J. W. MURFEE.

Subsoil Plow.

No. 106,193. Patented Aug. 9, 1870.

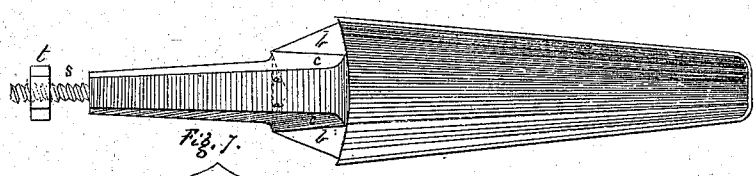

Fig. 1.

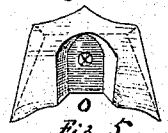

Fig. 5

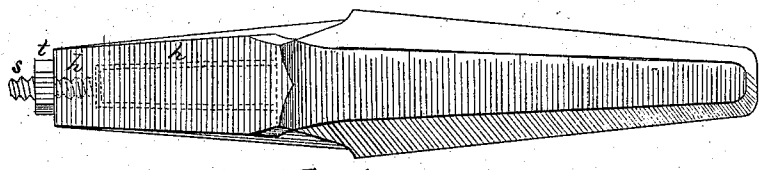

Fig. 6

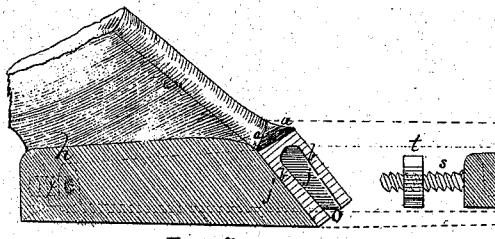

Fig. 3.

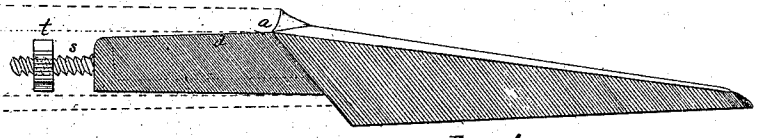

Fig. 4.

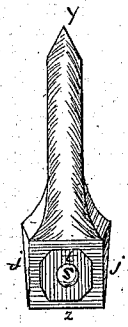

Fig. 2.

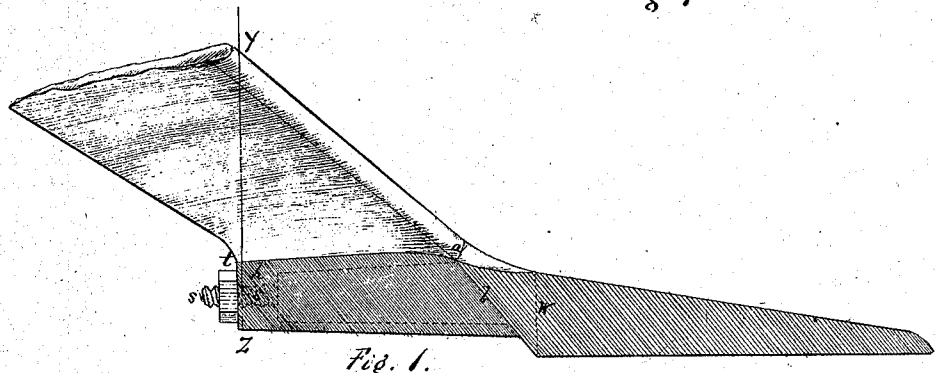

Fig. 1.

Witnesses:-

B Travis

Wm. C. Christian

Inventor:

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UNITED STATES PATENT OFFICE.

JAMES W. MURFEE, OF HAVANA, ALABAMA.

IMPROVEMENT IN ATTACHING THE POINT TO THE SHANK OF SUBSOIL-PLOWS.

Specification forming part of Letters Patent No. **106,193**, dated August 9, 1870.

To all whom it may concern:

Be it known that I, JAMES W. MURFEE, of Havana, Hale county, Alabama, have invented a new and useful Improvement in the Mode of Attaching the Point to the Shank of my Improved Subsoil-Plow, which plow was patented June 22, 1869, No. 91,657, and reissued August 24, 1869; and I do hereby declare that the following is a full, clear and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming a part of this specification.

Figure 1 is a side elevation of the subsoil plow-point, heel, and part of the shank or helve. Fig. 2 is a rear view of the heel and section through the shank Y Z. Fig. 3 is a side and end perspective of the reversed-wedge elevated heel with female mortise for the insertion of the male tenon of the point. Fig. 4 is a side and end perspective of the detached point with male tenon and screw for insertion into the heel of the shank. Fig. 5 is a section (transverse) of point and heel at their junction. Fig. 6 is a horizontal projection of the heel and point of the plow, showing the mortise, tenon, and screw attachment. Fig. 7 is a horizontal projection of bottom of the point and tenon.

My invention consists in the arrangement of a male tenon (with screw and tap at its end) to my subsoil-plow point, (patented June 22 and August 24, 1869,) inserted into a female mortise in the heel of the shank or helve, and in holding the two parts (heel and point) together by a bolt and screw at the rear, and a double shoulder at the front. The screw at *s* passes through a hole, *x*, in the rear and solid part of the heel *h*, and is drawn up home by the tap *t*, binding the point and shank closely together along the front shoulders, *a* and *b*. The lower side of the mortise *o* is left open, so as to allow the entire space to be filled by the tenon, and thereby strengthen the tenon by all the metal which it is possible to get in its depth. The tenon is broader on top than on the bottom, so as to assist in resisting any downward pressure on the point, as well as to get more strength of metal in the tenon. The tenon is shouldered and swelled to the point at *e* by curved surfaces, so as to cause the metal to form, in casting, the strongest union at that point. The top of the tenon and mortise is curved, so as to allow more metal in the shank at *d* than there would be if the tenon were made square on top.

The operation is as follows: My patent subsoil-plow heel and point being put together by the joint above described, (mortise and tenon with screw and tap), the heel is easily given that reversed, wedge shape and elevation described in my aforementioned Letters Patent; and by the use of this joint both heel and point can more easily be given the shapes and sets required in my specifications of said Letters Patent for improvement in subsoil-plows. As the plow is drawn through the ground the downward pressure comes on the shoulders *b b* of the heel, and there being two of these, and as large as practicable, this pressure is most effectually resisted. Any upward pressure is resisted by the upper shoulder, *a a*, of the shank. Any side pressure to the right or left, is resisted by the double jaws *j j* of the heel, which in point of strength are united as if one by the tap *t* and bolt *s*. The bottom of the mortise being open, the tenon can be made sufficiently large for strength, and the sole of the heel can be well elevated above the base of the point without making the total depth or rise of the point *w* so great as to impede the draft, as would be the case if space had to be given for filling up the lower side of the mortise at *o*.

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

In a subsoil-plow, the mortised heel *h* to the end of the colter-shank, in combination with the tenon *d*, attached to the point of the plow and secured in place by the screw *s* and tap *t*, substantially as specified.

JAS. W. MURFEE.

Witnesses:

B. TRAVIS,

WM. CHRISTIAN.