

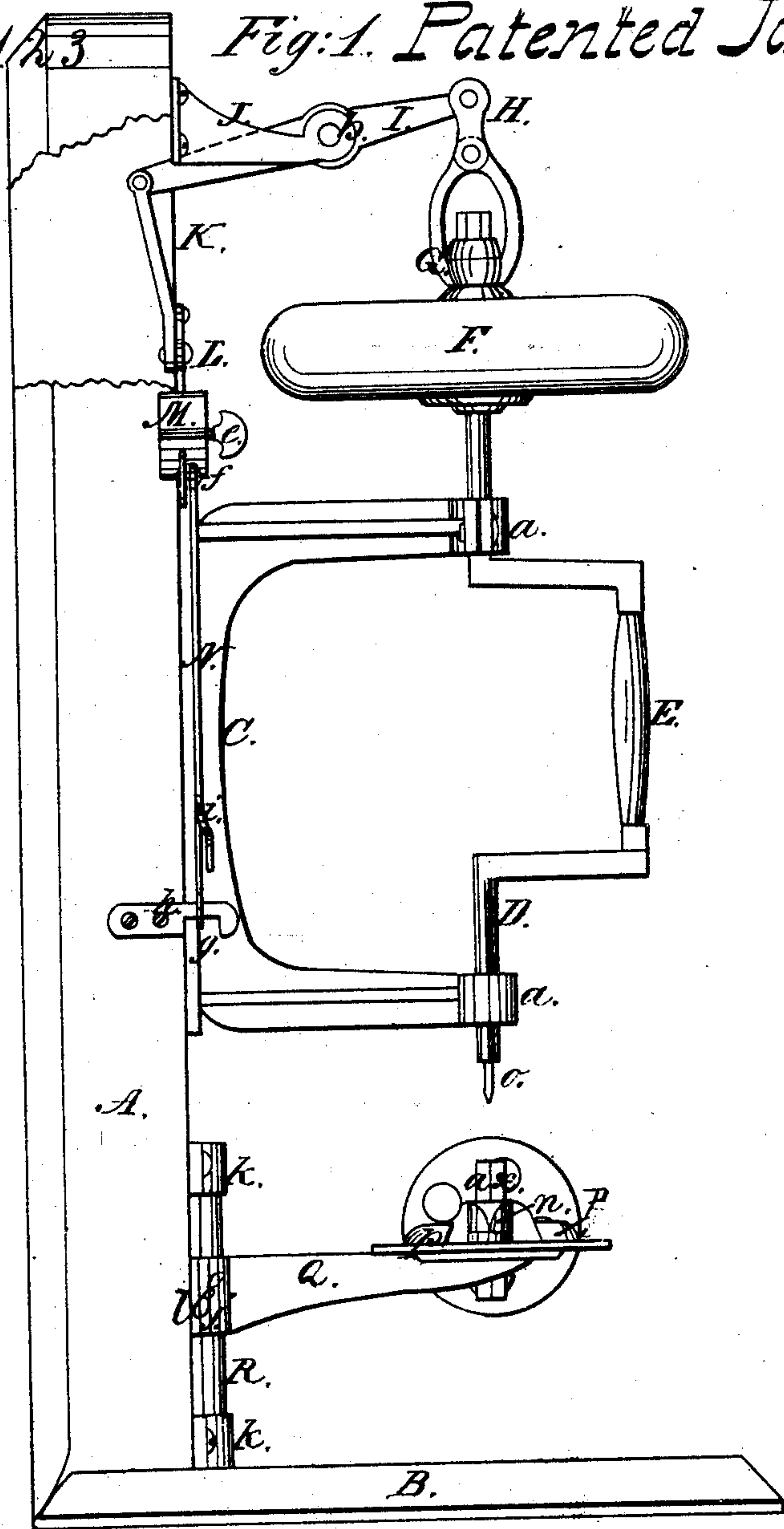
Sheet 1 - 2 Sheets

W. Lyon,

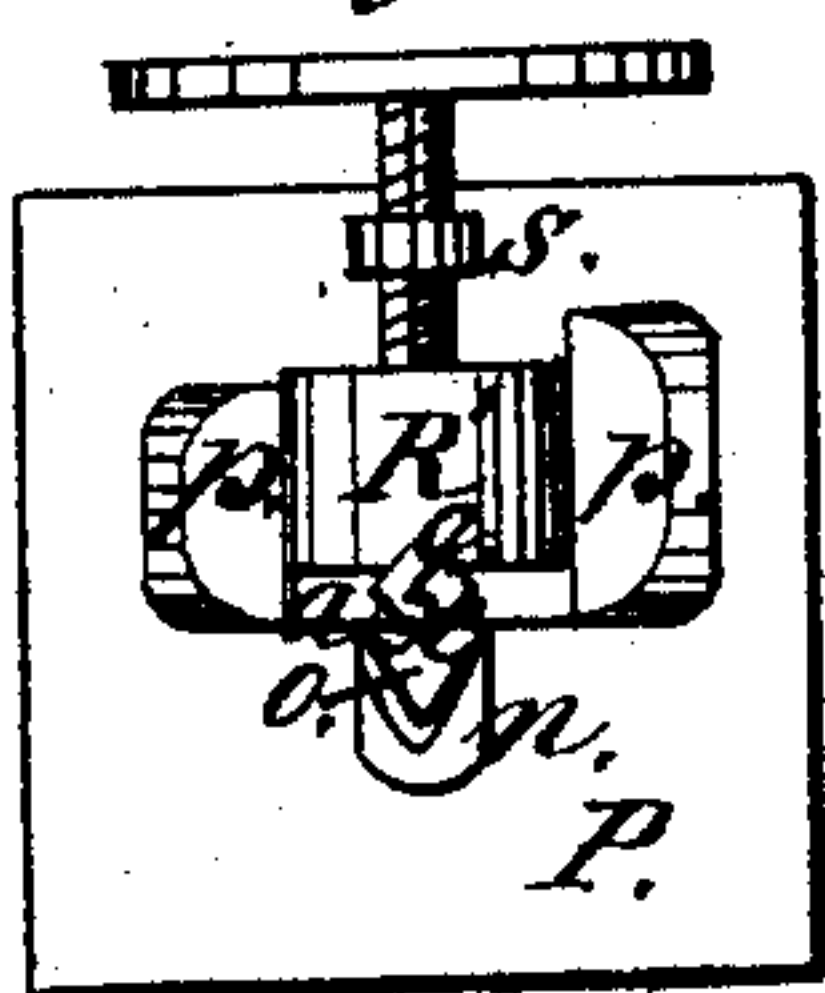
*Drilling Machine,*

No 40, 1/23

*Fig: 1. Patented Jan. 31, 1865.*



*Fig: 2.*



*Witnesses.*

*S. P. Hale.*

Wm. J. H. C. Kamara

*Inventor*

Warren Lyon

W. Lyon,

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Drilling Machine,

No 46,123,

Patented Jan. 31, 1865.

Fig: 3.

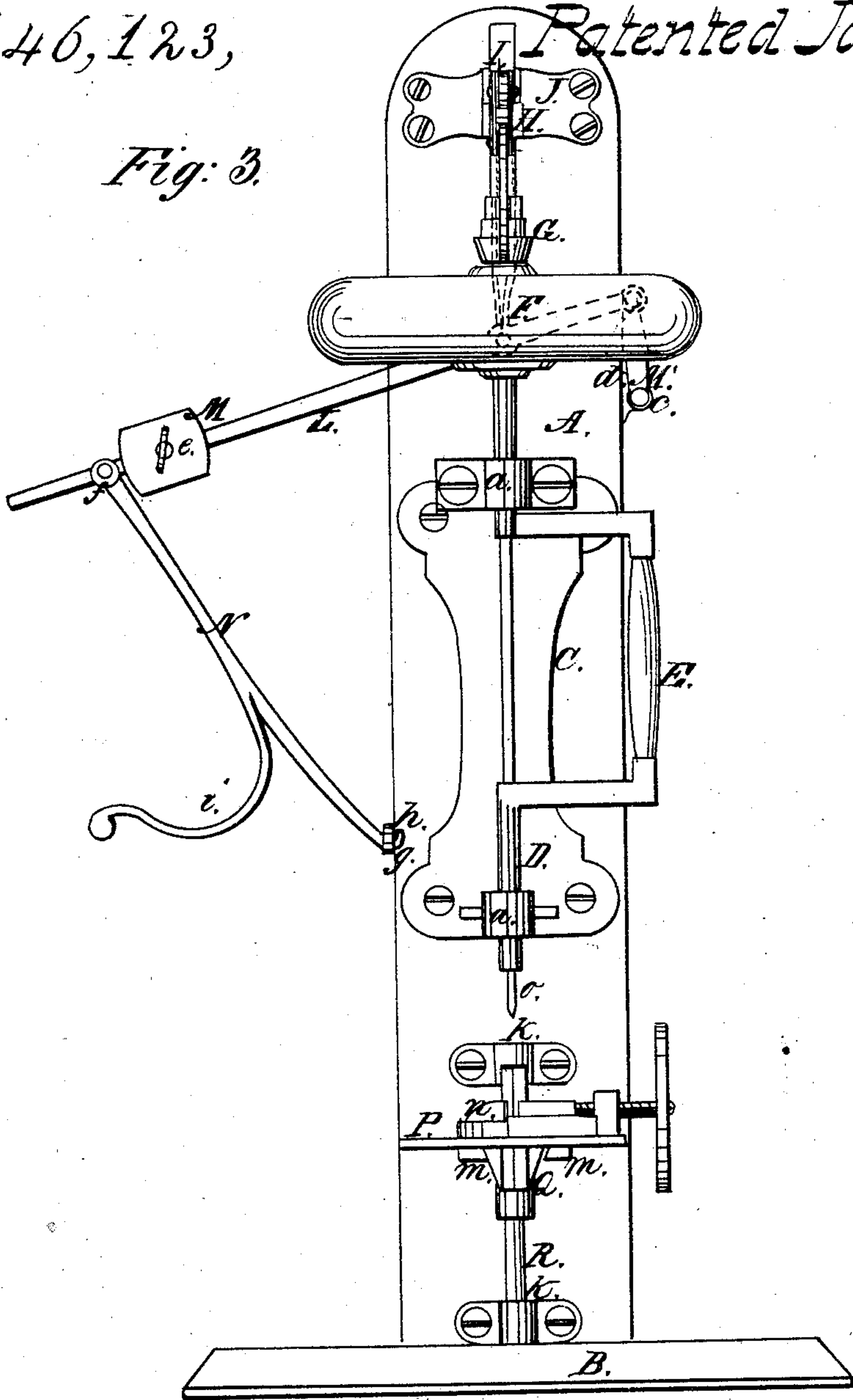


Fig: 4.

Witnesses:

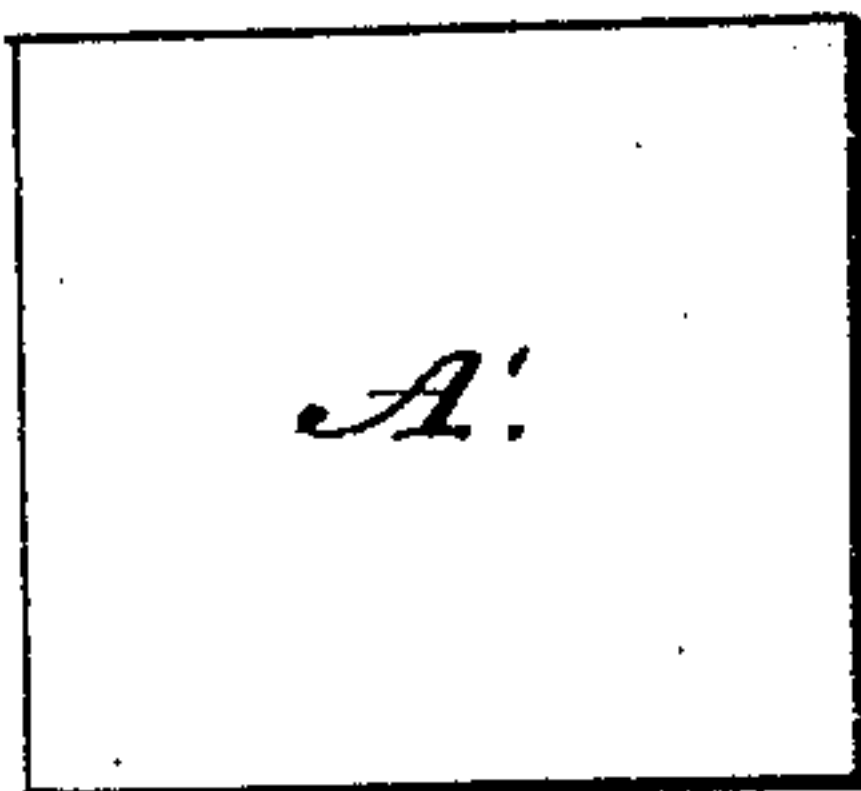


Fig: 5.

Inventor

J. P. Hall.

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# UNITED STATES PATENT OFFICE.

WARREN LYON, OF NEW YORK, N. Y.

## IMPROVEMENT IN DRILLING-MACHINES.

Specification forming part of Letters Patent No. 46,123, dated January 31, 1865.

*To all whom it may concern:*

Be it known that I, WARREN LYON, of the city, county, and State of New York, have invented a new and Improved Drilling-Machine; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1, Sheet No. 1, is a side elevation of my invention; Fig. 2, Sheet No. 1, a detached plan or top view of the bed-plate of the same; Fig. 3, Sheet No. 2, a front elevation of the invention; Fig. 4, Sheet No. 2, a detached plan or top view of the bed-plate of the same; Fig. 5, Sheet No. 2, an end view of Fig. 4.

Similar letters of reference indicate like parts.

This invention relates to an improvement on a drilling-machine for which Letters Patent were granted to me bearing date September 20, 1863.

The invention consists in an improved arrangement of the levers by which the necessary feed-pressure is transmitted to the drill from the weight, whereby the device is rendered more compact and simple than hitherto.

The invention also consists in a novel construction of the clamp by which the work to be drilled is held, whereby articles of different forms may be firmly held and expeditiously adjusted in and taken from the clamp.

The invention further consists in a novel construction of certain other parts of the machine, whereby advantages are obtained over the original invention, as hereinafter set forth.

A represents a standard attached to a suitable base, B. These parts may be of wood, and to the standard A a cast-iron bracket, C, is firmly bolted, said bracket being cast with bearings *a a*, in which a vertical arbor, D, is fitted and allowed to rotate freely, and also slide up and down. The arbor D is formed with a crank, E, for the purpose of turning it, and on the upper end of said arbor there is a weight, F, which acts upon the arbor as such, and also as a fly-wheel.

G is a swivel, fitted to the upper end of the arbor D, and connected by a link, H, to a lever, I, the fulcrum-pin *b* of which is in a bracket, J, firmly bolted to the standard A. The inner end of the lever I is connected by a link, K,

to another lever, L, the fulcrum-pin of which passes through the upper end of a bar, M', the lower end of the latter being secured by a pivot-bolt, *c*, to a lug, *d*, attached to A. On the lever L there is placed a sliding weight, M, which may be secured at any desired point by a set-screw, *e*. By this arrangement it will be seen that the downward pressure of the weight F on the arbor D may be graduated as desired by adjusting the weight M on the lever L nearer to or farther from the latter. All the advantages of the original machine are retained by a much simpler arrangement. The lever L has a rod, N, attached to it by a pivot, *f*, and the lower end of this rod is bent in the form of a hook, *g*, to catch under a bar, *h*, attached to the standard so as to hold up the arbor D when it is desired to elevate the drill free from the bed-plate. The drill (designated by O) is fitted in the lower end of the arbor D. The rod N has a curved arm, *i*, for the operator to grasp in actuating the levers to elevate the drill.

By having the bearings *a a* of the arbor D on a cast-iron bracket, C, as shown, the drill may be readily adjusted or put up in proper position for work.

In the original device the bearings were on separate arms, and considerable care and attention were necessary in order to get the bearings properly in line, and in case a careless workman superintended or performed the work the device would operate imperfectly.

P is a bed-plate attached to or fitted on an arm, Q, which is provided at its inner end with an eye or tube, *j*, the latter being fitted on a vertical fixed shaft, R, the ends of which have lugs *k* attached to them, said lugs being bolted to the standard A. The arm Q may be secured higher or lower on the shaft R, as required, by a set-screw, *l*. The bed-plate has two parallel cleats, *m m*, at its under side, the inner surfaces of which are beveled or inclined to form a dovetail to slide upon the outer part of the arm Q, which is forked, and has inclined sides to conform to the beveled surfaces of the cleats *m m*. By this means the bed-plate P may be readily adjusted upon and removed from the arm Q. On the upper surface of the bed-plate P there is a vertical projection, *u*, having a V-shaped notch, *o*, at its face side and there are also two parallel cleats, *p p*, on the upper surface of the bed-plate, be-



tween which a slide, R', is fitted and works, said slide also having a V-shaped notch, *q*, in its face side. (See Fig. 2.) This slide R' is operated by a screw, S, and made to clamp square bars *a*<sup>x</sup>, to be drilled, a hole being made in P for said bar to pass through. The V-shaped notches *o q* insure the proper entering of the bars *a*<sup>x</sup>. Flat bars may also be secured between the slide R' and the projection *u*, and the bed-plate P may be properly adjusted in relation with the drill by turning the arm Q either to the right or to the left on its shaft R, or raising or lowering it, as may be required. In drilling plates an ordinary flat bed-plate, A', Figs. 4 and 5, may be used.

By means of this improved construction and arrangement I am enabled so far to contract the dimensions of a machine of the requisite power that it may be placed in a room of moderate height, and also to reduce the length of the projecting part so as to render them less liable to injury in transportation. Greater steadiness of motion and general compactness is likewise secured, which recommends them

on the ground of economy of room and convenience of manipulation.

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

1. The arrangement, as herein shown and described, of the levers I L, drill-arbor D, with weight F attached, the counterpoise M on lever L, and the rod N, for the purpose specified.

2. The projection *u* and cleats *p p* on the face or upper side of the bed-plate P, in combination with the slide R', screw S, and the adjustable arm Q, to which the bed-plate is attached, all arranged substantially as and for the purpose set forth.

3. The bracket C, with bearings *a a* attached when used in combination with the drill-arbor D and its concomitant parts, as herein shown and described.

WARREN LYON.

Witnesses:

J. P. HALL,

WM. F. McNAMARA.