

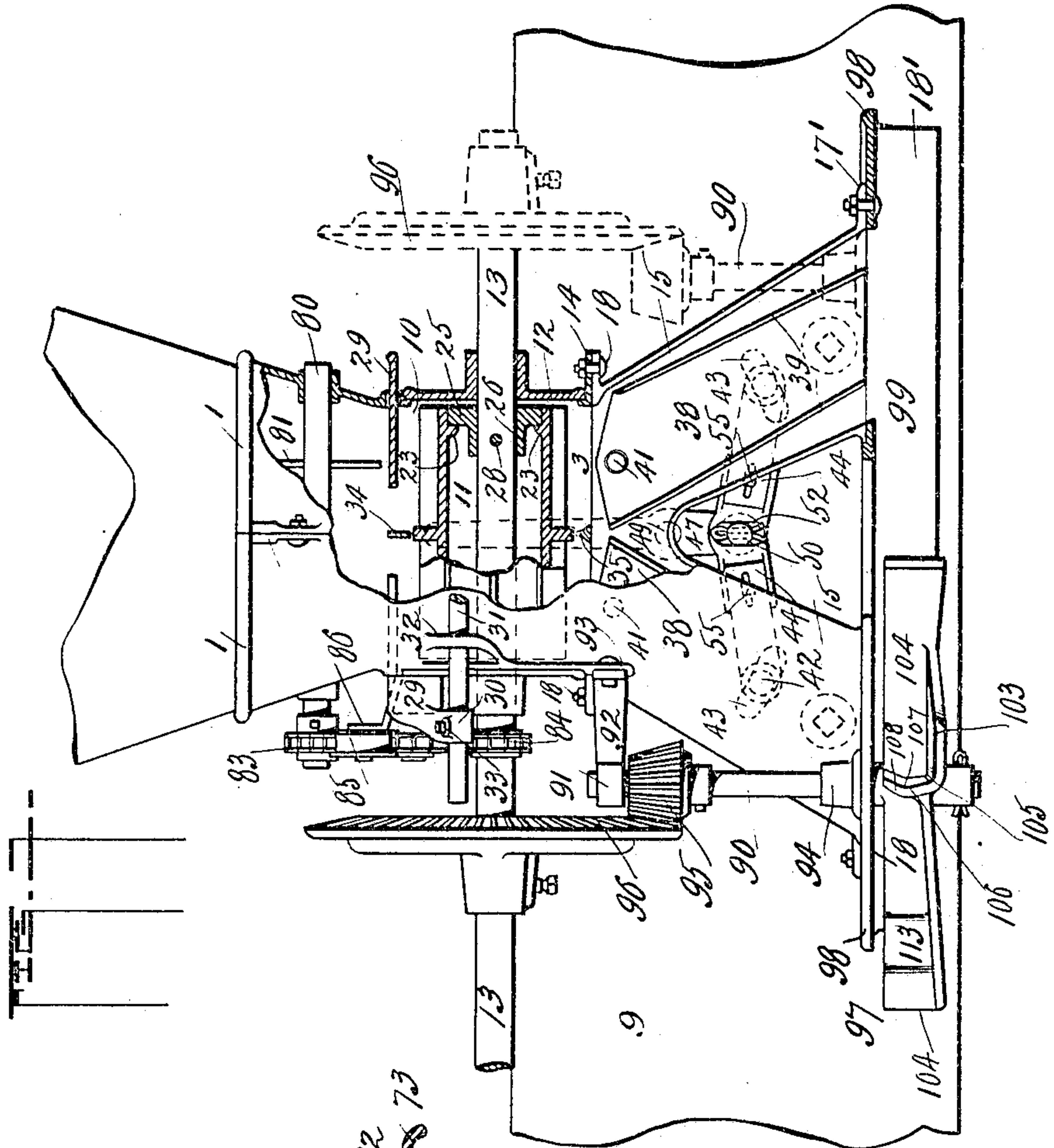
No. 787,949.

PATENTED APR. 25, 1905.

C. M. SESTER.  
BROADCAST SEEDING MACHINE.

APPLICATION FILED MAY 12, 1903.

3 SHEETS—SHEET 1.



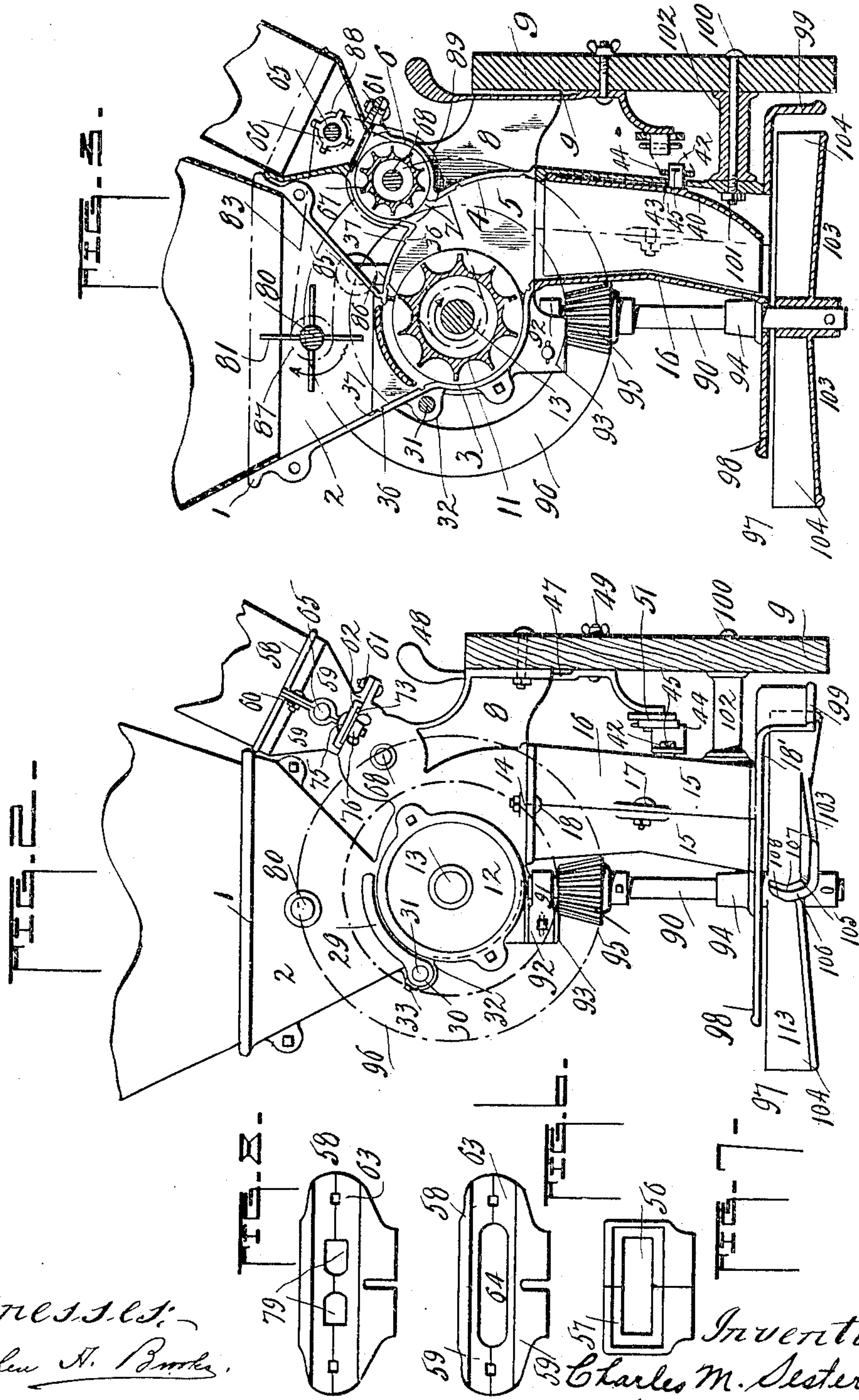
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3 SHEETS—SHEET 2.



Witnesses:  
*Stephen H. Parker,*  
*Boydton H. C. Leach*

Inventor:  
*Charles M. Sester,*  
*By Chas. M. Sester,*  
*Atty.*

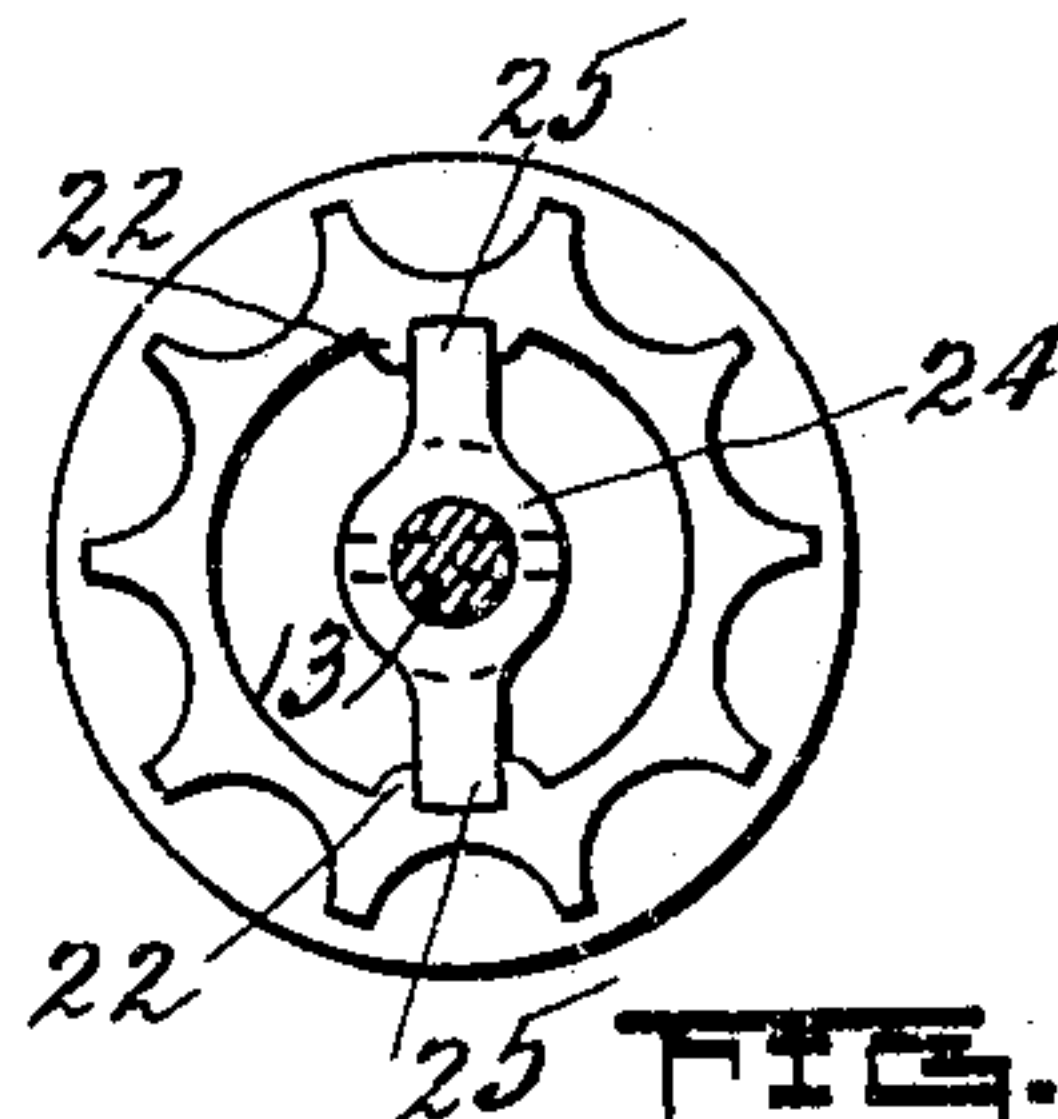
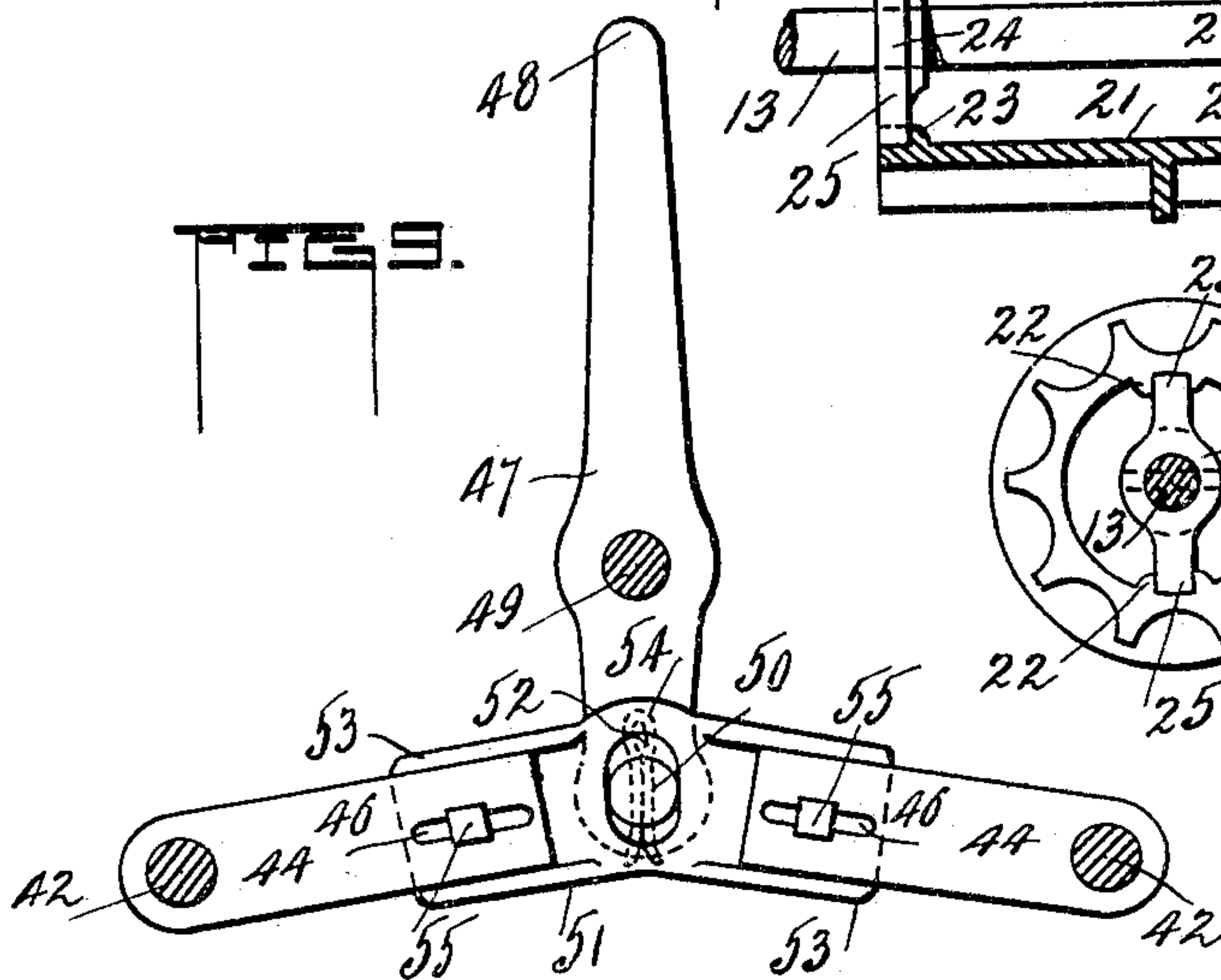
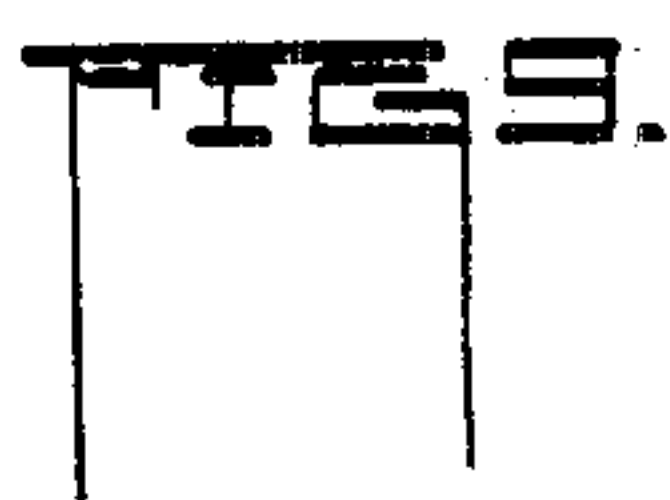
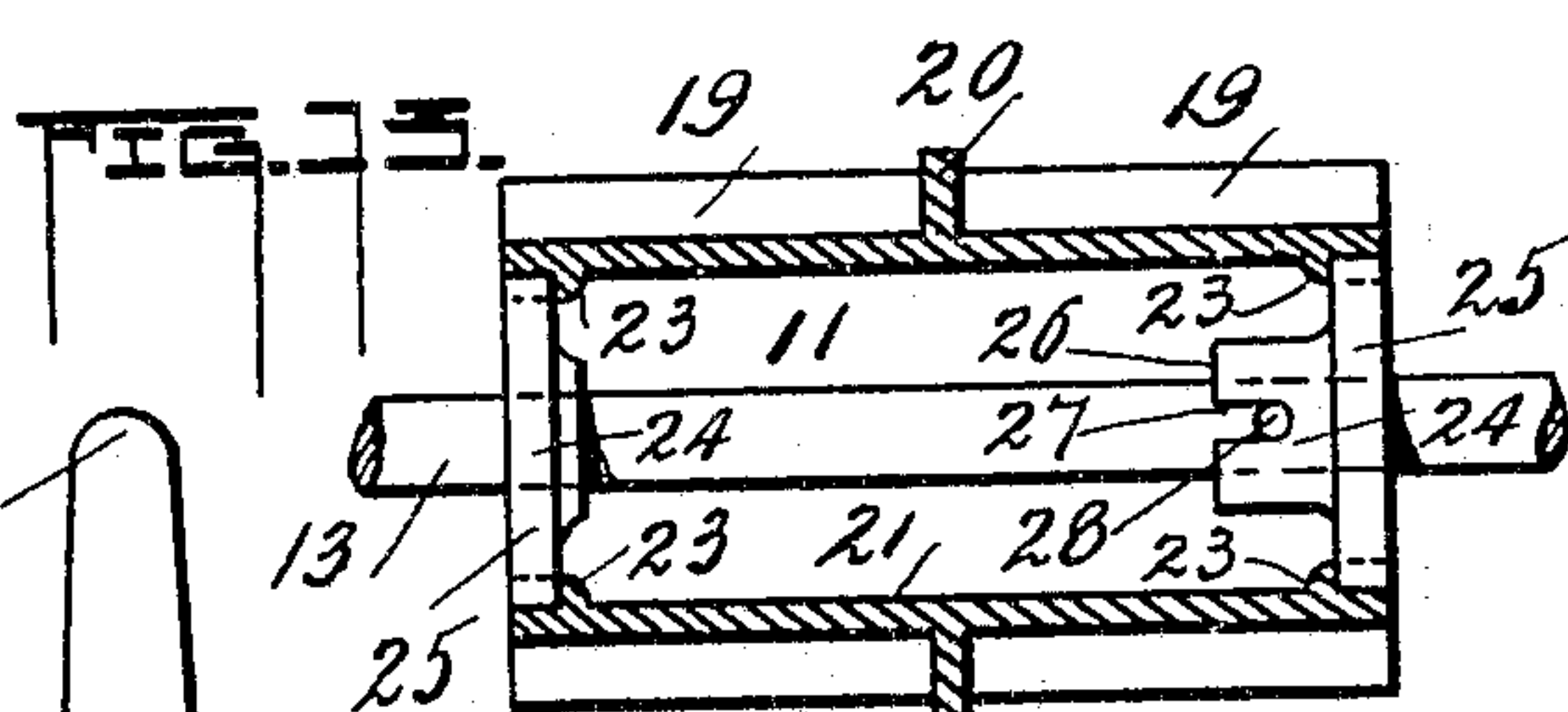
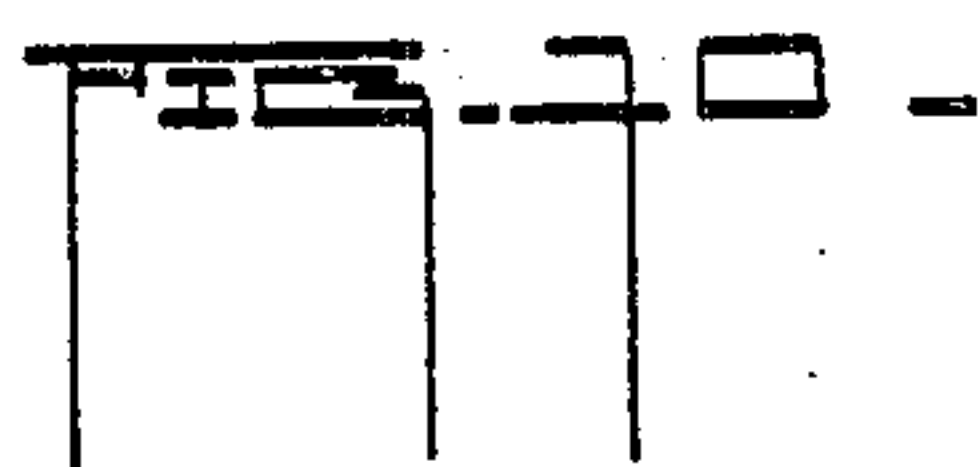
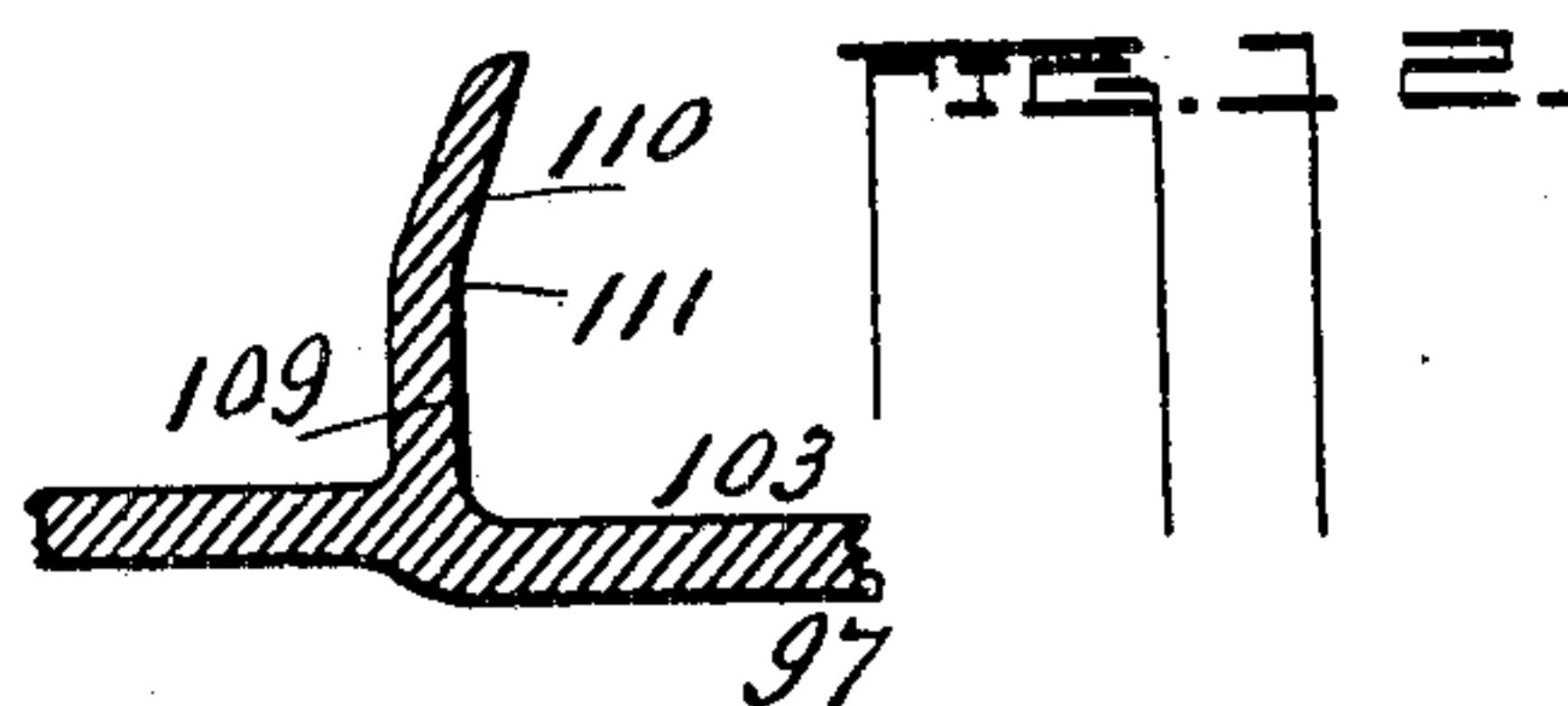
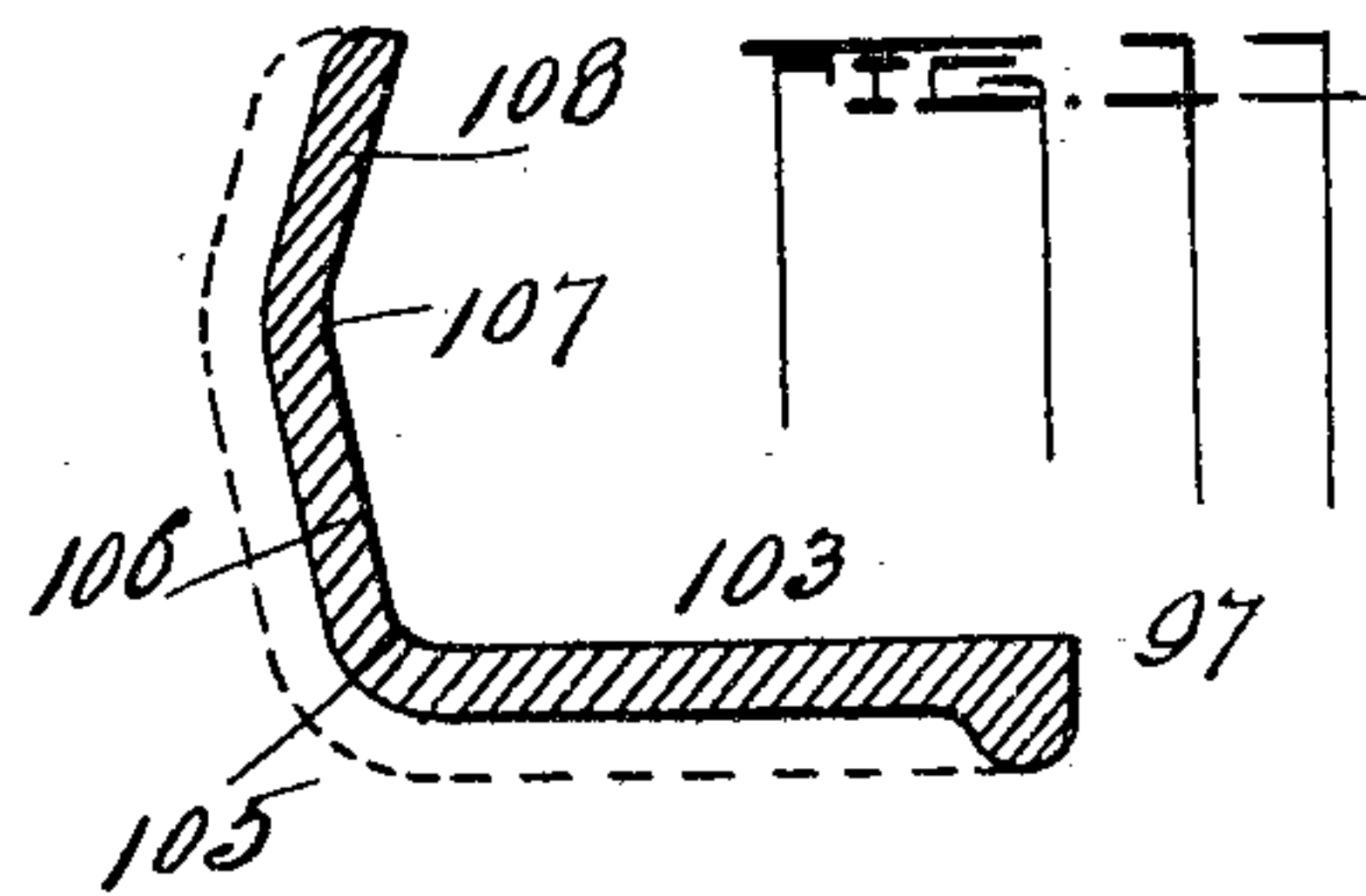
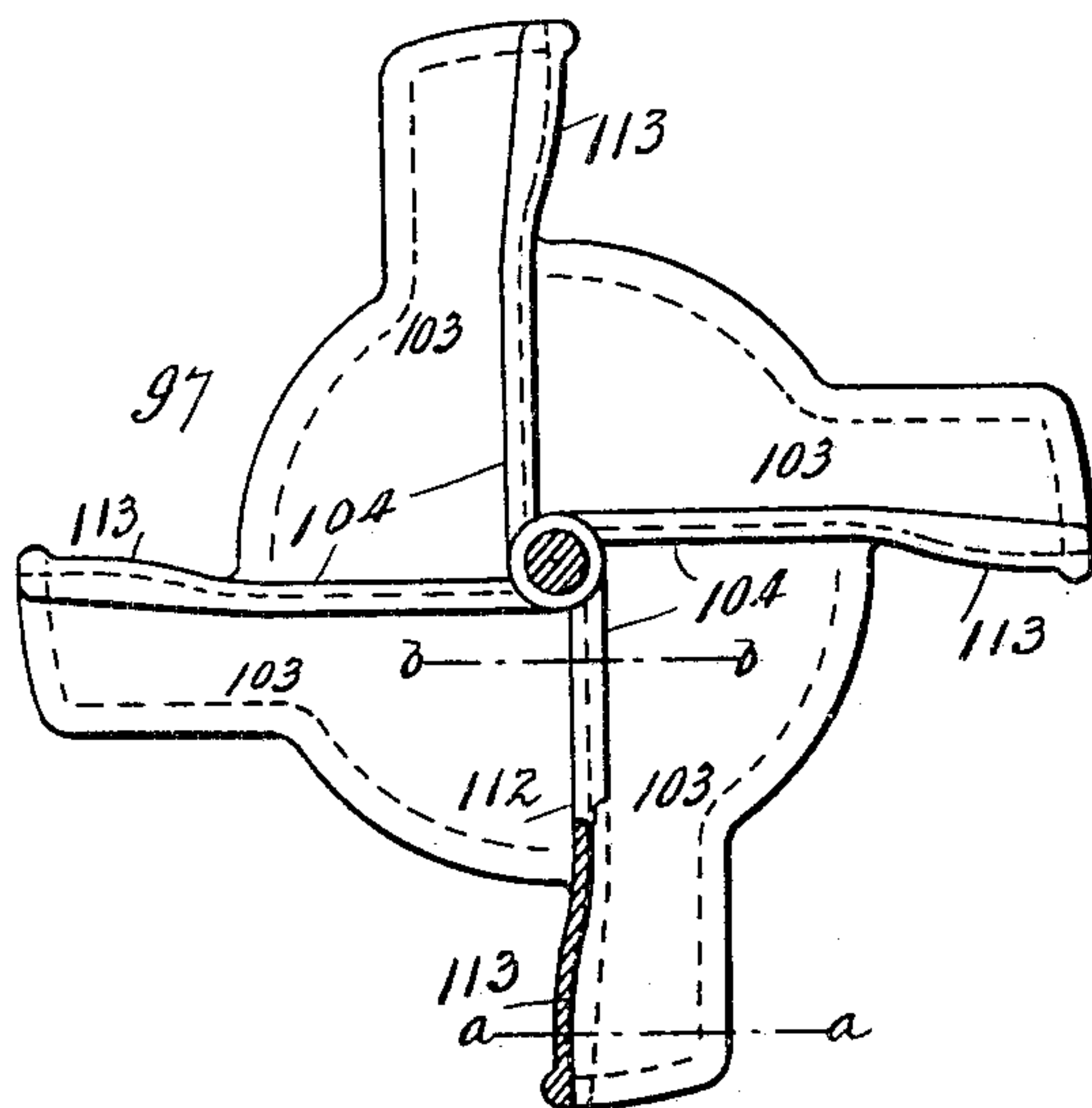


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BROADCAST SEEDING MACHINE.  
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3 SHEETS—SHEET 3.



Witnesses:  
Stephen N. Brooke  
Raymond C. Leach

Inventor.  
Charles M. Sester.  
By Chas. M. La Porte.  
att'y.



# UNITED STATES PATENT OFFICE.

CHARLES M. SESTER, OF PEORIA, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO PEORIA DRILL AND SEEDER CO., OF PEORIA, ILLINOIS, A CORPORATION OF ILLINOIS.

## BROADCAST SEEDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 787,949, dated April 25, 1905.

Application filed May 12, 1903. Serial No. 156,793.

*To all whom it may concern:*

Be it known that I, CHARLES M. SESTER, a citizen of the United States, residing at Peoria, in the county of Peoria and State of Illinois, have invented certain new and useful Improvements in Broadcast Seeding-Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention has reference to broadcast seeding-machines, and has for its object a seeding-machine of the type known as "end-gate" seeders.

A further object of the invention is a seeding-machine provided with a driving-shaft passing through the hopper, on which is carried a fluted force-feed roller having a centrally-arranged disk forming a part of said roller for the purpose of dividing the fluted portions; and a further object is the provision of converging spouts leading from the hopper and into which the grain is directed from the force-feed roller or cylinder.

The invention consists, further, in the provision of oscillating wind-shifts or valves operatively carried in the spouts and in the further provision of shifting mechanism having connection with the wind-shifts and adjustably attached to means pivotally attached to the end-gate supporting said seeding mechanism.

A further object of the invention is a new and improved grass-seed attachment, comprising a force-feed roller or cylinder having a centrally-arranged disk dividing said roller into two oppositely-placed fluted portions and valve mechanism situated above the roller and arranged to direct the grass-seed to the fluted portions of said roller.

Another object of my invention is a new and improved distributing-fan having a series of radial wings, each of which is provided with flanges which bear upwardly in diagonal lines to a suitable point and are then bent backward at an opposite angle to form a grain-shed. The flanges as they extend from the center or hub portion of the fan bear approximately at right angles to each

other, and at their outer end the sweeps are curved in a suitable manner, whereby as the grain drops upon the fan the same will hug the crevice formed by the opposite angles of the flanges of the wings to prevent the same from rising as the fan is rotated, and by centrifugal force it is carried along the crevices of the flanges, and as it reaches the point where the flanges are bent outwardly the grain receives an increased movement by the action of the fan in its centrifugal movement and is forced outwardly therefrom in lines extending approximately parallel with the end-gates supporting the seeding-machine.

Another object of my invention is in the peculiarly-constructed force-feed rollers, whose peripheries are fluted and have a central bore which is smooth, with the exception that at the opposite ends thereof I provide suitable lips or lug portions in which are detachably held bearings, through which the driving-shaft is carried and by means of which the force-feed roller is rotated.

Other objects and aims of the invention will become apparent from the following specification and the drawings forming a part thereof, in which—

Figure 1 is a front elevation, partially in cross-section, of a seeding-machine supported by an end-gate (shown broken away) embodying my improvements. Fig. 2 is a side elevation of the machine, also showing the end-gate in cross-section, which supports the same, and the driving-gear upon the side of the machine, shown in dotted lines. Fig. 3 is a vertical cross-section cut on an irregular line passing through the said machine. Fig. 4 is a vertical cross-section, enlarged, of the grass-seeding devices. Fig. 5 is a plan view of a valve-plate in the grass-seeding attachment and a sliding valve operatively connected thereto. Fig. 6 is a plan view of the under side of the upper half portion of the grass-seeding attachment. Fig. 7 is a plan view looking down upon the lower half portion of the grass-seeding attachment. Fig. 8 is a plan view showing a modified form of the upper half portion of the grass-seeding attachment shown in Fig. 6. Fig. 9 is an elevation,



enlarged, showing the adjustable shifting mechanism operatively connected with the wind-shifts of the spouts. Fig. 10 is a plan view, enlarged and partially in cross-section, showing my improved fan. Fig. 11 is an enlarged cross-section on the line *aa* of Fig. 10. Fig. 12 is an enlarged cross-section on the line *bb* of Fig. 10. Figs. 13 and 14 show, enlarged, a longitudinal section and an end view of the fluted roller carried in the grass-seed attachment.

The aim of the present invention is to provide an end-gate seeding-machine having two distributing-fans and two spouts which lead to the said fans and diverge from a common hopper. This hopper is arranged with a single force-feed roller having oppositely-placed fluted portions divided by a central disk, and surrounding a portion of the disk I provide suitable partitions having the contour of the disk and the walls of the hopper to provide for the feeding of grain to the oppositely-placed fans through the spouts referred to, and above the fans I arrange oppositely-placed valves to control the supply of grain to the force-feed roller. To regulate the discharge of the grain from the spouts to the fans, I have provided wind-shifts, inner valves, or linings, which are pivotally carried in the spouts and adapted to be oscillated for discharging grain upon the fans on either side of their centers. This is desirable for the fact that if the wind is blowing against the fans from the right to accomplish a perfect distribution of the grain the same must be delivered to the fans on the right of their centers or directly against the wind, and the same applies if the wind is blowing against the fans from the left. To accomplish the perfect distribution of the grain to the fans and the perfect adjustment and oscillation of the wind-shifts or inner valves, means must be provided whereby both wind-shifts or valves may be moved simultaneously and to which the same may have an adjustable connection. I accomplish this with an adjustable lever connection herein shown, with the plates or bars having a pivotal connection with short studs of the wind-shifts protruding through slotted portions of the rear walls of the spouts, and the reason for such adjustment is that the castings which form the parts of the machine are not always uniform and are not assembled perfectly upon their supports, and if it were not for some such adjustment between the wind-shifts and the operating-lever for oscillating the same the grain passing from the wind-shifts would fall upon the opposite fan at different points and would not be scattered upon the ground evenly, and as the machine traversed the field the overlapping rows would be uneven, and therefore it is necessary to provide a suitable adjustment to insure the grain being delivered upon the fans at corresponding points. The operating

lever for shifting the wind-shifts or inside valves is carried central of the machine, which is convenient in handling the same. The grass-seed attachment, to which reference has been made, is formed of two half-sections, one of which is a part of the machine proper and the upper section suitably secured thereto. The lower portion of the upper section is provided with oppositely-placed perforations through which the grass-seed is designed to pass, to be received by a fluted roller rotatably mounted in the lower section. These openings are controlled by oppositely-placed slidable valve-plates for regulating the discharge of grass-seed through either or both of said openings to fall upon the fluted roller, and in the upper section of the seeding attachment referred to I provide suitable agitators to prevent the clogging of the seed. With this arrangement of agitator and valve mechanism I am able to sow a less amount of grass-seed to the acre than has been made possible heretofore in machines of this class. For instance, the sowing of a limited amount of grass-seed to a greater area is accomplished by preventing the clogging of the grass-seed by means of the agitators herein, which insures a uniform flow of seed to the valve-ports, and the same having the adjustment shown aids materially in delivering the desired quantities to be mixed with the grain discharged by the fluted rollers in the main hopper to be delivered to the fans beneath. All of these devices will now be described in detail and their relation to each other as assembled in the entire machine.

1 indicates duplicate sections of a support suitably secured together to provide the hopper portion 2 and the cup portion 3 and the extension 4, forming a rear chamber 5, and extending upwardly from the extension 4 I provide the cup portion 6, communicating with the chamber 5 by means of the mouth or opening 7. The duplicate portions 1 are each provided with the rearwardly-carried plates 8, adapted to be bolted or otherwise suitably secured to an end-gate 9 for supporting the portions 1 referred to. The outside faces of the portions 1 are each provided with the circular openings 10, leading to the cup portion 3, to adapt the placing therein after the portions 1 have been assembled of a force-feed roller 11. These openings are closed by the disk 12, having central hub portions, through which extends a driving-shaft 13. The driving-shaft 13 extends to one side of the machine and, as is customary in this class of device, is provided with a suitable driving-pinion and clutch parts (not shown) adapted to receive power from the ground-wheels of a vehicle which supports the end-gate and from thence to mechanism actuated by the driving-shafts, to be described. The lower portion of the sections 1 upon opposite sides are provided with the lugs 14, adapted to



have secured thereto the sections 15 of the converging spouts 16, the sections 15 being suitably secured together at 17 and to the lugs 14 of the sections 1 by means of the bolts 18, as shown. These spouts 16 are so arranged as to communicate with the lower portion of the chamber 5 and converge therefrom in the manner shown in Fig. 1. The lower portions of the spouts 16 are provided with the flange portion 17, to which is suitably attached the shield 18, designed to partially incase two oppositely-carried fans in a manner and for a purpose to be described. The force-feed roller 11 referred to is a one-piece roller having the fluted portions or ribs 19 and the centrally-disposed flange or disk 20 separating said fluted portions, (see Figs. 1 and 15,) and the said roller is provided with a smooth central bore 21 and at the opposite ends thereof laterally-disposed lugs 22, leading from the outer edge of the roller and taking or merging into the offset 23.

24 indicates suitable collars or bushings having the extending arms 25, adapted to be carried between the lug portions 22 and abutting against the offsets 23. In one of the bushings or collars 24 I provide the extension thereof 26, having the slotted portion 27. (See Figs. 14 and 15.) When assembling the machine, it is desired to carry this roller in the cup portion 3 thereof to rotate with the driving-shaft 13, which shaft passes through the bushings 24 and by a pin 28 engages with the slotted portions 27 of the extension 26 of one of said bushings. It is made possible for the same to rotate therewith, the extensions 25 of the bushings or collars providing a lock between the same and the rollers, which, as seen, are carried between the lug portions 22 and locked in a relative position therewith by abutting against the offset portions 23.

29 indicates slidably-arranged valve-plates operating in the outer side walls of the sections 1 and above the fluted portions 19 of the roller 11 for controlling the supply of seed or grain to said rollers, as is apparent from the drawings. These valve-plates are provided with the collar extensions 30, slidably arranged on a fixed rod 31, supported by the lugs 32 of the sections 1, the valves being adjusted or retained in fixed position by means of the screws 33, operating in the collars 30, adapted to engage the rod 31.

In a device of this character where two seed-ing-distributers are provided it is preferable to arrange for an even distribution of grain and grass-seed to both of said distributers and also to provide for the distribution of grain or seed to one or both of said distributers, and I accomplish this by dividing the hopper portion above the force-feed roller and also the chamber 5 to the rear of said roller, which communicates with the grass-seed attachment and into which the grain or seed is discharged as it is received from the hopper 2 by the op-

positely-placed fluted portions of the roller. These partitions are referred to as 34 and 35 and may be secured in any suitable manner; but I provide the lips 36, seated in the indentations 37 in the walls of the section 1. (Best seen in Fig. 3.)

38 indicates a pair of wind-shifts, inside valves, or linings, having the tapered side walls 39 and having the forwardly-tapered rear walls 40. The said wind-shifts are pivoted for oscillation in the converging spouts 16 at 41 and extend from the upper ends of the spouts to the lower portions thereof, and each is provided with the short studs 42, protruding through and operating in the slots 43 of the rear section 15, which form the spouts 16. To the studs 42 are pivotally attached the operating arms or levers 44, which are retained on the studs in any suitable manner; but I prefer to use the cotter-pins 45, and the opposite ends of the levers 44 are slotted, as at 46.

47 indicates a lever having the handhold 48 and is disposed to the rear of the machine proper to be approximately in the center thereof and pivotally connected or supported by the end-gate at 49, and projecting laterally at a point beneath its pivot I provide the stem 50.

51 indicates an arm having the centrally-disposed elongated-slot or opening 52, and the said arm has the radial extensions 53, which may be of channel form, (best seen in Fig. 10,) to which it is desired to attach the arms 44. The arm 51 is attached to the lever 47 by its stem 50 passing through the slot 52 of the arm 51 and retained in any suitable manner, but here shown by means of the cotter-pin 54, and the arms 44 are attached to the extensions 53 of the arm 51 by the bolts 55 passing through the slots 46 of the arms 44. Thus it will be seen that by shifting the lever 47 either to the right or to the left will impart a corresponding movement to the wind-shifts 38 through the connections between the lever 47 and the studs 42, the slot 52 in the arm 51 permitting easy movement and allowing sufficient play to prevent cramping, and the wind-shifts may be adjusted so that their movements will correspond and their point of discharge onto the fans beneath to coincide for the purpose herein described, and this I do by loosening either of the bolts 55 and sliding the arms 44 by means of their slots 46, which will adjust the position of the wind-shifts and cause the grain as it is delivered thereto to be discharged onto the fans as is desired.

Referring to the grass-seed attachment, which is situated at a point to the rear of the hopper and disposed above the chamber 5 of the portion 3, the same consists of the cup-shaped casting 6, previously referred to, which has the upper contracted and rectangular opening 36 and also the depressed ledge 57. The upper



portion of the grass-seed attachment comprises a separate casting or hopper 58 of two sections 59, suitably bolted together at 60 and in turn secured to the cup portion 6, as at 61, and extending laterally from the said sections 59 I provide the plates or studs 62 and also the depressed edge portion 63, cut out to form the central opening 64. Extending through the upper portion of the grass-seed attachment, or the hopper 58, is shown an agitator-shaft 65, carrying the agitators 66. In the lower portion of said attachment and in the cut portion 6 thereof is rotatively carried a force-feed roller 67, mounted on a shaft 68. This force-feed roller is similar in construction to the seeding-roller 11, provided with the centrally-arranged disk or flange 68' and the oppositely-placed fluted periphery 69, forming a two-part seeding-roller and casting substantially in one piece. The ledge 57 is provided for the purpose of supporting a valve-plate 70, having the seed-openings 71, arranged substantially as seen in Fig. 5, and provided with the adjacent curved end walls 72. Slidably arranged above said plate 70 and in the depressed portion 63 of the upper section of the grass-seed attachment is provided the cut-offs or valves 73, having the slotted portion 74, through which is carried the bolts 75, which pass through the extension 62 of the upper section 59 and are retained in position by the thumb-nut 76, and the inner ends of the cut-offs 73 are cut out at 77, so that as the same are pulled outwardly they form substantially a circular opening, together with the walls of the slots 71, for the passage of grass-seed therethrough to the force-feed roller 67 beneath. Thus with the grass-seed attachment substantially of the character just described I am enabled by the agitator 66 to prevent any clogging of the seed when the valves beneath are opened, and by the cut-off 73 I have perfect control of the opening 71 and the plate 70 and may feed to both sides of the fluted roller leading to both fans or may feed one if it is desirable to do so. The arrangement of the opening 71 is substantially central above the fluted portions of the roller beneath and insures the grass-seed falling upon the body of the rollers and prevents the same passing down and around the edges thereof.

While I have shown the provision of the valve-plate 70 having the oppositely-placed seed-openings, I do not wish to confine myself to such a structure, as it may be convenient to use an upper section of the grass-seed attachment, as 58, provided with the two openings 79 instead of the one as shown at 64 in Fig. 6, which would of course serve the same purpose as the plate 70 with the two openings 71. The manner of driving the roller 11 and the roller 67, together with the agitator-shaft 65 and also an agitator-shaft 80, extending through the hopper, provided with

the agitating-pins 81, is by means of a chain 83, traveling around a pinion 84, secured on the driving-shaft 13, and from thence around an idler 85 on a support 86, and from thence around a pinion 87 on the agitator-shaft 80, and thence to a pinion 88 on the grass-seed-agitating shaft 65, and from thence around the pinion 89 on the shaft 68 and to the pinion 84 on the driving-shaft 13. This driving mechanism is best seen in Fig. 1 in elevation and in dotted lines in Figs. 2 and 3.

90 indicates two vertically-disposed fans or distributor-shafts, their upper ends journaled in bearings 91 of a support 92, which said support is fixedly attached to an ear 93, depending from and forming a part of the sections 1, and the lower ends of the fan-shafts are journaled in bearings 94, which are supported by the fan-shields 18' in the manner shown in the figures, the shields being attached and supported by the spouts in the manner described. On the upper ends of the fan-shafts 90 I provide the pinions 95, which are designed to be fiber pinions, and they intermesh with the beveled gear-wheels 96, carried by the driving-shaft 13, and on the extreme lower portions of the fan-shafts 90 and rotatably mounted beneath the shields 18' are provided distributing-fans 97. The fan-casings are provided with the overlying plates 98, which cover almost the entire circumference of the fan and have the depending semi-circular flange portions 99 partially surrounding the rear sweeps of the fan to prevent the discharge of grain therefrom upon the rear wagon-ledge or against the end-gate which supports the seeding mechanism. The lower portion of the seeding mechanism, or rather the spouts, is supported by the end-gate by means of the rods 100 passing through the end-gate and the spouts and secured in position by means of the nuts 101, and I interpose between the spouts and the end-gate the sleeves 102, through which it is designed to pass the stems 100, as seen in Fig. 3.

Referring to the fan or distributor 97, the same consists of four radial wings or vanes 103, radiating from a central hub portion comprising such fans, at right angles to each other. Each wing or vane inclines slightly downward as it leaves the hub portion thereof and is provided with the integral and conjoined flanged portions 104 and where the same merge into the bottom portions of the wings are curved, as at 105, and lead away therefrom upwardly and outwardly in oblique lines, as shown at 106, at a point somewhat removed from their center or hub portions or the outer sweeps thereof, and at 107 is bent upwardly and inwardly to form the oblique portion 108, extending approximately at an opposite angle to that shown at 106. Adjacent to the hub portion and extending a short distance therefrom to a point where the flanges merge into the upwardly and outwardly ex-



tended portions thereof I so construct the flanges as to provide the vertically-extended portions, which are approximately at right angles to the horizontal portions of the wings, (shown at 109,) and then bend the upper portion of said wings at this point to form the upwardly and inwardly or obliquely carried portions 110, forming the crevice 111. The peculiar formation of the flanges of the wings or vanes provides them with the vertically-extended and inwardly-carried portions, and then at a point removed from the hub to carry the flanges in vertical lines bearing obliquely outward and then reversing the shape to the vertically and inwardly carried portions is to give to the flanges of the wings somewhat of a spiral formation from the hub portions of the fans to the extreme outer ends or sweeps of the wings, and to further accomplish this I provide in the flanges of the wings the substantially radial portions extending at right angles to each other, as shown at 112, and curve the same to form the sinuous portions, as at 113, bearing outwardly. Thus it will be seen that the upper portions of the fan, both at 108 and 110, form a grain-shed to cause the grain as it drops onto the wings or vanes to hug closely the walls of the flanges and prevent the same from rising during the centrifugal movement imparted to said fans, and during the further rotation thereof the grain will be carried outwardly, passing along the crevice formed by the bend 107 and 111, and will be discharged from the fans when the radial wings or flanges are approximately parallel with the end-gate 9; but as the grain reaches the sinuous portion 113 of the flanges of the wings it is given a greater impetus and forced away therefrom by the action of the sinuous portions coming adjacent to the grain just previous to its discharge from the wings, owing to such formation of the flanges, as is readily apparent.

The object which I have in constructing a fan somewhat after the manner just described is to provide for properly receiving the grain as it is discharged from the spouts and when once upon the wings to retain it and advance it to its proper point of discharge on such wings, and I accomplish this by providing the shed formed by the portions 108 and 110 and advancing it in a spiral form along the sides of the wings and holding it until such wings reach a point where they are approximately parallel with the end-gate, when the grain carried thereby is discharged, and by forming the flanges of the wings so as to somewhat concentrate the location of the grain I can hold it and distribute it in an even body over a field being sown.

Referring back to the force-feed roller and not only that for forcing the grain, but also for forcing the grass-seed, I wish to call further attention to the construction previously described for retaining and rotating the same

upon its driving-shaft. In machines of this class it is desirable to assemble the entire machine and dip it in a vat for the purpose of painting, rather than to paint the separate parts and then assemble the machine. This being the case, if the hub portions of the distributors were cast integral with the same when the machine was dipped the paint would accumulate within the bore of the roller, and, in addition to adding to the expense, it would be difficult to tip the machine in such a manner as to cause the surplus paint to flow therefrom; but by casting the rollers in the manner in which I do and providing hubs therefor which are independent and detachable therefrom I leave no crevices or depending portions at the ends of the roller which would tend to prevent the paint from flowing therefrom or cause it to accumulate in the body of the roller, and while the construction herein accomplishes this purpose it also makes it very convenient for placing and detaching the roller from the machine.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. A broadcast seeding-machine, comprising a hopper-support having a cup-shaped receptacle, a driving-shaft, a force-feed roller mounted on the shaft within the cup, having a fluted surface, diverging spouts leading from the receptacle, wind-shifts pivotally supported in said spouts, an operating-lever centrally disposed behind said hopper and arms pivotally connected at one end to the respective shifts and their opposite ends adjustably connected with the operating-lever, substantially as and for the purposes set forth.

2. A broadcast seeding-machine, comprising a hopper-support having a cup-shaped receptacle, a force-feed roller mounted on a driving part in said receptacle, the said roller having a centrally-arranged flange and oppositely-disposed fluted portions, a partition dividing the receptacle beneath the roller, diverging spouts leading from the receptacle, oscillating wind-shifts in the spouts, shifting mechanism for such wind-shifts comprising a lever, and arms attached to said shifts and adjustably connected with said lever, for the purposes specified.

3. In a broadcast seeding-machine, the combination of a receptacle and seeding devices, oppositely-disposed spouts leading from said receptacle, wind-shifts mounted for oscillation in the spouts, a lever, arms pivotally connected with said wind-shifts and adjustably connected with the lever, for the purposes specified.

4. In a broadcast seeding-machine, the combination with suitable seeding mechanism, of grain-spouts depending and diverging therefrom, wind-shifts pivotally mounted in said spouts, a shifting-lever, a member having radial extensions pivotally connected with said



lever, and adjustable connecting devices between the wind-shifts and the aforesaid radial extensions, for the purposes specified.

5. In a broadcast seeding-machine, the combination of a seeding-receptacle having a cup-shaped portion and a chambered extension thereof, a force-feed roller mounted for rotation in said cup portion, a grass-seed receptacle integral with the seeding-receptacle and communicating with the chambered portion thereof, a hopper-support attached to said grass-seed receptacle, a grass-seed force-feed roller, having oppositely-disposed fluted portions divided by an integral flange, a valve-plate mounted above the grass-seed roller having oppositely-arranged seed-openings, and oppositely-disposed slidable valves for controlling the openings in the valve-plates, substantially for the purposes specified.

6. In a broadcast seeding-machine, the combination therewith, of a grass-seed attachment comprising a seed-receptacle, a force-feed roller rotatably mounted in said receptacle, oppositely-placed seed-openings above the roller, slidable valve-plates for controlling either or both of said seed-openings, and an agitator-shaft extending through the receptacle above the valve-plates and carrying two agitators, each disposed above the seed-openings, substantially for the purposes specified.

7. In combination with seeding mechanism, of a grain-spout leading therefrom, provided with a wind-shift, a fan-shaft and means for rotating said shaft, a distributing-fan carried by said shaft having conjoined radial wings which extend downwardly from their hub portions, and each provided with flange portions extending approximately at right angles to each other, and having outer sinuous portions, said flanges adjacent to their hub portions extending vertically a short distance and then bent obliquely inwardly, and the outer sweeps of the flanges extending vertically outwardly and at a suitable point reversed vertically inwardly, for the purposes specified.

8. A distributing-fan, comprising a series of conjoined radial wings bearing approximately at right angles to each other, each provided with flange portions which extending radially have straight, and then sinuous, portions, and said flanges, as they bear vertically, are provided with vertical, and then inwardly-

extended, portions adjacent to the centers of said fan, and merging into vertically and outwardly arranged portions, which at a suitable point are bent vertically and inwardly, for the purposes specified.

9. A distributing-fan, composed of a series of conjoined radial wings, each having flanges which, bearing radially, have outer sinuous portions, said flanges at their outer sweeps provided with the obliquely outwardly arranged portions 106, and the obliquely inwardly arranged portions 108, to provide the lateral crevice 107, for the purposes specified.

10. In a seeding-machine, the combination of a series of grain-spouts, wind-shifts pivotally arranged in said spouts, a shifting-lever having extended therefrom at a point beneath its fulcrum, a stem, a member having lateral extensions and provided with a slotted portion pivotally connected with the stem of the lever, and operating-rods pivotally connected at one end with the wind-shifts and at their opposite ends adjustably connected with the extensions of the lever, for the purposes specified.

11. A force-feed roller for seeding-machines provided with oppositely-disposed fluted portions, divided by an integral partition, lug portions arranged in the bore of the roller at opposite ends thereof, and extending toward each other, detachable bearings forming hub portions for the roller, having lateral extensions adapted to be connected with the roller by engagement with the lug portions thereof, for the purposes specified.

12. In combination with a driving-shaft, a force-feed roller, having a smooth central bore and provided with oppositely-extended members, detachable hub portions for said roller forming bearings upon the shaft, comprising two members, having radial extensions for detachable connection with the aforesaid members of the roller, one of said hub portions provided with a slot, and a pin carried through the shaft to engage the slot of the hub, for the purposes specified.

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

CHARLES M. SESTER.

Witnesses:

CHAS. W. LA PORTE,

A. B. LA PORTE.