

UNITED STATES PATENT OFFICE.

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SPEED MECHANISM.

SPECIFICATION forming part of Letters Patent No. 725,959, dated April 21, 1903.

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To all whom it may concern:

Be it known that we, JAMES SAMUEL HEATH, a British subject, and ERNEST BASEMAN, a citizen of the United States, both residing at Macedon, in the county of Wayne and State of New York, have invented certain new and useful Improvements in Speed Mechanisms, of which the following is a specification.

Our invention relates to speed mechanisms, and more particularly to that class of speed mechanisms which may be employed in connection with seeding-machines or grain-drills.

For the purpose of illustrating a convenient form of reducing our invention to practice we have shown it as applied to the grain-shaft of a seeding-machine; but it will be understood that it may be equally as well applied to the fertilizer-shaft and, in fact, to any form of mechanism wherein it may be desired to secure a change of speed.

Our invention consists in the construction and combination of parts now to be described in the specification and as finally pointed out in the claims.

Referring to the drawings, wherein the same parts are designated by the same characters of reference in all the views, Figure 1 is an end view of the hopper of a seeding-machine and shows our invention as applied thereto. Fig. 2 is a partial side view of the hopper and connected parts. Fig. 3 is a sectional view, on a larger scale, of the gear-case, taken upon the line 3 3 in Fig. 1. Fig. 4 is a detail view showing the means for connecting the disengaging strap to the gear-case. Fig. 5 is a detail view, on a larger scale and partly in section, of these connecting parts. Fig. 6 is a detail view, on a larger scale, of the head of the locking-lever, showing its relation to the bolt.

The hopper 1 may be of any desired or preferred construction and is shown in Fig. 2 as provided with hangers 16, wherein the grain-shaft 2 is mounted. The grain-distributing devices also may be of any desired construction and are operated in the customary manner from the grain-shaft 2 by suitable connections, which parts are not shown herein and form no part of our invention.

Fast upon the shaft 2, which is the driven

shaft hereinafter referred to in the claims, is a gear or pinion 3, which receives motion in the manner now to be described from the axle 4, which is the driving-shaft hereinafter referred to in the claims. The gear 6 is fast upon the axle 4 and is contained within the case or frame 5, which is pivotally mounted upon the axle and contains also a gear 7, meshing into the gear 6 and journaled in the case 5 by means of its stud 9. The stud 9 projects through to the outside of the case 5 and is so constructed and arranged that any one of a series of change-gears 8 may be secured thereon, so as to mesh into and actuate the gear 3 upon the shaft 2, whereby motion will be imparted to the grain-distributing devices in the customary manner.

At certain periods in the operation of the machine it is desirable that the actuation of the shaft 2 be automatically discontinued and the shaft disengaged from the driving-shaft—as, for instance, when the hoes, disks, or shoes of the grain-drill are elevated from engagement with the soil—and for this purpose we connect the pivoted case 5, in the manner hereinafter to be described, to the strap or link 10.

The hoes or other furrow-opening devices are connected in the customary way to a rock-shaft 13, so that they are raised from the soil when the rock-shaft 13 is turned in the direction of the arrow, Fig. 1.

Fast upon the rock-shaft 13 is an arm 14, provided at its outer end with a stud playing in the slotted piece 15, secured to one end of the strap or link 10 in such manner that when the rock-shaft is turned in the direction of the arrow the arm 14 will be depressed and through its connection with the slotted piece 15 will move the strap or link 10 inwardly, and the strap 10 being connected to the case 5 thereby swings the case about the axle 4 and disengages the change-gear 8 from the gear 3. When the hoes, &c., are again lowered, the rock-shaft 13 is turned in the opposite direction and the parts are restored to their former positions.

In view of the fact that a considerable number of change-gears of different diameter are to be employed upon the stud 9 it is neces-

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sary that means be provided for adjustably connecting the strap 10 with the case 5, so as to compensate for the different angular positions it will occupy when the gear 8 is changed.

- 5 As the case 5 moves about the axle 4 as a center the outer portion of the case 5 will move in the arc of a circle, and we have therefore formed the end 11 of the strap or link 10 in the arc of a circle having its center in the
10 axle 4, so as to insure its constant proximity to the case. The case 5 is provided on its outer edge with a lug 17, which is inwardly recessed, so as to receive therein the cylindrical portion of the rotatable sleeve or thimble 18. The thimble 18 is provided with a
15 pair of projecting lugs or shoulders 19 19 and is longitudinally bored, as shown in dotted lines in Fig. 5, for the reception of the locking-bolt 20. The bolt 20 is formed at one end
20 with a recessed head or loop 21, which passes over and engages the end 11 of the strap 10, the head or loop 21 being so shaped that when the bolt is moved longitudinally it will pass between the lugs or shoulders 19 19 of the
25 thimble 18 and press the end 11 of the strap 10 against the said shoulders and lock the strap 10, thimble 18, and bolt 20 firmly together. At the other side of the lug 17 the bolt 20 is provided with a transverse piece or
30 pin 22, between which and the thimble 18 the head of the locking-arm 12 is interposed. The head of the arm 12 is formed with a pair of oppositely-placed cam-surfaces 23 23 to engage the pin 22 upon the bolt 20 in such man-
35 ner that when the arm 12 is turned in the direction of the arrow in Fig. 6 the action of the cam-surfaces 23 23 upon the pin 22 will draw the bolt 20 through the thimble 18, thereby locking the end 11 of the strap 10, the
40 bolt 20, and the thimble 18 firmly together.

The devices just described constitute a convenient means of connecting the case 5 to the strap 10 at any desired point to compensate for the different diameters of the change-
45 gears 8 employed, and the thimble 18 being rotatably mounted in the lug 17 and locked securely to the strap 10 affords the proper amount of play when the strap 10 is moved so that the case 5 may be shifted to disen-
50 gage the gear 8 from the gear 3 without bind or friction in the connecting parts.

It is obvious that many changes and variations may be made in the mechanisms described and that the principle may be applied
55 to other uses without departing from the spirit of our invention.

Having thus described our invention, its construction and mode of operation, what we claim, and desire to secure by Letters Pat-
60 ent of the United States, is as follows:

1. In a speed mechanism, a driven shaft and a gear thereon, combined with a driving-shaft and a gear thereon, a case or frame pivotally mounted on the driving-shaft, a single second
65 gear contained therein and engaging with the gear on the driving-shaft, means attached to the said gear whereby a change-gear may be

directly connected thereto, and a change-gear mounted thereon and meshing directly into the gear on the driven shaft, the said change-
70 gear being one of a series of change-gears having different diameters, together with shifting means for the case and means for changing the position of the case with reference to the shifting means. 75

2. In a speed mechanism, a driven shaft and a gear thereon, combined with a driving-shaft, a case pivotally mounted thereon, a gear on the driving-shaft located within the case, a
80 single second gear supported within the case and meshing into the gear on the driving-shaft, a stud attached to the second gear, and a change-gear mounted on such stud and meshing directly into the gear on the driven shaft, the said change-gear being one of a se-
85 ries of change-gears having different diameters, together with shifting means for the case and means for changing the position of the case with reference to the shifting means.

3. In a speed mechanism, a driven shaft and a gear thereon, combined with a driving-shaft, a change-gear supported thereon and actuated thereby and arranged to mesh into the gear on the driven shaft, together with means to
90 disengage the change-gear therefrom, and means for changing the position of the change-gear with reference to the disengaging means. 95

4. In a speed mechanism, a driven shaft and a gear thereon, combined with a driving-shaft, a case or frame pivotally mounted thereon, a
100 change-gear carried by the case or frame and actuated by the driving-shaft and arranged to mesh with the gear on the driven shaft, a disengaging strap, and means for adjustably connecting the case or frame to the strap. 105

5. In a speed mechanism, the combination of a pivotally-arranged gear-case and a train of gearing, a portion of which gearing includ-
110 ing a change-gear is mounted in the gear-case, with a disengaging strap and means for adjustably connecting the strap to the case to allow for the different diameters of the change-gears employed.

6. In a speed mechanism, the combination of a pivotally-arranged gear-case and a train
115 of gearing, a portion of which gearing including a change-gear is mounted in the gear-case, with a disengaging strap formed in the arc of a circle and means for adjustably connecting the strap to the case to allow for the
120 different diameters of the change-gears employed.

7. In a speed mechanism, the combination of a pivotally-arranged gear-case and a train
125 of gearing, a portion of which gearing including a change-gear is mounted in the gear-case, with a disengaging strap, a rotatable piece connected to the gear-case, and means for adjustably connecting the disengaging strap with the rotatable piece to allow for the dif-
130 ferent diameters of the change-gears employed.

8. In a speed mechanism, the combination of a pivotally-arranged gear-case and a train

of gearing, a portion of which gearing is mounted in the gear-case, with a disengaging strap, a rotatable thimble connected to the case, a bolt connected to the strap, and means 5 to rigidly connect the thimble, bolt and strap.

9. In a speed mechanism, the combination of a pivotally-arranged gear-case and a train of gearing, a portion of which gearing is mounted in the gear-case, with a disengaging 10 strap, a thimble formed with projecting lugs and rotatably mounted upon the case, a bolt provided with a head to embrace the strap and passing through the thimble, and suitable means whereby the bolt may be moved longitudinally to draw its head within the lugs 15 of the thimble and to bind the strap thereto.

10. In a speed mechanism, the combination of a pivotally-arranged gear-case and a train

of gearing, a portion of which gearing is mounted in the gear-case, with a disengaging 20 strap, a thimble provided with lugs and rotatably mounted upon the case, a bolt formed with a head to engage the strap and passing through the thimble, and provided at its opposite end with a pin or projections, and a 25 lever interposed between the thimble and the projections on the bolt.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JAMES SAMUEL HEATH.
ERNEST BASEMAN.

Witnesses:

B. G. THOMAS,
D. C. TICKNOR.