

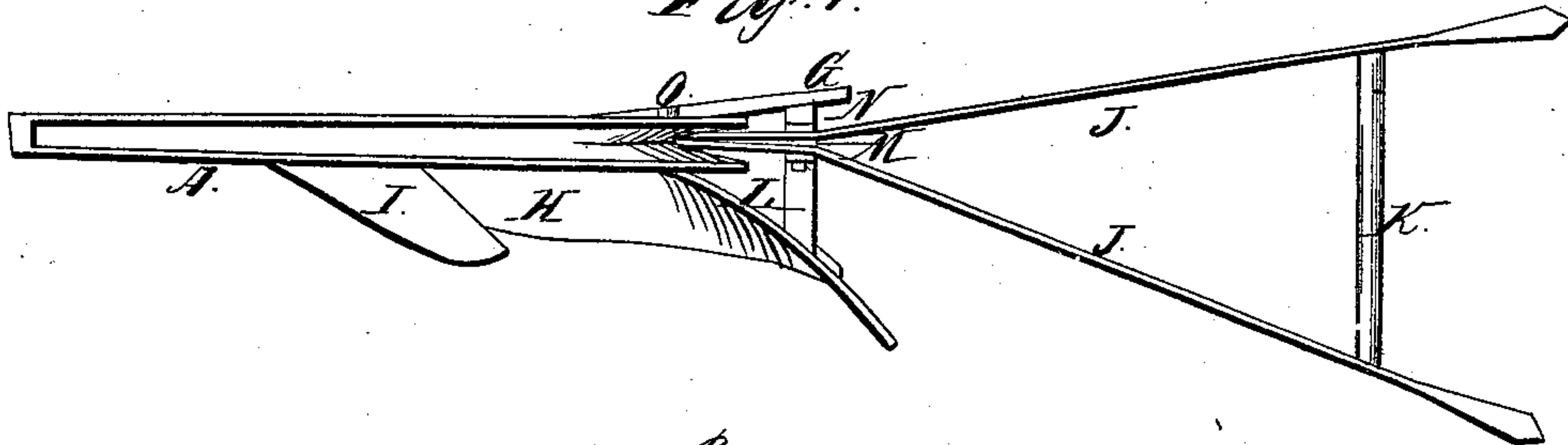
*A. Ball.*

*Plow.*

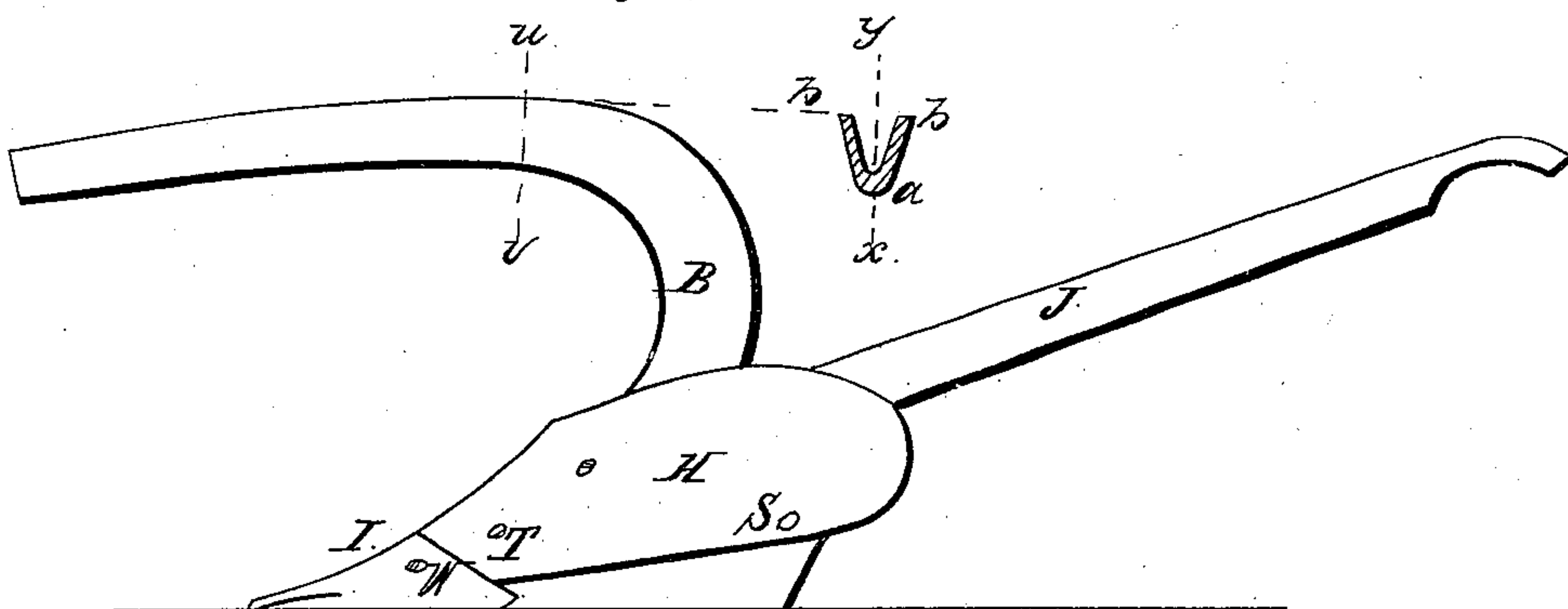
*N<sup>o</sup> 110,722.*

*Patented Jan. 3, 1871.*

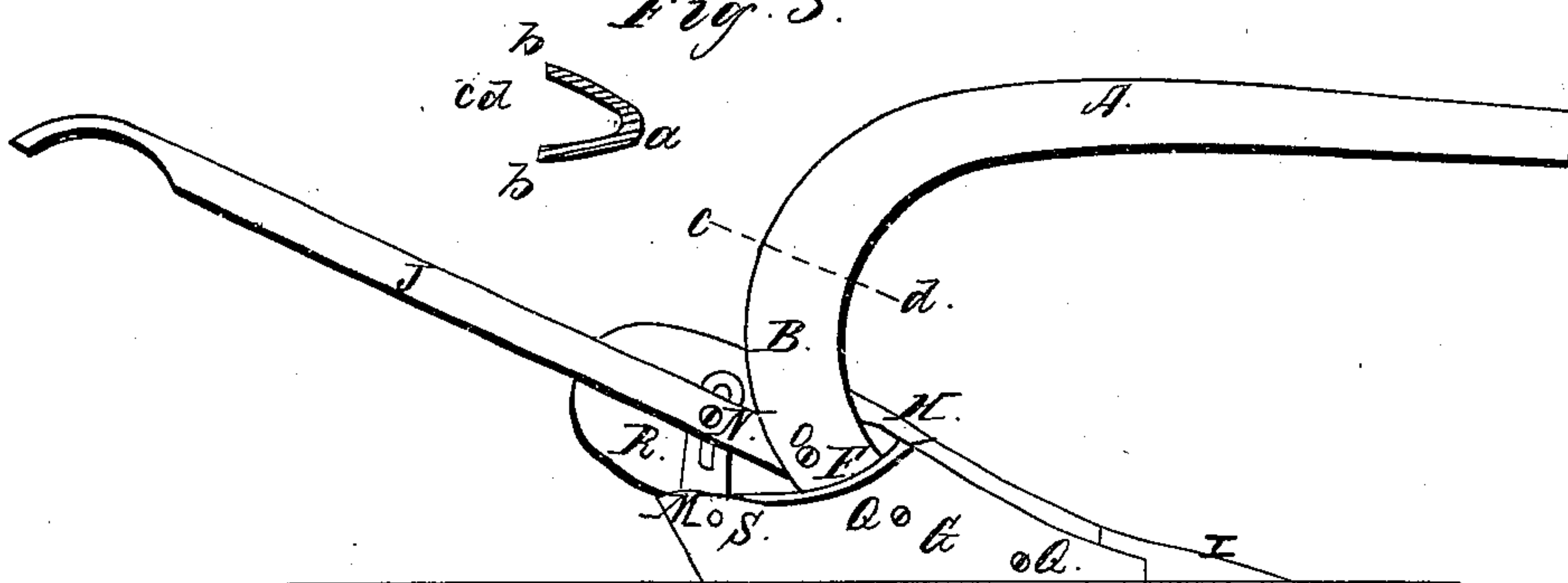
*Fig. 1.*



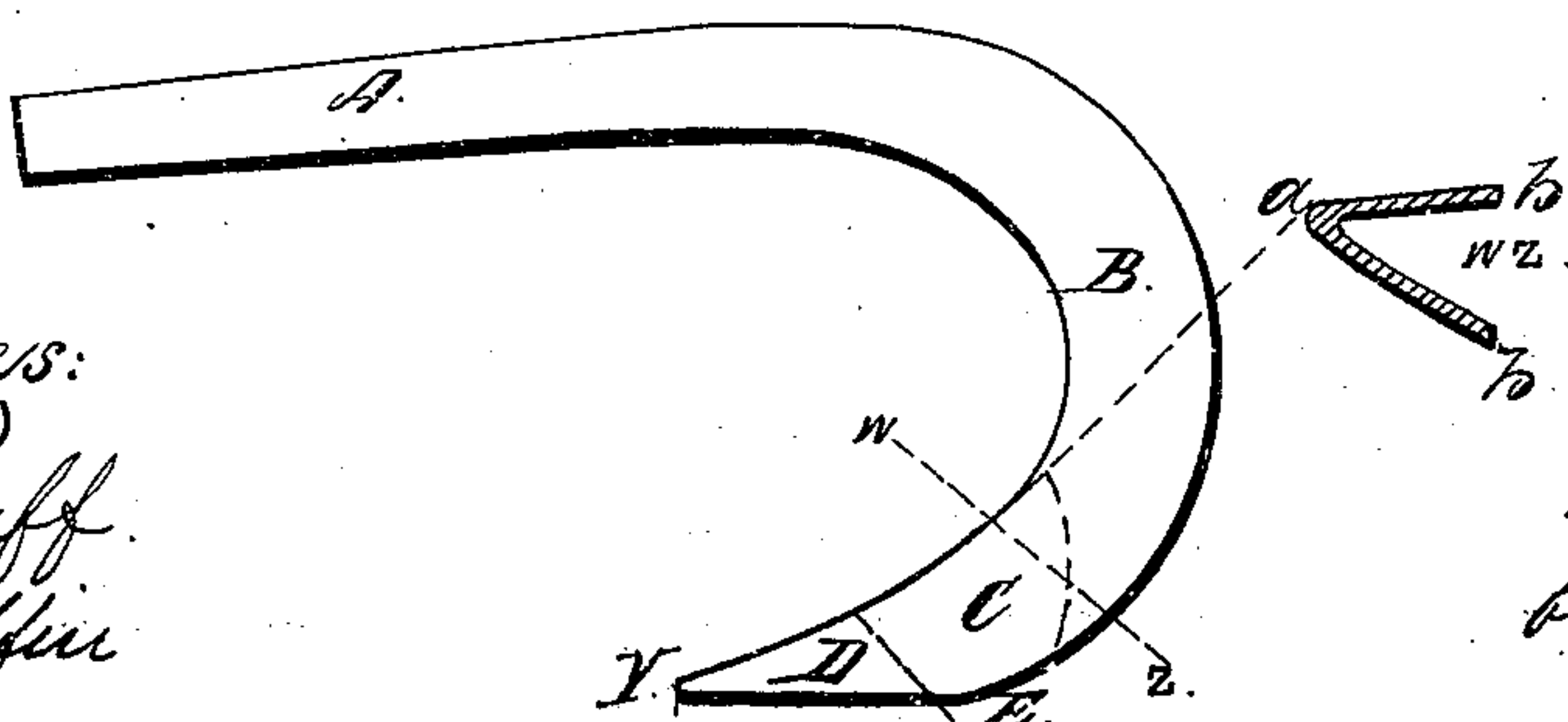
*Fig. 2.*



*Fig. 3.*



*Fig. 4.*



*Witnesses:*  
*Gross Raff.*  
*And, Choffin*

*Inventor:*  
*Albert Ball*  
*by Job Abbott*  
*Attorney*



# United States Patent Office.

ALBERT BALL, OF CANTON, OHIO.

Letters Patent No. 110,722, dated January 3, 1871; antedated December 29, 1870.

## IMPROVEMENT IN IRON PLOW-BEAMS.

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, ALBERT BALL, of Canton, Stark county, Ohio, have invented certain new and useful Improvements in Iron-Beam Plows, and that the following is a full, clear, and exact specification of my said invention.

### *Nature and Object of my Invention.*

My invention relates to the construction of a peculiarly-formed metal plow-beam, and to the combination of said beam with the mold-board, share, and land-side, said beam being of such a form that a transverse section of the same at any point shall be of a U-shape, and that the vertex of any such section shall be on the lower or anterior side of the beam and the open part on the upper or posterior side of said beam, and the lower end of said beam forming the standard for the plow, upon which the mold-board, share, and land-side are fairly seated, and to which they are secured by suitable clamping-bolts without the interposition of any intermediate supports between the beam and said parts. By this construction I obtain a combined beam and standard which can be made with much less material for the same strength than any of the old forms of plow-beams, as its form is such that its lower end is of just the proper shape to allow the mold-board, share, and land-side to be bolted directly to it, so that no extra material is required to form flanges for the attachment of any of said parts or to form intervening supports between the beam and said parts, while the arrangement of the material in the beam is such as to give it great stiffness against any strains which may be brought to bear on it.

### *Description of the Accompanying Drawing.*

Figure 1 is a plan of a plow embodying my invention.

Figure 2 is a side view of the same taken from the mold-board side.

Figure 3 is a side view of the same taken from the land-side.

Figure 4 is a side view of the plow-beam taken from the mold-board side.

### *General Description.*

The plow-beam is of the general form shown in fig. 4, from which it is seen that the beam rises backward from the base E so as to form a broad face-seat, D, for the share I, and an elongated face-seat, C, for the mold-board H, on one side of the beam, as indicated by dotted lines in fig. 4, and a full face-seat, F, for the land-side G, on the other side of the beam, as indicated in fig. 3.

Above these seats the beam gradually curves upward and forward to form the standard portion B,

and then extends forward as shown to form the forward portion A, which is the beam proper.

The transverse section of the beam at any point is of a U-form, as shown in plan in fig. 1 and by detached sections on the lines *u v*, *c d*, and *w z*, in figs. 2, 3, and 4; and it will be seen that the form of section is slightly varied at different points on the beam, and that the cross-section gradually diminishes in size from the base E to the end of the beam A, the sections of the lower end of the beam having a sharp vertex, as shown by the section *b a b*, on the line *w z*, in fig. 4, so as to obtain the proper seats for the mold-board, share, and land-side, and the sections on the standard portion B and beam portion A having a more rounded vertex, as shown by the sections *b a b*, on the lines *c d* and *u v*, in figs. 3 and 2, so as to obtain the proper lateral stiffness to resist the side strains from the draft. It is also seen that in any transverse section of the beam portion A, as, for example, the section *b a b*, on the line *u v*, in fig. 2, the vertex *a* of said section is on the lower side and the open part *b b* is on the upper side of said beam, and that in any transverse section of the standard portion B, as, for example, the section *b a b*, on the line *c d*, in fig. 3, or the section *b a b*, on the line *w z*, in fig. 4, the vertex *a* is on the anterior side and the open part is on the posterior side of the beam, so that any transverse section of the beam is of a U-form, and has its vertex on the lower or anterior side of the beam and its open part on the upper or posterior side of the beam.

The mold-board H is laid on its seat C, on the face of the beam, and is secured in that position by the bolts T T, which pass through holes in the mold-board and side of the beam.

The land-side G is laid and secured on its seat F, on the face of the beam, by the bolts Q Q, in a similar manner, and the share I fits down on its seat D, on the face of the beam, in front of the mold-board and land-side, and has a square offset on its under side which abuts against the point Y of the beam, the share being held in this position by the bolt W, which passes through a hole in the share and a corresponding hole in the beam.

The brace-bar L is secured between the mold-board H and land-side G by the rivets S S, and serves to prevent the mold-board and land-side from springing together at their rear ends.

The handle-standard M is secured on the brace-bar L, and the handles J J are united at their lower ends, and are pivoted by a bolt, O, to one side of the beam, from which they extend back on each side of the standard M, as shown in fig. 1, and are united near their upper ends by the cross-bar K.

The bolt N passes through the handles J J, and



through the slot R in the standard M, so that said handles can be clamped to the handle-standard at any desired height, as is readily seen.

From the foregoing description of the construction of my improved beam and its attachments, it is evident to any mechanic that the beam can be made of cast or malleable iron, or of wrought-iron or steel, as may be desired, and that the mold-board, share, and land-side can be made of cast-iron or of steel, or one or two of them may be made of cast-iron and the others of steel, the form of the parts being the same in either case.

I am aware that metal plow-beams have been before constructed of a U-shaped section, as shown in E. Ball, Jr.'s, patents of February 14, 1865, and June 11, 1867, but in those constructions the vertex and open parts of the transverse section were on the furrow side and land-side of the beam respectively instead of being on the lower or anterior side and upper or posterior side of the beam; hence there was no face of the beam to which the land-side could be attached, and it was necessary to provide an additional flange at the rear and lower part of the beam in order to obtain a proper attachment for the land-side, whereas, in my improved form of beam, no such additional flange is necessary, as the side of the beam is in just the proper position to allow the land-side to be bolted directly to it. I am also aware that wrought-iron plow-beams have been constructed of a U-shaped section, and with the vertex and open parts of the sections on the upper or posterior side and the lower or anterior side of the beam, respectively, as shown

in E. Peck's patent of September 15, 1868; but that form of beam is precisely the reverse of my improved beam, and has no faces to which either the mold-board, share, or land-side can be attached, so that it was necessary to provide intervening supports to unite the beam to the mold-board and land-side, whereas in my improved form of beam no such supports are necessary, as the beam is perfectly adapted to serve as the direct surface of attachment for each and all of the parts.

I disclaim both of these old and different forms of metal plow-beam, and confining myself to the particular plan of construction herein specified,

What I claim as new and of my invention, and desire to secure by Letters Patent, is—

The metal plow-beam A B, constructed of such form that a transverse section of the same at any point shall be of a U-shape, and that the vertex of any such section shall be on the lower or anterior side of the beam and its open part on the upper or posterior side of the beam, the lower end of said beam having the faces C, D, and E, on which the mold-board, share, and land-side are placed, and upon which they are secured by bolts passing through the sides of the beam, substantially as is herein specified.

As evidence that I claim the foregoing I have hereunto set my hand, in the presence of two witnesses, this 12th day of January, A. D. 1870.

ALBERT BALL.

Witnesses:

L. D. BALL,  
JOB ABBOTT.