James A. Cauldwell,

117862

Harvester.

PATENTED AUG 8 1871

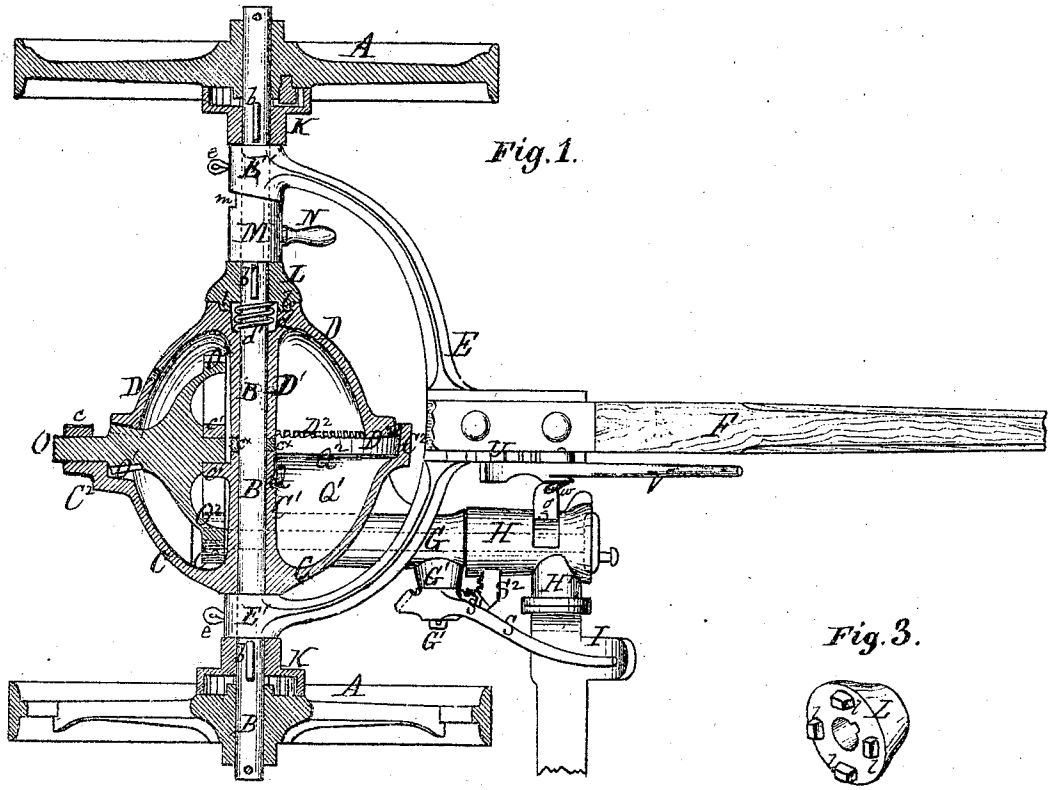
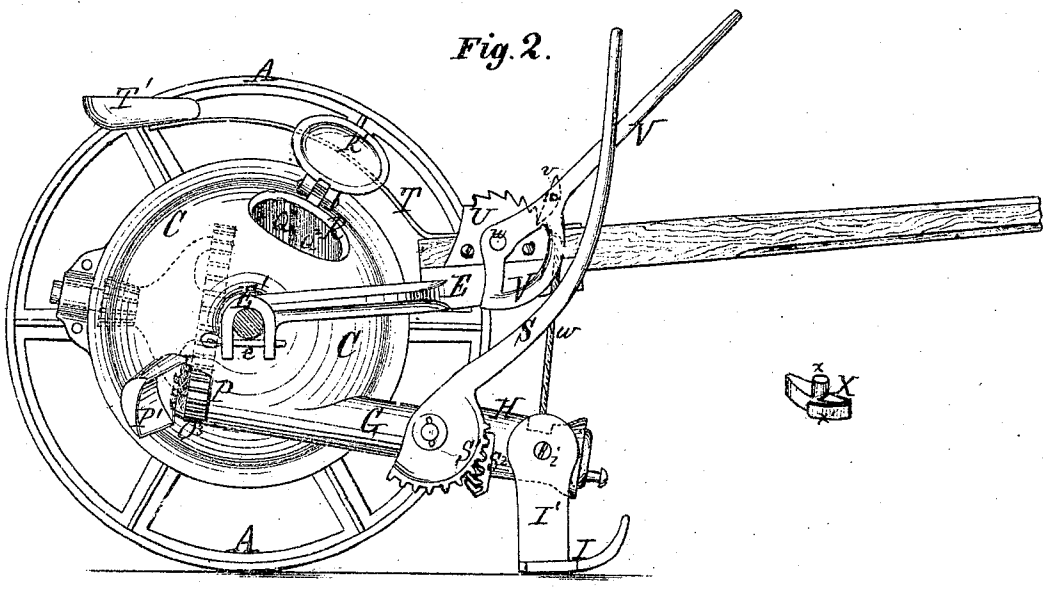


Fig. 1.

Fig. 3.

Fig. 2.



Witnesses.

H N Doubleday

Alex. Mahon

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UNITED STATES PATENT OFFICE.

JAMES A. CAULDWELL, OF WATKINS, NEW YORK, ASSIGNOR TO FRANK L. JOHNSON, GEORGE JOHNSON, ORLANDO HURD, BRADFORD C. HURD, AND SAMUEL M. BARKER, OF SAME PLACE.

IMPROVEMENT IN HARVESTERS.

Specification forming part of Letters Patent No. 117,862, dated August 8, 1871.

To all whom it may concern:

Be it known that I, JAMES A. CAULDWELL, of Watkins, Schuyler county, State of New York, have invented certain new and useful Improvements in Harvesters, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 is a top view, partly in plan and partly in section, of a harvesting-machine embracing my improvements. Fig. 2 is a side elevation of the same, with the inner drive-wheel removed for the purpose of better showing other parts; and Fig. 3 is a perspective view of the sliding feathered clutch.

Similar letters of reference denote corresponding parts wherever used.

The invention relates to that class of machines known as "the globe," in which the gearing is mounted and inclosed within a spherical-shaped case, made in two parts, one part of which is expanded or extended in the form of a sleeve or tubular arm, while the other part is formed by the main gear-wheel, driven by and revolving with the main axle.

In this class of machines as usually constructed that portion of the shell to which the cutting apparatus is attached is secured rigidly to the tongue or tongue-frame, and is thus supported against the lateral strain imparted by the cutting apparatus; hence the tubular sleeve and that portion of the shell with which it is connected have no vibration independent of the tongue or tongue-frame.

The object of this invention is to permit these parts to vibrate about the main axle as a center and then allow the cutting apparatus to conform more readily to the surface of the ground over which it is drawn; and to this end it consists: First, in providing that part of the shell to which the cutters are attached with a central sleeve inclosing the main axle, by means of which the shell is supported against the side draft of the cutters. Second, in providing the semi-spherical driving gear-wheel with a similar sleeve, mounted upon the axle to support it against the lateral thrust created by its bevel-gear. Third, in providing a bearing upon the sleeve of the inclosing shell for the inner end of the countershaft in the inclosing shell, so that this shell can vibrate independently of the tongue or tongue-frame; and in certain details of construction, as will be explained.

In the accompanying drawing, A A represent the driving-wheels; B, the main axle; C D, the main or gear-frame and gear-casing; E, the tongue and seat-plate or frame; F, the tongue; G, the tubular arm or sleeve forming an arm of frame C to which the cutting apparatus is connected; H, a coupling-sleeve surrounding arm G and connecting the cutting apparatus therewith; I, the inner pivoted shoe to which the finger-bar is connected; K K, the ratchet-wheels; L, the shipping-clutch on the main axle; M, the cam; and N, the lever for operating the shifting-clutch L, as hereinafter described.

The construction and arrangement of the above-recited parts are as follows, viz.: The axle B is made in one piece, and is grooved or recessed at various points in its length to receive removable strips or splines *b b b'*, which serve to key the ratchet-wheels and shifting-clutch to the axle, the former *b* for connecting the drive-wheels A A, mounted loosely on the ends of the axle, with said axle, for rotating the same, and the latter *b'* for connecting the driving-gear with or disconecting it from the axle, as hereinafter explained. The main frame C is made in a hollow semi-spherical form, and is provided with a central sleeve, C^1, which surrounds the axle B, as represented in Fig. 1, and also with the tubular arm G, arranged tangentially to the case C, as shown in Fig. 2. The open end of the shell C is enlarged at C^2 to permit it to receive the corresponding end of semi-spherical shell or case D, and is provided with bearings at *c c'* formed in the flange C^2 and sleeve C^1 to receive the pinion or countershaft O arranged at right angles to and in the same plane or thereabout with axle B. The semi-spherical shell D, like its counterpart C, is provided with a central sleeve D^1, and is mounted loosely on the axle B. A collar, $c^\times$, keyed or otherwise fastened to the axle, serves to determine the position of the sleeves C^1 D^1 on said axle. The inner open end of shell D is beveled on its inner face, which is inclosed within

the enlarged end or flange C^2 of shell C, and is provided with teeth at D^2 on said beveled face or end, which engage with and drive a pinion, O^1, on the countershaft O. The outer or closed end of shell D is grooved or recessed at *d*, forming an annular space surrounding the axle B, in which, and between shell D and clutch L, is placed a spiral spring, *d'*, the tension of which, when not restrained, serves to force the clutch L and shell D apart or away from each other. The face of the shell D adjacent to clutch L is notched or recessed, and the face of clutch L is provided with spurs *l*, corresponding in number and form to the holes or notches in the adjacent face of shell D. The opposite face or end of the clutch abuts against a cam-ring, M, which is provided at one end with an inclined or cam-face extending entirely around it and terminating in a square shoulder at *m*, (see Fig. 1,) and abutting against a correspondingly-inclined cam-face on the inner side of the loop or sleeve E' which connects the outer arm of the seat and tongue-plate with the axle B. The cam-sleeve M is armed with a lever, N, by means of which the attendant is enabled to rotate the cam-ring M on the axle and thereby to move the feathered clutch L longitudinally on the axle, overcoming the tension of spring *d'* and engaging the semi-spherical shell and bevel-wheel D with the axle, when desired. The rotation of the lever and cam in an opposite direction leaves the spring *d'* free to act, and forces the clutch outward or away from wheel D, as described. The shells C D, when arranged on the axle, as described, form a spherical inclosing-case, as represented in the sectional view, Fig. 1, one-half, C, being stationary and constituting the main or gear-frame, and the other, D, rotating and constituting the main driving-gear wheel, from which motion is imparted to the pinion or countershaft O through pinion O^1. A straight spur-gear, O^2, is keyed to or cast in one piece with shaft O and its driving-pinion O^1, said spur-gear being dished or made in a semi-spherical form to permit the spurred rim to be brought in close proximity to the sleeves C^1 D^1 surrounding its inner bearing *c'*, and as near to the center or largest transverse diameter of the inclosing-case as practicable, thereby reducing the size of the casing required and enlarging the spur-wheel to the utmost capacity of the casing. From the spur-wheel O^2 motion is imparted to a straight pinion, O^3, on the crank-shaft, which is mounted in bearings in the tubular arm G. The casing C is cut away at P to accommodate the pinion O^3, and is provided with a hinged semi-cylindrical box-lid, P', which serves to cover the projecting portion of the pinion O^3 when the machine is in operation. The casing C is provided at Q with a vertical diaphragm or web, connecting the sleeve C^1 with the shell, and serving, in connection with a horizontal web or plate, Q^1, and an end vertical plate, Q^2, secured thereto, to form a tool-box within the shell C, access to which and also to the gear-compartment of the casing is had through an opening, R, which is closed, when the machine is in operation, by a hinged lid or door, R'. The sleeve or arm G is provided, near its outer or vibrating end, with a horizontal stud projection, G', on which is mounted the lifting-lever S, provided with a toothed beveled segment, S^1, which engages with a corresponding beveled segment, S^2, on the coupling-sleeve H, and serves, when the lever S is moved backward or forward, to raise or lower the outer end of the cutting apparatus by rotating the sleeve H on the arm G in a manner that will be readily understood. The sleeve H is also provided with a horizontal arm terminating in a vertical flange or disk, to which the shoe I is connected through the medium of standard I' and a pivot, *i*, which permits the points of the cutters to be raised or depressed, as the condition of the crop may require. The tongue-plate E is forked at its rear end, and each arm is provided with a vertical fork or loop, E', which embraces the axle B, and is secured in place thereon by a pin or bolt, *e*. The forward end of plate E is provided with a socket in which the tongue F is firmly fastened. The seat-standard T is bolted to the rear end of the tongue (or to the tongue-plate, if preferred) and extends back over the casing C D into position to partially counteract the weight of the cutting apparatus upon the tongue, when said cutting apparatus is raised for reaping or for transportation, by lifting devices mounted on the tongue. U is a vertical rack-plate or standard bolted to the side of the tongue or tongue-plate, and V is a lifting-lever, pivoted at *u* to rack-plate U, and provided with a grooved segment-sheave, V', from which a cord, *w*, passes, connecting it with the forward end of arm G, through a pin or arm, *g*, projecting through a slot in sleeve H for raising the arm G and the inner end of the cutting apparatus. A weighted dog, *v*, pivoted to the lever V, engages with the curved rack on plate U, for holding the lever at the desired adjustment. Said dog is released by the pressure of the driver's foot upon its short upper end. X is one of the backing ratchet-pawls, shown detached in Fig. 4. Said pawls are made convex on their inner face, and are provided centrally of their length with pivots *x*, which fit into sockets in the inner faces of the driving-wheel or hub. The inner convex face of the pawl is armed with a flat spring, *x'*, attached to the pawl at one end and extending to a point about midway of the length of the pawl, its free end bearing against the hub of the wheel and serving to hold the pawl engaged with the ratchet in the forward movement of the machine, but yielding to allow the teeth to slip by when the machine is backed.

What I claim as new, and desire to secure by Letters Patent, is—

1. The semi-spherical case or shell C, provided with the tubular arm G and central sleeve mounted upon and vibrating about the main axle, in combination with the independently vibrating tongue, substantially as described.

2. The semi-spherical shell or case C, provided with the sleeve C', having a bearing thereon for the inner end of the countershaft O, and with a

bearing for the outer end of said shaft, substantially as set forth.

3. In combination with the shell C, gear-wheel D, countershaft O, and main axle B, the collar or stop $c^{\times}$, whereby a proper relation between the shell C, wheel D, clutch L, and cam M is maintained.

4. The toothed segment-lever S, mounted on the vibrating tubular arm or sleeve G, in combination with the coupling-sleeve and toothed segment, also mounted on sleeve G, as described.

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