(No Model.)

C. LA DOW.

PLOW POINT.

No. 575,666. Patented Jan. 19, 1897.

Fig. 2.

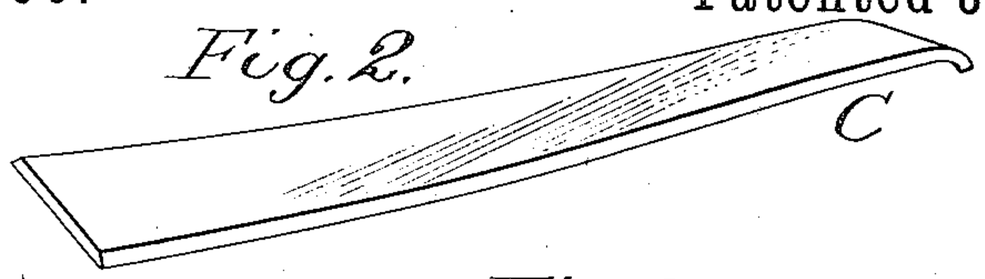


Fig. 3.

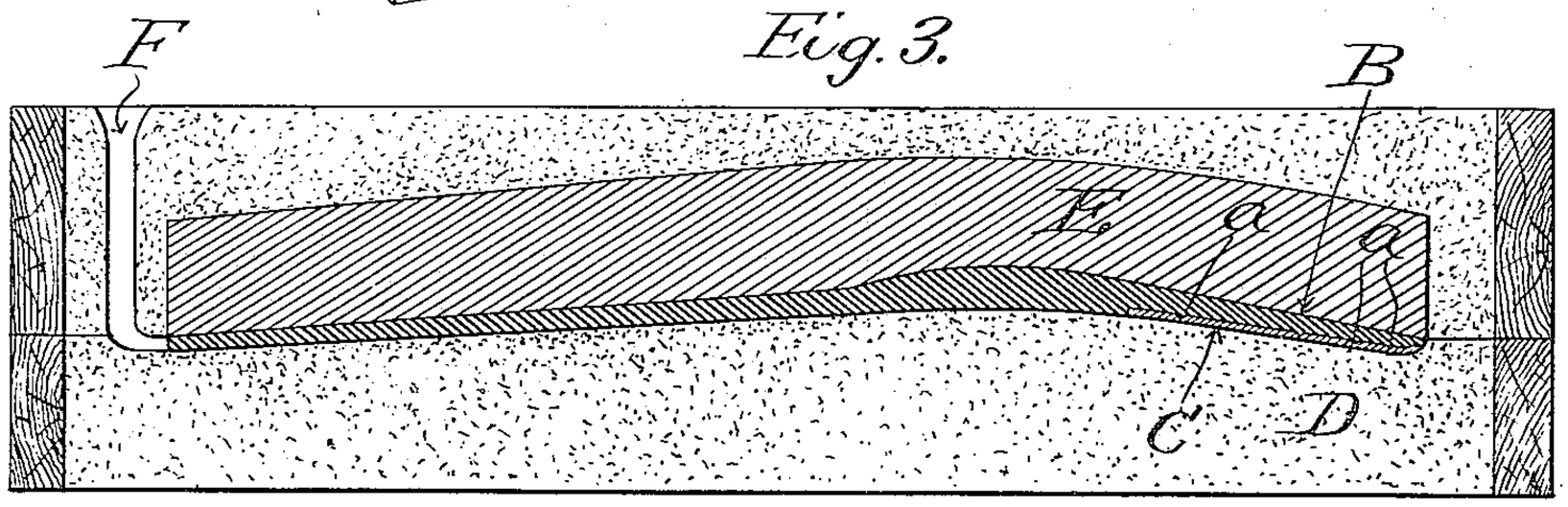


Fig. 1.

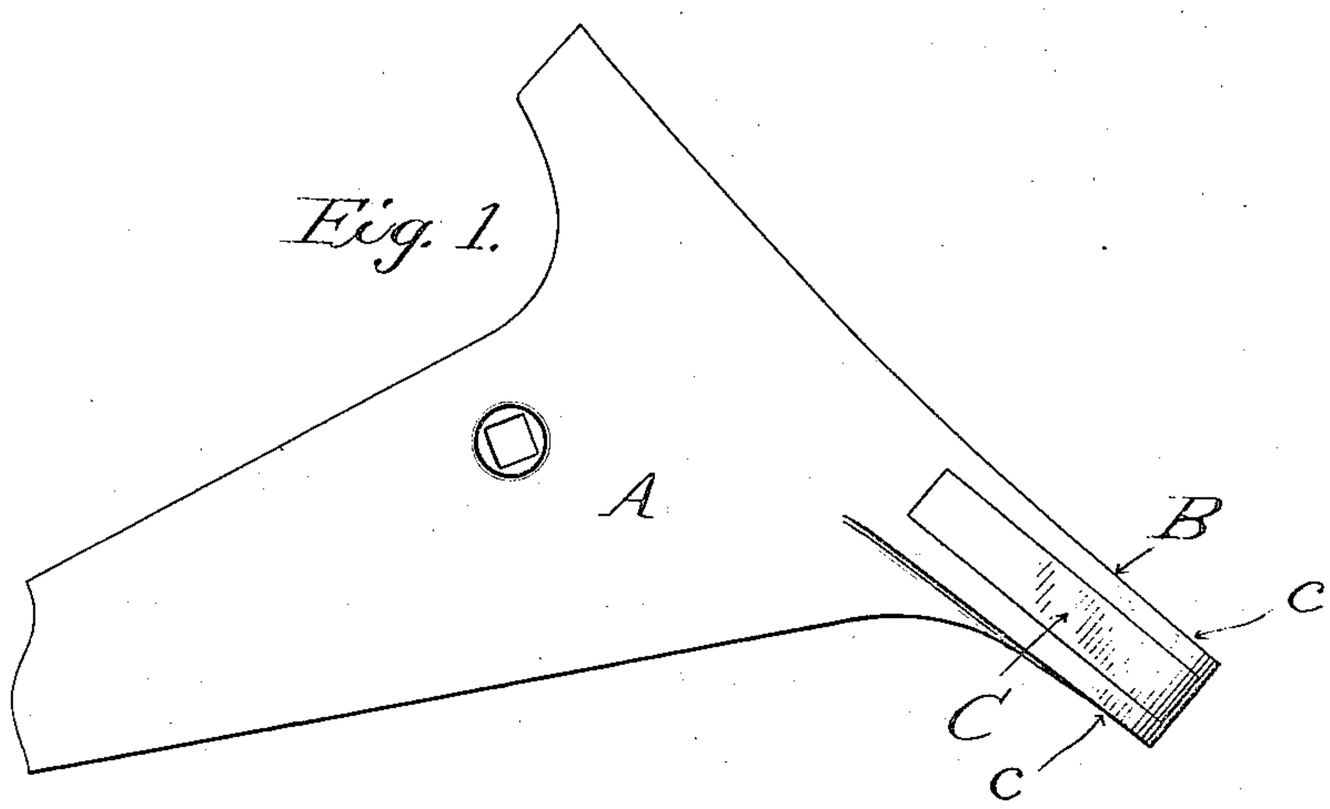


Fig. 4.

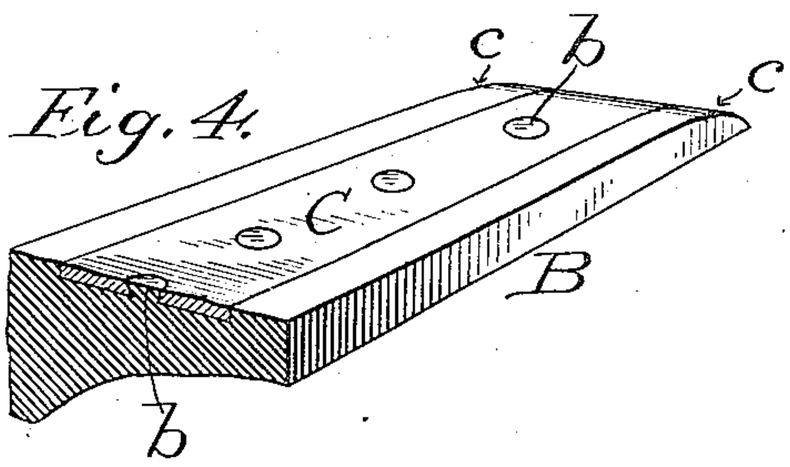
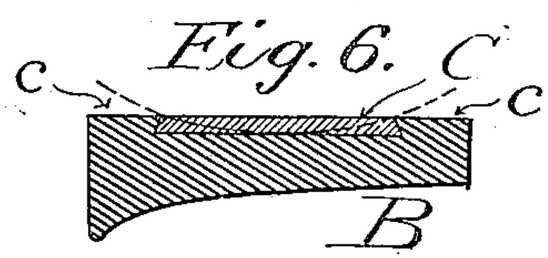


Fig. 5.

Fig. 6.



Attest;
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UNITED STATES PATENT OFFICE.

CHARLES LA DOW, OF ALBANY, NEW YORK.

PLOW-POINT.

SPECIFICATION forming part of Letters Patent No. 575,666, dated January 19, 1897.

Application filed November 21, 1896. Serial No. 612,921. (No model.)

To all whom it may concern:

Be it known that I, CHARLES LA DOW, a citizen of the United States, residing at Albany, in the county of Albany and State of New York, have invented certain new and useful Improvements in Plow-Points, of which the following is a specification.

My invention consists in a plow-point of novel construction, as hereinafter fully set forth.

The purposes of my invention are to increase the strength of plow-points, to permit the same to be made longer and thinner than heretofore, and to cause one face or a portion of one face to wear away more rapidly than the other face or portions, and thereby to maintain a thin sharp edge.

Figure 1 is a top plan or face view of a plowshare provided with my improved point; Fig. 2, a perspective view of a wrought-metal strip, such as is incorporated into the point; Fig. 3, sectional view illustrating the method of applying said strip and incorporating it into the point of the finished share; Fig. 4, a perspective view of a plow-point, showing the wrought-metal strip secured in place by studs or rivets formed in casting the share; Figs. 5 and 6, cross-sections of the plow-point, Fig. 5 showing it as it appears when first made and Fig. 6 illustrating the manner in which it wears away.

At the present time plowshares are universally cast, and usually with the points as an integral portion thereof. For the purpose of rendering the points more durable and thus prolonging the life of the share it is customary to chill the point by placing within the mold a metal body of sufficient size to preclude its becoming heated to any considerable extent by the molten metal, this cold body serving to chill and set the molten metal quickly and to render very hard that portion of the casting which comes in contact with the chill. It is essential to the attainment of satisfactory results in the matter of chilling that a special grade of iron be used, some varieties becoming so exceedingly brittle under chilling as to be useless and incapable of withstanding the strains to which a plow-point is subjected, while others cannot be hardened at all by chilling. It is found in practice that when metal of the proper grade or quality for the production of a properly-chilled plow-point is used the chilling effect and consequent hardening extends entirely through the point from face to face, and consequently the upper face of the plow-point, which is farthest from the chill in the mold, is made practically if not quite as hard as its lower face. This is due largely to the fact that the point is relatively thin and that the metal which forms it flows from the rearward end of the mold over the cold bottom thereof before reaching the portion of the mold in which the point is cast, and being at most a small body does not possess sufficient heat to overcome the effects of the relatively large mass of cold iron of the chill. It is desirable, however, to cause one face of the point to wear away more rapidly than the other in order that it may automatically thin down toward the extreme point or entering edge and be always in condition readily to enter the ground or find its way into and through the soil in which the plow is used.

My invention aims to secure this result, together with other desirable qualities above indicated; and to this end it consists in placing within the mold a strip or body of soft metal, preferably iron or steel, in such position that it shall be incorporated into the point cast therein at that side or face of the point opposite that cast against the chill. It being the usual practice to chill the lower face of the point, the strip above referred to is placed in position to constitute a part of the upper face of the point, or, in other words, as the share is cast upside down, with the chill at the upper side of the mold cavity or matrix, the wrought-metal strip is placed at the bottom of said cavity. This will be better understood upon referring to the drawings, in which—

A indicates a plowshare, B its point, and C the wrought-metal strip incorporated in the upper face of said point. The strip C as it appears before such incorporation is shown in Fig. 2, and in Fig. 3 it is shown lying upon the bottom of the matrix or cast space of the mold D, directly beneath that portion of the chill E which overlies the point B of the share A.

F indicates the sprue-hole, located in such position as to introduce the metal into the mold at that portion in which is formed the heel or rear end of the plowshare A, the purpose of such location being to cause the scoria, dross, &c., to work back toward the heel of the plowshare or to a point where its possible incorporation into the casting would be of slight consequence. It will be seen that if the strip C be thus placed in the mold D, the chill E be placed in position, and the cope or upper section of the mold be applied to the drag, so that the parts occupy the positions indicated in Fig. 3, the molten metal entering the mold will flow to the point C, the mouth of the sprue-hole being materially higher than said point, and while the upper surface of said metal comes into contact with chill E and is suddenly cooled and made quite hard the lower portion of the metal, forming the point B, flows around the sides of the strip C, which are preferably beveled, as in Figs. 2, 5, and 6, and firmly incorporates said strip into the casting.

Previous to its being placed in the mold the strip C is by preference tinned, and this is usually done at the place of manufacture of said strips, which may be distinct from that at which the shares are cast. The purposes of thus tinning the strips C are, first, to prevent rusting in handling or while being shipped or stored, and, secondly, to enable the molten metal portion to unite with the wrought metal of the strip, the tin serving as a solder or as a flux and facilitating the fusion of the edges and surface of the strip and its perfect union with the metal of the casting.

As is well understood, the wrought-metal strip cannot be chilled, and consequently, although the chilling effect may extend entirely through that portion of the plow-point between the strip C and the chill E, there will always be in the finished point a face of relatively soft metal as thick as the strip C. When the iron in the ladle begins to cool or become dull, it may happen that it will not possess sufficient heat to effect a fusion of the edges and surface of the strip C with which it comes into contact, and that consequently, although the cast metal may, by reason of the beveling of the edges of the strip, hold said strip against play or movement, there may be under severe strains a tendency to spring or bend the point and thereby to move or slide the strip longitudinally in its seat. To prevent this, I may form slight indentations *a* in the under face of the strip C, which may be conveniently done with a prick-punch, or I otherwise roughen the face against which the molten metal is brought, so that when the casting is formed the two contacting surfaces shall interlock sufficiently to prevent the longitudinal movement noted.

In Fig. 2 I have shown the edges of the strip C beveled, so that the cast metal shall overlap the edges, as in Figs. 5 and 6. This provision, together with the shrinkage of the metal in cooling, causes the strip to be very firmly bound and held in place, even if there be no fusion and no soldering effect, but it may in some cases be desirable to perforate the strip C in the manner indicated in Fig. 4 and permit the molten metal to flow through the perforations and form fastening studs or rivets *b*, which will serve the double purpose of securing the strip in position and preventing play in any direction. The perforations should be countersunk, as indicated in Fig. 4.

As indicated in the several figures, the strip C is somewhat narrower than the plow-point B, and is so made for the purpose of affording a sufficient body of cast metal at each side to firmly clasp and retain the strip C, and also to give to the upper face of the point different degrees of hardness at its middle and side portions. The effect of the chill being carried entirely through the cast portion of the point it will be seen that the side portions *c* of the upper face of the point B will be quite hard, while the intervening portion of said face will be soft, and as a consequence the upper face will, when the point is subjected to the wearing or scouring action of the soil, wear away more rapidly at the middle than at the sides, producing a concave surface, as indicated in Fig. 6. This is quite desirable in practice and adds to the efficiency of the point.

It will be seen from the foregoing description that I not only vastly increase the tensile strength of the point and its capacity to resist breaking strains by reason of the introduction of wrought metal, but I also cause the upper face to wear away more rapidly than the lower face, to take a concave form, and since the wear is most rapid at the extreme forward end, to wear thin at the point and preserve at all times a sharp entering edge, which conduces greatly to the efficient working of the plow.

Under the ordinary construction of plow-points the forward corners of the points wear away more rapidly than the intervening portion and thus produce a tapering or rounded nose or end, which does not preserve its course or direction as well as the square-ended point first formed. Under my plan, however, and owing to the wearing away of the softer central portion more readily than that at either side of it, there is a sort of compensation for the greater friction to which the corners are subjected, and consequently a more uniform receding of the point across its entire width.

It is obvious that the form of the strip and the material of which it is made may vary and that more than one strip may be used. So, too, the position of the strip may vary and the cast metal may cover its outer face in whole or in part. In such case the thin film of metal over the outer face will partly

wear and partly break away in use and thus gradually thin the point. In whatever position the wrought-metal strip be placed or whatever be its cross-section it will materially aid in strengthening the plow-point.

It is found that by reason of the great tensile strength afforded by the wrought-metal strip it is perfectly feasible to make the plow-point thinner than heretofore without reducing its strength or capacity to withstand transverse strains. In fact, it is possible to make the point thinner than heretofore and still have greater strength or capacity to withstand such breaking strains. It will therefore be seen that I am enabled to produce in the first instance and to maintain in use a thinner and sharper point than has heretofore been practicable, and consequently to furnish an implement which may be forced through the soil more readily than those heretofore in use.

Having thus described my invention, what I claim is—

1. As a new article of manufacture, a plow-share having a cast-metal point integral therewith, and a wrought-metal strip cast in the metal of the point only, substantially as set forth.

2. A cast-metal plow-point having a wrought-metal strip embedded in one of its faces, substantially as shown and described.

3. A cast-metal plow-point having one face provided with a wrought-metal strip extending lengthwise thereof, and having cast-metal borders at opposite sides of said strip.

4. A cast-metal plow-point having a wrought-metal strip embedded in one face, and retained therein by the cast metal overlapping its edges.

5. A cast-metal plow-point having a wrought-metal strip embedded in one face and held in position by projecting portions of the cast metal entering cavities or openings in the wrought metal.

6. A cast-metal plow-point having a wrought-metal strip embedded in one face; the strip being tinned roughened, or indented to cause the cast metal to engage with and prevent it from moving relatively thereto.

7. A cast-metal plow-point combined with a strip of soft metal conforming to the contour of the face of the point and cast therein.

In witness whereof I hereunto set my hand in the presence of two witnesses.

CHARLES LA DOW.

Witnesses:

D. E. BURDINE,

HORACE A. DODGE.