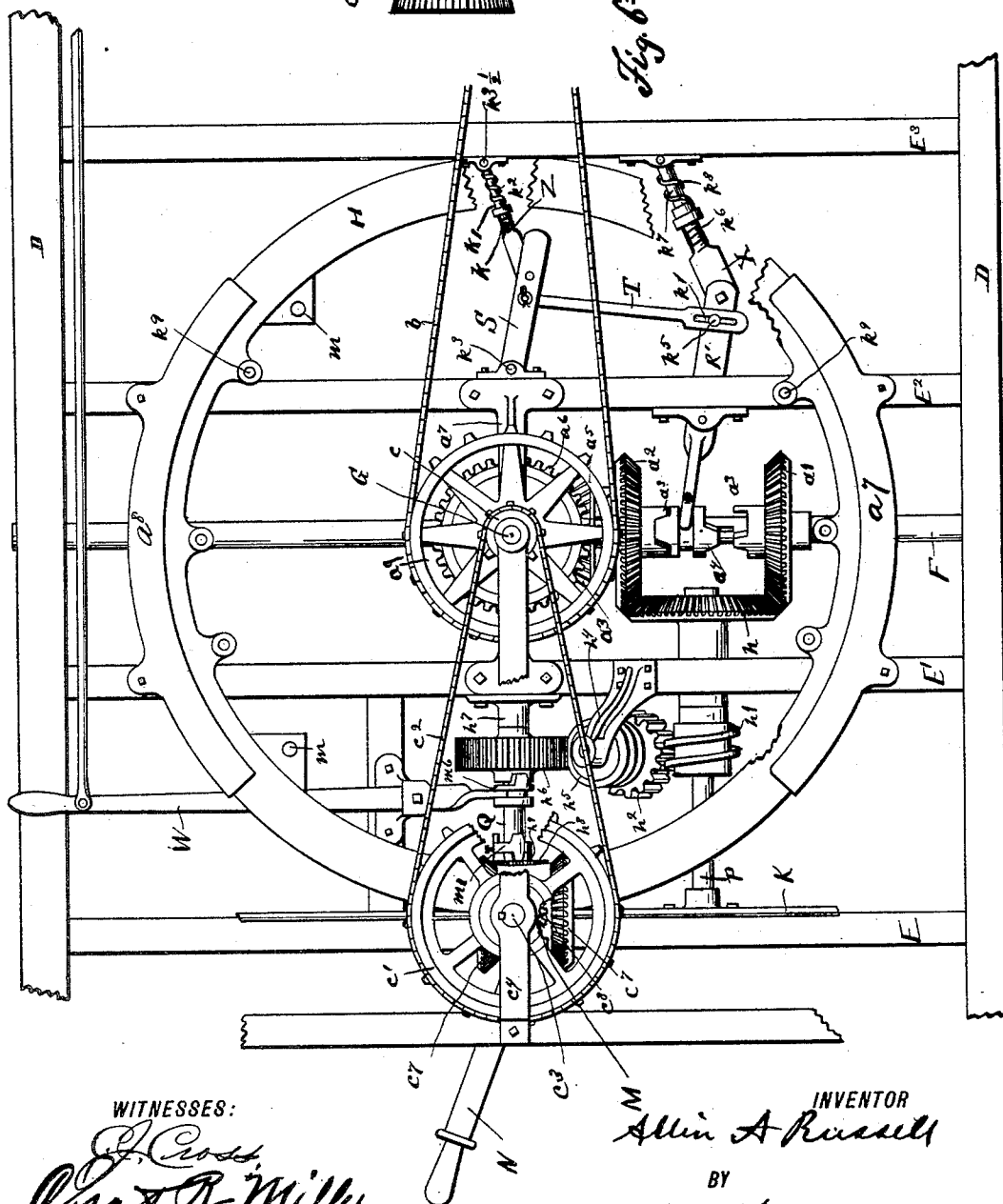


Fig. 6b



WITNESSES:
J. Cross
Chas. R. Milly

INVENTOR
Allin A Russell
BY
W K Miller
ATTORNEY.

UNITED STATES PATENT OFFICE.

ALLEN A. RUSSELL, OF INDIANAPOLIS, INDIANA, ASSIGNOR TO RUSSELL & COMPANY, OF MASSILLON, OHIO.

STRAW-STACKER.

SPECIFICATION forming part of Letters Patent No. 460,889, dated October 6, 1891.

Application filed March 27, 1891. Serial No. 386,701. (No model.)

To all whom it may concern:

Be it known that I, ALLEN A. RUSSELL, a citizen of the United States, and a resident of Indianapolis, county of Marion, State of Indiana, have invented a new and useful Improvement in Straw-Stackers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

This invention relates to improvements in mounted straw-stackers; and it consists in certain features of construction and combination of parts, as will be hereinafter described, and pointed out in the claims.

Figure 1 of the accompanying drawings is a view in perspective of a mounted straw-stacker, illustrating my invention; Fig. 2, a similar view of a fragment of the hoisting device; Fig. 3, a perspective showing hoisting nut and housing; Fig. 4, a transverse section of roller over which the stacker is raised and by which the truck is held in working position. Fig. 5 is a detailed perspective. Fig. 6 is a detail view of the sleeve M, mounted on shaft K. Fig. 6^a is a perspective of the gearing on the truck of the machine. Fig. 6^b is a plan view thereof; Fig. 7, a similar view of pinion and clutch.

Similar letters of reference indicate corresponding parts in all of the figures of the drawings.

The supporting-truck is composed of the axles A, bolster B, standards C, side bars D, and girders E E' E² E³.

The driving-shaft F is journaled in the side bars D, as shown, and has mounted thereon a driving-pulley *a* and miter-wheels *a'* and *a''*, said wheels loosely mounted face to face a distance apart, and have on the inner end portions of the hub a clutch *a'''*, and between said wheels is provided a clutch-sleeve *a⁴*, having a feather engagement with the shaft F. A bevel-pinion *a⁵* is mounted on said drive-shaft to engage a bevel-wheel *a⁶*, said wheel mounted on a vertical shaft G, said shaft being central to the armless stacker-carrying trip-wheel H, supported in journal-boxes in spiders *a⁷* and *a⁸*. On said vertical shaft is mounted a sprocket-wheel *a⁹*, which has a chain engagement by the chain *b* with

a similar wheel *b'*, supported on a vertical shaft *b²*, journaled in cross-bar *b³*. On the upper end of said shaft is mounted a bevel-wheel *b⁴* to engage a similar wheel *b⁵* on a cross-shaft *b⁷*, on the outer end of which is mounted a wheel *b⁸*, which has a chain engagement with a similar wheel *b⁹* on the stacker-shaft *b¹⁰*. A chain-wheel *c* is mounted on the upper end portion of the shaft G, that is engaged with a similar wheel *c'* by chain *c²*. Said wheel is mounted on a vertical shaft *c³*, said shaft supported in plate *c⁴* and girder E.

At the lower end portions of the carrier-supports J is provided a metal bracket *c⁵*, in which is journaled a cross-shaft K and the carrier-elevating screws L, the upper end of said screws journaled in a box *e⁶*, secured to the top portion of the supports J.

At the central portion of the shaft K is placed a sleeve M, having a feather engagement with said shaft and having mounted on each of its ends a bevel-wheel *C'*. About said sleeve is provided an annular groove in which is placed the prongs of the inner end of the shifting-lever N, by which the sleeve may be moved on the shaft K, to carry one or the other of the wheels into engagement with a pinion *c⁸* below and secured to the hub of the wheel *c'*.

At the end portions of the shaft K is mounted a small bevel-wheel *c⁹*, and on the lower end of a screw L a similar wheel *c¹⁰* to engage the wheel *c⁹*. A threaded nut *e* is placed in the housing *e'* and the screw L turned through the nut. The housings resting on the nuts are connected by a bar *e²*, on which is loosely mounted the rollers *e³*. By this arrangement of parts the nuts are free to move on the screw to carry the housing and cross-bar up and down on the screw.

The raisers O, which are secured to the carrier-frame O' at each side, as shown, rest on and travel over the said rollers. A cable *e⁴* has one end secured to the raisers, as shown at *e⁵*, the other end to the truck-frame.

In operation motion is communicated to the pinion *c⁸* from the chain-wheels *c* and *c'* and the chain *c²*. The lever N serves to move one of the wheels *c⁷* into engagement with said pinion, by which engagement the shaft is rotated and by a similar geared engagement shown at the end portions of the shaft K with

the screws L they too are rotated to raise the stack-frame by the power applied to operate the stacker, and to lower the stacker the movement of the lever N will be reversed, engaging the opposite wheel c^7 with the pinion M to reverse the movement of the shaft K and screws L to lower the stacker.

On the end portion is provided a hand-crank, by which the screws L may be rotated to raise and lower the stacker.

A shaft P is supported in journal-boxes secured to the girders E and E', said shaft having mounted on its end portion a miter-wheel h , having a constant engagement with the wheels a' and a^2 . On said shaft is mounted a worm h' , having engagement with a worm-wheel h^2 , supported on a pin h^3 , secured in bracket h^4 . Integral with said worm-wheel is a worm h^5 , having engagement with wheel h^6 , said wheel loosely mounted on shaft Q, journaled in boxes h^7 , secured to girders E and E', and on the other end of said shaft is loosely mounted a bevel-pinion h^8 , having on its back portion clutch member h^9 , that engages a corresponding clutch member m' , secured to said shaft by a set-screw, said pinion to engage cogs on the under side of the wheel H, to which the vibrating stacker-frame U is secured, said wheel also serving as a trip by which the trip S is operated.

The object of introducing the particular devices described in the foregoing paragraph is to reduce the speed of the wheel H and increase the power required to operate the stacker.

The trip-lever S has a hinged connection with the girder E², and to the free end of said trip is pivotally secured an arm Z, composed of a pipe portion k and a stem portion k' , the latter of which is hinged to the girder E² and about which is placed a strong coil casting-spring k^2 , the energy of which is exerted outwardly to lengthen the arm by forcing the pipe portion a distance off the stem, by which movement the lever S is thrown violently to one side of a line drawn through the pivotal or hinged points k^2 and k^3 . The trip-lever S is connected to a gear-shipping lever R', pivotally supported on girder E², by which the clutch-sleeve a^4 is shipped or disengaged from the wheel a^2 and engaged with wheel a' by a link T, one end of which is pivotally secured to the trip-lever S, the other end of said link provided with elongated aperture k^4 , through which a bolt or pin, as k^5 , is passed and secured in the lever R, thus providing for a certain and predetermined movement of the trip-lever S before the ends of the perforation k^4 will engage the pin k^5 , the object of which will be explained farther on.

An arm X, composed of a pipe portion k^6 and a stem portion k^7 , similar to that hereinbefore described, one end of the pipe portion pivotally secured to the lever R, the other to embrace the stem portion which is pivotally secured to the girder E³, said portion embraced by a coil-spring k^8 , by which the clutch-

sleeve a^4 is held in engagement with the clutch a^3 .

In operation a trip-pin k^{10} (see Fig. 6) is placed in the perforation k^9 in the wheel H to engage the trip-lever S to compress the spring k^2 to cast the lever R'. The aperture k^4 will allow the trip S to be moved to compress the spring k^2 before engaging the pin k^5 at the instant of such engagement, the casting-spring, being much stronger than the spring k^3 , will cast the shipping-lever to the opposite side of a line drawn through the pivotal points of the lever R and the arm X, by which movement the sleeve a^4 will be thrown from one clutch a^3 to the other, thereby reversing the movement of the wheel H to again repeat the compressing of the casting-spring, the spring k^8 to hold the clutch in engagement until cast, as before stated.

As heretofore constructed, when the trip-pin engaged the lever R or the arm S, the clutch began to move out, lessening the point of contact and wearing the clutch, so that the spring k^3 could not hold the clutch in engagement. By the use of trip-lever S and casting-spring the instant it is compressed and passes a line central to the pivotal points of the lever S and the arm Z, the compressed spring will cast the lever to the free side away from the driving-pin and reverse the gear, and the movement of the wheel H, which is driven by the engagement of the wheel h with the wheels a' and a^2 , the worm h' , wheel h^2 , worm h^5 , and wheel h^6 , serving to rotate the pinion h^8 , engaging the wheel H.

The stacker-supporting frame U is secured to the wheel H by bolts passed through the frame U and the lugs m , and as the rotary movement of the wheel is automatically reversed the carrier is oscillated about the central shaft G, and to provide for a previously-determined delay at each end of the oscillation of the stacker a clutch h^9 is provided on the back of the pinion h^8 , that engages the wheel H, and a timing clutch-ring, which, if preferred, may be a reversible clutch-ring, as m' , secured on the shaft Q with a set-screw m^2 . At each side of said ring is provided teeth, as m^3 and m^4 , which are narrower than the open space m^5 in the clutch h^9 , to provide for a limited movement of the shaft Q before the tooth m^3 engages the sides of the clutch h^9 . In the present case the small tooth m^3 in operation will allow the pinion h^8 to stand still one minute immediately after each reversal of movement of the shaft Q, and by reversing the ring to bring the larger tooth into use the time allowed the stacker to stop at each end of its oscillation will be reduced to one-half minute, the object of which is to allow the ends of the stack to build up equally fast with the central portion.

To arrest the oscillation of the stacker at any desired point or time, a hand-lever W is provided, as shown, having engagement with a clutch m^6 on the hub of the wheel h^6 , and by engaging and disengaging the clutch so

formed the rotary movement of the wheel H may be started or stopped.

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

1. The combination, with the supporting-frame D, driving-shaft F, and the bevel-pinion a^5 , mounted thereon, of the vertical shaft G, bevel-wheel a^6 , chain-wheel c , vertical shaft c^3 , chain-wheel c^4 , bevel-pinion c^5 , chain c^2 , cross-shaft K, sleeve M, having the bevel-wheels c^7 and slidable on shaft K, screws L, and reversing-shipper N, substantially as set forth.

2. The combination, with the supporting-frame D and driving-shaft F, of the bevel-wheels a^1 and a^2 , loosely mounted on said shaft to face inwardly, means for operatively engaging one of said wheels with the said shaft, a shaft P and wheel h supported thereon to simultaneously engage the wheels a^1 and a^2 , worm h^1 to engage a worm-wheel h^2 , having a worm h^3 integral therewith, a second worm-wheel h^6 , loosely mounted on shaft Q, a clutch member m^6 to engage said wheel, a clutch member m^7 , and pinion h^8 to engage the stacker-carrying wheel H, substantially as described, and for the purpose set forth.

3. The combination, with driving mechanism, of the shaft Q, timing-clutch consisting of the member m^1 , having clutch-teeth m^3 and

m^4 , and the clutch member h^9 , pinion h^8 , and the stacker-carrying wheel H, substantially as described, and for the purpose set forth.

4. The combination, in an oscillating straw-stacker, of the stacker-carrying wheel H, a driving-shaft Q, a pinion to engage said wheel loosely mounted on said shaft, said pinion provided with an open clutch member h^9 , and a timing driving-clutch member m^1 , whereby the oscillating movement of said stacker is automatically arrested for a period of time previously determined and again started, substantially as set forth.

5. The combination, with a driving mechanism, of the carrying-wheel H, a gear-clutch sleeve a^4 , shipper R', arm X, and spring k^3 to hold said clutch-sleeve in engagement with the driving mechanism, a trip-lever S, and link T, having an elongated aperture k^4 , by which is provided a sliding or loose connection between the said link T and lever R, an arm Z, casting-spring k^2 , and a trip to engage the trip-lever S to compress the casting-spring and to throw the gear-shipper, substantially as described, and for the purpose set forth.

In testimony whereof I have hereunto set my hand this 8th day of January, A. D. 1891.

ALLEN A. RUSSELL.

Witnesses:

W. K. MILLER,
CHAS. R. MILLER.