

UNITED STATES PATENT OFFICE.

FRANCIS F. SMITH, OF COLLINSVILLE, CONNECTICUT.

IMPROVEMENT IN PLOW-CASTINGS.

Specification forming part of Letters Patent No. **47,753**, dated May 16, 1865.

To all whom it may concern:

Be it known that I, FRANCIS F. SMITH, of Collinsville, State of Connecticut, have invented a new and useful Improvement in the Manufacture of Plows; and I do hereby declare the following to be a full and exact description of the same.

The nature of my improvement consists in manufacturing the mold-board, share, and landside composing the plates of a plow of iron faced with cast-steel, or semi-steel faced with cast-steel.

Prairie soil cannot be plowed successfully without the parts of the plow which enter the earth have the surface due to hardened cast-steel. In order to obtain a proper steel surface requires the highest tempering of which steel is susceptible. It was attempted to accomplish this result by rolling out and bending and forging sheet cast-steel; but this proved a failure, because after the cast-steel plates had been pressed into shape the subsequent process of tempering warped and broke them, so as to render them useless, and as all such plates, being wholly composed of cast-steel, would necessarily temper throughout their mass, the toughness of the material would be in great measure impaired. I have heretofore overcome the difficulty of warping by casting cast-steel mold-boards, as described in a patent heretofore granted to me. I have also overcome the difficulty as to cracking in the process of tempering by drawing out the temper at certain parts of the plow, as described in another patent for tempering heretofore granted to me. I have discovered, however, that by making the plates of a plow of iron or semi-steel plated or faced with cast-steel, as hereinafter

described, a lighter plow can be produced with a highly-tempered surface of the finest cast-steel, combined with great toughness in the back or body of the plate. At the same time the cracking and warping are obviated.

The plow-plates I prefer to make in the following manner: The compound ingot of iron and cast-steel, or semi-steel and cast-steel, is first formed by casting the metals composing these parts so that one surface shall be steel and the other iron or semi-steel. This ingot is then heated and hammered or rolled into sheets of the required thickness, one surface being steel and the other iron or semi-steel. The plow-plates are then cut from these sheets and are heated and bent into the required shape by drop-hammer or other known method. The parts are then tempered in the ordinary way by heating and plunging in water. The plates thus obtained will be found to be properly shaped and of proper thickness for either the mold-board, share, or landside of the plow, or for all these parts, with a perfectly tempered cast-steel surface throughout, and having sufficient toughness and strength to stand all the strain to which the plow will be subjected. The plow-plates are put together in the ordinary manner to form the plow.

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

A new manufacture in plow-plates made of semi-steel or iron plated or faced with cast-steel.

FRANCIS F. SMITH.

Witnesses:

J. E. SHAW,

G. E. BUCKLEY.