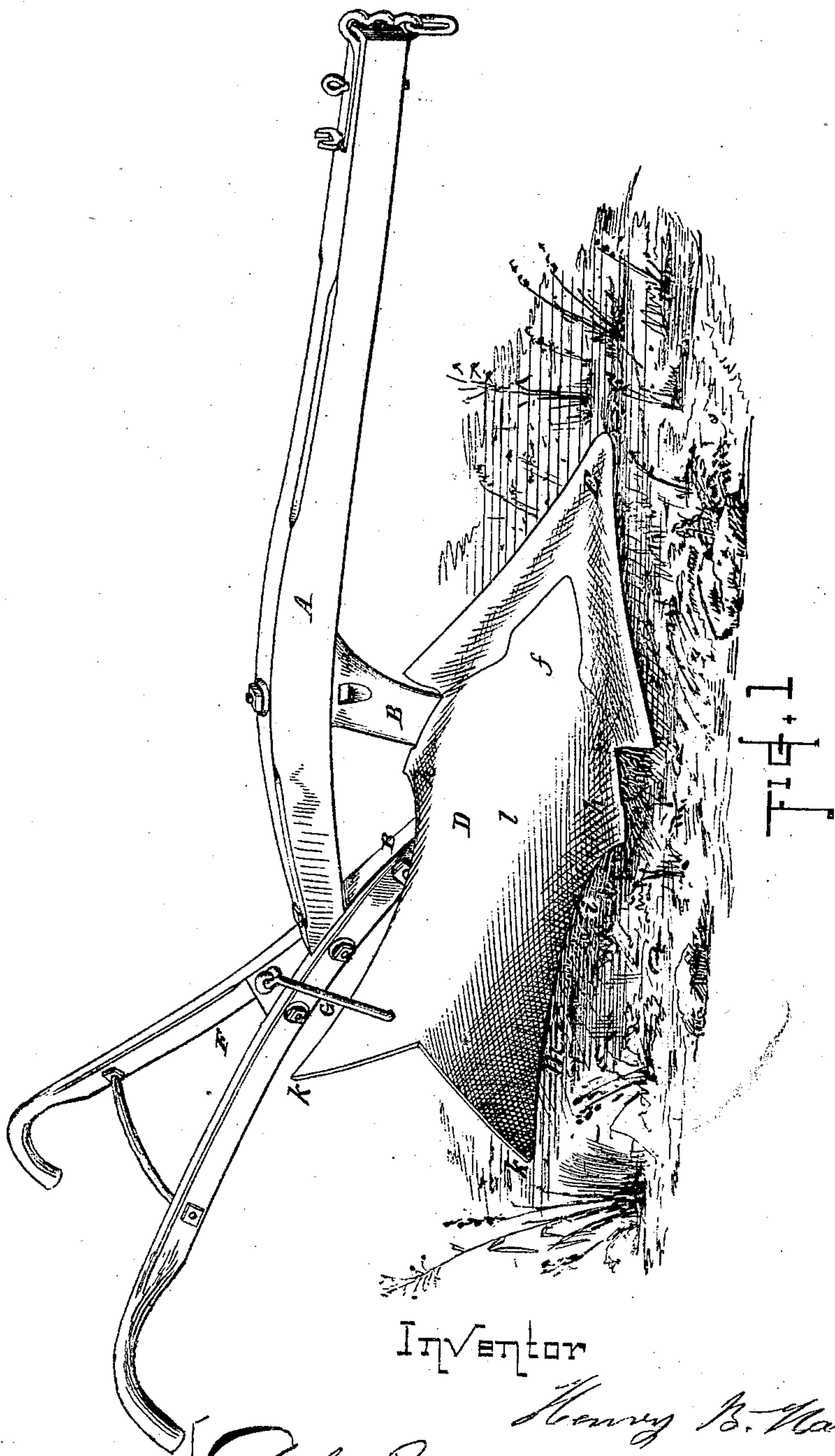


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Improvement in Plows.

No. 131,679.

Patented Sep. 24, 1872.



Inventor

Henry B. Hakes

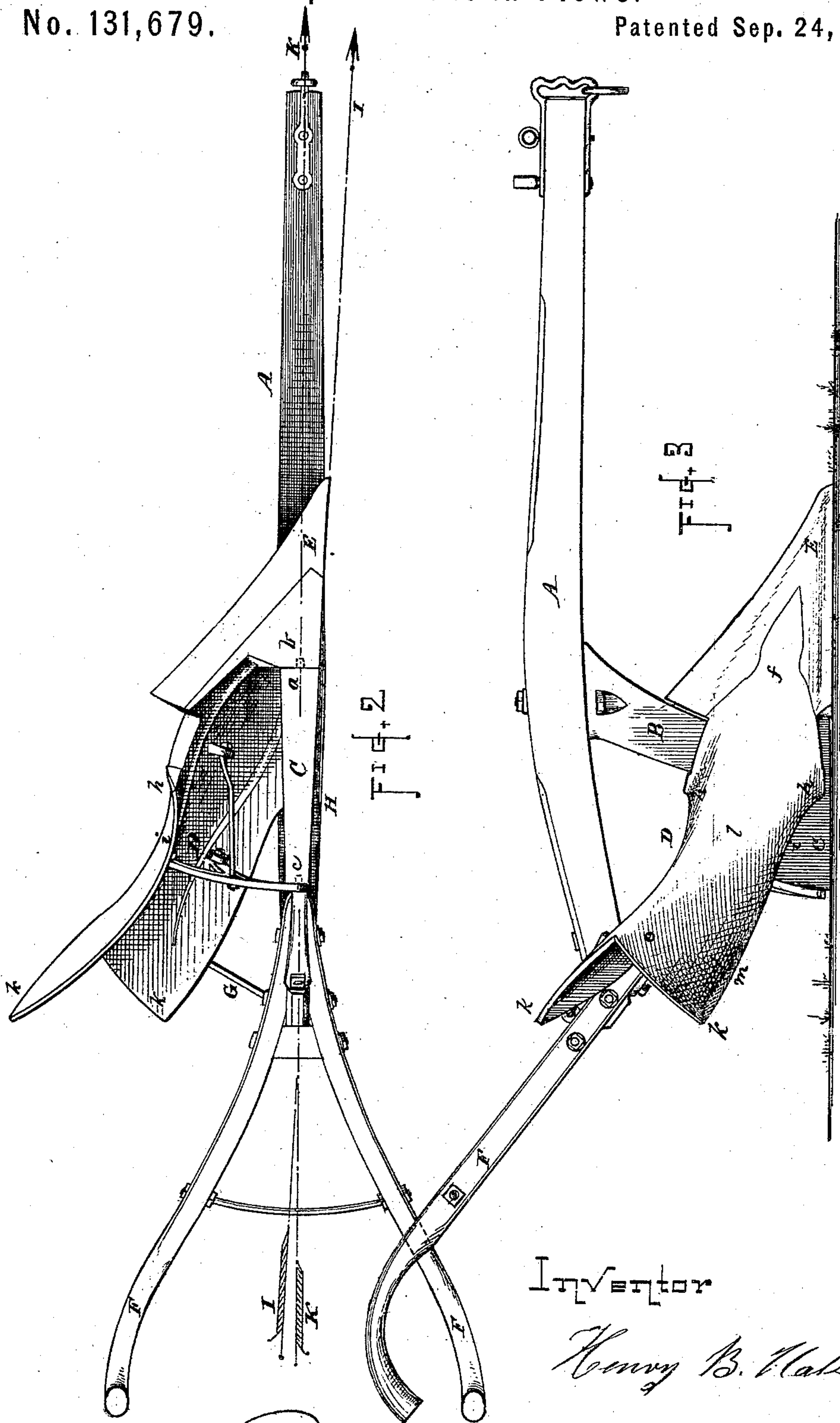
Charles Burleigh  
Thos. H. Dodge

Witnesses

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WITNESSES

Chas. F. Furlough  
Thos. H. Dodge



# UNITED STATES PATENT OFFICE.

HENRY B. HAKES, OF WORCESTER, MASSACHUSETTS.

## IMPROVEMENT IN PLOWS.

Specification forming part of Letters Patent No. 131,679, dated September 24, 1872.

*To all whom it may concern:*

Be it known that I, HENRY B. HAKES, of the city and county of Worcester and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Swivel-Plows; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing which forms a part of this specification, in which—

Figure 1 represents a perspective view of my improved swivel-plow; Fig. 2 represents a bottom view, and Fig. 3 represents a side view of the same.

This invention relates to certain improvements in the construction of swivel-plows whereby the plow is caused to "run to land," and is also rendered more efficient and satisfactory in its operation of turning the furrow-slice and pulverizing the soil. The invention consists in a peculiarly constructed bed-piece, and also in the peculiar form of the mold-board, as hereinafter described.

In the drawing, the parts marked A represent the beam. B indicates the standards; C, the bed; D, the mold-board; E, the point; F, the handles; and G, the hook for securing the mold-board in position. These parts, with the exception of the mold-board D and bed C, may be constructed and arranged substantially in the ordinary manner. The bed C is formed of about the usual width at the forward end *a*, (see Fig. 2,) where it is pivoted to the frog *b*, while the rear end, *c*, is made much narrower, its width being gradually and uniformly tapered from its front to its rear end. The inclination of the sides of the bed C and the sides of the point E correspond, so that the land-side H forms a direct plane surface from the point E to the heel *c* of the bed, with the exception of a slightly increased dip at the extremity of the point, which is added to compensate for the more rapid wearing away of the metal at the point. The direction of cut of the plow, indicated by the line I, corresponds, of course, with the land-side H; consequently, with the bed constructed as herein shown and described, the line of cut I is varied from the line of draft, which is indicated by the line K, and is in a vertical plane passing through the axis of the beam to an extent equal to the variation

between the side and axis of the bed C, and the plow is thereby caused to "run to land" to a corresponding extent, whether the mold-board is set to turn the furrow at the right or left hand side of the beam A, the direction of variation in relation to the line of draft being changed from right to left, and vice versa, with the change in position of the mold-board, and being equal at both sides, from the fact that the bed is tapered at both sides.

By this construction I obtain a clean and straight line from the point to the heel along the land-side of the plow, while the downward inclination or dip of the point is just sufficient to produce the best result; while the swiveling or changing the plow from one side to the other causes no derangement of the proper relative positions of the parts, but simply reverses them from right to left, and vice versa.

The mold-board D I make of the peculiar form illustrated, the forward end at *f* being formed considerably convex, as presented to under surface of the furrow-slice, while at the sides *h h* it is curved downward with a quick curve, and the edge formed so as to leave a sufficient space at *i* for the inner edge of the furrow-slice to turn and pass under the mold-board without being pressed or carried outward. The rear end of the mold-board is extended in the form of a fluke, K, which projects well over the furrow-slice and rolls over its outer edge, while the surface of the mold-board from the positions *l* to *k* is as presented to the furrow-slice concave.

The result produced by this form of mold-board is, that the furrow-slice is subjected to a series of undulations or bending motions, both longitudinally and laterally, as well as diagonally, it being first raised by the point on an under diagonal curve, then arched or bent laterally over the convex portion *f*, after which it is bent upward longitudinally while passing the portion *l*, and beyond which it is curved under laterally as it turns over and passes under the edges of the mold-board at *m*, while the rear fluke *k* throws over the outer edge and bends the slice downward longitudinally and diagonally, thus breaking up and pulverizing the soil in a most effectual manner, and leaving it in a light and mellow condition.

Having described my improvements in swiv-

el-plows, what I claim therein as new and of my invention, and desire to secure by Letters Patent, is—

1. The combination, with the beam, mold-board, and point, in a swivel-plow, of a bed, C, tapered from front to rear, substantially as and for the purposes set forth.

2. The mold-board D having the forward

convexity at *f*, the rapidly-receding curved sides *h h* hollowed out at *i*, and the outwardly-curved flukes *k k*, substantially as shown and described, and for the purpose set forth.

HENRY B. HAKES.

Witnesses:

CHAS. H. BURLEIGH,

THOS. H. DODGE.