

No. 639,617.

Patented Dec. 19, 1899.

V. ROYLE.  
SHOOT PLANE.

(Application filed Dec. 11, 1896.)

(No Model.)

2 Sheets—Sheet 1.

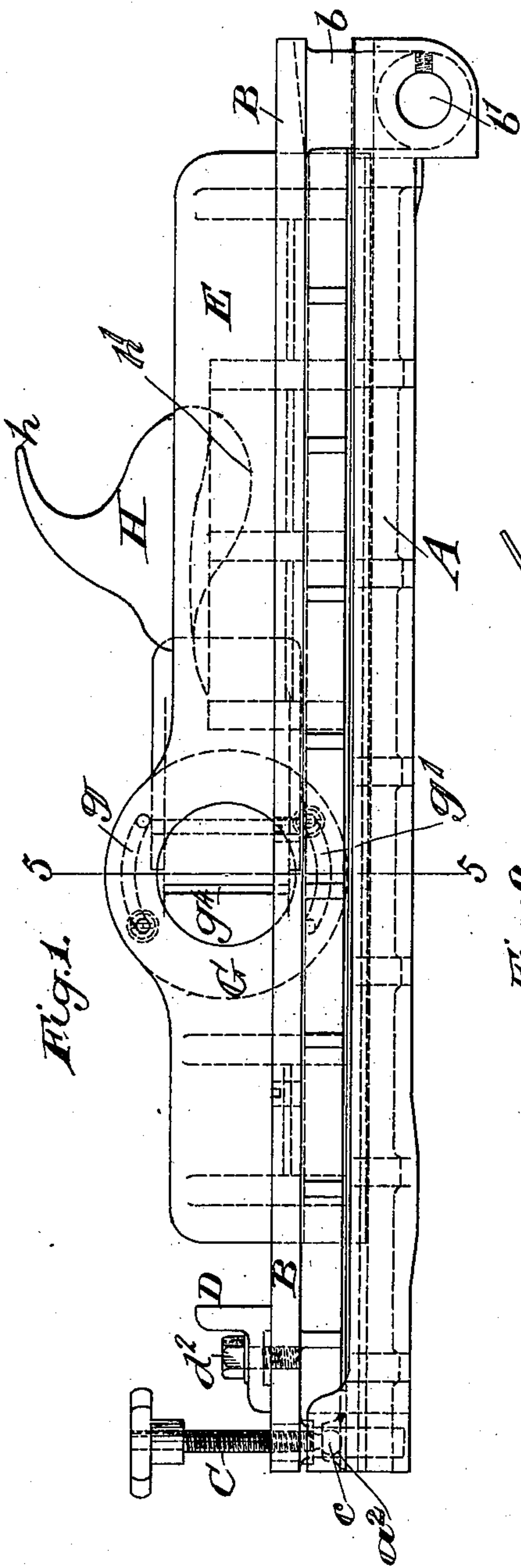


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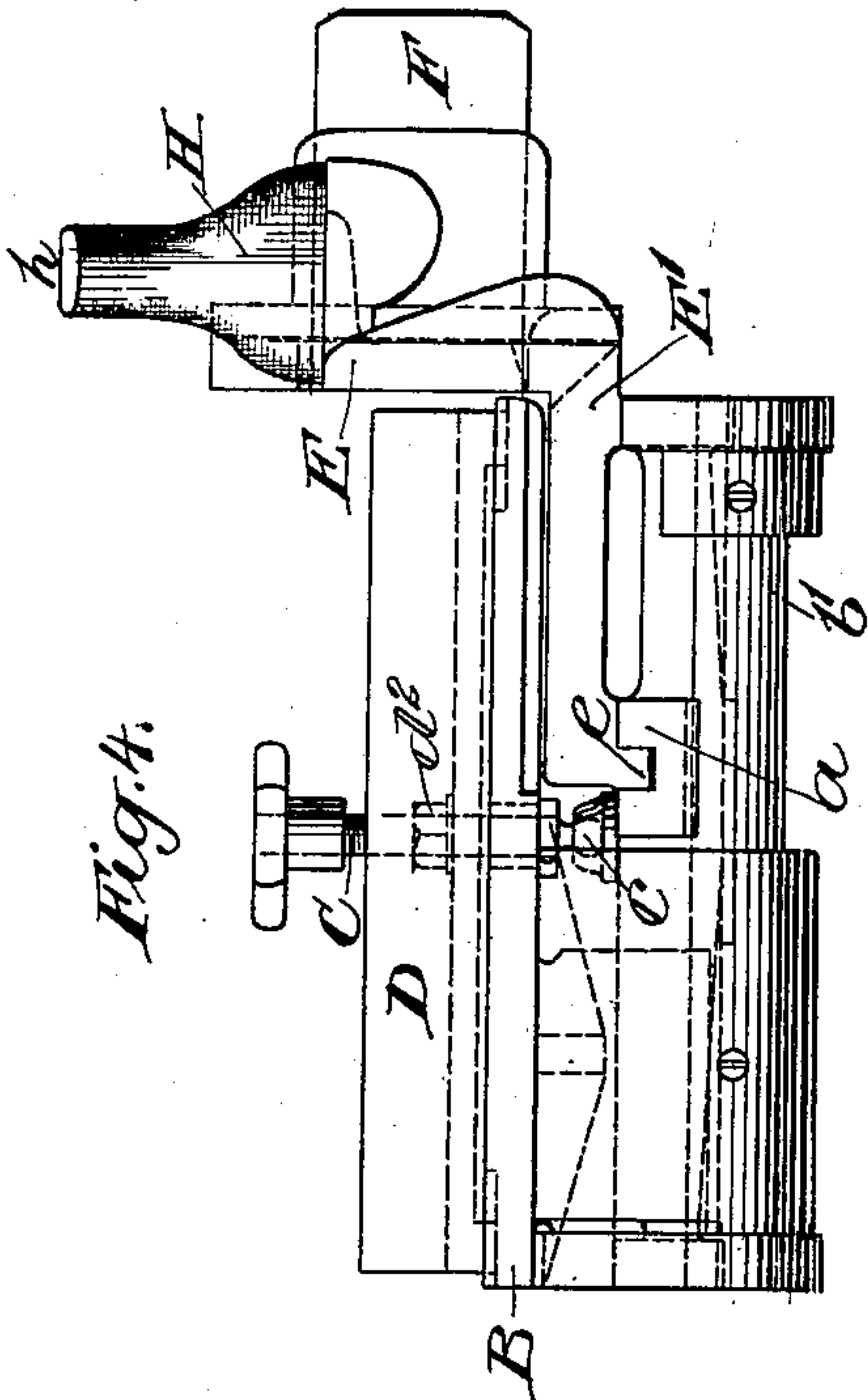


Fig. 4.

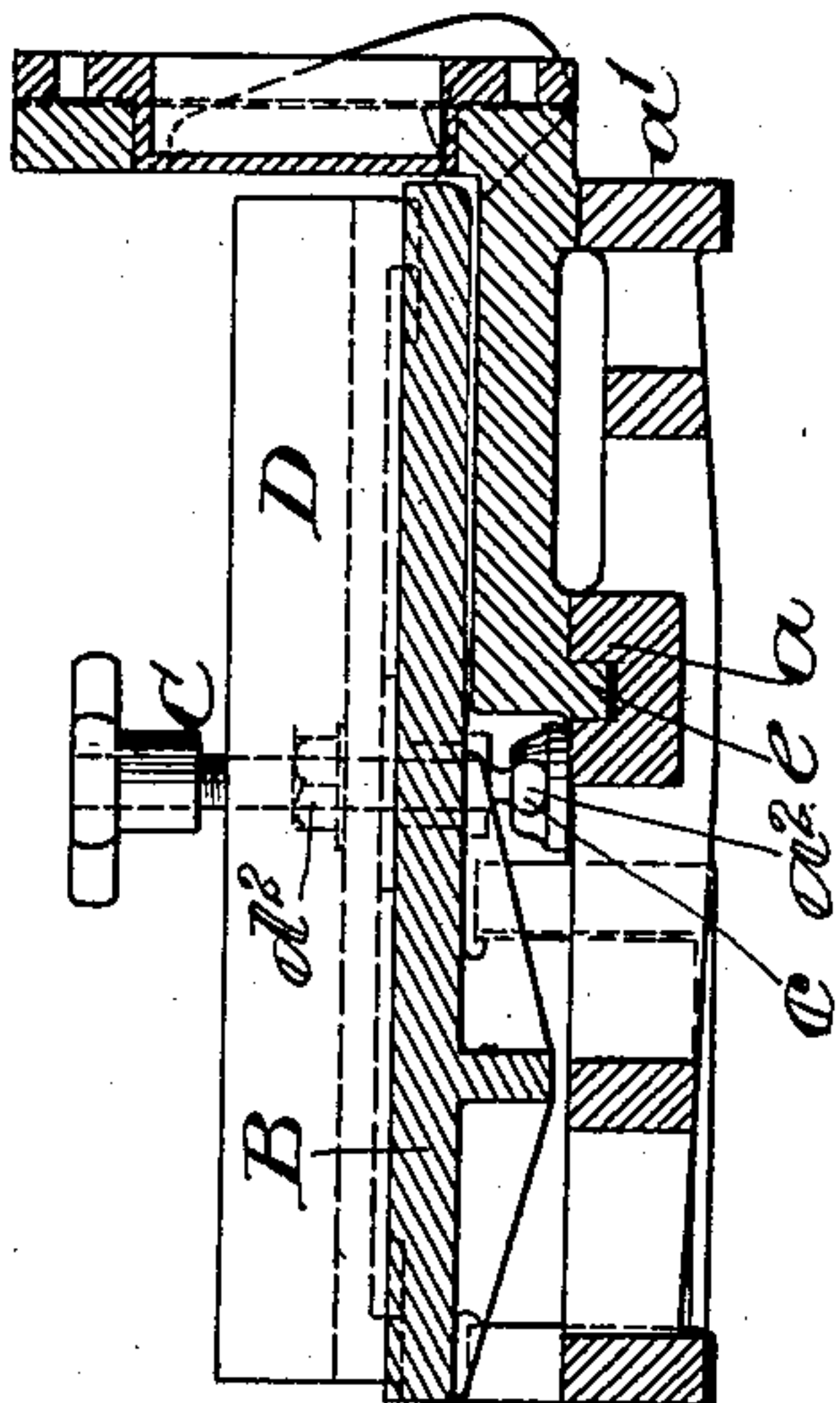


Fig. 5.

Witnesses  
Edward Vieser  
George Barry Jr.

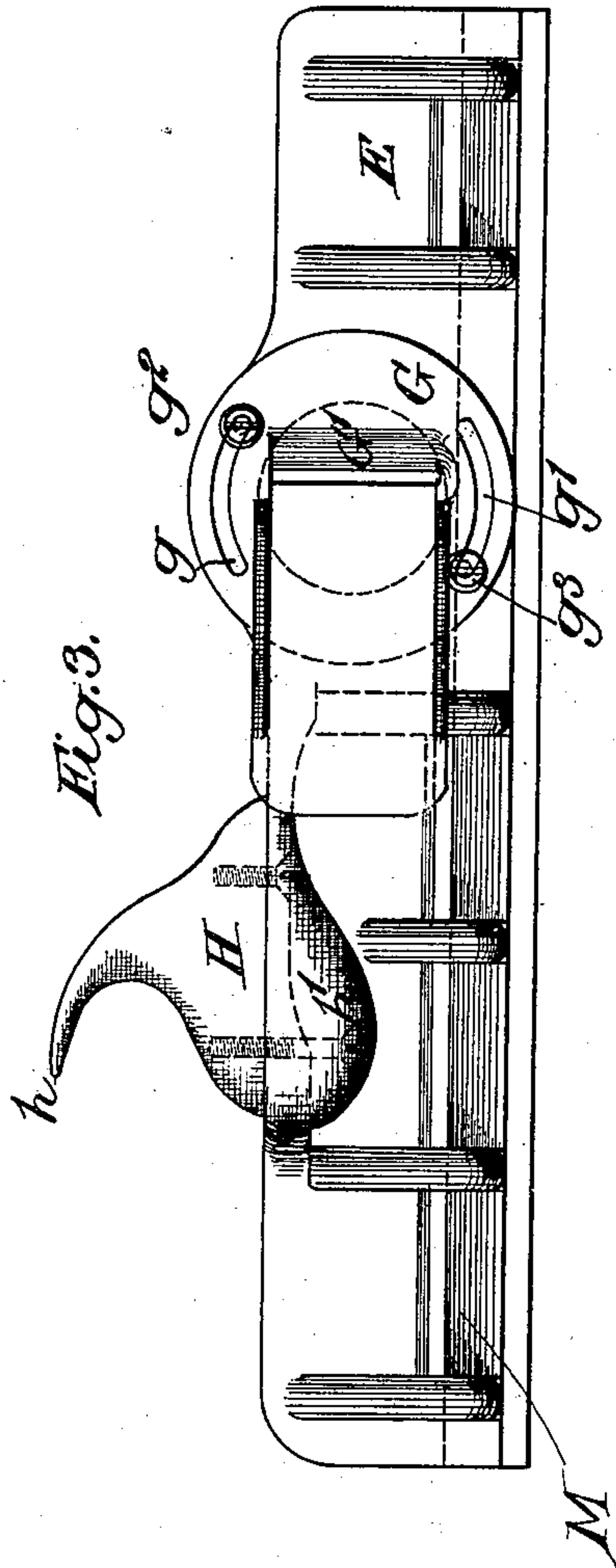


Fig. 3.

Inventor  
Vernon Royle  
by attorneys  
Brown & Edward



# UNITED STATES PATENT OFFICE.

VERNON ROYLE, OF PATERSON, NEW JERSEY.

## SHOOT-PLANE.

SPECIFICATION forming part of Letters Patent No. 639,617, dated December 19, 1899.

Application filed December 11, 1896. Serial No. 615,280. (No model.)

*To all whom it may concern:*

Be it known that I, VERNON ROYLE, of Paterson, in the county of Passaic and State of New Jersey, have invented a new and useful Improvement in Shoot-Planes, of which the following is a specification.

My invention relates to an improvement in shoot-planes in which provision is made for presenting the edge of the plane-knife at different angles to the work which it engages.

A practical embodiment of my invention is represented in the accompanying drawings, in which—

Figure 1 is a view of the plane in side elevation looking toward the side on which the material to be planed is presented to the cutting edge of the knife. Fig. 2 is a top plan view. Fig. 3 is a view in side elevation looking toward the opposite side of the plane from that presented in Fig. 1. Fig. 4 is an end view looking toward the end from which the plane begins its cutting or advance stroke, and Fig. 5 is a transverse section through line 5 5 of Fig. 1.

My invention is particularly directed to means for supporting and guiding the plane to prevent fouling, to means for interchanging knives, to means for changing the position of the edge of the material to be operated upon relatively to the cutting edge of the knife, either by changing the angle of the work-support with respect to the path of the plane or by changing the angle of the cutting edge of the knife relatively to the position of the work, or both, and the providing of a handle which will permit the plane to be firmly grasped and operated without cramping the hand of the operator.

The plate or board along which the plane travels is denoted by A, and it is provided with a grooved way  $a$  for the reception of a depending tongue on the bottom of the plane and with a smooth-faced way  $a'$ , also forming a support for the bottom of the plane and located in a position beneath the path of the cutting-blade of the plane. To the base-plate or board A is hinged the work-supporting table B, in the present instance by means of a depending lug or socket-piece  $b$ , which embraces a pivotal pin or shaft  $b'$ , mounted in suitable bearings in the table at the end of the board or base-plate A.

The work-supporting table B rests normally on and parallel with the base-plate A and is provided at its free end with an adjusting-screw C, which has a screw-threaded engagement with the end of the table, the free end  $c$  of the screw bearing in a socket  $a^2$  in the face of the base-plate A, so that by turning the screw C the free end of the work-support B will be lifted from the base-plate A, causing it to assume various angles relative to the base-plate within the limits of the adjusting-screw, as may be desired.

The work-supporting table B is provided near its free end with a stop D, the face of which extends across the surface of the table B at right angles to the path in which the plane moves along the edge of the table, the said stop being held truly in position by means of guide-pins  $d$   $d'$  at its opposite ends and provided with a set-screw  $d^2$ , which extends through an elongated slot  $d^3$  in the stop D and into the table B for locking the stop D in the desired adjustment toward and away from the path in which the plane travels.

The plane consists of an upright portion E and a base portion E', offset in the present instance at right angles to the upright and extending from the upright in a direction opposed to that in which the work is fed to the plane, thereby leaving a clearance for the chips and protecting the way from becoming fouled by them. The portion E' is provided with a depending rib or tongue  $e$ , adapted to loosely fit the groove in the bed-plate bearing  $a$  to guide the plane in its movement along the support. The upright portion E carries the cutting-knife with its edge standing in a plane at right angles to the work-support B. The knife F is held in a disk G, which is made removable from the body of the plane and which is permitted a limited rocking movement with respect to the upright E. This is provided for by forming elongated curved slots  $g$   $g'$  through the disk G and inserting set-screws  $g^2$   $g^3$  through the slots  $g$   $g'$ , respectively, into the upright E. A central or hub portion G' of the disk G extends through a circular opening in the upright E and is provided with a suitable opening  $g^4$  in the upright for the projection of the edge of the knife.

By rocking the disk G, and with it the knife



F, after the set-screws  $g^2$   $g^3$  have been loosened, and then setting the screws again to clamp the knife in position, its edge may be held at any desired angle in a vertical plane with respect to the position which the material to be operated upon occupies when resting upon the work-support B. This angular adjustment of the cutting edge of the knife, as well as the angular adjustment of the work-support and the material resting thereon, renders it feasible to so set the work that the edge of the cutting-blade will begin to cut near one corner and will gradually bring successive portions of its cutting edge into action as it travels along the edge of the work-table until the cutting is completed by the opposite corner of the edge of the knife, thereby obviating the wearing away or dulling of the knife-edge at one end more than at another. At the same time by setting the knife-edge at a suitable angle with respect to the work it may be caused to make a shearing cut as it travels along the edge of the material, the acuteness of the angle with which it engages the work being regulated to suit the hardness of the material operated upon. The removable feature of the disk and knife therein renders it feasible to keep at hand several disks with knives of the same or different forms set therein, which may be interchanged with celerity by simply removing the set-screws  $g^2$   $g^3$ .

The handle for operating the plane is denoted by H as a whole. It has a usual horn  $h$  for the purpose of engaging the hand between the thumb and forefinger; but its novelty lies in the bulge portion  $h'$ , which extends outwardly from the upright E in curved form, downwardly, and then upwardly toward the face of the upright E, as clearly indicated in Figs. 3, 4, and 5. This affords the palm

of the hand an easy smooth rest and affords the fingers and hand a gradual curve over and underneath the handle, enabling the hand to firmly grasp the handle, so as to carry the plane forward with a steady movement without cramping the hand.

Along the body of the plane, at the base of the upright portion of the body, there is formed a series of openings M, extending from its face to its back for the escape of dust and chips which fall from the edge of the material being operated upon.

What I claim is—

1. A shoot-plane comprising a base-plate having bearings for supporting the plane, a work-support located above the bearings on the base-plate, and a plane having its base extended bodily in a direction away from its working face between the base-plate and work-support, the said extended base of the plane and the base-plate being provided the one with a tongue and the other with a groove for holding the plane in position on the base-plate, substantially as set forth.

2. A shoot-plane provided with a handle having the usual horn for engaging the hand, the thumb and forefinger and a bulge at its side shaped to cause the fingers of the hand to follow a curve downwardly and outwardly from the side of the plane and thence inwardly and upwardly toward the side of the plane, substantially as set forth.

3. A shoot-plane, provided with an opening extending longitudinally along its body and from its face to its back for the clearance of dust and chips, substantially as set forth.

VERNON ROYLE.

Witnesses:

JOHN ROYLE, Jr.,  
SIDNEY FARRAR.