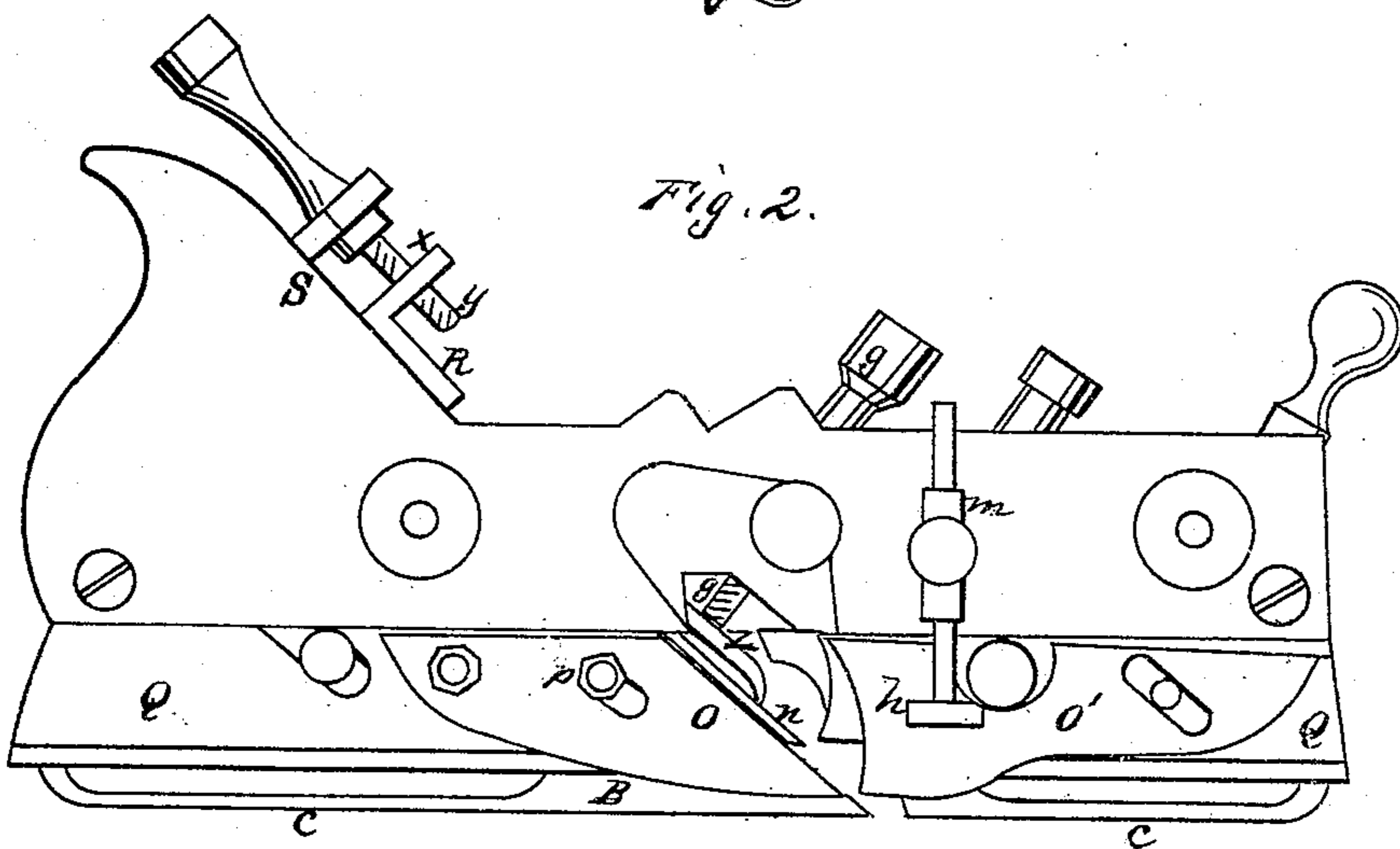
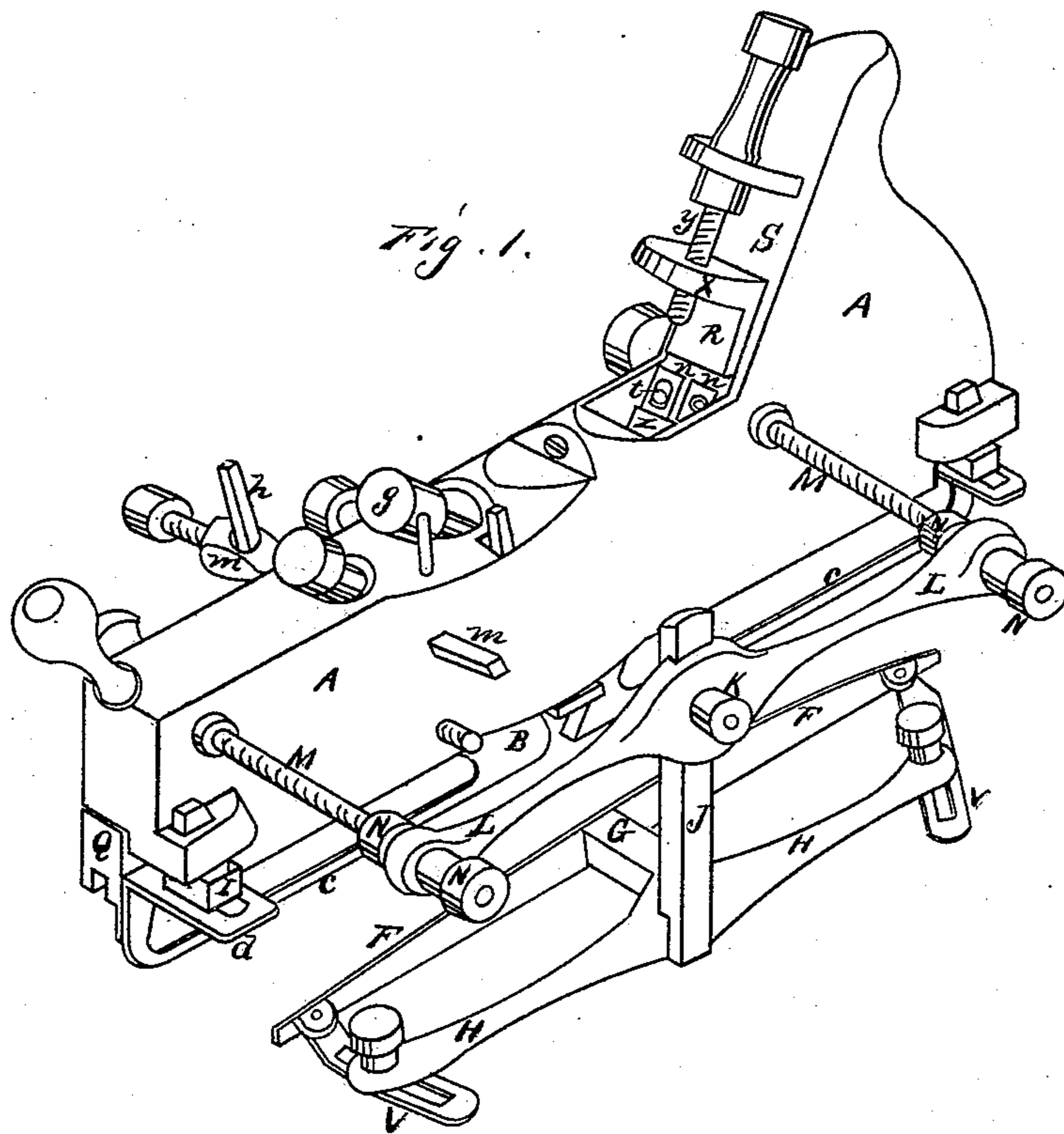


A. JOHNSON.
Combination Planes.

No. 146,004.

Patented Dec. 30, 1873.



Witnesses
Geo. H. Strong.
C. Milton Richardson

Andrew Johnson
By his Atty's
Dewey & Co.

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Fig. 3.

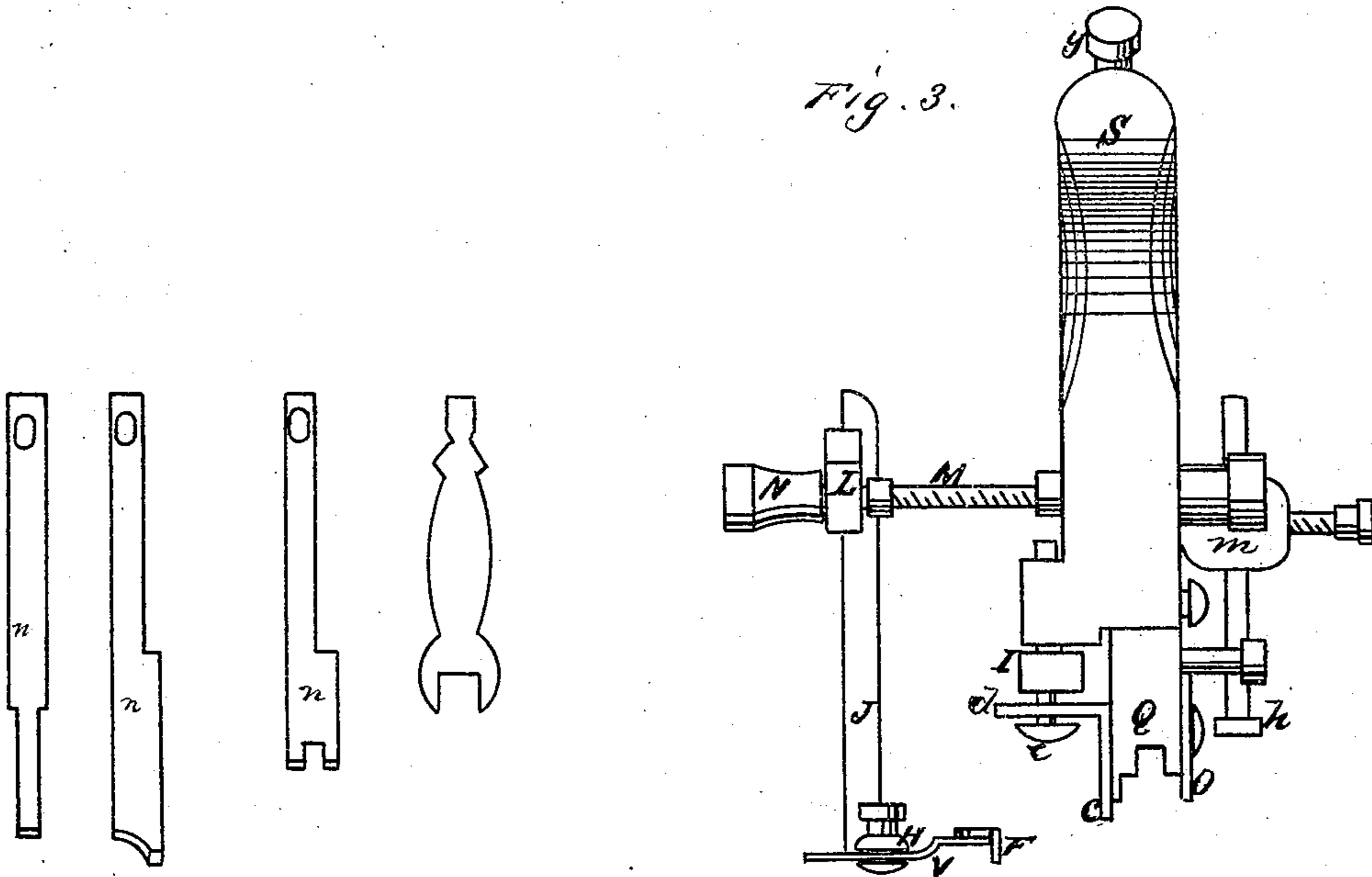


Fig. 4.

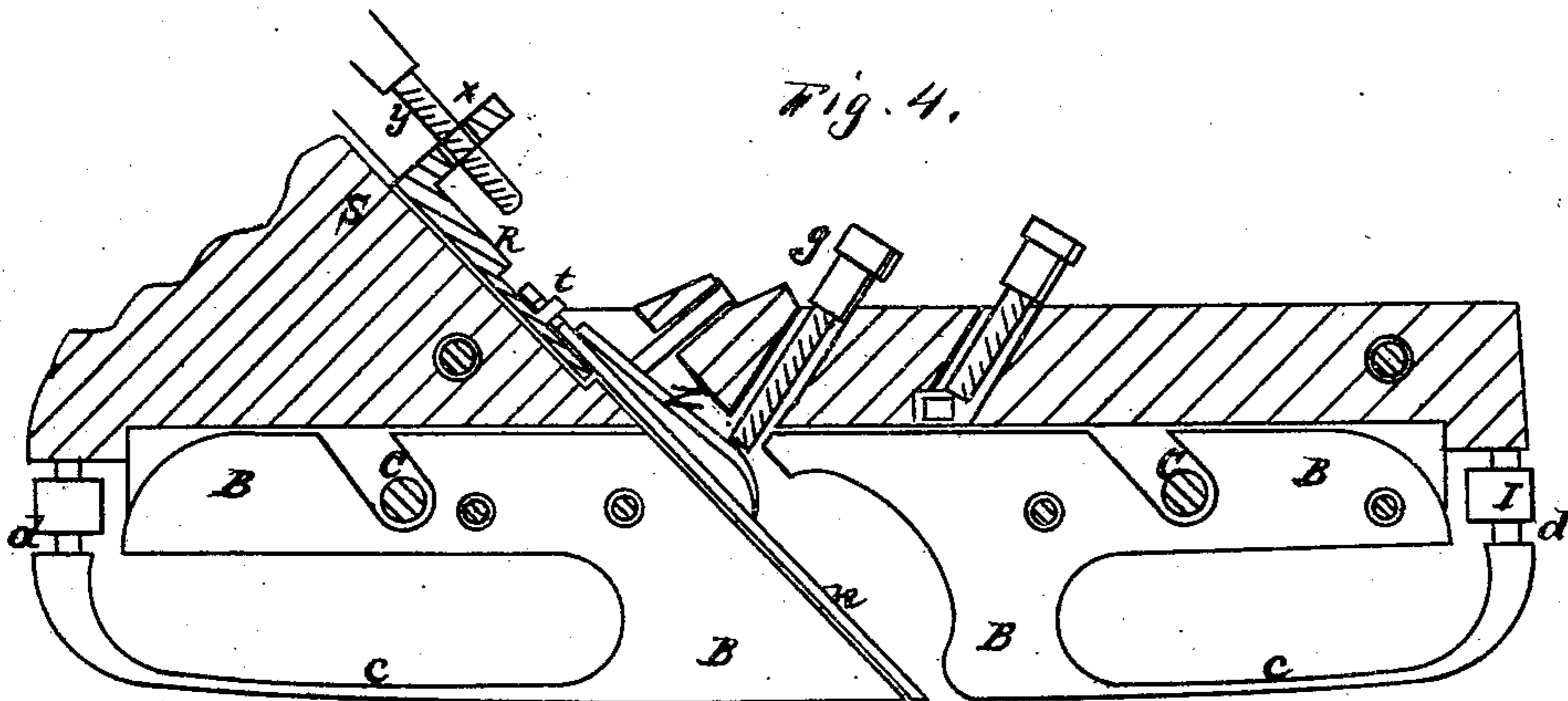


Fig. 5.

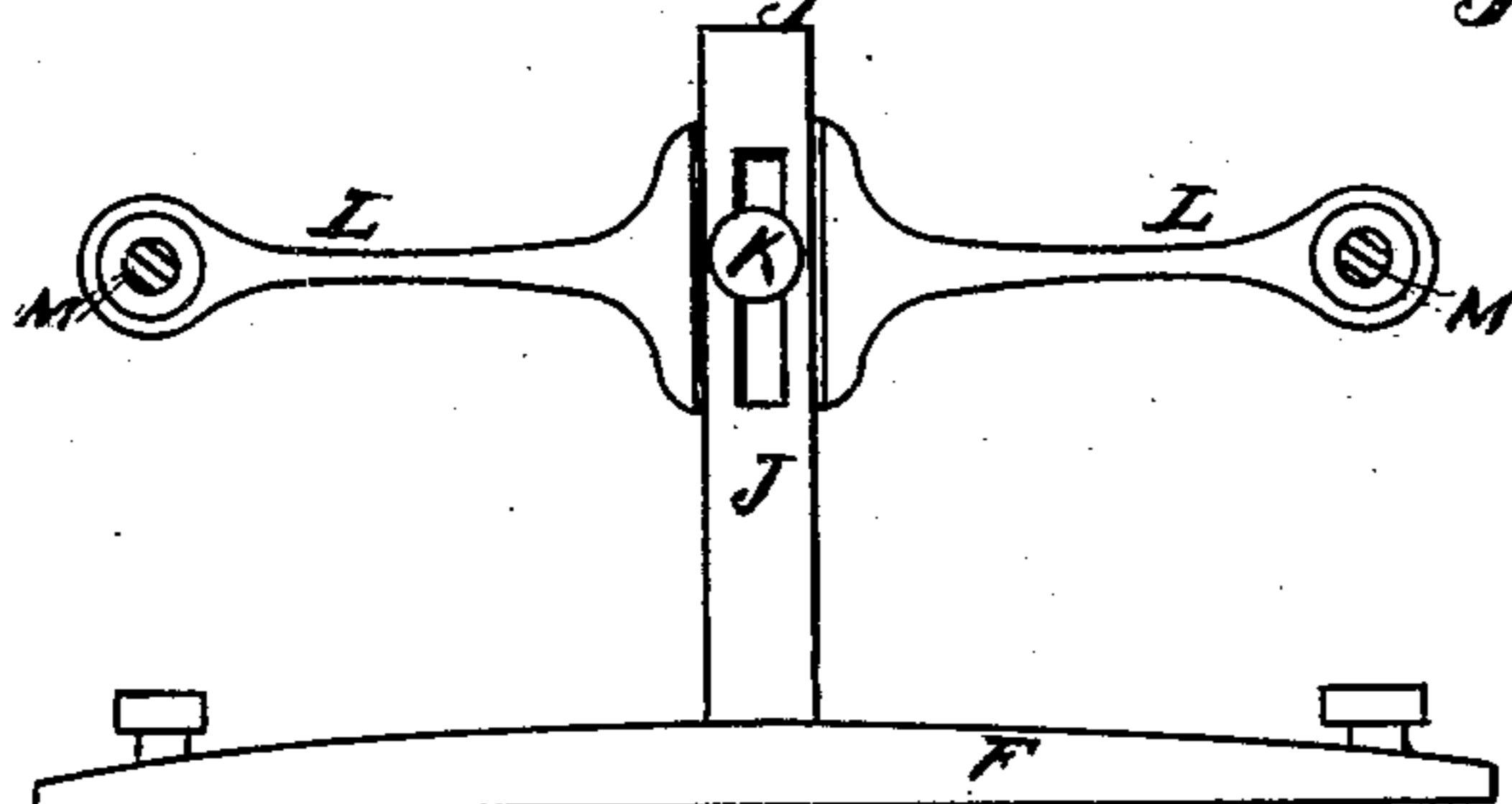
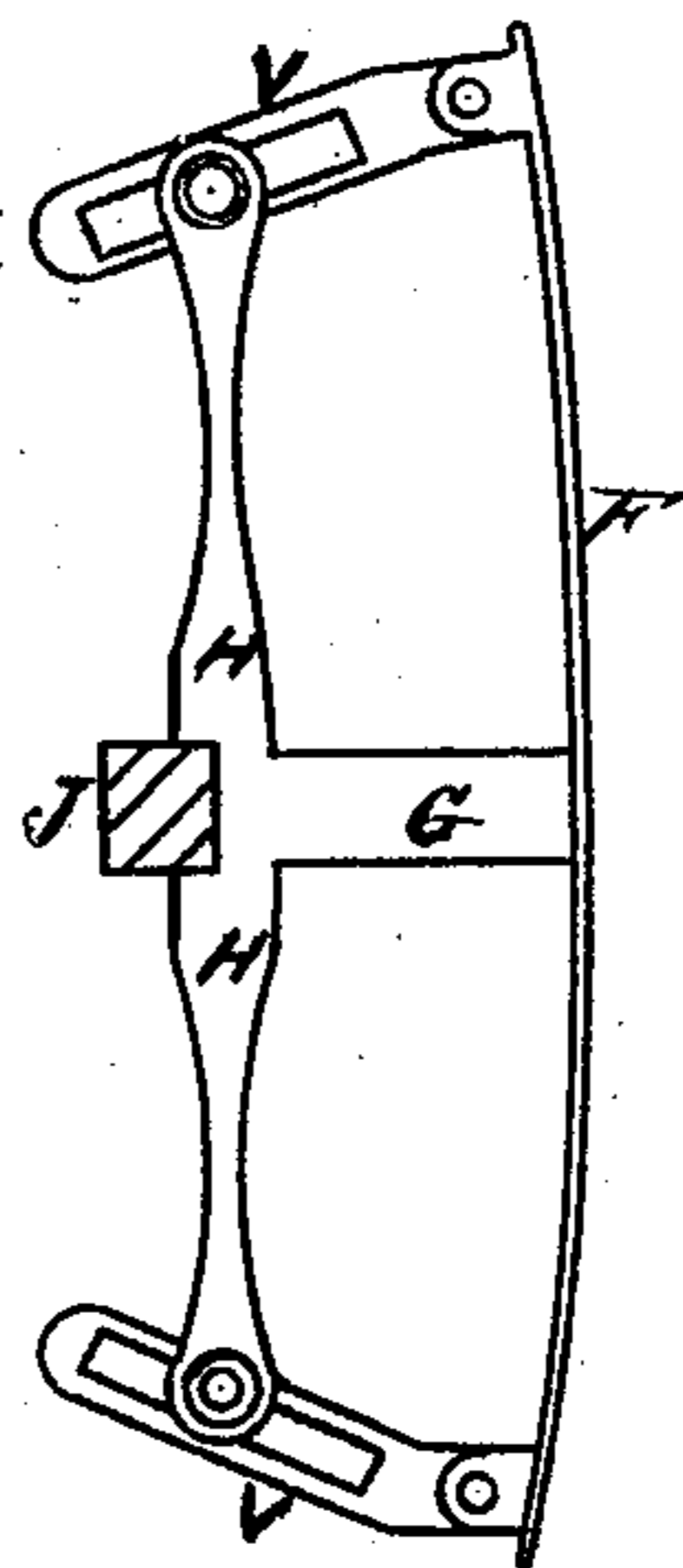


Fig. 6.



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UNITED STATES PATENT OFFICE.

ANDREW JOHNSON, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN COMBINATION-PLANES.

Specification forming part of Letters Patent No. **146,004**, dated December 30, 1873; application filed November 15, 1873.

To all whom it may concern:

Be it known that I, ANDREW JOHNSON, of San Francisco city and county, State of California, have invented a Combination-Plane; and I do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use my said invention without further invention or experiment.

The object of my invention is to provide an improved combination-plane, the novelty of which consists, mainly, in the use of a series of adjustable guides and gages by which the tool may be made to cut in straight lines or upon the concave or convex surfaces of the work, whether such surfaces lie in the line of the tool or at right angles with it. My invention further relates to the employment of a series of cutting-irons which may be so combined as to cut any desired form of molding.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1, Sheet 1, is a perspective view of my plane. Fig. 2 is a side elevation. Fig. 3, Sheet 2, is a back view. Fig. 4, Sheet 2, is a sectional elevation. Figs. 5 and 6 are detailed views of the gage.

A is the body of the plane or the block, and it is made short, so as to facilitate its use on short curves. From its lower face project the plates B, one in front and one behind the cutter, and which serve as a guide for the plow and as a back for the cutting-iron. These plates are secured by set-screws, C, which pass horizontally through slots in them and enter the projecting lower part of the block A. The plates are so formed that a thin elastic strip of metal, *c*, extends on each from near the cutter forward and backward respectively to the front and rear of the block, where they are turned up and have a horizontal portion, *d*, which is slotted to receive a set-screw, *e*, which secures it to the vertically-adjusting standard I. A wide open space intervenes between the part B of the plates and the strip *c*. The strip unites with the plate at the end nearest the cutters, but is free at the opposite end, so that it can be adjusted up and down when the tool is to be used upon concave or convex surfaces in a vertical plane.

If the tool is to be used around concave or convex surfaces which lie in a horizontal plane, the set-screws *e* are loosened, and the elastic strip *c* is curved either to or from the block, as the case may be, and secured by the screws.

The guide and gage for this work consist of a plate, F, which has its center riveted to a projection, G, on the bar H, while its ends are connected with the ends of the bar by slotted links V, so that this plate F can be bent from side to side to correspond with the curve given to the strip *c*, and secured by set-screws, as shown. The bar H has a vertical post, J, extending upward, and this post is slotted to receive a set-screw, K, which secures it to the bar L. This bar L is connected at each end to the block A by long screws M, which have double nuts N N, between which the bar L is held, or smooth bars may be used instead of screws M with a set-screw. By means of these nuts the distance of the guide-plate F from the tool is regulated, while its vertical adjustment is made by means of the screw K and the slotted standard or post J.

In order to cut a variety of moldings with the same tool, I provide a number of cutters, *n*, of various shapes. The cutters have any suitable number of supporting-backs *o*, which have screws *p* passing through them, and provided with double nuts, so that the back plates can be adjusted to suit the number or kind of cutters. These plates and their equivalent guides *o'* before the cutters may be cut away, as shown, so as to allow the tool to work freely on curves, either vertical or horizontal, and can be adjusted by the nuts to the highest point of the cutting-iron from the main face-plate. The lower ends of the cutters are supported by the back plates, and the upper ends are suitably connected with the setting-screw, so that any number of cutters can be easily adjusted at any time. In the present case I have shown a plate, R, which slides upon the inclined front of the handle *s*. This plate has two projections or lugs, *t t*, near its lower end, and upon these projections the holes or slots in the upper ends of the cutters are fitted. By the variation allowed by the slots each iron can be set separately. The plate R has a nut, *x*, formed at its upper end, and a screw, *y*, passes through this nut, and serves to op-

erate the plate and move it up or down, as may be desired, to give the cutters the proper set. The cutters being placed, their upper ends will be held as described by the lugs *t*, while the lower ends are steadied by the back plates *o*. A plate, *z*, is fitted to press the cutters against these plates *o*, being operated by a screw, *g*, and this holds them firmly to their work, and causes them all to work as one tool. Gages *h h*, with set-screws, serve to regulate the depth of cut to be made, and the distance of the cut from any particular point or surface is regulated by means of the sliding bars *m*. The spring-gage can be adjusted up or down to facilitate the working of a molding upon the edge of a raised panel or a flat or plain surface.

It will be manifest that any number of wooden faces, *Q*, with either hollows, round, or flat surfaces can be made to fit the various combinations of cutters, and which may be substituted for or placed between the plates *o*, if desired, for straight work. The plate *B*, together with the blocks or faces *Q*, when used in place of the metal plates, serve to form a match-plane, the irons *n* being employed with them.

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

1. The plates *B*, having elastic adjustable curving strip *c*, combined with the block *A* and adjusting-standards *I*, substantially as and for the purpose described.

2. The combination of the elastic gage-plate *F*, bar *H*, and slotted links *V* with their set-screws.

3. In combination with the elastic adjustable gage-plate *F*, the vertically-sliding post *J* with its holding-screw, and the bar *L* with its horizontally-adjusting screws *M*, and the nuts *N*, substantially as and for the purpose herein described.

4. The adjustable curved plates *o o'*, in combination with plate *B* and intermediate blocks *Q*, substantially as and for the purpose set forth.

In witness whereof I hereunto set my hand and seal.

ANDREW JOHNSON.

Witnesses:

GEO. H. STRONG,

C. MILTON RICHARDSON.