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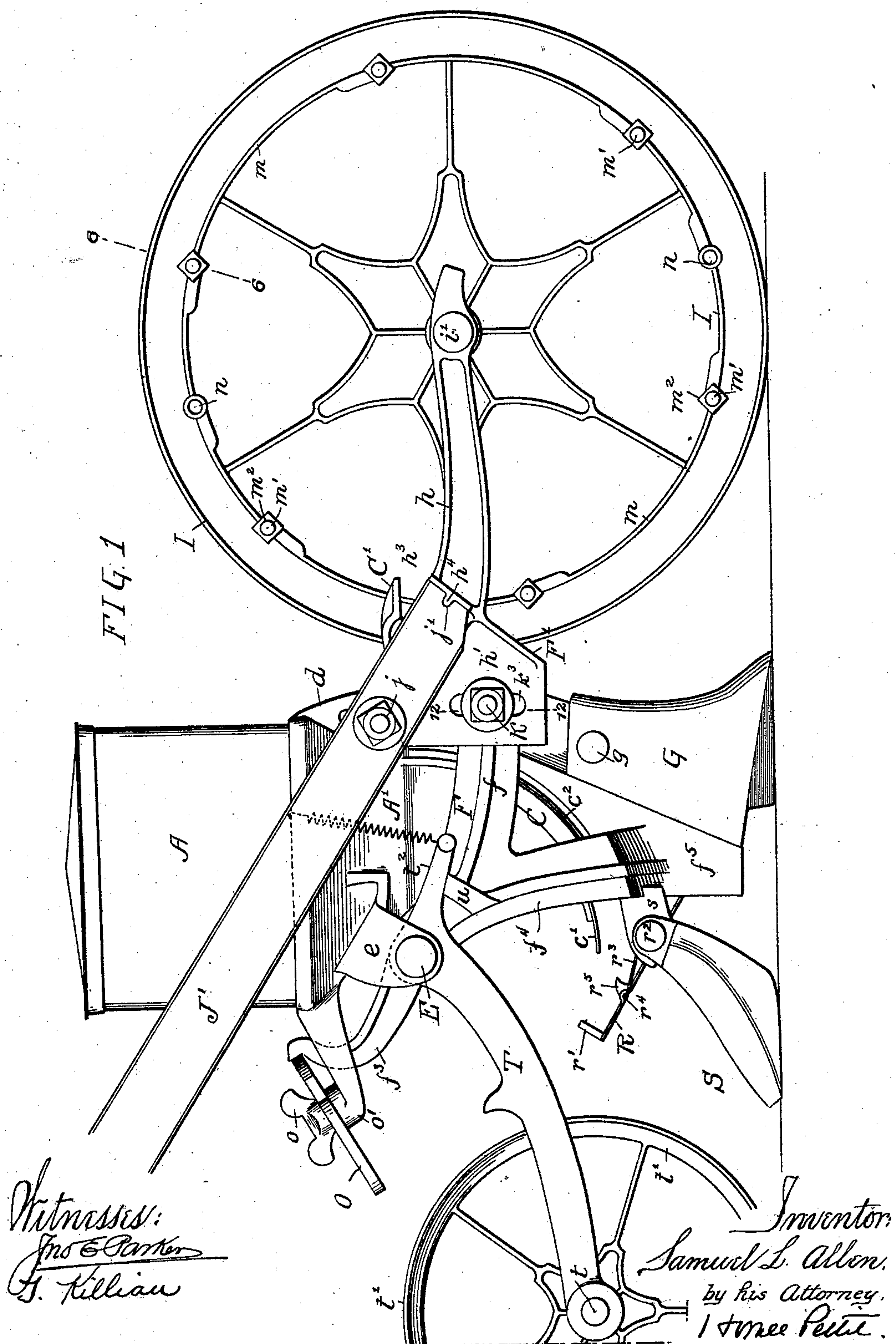
5 Sheets—Sheet 1.

S. L. ALLEN.

DISTRIBUTER FOR SEEDS OR FERTILIZERS.

No. 603,476.

Patented May 3, 1898.



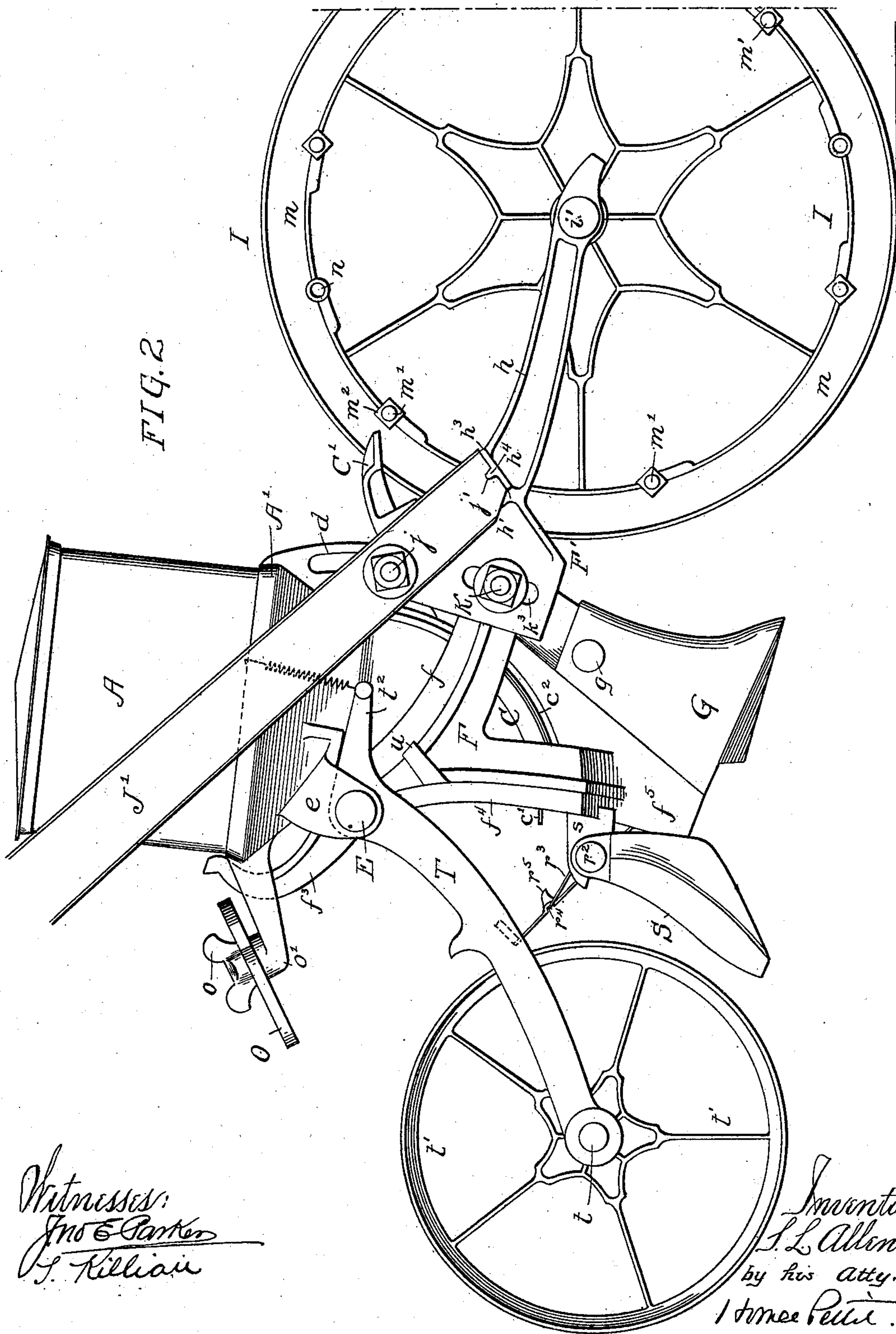
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No. 603,476.

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Witnesses:
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Inventor:
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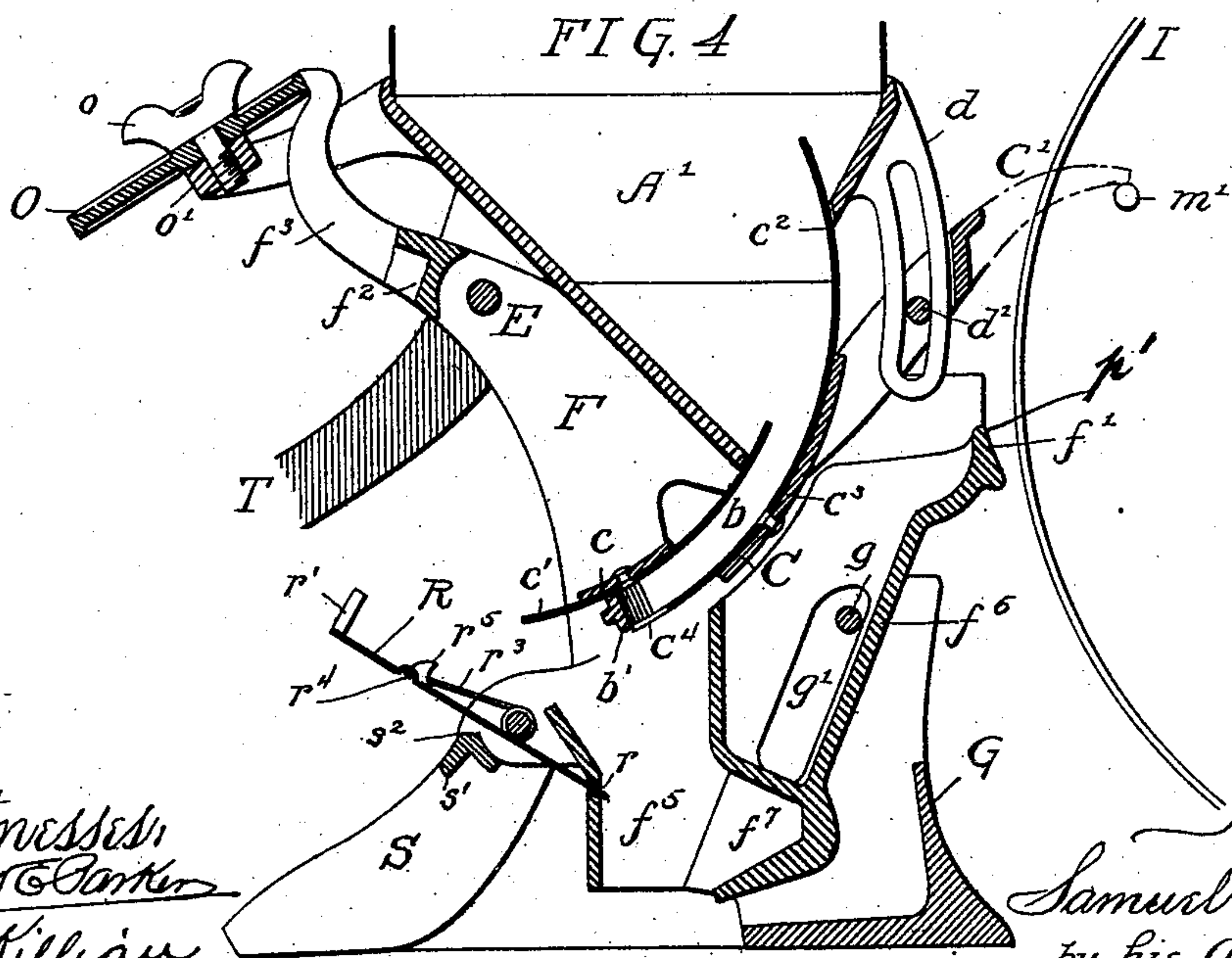
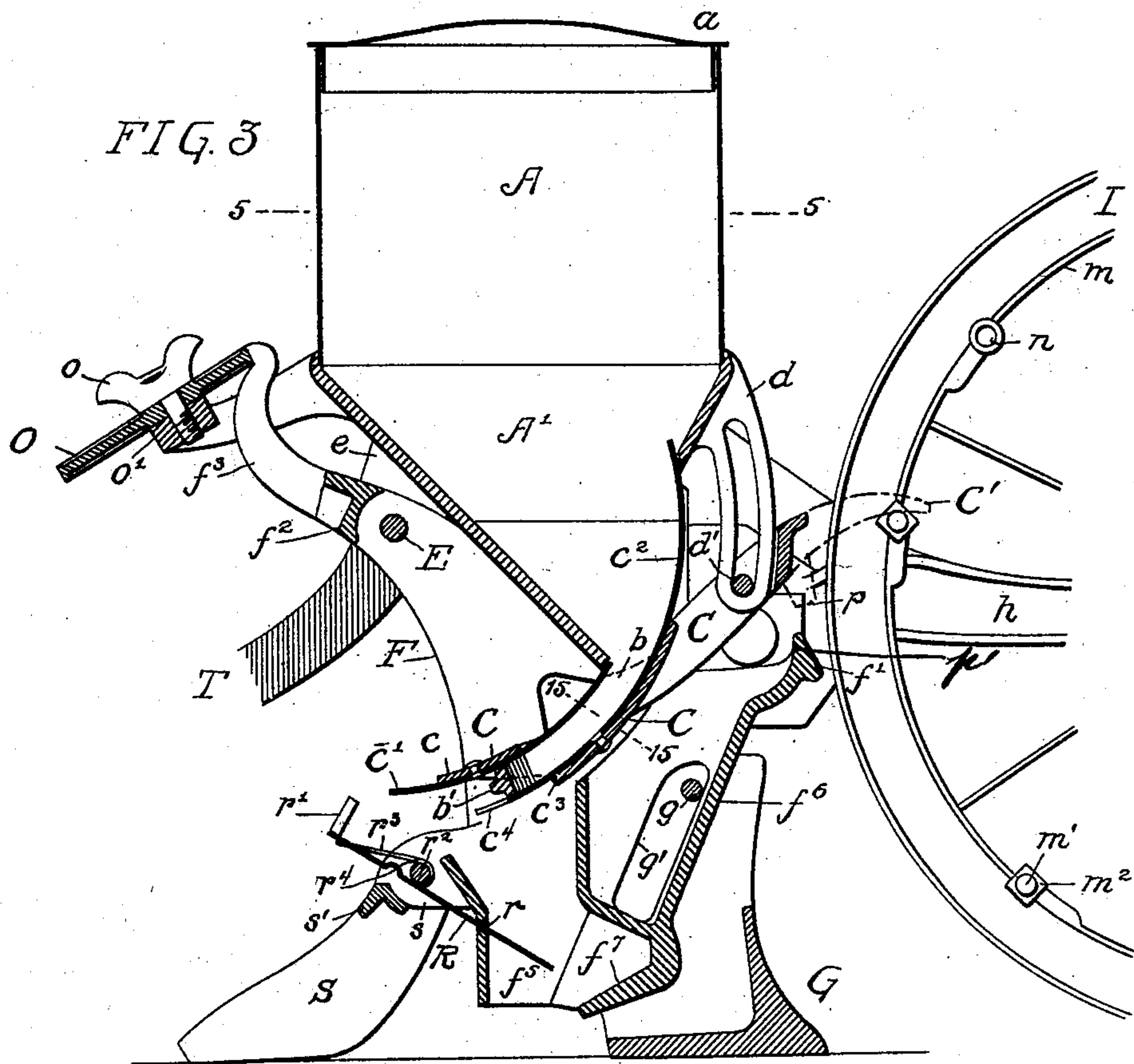
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S. L. ALLEN.
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Patented May 3, 1898.



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(No Model.)

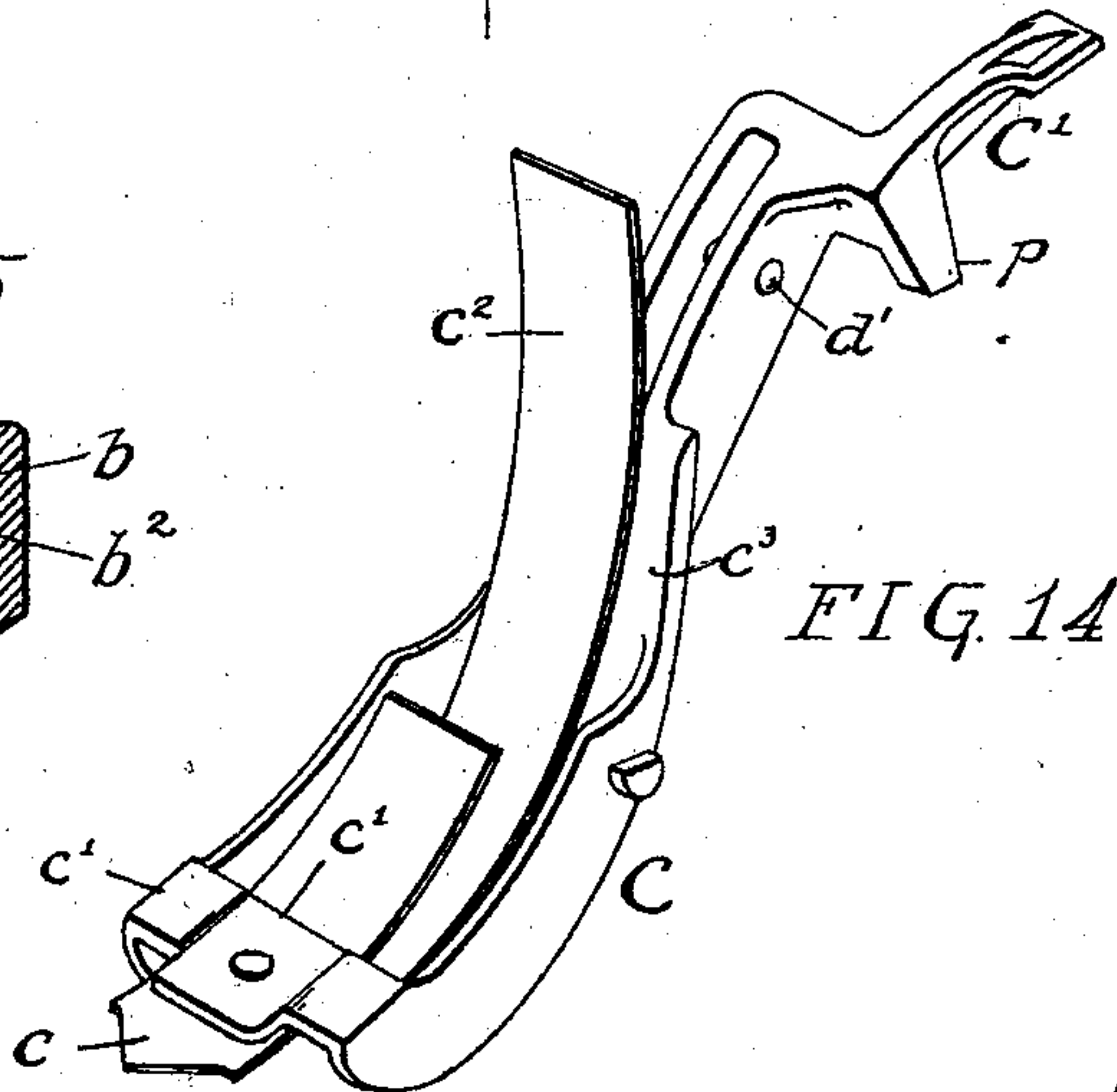
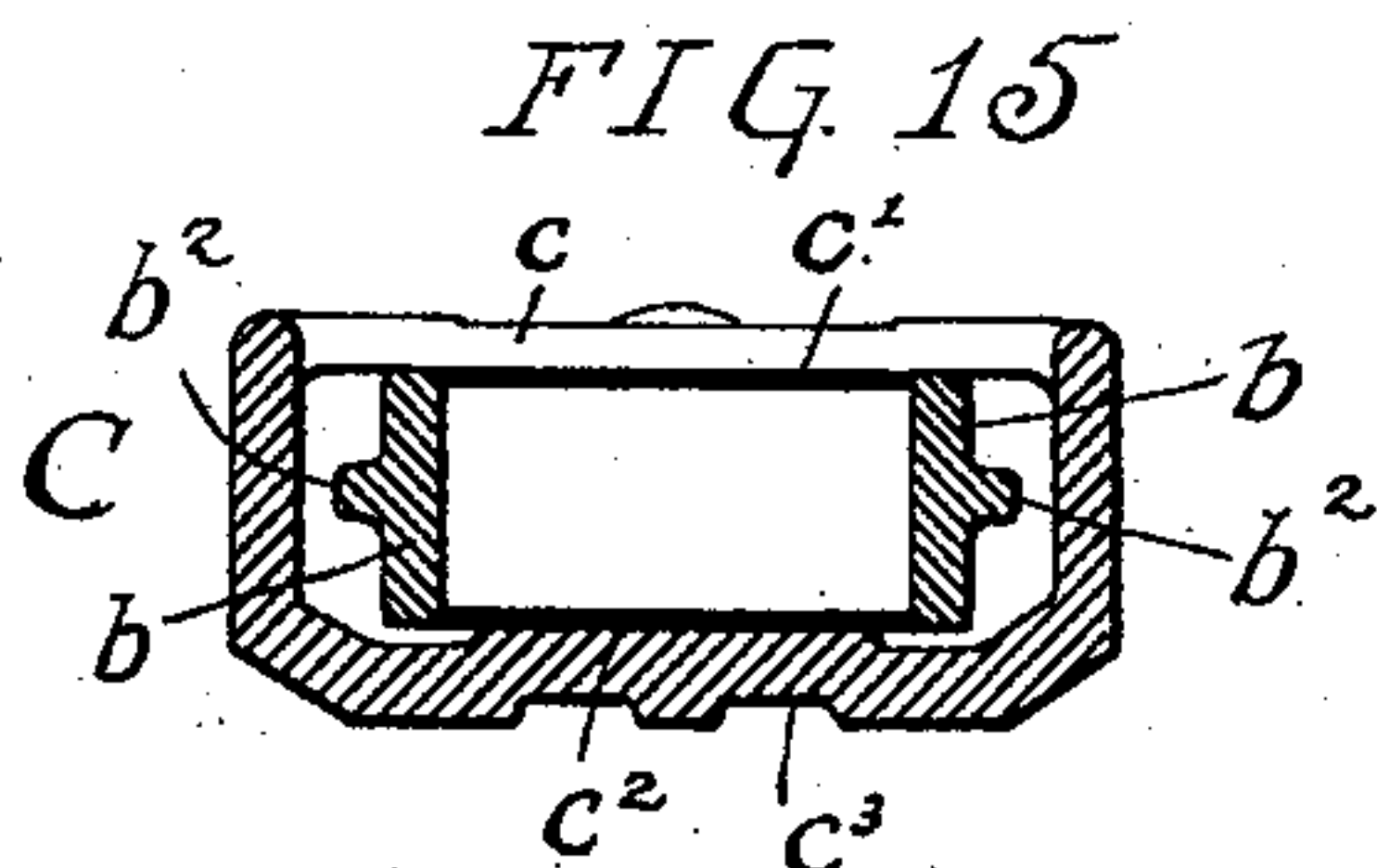
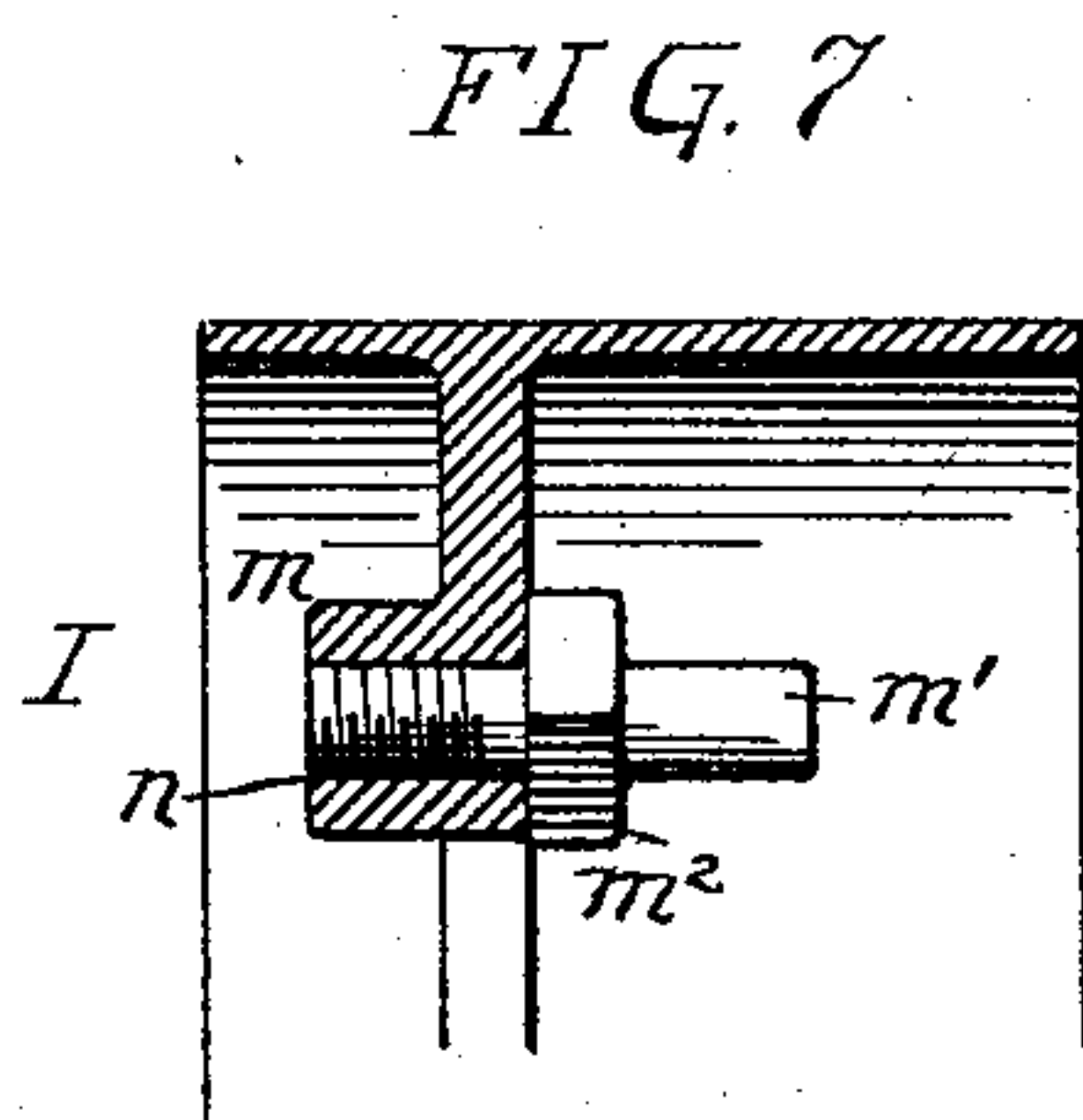
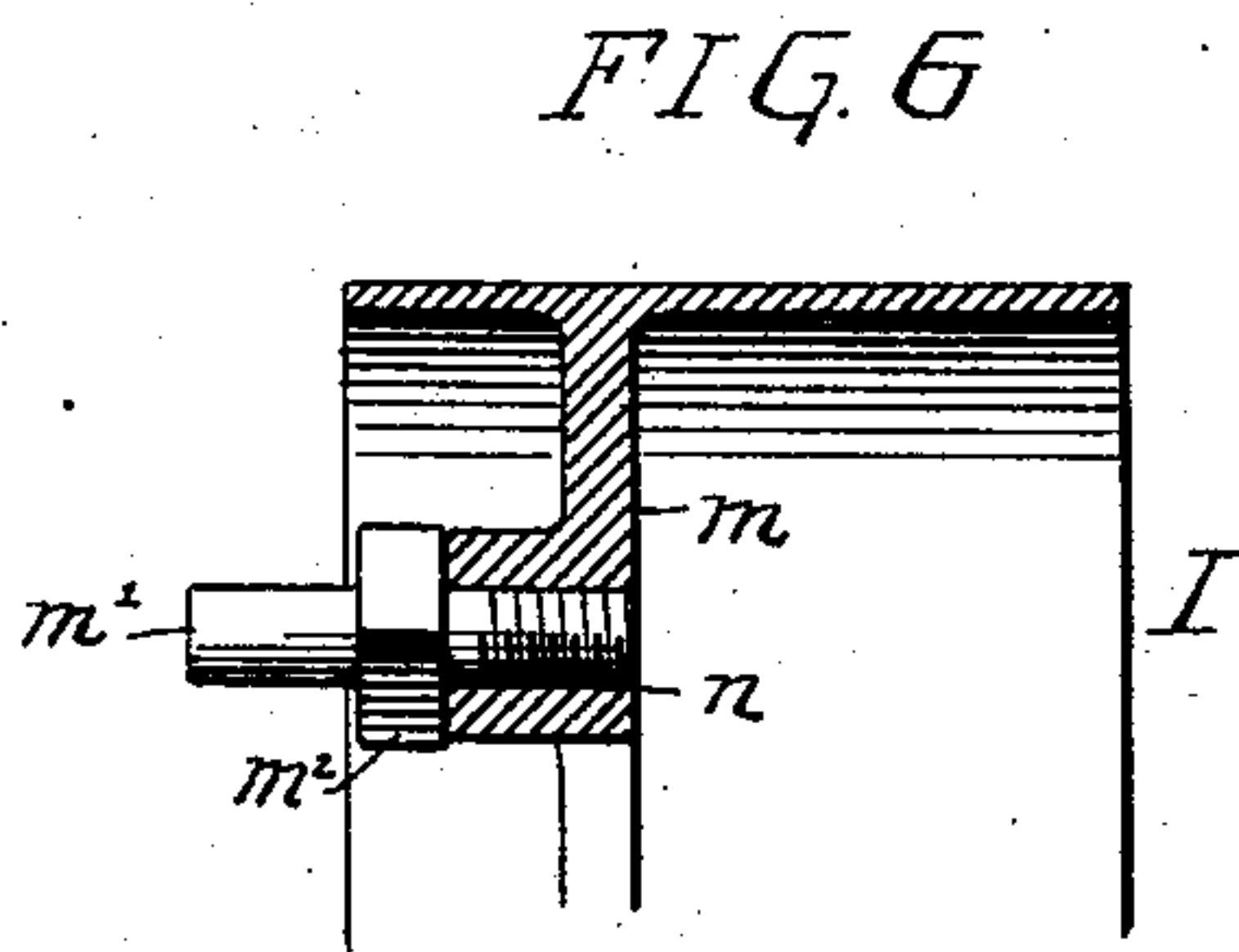
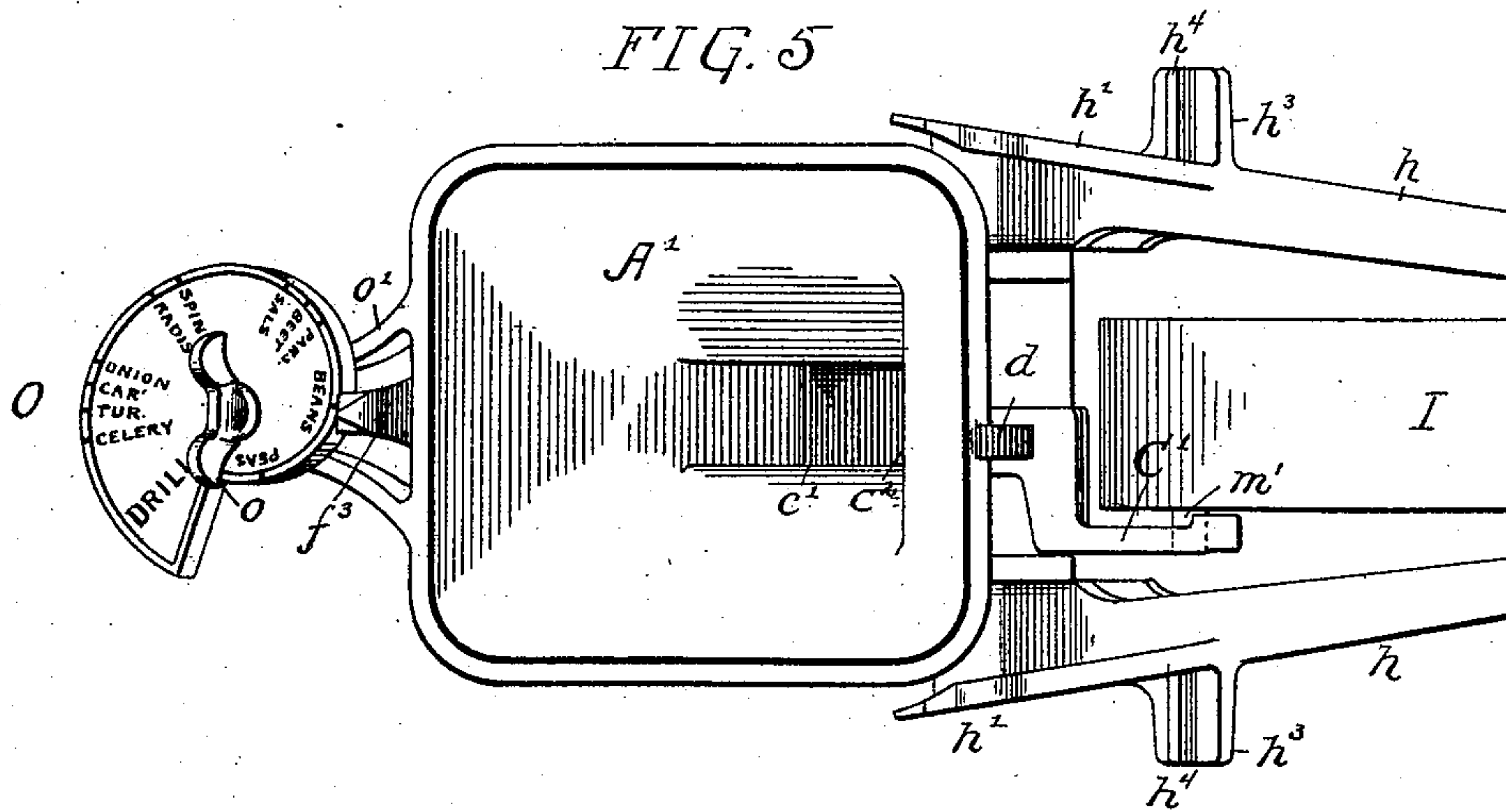
5 Sheets—Sheet 4.

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No. 603,476.

Patented May 3, 1898.



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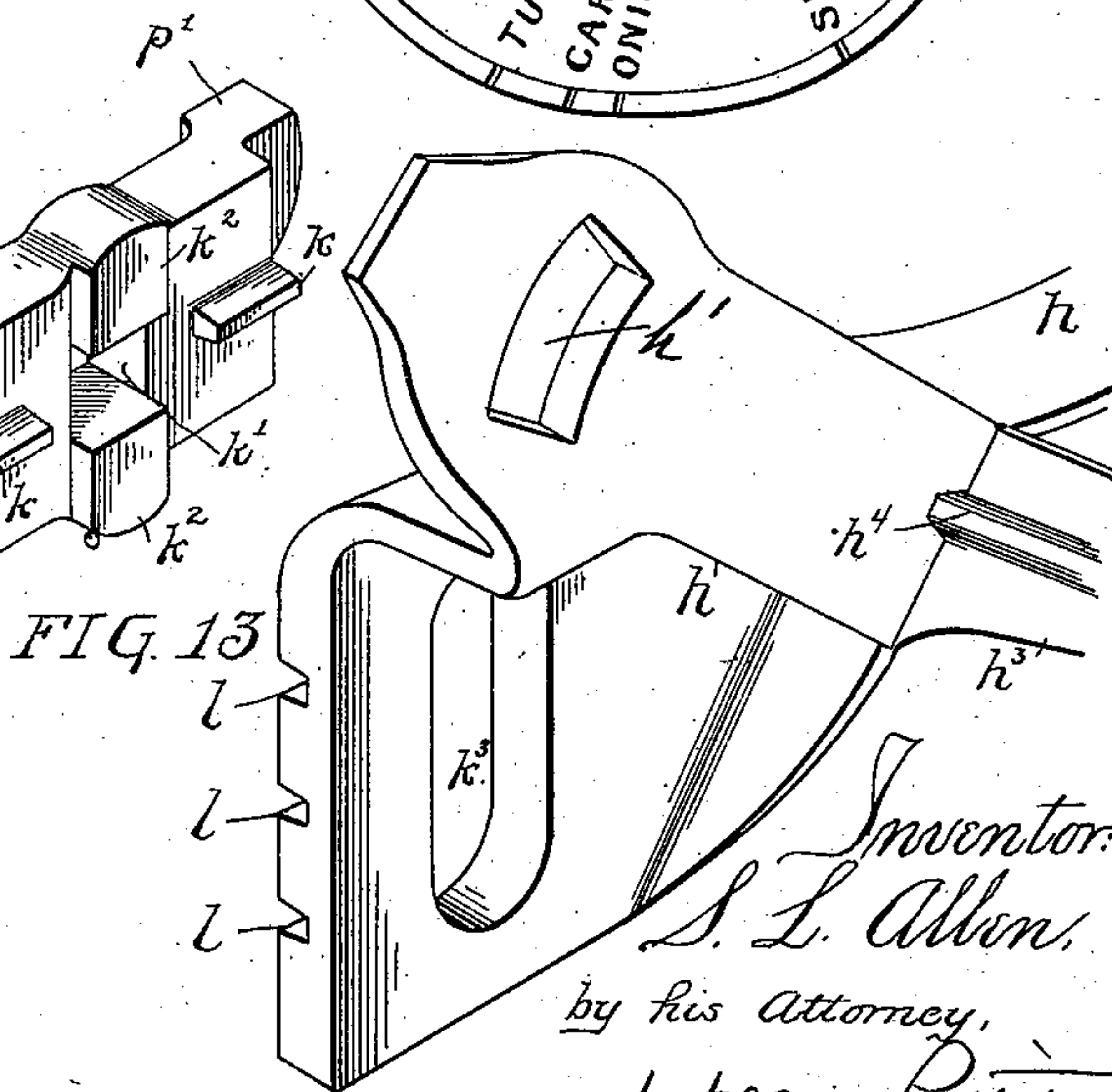
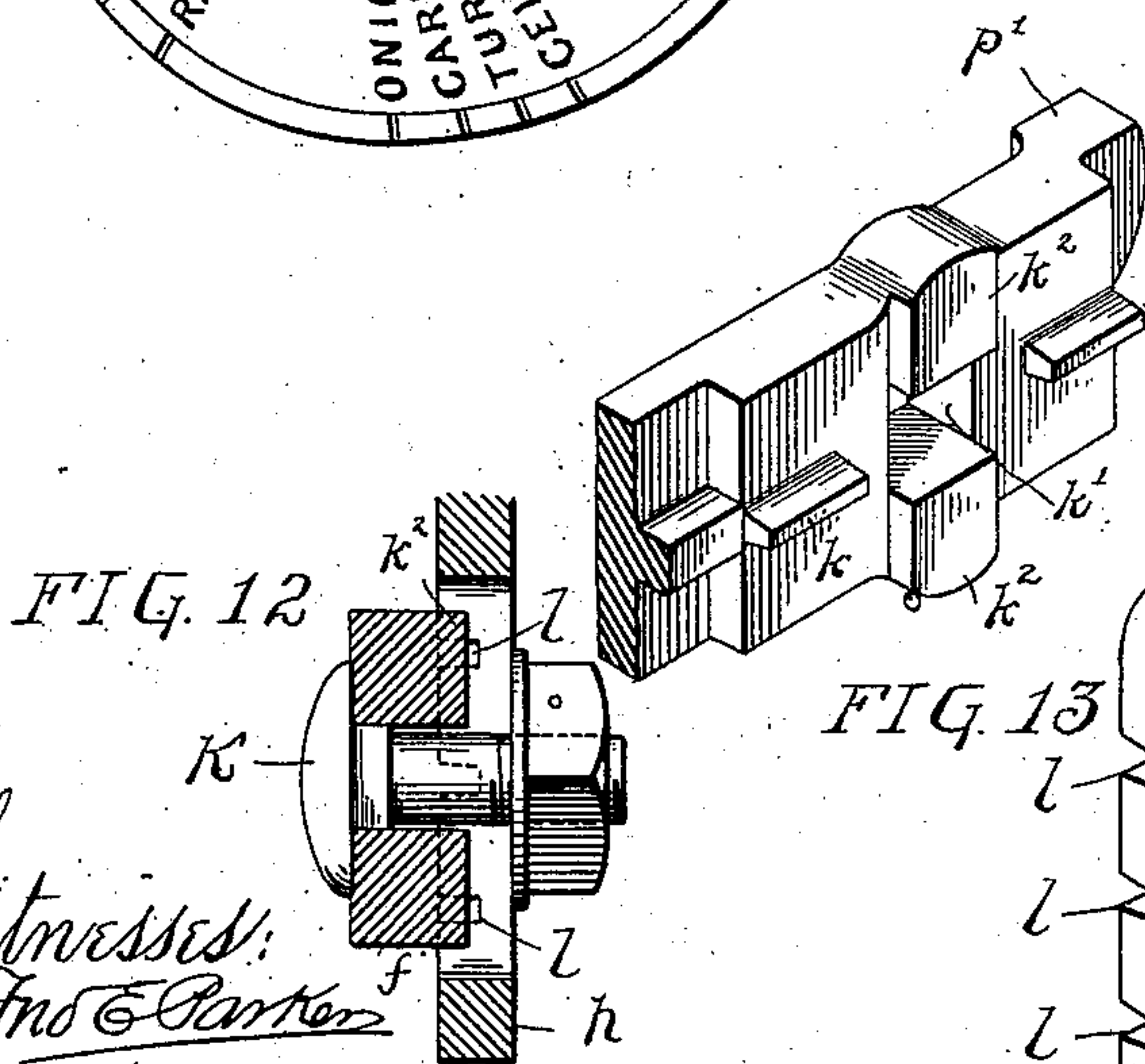
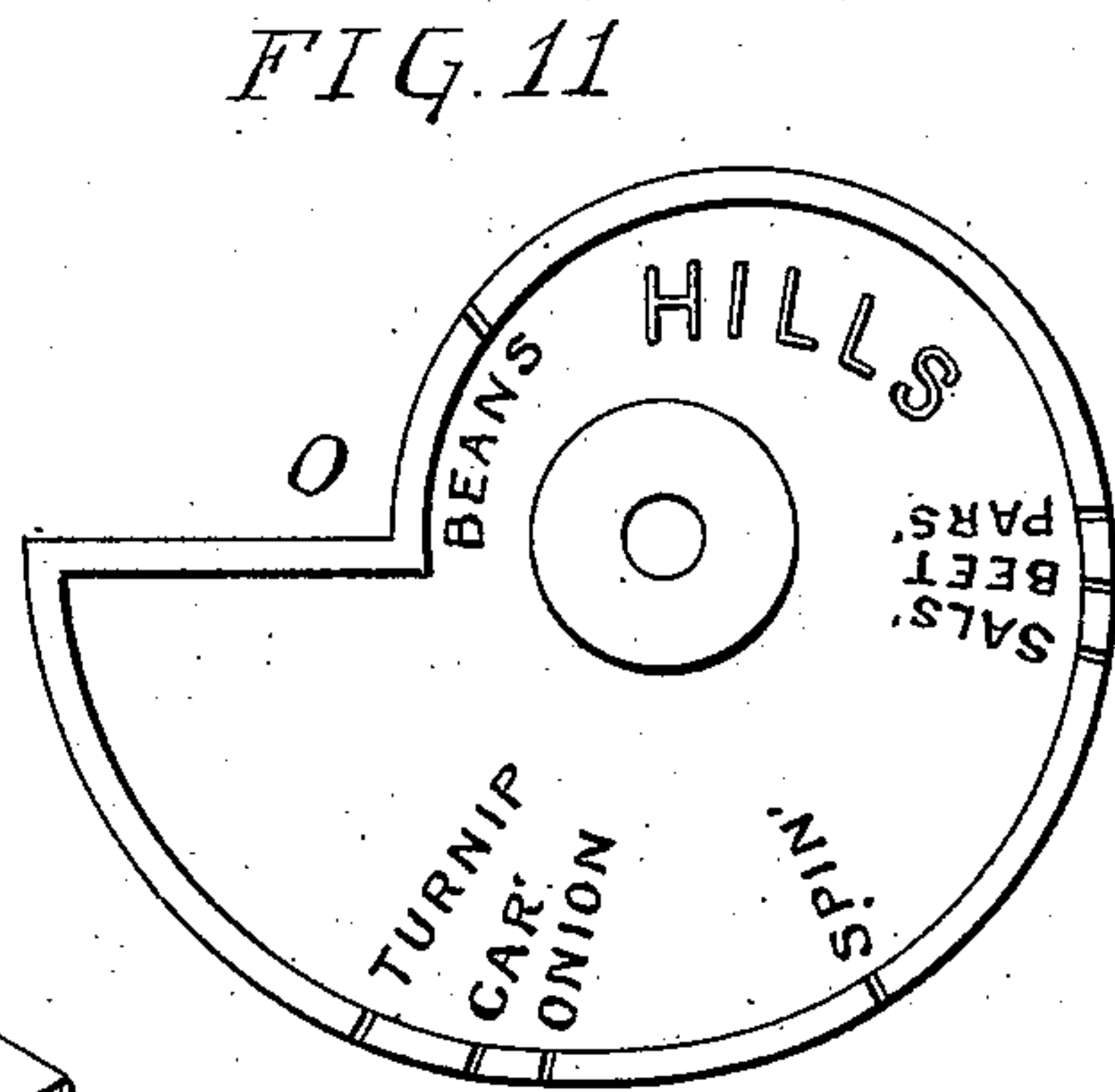
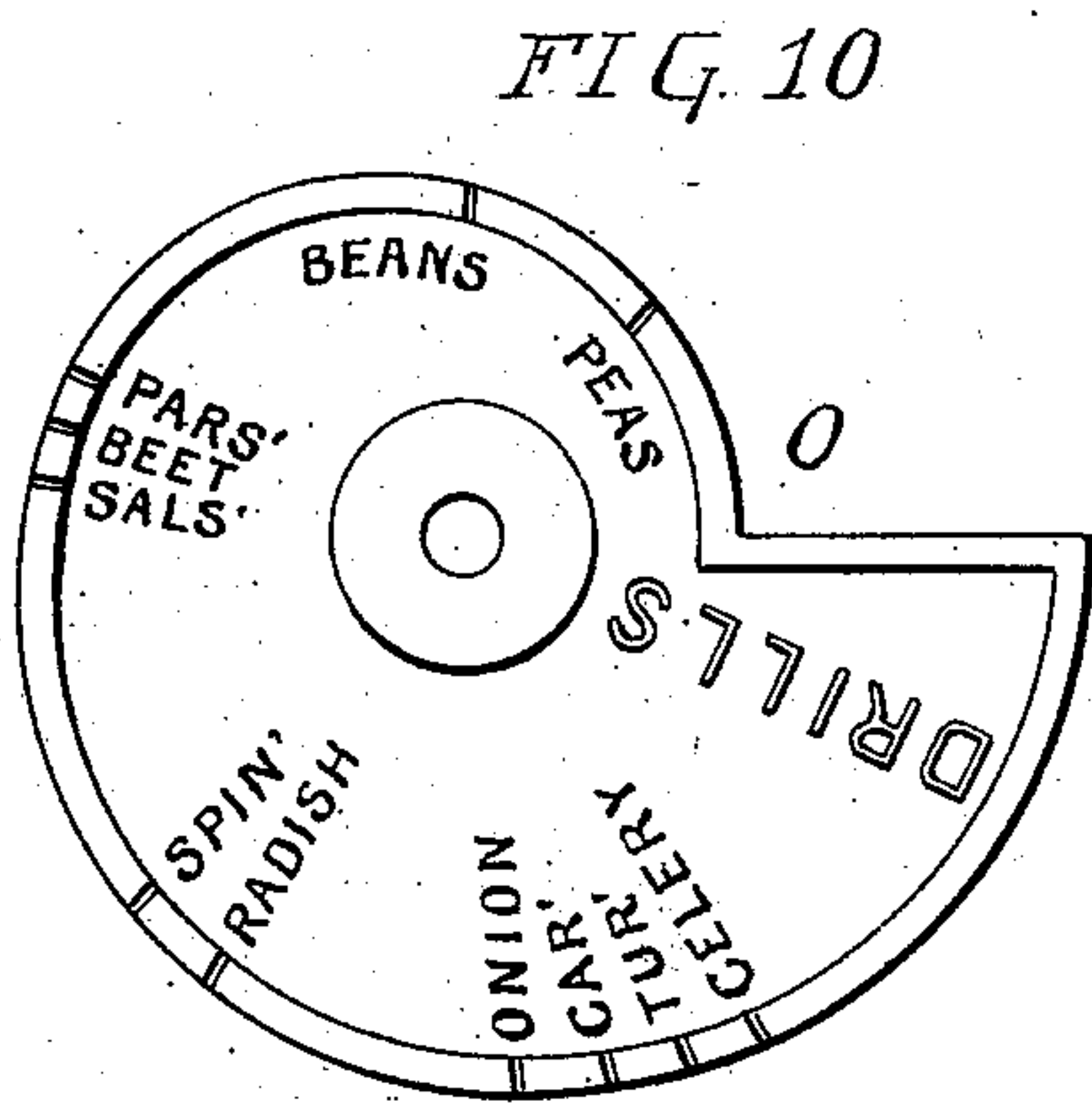
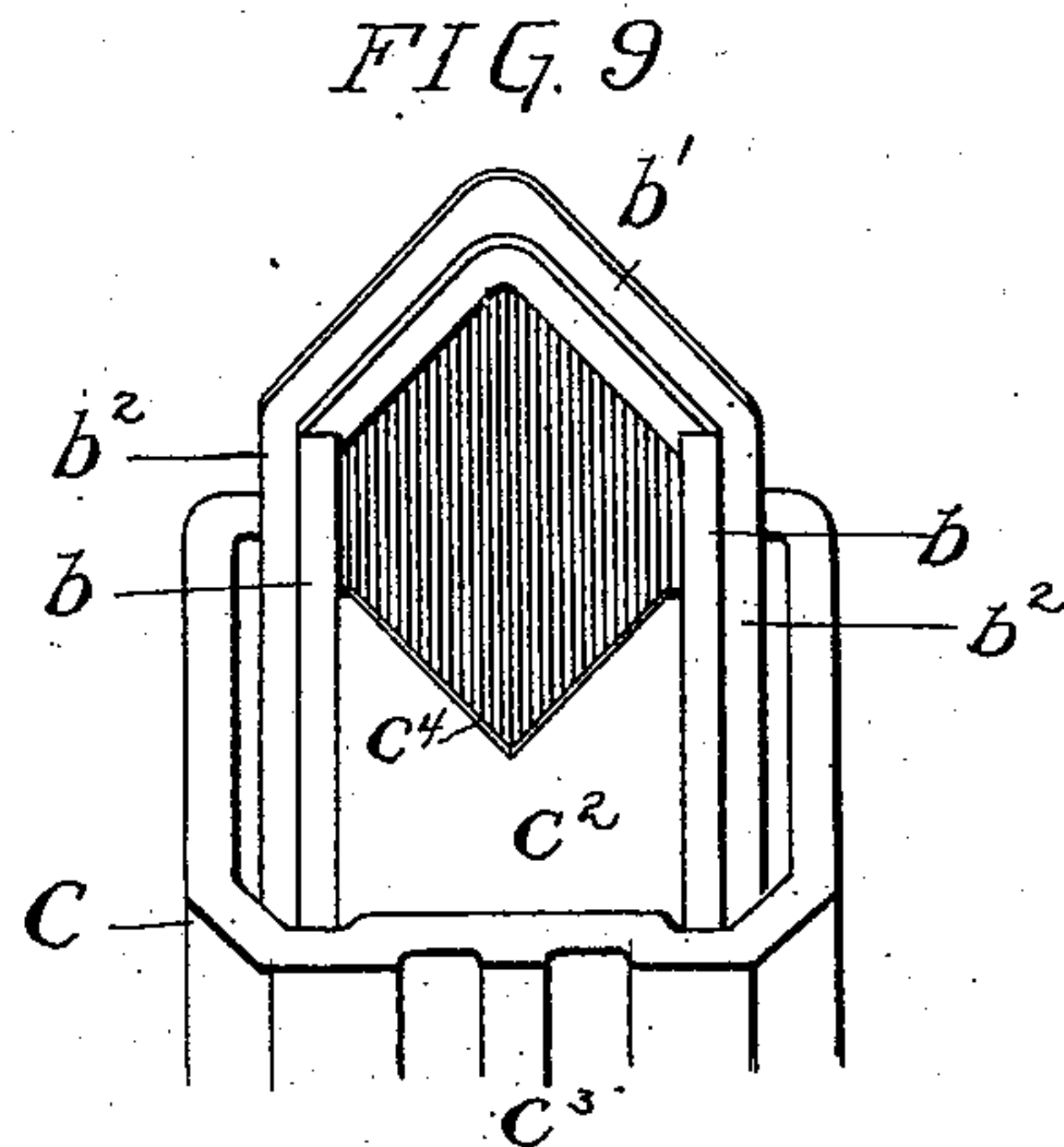
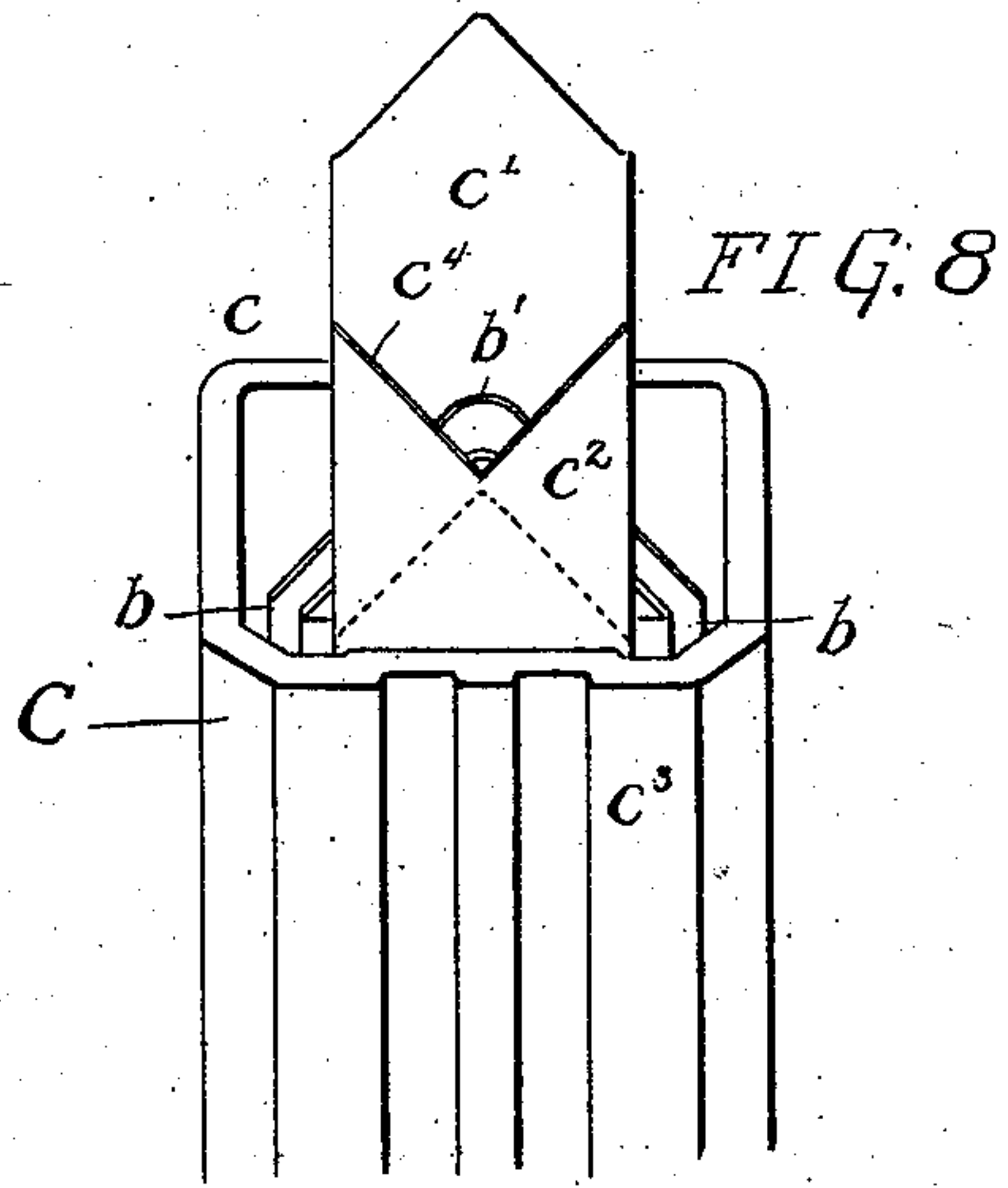
(No Model.)

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S. L. ALLEN.
DISTRIBUTER FOR SEEDS OR FERTILIZERS.

No. 603,476.

Patented May 3, 1898.



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UNITED STATES PATENT OFFICE.

SAMUEL L. ALLEN, OF MOORESTOWN, NEW JERSEY.

DISTRIBUTER FOR SEEDS AND FERTILIZERS.

SPECIFICATION forming part of Letters Patent No. 603,476, dated May 3, 1898.

Application filed May 10, 1897. Serial No. 635,958. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL L. ALLEN, a citizen of the United States, and a resident of Moorestown, Burlington county, State of New Jersey, have invented certain new and useful Improvements in Distributers for Seeds and Fertilizers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to certain improvements in that class of machines employed to distribute seeds, fertilizers, &c., in a continuous stream along a furrow or row or in predetermined quantities in hills, and has for its object to provide a machine of this character in which the amount or quantity of seed or fertilizer to be dropped may be regulated to a nicety.

A further object of my invention is to provide for the ready and accurate adjustment of the hopper discharge-mouth to regulate the quantity of seed discharged.

A still further object of my invention is to provide for the adjustment of the intervals of opening of the hopper, so that in hill sowing the seed can be dropped in hills at varying distances from each other.

A still further object of my invention is to provide for the automatic and instantaneous disconnection of the seed-discharging mechanism from its actuating devices when desired.

Further objects of my invention are to provide an improved form of index and adjusting device which may be used for both drill and hill sowing, and generally to improve, simplify, and cheapen the construction of the device, as more fully set forth hereinafter.

In the accompanying drawings, Figure 1 is an elevation of a seed or fertilizer distributor constructed in accordance with my invention. Fig. 2 is a similar view showing the position which the parts assume when the rear of the machine is elevated from the ground and illustrating the automatic disconnection of the shutter-actuating mechanism. Fig. 3 is a sectional elevation illustrating the principal parts of the structure. Fig. 4 is a view similar to Fig. 3, illustrating some of the parts in a different position. Fig. 5 is a sectional plan view on the line 5 5, Fig. 3. Fig. 6 is a detail sectional view on the line 6 6, Fig. 1. Fig. 7

is a view similar to Fig. 6, illustrating one of the shutter-actuating pins in a different position. Figs. 8 and 9 are inverted views of a portion of the hopper and the shutter discharge in the closed and open position, respectively. Fig. 10 and 11 are views of the opposite faces of the adjusting-index by which the area of the hopper discharge-mouth is regulated. Fig. 12 is a sectional elevation, on an enlarged scale, on the line 12 12, Fig. 1. Fig. 13 illustrates detached perspective views of the devices shown in Fig. 12. Fig. 14 is a detached perspective view of the seed-discharge shutter; and Fig. 15 is a sectional plan view, on an enlarged scale, on the line 15 15, Fig. 3.

Referring to the drawings, A represents a seed-hopper, preferably rectangular in form and provided with a hinged or removable lid *a*, which may be opened for the introduction of the seed. The bottom section A' of the hopper is preferably formed of cast metal and is gradually tapered toward its lower end, forming toward the front an opening, closed on each side by arms *b*, which are connected at their lower ends by an integral cross-piece *b'*, angular in form and so arranged that in connection with the lowermost edge of the operating-shutter it will form a diamond opening. These side pieces *b* are segmental in form and on the outer face of each is a rib *b²*, forming a guide for a cast-metal box C, which embraces and entirely surrounds both side pieces and is secured to and forms a part of the discharge-shutter. To the upper portion *c* of the box C is secured a curved metallic strip *c'*, which extends from side to side of the lower portion of the hopper and prevents at all times the escape of seed from the rear of the hopper, while at the same time during the reciprocation of the shutter it enters the hopper and acts as a stirring device to agitate the seeds and insure the constant feed of the latter into the discharge-channel of the hopper. Three sides of this discharge-channel are formed by the stationary side pieces *b* and the plate *c'*, while the opposite side is formed by the shutter-piece proper, which is also in the form of a curved metallic strip *c²*, secured to the lower portion *c³* of the casting C, and at its lower end has a V-shaped notch or slot *c⁴*, which coacts with the angular bar *b'* to form the previously-mentioned dia-

mond-shaped discharge-opening. The shutter c^2 will at all times prevent the escape of seed from the hopper except when it is so moved as to form, in connection with the cross-bar b' , a discharge-opening through which the seed may fall from the discharging-channel, while its upper end, also entering the hopper, will act as a stirrer and tend to keep the seed from clogging or packing.

- 10 Secured to or formed integral with the casting C is an arm or finger C' , which projects into the path of a series of studs on the driving-wheel and is actuated thereby in a manner described hereinafter. The lower portion of the hopper A' is provided with a segmentally-slotted guide d , which is embraced by the casting of which the box C and finger C' form part, and in this casting is a pin d' , extending transversely through the slot, the
- 15 pin governing the lowermost position which the shutter may assume, while the guide d acts in connection with the other portions of the hopper to form the guide for the movement of the shutter. As a modification of this construction the number of guides may be lessened by providing the shutter structure with arms pivoted to the hopper or to the frame in such manner that the same or substantially the same movement on a curved
- 20 line would be obtained.

On opposite sides of the portion A' of the hopper are formed pivot-lugs e , through which and through the frame of the machine passes a transverse pivot-bolt E.

- 35 The frame is in two sections $F F'$, the portion F being that to which the hopper is pivoted and comprising opposite curved side bars f , connected at the front by a cross-bar f' and at the upper rear end by a cross-bar f^2 , from the central portion of which extends a curved
- 40 finger f^3 . The side bars f are formed integral with downwardly-curved side bars f^4 , which carry and are integral with a guiding-box f^5 , extending close to the surface of the
- 45 ground, so as to guide the seed and prevent its being scattered, as by the wind. Immediately in front of the guide-box f^5 is a front bar f^6 for the reception of a removable plow-point G, which is held in place by means of
- 50 a bolt g , passing through a slot g' in said bar, and is adjustable vertically thereon, so that the plow-point may make a furrow of greater or less depth. The rear of the plow-point is hollow, and within the space thus formed fits
- 55 an inclined plate f^7 , which forms an integral part of the section F' of the frame.

- The portion F' of the frame comprises two separate arms h , each provided near the forward end with an opening for the passage of
- 60 a bolt i' , forming a shaft or support for the driving-wheel I. On the outer rear faces of each arm are integral plates h' , having segmental slots h^2 for the passage of the securing-bolts j of the handles J' , and at the lower
- 65 end of the plates h' is a projecting rest h^3 , having a rib h^4 , which fits into a slot j' , cut in the end of the handle, the whole forming a

step or support against which the lower end of the handle fits and avoids the necessity of a double set of securing-bolts.

The means for connecting and for adjusting the relative positions of the sections of the frame are more clearly illustrated in Figs. 12 and 13. The inner face of each side of the frame F is provided with a rib or ribs k , spaced by a square opening k' for the passage of the securing-bolt K, and immediately above and below this opening are inwardly-projecting bosses k^2 , which extend into a vertical slot k^3 , formed in the lower rear face of each of the arms h . On the inner face of each arm are formed three or more slots l , into which may enter ribs k , so that the relative vertical positions of the front and rear sections of the frame may be altered to accommodate the character of the work to be carried on, the ribs k entering the slots l and the bosses k^2 entering the slots k^3 and forming, when the bolt K is tightened, a rigid structure.

On the bolt i' , or on a suitable antifriction-sleeve surrounding the same, is mounted the driving-wheel I, provided with an inwardly-projecting flange or ring m , in which are formed a series of threaded openings n , as shown more clearly in Figs. 6 and 7. To these threaded openings are adapted double-ended stud-bolts m' , having a squared central portion m^2 , and one end of the bolt being threaded and adapted to the threaded orifice n , while the opposite end is smooth and projects beyond the face of the wheel in the plane of the finger C' of the seed-discharge shutter. The number of these openings may be varied at pleasure and they may be placed at equal or varying distances from each other, in accordance with the character of work which the machine is intended to perform or in accordance with the distance of the hills from each other. When the distance has been determined—say six, nine, twelve or more inches from each other—the stud-bolts are arranged in the threaded openings at the required distance from each other and the remainder of the bolts not to be used are removed and screwed into the openings n from the opposite face of the ring m , so that their projecting smooth ends will be entirely within the periphery of the wheel and will not act upon the finger C' .

The mechanism for effecting the adjustment of the area of the seed-discharge opening comprises a cam-plate O, the obverse and reverse sides of which are illustrated in Figs. 10 and 11, respectively. This plate is held by a thumb-screw o in the outer end of a yoke o' , formed integral with the casting A' of the hopper and surrounding the finger f^3 of the frame, the edge of the cam-plate bearing against the rear face of the finger f^3 , and as the latter forms a part of a stationary frame the turning of the cam-plate on the thumb-screw as an axis will effect the movement of the hopper on its pivot-bolt E, and the seed-

discharge channel of the hopper is moved at first independently of the movement of the discharge-shutter C and then with the shutter when a given point is reached to gain the adjustment for the smaller seeds.

It will be noted that the finger C' is provided with a projection p , which comes into contact with a stop p' at one end of one of the side bars f' , and when in contact with such stop further downward movement of the shutter is prevented. In gaining the adjustment for seeds of the larger variety, such as beans or peas, the cam-plate O is turned until, in the lowering of the seed-channel and the consequent lowering of the seed-shutter, the pin d' resting against the lower wall of the slot in the guide d , the projection p comes into contact with the stop p' . The cam-plate is further turned until the seed-channel of the hopper descends to its lowest point, and the distance between the edge of the bar b' at the bottom of the channel and the V-shaped slot c^4 in the shutter proper is increased to the fullest limit, the slot in the guide d traveling over the pin d' of the shutter during this latter movement. When this adjustment for the larger-size seed has finally been accomplished, the finger f^3 is at a point opposite the notch in the cam-plate marked "Beans," which is nearest to the pivot-point of the cam-plate, the bar b' of the seed-channel and the plate c^2 of the shutter have assumed the closed position shown in Fig. 8, and the finger C' of the shutter has approached a point about on a line with the axis of the driving-wheel. The rotation of the driving-wheel will bring one of the studs m' into contact with the under surface of the finger C' and will raise the shutter for a considerable distance until the bar b' of the seed-channel and the V-shaped slot c^4 of the shutter assume the position illustrated in Fig. 9, this being the largest area of seed-opening which can be afforded in a machine of the size and character shown, and through it may simultaneously fall several seeds of comparatively large size.

To adjust the machine for the sowing of smaller seeds, the cam-plate is turned until the seed-channel of the hopper moves forward and upward, and the opening movement of the shutter is thus lessened to permit the passage of only a small variety of seed, such as celery or turnip.

The machine is adapted for either sowing in continuous rows or for dropping a fixed quantity of seed in hills at predetermined distances from each other, and to gain the proper adjustment for both classes of work I make the adjusting cam-dial in the manner illustrated in Figs. 10 and 11, on referring to which it will be seen that one side is marked with the word "Drills" and the opposite side with the word "Hills," and each side has upon it the names of seeds that can be sown, and corresponding peripheral notches which when set opposite the finger f^3 adjust the sowing for the seeds indicated.

When the machine is employed for hill sowing, the seed falls intermittently direct from the shutter-opening through the guiding-box f^5 to the ground; but where the sowing must be in a continuous row I provide near the lower end of the guide-box f^5 a slot r , through which may be adjusted an inclined plate R, having at one end a finger r' , by which it may be moved into or out of operative position. This plate is held against the under side of the cover-blade pivot r^2 by the spring r^3 , which partially winds around the pivot and has its central portion extending under the plate R, so that it will normally tend to raise the said plate and hold it in position by the frictional contact between the plate, the pivot-pin, and the lower wall of the slot r . On the under side of the plate R is a recess r^4 , into which the spring fits when the plate is withdrawn to the position shown in Fig. 4, and holds said plate in the inoperative position during all the time that the machine is employed for hill sowing. When it is desired to adjust the machine for drill sowing, the plate is pushed forward through the slot r into the guide-box until a stop r^5 on the plate comes into contact with the pivot-bolt. The operative position of the plate in drill sowing is illustrated in Fig. 3.

In the operation of drill sowing the seed dropping at close (six inches) intervals from the hopper will fall through the guide-box until it comes into contact with the inclined plate R, from which it will rebound and ricochet until it finally passes beyond the edge of the plate and falls on the inclined plate f^7 in the hollow portion of the plow G, and from thence again ricochet to the ground. These inclined plates are found in practice to effect a thorough scattering and distribution of the seed, as the discharge against the plate will take place at varying points throughout its surface, and in some cases portions of the seed falling nearest the rear of the plate will rebound several times and make several contacts before it finally falls to the inclined plate f^7 , while other portions of the seed striking near the forward edge of the plate will almost immediately pass to the plate f^7 , and from thence continually to the ground.

On the rear of the guide-box f^5 are formed integral lugs s for the passage of the pivot-bolt r^2 , and on this bolt are hung two cover-blades S, connected by an integral bar s' , which comes into contact with stops s^2 , formed on the lugs, when the blades are in operative position. These blades are free to move toward the front of the machine, swinging on the pivot-bar when the rear end of the machine is raised from the ground.

Pivoted on the bolt E, at points between the frame and the pivot-lugs e of the hopper, are two arms T, carrying at their rear end a shaft t , for the support of a roller t' , having a concaved or hollow face which rolls down the ground previously operated upon by the plow-point and the cover-blades. The arms T are

extended forward of the pivot-point in the form of levers t^2 , the under surfaces of which bear against stops u , projecting from the frame, and the weight of the frame and its connected parts will normally keep such levers in contact with the stops when the machine is in practical operation.

In wheeling the machine to and from the field of operation, or in moving it from furrow to furrow, or in other places where it is desirable to throw the seed-discharging shutter out of gear, the handles J' may be depressed until the driving-wheel is raised from the ground, when the machine may be pushed along on the cover-wheel as a support without sowing.

When the handles are raised to lift the plow out of the ground, the weight of the cover-wheel, acting through the lever t^2 , will move the hopper on its pivot-bolt until the hopper assumes the position illustrated in Fig. 2, and at the same time the lower wall of the slot in the guide d will come into contact with the pin d' of the shutter-finger C' and will elevate the latter to a point beyond the line of travel of the studs m' , and the machine may be wheeled around on the driving-wheel without danger of accidental discharge of any of the seed.

Various modifications of the structure herein described may be made without departing from the spirit of my invention—as, for instance, the overlapping V-shaped ends of the seed-channel and the shutter may be partially curved or may be perfectly straight in lieu of the V-shape, as described, or the shutter in lieu of being guided on the sides of the feed-channel may be provided with arms pivoted to the pivot-bolt E , or the seed-channel and the discharge-shutter may be arranged on a straight instead of a curved line, as shown.

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

1. In a seed-sowing machine, a movable seed-discharge shutter having a fixed range of movement, means for operating the same, a hopper, and means for adjusting the hopper relatively to the shutter to regulate the quantity of seed to be discharged at each opening of the shutter.

2. In a seed-sowing machine, a pivotally-movable hopper, a discharge-orifice in said hopper, means for opening and closing said discharge-orifice for regulating the discharge of the seed, and means for adjusting the position of the hopper to govern the area of the discharge-orifice.

3. In a seed-sowing machine, a movable hopper, a movable seed-discharge shutter, means for operating said shutter, and means for adjusting the position of said hopper to regulate the quantity of seed to be discharged at each opening of the shutter.

4. In a seed-sowing machine, a frame, a hopper pivoted thereto having a bottom discharge-opening, a shutter normally closing said opening, means for reciprocating said

shutter, and means for adjusting the position of the hopper.

5. A seed-sowing machine having an adjustable hopper, a movable shutter at the bottom of said hopper, devices for operating said shutter to discharge the seed, and means for adjusting the position of the hopper to regulate the area of the discharge-opening effected by the movement of the shutter.

6. In a seed-sowing machine, a frame, a hopper pivotally connected thereto and having at its bottom a seed-discharge opening, a movable shutter normally closing said opening, means for operating said shutter to discharge the seed, and means for adjusting the position of the hopper to regulate the area of the discharge-opening effected by the movement of said shutter.

7. In a seed-sowing machine, a frame, a hopper having a lower seed-discharge channel terminating in a V-shaped end, and a movable discharge-shutter arranged under the seed-discharge channel and having a recessed or slotted end portion, the ends of the seed-discharge channel and the shutter coacting to form a diamond opening for the discharge of the seed.

8. In a seed-sowing machine, a hopper having at its point of discharge a recessed or V-shaped opening, a shutter having a recessed or V-shaped opening adapted to be moved to alternately close and open the hopper discharge-opening, and means for actuating said shutter.

9. In a seed-sowing machine, a hopper recessed at the point of discharge, in combination with a shutter having a recessed end adapted to be moved to close or open the hopper-discharge.

10. In a seed-sowing machine, a hopper having a lower seed-discharge channel, a movable shutter forming one wall of the channel, and means for actuating said shutter to form a seed-discharge opening between the end of the shutter and the end of the seed-discharge channel.

11. In a seed-sowing machine, a hopper having a lower seed-discharge channel, a movable shutter forming one wall of said channel, means for actuating said shutter to form a seed-discharge opening between the end of the shutter and the end of the seed-discharge channel, and a regulating-cam for adjusting the area of the discharge-opening.

12. In a seed-sowing machine, a hopper having a seed-discharge channel provided at its lower end with an inclined cross-bar, in combination with a seed-discharge shutter having at its end a recess or slot and adapted to be moved across said inclined bar to alternately open and close the seed-discharge opening.

13. In a seed-sowing machine, a hopper having at its lower end a seed-discharge channel formed partly by the hopper-walls and partly by a movable shutter, with means for actuating said movable shutter to form between

the fixed walls of the channel and the end of the shutter a seed-discharge opening.

14. In a seed-sowing machine, a hopper having at its lower end a seed-discharge channel having two fixed walls and two movable walls, one of such movable walls forming a seed-discharge shutter with means for actuating said shutter, substantially as specified.

15. In a seed-sowing machine, a hopper having a seed-discharge channel, a movable shutter forming one wall of the channel, means for actuating said shutter to form a seed-discharge opening between the end of the shutter and the end of the discharge-channel, the upper end of said shutter projecting within the hopper and forming a seed-stirrer.

16. In a seed-sowing machine, a hopper having a seed-discharge channel, a movable shutter forming one wall of such channel, means for actuating said shutter to form a seed-discharge opening between the end of the shutter and the end of the discharge-channel, and means for adjusting the positions of both the hopper and the shutter and for regulating the limit of movement of such shutter.

17. In a seed-sowing machine, a frame, a hopper, A, a pivot-bolt, E, connecting the hopper to the frame, a seed-channel formed partly by the lower walls of the hopper and partly by sliding plates, c' , c^2 , the end of the lower plate, c^2 , having a slot or recess, c^4 , adapted to form a seed-discharge opening and means for actuating said plate, c^2 , substantially as specified.

18. The combination of the frame, a hopper, side bars, b , formed on said hopper, an inclined bar, b' , connecting said side bars, a seed-discharge shutter comprising sliding plates, c' , c^2 , adapted to reciprocate on said side bars, the lower plate, c^2 , being provided at one end with a slot or recess, c^4 , which in connection with the said bar, b' , forms a seed-discharge opening, and means for actuating said shutter, substantially as specified.

19. In a seed-sowing machine, a frame, a hopper having at its lower portion a seed-discharge channel, a combined discharge-shutter and seed-stirring device comprising plates, c' , c^2 , arranged on either side of and forming movable walls for the seed-channel, and means for reciprocating said shutter and stirring device, substantially as specified.

20. In a seed-sowing machine, a frame, a hopper having a lower seed-discharge channel formed partly by the walls of the hopper and partly by movable plates, c' , c^2 , which extend up into the hopper and serve to agitate the seed therein, a shutter-frame, C, embracing and surrounding the seed-channel and to which said plates, c' , c^2 , are secured, a projecting finger, C', secured to or formed integral with the shutter-frame, means for guiding said frame and finger, and means for raising the finger to effect the reciprocation of the shutter, substantially as specified.

21. In a seed-sowing machine, a frame, a hopper having a lower seed-discharge channel formed partly by bars, b , b' , integral with

the hopper and partly by sliding plates, c' , c^2 , a shutter-frame and finger, C, C', carrying said plates, a slotted guide, d , projecting from the hopper a pin, d' , carried by the shutter structure and extending through said slot, an actuating-wheel, and a series of pins on said wheel adapted to operate on said finger to effect the reciprocation of the shutter, substantially as specified.

22. In a seed-sowing machine, a frame, a hopper pivoted thereto and provided with a lower seed-discharge channel, a movable shutter, means for reciprocating said shutter to form at the end of the seed-channel a discharge-opening, and a cam, O, for moving said hopper on its pivot to adjust the relative positions of the end of the seed-channel and the end of the shutter, substantially as specified.

23. In a seed-sowing machine, a frame, a hopper pivoted thereto, a cam pivotally secured to the frame and adapted to coact with a fixed portion of the frame to effect the pivotal adjustment of the hopper, a seed-discharge channel at the lower end of the hopper formed partly by fixed side and end walls, b , b' , and partly by sliding plates, c' , c^2 , adapted to reciprocate on said side bars, the lower plate, c^2 , being provided with a slot or recess, c^4 , which in connection with the end bar, b' , forms a seed-discharge opening, and means for actuating said shutter, substantially as specified.

24. In a seed-sowing machine, having a hopper pivotally connected to the frame of the machine and adapted to be raised or lowered at will upon the frame, mechanism for automatically closing the seed-discharge opening when the hopper is raised to its full extent upon the frame.

25. In a seed-sowing machine, a frame, handles thereon, a seed-hopper pivoted to said frame, a discharge-shutter provided at the bottom of the hopper, a driving-wheel adapted to operate the said shutter, and a covering-roller hung to the rear end of the frame and adapted on the raising of the handle to disconnect the driving-wheel and the discharge-shutter.

26. A seed-sowing machine, comprising a frame, a driving-wheel carried thereby, a seed-hopper pivoted to the frame, a discharge-shutter carried by the hopper and adapted to be operated by the driving-wheel, a covering-roller pivotally hung to the frame and adapted to elevate the hopper when the handles are raised and thereby disconnect the shutter-operating mechanism.

27. In a seed-sowing machine, a frame, a seed-hopper pivoted thereto, a discharge-shutter for governing the discharge of the seed, a driving-wheel adapted to operate upon said shutter, a covering-roller hung to the rear end of the frame, and lever-arms extending beyond the pivot-point of the covering-roller frame and adapted to raise the hopper and its shutter from contact with the shutter-actuating mechanism when the handles are raised.

28. In a seed-sowing machine, a frame, a hopper pivoted thereto, projections as e' , extending laterally from the sides of the hopper, seed-discharge mechanism comprising a movable shutter and a driving-wheel having projections adapted to engage with and actuate the same, a covering-roller, a frame, T, pivoted to the frame and carrying said roller, arms, t' , secured to or formed integral with the roller-frame and extending beyond its pivot-point, said arms being adapted to engage with the projections, e' , when the handles are raised.

29. In a seed-sowing machine, a hopper, means for discharging the seed therefrom, a guide-box arranged below the seed-discharge opening and an inclined plate adapted to be moved into or from the path of the seed falling through said guide-box.

30. In a seed-sowing machine, a hopper, means for discharging the seed therefrom, a guide-box situated below the seed-discharge opening and having a slotted rear wall, and an inclined plate, R, movable through said slot into or from the path of the falling seed.

31. In a seed-sowing machine, a hopper, means for discharging the seed therefrom, a guide-box provided below the seed-discharge opening and having a slotted rear wall, a plate, R, and a holding-spring, r^3 , for retaining said plate in an operative or inoperative position, substantially as specified.

32. In a seed-sowing machine, a hopper, means for discharging the seed therefrom, a guide-box below the seed-discharge opening, and inclined plate adapted to be moved into or from the path of the seed falling through said guide-box, and a second plate below and inclined in a direction opposite to the first plate said second plate forming a stationary portion of the machine and being normally out of the path of the falling seed.

33. In a seed-sowing machine, a hopper, means for discharging the seed therefrom, a guide-box, f^5 , situated below the seed-discharge opening, an adjustable inclined plate, R, having on its under side a recess, r^4 , and a spring, r^2 , adapted to hold said adjustable plate in operative or inoperative position, substantially as specified.

34. In a seed-sowing machine, a hopper, a seed-discharge shutter therefor, a driving-wheel having an internal ring in which are formed a series of threaded openings, and removable shutter-actuating studs adapted to be screwed into said openings from either side of said ring.

35. In a seed-sowing machine, a seed-discharge-actuating mechanism comprising a driving-wheel having in a ring concentric with the periphery of the wheel a series of threaded openings extending entirely through said ring, and studs having threaded ends adapted to be screwed into said openings from either side of the ring, substantially as specified.

36. In a seed-sowing machine, a seed-dis-

charge-actuating mechanism comprising a driving-wheel having an internal ring, m , provided with a series of threaded openings, n , and double-ended studs, m' , adapted to said threaded openings, substantially as specified.

37. In a seed-sowing machine, a frame, a discharge-shutter having a fixed range of movement, a movable hopper carried in the frame, and a cam-plate pivoted to the frame and adapted to adjust the position of the hopper, substantially as specified.

38. In a seed-sowing machine, a frame, a movable hopper carried thereby, a movable discharge-shutter at the lower end of the hopper, means for operating said shutter, and a pivoted cam-plate for regulating the discharge of seed from the hopper, the obverse and reverse sides of said cam-plate being provided with different series of indicating-marks.

39. A cam-plate for regulating the discharge of seed from a seed-sowing machine, said cam-plate being reversible and having on its obverse and reverse sides indicating-marks which when moved to a predetermined position regulate the area of the discharge-opening, each side of the plate being adapted for the sowing of seeds of different classes and sizes, substantially as specified.

40. In a seed-sowing machine, a frame having at or near its rear end a finger, f^3 , a hopper pivoted to the frame and provided with a yoke, o , surrounding said finger, a movable discharge-shutter at the bottom of the hopper, means for operating said shutter, a cam-plate, O, adapted to make contact with the finger, f^3 , and effect the adjustment of the hopper and a screw or pin, o , forming a pivot for said cam-plate, substantially as specified.

41. In a seed-sowing machine, a two-part frame comprising forward and rear sections, a driving-wheel carried by the forward part of the frame, a hopper and seed-distributing mechanism carried by the rear part of the frame, one portion of such frame having a series of recesses arranged at different levels, and the connecting portion of the opposite section having a web or flange adapted to any one of such recesses, and a securing-bolt for connecting such sections, substantially as specified.

42. In a seed-sowing machine, a frame comprising a forward section and a rear section adjustably connected to each other, a driving-wheel carried by the forward section, a seed-hopper and distributing mechanism carried by the rear section, one of such sections being provided with a series of horizontally-arranged parallel recesses and a vertically-arranged slot and the opposite section being provided with a web or flange adapted to enter any one of such recesses and a projecting lug adapted to enter the slot of the opposite section, and a securing-bolt adapted to secure the sections together, substantially as specified.

43. An adjustable connection for the two

sections of an agricultural-implement frame, comprising in one section a series of recesses, l , extending in a horizontal plane and a vertical slot, k^3 , extending entirely through such section, and in the opposite section a web or flange, l , adapted to any one of the recesses, l , and projecting lugs, k^2 , adapted to the vertical slot, k^3 , with a securing-bolt for fasten-

ing the two sections to each other, substantially as specified.

In witness whereof I have hereunto set my hand this 6th day of May, A. D. 1897.

SAMUEL L. ALLEN.

Witnesses:

JNO. E. PARKER,
HORACE PETTIT.