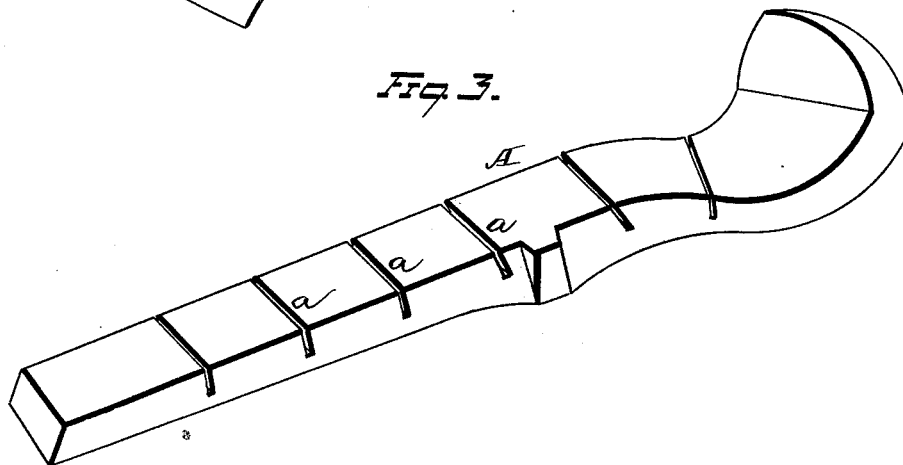
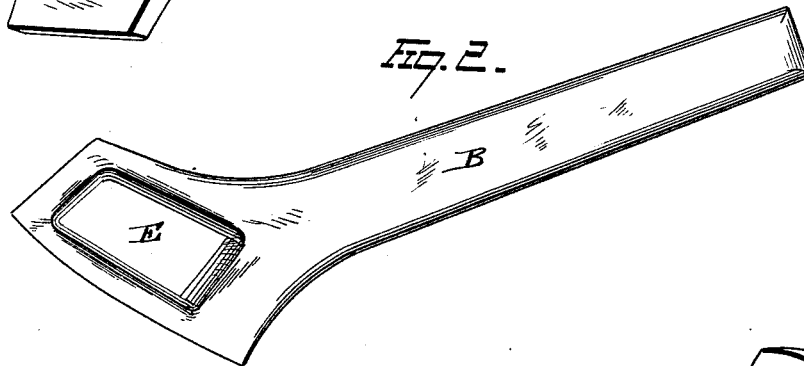
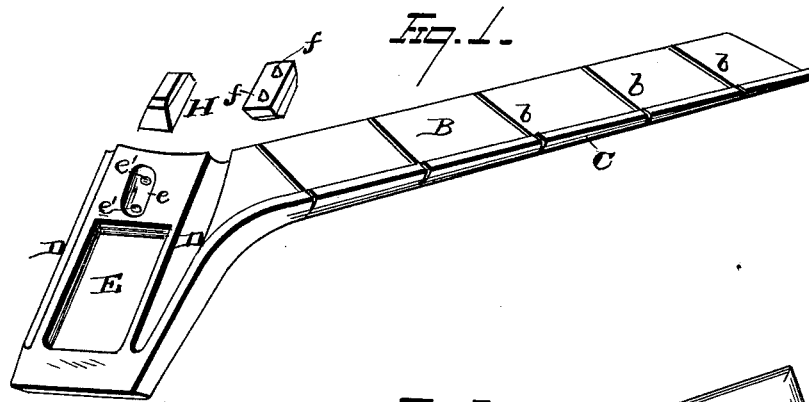


J. OLIVER.
Chill for Chilling Plow-Points.

No. 220,648.

Patented Oct. 14, 1879.



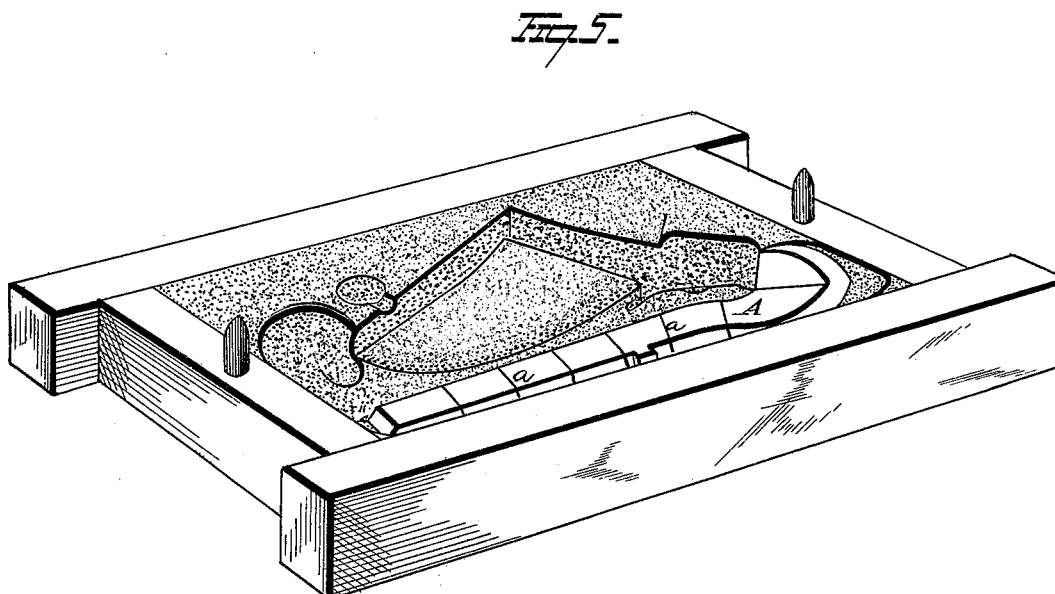
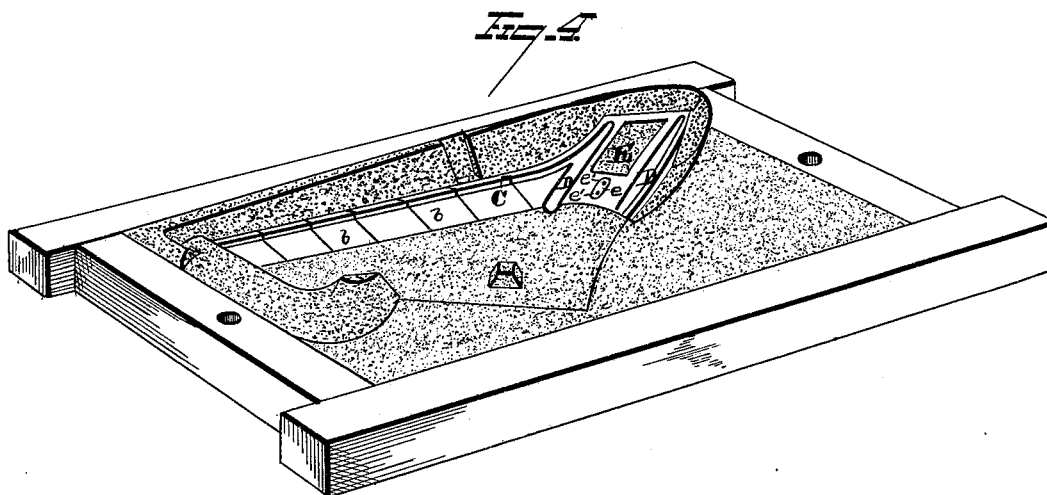
WITNESSES
E. J. Nottingham
A. M. Bright

INVENTOR
James Oliver
By A. J. Seymour
ATTORNEY

J. OLIVER.
Chill for Chilling Plow-Points.

No. 220,648.

Patented Oct. 14, 1879.



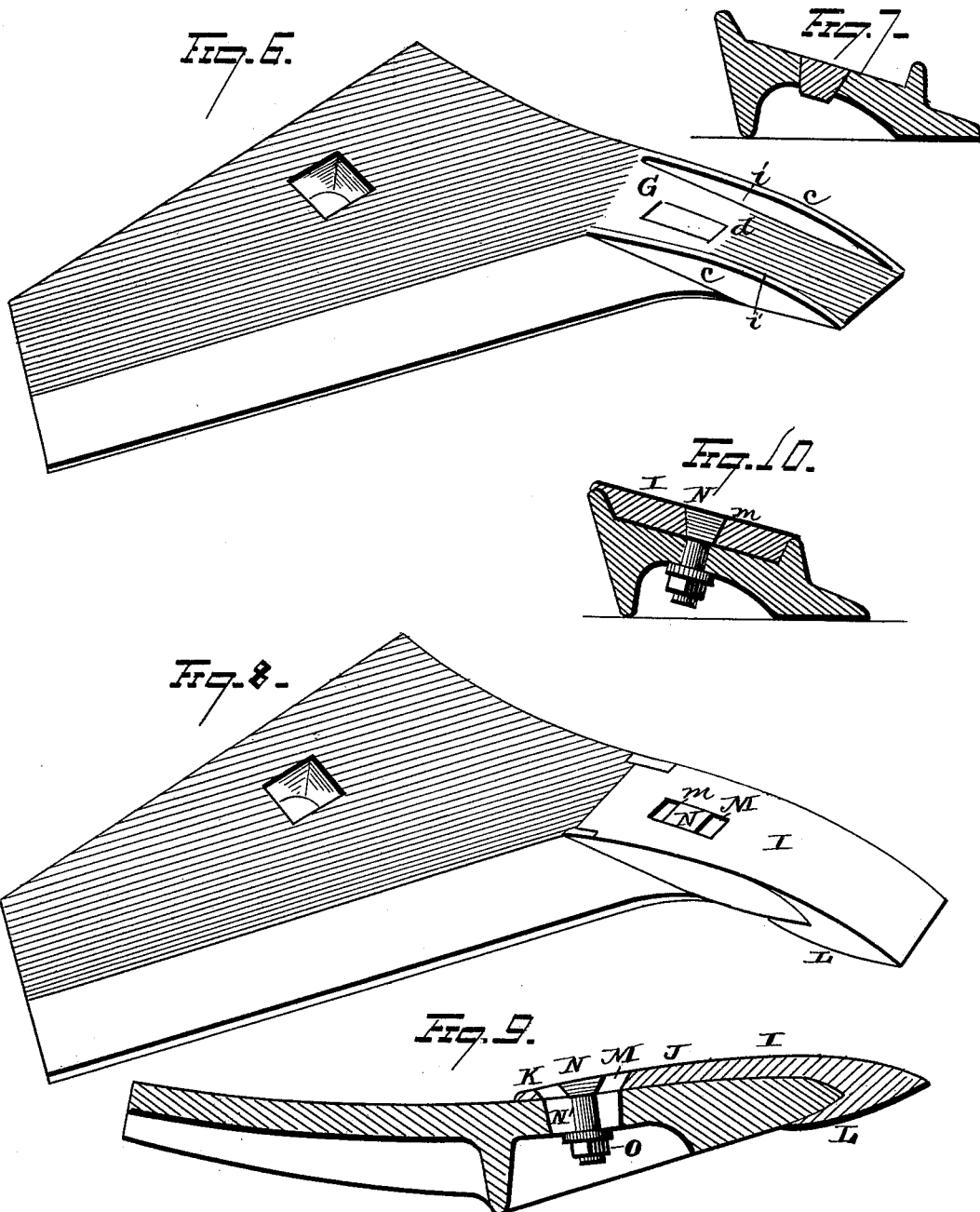
WITNESSES
E. J. Nottingham
A. M. Bright

INVENTOR
James Oliver
B. H. W. Seymour
ATTORNEY

J. OLIVER.
Chill for Chilling Plow-Points.

No. 220,648.

Patented Oct. 14, 1879.



WITNESSES
E. J. Nottingham
A. M. Bright

INVENTOR
James Oliver.
By *H. A. Seymour*
ATTORNEY

UNITED STATES PATENT OFFICE.

JAMES OLIVER, OF SOUTH BEND, INDIANA.

IMPROVEMENT IN CHILLS FOR CHILLING PLOW-POINTS.

Specification forming part of Letters Patent No. **220,648**, dated October 14, 1879; application filed August 29, 1879.

To all whom it may concern:

Be it known that I, JAMES OLIVER, of South Bend, in the county of St. Joseph and State of Indiana, have invented certain new and useful Improvements in Chills for Chilling Plow-Points, and 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in chills and devices for manufacturing chilled plow-points.

The object of my invention is to provide chills of such construction that they will operate to chill the opposite sides of the edge and nose of a plow-point, with the exception of a space on the forward or wearing surface of the upper side of the nose, and thereby form a soft-iron wearing-surface on the upper face of the plow-nose, and a hard-chilled surface in rear of such soft wearing-surface, which shall constitute a seat for the rear portion of a false nose when attached to the worn-away nose of the plow-point.

A further object of my invention is to provide chills for chilling the opposite sides of the edge and nose of a plow-point, with the exception of a space on the forward or wearing surface of the upper side of the nose, which is left unchilled, and also to form a chilled seat in rear of such unchilled space, one of said chills being constructed and adapted to have a die removably secured thereto in such a manner that upon pouring the molten metal in the flask it will flow between the chills and surround said die, and the latter become fixed in the chilled space or seat on the rear portion of the nose of the plow-point, whereby the finished article is formed with an imperforate plow-nose when first produced, and when the plow-nose has become unduly worn by use said die may be removed and form a bolt-opening for the attachment of a false nose.

To these ends my invention consists in the combination, with a sand mold, of chills constructed and adapted to impart a chilled surface to the opposite sides of the edge and nose

of a plow-point, with the exception of a space on the wearing-surface of the nose, and also to produce a chilled seat in rear of such unchilled space on the plow-nose, one of said chills being constructed to receive a detachable die, which will become embedded and firmly secured within the chilled seat on the plow-nose after the metal has been poured and solidified in the chill.

My invention further consists in other details of construction, as will hereinafter be described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view, in perspective, of the chill for chilling the upper side of the edge and nose of the plow-point, also showing the die adapted to be connected with the chill. Fig. 2 is a view, in perspective, of the rear side of the chill shown in Fig. 1. Fig. 3 is a view, in perspective, of the chill for chilling the under side of the edge and nose of the plow-point. Figs. 4 and 5 are views, in perspective, of the two parts of the flask properly rammed up for pouring, with the chills in position for imparting a chilled surface to the desired parts of the plow-point. Fig. 6 is a view, in perspective, of my improved plow-point as produced by the employment of my improved chills and removable die. Fig. 7 is a section of the plow-point, taken through the nose portion thereof. Fig. 8 is a view, in perspective, of my improved plow-point, with a false nose secured thereto. Figs. 9 and 10 represent longitudinal and transverse sections taken through the plow-point and false nose.

A represents the lower chill, which is adapted to impart a chilled surface to the under side of the edge and nose of a plow-point. Chill A is made of a solid piece of iron, with channels *a* cut transversely in its chilling-face, thereby subdividing the chill into independent chilling-faces, that the different portions of the chill may expand and contract without warping the chill, and thereby distorting the casting. Channels *a* are of sufficient depth to insure independent chill-faces of the necessary thickness, the requirement being that the several faces shall be of sufficient thickness to prevent the heat of the molten metal as it is poured upon the chill from penetrating to a depth exceeding that of the channels

before the casting shall have solidified sufficiently to obviate any warping of the chills or distortion of the casting.

The general form and purpose of the chill A is fully shown and described in Letters Patent No. 217,815, granted to me June 24, 1879. In said patent one of the chills is made up of independent sections, riveted or otherwise secured to a connecting-strip, and thereby free open spaces are formed between the several independent sections of the chill to allow of the expansion and contraction of the chill without warping the same.

Chill A, as heretofore stated, is formed of a single piece of metal, with channels cut transversely in its chilling-face. This construction is preferable for several reasons: First, the several sections of the chilling-face are united and form an integral part of the solid chill-back, and hence it is absolutely impossible for any of the independent chill-faces to become displaced; second, when the flask is being prepared for casting, and sand is rammed up around the pattern and chill, the solid and imperforate back prevents any grains of sand or other material from becoming dislodged and falling upon the face of the chill. Again, the chills made with channels formed in a single piece of metal are much simpler and of less initial cost than those wherein the several sections are riveted to a connecting-strip.

B represents the chill for imparting a chilled surface to the upper side of the edge and portion of the nose of the plow-point. It is provided with ventilating-grooves *b*, to allow of the escape of any gases generated in pouring the molten metal upon the chill.

C is a flange extending along the edge of the chill-face, and constitutes a wall uniting the outer edge of chills A and B, and forming the extreme edge of the plow-point.

D represents grooves or depressions for forming the ribs *c* on the nose of the plow-point. Between said grooves or depressions is formed an open space, E, to allow the sand to be rammed up flush with the face of the chill within said space E, as clearly illustrated in Fig. 4 of the drawings.

The object of this last-mentioned feature of construction is to leave the space on the upper side of the nose from the extreme edge thereof to the point *d* in an unchilled condition, and upon opposite sides of such unchilled surface provide the chilled ribs *c*.

F represents that portion of the chill which produces the chilled seat G on the rear portion of the nose of the plow-point. Within the space F of the chill is formed an elongated depression, *e*, having holes *e'* at opposite ends thereof.

H is a die, of rectangular form and slightly wedge-shaped, and provided with the prongs *f*. Die H is placed in the recess or depression *e*, the prongs *f* entering the holes *e'*, thereby securing the die against displacement when the metal is poured. The die is of greater width than the desired thickness of the plow-

point, so that the bottom of the die projects downwardly into the sand a little distance. When the two parts of the flask, having the chills and die properly arranged therein, are secured together, and the metal is poured into the flask, the metal enters between the chills and surrounds the die. When the metal has solidified the die is embedded in the chilled seat on the rear portion of the nose of the plow-point, the prongs of the die projecting outwardly from the surface of the chilled seat. The bottom of the die projects slightly from the under side of the plow-point. The projecting prongs are ground off flush with the upper surface of the plow-point. The die is formed with reverse wedge-shaped sides and ends, as shown in the drawings, the sides and ends being inclined in one direction, while the upper portion of the die is beveled off at its sides and ends, in order that the metal of the plow-point may envelop the die and prevent its accidental displacement in either direction.

The plow-point, with its removable die embedded therein, is thus a complete and perfect article, and adapted for ordinary use.

The lower surface of the nose of the plow-point is chilled, and hence prevented from being rapidly worn away, while the upper surface adjacent to its cutting-edge is left unchilled, and hence is allowed to wear away by constant abrasion of the soil therewith; and hence the plow-point nose is rendered self-sharpening, the thin chilled lower surface constituting a sharp cutting-edge.

By means of the chills herein described I am enabled to manufacture plow-points having thin cutting-edges on the nose portion which will be self-sharpening; to form a chilled seat in rear of such self-sharpening cutting-edge, which will prevent grooves being formed in the plow-point and prevent injury to the mold-board, the chilled seat also serving to preserve a perfect bearing for the attachment of a false nose.

The plow-point will be provided with chilled surface on the under side of the nose, and chilled sides *i i'* on the ribs *c c*.

This construction of plow-point is specially adapted for the attachment of a false nose, as shown at I, the upper portion, J, of which fits snugly between the chilled ribs, and the rear end, K, has a firm bearing on the chilled seat on the plow-point.

False nose I is provided with a lower lip, L, which fits against the under surface of the nose. An elongated slot is formed in the false nose, within which is seated the bolt-head N, the stem N' of which extends through the elongated opening, (the die having first been removed,) and a nut, *o*, is turned down on the bolt.

I make no claim in this application to my improved plow-point herein shown and described, as the same constitutes the subject-matter of a separate application, which was filed even date herewith.

It is evident that slight changes in form and

construction of parts may be resorted to—as, for instance, the die may be made of various forms, and may be attached to the chill in different ways. The chills may be changed in form and construction, and hence I would have it understood that I do not limit myself to the exact form and construction of parts herein shown and described; but,

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The chill B, having an opening, E, formed in the nose portion of the chill, substantially as set forth.

2. The combination, with a sand mold, of chills constructed and adapted to chill the opposite sides of the edge and nose of a plow-point, with exception of a space on the upper surface of the nose extending to the cutting-edge thereof, and to produce a chilled seat on the plow-point nose in rear of said unchilled portion, one of said chills constructed to re-

ceive a detachable die, arranged to become embedded and firmly secured within the chilled seat on the plow-point nose after the metal has been poured and solidified in the chill, substantially as set forth.

3. The combination, with a chill for imparting a chilled surface to a portion of a plow-point, of a die provided with prongs or projections that enter the chill, substantially as set forth.

4. The combination, with a chill for imparting a chilled surface to a portion of a plow-point, of a wedge-shaped die provided with prongs for its attachment to the chill, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 25th day of August, 1879.

JAMES OLIVER.

Witnesses:

LUCIUS HUBBARD,

FRANCIS W. GROVE.