P. P. MAST.

Seeding-Machine.

No. 212,028. Patented Feb. 4, 1879.

Fig. 1.

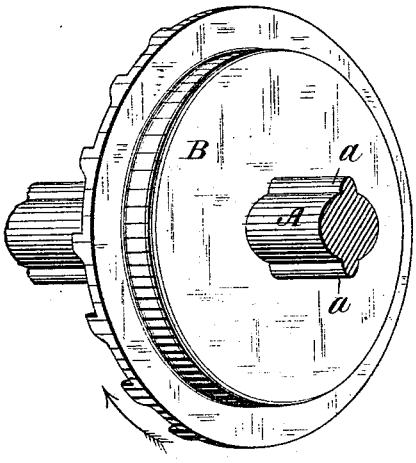


Fig. 3.

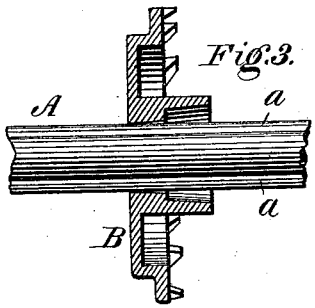
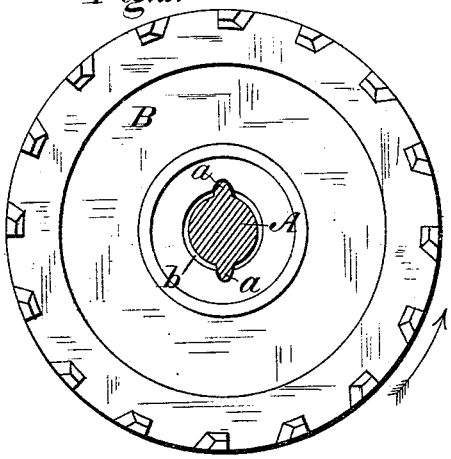


Fig. 2.



Witnesses:

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UNITED STATES PATENT OFFICE

PHINEAS P. MAST, OF SPRINGFIELD, OHIO, ASSIGNOR TO P. P. MAST & COMPANY, OF SAME PLACE.

IMPROVEMENT IN SEEDING-MACHINES.

Specification forming part of Letters Patent No. **212,028**, dated February 4, 1879; application filed November 5, 1878.

To all whom it may concern:

Be it known that I, PHINEAS P. MAST, of Springfield, in the county of Clarke and State of Ohio, have invented certain Improvements in Seeding-Machines, of which the following is a specification:

The object of my invention is to provide a cheap, simple, and close connection between the feed-wheels of a seeding-machine and the shaft by which they are driven, and this in such manner as to avoid the necessity of machining or fitting the parts, dispense with screws and other extra fastening devices, and permit the ready withdrawal of the shaft at will.

To this end the invention consists in driving the wheels by means of a shaft having two ribs on opposite sides.

Seeding-machines, as ordinarily constructed, are provided with a series of feed-wheels mounted in feed cups or cases, and driven by means of a single central feed-shaft passing through the entire series of wheels. Necessity demands that the wheels shall fit the shafts closely, or in such manner as to have no play or lost motion thereon, and also that the shaft shall be readily removable, in order that the wheels may be taken from the cups for repair, or the removal of obstructions.

Heretofore various plans of construction have been employed. The shaft has been made square, and fitted into an eye or hole of corresponding form in the wheel; but owing to the facts that the holes could not be cast accurately, and that the square iron as sold in the market could not be depended upon for uniformity and accuracy, the parts either fitted with an objectionable looseness, or, on the other hand, refused to go together until after having been fitted—an operation which added greatly to the cost of constructing the machine.

Another plan attempted was that of planing a flat face on one side of a round shaft, and providing each wheel with a screw to bear thereon; but this plan, besides being very expensive, necessitated the loosening and retightening of a great number of screws in order to permit the removal of the shaft.

Still another plan was that of using a shaft with a rib on one side to enter a corresponding notch in the eye of the wheel. This plan required that the wheel should fit the shaft closely, as the rib served the sole purpose of imparting the rotary motion, and in practice it was found that this could only be secured by machining or fitting the parts together. In casting the wheel a certain allowance must be made in the size of the eye to insure an admission of the shaft in all cases, and it was found that the space thus allowed would, in nearly every instance, permit too much play of the wheel on the shaft.

After experimenting I have discovered that all the objections incident to the above plans may be overcome by the very simple expedient of providing the shaft with two driving-ribs on opposite sides, arranged to fit within corresponding notches in the hub of the wheel, good results being attained when the eye of the wheel fits very loosely around the body of the shaft, so that the ribs both sustain and turn the wheel.

Figure 1 is a perspective view, showing my shaft in combination with a feed-wheel; Fig. 2, a face view of the wheel with the shaft therein; Fig. 3, a cross-section of the same.

A represents the shaft, made preferably of a round form in cross-section, having on opposite sides two ribs, *a*, best made of a half-round or V form. B represents the feed-wheel, which may be made of any form desired, provided at the center with an eye or opening of such shape as to admit the shaft and its ribs.

In casting the wheel care is taken to have it fit the ribs as closely as possible; but the central portion of the eye or opening may be of such size as to leave a space around the body of the shaft, as shown at *b*, Fig. 2, in which case the ribs will serve both to rotate and to sustain the wheel.

In practice it has been demonstrated that by the use of the double-ribbed shafting, in connection with the cast-metal wheel, a much better and closer fit can be obtained without specially fitting the parts than in any other manner.

It is found that by using double-ribbed shafting of ordinary rolled iron in connection with the wheels as they come from the mold, the

requisite closeness of fit may be secured in every instance.

In casting feed-wheels a certain allowance must be made for shrinkage and variation, and the eye must, as a matter of precaution, be made somewhat larger than the shaft. In consequence of this allowance, and of the fact that ordinary round iron rods or shafting vary somewhat in size, there is generally more or less play and space between the wheel and shaft. This space, which in the case of square shafts and round shafts with a single rib permits an excessive amount of play on the part of the wheel, is of no moment under my mode of construction, as the application of the second rib reduces the amount of play to such an extent that it is practically inappreciable.

It is manifest that a given amount of space between the wheel and shaft causes far less play when the two ribs are employed than when one only is used—first, because the bearing-points are thrown farther apart, and, second, because the shaft is prevented from working from side to side within the eye.

I am aware that a car-wheel has been provided with two splines fitting within grooves in the axle to prevent it from turning thereon; but such construction differs from mine in that the points of bearing or driving-points are thrown inward toward the center of the shaft, instead of outward beyond its periphery, so as to permit an increased amount of play between the parts.

It is manifest that with a given space between the wheel and shaft, and two points of bearing between them, the amount of rotary play which the shaft has within the wheel will depend upon the distance between the two points of bearing, and that as the points are carried outward away from the center and from each other, the rotary play of the wheel will be decreased accordingly.

Having described my invention, what I claim is—

1. In a grain-drill or seeder, the combination of a series of cast feed-wheels, each provided with an eye and two notches therein, and a loose feed-shaft provided on opposite sides with two continuous ribs formed longitudinally thereon.

2. The combination of the shaft having the two ribs on opposite sides and the feed-wheel having the central opening, adapted to fit closely upon the ribs, but loosely on the body of the shaft.

3. As a new article of manufacture, a feed-shaft for seeding-machines, made of a round form, with two continuous longitudinal ribs formed on its opposite sides.

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