

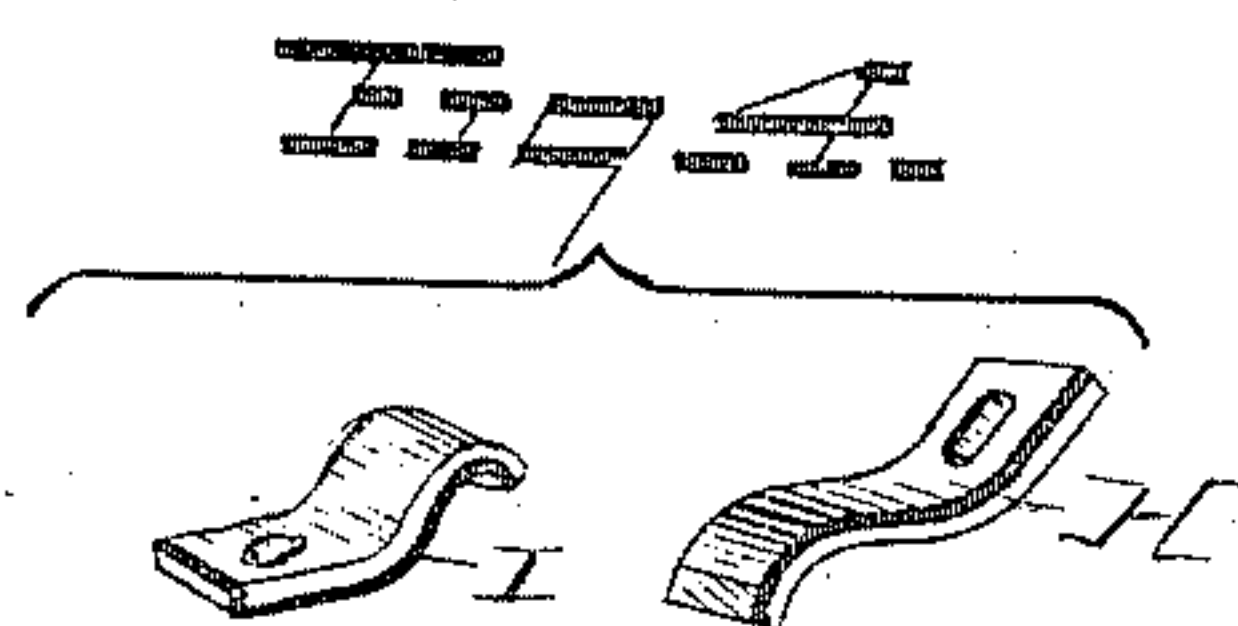
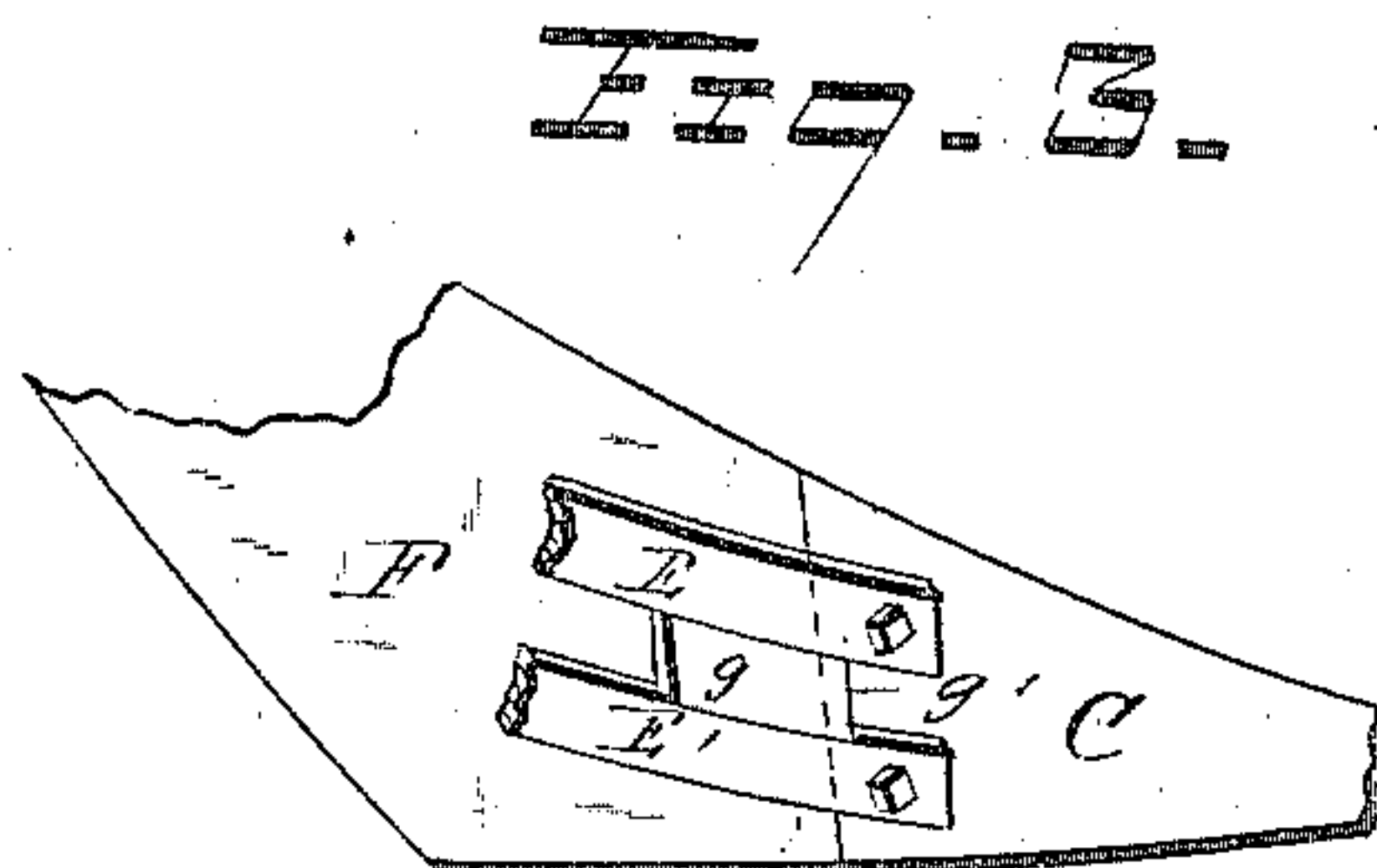
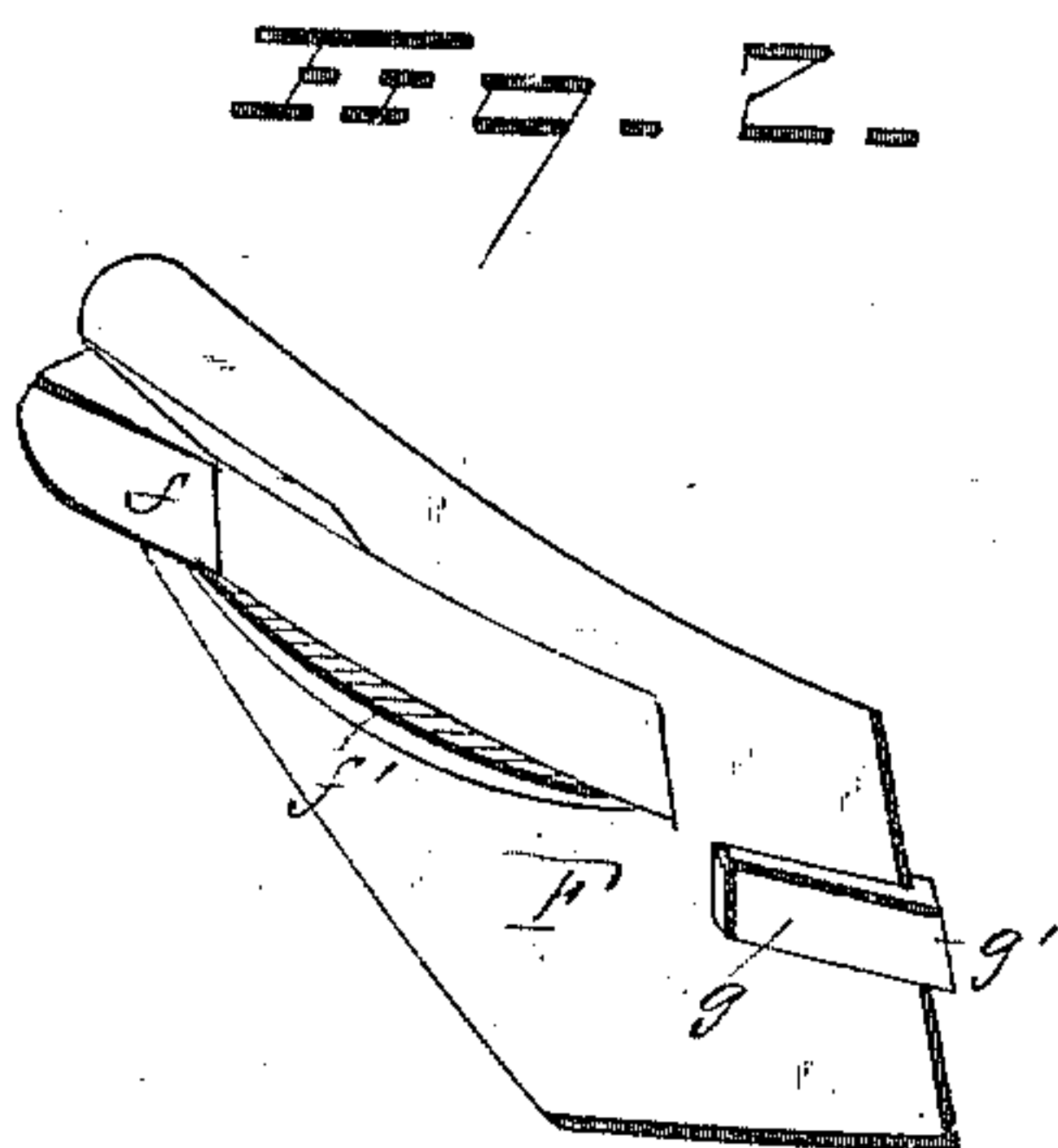
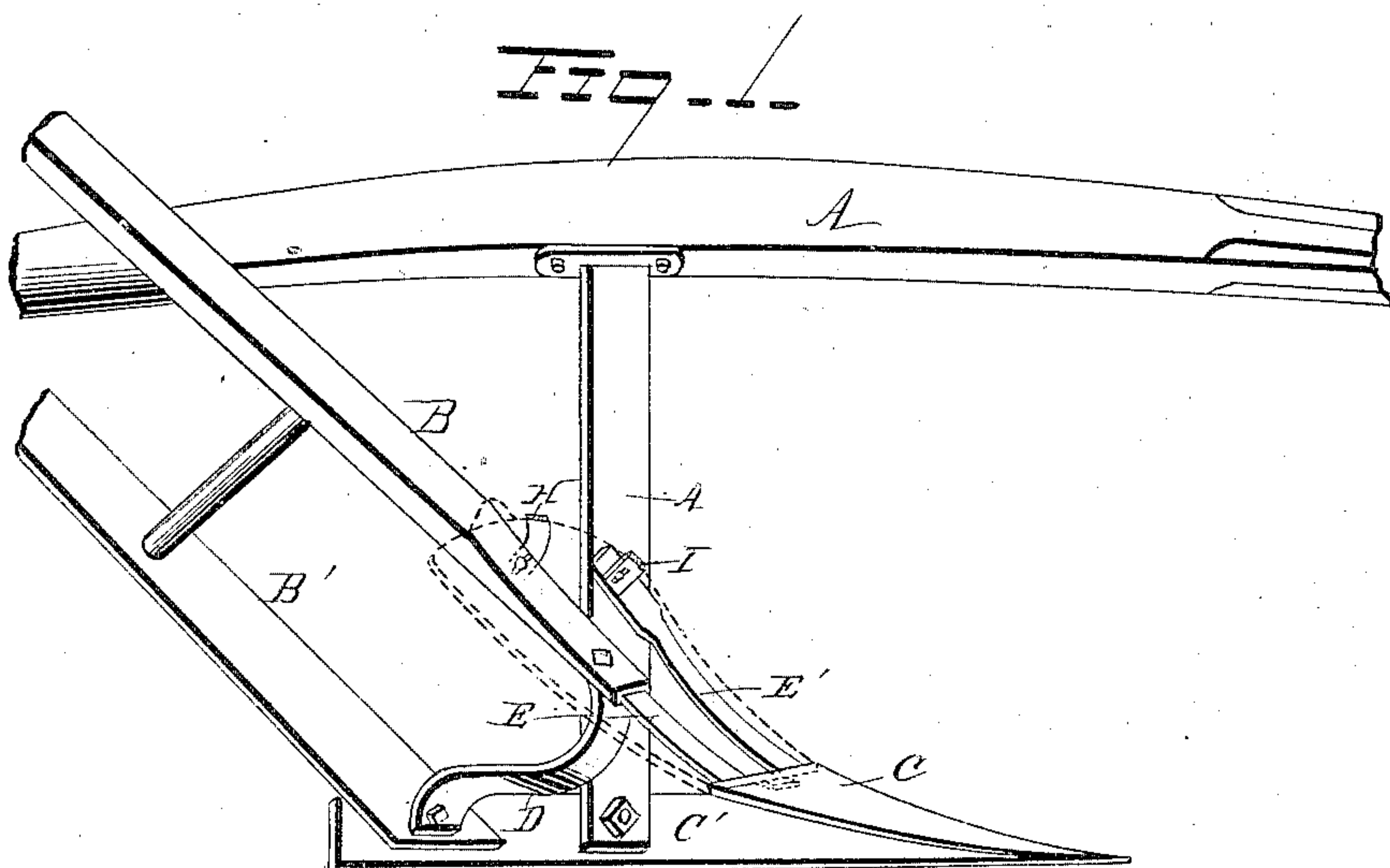
(No Model.)

D. HARGER.

PLOW AND MOLD BOARD THEREFOR.

No. 314,445.

Patented Mar. 24, 1885.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

DAVID HARGER, OF DES MOINES, IOWA.

## PLOW AND MOLD-BOARD THEREFOR.

SPECIFICATION forming part of Letters Patent No. 314,445, dated March 24, 1885.

Application filed December 24, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, DAVID HARGER, a citizen of the United States, residing at Des Moines, in the county of Polk and State of Iowa, have invented certain new and useful Improvements in Plows and Mold-Boards Therefor; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to plows and the construction of glass mold-boards for use thereon; and it consists in the construction of mold-board and combination of parts hereinafter described, and pointed out in the claims.

In carrying my invention into practice I form a mold-board of glass, of any suitable thickness to insure security and strength, and have projections or lugs on its under side to adapt it to fit snugly to the other parts of the plow and to give it strength. One of these projections or lugs extends beyond the edge of the mold-board, and is adapted to fit under the upper edge of the share. The right handle of the plow is set out and secured by an S-shaped brace extending from the bottom of the opposite handle, which, as usual, is fastened to the landside. The peculiar shape of this brace gives some power of yielding to the lower end of the right handle. Two curved braces are employed, on which the front of the mold-board is to rest. One of the two braces is fastened to the bottom of the right handle by the same bolt which fastens the S-shaped braces, and at the other end is secured to the share. The other one of the two braces extends from the upright standard to a point under the upper edge of the share, where it is fastened the same as the first-mentioned one. One of the projections on the mold-board lies between these braces, and the projecting end thereof, which extends past the edge of the mold-board, lies under the upper edge of the share between these two braces. I also employ a pair of clamps, which are secured to the handle and standard, respectively, and bear upon the upper edge of the mold-board to keep it in place. These are curved, as will be hereinafter explained, to give them a sufficient degree of elasticity or yielding capacity to keep the mold-board from being

broken when pressed upward. Ordinarily, however, no such pressure will occur. The tendency is for the share to be drawn downward, and the free condition of the mold-board on its lower edge allows this movement without any injury to it, and without any possibility of breaking or cracking.

The accompanying drawings illustrate what I consider the best means for carrying my invention into practice.

Figure 1 is a perspective view of a portion of a plow, showing the construction of parts used in connection with my mold-board, and showing the mold-board in place in dotted lines. Fig. 2 is a back view of the mold-board, showing the projections and lugs. Fig. 3 is an inverted plan view of a portion of share and mold-board. Fig. 4 is a detail view of the clamps for holding the upper edge of the mold-board.

Similar letters of reference indicate corresponding parts in all the figures where they occur.

A is the beam, and A' the standard.

B is the right handle and B' the left.

C is the share, and C' the landside. The lower ends of the left handle B' and standard A' are secured to the landside C', as shown.

The lower end of the right handle, B, is set out and held in place by a brace, D, which is preferably of S shape in order to properly fit the space and secure the handles and at the same time give sufficient elasticity or yielding power to the lower end of handle B. This brace D is secured at one end to the lower end of handle B' and at the other to the lower end of handle B, as shown.

Two curved braces (marked E and E', respectively) unite the lower end of handle B and standard A' to the under side of the upper edge of the share. The brace E is secured to the lower end of the handle B by the same bolt employed to secure the brace D. These braces E and E' are curved, as shown, and lie alongside of each other to receive between them one of the projections on the under side of the mold-board. Their curvature corresponds to that of the under side of the mold-board, which fits upon them.

F is the mold-board, formed of glass or analogous vitreous material which possesses the quality of great smoothness, and is totally im-



pervious to the action of the earth, dampness, or any of the influences of the weather, and at the same time will not be affected by wear or friction of the earth, stones, or other material. It is formed in a single piece of such material, and the lugs or projections, herein-  
 5 after mentioned, are formed integral with the mold-board. The thickness of the mold-board may be such as circumstances may require,  
 10 the character of the soil to be plowed, and the size of the plow, whether two or more horses are used, or other equivalent power—such as steam—employed. In my experiments I have found that about three-fourths of an inch is  
 15 about the proper thickness; but I would not be understood as confining myself to this thickness, as it may be increased or diminished according to the requirements of the case, and according as experience or preference may  
 20 dictate.

In shape and general construction my mold-board may be of the ordinary or usual form employed with iron or wooden mold-boards, and any desired form may be used to adapt it  
 25 to different styles of plows. I would state that I do not desire to be confined to any particular form of mold-board, as it is evident that any of the ordinary known forms may be employed without affecting the spirit and es-  
 30 sence of my invention.

The under side of the mold-board is provided with a projection, *f*, which causes it to fit snugly and firmly upon the right handle. A lug or flange, *f'*, lying just above said pro-  
 35 jection *f*, and extending a little beyond it, rests over the upper edge of the right handle, B, and holds the mold-board in place. A projection, *g*, on the back of the mold-board, serves to lie between the braces E and E', and  
 40 holds the mold-board on the front edge. This projection *g* extends past the edge of the mold-board, as shown at *g'*, which portion *g'* extends under the upper edge of the share, as shown in dotted lines in Fig. 1. This al-  
 45 lows the share to be drawn or forced down by contact with rocks, roots, &c., without jarring, cracking, or breaking the mold-board, and if, when such obstruction is passed, the share springs up again, the mold-board will not be  
 50 affected, as it will simply glide over the projecting lug *g'*, and if a pressure should come upon the mold-board it will be compensated by the spring-clamps H and I, which are se-  
 55 cured the former to the handle B and the latter to the standard A', and bear with a yielding force upon the upper edge of the mold-board.

The ends of the clamps which are attached to the handle B and standard A' have oblong openings, as shown, so that their tension upon  
 60 the mold-board may be adjusted as desired, and when the mold-board is set in place they may be loosened and tightened as desired.

It will be seen that no strain nor shock nor jar comes upon the mold-board from the operation of the plow, and that it is not punctured  
 65 nor strained in being secured to the plow. In such construction the fragility of the glass is practically overcome, and the objections arising to the use of the glass mold-boards heretofore known are entirely obviated, while all the  
 70 advantages arising from the use of this hard, smooth, impervious surface are insured.

In applying my invention it will be understood that the character or style of plow is not essential, and that any of the known forms of  
 75 plow may be employed.

By reason of the smoothness and non-corrosion of the glass mold-board the plowing is done with much less draft than with the ordinary iron or wood mold-board, and at the same  
 80 time the furrow is completely turned over without breaking up the earth and commingling the upper with the lower strata thereof, as is the case with mold-boards which do not scour. In the cost of manufacture also great  
 85 saving is effected, as the cost of the glass mold-board will not be over one-fourth of that of the metal mold-board.

In laying the plow away for the winter, or leaving it out over night or at other times  
 90 when it is subject to cattle coming against it, the mold-board may be readily taken off, as its attachment is very simple and readily undone.

I am aware that glass mold-boards have been  
 95 used heretofore; but so far as I am aware they have never been practically successful, by reason of improper construction and mode of attachment.

Having thus described my invention, what I  
 100 desire to claim and secure by Letters Patent is—

1. A mold-board formed of glass or analogous vitreous material, having the flange *f'*, for resting upon the plow-handle, and the lug  
 105 or projection *g g'*, for resting between the braces and under the upper edge of the share, as set forth.

2. The combination, with the plow handles, standard, and share, of the S-shaped brace D,  
 110 the curved braces E E', and the glass mold-board having lugs *f* and *g*, as described.

3. The combination, with the plow handle, standard, and share, of the curved braces E E', mold-board F, having projections *g g'*, and  
 115 spring-clamps H and I, constructed and applied substantially as herein set forth.

In testimony whereof I affix my signature in presence of two witnesses.

DAVID HARGER.

Witnesses:

I. N. KALB,  
 JAMES H. SMITH.