2 Sheets—Sheet 1.

R. HANEY & J. S. ESTES.

CULTIVATOR

No. 94,106. Patented Aug. 24, 1869.

Fig: 1.

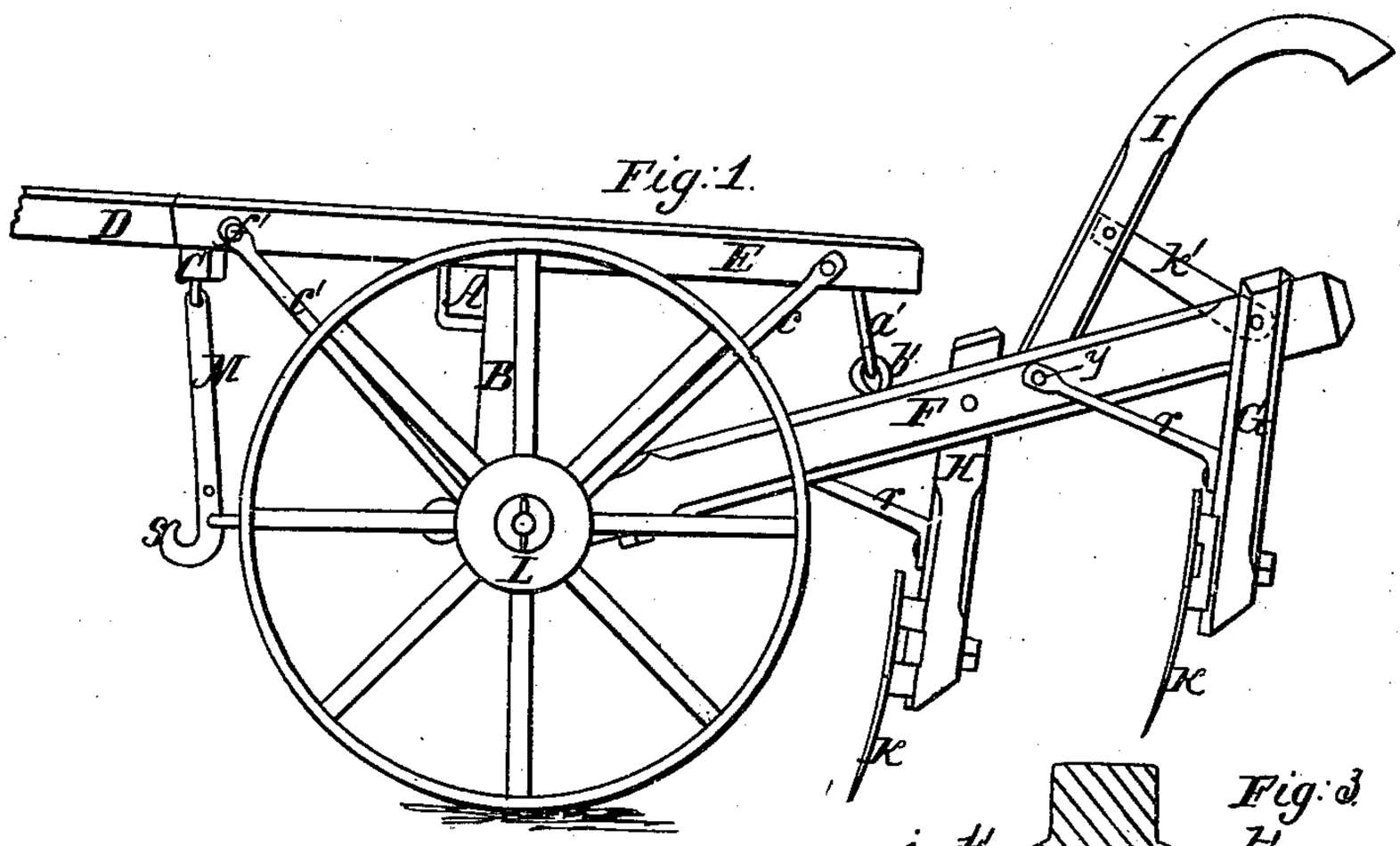


Fig: 3.

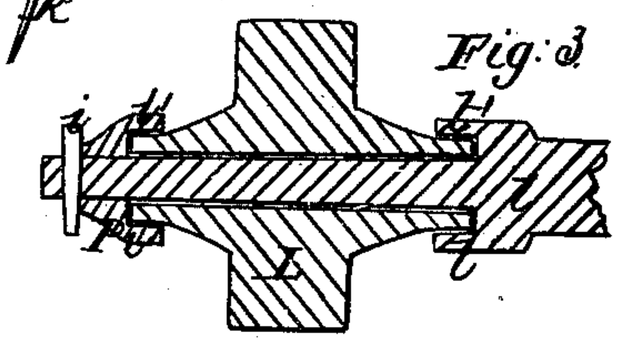
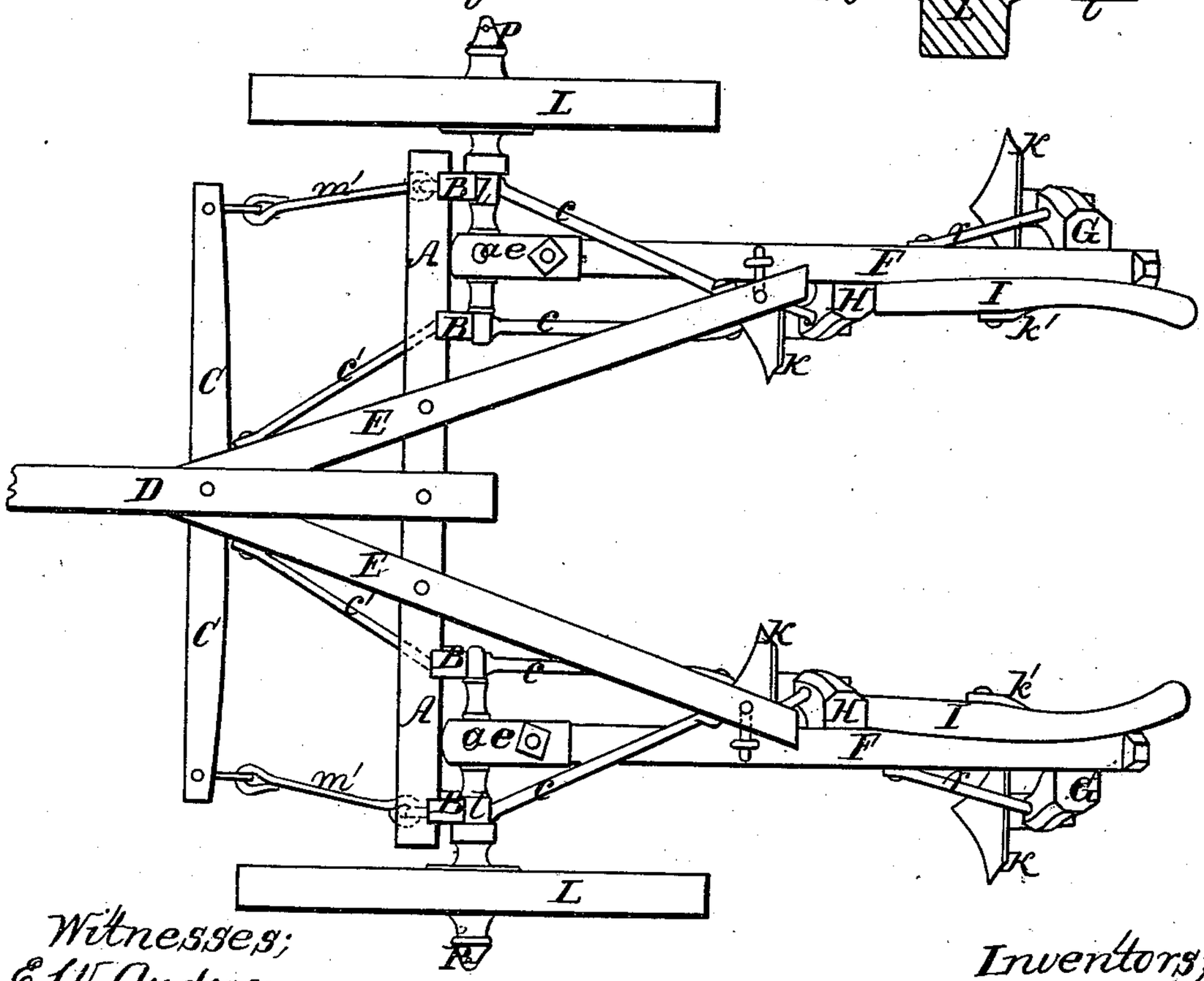


Fig: 2.



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James P. Graves

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2 Sheets—Sheet 2.

R. HANEY & J. S. ESTES.

CULTIVATOR.

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Fig: 6.

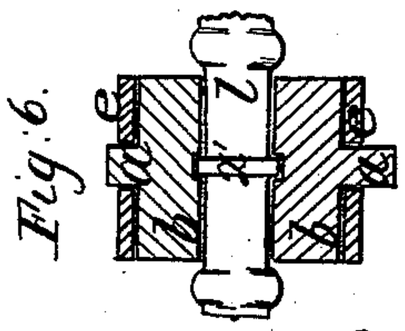


Fig: 5.

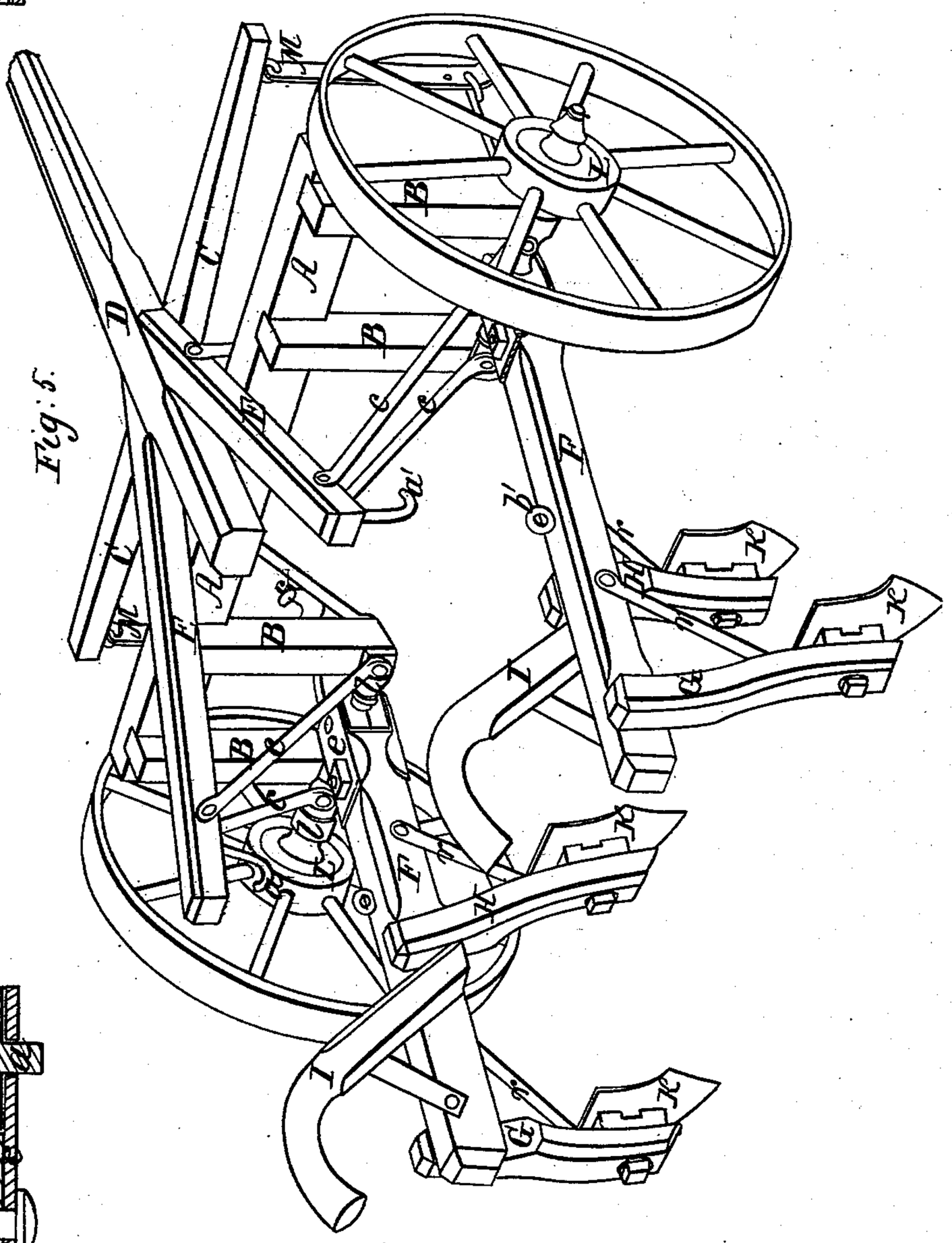
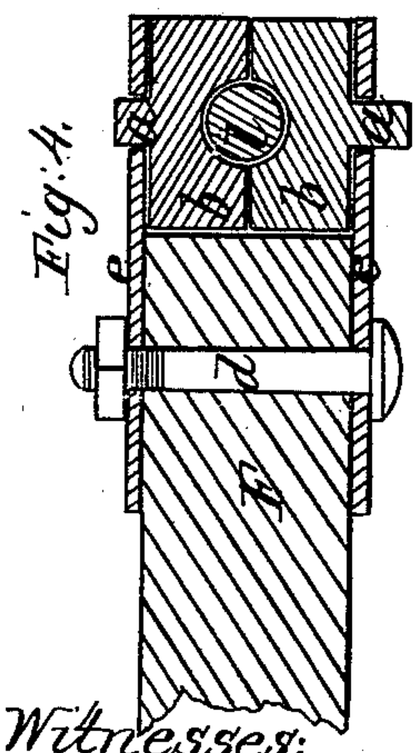


Fig: 4.



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RICHARD HANEY AND JAMES S. ESTES, OF PEORIA, ILLINOIS

Letters Patent No. 94,106, *dated August* 24, 1869.

IMPROVEMENT IN CULTIVATORS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that we, RICHARD HANEY and JAMES S. ESTES, of Peoria, in the county of Peoria, and State of Illinois, have invented a new and valuable Improvement in Cultivators; and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 represents a side elevation of our cultivator.

Figure 2 represents a plan view of the same.

Figure 3 is a vertical section through the axle, cap, and hub of the wheel.

Figure 4 is a vertical section, taken longitudinally through the end of the plow-beam, showing a device by which double motion, lateral as well as vertical, is allowed to the same.

Figure 5 represents a perspective view of the cultivator.

Figure 6 is a cross-section, taken vertically through the end of the plow-beam.

Our invention relates to that class of agricultural machines known as cultivators, and consists, mainly, in a novel arrangement of devices, whereby double motion, lateral as well as vertical, is allowed to the plow-beam.

To enable others skilled in the art to make and use our invention, we will proceed to describe its construction and operation, reference being had to the drawings herewith, in which the same letters are used to designate the same parts in the different figures.

A cross-beam, A, of suitable wood, is employed to form the body of the cultivator, upon which is firmly bolted, a pole, D, having two arms, or branches, E E, one on each side, secured rigidly to it by a pin, *f''*, which also serves to fasten the upper ends of the braces *c' c'*.

Firmly attached, by being mortised into and bolted to the cross-beam A, are four standards, B B, arranged in pairs, one set or pair being situated near each end of the cross-beam A.

These standards are further secured, and held rigidly in position, by the iron rods or braces *c c*, whose upper ends are firmly bolted to the rear portions of the arms E E, and whose lower ends are fastened to the lower ends of the standards B B, by bolts, which also pass through and secure, respectively, the stem or body of the intervening axle.

The two inside standards, or those nearest the pole, are still further braced by rods, *c' c'*, passing from their lower ends forward, and having their upper ends fastened to the forward portions of the branches E E, by the pin *f''*.

Two axles, *l l*, are employed, being one for each wheel, spindle-shaped, but flattened vertically, in certain parts, where they abut against, and are bolted to the lower ends of the standards B B.

As it nears the hub of the wheel, each axle expands, forming a cup, or flanged cavity, from the centre of which extends the spindle, around which the wheel L revolves.

The hub of the wheel is formed with a projecting portion on each side, terminating in a truncated cone, with an accurately-turned end or lip, which, on the inside, revolves about the spindle and within the flange *t'*, in the cup-like cavity above mentioned.

The exterior lip is covered by a cap, *p*, having a similar flange, *v'*, formed about its inner end, and having its outer end notched, to receive the linchpin, above and below the spindle, preventing revolution.

By this arrangement the dust and dirt are almost entirely excluded from the spindle.

To the plow-beams F F, are bolted plow-standards G G H H, being respectively so fashioned or bent, that the lower ends of the forward pair, H H, are nearer to each other, and those of the pair in rear, G G, further from each other, than their respective upper ends, whereby suitable distances are preserved between the furrows.

The shares are bolted to the standards in the usual manner, and the standards are braced by the rods *r r*, fastened to them in front, and about midway of their length, and, passing forward and upward, secured to the plow-beams by the bolts *y y*, which also serve to fasten the lower ends of the plow-handles I I, firmly held in position by the braces *k' k'*.

To the upper and under surfaces of the forward end of each plow-beam, F, are bolted plates, *e e*, having flanges or wings, turned, respectively, down and up, embracing each side of the plow-beam, and preventing lateral movement around the bolt *d*.

These plates *e e* project several inches beyond the forward end of the plow-beam, forming, by means of circular openings, bearings for the journals *a a* of the box *b b*, about which journals *a a*, the plow-beam has, therefore, a free lateral motion.

The box *b b* is divided in two equal parts, horizontally, which are held together by the plates *e e*.

Between the two parts *b b*, through the cylindrical opening formed in the central part of the box, passes the axle *l*, about which axle *l* the plow-beam has, therefore, a free vertical motion.

The portion of the axle about which the box turns, is about midway between a pair or set of standards, B B, and is not a continuous cylinder, but has a flange or short cylinder, of greater diameter, formed around it, in the centre of the bearing-surface, which flange works in a corresponding groove in the surface of the cylindrical opening in the box *b b*, as shown in fig. 6.

The staples or loops *b' b'*, are bolted into the plow-

beams, and when the plows are not in use, or it is desired to keep them clear of the ground, the loops *b' b'* are passed over the hooks *a' a'*, firmly bolted into the ends of the branch-beams E E.

To the under side of the pole D, at the point where the branches E E are attached to it, is bolted the double-tree C, from the staples of which, at each end, depend iron bars, which extend down until their lower ends, wrought into hooks to receive the staples of the single-trees, are nearly in the same horizontal plane with the axles.

Each bar, lettered M in the drawings, is pierced with one or more holes near the lower or curved end *s*, for the adjustment of a connecting-rod, *m'*, having its forward end fastened through one of the holes referred to, and its rear end being formed into a loop or ring, linked into the loop or ring formed on the head of the bolt which connects the lower end of the outer standard B, the axle *l*, and the lower end of the outer brace *c*.

Thus, by the arrangement of devices above described, lateral as well as vertical motion is allowed to the plow-beam, enabling the operator to move the plows in and about the hills of the growing crop with great facility. Also, is secured freedom from dust and dirt between the spindle and bearing-surface of the wheel-hub. Also, the line of traction is near coincident with that of the resistance, the power being applied directly to each axle, about midway between the hub of the wheel and the box *b b*, at the end of the plow-beam.

We are aware that devices for allowing double motion to plow-beams are not new, for such devices have been patented by J. C. French, March 16, 1869. and others.

We do not claim the devices for allowing double motion to plow-beams, or their effect, as shown and described by J. C. French, in Letters Patent, dated March 16, 1869; but

What we do claim as our invention, and desire to secure by Letters Patent, is—

1. The axle *l*, with flanges *t'* and *z'*, substantially as shown and described.

2. In combination with a plow-beam, the plates *e e*, with flanges, bolt *d*, box *b b*, and journals *a a*, substantially as shown, and for the purposes specified.

3. In combination with an axle, *l*, and flange *z'*, the box *b b*, journals *a a*, plates *e e*, and bolt *d*, as shown, and for the purposes specified.

4. In combination with an axle, *l*, having flange *t'*, and cap *p*, having flange *v'* encircling and covering the tapering ends of the hub, the wheel L, as shown and described.

5. In combination with the bars M M, and adjustable connecting-rods *m' m'*, the cross-beam A, standards B B B B, pole D, with branches E E and braces *c c c' c'*, substantially as shown, and for the purposes specified.

In testimony that we claim the above, we have hereunto subscribed our names, in the presence of two witnesses.

RICHARD HANEY.
JAMES S. ESTES.

Witnesses:
F. W. CARLTON,
GEO. PUTERBAUGH.