No. 676,856. Patented June 18, 1901.

E. H. WAGENER.

WHEEL HUB AND BOX THEREFOR.

(Application filed Oct. 9, 1900.)

(No Model.)

Fig. 1.

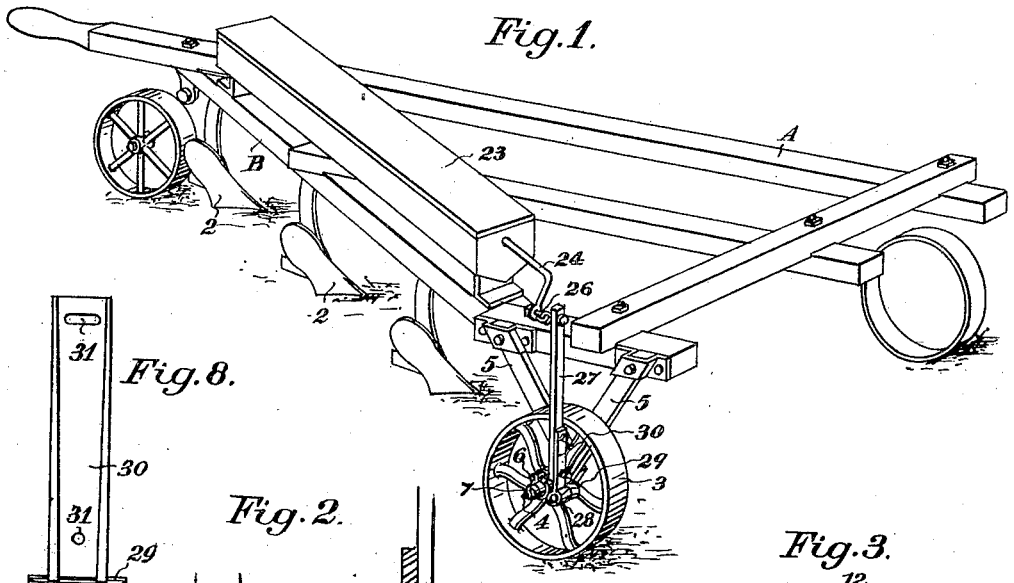


Fig. 8.

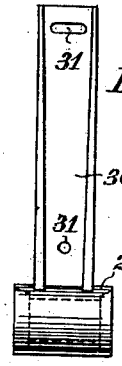


Fig. 2.

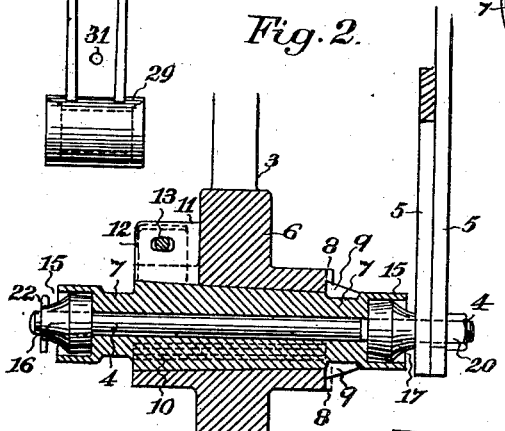


Fig. 3.

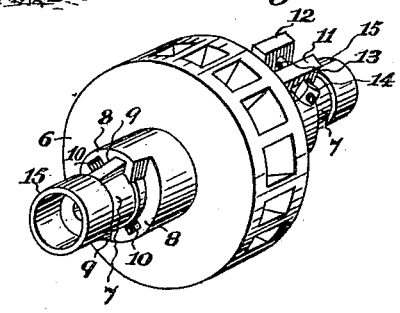


Fig. 7.

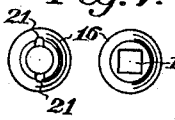


Fig. 4.

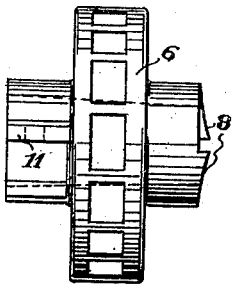


Fig. 5.

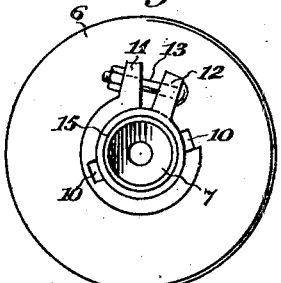
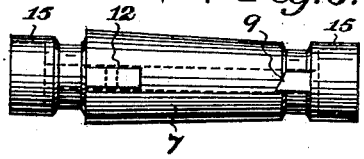


Fig. 6.



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UNITED STATES PATENT OFFICE.

ERNEST HENRY WAGENER, OF MODESTO, CALIFORNIA; MRS. S. J. WILLSON ADMINISTRATRIX OF SAID WAGENER, DECEASED.

WHEEL-HUB AND BOX THEREFOR.

SPECIFICATION forming part of Letters Patent No. 676,856, dated June 18, 1901.

Application filed October 9, 1900. Serial No. 32,500. (No model.)

To all whom it may concern:

Be it known that I, ERNEST HENRY WAGENER, a citizen of the United States, residing at Modesto, county of Stanislaus, State of California, have invented an Improvement in Wheel-Hubs and Boxes Therefor; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to improvements in wheel-hubs and boxes therefor. It is especially adapted to that class of plows known as the "Stockton gang-plow," in which a triangular frame is mounted upon three wheels and is adapted to travel with its shorter base in front, while the plows are carried by standards fixed to the diagonal beam of the frame, so that each plow in the gang successively turns its furrow when the machine is moved over the ground to be plowed. In this class of plows the wheel-journals are subjected to a great deal of dirt, which rapidly wears them out and makes it necessary to replace them from time to time.

It is the object of my invention, first, to protect these bearings and the movable joints from as much of the dirt as possible, and, secondly, to provide a take-up mechanism by which the bearing-box is removably fitted into any wheel-hub and is adjustable therein to prevent looseness and lost motion.

My invention therefore comprises details of construction, which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a perspective view of a gang-plow embodying my invention. Fig. 2 is a longitudinal section through the hub of one wheel embodying the main features of my improvement. Fig. 3 is a perspective view of the hub and sleeve. Fig. 4 is a view of the hub; Fig. 5, an outer view of the same. Fig. 6 is a plan of the hub-box. Fig. 7 represents end views of the outer and inner dust-protecting sleeves. Fig. 8 is an elevation of the crank-arm and sleeve.

A B represent the triangular plow-frame, the shorter base of which forms the front of the plow, and the beam A lies parallel with the line of travel. The diagonal beam B, forming the hypotenuse of the triangle, carries the plows 2, of which there may be five or any other suitable or desired number, depending upon the size of the plow. This plow is carried upon bearing-wheels suitably journaled at or near the angles of the frame, and one of these wheels is swiveled and turnable to guide the plow. The wheel 3, which is carried at the junction of the front beam with the diagonal or plow beam of the frame, is here employed to illustrate one part of my improvement. This wheel is carried upon an axle or spindle 4, the inner end of which is secured to the overlapping meeting ends of the iron braces 5, the upper ends of which are clamped to the front end of the frame thus shown.

The hub 6 of the wheel 3 has a tapering opening through it of sufficient diameter to receive the box 7, which fits into this tapering opening and is adjustably locked therein, as follows: Upon the end of the hub 6 contiguous to the smaller end of the tapering opening are formed inclines 8. Upon the corresponding end of the box 7 are formed beveled lugs 9, corresponding in position with the inclines 8. Through the hub are made slots or channels 10 of such size that when the box 7 is inserted into the hub the lugs 9 being in line with these slots 10 will pass through them, and when the box has been pushed through the hub until the lugs 9 have passed beyond it, by turning the box in the hub the lugs 9 will engage the incline or beveled ends 8, and will thus act to draw the box into the hub and lock it firmly in place. In order to effect this locking, the hub of the wheel has a lug 11 projecting radially from its flanged portion, and the box carries a corresponding lug 12. Through the lugs 11 and 12 holes are made, and a bolt 13 is passed through these holes, and by the head of the bolt fitting against the surface of one of the lugs, while a nut 14 being turned upon the screw-threaded end of the bolt against the other lug will act to draw the two lugs toward each other, thus turning the box within the hub and causing the lugs 9 to travel up the inclines 8 as much as may be necessary to lock the parts firmly together by forcing the box farther into the hub.

If by use and wear the box becomes slightly loose within the hub, a turn or two on the nut

14 will draw the lugs 11 and 12 a little nearer together, and thus turning the box within the hub will cause the lugs 9 to travel up the inclines 8 a little farther and so bind the parts firmly together.

The spindle 4 passes through a box 7, and in order to prevent the entrance of dirt into the interior of the box and the consequent wear upon the parts which would thus be caused I have shown a means for throwing any dirt outward which may fall upon the hub of the wheel and which might otherwise eventually find its way into the interior of the box, and at the same time it provides a means for firmly locking the spindle and the parts carried thereby to the supporting frame-irons 5. The ends of the box 7 are made with enlarged chambers or sockets 15, and within these sockets are fitted the dust-protecting sleeves 16 and 17. These sleeves have holes through them of sufficient diameter to receive the spindle 4, which passes through them. The outer peripheries of the inner ends of these sleeves are made cylindrical and turnable within the chambers 15 of the box. The outer ends of the sleeves are made convergent outwardly, and as the cylindrical portions 16 and 17 lie within the chambers 15 any dirt which may fall upon the hub or the projecting ends of the box and thence fall off onto these sleeves will be thrown outward by the outward taper or convergence of the parts 18.

The spindle 4 is made cylindrical where it passes through the box. It is made rectangular where it passes through the inner sleeve or dust-cap 17, and this dust-cap has a correspondingly-shaped opening 19, which fits the square part of the spindle. The inner end of the spindle is screw-threaded and passes through the supporting-irons 5 and is securely locked thereto by means of a nut 20, which fits upon the inner end. The outer dust-cap or sleeve 16 has slots formed in its outer end, as shown at 21, and the pin 22, which passes through the spindle to hold the wheel in place, also passes through these slots 21 and prevents the outer sleeve or dust-cap from turning. The inner one being prevented from turning by reason of the square socket 19 fitting upon the square portion of the spindle, it will be manifest that the wheel and the box 7, which is secured within it, will turn in unison while the spindle and the dust-caps remain stationary. There is thus a tendency to throw off any dust or dirt which is carried up by the wheel in turning and which may fall upon the hub and to deliver it outwardly and away from the journal or wearing parts upon which the wheel turns.

Whenever there is sufficient wear to make it necessary to change the parts, it is very easy to remove the wheel by taking out the pin 22, and the dust-caps or sleeves can be separated from the box and the box itself withdrawn from the hub and the parts renewed with little loss of time.

It is often customary in this class of plows to carry a seedbox, as at 23, upon the plow-beam B, and an oscillating shaft 24 passes through the box and carries radial arms, which being moved over the concave bottom of the box serve to agitate the seed and cause it to fall through holes made in the bottom of the box, so that the seed is sown and covered simultaneously with the plowing. The shaft 24 is bent at an angle, as shown, and is connected by a loose coupling 26 with a rod or bar 27, the lower end of which is connected with an eccentric or crank pin 28 upon the wheel 3. It will thus be seen that the revolutions of the wheel 3, carrying this crank or eccentric pin, will serve to reciprocate the bar 27, and thus operate the seeding devices, as previously described.

In order to connect the bar 27 with the crank-pin and to prevent wear of the movable parts, I have shown a sleeve 29, having an arm 30 cast therewith, with holes or slots 31, which serve to receive bolts by which it is secured to the lower end of a bar 27. This sleeve has a hole through it of sufficient size to receive an independent box 32, and this box fits upon the pin 28 and forms the journal. The ends of the sleeve 29 are counterbored with enlarged chambers, as shown at 33, and the outer one is of sufficient size to receive the head of the bolt or pin 28, which thus covers the end of the box 32 and prevents dirt from getting in, so that this joint will remain true for a long time.

A slightly-projecting hub or boss is made upon the wheel 3 at the point where the pin 28 connects therewith, and this hub entering the opposite end of the sleeve 29 forms a similar protection for the inner end of the box 32. These devices serve to protect the wearing parts from dirt and to form an easily-adjustable and replaceable mechanism at a very small expense. The hub and box adjustment is applicable to any wheels for which it may be desired to use it.

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

1. The combination with a vehicle, and the bearing-wheels thereof, of an independent journal-box fitting the hub of the wheel and turnable therein, and means including inclined surfaces on one of the parts and lugs on the other part engaging said surfaces, for locking said box in the hub.

2. The combination in a bearing-wheel of a vehicle, of a hub having a tapering hole therethrough, a box having a corresponding taper on its exterior adapted to fit within the hub, lugs formed upon the box to engage inclined surfaces of the hub, and means for turning the box within the hub whereby it is locked thereto.

3. The combination in the wheel of a vehicle, of a hub having a tapering opening therethrough, a journal-box having a correspondingly-tapered exterior, lugs formed upon the surface of the journal-box and slots

in the hub through which said lugs may be passed, inclined surfaces upon the end of the hub, lugs fixed respectively to the opposite ends of the box and the hub, a screw-bolt by which they are drawn toward each other whereby the box is turned in the hub and the lugs at the opposite end are interlocked with the inclines of the hub.

4. The combination in a vehicle-wheel of a hollow hub and removable interlocking journal-box, said box having chambers in its ends, dust-caps or sleeves fitting therein, the outer ends of said caps being tapered or convergent to throw off the dirt.

5. The combination in a vehicle-wheel of a hollow hub a journal-box fitting and interlocked therewith, chambers made in the ends of the box, sleeves or dust-caps fitting in said chambers having the outer ends convergently tapered, an axle-pin screw-threaded at the inner end and a nut by which it is secured to the supporting-frame, said pin having a polygonal section upon which the correspondingly-shaped opening of the inner dust-cap fits, whereby it is prevented from turning, and slots made in the outer dust-cap, with which the pin engages that passes through the axle to hold the wheel in place whereby the dust-caps are held stationary while the wheel and journal-box are turnable.

In witness whereof I have hereunto set my hand.

ERNEST HENRY WAGENER.

Witnesses:

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