(No Model.) 4 Sheets—Sheet 1.

B. C. BRADLEY.

COMBINED LISTER AND SEEDER.

No. 360,793. Patented Apr. 5, 1887.

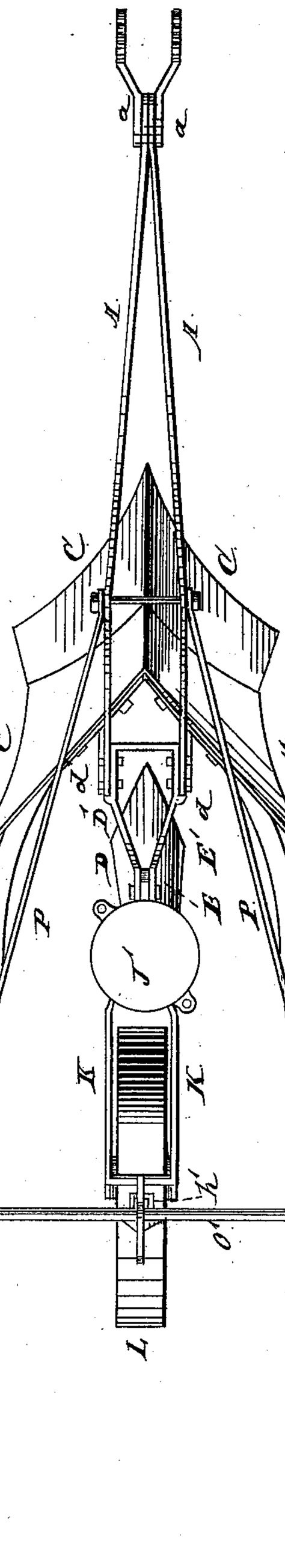

Fig. 1.

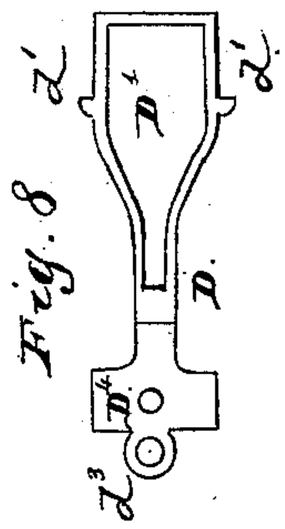

Fig. 8

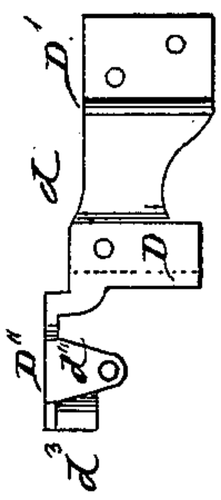

Fig. 7.

Witnesses:
C. W. Bond-
Harry F. Jones.

Inventor:
Byron C Bradley

(No Model.)

4 Sheets—Sheet 2.

B. C. BRADLEY.

COMBINED LISTER AND SEEDER.

No. 360,793. Patented Apr. 5, 1887.

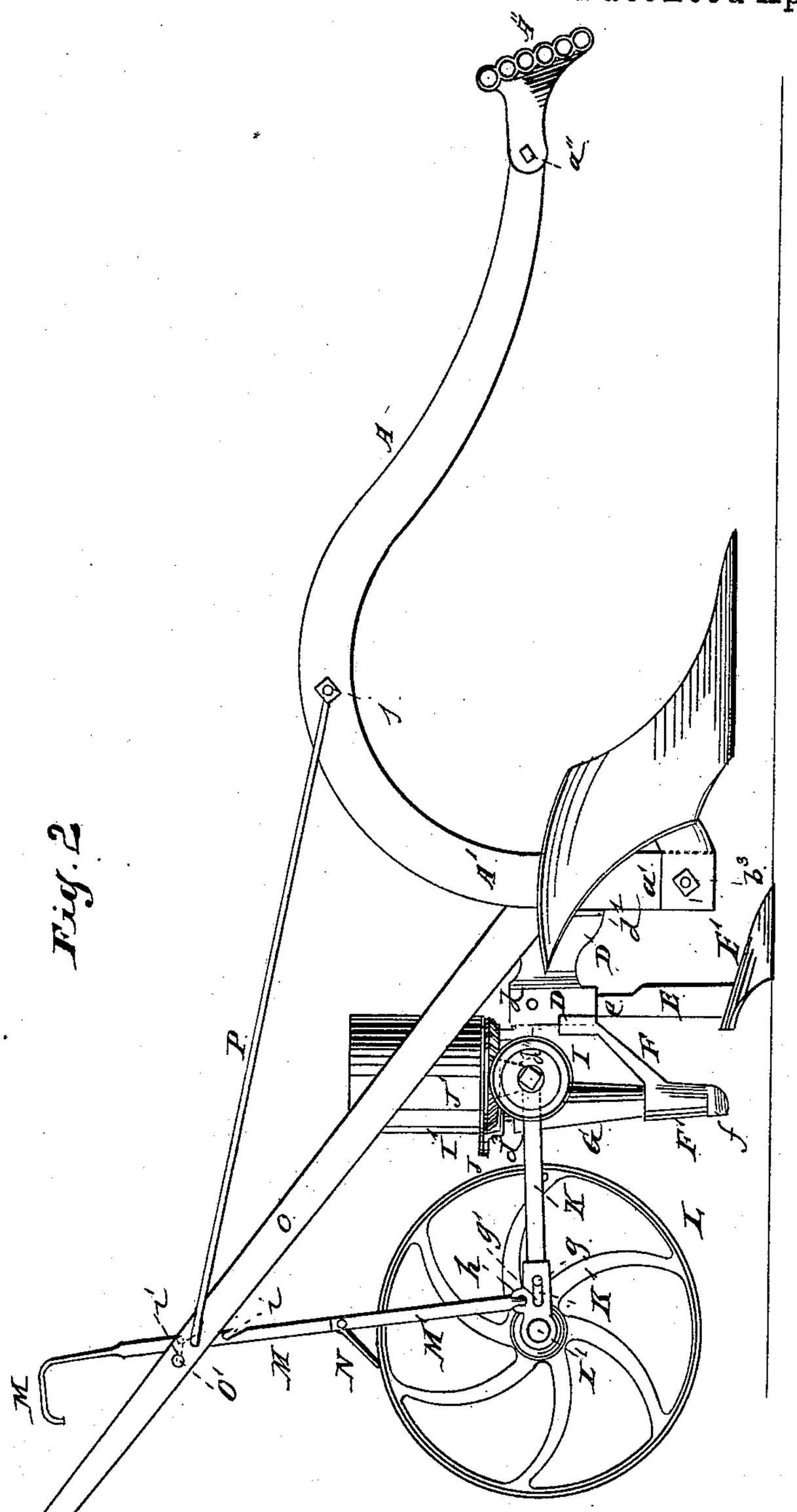

Fig. 2.

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Inventor:
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(No Model.) 4 Sheets—Sheet 3.

B. C. BRADLEY.

COMBINED LISTER AND SEEDER.

No. 360,793. Patented Apr. 5, 1887.

Fig. 3.

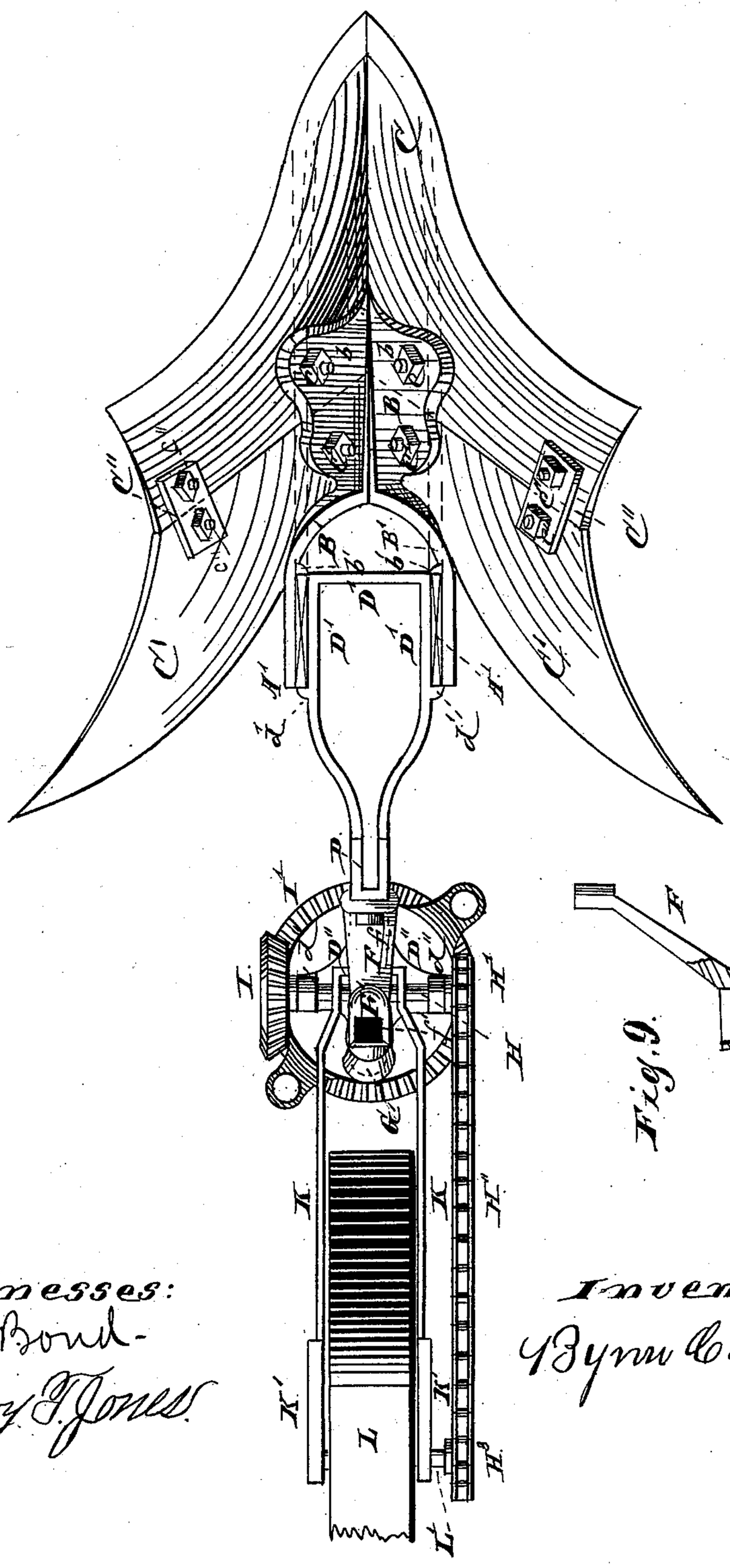
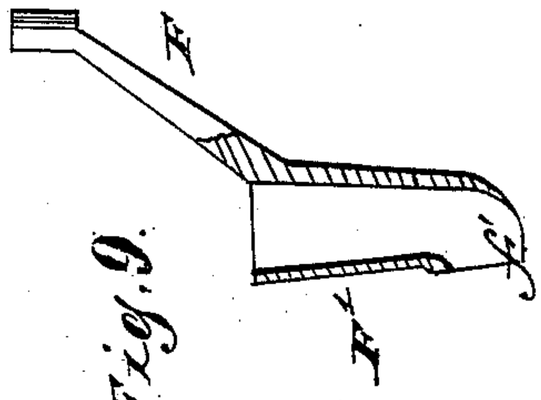


Fig. 9.



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(No Model.) 4 Sheets—Sheet 4.

B. C. BRADLEY.

COMBINED LISTER AND SEEDER.

No. 360,793. Patented Apr. 5, 1887

Fig. 4.

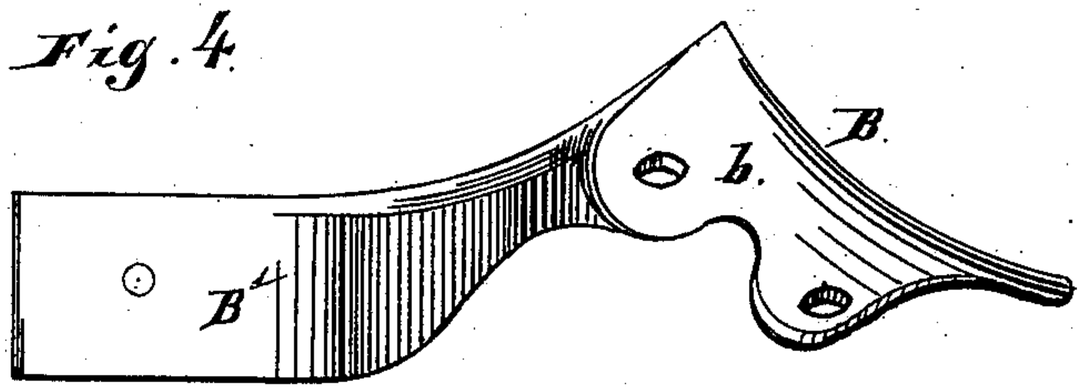


Fig. 5.

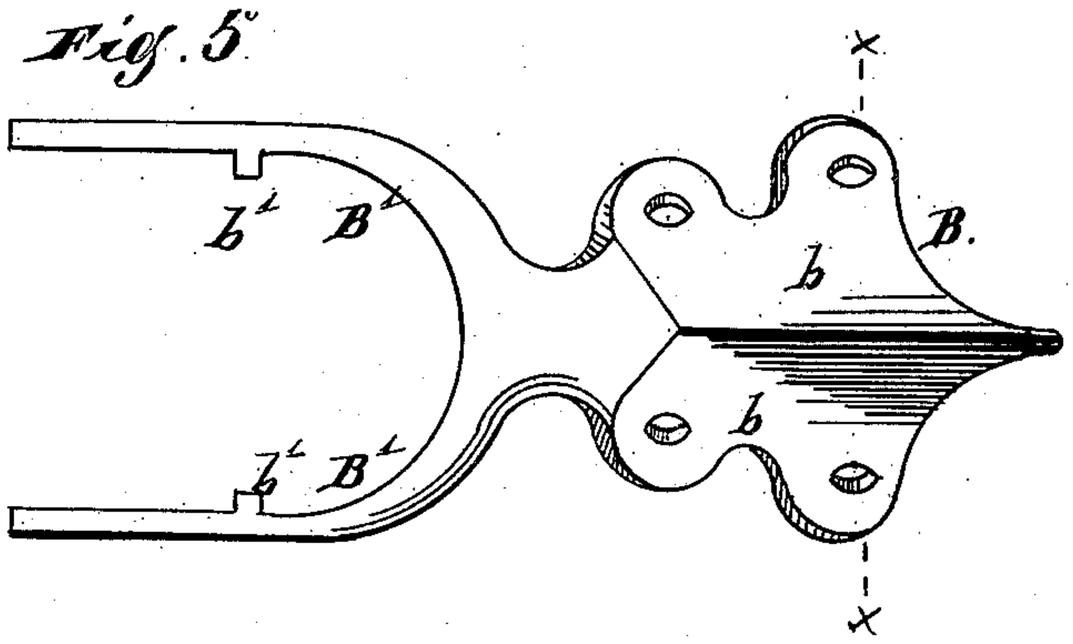
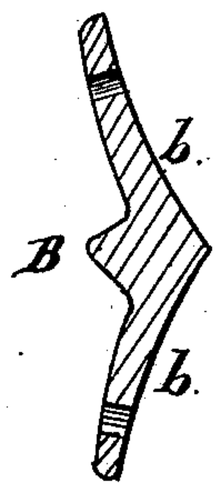


Fig. 6.



Witnesses:
C. W. Bond.
Harry F. Jones.

Inventor:
Byron C. Bradley

UNITED STATES PATENT OFFICE.

BYRON C. BRADLEY, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE DAVID BRADLEY MANUFACTURING COMPANY, OF SAME PLACE.

COMBINED LISTER AND SEEDER.

SPECIFICATION forming part of Letters Patent No. 360,793, dated April 5, 1887.

Application filed December 28, 1885. Serial No. 186,931. (No model.)

To all whom it may concern:

Be it known that I, BYRON C. BRADLEY, residing at Chicago, in the county of Cook and State of Illinois, and a citizen of the United States, have invented a new and useful Improvement in a Combined Lister and Seeder, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is a top or plan view; Fig. 2, a side elevation; Fig. 3, a bottom view, enlarged, showing the frog and the connection for the seed-dropping devices; Fig. 4, a side elevation of the double-heel frog; Fig. 5, a top or plan view of the same; Fig. 6, a section on line *x x* of Fig. 5; Fig. 7, a side elevation of the frame; Fig. 8, a top or plan view of the frame; Fig. 9, a detail of the dropping-tube.

The principal object of this invention is to give the plow a bracing support directly from the plow-beam by which the straining of the plow and the connection with the beam will be obviated, and at the same time both the beam and the plow will be greatly strengthened; and another object is to give a firm support to the dropping mechanism and to the devices which coact therewith and with the plow for planting purposes; and its nature consists in providing a beam made in two sections or parts, each part at its lower end being connected with an extension of the frog, which extensions form a double heel for the frog, and by which the frog and plow-beam brace each other and also the plow attached to the frog; in providing a support adapted to be firmly secured at its front end to the plow-beam, and to extend back and receive the receptacle and dropping devices, the subsoiler, and the dropping-spout, and furnish a support for these parts; and in the several parts and combinations of parts hereinafter described, and pointed out in the claims as new.

In the drawings, A represents metal bars, the forward ends, *a*, of which are brought together and receive a clevis, A″, or other attachment for the hitch, the clevis, as shown, being pivotally connected to the forward end, *a*, of the bars A by a bolt, *a″*. Each bar A at its rear end, A′, is curved downward, as shown in Figs. 1 and 2, the lower end, *a′*, of each portion A′ standing vertical, or nearly so, as shown in Fig. 2, and the bars A spread apart from their forward end, as shown, to a point back of where the curve commences, and back of this point the two bars A extend backwardly and downwardly in line parallel with each other, as shown in Fig. 1.

B is the main or body portion of the frog, adapted to receive the mold-boards and point of what is known or termed a "double-shovel plow," for which purpose each side or leaf *b* of the frog B has the same curvature and shape on its upper surface which receives the share and mold-boards, and, as shown, the under surface of the frog at the center or dividing line between the sides *b* has a flange, *b″*, for strengthening purposes, and from this center flange or line, on each side and extending backward, is a support, B′, each of which is provided with a lug, *b′*, to come against the forward edge of the portion *a′* of the downward extension A′ of the plow-beam on each side, as shown in Fig. 3, and form a bearing to resist the pressure of the plow in use. The extensions B′ form in effect a double frog, one arm of which is attached to the respective downward portions A′ of the beam, and, as shown, this attachment is made by a bolt, b^3, so that when the double frog is secured to the beam-extensions such extensions brace the frog, and at the same time the double frog braces the beam.

C is the plow-point, formed, as shown or in any other suitable and well-known form, of points for double mold-board plows, and C′ represents wings or mold-boards to complete the plow; and the plow as a whole is secured to the frog B by bolts *c*, passing through the point and the frog on each side, and bolts *c′*, passing through the mold-boards or wings and the frog on each side; and the point and mold-boards or wings are secured together at their outer edges by straps C″ and bolts *c″* in the form of construction shown. The plow, attached to the frog, having the double heel B′ running back and attached to the separate bars of the plow-beam, has a support against the lateral pressure in use, by which it will be held firmly in line and will not twist and turn itself, as is the case where an attachment

of the plow by a frog to a single plow-beam is made, as the double heel braces the plow from all directions and holds it true and in line through the medium of the double beam, to the lower ends of which the double heel of the frog is connected.

D is a socket, forward of which is an extension, D′, formed of two side pieces and an end piece, the side pieces standing at the same distance apart as the distance between the ends A′ of the plow-beam, so as to fit between such ends and the part D′, forming a cross-brace between the beam ends, and, as shown, each side arm of the extension D′ is provided with a lug or stop, *d′*, which abuts against the rear edge of the respective ends A′ when the parts are together, and, as shown, the socket D has an opening for the passage of a pin for adjusting the standard of the subsoiler. The socket D also has a rearward extension, D″, formed of cross-bars, the transverse one of which at each end is provided with depending ears *d″* for attachment to the shaft, by which the seed-dropping plate is rotated, and the longitudinal one of which at its rear end is provided with a tubular projection, d^3, in which is an opening which coincides with the stationary plate of the dropping devices for the discharge of the seed.

E is a shank, the upper end, *e*, of which is provided with a series of holes, and enters the socket D, in which it can be raised or lowered, and, when adjusted at the proper height, locked in place by passing a pin through the hole *d* and the coinciding hole in the standard. The lower end of the standard E has secured thereto a subsoiler, E′, which runs directly behind the plow and in line with the center of the plow, and in use the subsoiler is to be adjusted to run at the required depth below the running depth of the plow.

F is a standard, the upper end of which is recessed to fit over the rear edge of the socket D, to which it is attached by bolts *f*, and the lower end of this standard is in the form of a tube, F′, its lower end having an opening, *f′*, for the discharge of the seed.

G is a dropping-tube, the lower end of which enters the upper end of the tube F′, and the upper end of which encircles the projection d^3 on the plate or support D″, so that the seed dropped by the dropping devices will pass through the tube G and enter the tube or heel F′, to be deposited in the ground back of the subsoiler E′.

H is the shaft for operating the seed-dropping mechanism, having at one end a sprocket-wheel, H′, over which a chain, H″, from a sprocket-wheel, H^3, on the axle of a ground-wheel runs to drive the shaft H from the travel of the ground-wheel. This shaft is supported and has its bearings in the depending ears *d″* of the frame or support D″, as shown by the dotted lines in Fig. 2.

I is a beveled gear on the other end of the shaft H and meshing with a horizontal beveled gear, I′, through which the seed-dropping plate is operated, and the wheel I′ revolves on a trunnion extending up from the center of the frame or support D″.

J is a ring or support located above the wheel I′ and carrying a seed-receptacle, J′.

K is a reach formed of side bars and a cross-bar at the front end, and connected to the shaft H at its front end so that it can turn on such shaft as a pivot, and each side bar at its rear end is connected by a pin, *g*, and a slot, *g′*, to a bracket or arm mounted on the shaft of the ground-wheel.

L is the ground-wheel mounted between the side bars of the reach K, and having an axle or trunnions, L′, to enter the brackets or arms K′.

M is a bar or rod, the lower end of which is connected to a fork, M′, the sides of which extend down and are hooked into eyes *h* on the brackets K′, as shown in Fig. 2.

N is a scraper connected with the arm M, and arranged to have its acting-edge run on the periphery of the wheel L and clear the wheel from dirt.

O represents the handles, the front ends of which are attached to the respective wings or mold-boards C′, and the handles are strengthened by a cross-bar, O′, which cross-bar has thereon a loop, *i′*, through which the lever or handle M passes, and by which loop and a notch, *i*, in the handle or lever M the ground-wheel can be raised and held clear from the ground in moving the plow from place to place, so as to prevent the operation of the dropping devices in running the plow from place to place.

The point C is attached to the frog B by the bolts *c*, and the wings C′ are attached to the frog B and point C by the bolts *c′* and straps C″ and bolts *c″*. The extensions or double heel B′ for the frog are attached to the ends *a′* of the beam by a bolt or bolts, b^3. The extension D′ of the socket D is attached to the curved portion A′ of the beam by suitable bolts, and when the parts are together the lugs *b′* are against the front edge of the beam ends and the lugs *d′* are against the rear edge, so that these lugs, in connection with the attaching-bolts, make a firm connection between the frog B and the socket D with the beam. The shank or stem E has its upper end, *e*, slipped into the socket D and locked therein by the pin *d*. The arm or support F is slipped onto the socket D and secured in place by the bolts *f*, and the tube G is entered into the upper end of the tube F′, with its upper end encircling the tube d^3. The shaft H is slipped into the pendants or ears *d″* and the wheels H′ and I attached to the opposite ends of the shaft, and the wheel I′ placed in position to mesh with the wheel I, and the plate or support J and the receptacle J′ are placed in position over the wheel I′ and secured by bolts or otherwise. The reach K is brought into position for the shaft H to pass through its front end when slipped through the ears *d″*, and the rear end of the reach is connected with the brackets K′, which are slipped onto the shaft L′ of

the ground-wheel, and on this shaft L′ is secured the sprocket-wheel H^3, over which and the wheel H′ the chain H″ passes. The handles are attached by bolts or otherwise at their front ends to the wings C′, and the arm M, with its fork M′ attached to the plates or brackets K′, is passed through the loop *i′* on the cross-rod O′; and the handles are still further braced by rods P, running from the handles forward and attached to the beam-bars A by a bolt, *j;* and when together the plow is ready for use.

In use the plow C C′ operates to open the furrow on both sides, and the furrow thus opened drops back into place, as is usual with double mold-board plows, and the subsoiler is adjusted to run at the required depth below the running depth of the plow C, to form an opening into which the seed is deposited from the seed-dropping devices, and the seed-dropping devices are operated through the sprocket-wheels H′ H^3 and drive-chain H″, which rotate the shaft H, and this shaft drives the wheel I, which in turn rotates the wheel I′, to operate the seed-dropping plate, and the seed dropped by the plate passes through the hole in the tube d^3 and down through the tube G into the tube or heel F′ and out through the opening *f′* in the tube or heel onto the ground, where it is covered by the earth dropping in from the plow; and when in use the arm M has its notch *i* released from the loop *i′*, to allow the wheel L to drop down and run on the ground to operate the dropping mechanism.

As before stated, the frog B, with its double heel or extension B′, furnishes a bracing-support for the plow in all directions, so that the plow cannot turn or twist in use; and the beam is still further braced by the extension D′ of the socket D, so that when the frog and socket are secured to the beam these parts are held together by each other in a very strong and firm manner; and, by having the extension D″ also on the socket D, it will be seen that the seed-dropping devices are also given a very strong support; and it will also be seen that the subsoiler, dropping-tubes, and seed-dropping devices are all supported from the socket D and its extensions D′ D″, thus bringing these parts in compact relation with each other and furnishing a strong support for them. The reach K, pivotally attached to the front end and connected at its rear end with the plates or brackets K′, through the arm M and fork M′, carry the ground-wheel L, so that it can be readily raised to be out of use or lowered to be in use, and the scraper N acts to keep the periphery of the wheel clear from the dirt.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the beam composed of two bars, A A, the socket D, having an extension, D′, bolted to the rear downwardly-curved ends of said bars, the frog B, having a double-heel extension, B′, the point C, and the wings C′, substantially as described.

2. The combination of the beam composed of two bars, A A, the socket D, having extensions D′ D″, the subsoiler E E′, the frog B, having a double-heel extension, B′, the point C, the wings C′, and a seed-dropping mechanism, substantially as described.

3. The combination, with a plow-beam, subsoiler, and seed-dropping mechanism, of the socket D, having extensions D′ D″, and tubular projections d^3, the support F, and the tubes F′ G, the upper end of said tube G being arranged to encircle the tubular projection d^3, substantially as described.

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HARRY T. JONES.