2 Sheets—Sheet 1.

J. P. MAULL.

Hand-Binding Harvester.

No. 199,655. **Patented Jan. 29, 1878.**

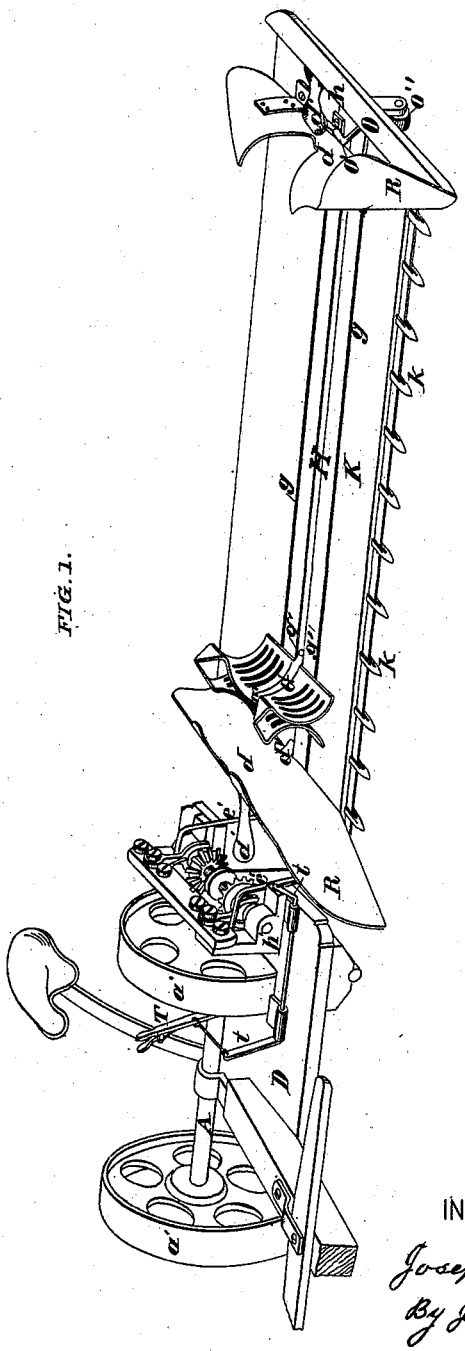

FIG. 1.

ATTEST:

Joseph E. Mare.
William Daly

INVENTOR:

Joseph P. Maull
By Joseph E. Mare
Attorney

2 Sheets—Sheet 2.

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FIG. 2.

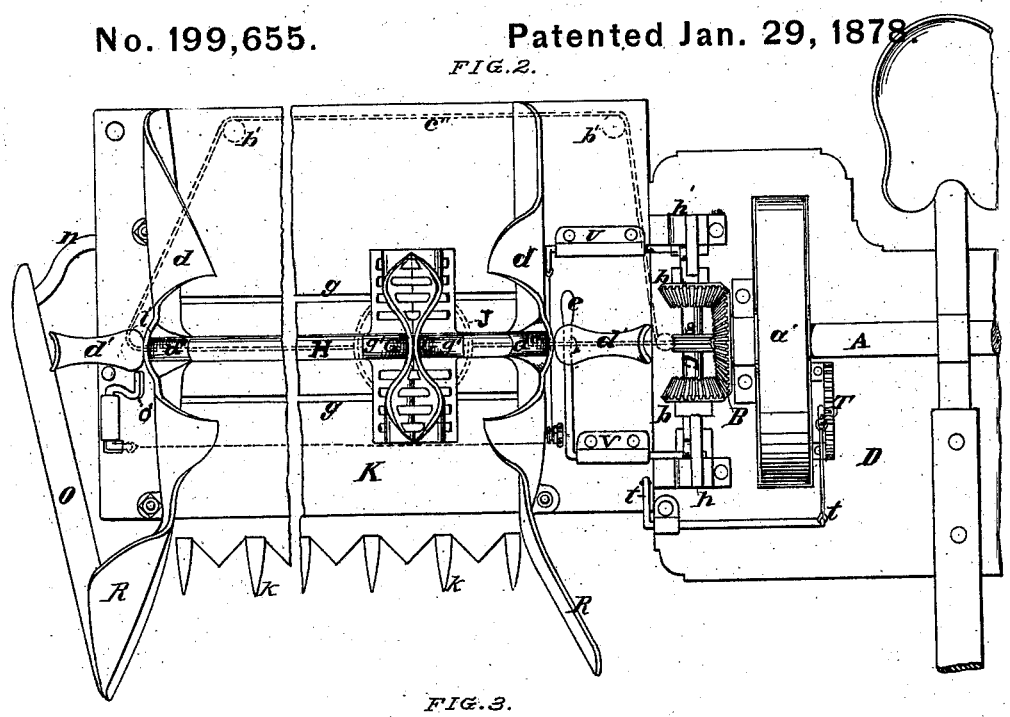
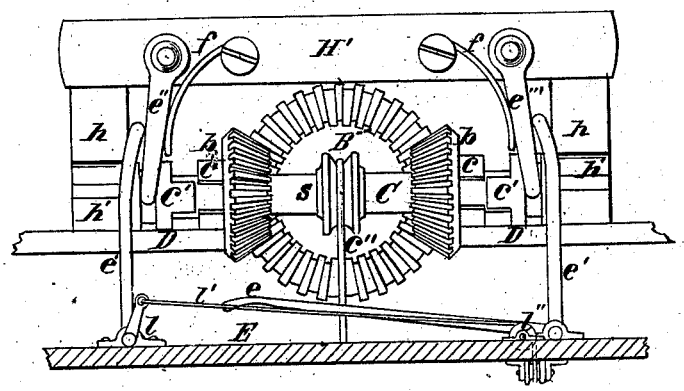


FIG. 3.



ATTEST:

Joseph E. Ware

William Daly

INVENTOR:

Joseph P. Maull.

By Joseph E. Ware. Attorney

UNITED STATES PATENT OFFICE.

JOSEPH P. MAULL, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF HIS RIGHT TO LOUIS C. MAULL, OF SAME PLACE.

IMPROVEMENT IN HAND-BINDING HARVESTERS.

Specification forming part of Letters Patent No. **199,655**, dated January 29, 1878; application filed May 26, 1877.

To all whom it may concern:

Be it known that I, JOSEPH P. MAULL, of the city of St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Grain-Binders; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My improvement has reference entirely to the use of straw bands, single or double, wherewith to tie the gavels of grain whenever the strain is sufficiently strong, the length of the straw or the desired size of the gavel controlling the selection of single or double straw bands.

The grain-platform has the usual pivot-bar attachment to the draft-frame. An extension of the ordinary draft-frame is necessary outside of the right-hand ground-wheel, upon which I place the actuating-gearing for the movement of the carrier-ring J, upon which the grain-gatherer G is placed, to cause it to traverse the grain-platform from end to end alternately.

To the main axle I attach a bevel-wheel, into which two loose beveled pinions engage, which are set on a counter-shaft with spline-seats. Each pinion has clutch-seats formed in sleeves thereon into which loose spline-clutches are to be alternately slipped by the action of clutch-bars receiving their movement from treadle-rods, which are to be worked by the pressure of the binder's feet; but when the binder removes his foot the clutch is slipped out of its seat in the pinion-sleeves by the pressure of a spring, which acts upon the clutch-bar. On the counter-shaft is also affixed a grooved pulley, over which wire or other rope passes, which is only brought into movement whenever one or other clutch is caused to take motion from the pinion with which it engages.

The pulley-cord is changed to various traversing directions by changing sheaves. The anterior pair lead away the cord behind a guard-bar on the under rear part of the grain-platform. This arrangement is to prevent the entanglement of the cord while passing over brier-roots, &c. Each end of this cord is fastened to a ring-carrier, which acts as a cradle upon which the grain-gatherer rides.

The grain-gatherer is made to pass alternately from end to end of the grain-platform by foot-pressure upon the clutch-treadles. One of these treadles works directly upon the clutch-bar, while the treadle above the shoe-wheel requires a cord-connection over suitably-placed pulleys with a bell-crank on the treadle-rod V.

In the floor of the grain-platform are cut two long parallel slots, through which are inserted and riveted to the carrier-ring the plates or legs upon which the grain-gatherer G sits. The grain-gatherer is slat-built, and is composed of two semi-cylindrical frames having the functions of rakes, but fastened back to back for action either way of movement. In the middle and front face of each half of the gatherer are sunk the tongued pointed depressions *g' g'*. These channels or recesses receive the gavel-bands of straw when the machine is operated. The tongue-points reach down into a sunken channel in the grain-platform, into which the binder places the gavel-band, which the tongue *g'* passes under as the gatherer approaches the stationary semi-cylindrical breast at either end of the grain-platform; and as the two cylindrical or sectional halves come together to comprise the gavel, the band has both its ends turned up, there being a corresponding tongued depression in each stationary breast. In the rear of each breast is placed a saddle-formed seat for each binder to occupy. The stationary sectional breasts have wing shapes in each front for the purpose of conveying the grain standing without the stroke of the sickle, to insure the cutting of all that the width of the platform requires, or which cannot be pressed aside by the bar O. The grain-platform is pivoted and adjusted as to depth of cut in the ordinary way.

Parts very well known and forming no direct communication with my improvement I have not attempted to describe.

The construction and operation of my im-

proved grain-gatherer are as follows, reference being had to the accompanying drawings and corresponding letters of reference.

Figure 1 is a perspective view of a reaper with my improvement attached; Fig. 2, a horizontal broken section, and Fig. 3 an enlarged section of the actuating-gearing on the draft-frame A.

A, main axle; *a' a'*, ground-wheels; B, bevel actuating-wheel; *b b*, pinion; *b' b'*, gatherer-cord; C, counter-shaft; *c c*, clutch-engagement sleeves to pinion; *c' c'*, clutches; *c'' c''*, cord from pulley *s* on counter-shaft to operate the grain-gatherer G; D D, draft-frame; *d d*, stationary semi-cylindrical breasts; *d' d'*, saddle-seats for binders; *d''*, depression in breast for reception of band; E, floor of draft-frame; *e*, treadle to operate clutch-bar *e'''* by the pressure of treadle-bar *e'*, while treadle O, connecting by the cord *l'* with bell-crank *l*, causes rods, through clutch-bar *e''*, to slip clutch *c'* into engagement with *c*. A binder in his seat can thus cause the grain-gatherer to approach him by pressing with his foot on his own treadle. *f f*, springs to cause the clutch to disengage by pressing the clutch-bars outward; *g g*, slots in floor of grain-platform, wherein the grain-gatherer traverses; *g' g'*, tongue and sunken recess for gavel-band in the grain-gatherer G; H, channel in platform for tongues *g'* to move in. This channel, which is really extended up into the gatherer, must be deep enough to receive the band, one end of which (the tongue) turns up into the semi-circular recess in the face of the gatherer, within easy reach of the binder. *h h*, boxes to counter-shaft; K, grain-platform; *k k*, grain-fingers; *n*, support to off-presser; O, bar to press aside the standing grain on account of rear binder's seat; *o*, treadle for rear binder, with which to operate the clutch to cause gatherer to approach him; R R, blades or wings to converge the grain toward the sickle-bar; *s*, pulley to actuate traversing gear of grain-gatherer; T *t*, usual means for adjustment of cut; *v v*, axes of clutch-rods.

When the reaper commences to work, the driver and binders are expected to be seated, and the gatherer G to be at one end of the platform, retaining one end of the band in his hand, and having extended the band down the breast-channel into the platform-channel, (sufficiently to completely encircle the compressed gavel when the end of the band in the platform-channel is turned up,) the band being properly laid down. When enough grain to form a gavel has been laid by the reel, the binder presses down with his foot the clutch-treadle. The grain-gatherer then rapidly carries all the grain in its front toward the semi-cylindrical breast *d*, the gatherer being also semi-cylindrical. When both come together a firm compression of the gavel takes place within the sectional cylinder formed. Now, if the band has been undisturbed in the channel therefor, when the gatherer nears the end of the band, the tongue *g'*, which glides along in the bottom of the platform-channel H, turns the edge of the bands upward in the continued channel in the gatherer, causing it to appear on the top in the proper cut-away parts of both sections convenient to the free hand of the binder, who instantly ties the band, and when the opposite binder draws the gatherer toward him the gavel is released and thrown on the ground. In the case of over-ripe straw, hay, bark, or other bands can be used in a similar manner.

What I claim as my invention, and ask a patent therefor, is—

1. The stationary semi-cylindrical breast *d*, in combination with the traversing grain-gatherer G, arranged with their depressions *d''* and *g'*, substantially as set forth.

2. The gatherer G, in combination with counter-shaft *c'*, beveled wheels B *b b*, pulley *s*, direct, and the changing pulleys *b' b'*, and cord *c''*, operated as and for the purpose specified.

3. The clutches *c c*, pulley *s*, and cords *c''*, in combination with the treadles *e*, connecting-cord *l'*, and changing pulleys *l''*, as and for the purposes specified.

In testimony that I claim the foregoing as my own invention I affix my signature in presence of two witnesses.

JOSEPH P. MAULL.

Witnesses:

ALEX. J. THOMSON,

CHAS. E. WARE.