(No Model.)

3 Sheets—Sheet 1.

L. C. EVANS.

CORN PLANTER.

No. 546,486. Patented Sept. 17, 1895.

Fig. 2.

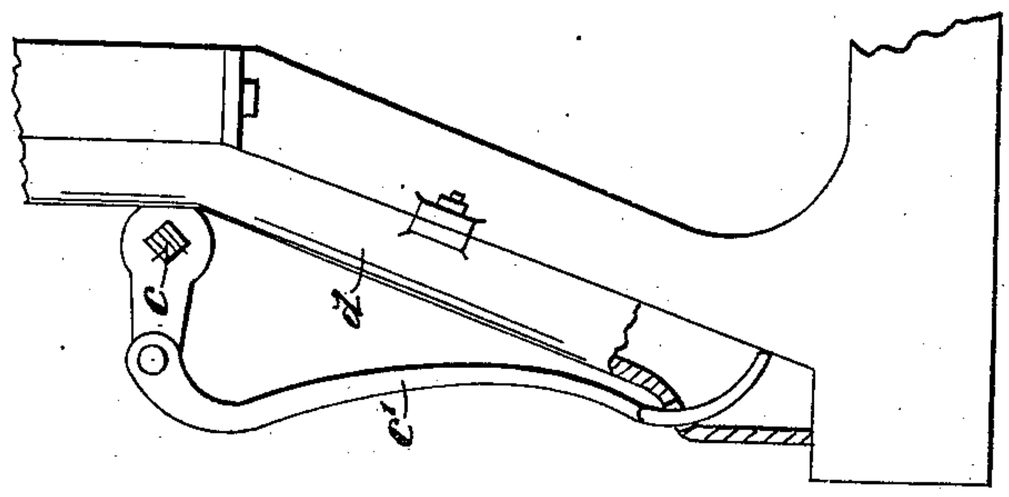
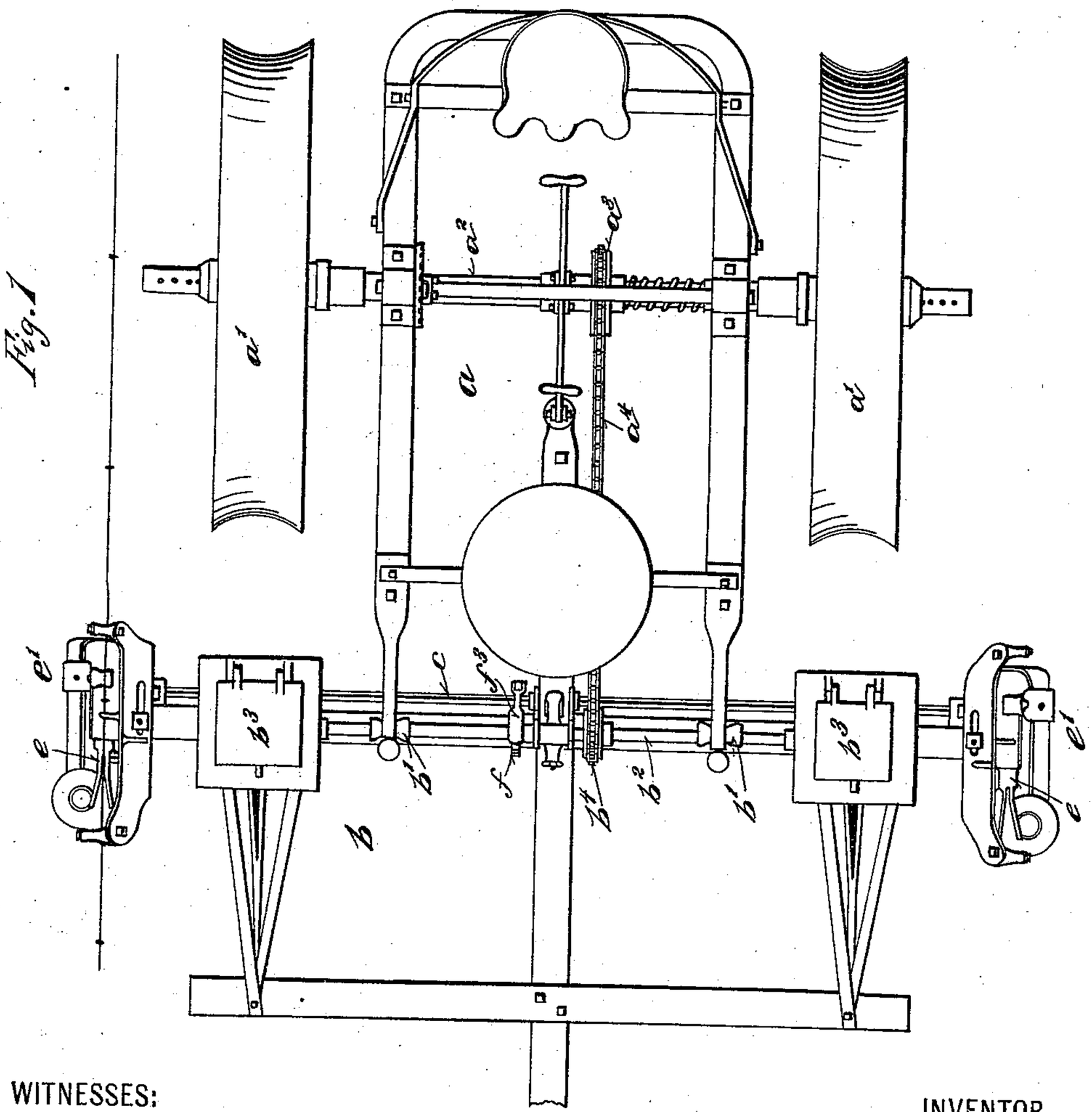


Fig. 1.



WITNESSES:

Fred B. Ernest

Chas. I. Nebel

INVENTOR

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BY Dailey & Shepherd

ATTORNEYS

(No Model.)

3 Sheets—Sheet 2.

L. C. EVANS.
CORN PLANTER.

No. 546,486. Patented Sept. 17, 1895.

Fig. 3

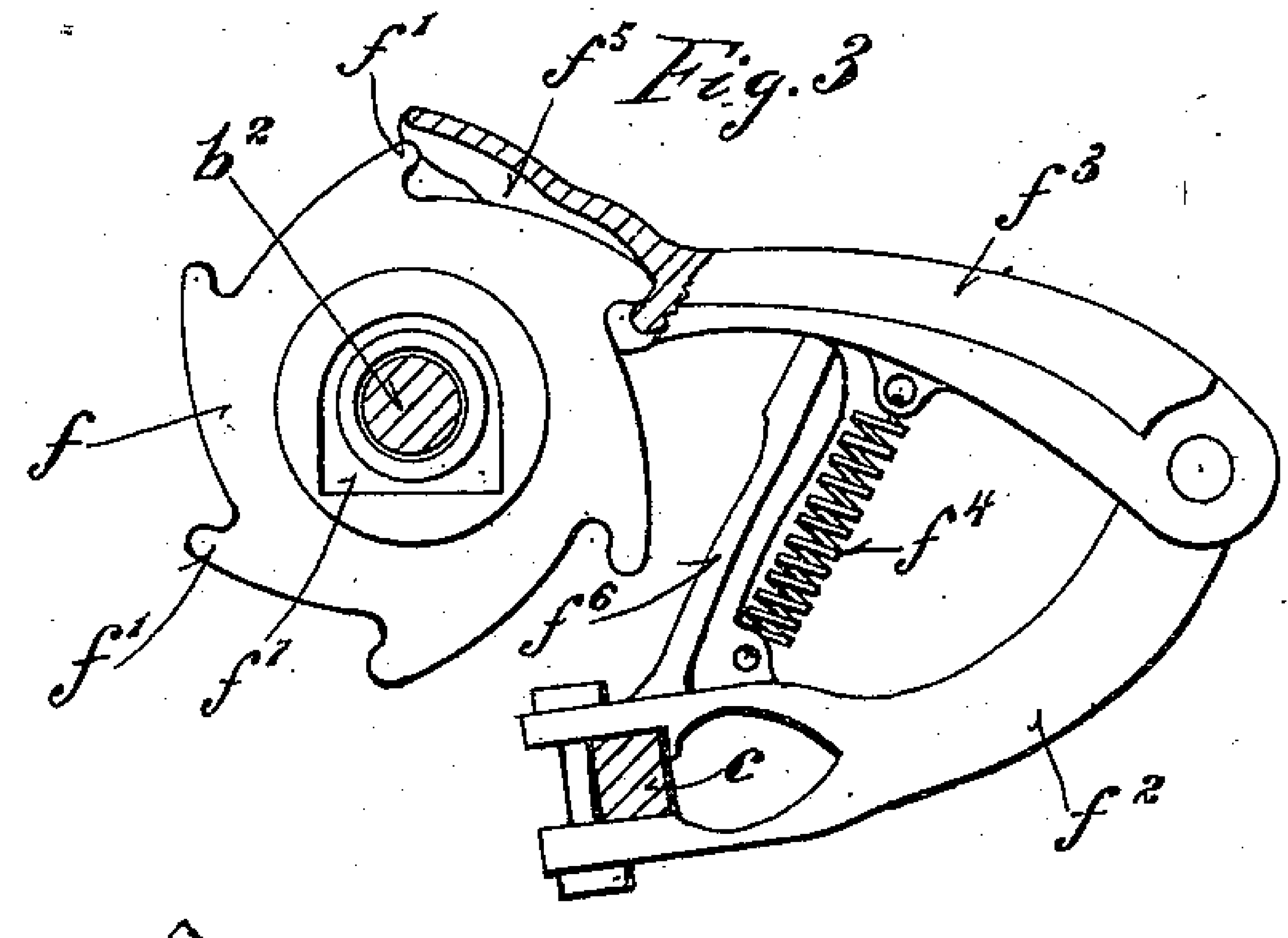


Fig. 5

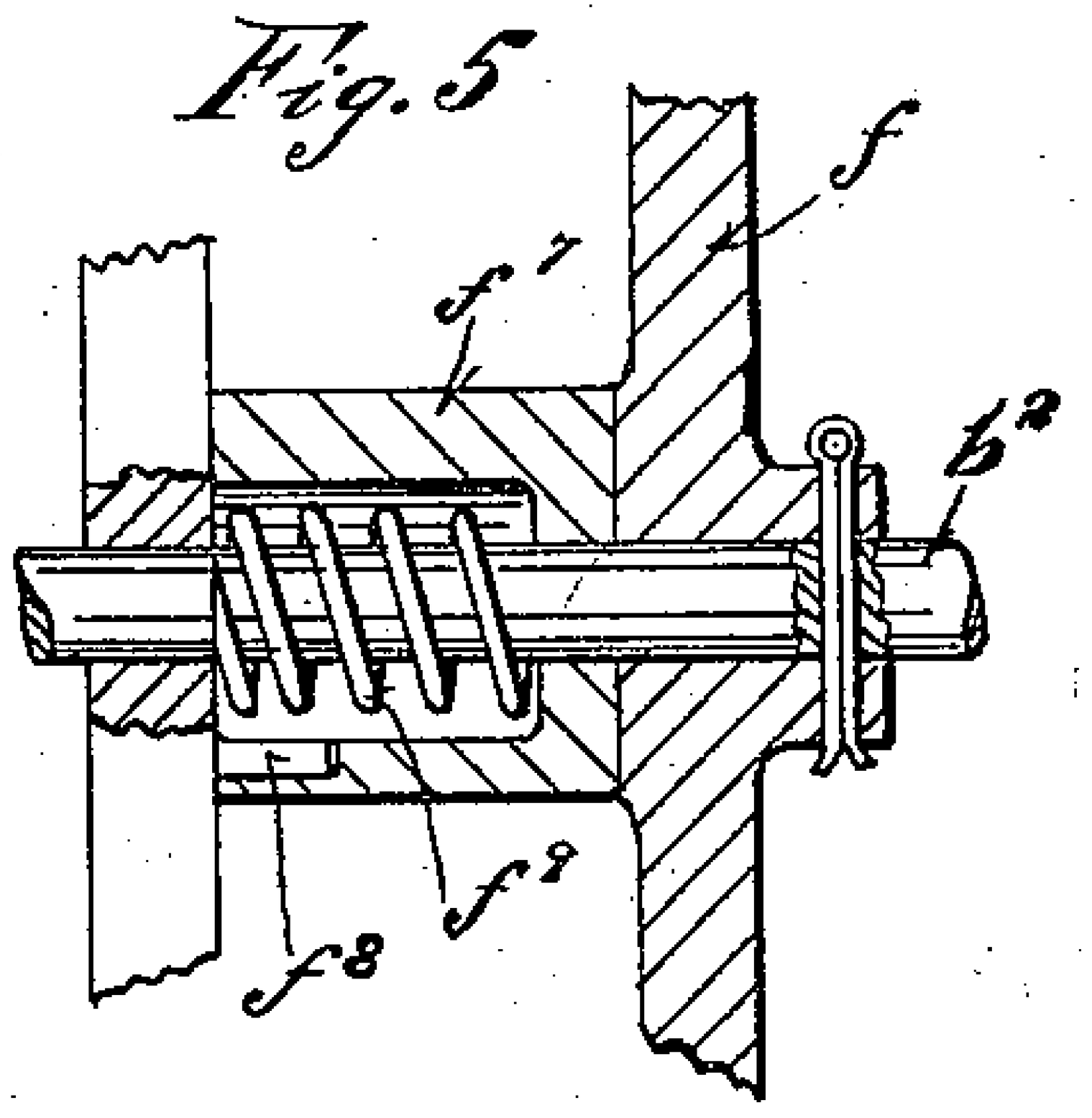


Fig. 2

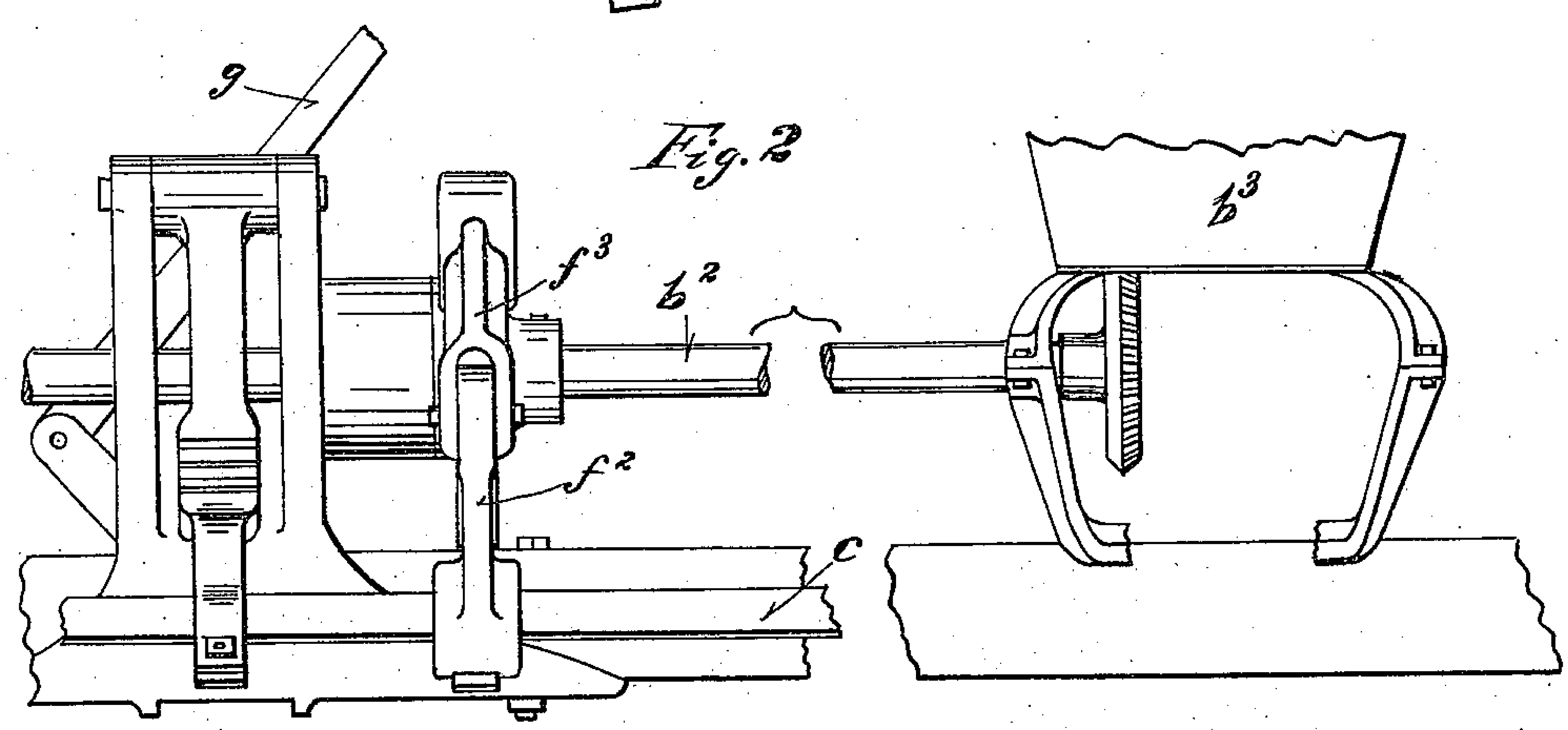
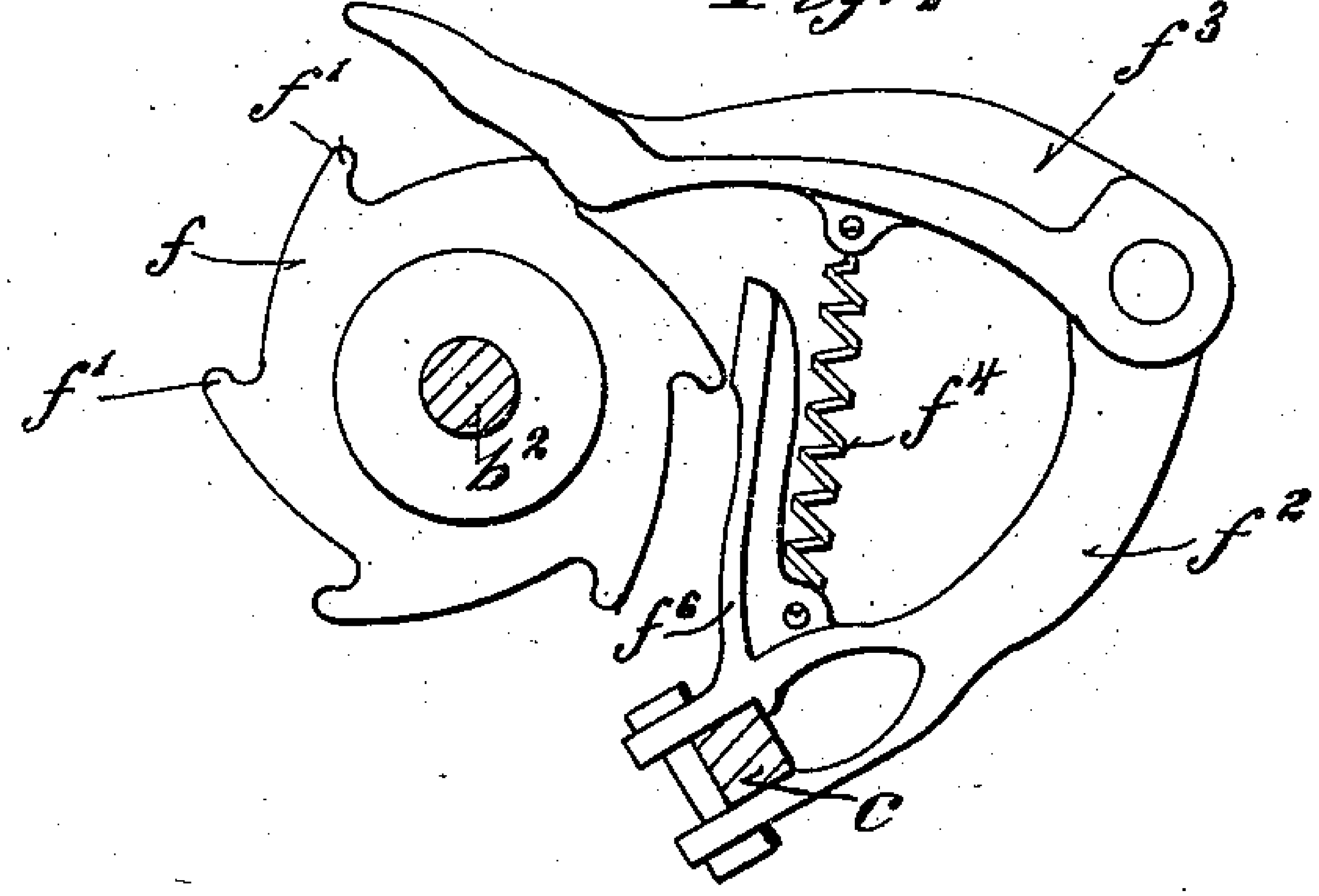


Fig. 4



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(No Model.) 3 Sheets—Sheet 3.

L. C. EVANS.

CORN PLANTER.

No. 546,486. Patented Sept. 17, 1895.

Fig. 6

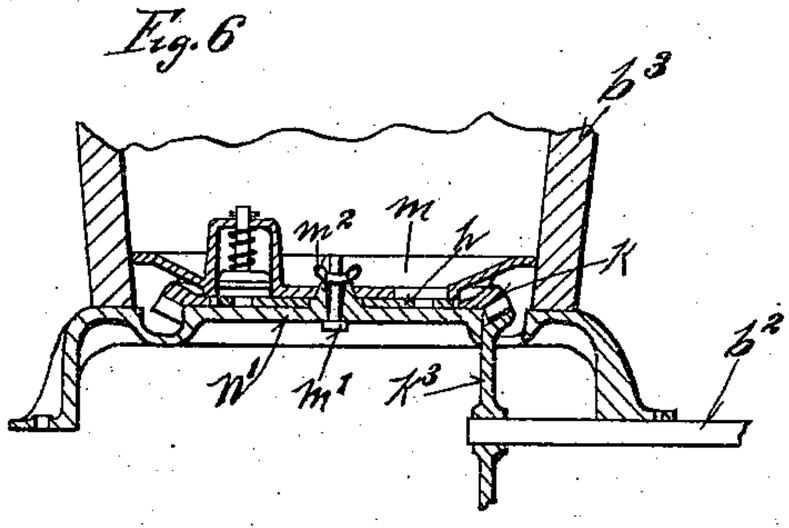


Fig. 7

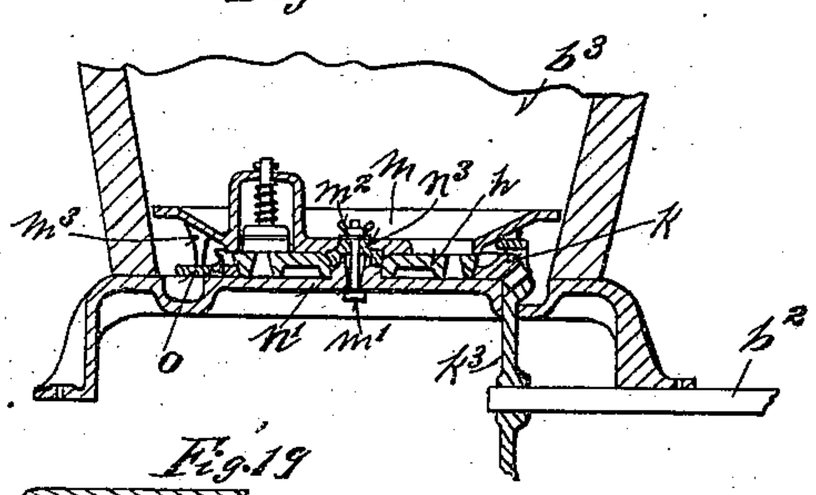


Fig. 8

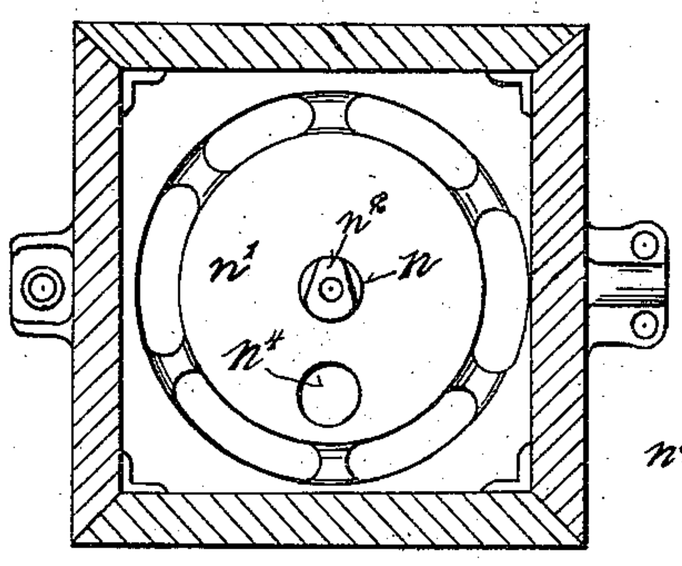


Fig. 19

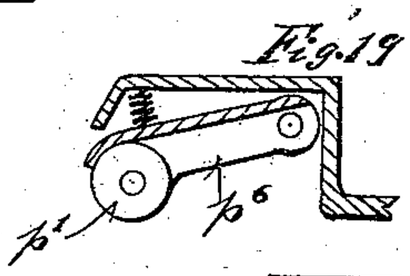


Fig. 9

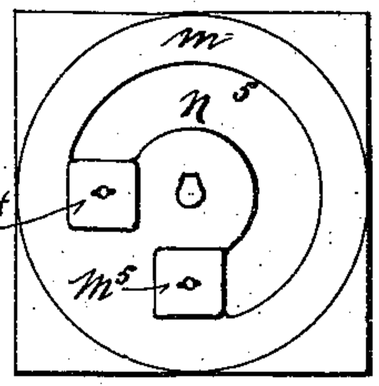


Fig. 16

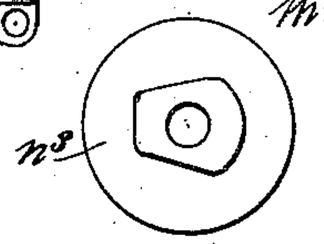


Fig. 11

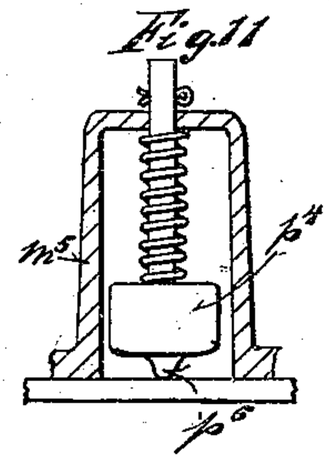


Fig. 17

Fig. 14

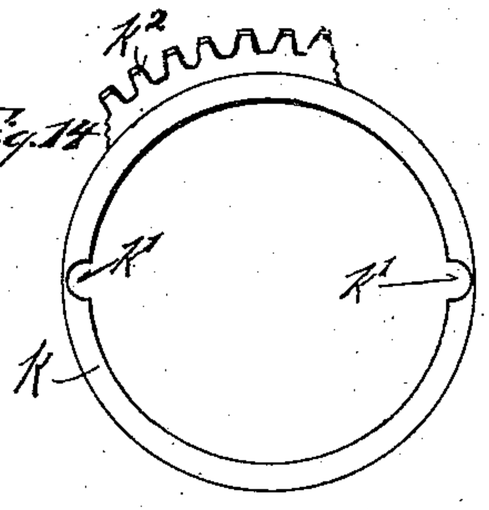


Fig. 13

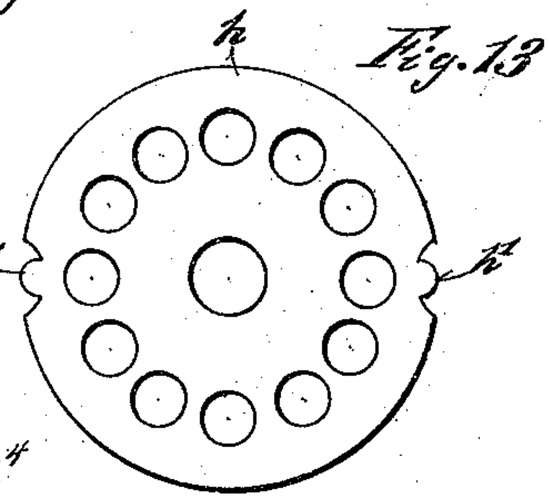


Fig. 10

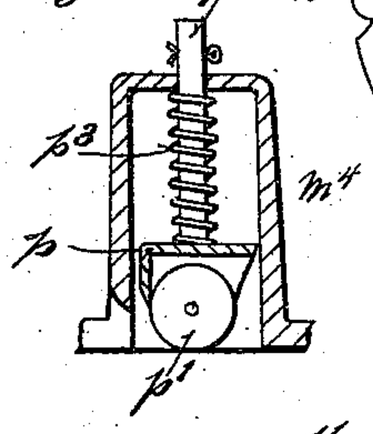


Fig. 15

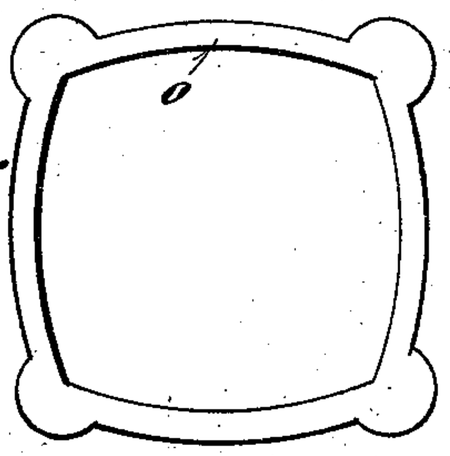


Fig. 12

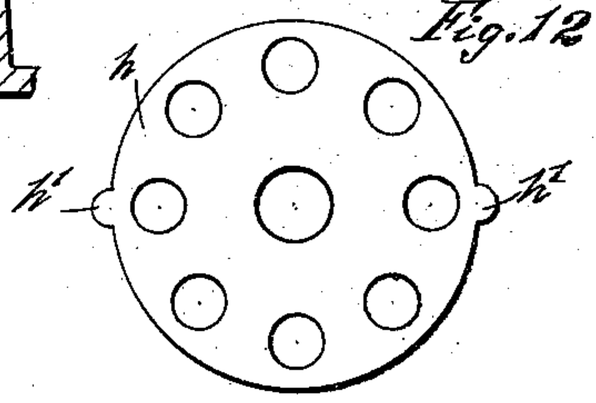
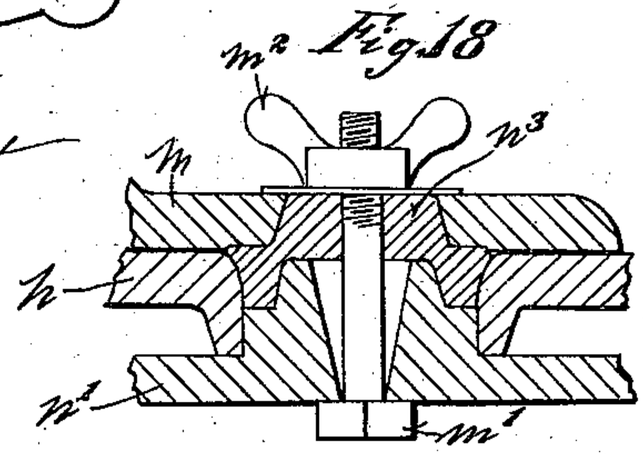


Fig. 18



WITNESSES:

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Chas. I. Welch

INVENTOR

Louis C. Evans

BY Staley & Shepherd

ATTORNEYS

UNITED STATES PATENT OFFICE.

LOUIS C. EVANS, OF SPRINGFIELD, OHIO, ASSIGNOR OF ONE-HALF TO LORENZO D. BENNER, OF PEORIA, ILLINOIS.

CORN-PLANTER.

SPECIFICATION forming part of Letters Patent No. 546,486, dated September 17, 1895.

Application filed March 17, 1894. Serial No. 503,990. (No model.)

To all whom it may concern:

Be it known that I, LOUIS C. EVANS, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Corn-Planters, of which the following is a specification.

My invention relates to improvements in corn-planters, and it especially relates to that class of corn-planters which are adapted to operate either as a drill or check-rower.

The object of my invention is to provide in a corn-planter novel means by which an ordinary drill-planter may be converted into a check-row planter, the construction being such that the whole operation of check-rowing may be accomplished by the check-wire or partly by the check-wire and partly by the wheels, as desired.

A further object of my invention is to provide novel means for adjusting the seed-plates in the hopper to the different work to be performed.

A further object of my invention is to provide novel means for carrying the corn from the hopper to the seed-tubes and regulating the quantity so carried.

A further object of my invention is to simplify the constructions heretofore employed in corn-planters.

I attain these objects by the constructions shown in the accompanying drawings, in which—

Figure 1 a plan view of a corn-planting device embodying my invention. Fig. 2 is a side elevation of a portion of the same, showing features of my improved check-rowing device. Figs. 3 and 4 are respectively detail views, partly in section, of portions of the same. Fig. 5 is a sectional elevation showing a detail of the same. Figs. 6 and 7 are respectively sectional elevations of the feeding-plates adjusted to accomplish different results in planting. Fig. 8 is a sectional view showing the hopper with the seeding devices removed. Fig. 9 is a plan view of the false bottom arranged above the seeding-plates. Fig. 10 is a detail view of my improved cut-off device. Figs. 11 to 18, inclusive, are details of some of the various parts relating to the seeding devices; and Fig. 19 is a detail showing a modified form of the cut-off. Fig. 20 is a side elevation, partly in section, of the seed-tube, showing the valve.

Like parts are represented by similar letters of reference in the several views.

In the said drawings, a represents the wheel-frame, and b the runner-frame of an ordinary corn-planter. a' a' are the carrying-wheels, which are arranged in the usual way on a shaft a^2, which carries a sprocket-wheel a^3, over which passes a driving-chain a^4. The wheel-frame is hinged to the runner-frame by suitable hinged connections b', which are preferably arranged concentric to a rotating shaft b^2, which drives the seed-plates arranged in the hoppers b^3, the shaft b^2 being adapted to receive motion from the drive-chain a^4, which passes over a suitable sprocket-wheel b^4 on said shaft. A rock-shaft c, journaled in suitable bearings on the runner-frame and connected to valves c' in the seed-tubes d, is adapted to be oscillated by forked levers e on suitable heads e' in the usual manner, the construction being such that as the grain is dropped into the seed-tubes by the continuously-revolving plates revolved by the shaft b^2 it is retained in the heel of the shoe until the valves are opened by the check-wire operating on the fork-lever e, this being a well-known method of check-row planting by what are known as "combined" planters. This method of check-row planting, while simple in its operation and permitting peculiar advantages in the construction of the machine, which enables it to be readily changed from a drill to a check-row planter, is defective as regards the planting in hills, inasmuch as the method of accumulating the grain in the heel of the shoe to form a hill does not insure a uniform amount of grain in each hill, as the drill may operate to drop more or less grain between the successive opening and closing of the valves in the seed-tubes, depending upon the character of the soil over which the machine is passing. I have sought to overcome this difficulty by providing means by which in check-row planting all of the device may be operated by the check-wire without removing or disturbing the elementary operating parts. I accomplish this by providing means by which the rotating-shaft b^2 may

be partially rotated by the operation of the rock-shaft c, and dispense with the driving-chain a^1.

Mounted on the shaft b^2 is a ratchet-wheel f, having a series of notches or teeth f'. The rock-shaft c is provided with a projecting arm f^2, to which is hinged a peculiarly-shaped pawl f^3, which is connected to said arm f^2 by a spring f^4. The pawl f^3 is preferably bifurcated or recessed at its outer end to form a chamber f^5, which fits over and is adapted to engage with the teeth f' in the ratchet-wheel f. (See Fig. 3.) The arm f^2 is further provided with a projecting lug or finger f^6, which, as the shaft c is oscillated, is adapted to contact with the teeth f' and stop the revolution of the ratchet-wheel f and the shaft b^2. The construction is such that as the rock-shaft c is operated by the knotted wire acting on the fork-levers the arm f^2 presses the pawl f^3 upwardly and forwardly and thus moves the ratchet-wheel f a distance of one notch or until the projection f^6 contacts with said ratchet-wheel and stops the revolution, which is accomplished synchronously with the passage of the wire from the fork-lever, the parts being returned immediately to their normal positions by the action of the springs in the check-heads in the usual way. For planting by this method a plate is provided in the hopper which has a number of openings therein corresponding to the number of teeth in the ratchet-wheel, the openings being of a sufficient size to contain the exact quantity of grain necessary to form a hill. A hill of grain is thus dropped from the hopper into the seed-tube at each operation of the check-wire, while the preceding hill is dropped from the seed-tube by the valves in the usual way, the closing of the valves being accomplished in time to catch and retain one hill of corn in the seed-tubes at all times.

Means are preferably provided by which the shaft b^2 is prevented from turning too freely to cause the same to remain in the position in which it is moved by the operation of the pawl and ratchet-wheel. This I preferably accomplish by providing at one side of the ratchet-wheel f a friction-hub f^7, said hub being adapted to fit over and engage a projection f^8 on a stationary part of the frame, which holds the same from revolving, a spring f^9 in said hub being adapted to press one end firmly against the wheel f and thus create sufficient friction to prevent the shaft from turning except as moved by the pawl, thus insuring the proper registration of the seed-plates with the opening in the seed-hopper. It is obvious that the same result exactly may be obtained by a hand-lever g, operating through suitable mechanism to oscillate the shaft c. I have shown in Fig. 2 substantially the same mechanism for this purpose as described in my patent, No. 508,568, dated November 14, 1893.

When the corn is drilled into the seed-tube by the continuously-revolving shaft b^2, a different form of plate is used in the hopper than when the entire hill is discharged into the seed-tube at one operation. For drilling, a thin plate having a greater number of openings is employed, such as shown in Fig. 13, while for dropping at intervals a hill at a time a thicker plate with a fewer number of openings is employed, as shown in Fig. 12. Now, in order to employ means for readily adjusting the dropping devices in the hopper to either form of check-row planter, I have provided novel means for supporting and operating the said dropping-plates. In either case the dropping-plate h is adapted to fit in a driving-ring k, said ring being provided with notches k', into which suitable lugs h' on the dropping-plate are adapted to engage, the driving-ring k being provided with gear-teeth k^2, adapted to mesh in a pinion k^3 on the shaft b^2.

A false bottom m is arranged above the plate and driving-gear and fits over a boss or projection n on the bottom proper n', the projection n being in the nature of a stud on which the plates revolve, and is further provided with an irregularly-shaped projection n^2, over which the false bottom m is adapted to fit, a bolt m', having a thumb-nut m^2, being adapted to hold the parts in their proper relative positions. The false bottom m is provided with projecting lugs or feet m^3 at the corners thereof, which normally rest on the bottom proper and thus elevate the same sufficiently to permit the free operation of the driving-ring and plates. Now, when it is desired to use a thicker plate, the false bottom and the drill-plate (such as shown in Fig. 13) are removed, the thicker plate (shown in Fig. 12) is inserted therein, and a supporting-ring o placed on the bottom proper to form a support for the lugs m^3 on the false bottom, and thus elevate the same sufficiently to accommodade the thicker plate. This ring o is so constructed as to rest on the bottom proper at the corners only, the connecting portions thereof being curved so as to pass over the driving-ring. An extension n^3 is placed on the stud n, the under side of which is formed with an opening corresponding to the projection n^2 and the upper part being formed with a similar projection, after which the false bottom m is placed into position and the whole united together by the bolt m', as before, and as shown in Figs. 7 and 18.

To provide for properly filling the seed-openings in the respective plates, I form the false bottom m with a chamber m^4, in which is placed a supporting-frame p, carrying a roller p', which is journaled therein, said frame being provided with a stem p^2, which extends upwardly through the chamber m^4 and around which is arranged a spring p^3, which serves to force said roller in contact with the dropping-plate. The false bottom m is provided in the usual way with an opening n^5, through which the grain passes to the

openings in the seed-plate, and the chamber m^4, with the cut-off, is arranged at one end of said opening, so that as the plates are revolved the openings containing the grain are successively brought under said cut-off and the surplus grain removed therefrom by the operation of the yielding roller. The use of a roller for this purpose prevents the breaking of the grain and tends to more evenly fill the openings by rolling over and pressing the grain therein. A similar chamber m^5 is provided immediately over the opening n^4 in the bottom proper, which leads to the seed-tubes, and within the chamber m^5 is placed a similarly spring-actuated frame p^4, having a projection p^5, which is forced downwardly into the successive openings as they pass under the same, and thus discharges the grain therefrom into the seed-tubes.

In Fig 19 I have shown the roller cut-off arranged in a modified form, the roller p' being in this case journaled in a pivoted frame p^6 instead of a vertical moving frame, as in the other figures described.

The arrangement of the supporting-ring and the stud extension for the bottom proper enables the false bottom to be secured securely to the bottom proper when a seed-plate of greater or less thickness is used and still permit said seeding-plate to revolve freely between the said parts.

It will be seen from the above description that I provide a planter which, while extremely simple, is capable of adjustment to almost every variety of work. It may be used as a simple drill, as a combined drill and check-rower, in which the drill operates continuously and the check-row devices only are operated by the wire, or it may be operated as a check-row planter pure and simple, either through the agency of the ordinary check-wire or by hand, as desired.

Having thus described my invention, I claim—

1. In a planter, a revolving shaft and seed plates operated thereby, a rock shaft operating valves in seed tubes under said seed plates, a ratchet wheel on said revolving shaft, and a pawl on said rock shaft adapted to engage said ratchet wheel, and a stop projection adapted to limit the movement of said ratchet wheel when moved by said pawl, substantially as specified.

2. In a planter having seed hoppers with seed plates therein, and seed tubes having valves therein, two parallel shafts for operating the plates and valves, respectively, and a pawl and ratchet connection between said shafts, and means, substantially as specified, for stopping the revolution of one shaft when moved by the other shaft by said pawl and ratchet devices, substantially as specified.

3. In a planter, the combination with a revolving shaft for operating the hopper seeding devices, and a rock shaft for operating the valves in seed tubes, of a projecting finger on said rock shaft, a spring-actuated pawl pivoted to said finger, a stop projection also on said finger, and a ratchet wheel on said revolving shaft adapted to be operated by said pawl and finger, substantially as specified.

4. In a planter having hoppers with seeding devices operated by a revolving shaft, and seed tubes having valves therein operated by a rock shaft, a ratchet wheel on said revolving shaft, and a spring-actuated pawl pivoted to said rock shaft to engage said ratchet wheel, and means, as described, for retarding the motion of said revolving shaft when operated by said rock shaft, substantially as specified.

5. In a planter having a hopper, and a perforated revolving plate in said hopper, a removable false bottom in said hopper over said perforated plate, a stud on which said plate revolves, and an intermediate movable supporting ring adapted to support said false bottom, and a removable extension for said stud having engaging projections for the false bottom, substantially as specified.

6. In a planter having revolving perforated plates arranged in hoppers, as described, and seed tubes having independently operated valves therein, driving rings for said seed plates to which said plates are removably attached, perforated bottoms in said hoppers having projecting studs on which said plates revolve, removable false bottoms arranged above said plates, and intermediate removable supporting rings adapted to rest on said bottoms and support said false bottoms, and extensions for said studs also adapted to engage with said false bottoms when supported on said supporting rings, substantially as specified.

7. The combination in a seed hopper, of a driving ring, a removable plate in said ring, a removable false bottom supported above said plate, and an intermediate removable supporting ring for said false bottom, a stud on which the plate revolves, and a removable extension on said stud, said extension being provided with engaging features to engage said stud and false bottom, respectively, and means, substantially as described, for clamping the said parts together so as to permit the free operation of said plate, substantially as specified.

In testimony whereof I have hereunto set my hand this 13th day of March, A. D. 1894.

LOUIS C. EVANS.

Witnesses:
FRED B. ERNEST,
ROBERT C. RODGERS.