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Patented Oct. 24, 1899.

T. E. HOFFMAN.
SEEDER AND PLANTER.

(Application filed Feb. 9, 1899.)

(No Model.)

2 Sheets—Sheet 2.

Fig. 3.

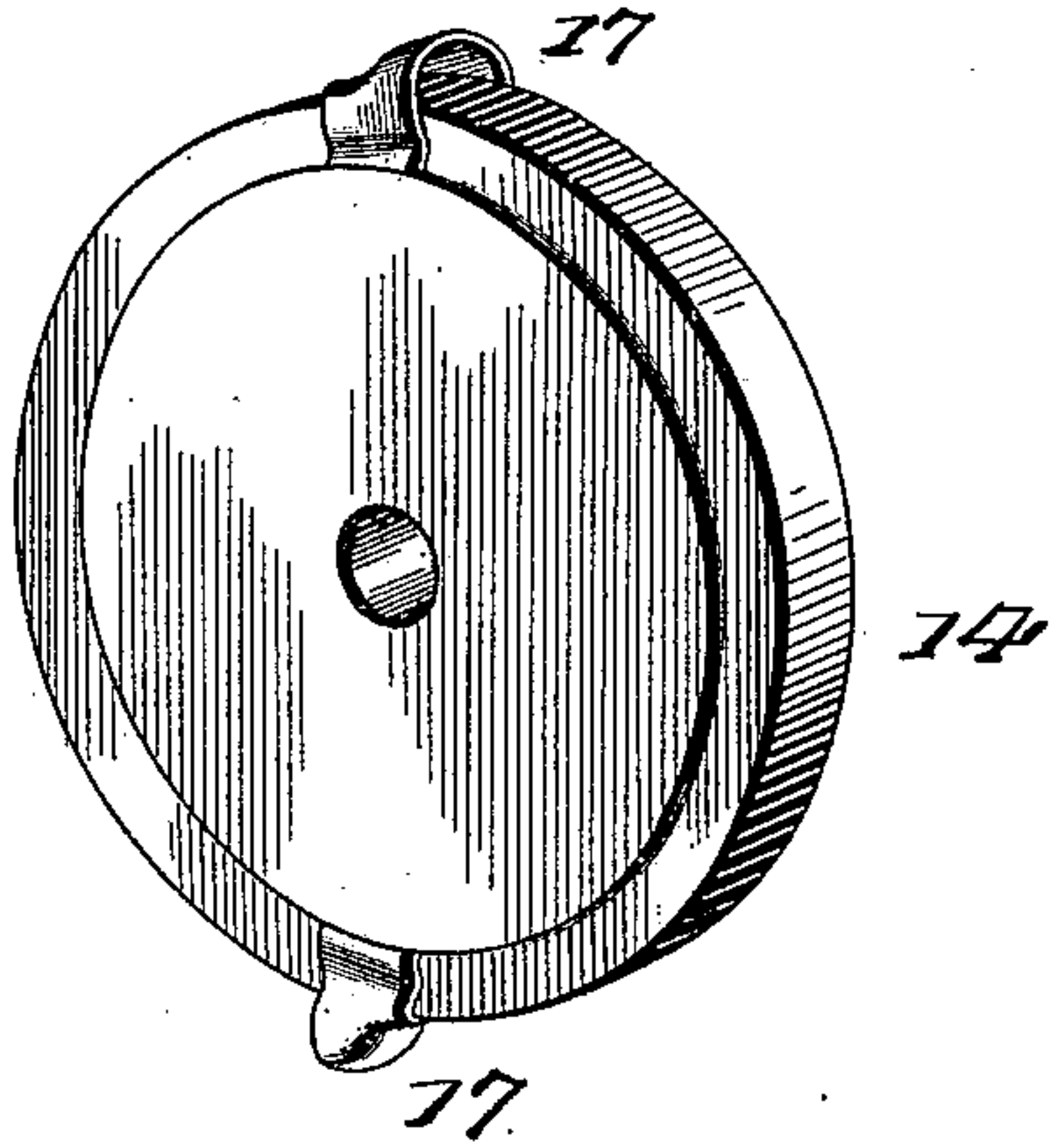


Fig. 4.

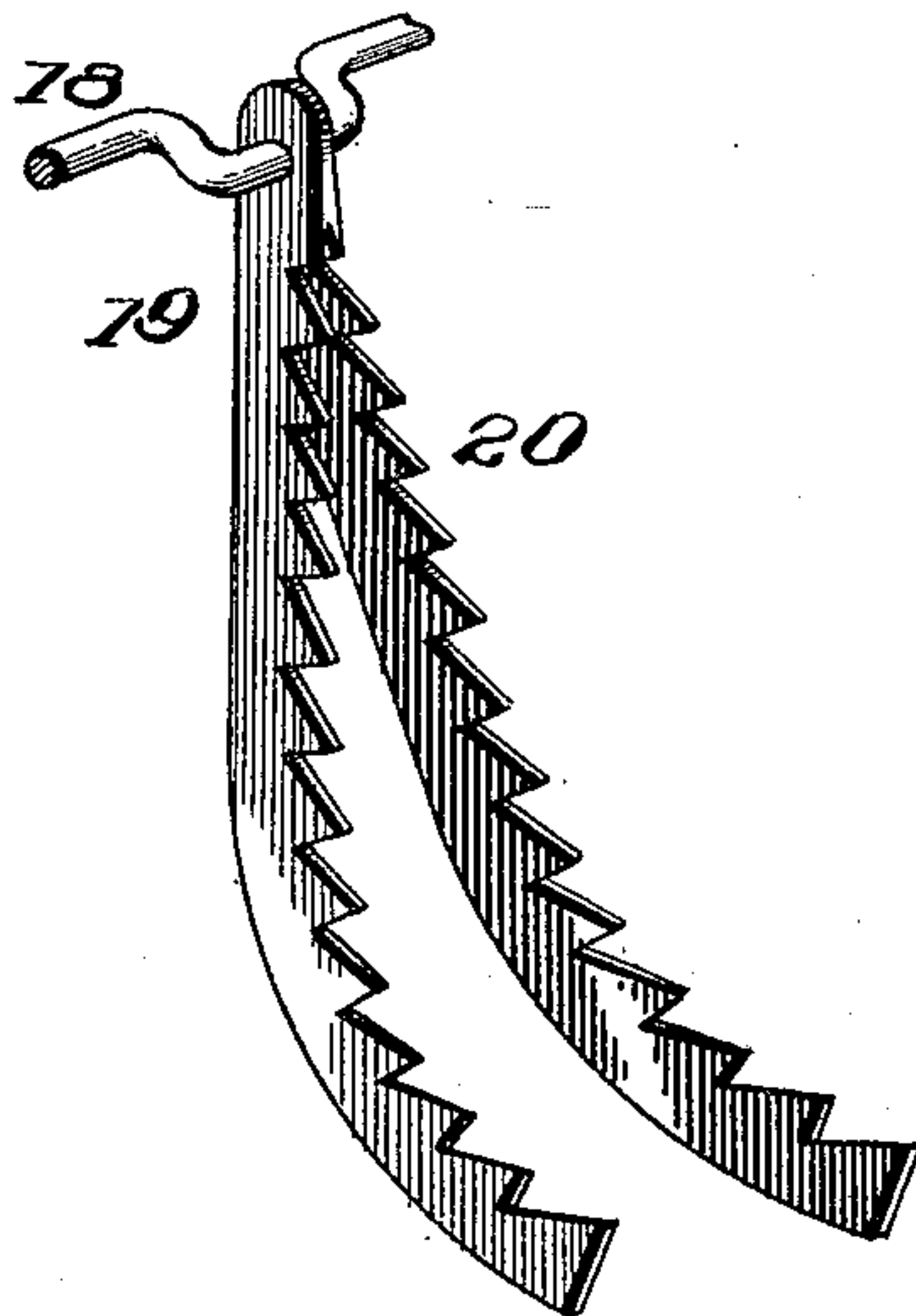


Fig. 5.

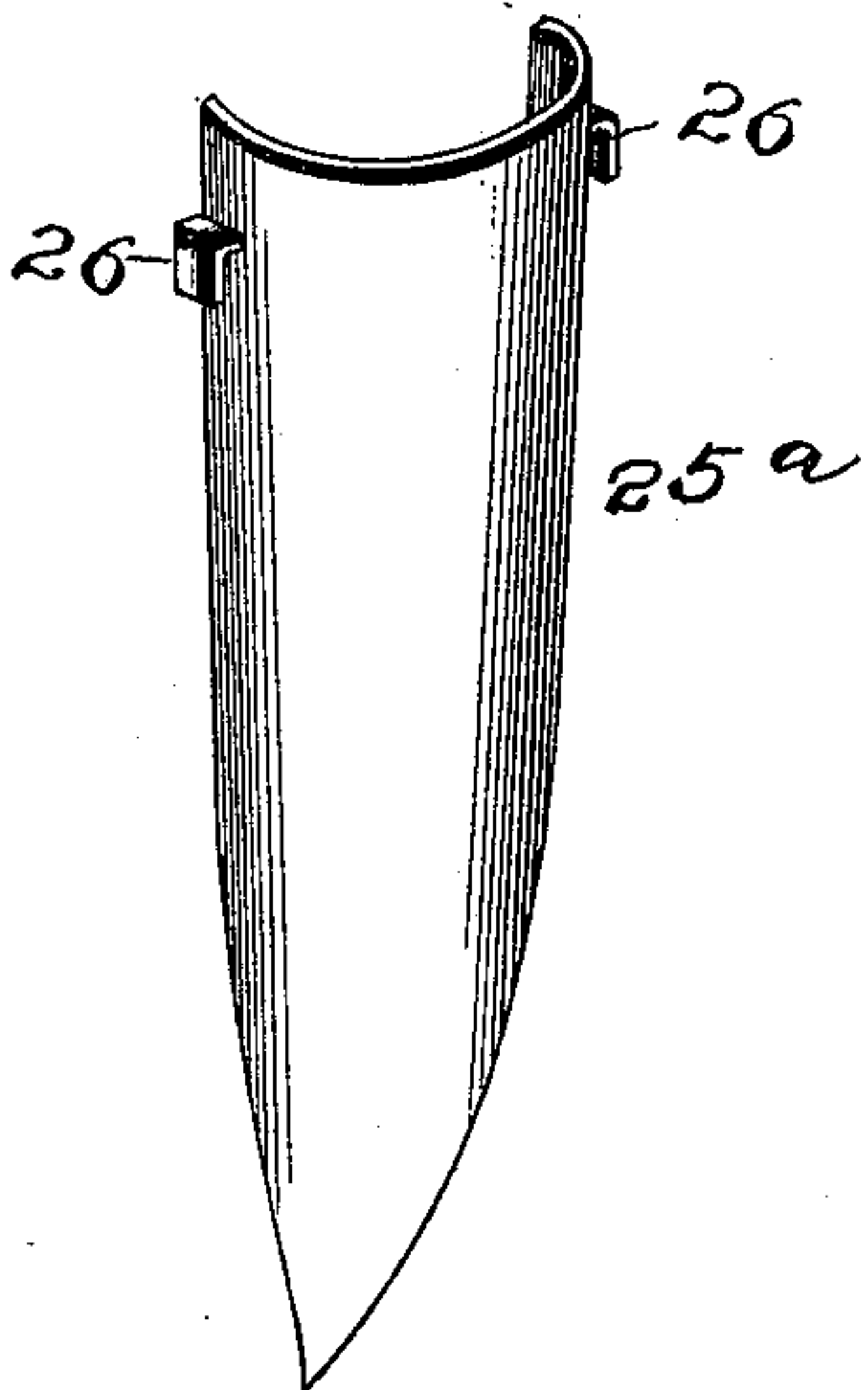
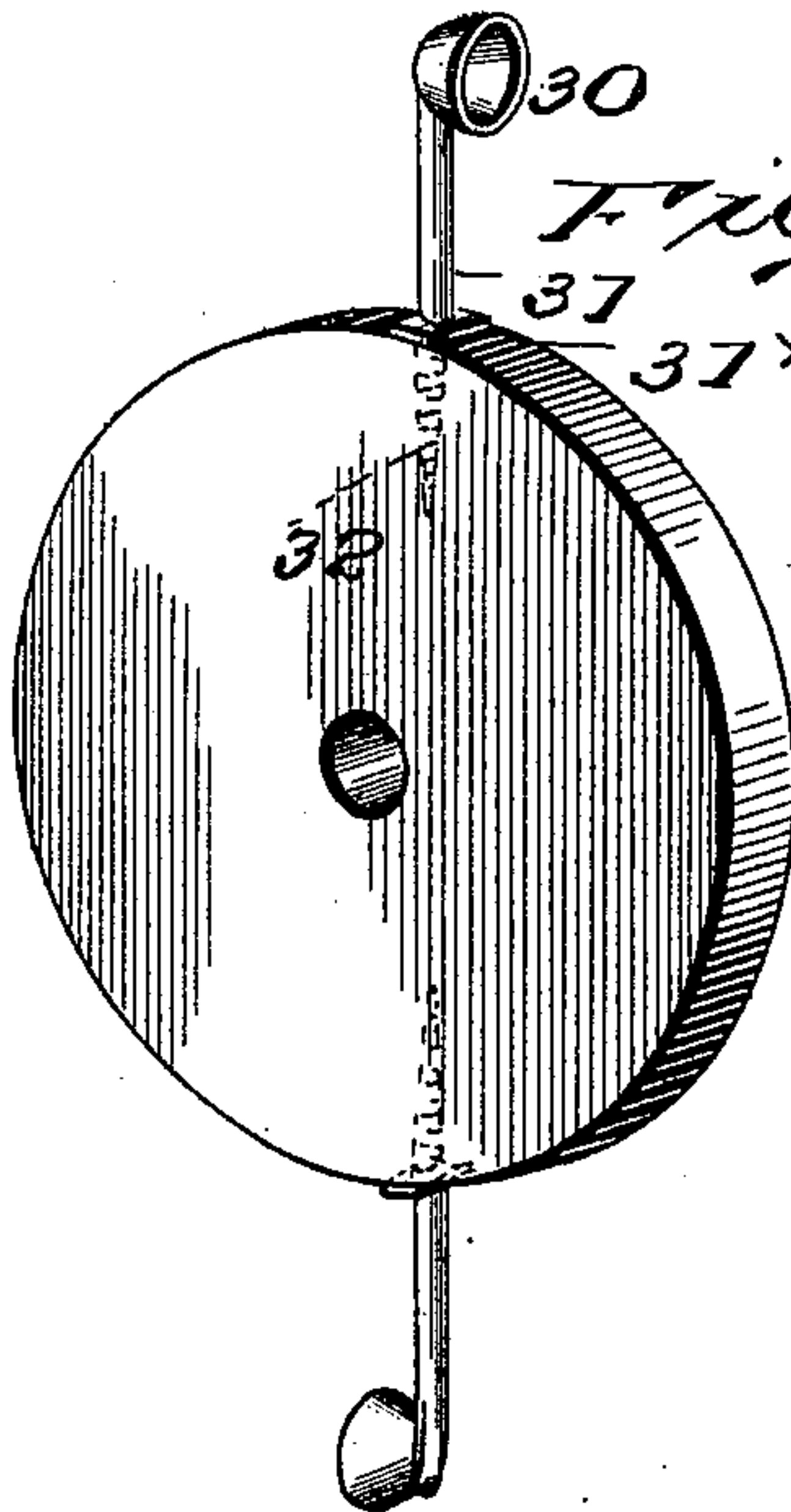


Fig. 6.



Witnesses

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SEEDER AND PLANTER.

SPECIFICATION forming part of Letters Patent No. 635,483, dated October 24, 1899.

Application filed February 9, 1899. Serial No. 705,083. (No model.)

To all whom it may concern:

Be it known that I, THOMAS E. HOFFMAN, a citizen of the United States, residing at Orangeburg, in the county of Orangeburg and State of South Carolina, have invented certain new and useful Improvements in Seeders and Planters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention pertains to combined planters and seeders adapted for universal use or in depositing seed of all kinds without employing boots or analogous conducting devices.

The object of the improved machine considered relatively to previous apparatus for similar purposes is to arrange all the mechanism contributing to the combined operation within limited confines, to reduce the number of necessary parts to a minimum, and insure an effective result in any use by means of a single device having a multiplicity of applications and not requiring a material change or adjustment of parts.

Generally stated, the structure embodies an elongated narrow frame supporting a front depending colter for ground-opening purposes, an immediately succeeding ground-wheel or disk having a sharpened edge or periphery and serving both as an operating and a guiding means, a rear hopper having a forward shoe at a downward angle of inclination in which a disk carrying peripheral cups has rotation and an agitator having a timed movement to regulate a gravitating feed, and a rear coverer or analogous device on the rear frame, the disk and agitator being operated by power-connecting mechanism primarily actuated by the ground-wheel.

The invention also consists of the details of construction and arrangement of the several parts more particularly hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a perspective view of a machine embodying the invention. Fig. 2 is an enlarged longitudinal vertical section of the hopper and rear parts of the device. Fig. 3 is a detail perspective view of the feed-disk. Fig. 4 is a similar view of the agitator and shaft there-

for. Fig. 5 is a similar view of a shield attachment used at times with the machine. Fig. 6 is a similar view of a disk, showing an additional form of cups.

Referring to the drawings, wherein similar numerals are utilized to indicate corresponding parts in the several views, the numeral 1 designates a frame which is of elongated narrow form and preferably constructed of suitable metal. The front end of this frame is contracted and provided with a suitable opening or analogous structure for the attachment of a singletree, and in rear thereof is a slot 2, in which a colter 3 is adjustably mounted and depends a suitable distance below the frame. The purpose of this colter is to open up the ground, and its adjustability serves to accommodate a variation in the depth of penetration. From this front or converging end of the frame the opposite parts thereof extend rearward in such planes of divergence or otherwise as to form a proper support for the parts confined therein. Wherever axes or shafts are mounted in the several parts as well as in the frame, any approved form of journal boxes or bearings may be employed. At the front, between the opposite parts of the frame immediately in rear of the colter 3, a ground wheel or disk 4 is fixed to a shaft 5. The said ground-wheel has a sharpened periphery 6, and on one end of the shaft 5 is a sprocket-wheel 7. In rear of the ground-wheel 4 a hopper 8 is made fast between the opposite parts of the frame and has a forwardly-projecting downwardly-inclined shoe 9, with an upper open side 10. To opposite sides of the hopper 8 handles 11 are secured and extend upwardly and rearwardly at an angle of inclination and terminate in grips 12. The rear wall 13 of the hopper is continuous with the bottom wall of the shoe 9, and the inclination of said wall in its entirety is gradual, and the open front end of the shoe stands at such an angle relatively to the horizontal position of the frame 1 as to insure the desired operation of a feed-disk 14, movable in the said shoe 9 and fixed to a shaft 15, having a sprocket-wheel 16 on one end. (Shown in the majority of the figures where it appears.) The said feed-disk 14 has peripheral cups 17, having opposite parts clamped or pinched against the disk and the cup member standing out in op-

erative position. The shaft 15 stands over the adjacent upper part of the shoe 9, and the disk 14 thereon moves through the body of the shoe at a suitable depth. In the
 5 hopper 8 a crank-shaft 18 is rotatably mounted and has attached to the crank thereof the upper end of a forked agitator 19, which works downwardly into the shoe on opposite sides of the disk and has teeth 20 of such
 10 shape as to push the seed or other material to be planted forward into the shoe and also to prevent clogging of the disk 14. The agitator 19 is loosely mounted upon the crank portion of the crank-shaft 18 with its lower end resting upon the curved portion of the hopper
 15 common to the rear wall thereof and the bottom of the shoe. The upper or top portion of the agitator is toothed, and the teeth engage positively with the seed and feed it from the
 20 hopper to the shoe. The lower portion of the agitator is curved about as shown, and the curved portion rests upon the curved part of the hopper and travels thereon in the reciprocating movement of the agitator. The lower
 25 or curved portion of the agitator projects beyond the hopper into the shoe and serves in the operation of the seeding mechanism to move the seed into the shoe a sufficient distance to be taken up by the cups of the disk
 30 14. On one end of the crank-shaft 18 a sprocket-wheel 21 is fully engaged by a chain belt 22, running from the sprocket-wheel 7 on the shaft 5 of the ground-wheel 4, one part of said chain belt being at all times in engagement
 35 with the sprocket-wheel 16 on the shaft 15 of the disk 14. By this means the parts are relatively actuated, and it will be understood that any equivalent mechanism is intended to be substituted therefor.
 40 The lower portion of the front of the hopper is cut away, forming an opening which is adjustably controlled by a gate or slide 23, held in position by means of a set-screw 24. At this point also a brush 25 is adapted to be positioned and engages the peripheral disk 14,
 45 so as to thoroughly clean the latter and cause the cups 17 to carry over a prescribed quantity of seed during the planting operation. The inclination or the depression of the front
 50 upper part of the shoe 9 relatively to the frame 1, as hereinbefore referred to, permits the cups 17 to clear a part of the said shoe when in their horizontal relieving position by reason of the fact that when the disk is primarily
 55 placed on the frame it occupies an eccentric relation to the length of the shoe, and the cups when coming over will therefore stand beyond the front end of the latter.

The rear ends 26 of the frame 1 are extended downward and rearward and have removably attached thereto a coverer 27, with a lower reduced edge, which is arched, as at 28. The arched part of the coverer is in direct alinement with the point of ground on
 60 which the seed is at all times deposited, and the opposite sides of said coverer draw up the ground over the seed, while the center also

covers, but does not scrape too deep, and thus a sufficient depth of soil is placed upon the deposited seed; also, the seed remains
 70 undisturbed after deposit by the use of this form of coverer, and for general usages this attachment will be the only one needed and required. Under some circumstances, however, it may be desirable to employ shovel or
 75 other cultivators or other attachments, and for the purpose of substitution the coverer is made removable and may be replaced by such other devices.

A shield attachment 25^a is removably fitted
 80 to the frame in the rear of the ground-wheel and in advance of the seeding devices and is supported by hooks 26, engaging over the frame-bars. There are many ways in which
 85 this shield could be attached to the said frame; but all should embody removable devices, so that this attachment may be easily applied or withdrawn. The function of this device
 is to prevent the wind from blowing the seed after it leaves the cups, and ground is also
 90 prevented from being thrown over into the shoe by the ground-wheel, and the lower end thereof is tapered to follow in the furrow made, though it does not strike the bottom
 of the furrow. Under other conditions this
 95 shield might also serve a useful purpose, and it is intended to be used when desired by the operator.

In Fig. 6 an additional form of cups 30 is shown, and in this instance they are shown
 100 supported by shanks 31, removably attached to the periphery of the disk, and particularly adapted for use with certain kinds of seed.

In the construction of the cups in either event they are to be slightly less than a full
 105 hemisphere in order to avoid clogging or packing of the seed taken thereby from the shoe 9 and make a full deposit of their contents at all times when brought over the front end of the said shoe. The cups 17 and 30 are inter-
 110 changeable on the same disk, and as many may be used as desired for different purposes; also, the shanks shown by Fig. 6 on the cups 30 have flanges 31, which rest on the periphery of the disk and are supplied with screw-
 115 shanks 32 for insertion in the said disk and in a removable manner. In the first-described form the opposite parts of the cups are pressed against the sides of the disk. These removable parts, together with the
 120 shield 29 and the coverer, are the only ones which require change or application, as all other structural features remain intact so far as the seeding mechanism *per se* is concerned. In the use of the device the draft-animal is
 125 attached to the front of the frame 1, and the colter 3 first opens up the ground and the furrow or groove completed by the wheel or disk 4 immediately in advance of the disk 14. In addition the movement of the said wheel or
 130 disk 4 operates the said disk 14, and the cups on the latter take up the seed from the shoe 9 and deposit it regularly on the ground directly in the furrow or groove. The coverer at the

rear end of the frame then successively draws up the ground in the manner stated hereinbefore over the deposited seed, and the operation becomes complete.

5 It is unnecessary to use the improved device on previously-prepared ground, as it serves effectually in its intended use on unbroken ground, and in the latter event the colter and wheel or disk 4 break the ground
10 sufficiently for the reception of the seed.

The inclination of the rear wall of the hopper, and which is continuous with the bottom of the shoe, causes the seed in said hopper to gravitate into the shoe, and sufficient space
15 is left between the lowermost plane of rotation of the disk and the bottom of the shoe to avoid crushing or cutting the seed, particularly where soft seed is being used, and by the described arrangement pressure is also
20 relieved in a lateral direction.

The machine set forth is adapted for general use and is not confined exclusively to field or plantation purposes, but may be conveniently employed for seeding vegetables or
25 flowers in gardens or truck-farms, and for some applications it might be found necessary to modify the gearing to vary the speed and also the proportions and dimensions, as well as the details of construction. Such changes
30 will be made within the purview of the invention and without sacrificing any of the advantages thereof.

Having thus described the invention, what is claimed as new is—

35 1. In a device of the character specified, a hopper having a forwardly-projecting shoe, a rotatable feeder positioned in said shoe, and an agitator located in the hopper and projecting therefrom into the shoe, substantially
40 as and for the purpose set forth.

2. In a device of the character set forth, a

hopper having a forwardly-projecting shoe, and seeding mechanism positioned in said shoe, an agitator located in the hopper and projecting therefrom into the shoe, and means 45 applied directly to the upper end of the agitator for imparting a reciprocating movement thereto, the lower end of the agitator resting loosely upon the portion of the hopper common to the latter and the shoe, substantially 50 as described.

3. In a device of the character set forth, the combination of a frame, a seed-hopper supported thereby having a shoe extending forwardly therefrom, a disk rotatably positioned 55 in said shoe and having peripheral cups, a forked agitator working through the hopper and shoe and on opposite sides of the disk, and means for operating said parts.

4. In a device of the character set forth, the 60 combination of a frame, a ground-wheel seeding devices on said frame, and a depending shield removably attached to the frame between the seeding devices and ground-wheel.

5. In combination, a hopper having a forwardly-extending shoe, the rear wall of the hopper being inclined and merging into the bottom of the shoe, a rotary feeder positioned in the shoe, a toothed agitator located in the hopper and having its lower portion curved 70 and resting loosely upon the portion of the hopper common to the rear wall thereof and the bottom of the shoe, and a crank-shaft located in the hopper and having the upper portion of the agitator mounted thereon, as and 75 for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

THOMAS E. HOFFMAN. [L. S.]

Witnesses:

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