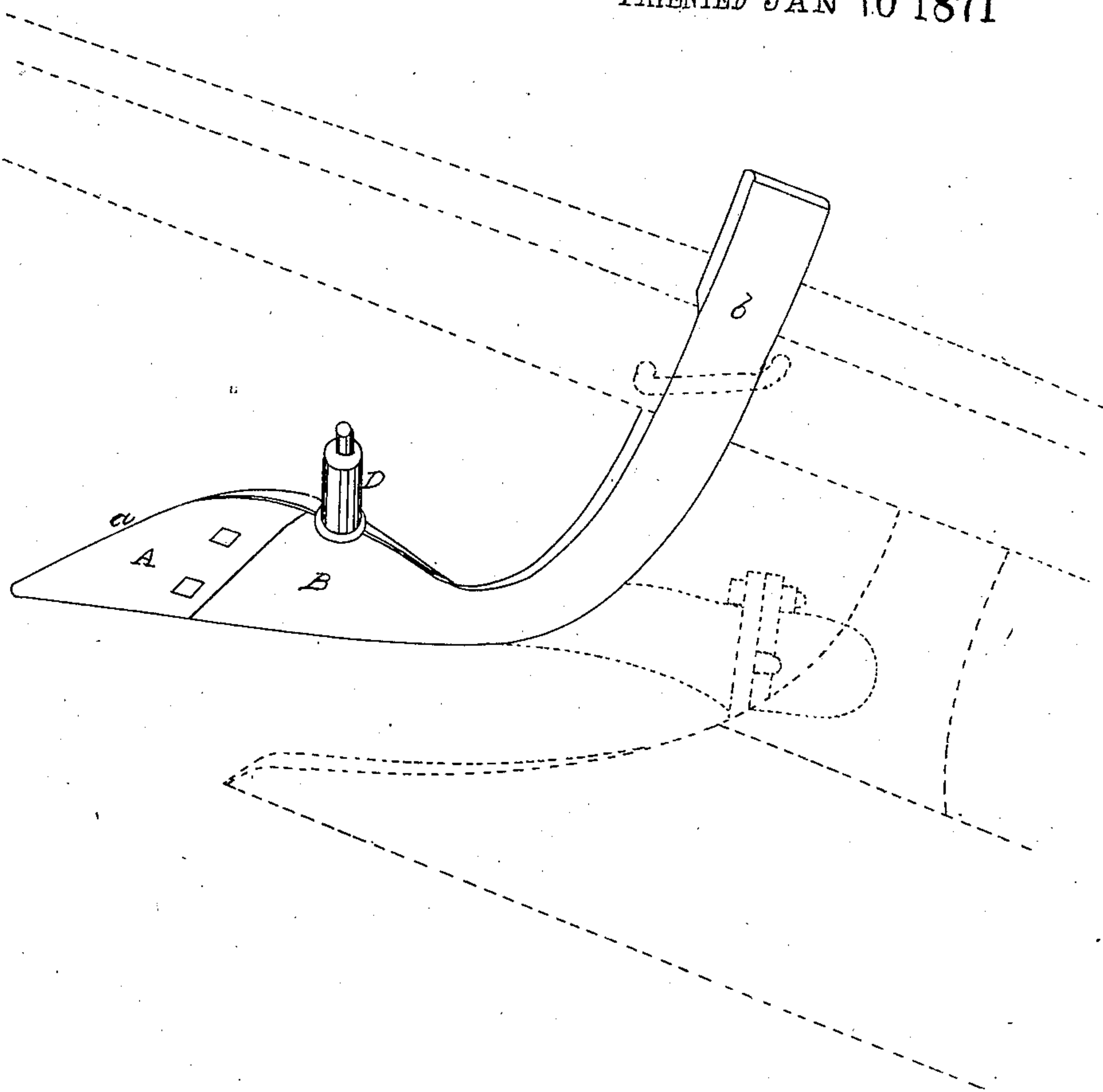


*J. M. Leonard's improvement in*  
**PLOUGHS.**

110924

PATENTED JAN 10 1871



*Witnesses*  
*George D. Phelps*  
*G. H. Smith*

*Inventor.*  
*John M. Leonard*

# United States Patent Office.

JOHN M. LEONARD, OF MARSHALL, MICHIGAN.

Letters Patent No. 110,924, dated January 10, 1871.

## IMPROVEMENT IN PLOWS.

The Schedule referred to in these Letters Patent and making part of the same.

### *To all whom it may concern:*

Be it known that I, JOHN M. LEONARD, of the city of Marshall, in the county of Calhoun and State of Michigan, have invented a new and useful Improvement in Plows; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings making a part of this specification, in which my invention is shown in perspective, sufficient of the main plow, to which it is an adjunct, being exhibited in broken lines, to indicate the connection and relation between the two.

My invention relates to an improvement in the set and arrangement of the parts constituting the small plow, called a jointer, attached to the beam forward of the main plow, said jointer, as ordinarily used, making a small furrow in advance of the principal one, and operating in connection with the main plow, as in the subsoil arrangement.

As is well known the "jointer" is not employed for deep plowing, but to slice away a strip next to land, and turn it over to the right on the top of the furrow-slice, to be turned by the share and mold-board of the large plow immediately behind it.

In practice, however, it is difficult and often impossible to bury all the soil, &c., cut away by the jointer, under the main furrow-slice, and it is the object of my improvement to remedy this defect by so changing the set and inclination of the share and mold-board of the small plow as to turn over the preliminary slice toward the left or land-side, and separate, by the intervention of the mold-board, such slice from the main one as that is being turned over to the right.

For this purpose I employ a cutting-share, A, and a mold-board, B, somewhat resembling a left-hand plow divested of its land-side, and the upper edge of the share made thin and sharp.

The mold-board forms a part or continuation of the standard or shank shown at *b*, which connects it with the main plow, and the share is connected flush to the mold-board by countersunk headed bolts, as usual.

At or about the point where the standard merges in the mold-board, I form a twist in such a manner that the mold-board and share-faces will lie at such suitable angle with the ground surface as will best enable the cutting-edge *a* of the share to penetrate and slice the soil in the most easy and efficient manner.

I usually construct the combined standard and mold-board in cast-iron, and the cutting-share of plate steel, or of iron faced with steel; but for some soils it may be best to make the mold-board and share in one piece of steel plate, cut and swaged to the proper configuration.

In case of very rank surface growth, I sometimes increase virtually the depth of the mold-board, by the erection of a roller, as shown at D, provided with a bottom flange, said roller turning freely on a pivot bolted through its bottom tang to the back side of said mold-board, so that when not required it may be readily removed.

I find it best to continue the mold-board curve across the share, so that the left-hand furrow-slice may be promptly turned, and, in regard to the connection with the main plow, I will say here that I do not desire to be confined to connecting my improved jointer to the beam, for I am inclined to believe that mine may be more desirably connected near the shin, somewhat as shown by the red broken lines.

If connected at the point just named the cutting-share and mold-board might be more readily adjusted at any desired angle with the ground surface, and the projection of the jointer from the main plow sensibly diminished.

The operation is as follows:

As the plow moves along the share and mold-board A B cut and turn a small furrow-slice to the left, holding the separated herbage, stubble, &c., from falling on or mixing with that on the main furrow-slice that is being turned to the right or plowed land.

At the succeeding plowing the jointer furrow-slice will lie along the right edge of the main slice to be turned, and will be covered up at the bottom of the main furrow previously made.

The words "right and left" heretofore used apply only in the case of right-hand plows. In the case of a left-hand plow my jointer would, of course, be so relatively arranged as to turn the small furrow-slice to the right.

My invention differs from others used for the same purpose in this: That while it causes the surface growth to be completely and effectively covered up, the combined action of its share and mold-board A B tends to establish an equilibrium of lateral pressure, and greatly aids the ploughman in making a straight furrow of uniform depth.

Having thus described my invention,

What I claim as new, and desire to secure by Letters Patent, is this:

The combination with each other, and with a plow, of the jointer-share and mold-board A B, when employed either with or without the roller D, and constructed, arranged, and connected substantially as and for the purpose set forth.

Witnesses: JOHN M. LEONARD.

GEORGE I. PHELPS,  
G. S. WRIGHT.