

(No Model.)

M. S. & E. L. CADWELL.  
MOLD BOARD OR BREAKING PLOW.

No. 397,415.

Patented Feb. 5, 1889.

Fig. 1.

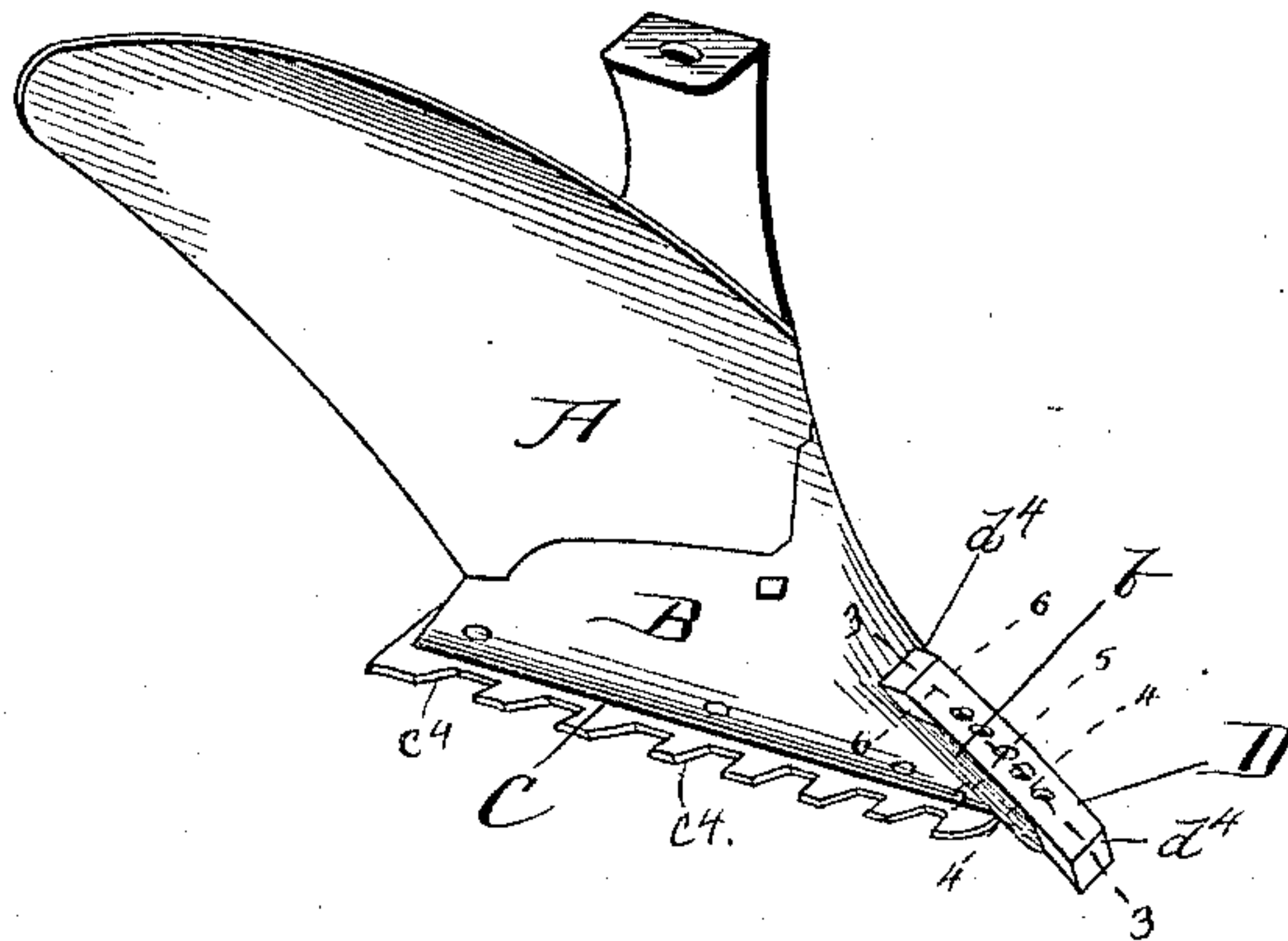


Fig. 2.

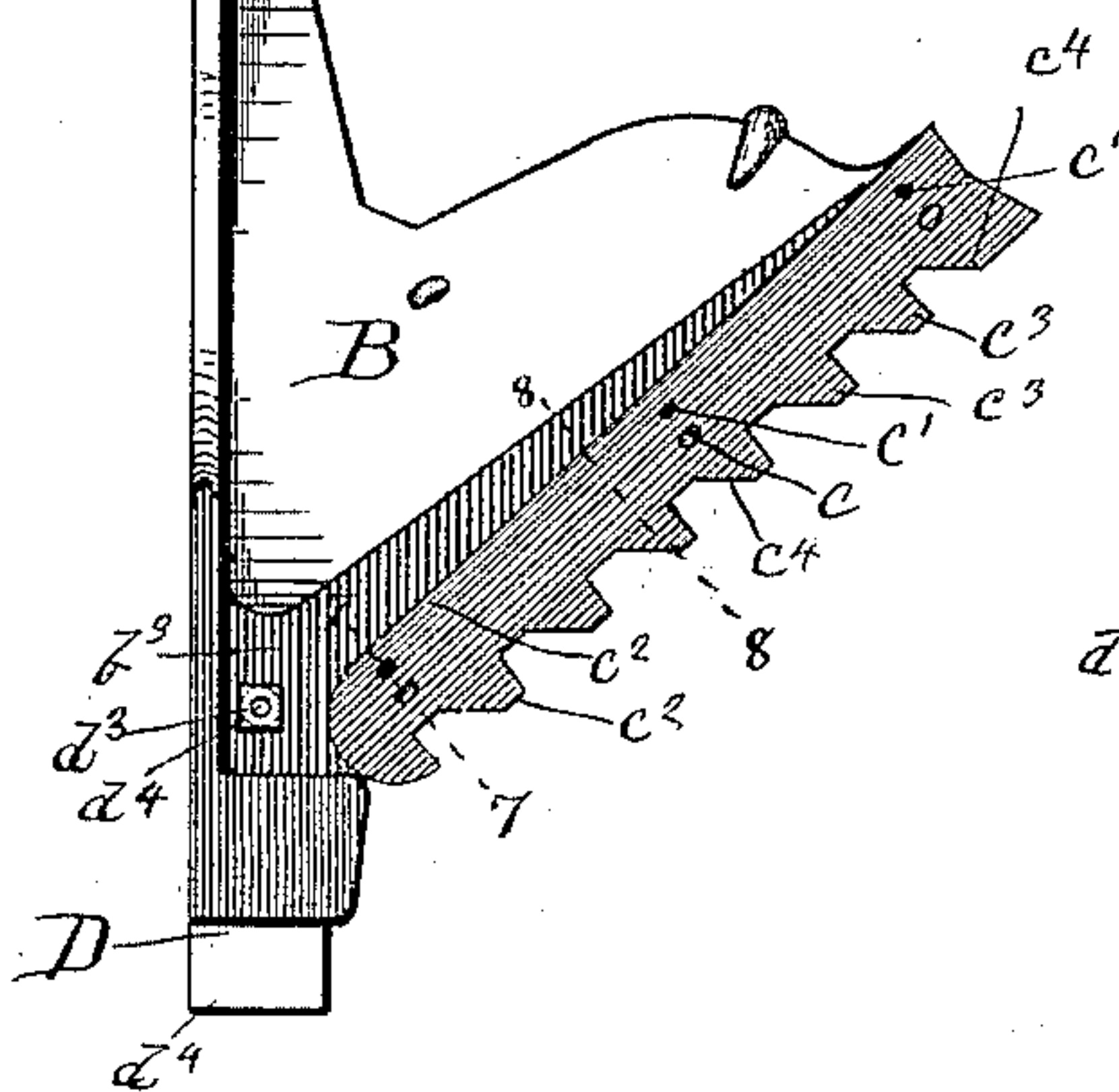


Fig. 3.

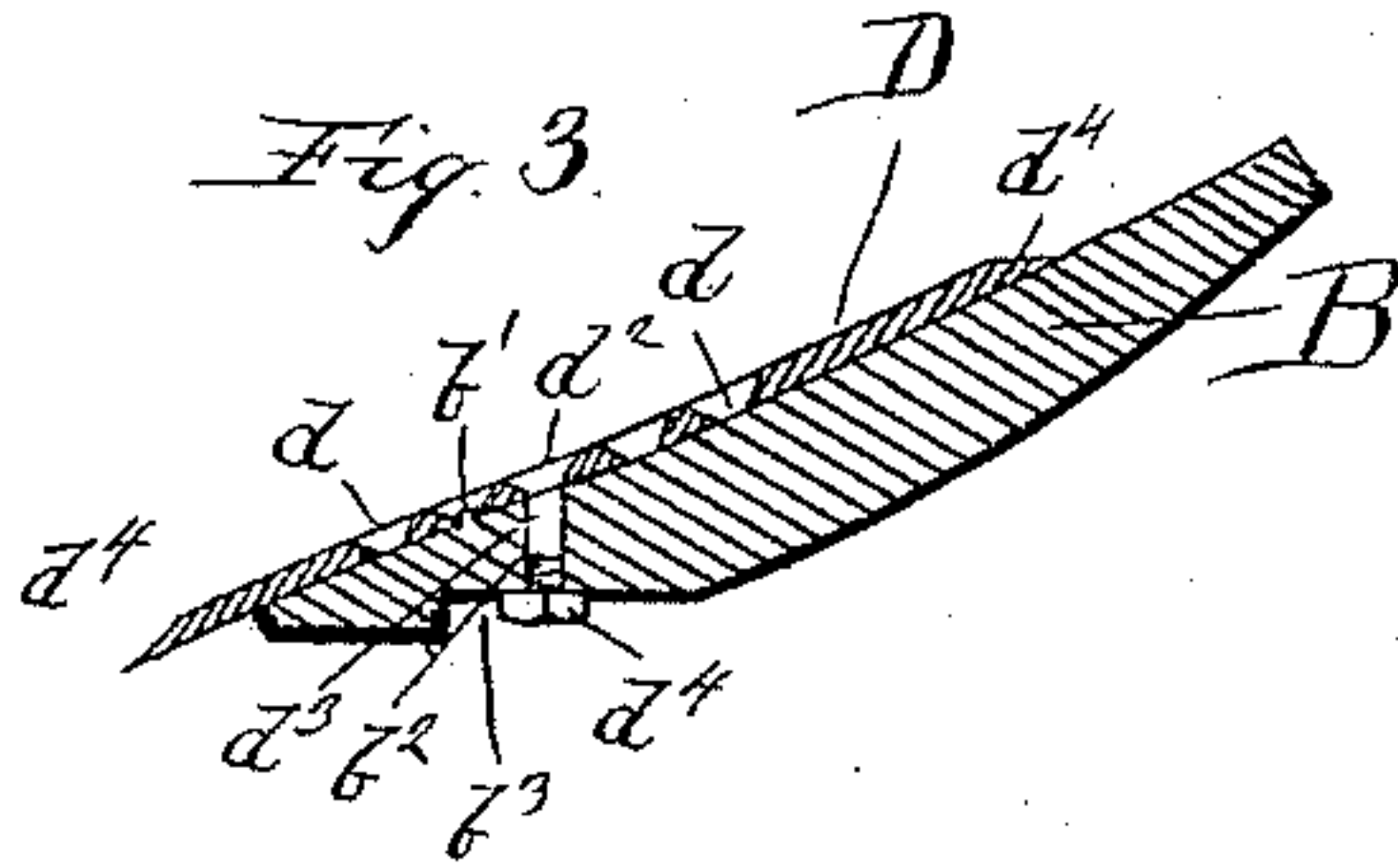


Fig. 4.

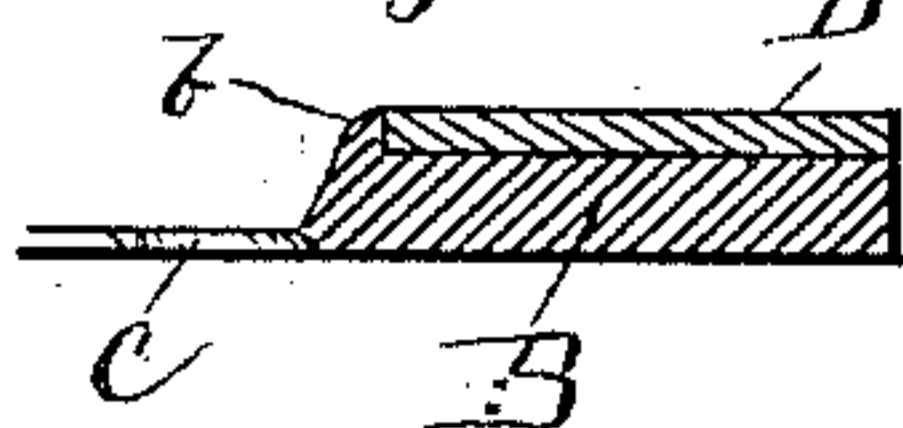


Fig. 5.

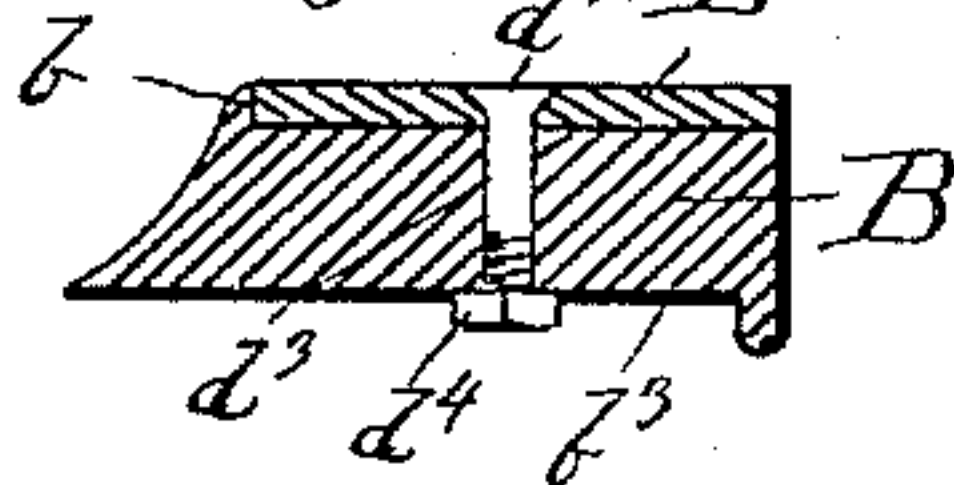


Fig. 6.

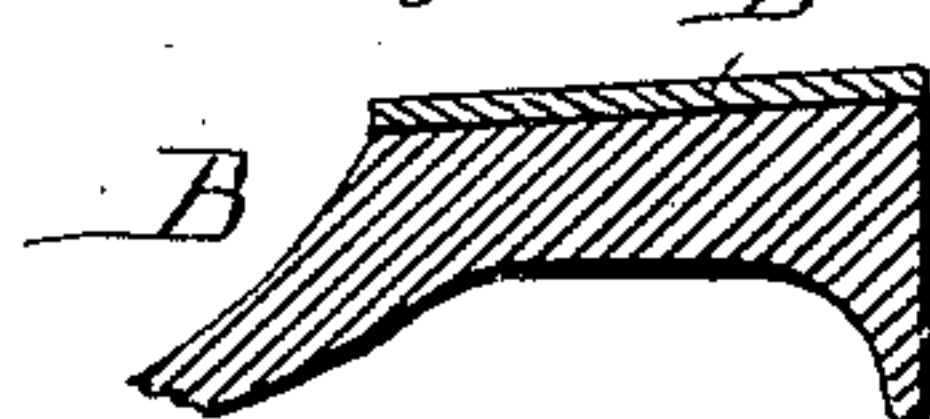


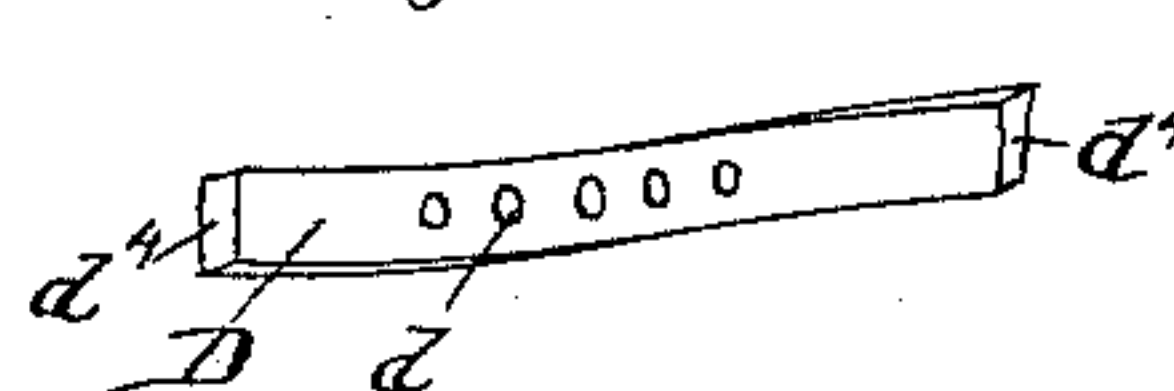
Fig. 8.



Fig. 7.



Fig. 9.



Witnesses:

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# UNITED STATES PATENT OFFICE.

MARVIN S. CADWELL AND EDWARD L. CADWELL, OF LANSING, MICHIGAN.

## MOLD-BOARD OR BREAKING PLOW.

SPECIFICATION forming part of Letters Patent No. 397,415, dated February 5, 1889.

Application filed January 23, 1888. Serial No. 261,575. (No model.)

*To all whom it may concern:*

Be it known that we, MARVIN S. CADWELL and EDWARD L. CADWELL, citizens of the United States, residing in Lansing, in the county of Ingham and State of Michigan, have invented a new and useful Improvement in Mold-Board or Breaking Plows, of which the following is a specification.

Our invention relates to mold-board or breaking plows, and especially to the point and share or cutting-edge thereof.

The object of our invention is to provide a mold-board plow with a strong, durable, and efficient cutting-edge and point of a simple and cheap construction.

The easy and proper operation of a mold-board or breaking plow, both to the plowman holding the same and to the draft-animals pulling it, is largely dependent upon the proper sharpness of the cutting-edge of the share and point, and also upon the length, shape, and proportion of the point in relation to the other parts of the plow. When plowing in hard or dry soil the ordinary cast-iron point and share with which plows are commonly furnished will frequently become so dulled by less than a single day's use as to require their replacement by new ones. This entails a heavy expense upon the farmer, and where tempered-steel points and shares are employed, little practical advantage is gained because of the loss of time and expense incident to resharpening them at the forge.

Our invention consists in a plow furnished with a self-sharpening point and share made of thin plate-steel, thin enough so that the wear upon its edge does not appreciably dull it, and so that the edge when slightly dulled may be readily sharpened by a file or by grinding without ever requiring reforging. The plate-steel share and point are both made reversible, so that either end or edge may be used as the cutting-edge. The share and point are also both secured adjustably upon the plow, so that as they become worn away they may be adjusted farther down and the proper relation of length of point and share always preserved to the plow.

Our invention also consists in the novel devices and novel combinations of devices herein shown and described, and more particularly pointed out in the claims.

In the accompanying drawings, which form a part of this specification, and in which similar letters of reference indicate like parts, Figure 1 is a perspective view of a plow embodying our invention. Fig. 2 is a bottom view of the same. Fig. 3 is a longitudinal section on line 3 3 of Fig. 1. Figs. 4, 5, and 6 are cross-sections on lines 4 4, 5 5, and 6 6, respectively, of Fig. 1. Fig. 7 is a section on line 7 7 of Fig. 2. Fig. 8 is a detail cross-section of the supplemental plate-steel share, and Fig. 9 is a detail view of the supplemental plate-steel point.

In said drawings, A represents a mold-board plow; B, the cast share and point adjoining the mold-board, and to which the supplemental thin plate-steel cutting-share C and supplemental thin plate-steel cutting or working point D are attached.

The cast piece B of the plow is provided with a longitudinal ledge or shoulder, *b*, on its upper face, extending back preferably about one-half or two-thirds the length of the supplemental point D, to form a bed for securing and holding the supplemental point in place on the plow. For this same purpose also the part B is provided with a pin or lug, *b'*, preferably cast integral with the part B and adapted to enter one of the holes *d* in the supplemental point D. A bolt, *d'*, having a countersunk head, *d*<sup>2</sup>, and nut *d*<sup>3</sup>, passing through a hole, *b*<sup>2</sup>, in the part B, secures the supplemental point in place. The supplemental point D consists of a thin narrow piece of plate-steel, preferably about an inch and a half or an inch and three-quarters wide and about one-quarter of an inch thick and from five to eight inches in length, according to the plow to which it is to be secured. It is preferably made of old flat steel leaf-springs. By making the point thus of thin plate or leaf-spring steel it will not tend to wear blunt, and it may also be readily sharpened by grinding or filing, and will require no reforging. The point D is provided with a series of holes, *d*, through which the bolt *d'* passes, and into one of which the lug *b'* projects. The cast point or share part B of the plow has a recess or cavity, *b*<sup>3</sup>, in its under face, to receive the nut *d*<sup>3</sup>. Both ends of the supplemental point may be used as the cutting end or edge, and the point is thus reversible, the series of holes *d* being



located at the middle portion of the point. As the upper surface of the cast plow point and share B is of course a curved and not a plane surface, the supplemental plate-steel point D is correspondingly curved, so that it will lie flat upon the upper surface of the cast plow point and share B. This twist or curve in the supplemental point D does not interfere with the reversibility of the same, as both ends of the same are symmetrical and fit equally well the curved surface of the cast plow point and share B. By referring to Fig. 9 and also to the cross-sections, Figs. 3, 5, and 6, it will be seen that the two cutting edges or ends  $d^1$   $d^1$  of the supplemental point D do not lie in the same plane, owing to the slightly twisted or curved shape of the point.

The plate-steel share C is preferably made of plate-steel about one-eighth of an inch in thickness, so that it will be self-sharpening as it wears away. It should be from two to three inches in width, so that it may have a firm flat bearing on the under surface of the cast-share part B, and its cutting-edge projects from one-half inch to one inch, or such matter, in front of the edge of the cast-share part B. The supplemental self-sharpening steel share C is secured rigidly and firmly to the cast-share part B of the plow by rivets  $c$ , inserted through suitable holes in the parts B and C.

To provide for the adjustment of the supplemental plate-steel share C farther down as it wears away, we usually provide it with a series of rivet-holes,  $c'$ —two or more—close together. Both edges  $c^2$  of the supplemental plate-steel share are adapted for use as the cutting-edge, the steel-share being reversible by simply turning it over, the same ends of the share-plate being kept adjacent to the point D. The cutting-edges  $c^2$  of the share-plate C, it will be observed from Fig. 8, are sharpened or beveled from opposite sides of the plate, so that when the plate is reversed each cutting-edge will have a flat plane under surface. One or both of the cutting-edges  $c^2$  of the supplemental share C are preferably serrated, or provided with a series of teeth,  $c^3$ , having inclined sharpened front edges,  $c^4$ , as we find by experiment that such notched or serrated edge materially diminishes the draft

of the plow. In the drawings we have shown the share C provided with one smooth or straight cutting-edge and one serrated. Obviously, however, we prefer to make both cutting-edges serrated.

To adjust the share-plate C farther down, or to reverse it, the rivets  $c$  are punched out and new ones inserted. The share-plate is secured by rivets, in order that both its upper and under surfaces may be smooth. The supplemental plate-steel share C is secured in a horizontal position to the plow, and it thus occupies the best position or relation for cutting with ease.

We do not herein claim, broadly, the thin supplemental self-sharpening point in combination with the cast point, share, and landside of the mold-board plow, as that forms the subject-matter of our previous application, Serial No. 248,500, filed September 1, 1887. Nor do we herein claim any subject-matter which is shown, described, and claimed in said former application, to which application and the patent to be issued thereon reference is hereby made for greater certainty.

We claim—

1. The share B, having a supplemental thin self-sharpening point, D, adjustably secured on the upper face of said part B, and a thin self-sharpening supplemental share, C, secured on the under face of said part B, substantially as specified.

2. The combination, with a mold-board plow, of a cast share, B, having a thin supplemental self-sharpening share, C, and a thin supplemental self-sharpening point, D, both secured to said share B, substantially as specified.

3. The combination, with a mold-board plow and its part B, of a slightly twisted or curved thin plate-steel reversible and adjustable supplemental point, D, secured on the top face of said part B, said point D having two cutting-edges lying in different planes, substantially as specified.

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