No. 637,281. Patented Nov. 21, 1899.

R. S. PENCE.

SEED HARVESTER.

(Application filed Mar. 13, 1899.)

(No Model.) 2 Sheets—Sheet 1.

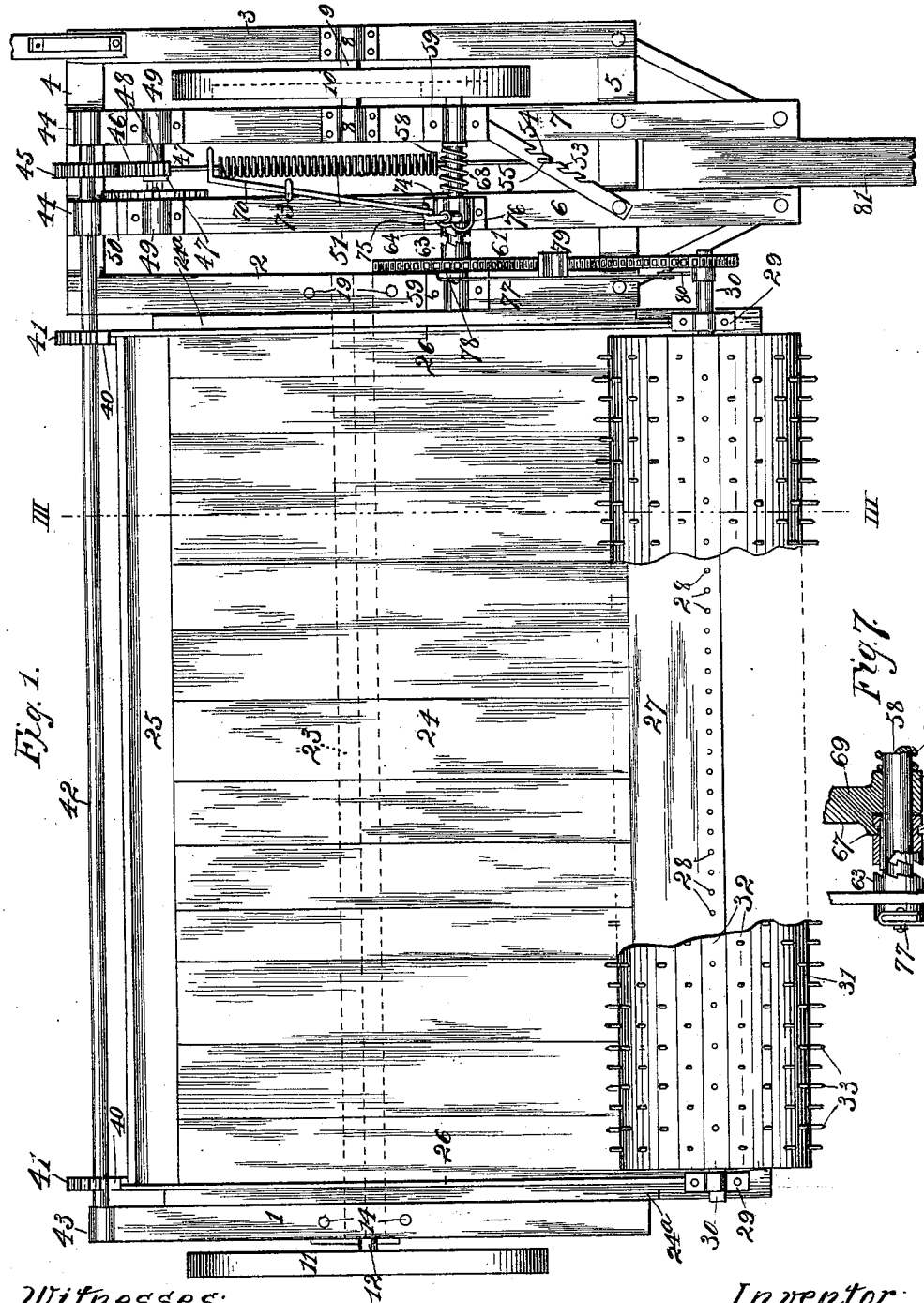


Fig. 1.

Fig. 7.

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Fig. 2.

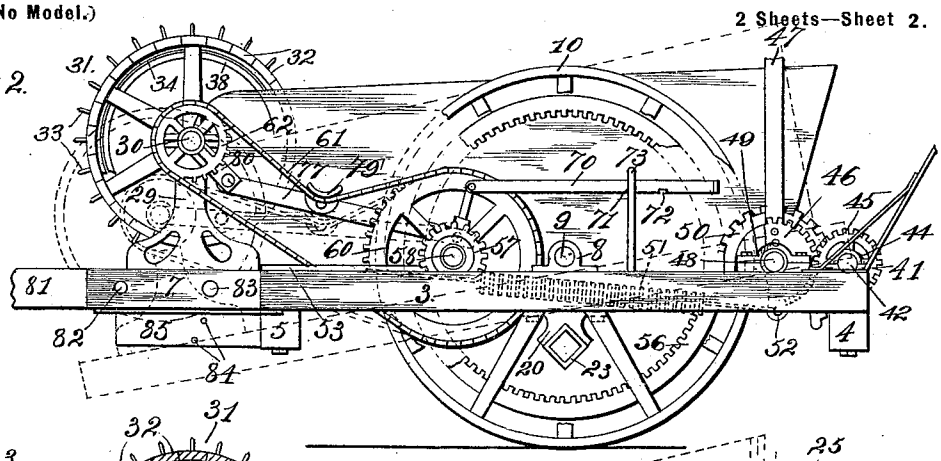


Fig. 3.

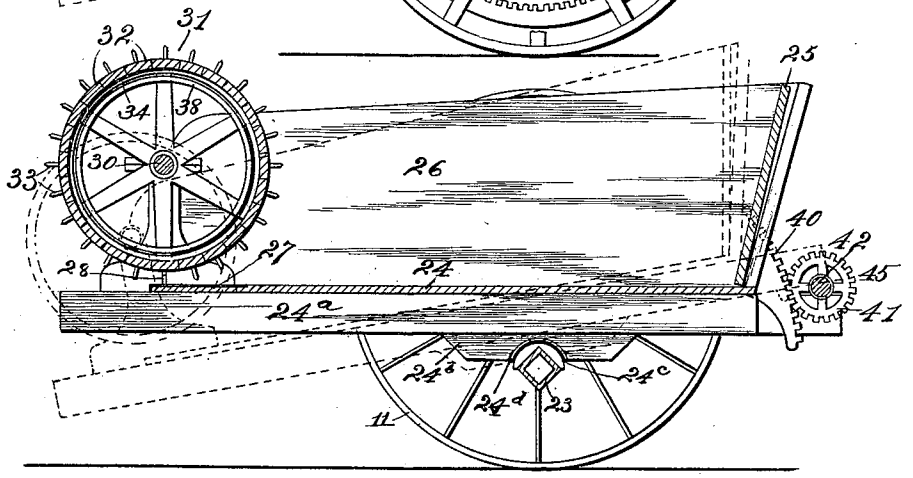


Fig. 4.

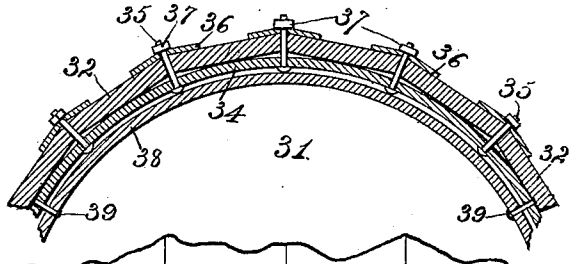


Fig. 5.

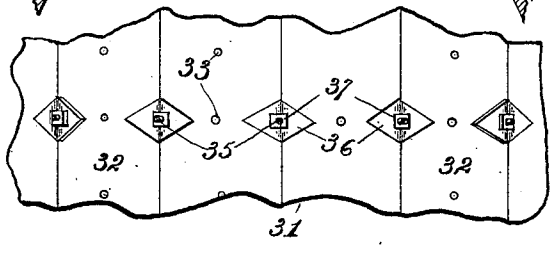
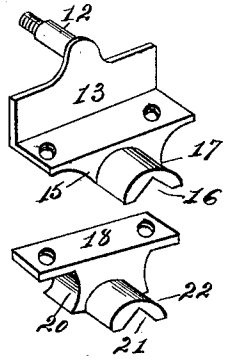


Fig. 6.



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UNITED STATES PATENT OFFICE.

ROBERT S. PENCE, OF KEARNEY, MISSOURI.

SEED-HARVESTER.

SPECIFICATION forming part of Letters Patent No. 637,281, dated November 21, 1899.

Application filed March 13, 1899. Serial No. 708,850. (No model.)

To all whom it may concern:

Be it known that I, ROBERT S. PENCE, of Kearney, Clay county, Missouri, have invented certain new and useful Improvements in Seed-Harvesters, of which the following is a specification.

My invention relates to seed-harvesters, and is designed more particularly as an improvement in the seed-harvester patented by A. W. Thomasson and Robert S. Pence, (myself,) of Kearney, Missouri, on February 21, 1888, the number of said patent being 378,184, my object being to provide a seed-harvester which is of simpler and more durable construction than the one referred to above and which is under the direct control of the driver.

With this object in view the invention consists in certain novel and peculiar features of construction and combinations of parts, as will be hereinafter described and claimed, and in order that the invention may be fully understood reference is to be had to the accompanying drawings, in which—

Figure 1 is a plan view of a seed-harvester embodying my invention. Fig. 2 is a side elevation of the same, partly broken away. Fig. 3 is a vertical cross-section taken on the line III III, Fig. 1. Figs. 4 and 5 are sectional and plan views, respectively, of the central part of the seed-stripping cylinder. Fig. 6 represents perspective views of a pair of castings used in the machine. Fig. 7 is a detail showing the clutch mechanism.

In the said drawings, 1, 2, and 3 designate short parallel bars arranged at certain distances apart, with the ends of bars 2 and 3 connected at their under sides by cross-bars 4 and 5, and said cross-bars are connected between bars 2 and 3 by the bars 6 and 7, which project forward beyond cross-bar 5 and extend parallel with bars 2 and 3.

8 designates a pair of journal-boxes secured centrally upon bars 3 and 7, and 9 a shaft journaled therein and carrying a wheel 10. 11 designates a wheel of the same size, arranged at the outer side of bar 1 and journaled upon a stub-shaft 12, projecting outward from the angle-bracket 13, Fig. 6, embracing the outer and under sides of bar 1 and secured thereto by bolts 14 or equivalent means, said bracket being provided with a depending arm 15, having an angular notch 16 in its under side, and an inwardly-projecting semicircular sleeve 17, through which the notch 16 also extends.

18 designates a bracket, Fig. 6, bolted, as at 19, to the inner side of bar 2 and provided with a depending arm 20, having an angular notch 21 in its inner side similar to notch 16, and said bracket is provided with an inwardly-projecting semicircular sleeve 22, through which said notch 21 also extends, and fitting snugly in the alined notches 16 21 is a rectangular bar 23, preferably in the form of a metallic tube.

The seed-receptacle consists of the bottom 24, the rear wall 25, the side walls 26, and the extension 27 of the bottom, said extension being preferably in the form of a metallic plate having a series of upwardly-projecting teeth or pins 28 near its front edge. This receptacle is secured rigidly upon the parallel bars 24^a, fitting snugly between bars 1 and 2 and provided with depending blocks 24^b, having semicircular recesses 24^c in their under sides engaging the semicircular sleeves 17 and 22, to the end that the receptacle may bear pivotally upon said sleeve for a purpose which will hereinafter appear. Said blocks 24^b may be of metal or of wood and provided with metallic bushings 24^d to reduce the wear from friction as much as possible. The bars 24^a project forward beyond the body of the receptacle, and mounted thereon are the bearing-standards 29, in which are journaled the opposite ends of the shaft 30, said shaft carrying the stripping-cylinder 31, consisting of a series of strips or staves 32, provided with outwardly-projecting teeth or pins 33, arranged spirally, so that every head of grass over which the cylinder passes in the operation of the machine shall be acted upon by the cylinder, to the end that said pins may effectually strip or comb the seeds therefrom and sweep them rearwardly into the receptacle. The pins or teeth of the cylinder pass between the pins or teeth 28, projecting upward from the receptacle extension 27, which arrangement not only makes the stripping action more positive and reliable, but also serves to prevent the heads of the grass from being swept into the receptacle with the seeds thereof.

As an improvement over the cylinder used

in the patented machine hereinbefore referred to I employ a cylinder, as hereinbefore stated, embodying longitudinal strips or staves arranged circularly, and in order to secure such staves reliably in position midway the length of the cylinder, which, as has been found in practice, is its weakest point, I secure therein a metallic hoop or band 34, through which radially extend bolts 35, said bolts extending outward from the hoop through the joints between said strips or staves and also through the diamond-shaped angle-washers 36, overlapping each adjacent pair of strips or staves, clamping-nuts 37, engaging the bolts and bearing against the outer sides of the washers, serving to secure said bars reliably in the position described. In order to prevent any possibility of the cylinder bursting in case one or more of the nuts should become accidentally detached, I arrange an auxiliary metallic hoop or band 38 concentrically within the band or hoop 34 and bearing against the heads of said bolts, said bands or hoops being riveted together at two or more points, as shown at 39, to prevent the dislocation of the inner one.

40 designates a pair of segmental rack-bars which are secured to the rear sides of the said receptacle and extend concentrically of the axis or fulcrum-points of the same, said rack-bars meshing continuously with the cog-wheels 41, secured rigidly on the shaft 42, journaled in bearings 43 and 44 of bar 1 and bars 6 to 7, respectively, the shaft also carrying between said bearings 44 a gear-wheel 45, which meshes with a semicircular rack 46, provided with a handle or lever 47 and mounted rigidly on a short shaft 48, journaled in bearings 49, secured to said bars, said lever being provided with the usual locking-dog (not shown) for engagement with the toothed sector 50, carried on bar 6, to secure the lever at any desired point of adjustment, the movement of said lever through the instrumentality of the gearing described obviously causing the receptacle to assume an inclined position, tilting upward or downward, accordingly as the lever is pushed forward or pulled rearward.

As the heavy end of the receptacle is in advance of its fulcrum-point, it is obvious its tendency is to tilt downward, thereby assisting the operator in accomplishing this object when he pushes forward on the lever 47, and as it would be difficult for him to reëlevate the receptacle by pulling backward on the lever I provide the retractile spring 51 for assisting him in this operation, said spring being connected at its rear end to the lower end of said lever below its pivotal point, as at 52, and at its forward end to the oblique bar 53, which bar is provided in its front edge with a series of notches 54, adapted to be engaged by hook 55, formed at the front end of the spring. By this arrangement it is obvious that the hook can be quickly and easily engaged with one or another of said notches in order to increase or diminish the tension or resisting power of the spring, this variation in the power exerted by the spring making it more or less difficult for the driver to operate the lever, as will be readily understood.

56 designates an internal-tooth gear-wheel secured concentrically within the carrying-wheel 10 in any suitable manner and meshing continuously with a small cog-wheel 57, secured upon the short shaft 58, journaled in the bearing-boxes 59, secured to bars 2 and 7, and said shaft carries loosely a large sprocket-wheel 60, which is connected by the chain 61 to the small sprocket-wheel 62 upon the adjacent end of the shaft 30 of the stripping-cylinder. In order that the stripping-cylinder may be thrown in and out of gear with the carrying-wheels at will, the wheel 60 is formed with a clutch member 63, adapted for engagement by the opposing clutch member 64, mounted to slide upon and rotate only with the shaft 58. This clutch member 64 is provided with an annular groove 65, engaged by the pin 67 of the sliding collar 66, journaled upon the shaft, and interposed between said collar and the bearing 59 is an expansive spring 68, spirally encircling the shaft, the tendency of said spring being to force the collar, and consequently clutch member 64, toward clutch member 63, and thus cause said clutch member to be engaged by clutch member 64. To withdraw clutch member 64 from engagement with the clutch member 63 against the resistance of spring 68, the collar 66 is provided with an arm 69, pivotally connected to the front end of a slide-bar 70, which slide-bar is formed in its lower edge with notches 71 and 72 for engagement with a guide loop or standard 73, mounted upon the framework. The arm 69 of the collar projects up through a stationary guide-loop 74, provided with two notches 75 and 76, the latter deeper than the former and connected thereto by the sloping piece or cross-bar of the loop. When said arm is seated in the shallow notch 75, as shown clearly in Fig. 1, the collar is retracted to withdraw the clutch member 64 from engagement with clutch member 63 and the spring 68 is compressed. At the same time the clutches are secured in this position by the engagement of the notch 71 with the guide loop or standard 73. To throw said clutches into gear, the said bar is raised to disengage the notch 71 from the standard and then pushed forward to disengage the arm 69 from the shallow notch 75. At the instant this is accomplished the spring 68 forces the collar forward and the clutch 64 into engagement with the clutch 63, and said bars are locked in this position by the engagement of notch 72 with the guide loop or standard. To withdraw the clutch 64 to inoperative position, the bar 70 is raised to disengage notch 72 from the guide loop or standard and then pulled rearward. This oscillates the collar back to its original position, but owing to the fact that the arm 69 is

compelled to ride up the sloping bridge-bar of the loop to pass from the deeper to the shallower notch the spring is obviously compressed and the clutch member 64 withdrawn.

Owing to the fact that the depression of the seed-receptacle increases the distance between the axis of wheel 62 and wheel 60 it is obvious that means must be provided to take up the slack in the chain 61, connecting said wheels, as the seed-receptacle is raised. To accomplish this automatically, I pivot a bar 77 to a short arm 78, Fig. 1, projecting from the adjacent bearing 59, and secured to said bar is a plate 79, which bears upon the chain. I also provide a bar 80, which is pivoted to the shaft 30 and to the bar 77. When the bars are in their normal position, as shown in full lines, Fig. 2, they form an obtuse angle, and the plate 79 depresses the upper strand of the chain and holds the same properly tensioned. Now as the driver upon the seat (not shown) depresses the front end of the receptacle and the stripping-cylinder carried thereby said bars gradually straighten out and relatively elevate the plate 79, so that the increasing distance between said wheels shall be accommodated by the proportionate decrease in the slack of the chain, until finally, as the stripping-cylinder assumes its lowest point of adjustment, said bars 77 and 80 extend in longitudinal alinement with each other. As the receptacle is reëlevated, said bars move back toward their original positions and cause the plate 79 to take up the slack in the chain, as will be readily understood. To accomplish this raising and lowering of the stripping-cylinder, the driver grasps the lever 47 and swings it rearward or forward, this movement being transmitted to the receptacle pivoted upon the semicircular sleeves 17 and 22 through the instrumentality of the train of gearing described.

81 designates a draft bolt or tongue which is pivoted, as at 82, between the front ends of bars 6 and 7, and said tongue rearward of this pivot is adapted to be engaged by the bolt or pin 83, extending also through said bars 6 and 7 or through apertures 84 in underlying bars 85. This arrangement permits the wheeled frame, as well as the receptacle, to be vertically adjusted, as will be readily understood.

From the above description it will be apparent that I have produced a seed-harvester which embodies the features of advantage enumerated as desirable in the statement of invention, and it is to be understood that I reserve the right to make all changes which properly fall within its spirit and scope.

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

1. A seed-harvester, comprising a wheeled frame, a shaft thereon and geared to one of the carrying-wheels of the frame, a seed-receptacle pivoted in said frame, a stripping-cylinder carried by said receptacle, a sprocket-wheel mounted on the shaft of said cylinder, a sprocket-wheel upon the first-named shaft, a chain connecting said sprocket-wheels, a pair of bars pivoted together, and one of them pivoted upon the stripping-wheel shaft and the other to a fixed point near the first-named shaft and provided with a plate engaging said chain, and means to pivotally operate said seed-receptacle, substantially as described.

2. A seed-harvester, comprising a wheeled frame, a shaft thereon and geared to one of the carrying-wheels of the frame, a seed-receptacle pivoted in said frame, a stripping-cylinder carried by said receptacle, a sprocket-wheel mounted on the shaft of said cylinder, a sprocket-wheel upon the first-named shaft, a chain connecting said sprocket-wheels, a pair of bars pivoted together, and one of them pivoted upon the stripping-wheel shaft, and the other to a fixed point near the first-named shaft and provided with a plate engaging said chain, means to pivotally operate said seed-receptacle, and means to throw said last-named sprocket-wheel in or out of engagement with said first-named shaft, substantially as described.

3. In a seed-harvester, a stripping-cylinder embodying a circularly-arranged series of strips or staves, a hoop or band within said series of strips or staves, bolts projecting outward through said hoop or band and said strips or staves at their juncture-points, washers upon said bolts and overlapping the adjacent strips or staves, clamping-nuts engaging the outer ends of said bolts, and a hoop or band mounted concentrically within and secured to the first-named hoop or band, and bearing against the headed ends of said bolts, substantially as described.

In testimony whereof I affix my signature in the presence of two witnesses.

ROBERT S. PENCE.

Witnesses:
ALBERT E. MARTIN,
CHARLES REEFER.