

(Model.)

G. E. SMITH.
Plow.

3 Sheets—Sheet 1.

No. 236,463.

Patented Jan. 11, 1881.

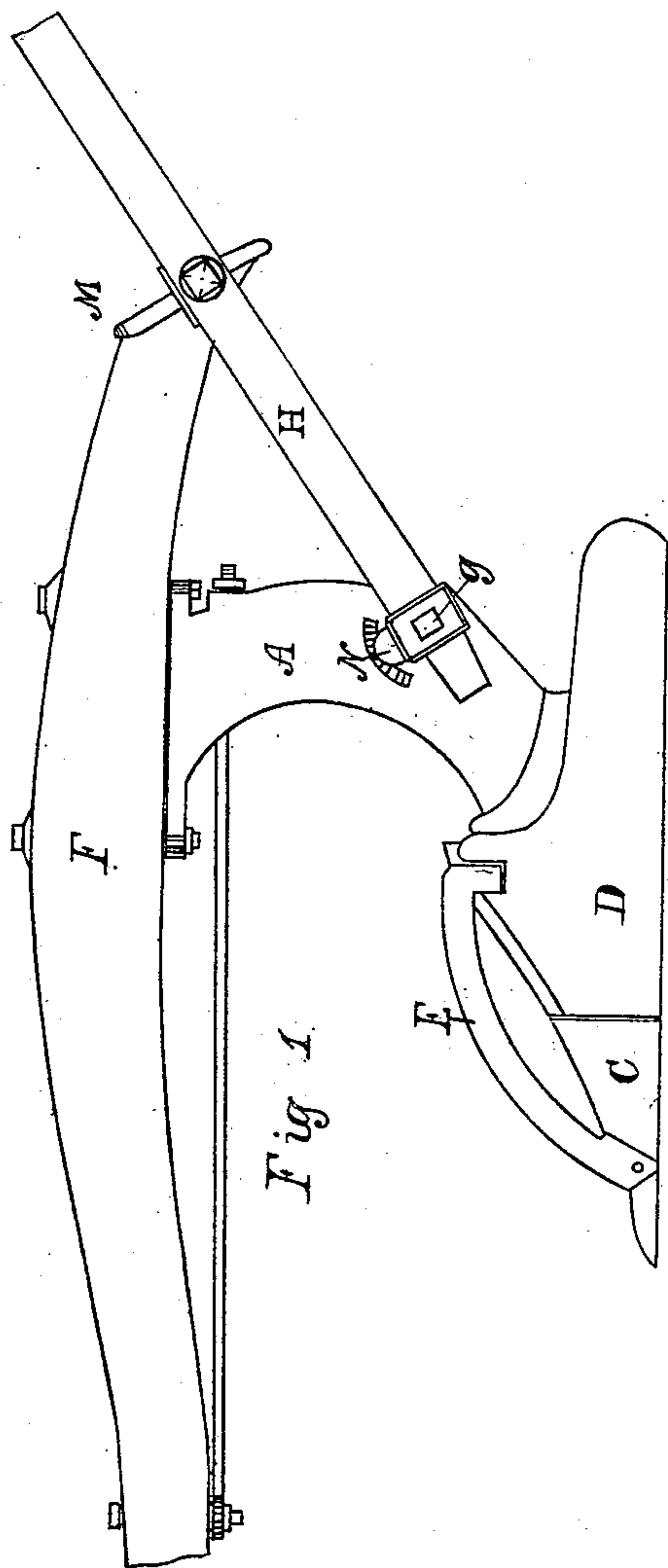


Fig 1

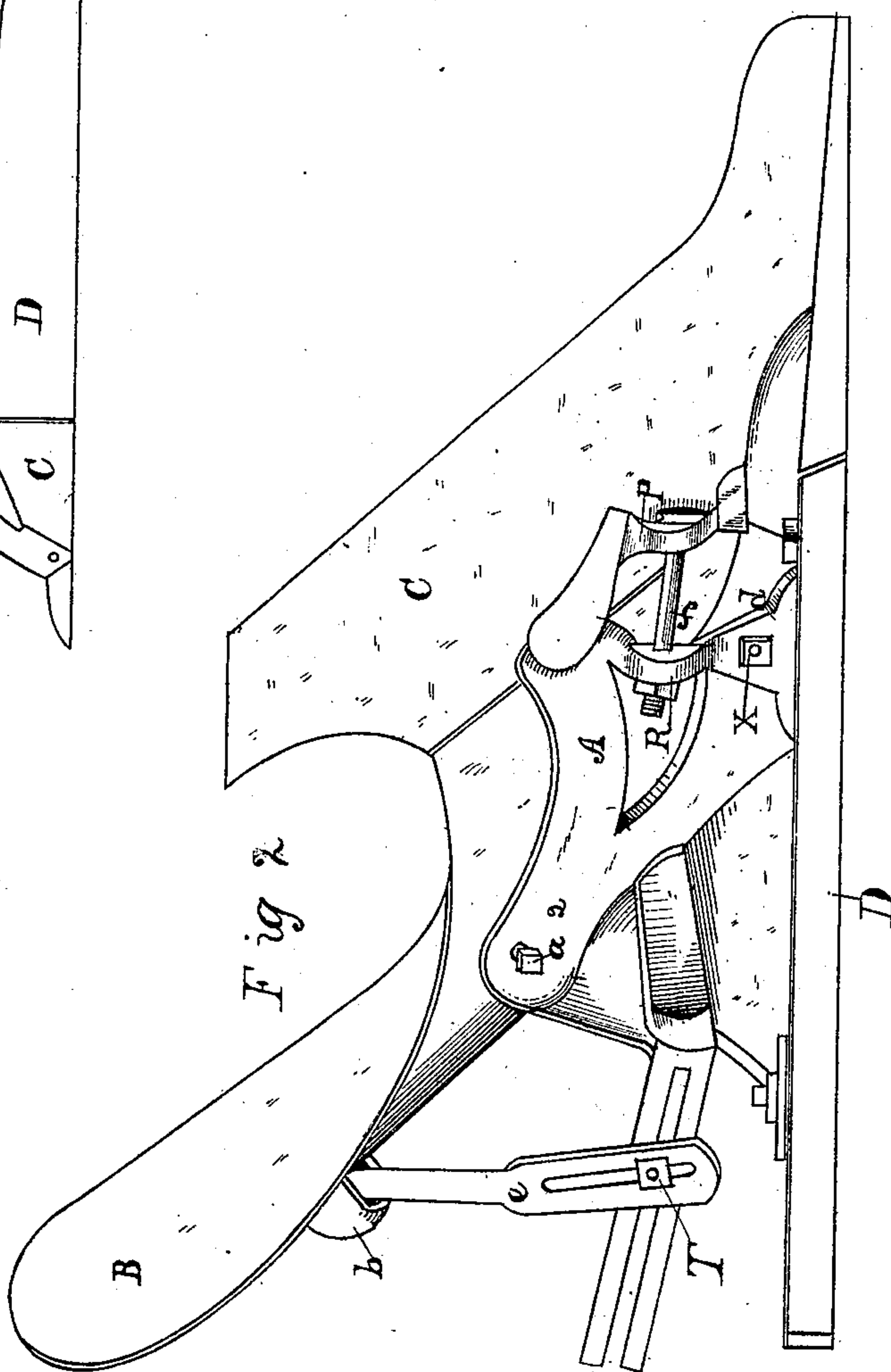


Fig 2

Witnesses:
James Chandler
W. Blair Jones

Inventor:
George E. Smith

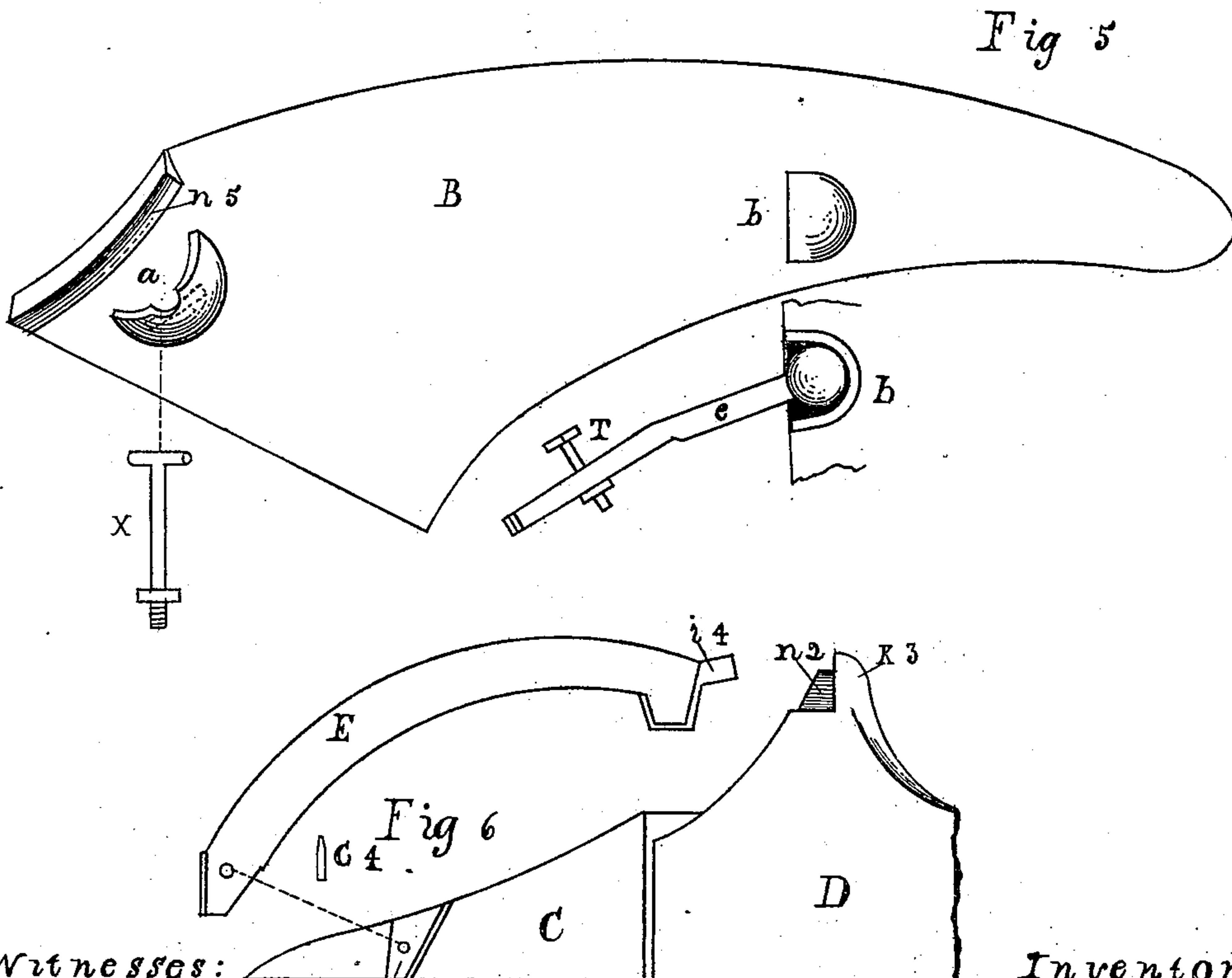
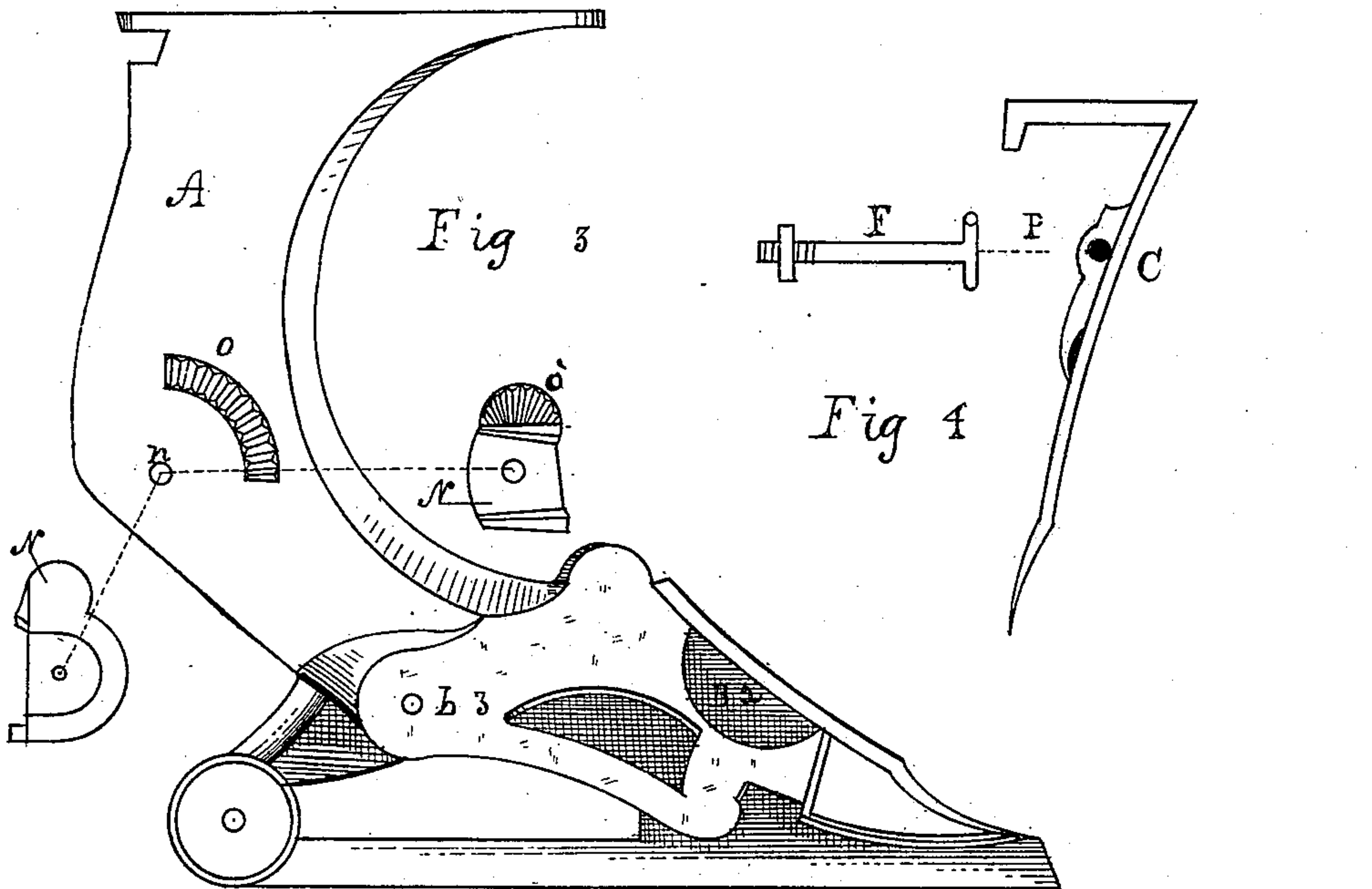
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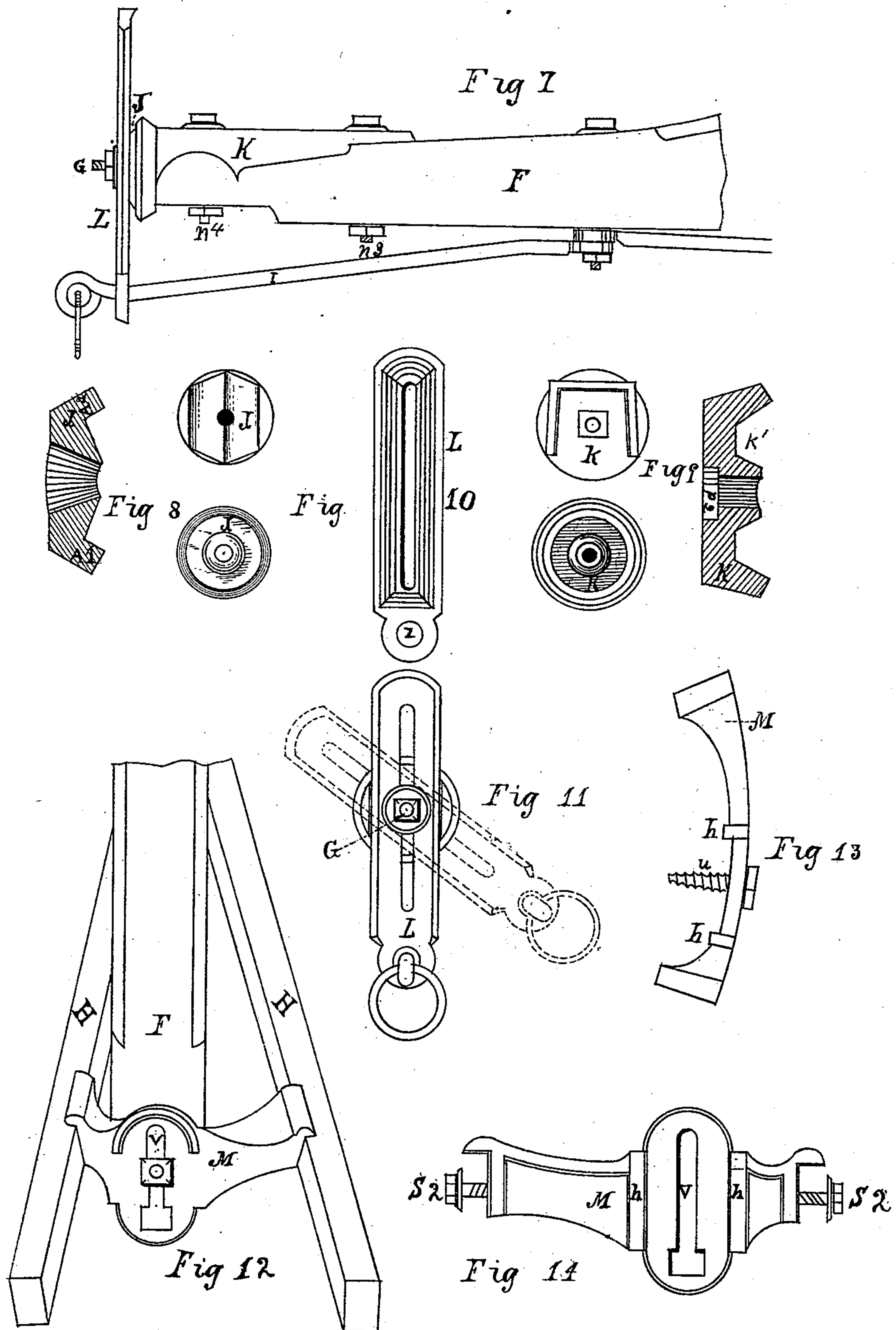
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3 Sheets—Sheet 3.

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No. 236,463.

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Witnesses:
James S. Chandler
R. Blair Jones

Inventor:
Geo. E. Smith

UNITED STATES PATENT OFFICE.

GEORGE E. SMITH, OF RACINE, WISCONSIN, ASSIGNOR OF FOUR-FIFTHS TO
WILLIAM S. BUFFHAM AND THOMAS DICKENSON, OF SAME PLACE.

PLOW.

SPECIFICATION forming part of Letters Patent No. 236,463, dated January 11, 1881.

Application filed September 21, 1880. (Model.)

To all whom it may concern:

Be it known that I, GEORGE E. SMITH, of Racine, in the county of Racine and State of Wisconsin, have invented new and useful Improvements in the Construction of Plows, of which the following is a specification, reference being had to the accompanying drawings, in which similar letters of reference indicate like parts.

Figure 1 is a side elevation with only portion of beam and handles shown. Fig. 2 is a bottom view of plow. Fig. 3 is a detailed view of standard and lower handle-clips; Fig. 4, a detailed view of share and T-bolt fastening; Fig. 5, a detailed view of mold-board, T-bolt fastening, and back-brace connection; Fig. 6, a detailed view of share, landside, and cutter; Fig. 7, a section of plow-beam with plow-head attached; Fig. 8, a detailed view of male friction-clutch of plow-head; Fig. 9, a detailed view of plow-head body; Fig. 10, a shifting (or sliding) bar of plow-head; Fig. 11, front view of plow-head; Fig. 12, a sectional view of plow-handle connections; Fig. 13, a top view of lower handle-strut; Fig. 14, a back view of same.

This invention relates to the construction of plows which are cast with a chill; and the improvements consist in the several parts and combinations of the parts, which are hereinafter described and specifically claimed.

In casting with a chill it is found to be impossible to keep the castings of exact uniform shape, owing to shrinkage and warpage. It is also economically impossible to work upon chilled cast-iron, as it cannot be filed or chipped. For these reasons I have made certain modifications in construction, by which I am enabled to produce a plow in which all the parts will assemble and good adjustments be made, even though the parts are not uniform. I also secure a better chilled surface than usual by means of certain forms given to the bosses or projections on the castings.

Referring to the drawings, A is the standard of the plow. This standard is of cast metal, and is somewhat peculiar in construction, as hereinafter described.

B is the mold-board, which is cast with a chill, and has bosses or projections cast thereon, as will be described.

C is the share, D the landside, E the cutter, and F the beam, of the plow. The other parts designated by letters of reference will be hereinafter referred to.

The standard or frog A conforms, in a general way, to the shape of the inner surfaces of the mold-board, landside, and share. A recess, B², of circular form, is cast in the front of the standard, as shown in Fig. 3.

Segments O, having teeth or notches, are raised on each side of the upright portion of the standard, so that the handles may be attached thereto by means of clips N. These clips embrace the ends of the handles, and are secured to the standard by means of a bolt, which is passed through the clips, the handles, and a hole, n, in the standard. Corrugations or teeth on the clips rest in the teeth in the segments. By this means the handles may be made to turn about the hole n when the bolt is loosened, but will be held from turning when the nut on the bolt is tightened and the teeth on the clips and standard are made to interlock.

The handles H, at a point above the end clips, are secured to the lower handle-strut, M, by screws S². The strut M has projections h, which embrace the sides of the plow-beam, and also has a slot, V, of the form shown in Figs. 12 and 14. A screw-bolt, u, passes through this slot into the end of the beam F, as shown in Fig. 12. The end of the beam and the inside of the strut are arcs of a circle struck from hole n in the plow-standard.

To raise or lower the plow-handles the screws g and u are loosened and the handles placed in the desired position, when, by tightening the screws, the handles will be firmly supported at the ends and at the strut. In removing the handles from the plow for shipment the strut remains attached to them, and is removed from the beam by passing the head of bolt u through the enlargement of slot V.

The mold-board B has two sockets or cups cast on its back or inside, as shown at a b. These sockets for retaining bolt and brace are cast with cores, so that there will be no large accumulation of metal at any part of the mold-board, which would injure the chill. The cup a is substantially semi-spherical, and has a recess inside, as shown in dotted line. The

T-head of bolt x is passed sidewise into this cup, and when the bolt is turned so as to point downward from the mold-board the T-head will be locked in the cup or socket. The landside-edge of the mold-board has a projection, n^5 , which extends over the edge of the short landside of the standard. The cup b forms a socket for the ball end of brace e , and when the brace is in its adjusted position the socket may extend slightly over the swell of the ball, so as to retain it in position. The mold-board is adjusted to the standard in such a manner that the semi-spherical socket a extends into the recess B^2 of the standard. The T-bolt extends down through the recess, and is held by a nut under the lug d of the standard-landside. The brace e has its ball end socketed in cup b , and the other end of this brace, which is slotted, is held in a slotted extension of the standard by a screw-bolt, T . By this construction and arrangement the mold-board, although it may warp considerably, can be readily adjusted, the T-bolt holding the front of the mold-board firmly while the brace e adjusts sufficiently to compensate for warpage. The cup-sockets on the mold-board are better than a system of dovetail fastenings which have heretofore been used, for the reason that these are not subject to the wedging strain of a dovetail connection, which has a tendency to split the mold-board.

Solid lugs have been cast upon mold-boards; but this makes an accumulation of metal which will not chill uniformly, so that a soft spot is left on the face of the mold-board. Such lugs are also liable to break off at the base, owing to unequal shrinkage. A screw, a^2 , in the heel of the standard forms a support for the mold-board, and is adjustable out or in to compensate for variations in the form of the mold-board.

The share O has a boss, P , cast upon its inner side, which receives the T-head of the bolt f . This bolt extends back through a hole in projection R of the standard, and is secured by a nut. The boss P is of slight elevation, and the head of the bolt is partially embedded in the body of the share by means of a suitable recess formed therein. Share O has the usual mortise and lip to hold it on the nose of the standard. The boss P is made as light as may be consistent with strength, and has the same advantages with respect to casting with a chill that have been hereinbefore described as resulting from the form of bosses a b on the mold-board. The T-headed bolt will lie closer to the under side of share and standard than a square-headed bolt, such as has been heretofore used with a separate lug riveted to the share. I am, by this construction, enabled to place the securing-bolt relatively higher from the ground, which is very desirable, as it avoids clogging.

The cutter E has a dovetail projection at the front end. This projection enters dovetail

groove C^2 in the side of the share, and is secured by pin C^4 passing through suitable perforations. The rear end of the cutter is beveled off at one side to fit the scarf n^2 of the landside, and the projection i^4 passes behind the projection K^3 of the landside.

The clevis of my plow is constructed to admit of any amount of variation in adjustment, as follows: K is the cap-piece which covers the front part of the plow-beam, and is secured thereto by bolts n^3 n^4 or otherwise. The portion of this cap which extends down in front of the beam has a conical recess, K' , in its face, in the center of which is a conical projection. The plate J is made with conical sides A' A^2 and a central conical recess. This plate J fits into the conical recess K' of plate K . A transverse recess in the face of the plate J receives the slotted sliding bar L , which is preferably made with a beveled depression in its rear side to fit the beveled-faced recess in plate J . All the parts of the clevis are secured together by bolt G , which has its head in recess p^2 of plate K . The draft-rod I passes through a ring or bar, L .

To adjust the clevis so that the draft-rod may be at any desired height and inclination the nut on bolt G is loosened. The sliding bar L is then moved up or down with reference to plate J , and plate J is turned on its center in the recess in plate K . By tightening the nut all the parts may be firmly secured in their new position. By this conical bearing on the clutch portions of the clevis I secure as fine an adjustment as may be desired, together with a firm hold when the parts are clamped.

Heretofore clevises have been made having a side adjustment by means of a bar turning on a plate having projecting teeth, so that the bar must turn the distance between the teeth. Another adjustment has been by means of a pin or pins passing into holes in the plate, so that the adjustment must be equal to the distance between the holes.

So far as I am aware, no clevis has been made with a friction-clutch which will permit of any required nice adjustment, as does my clevis.

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

1. The standard having toothed segment O , combined with handle H and clip N , provided with toothed lips and retaining-bolt g , as set forth.

2. The standard having toothed segments O , the handles H , clips N , and bolts, as described, in combination with the slotted strut M , its retaining-screw, and the plow-beam, as set forth.

3. The chilled cast-metal mold-board having the semi-spherical hollow boss a cast thereon near the landside end of the mold-board, as set forth.

4. The combination of the mold-board hav-

ing hemispherical hollow boss *a* cast thereon with the standard having recess, as B^2 , to receive the boss on mold-board, and lug *d*, to retain the bolt, and the connecting T-bolt *x*, extending from the boss to the lug, as set forth.

5 5. The chilled mold-board B, having the semi-spherical boss *a* and the semi spherical socket or cup *b* cast thereon, substantially as shown and described, and for the purpose set
10 forth.

6. The combination, with the beam and draft-rod, of the clevis described, consisting of a back plate having conical seat, clutch-plate having conical projections, and the sliding bar, the parts being held in frictional contact by a
15 screw-bolt, as set forth.

GEORGE E. SMITH.

In presence of—

ERASTUS O. PECK,

JOHN BOWEN.