

J. W. PEER.
Vertical Trip Hammer.

No. 10,274.

Patented Nov. 29, 1853.

Fig. 1.

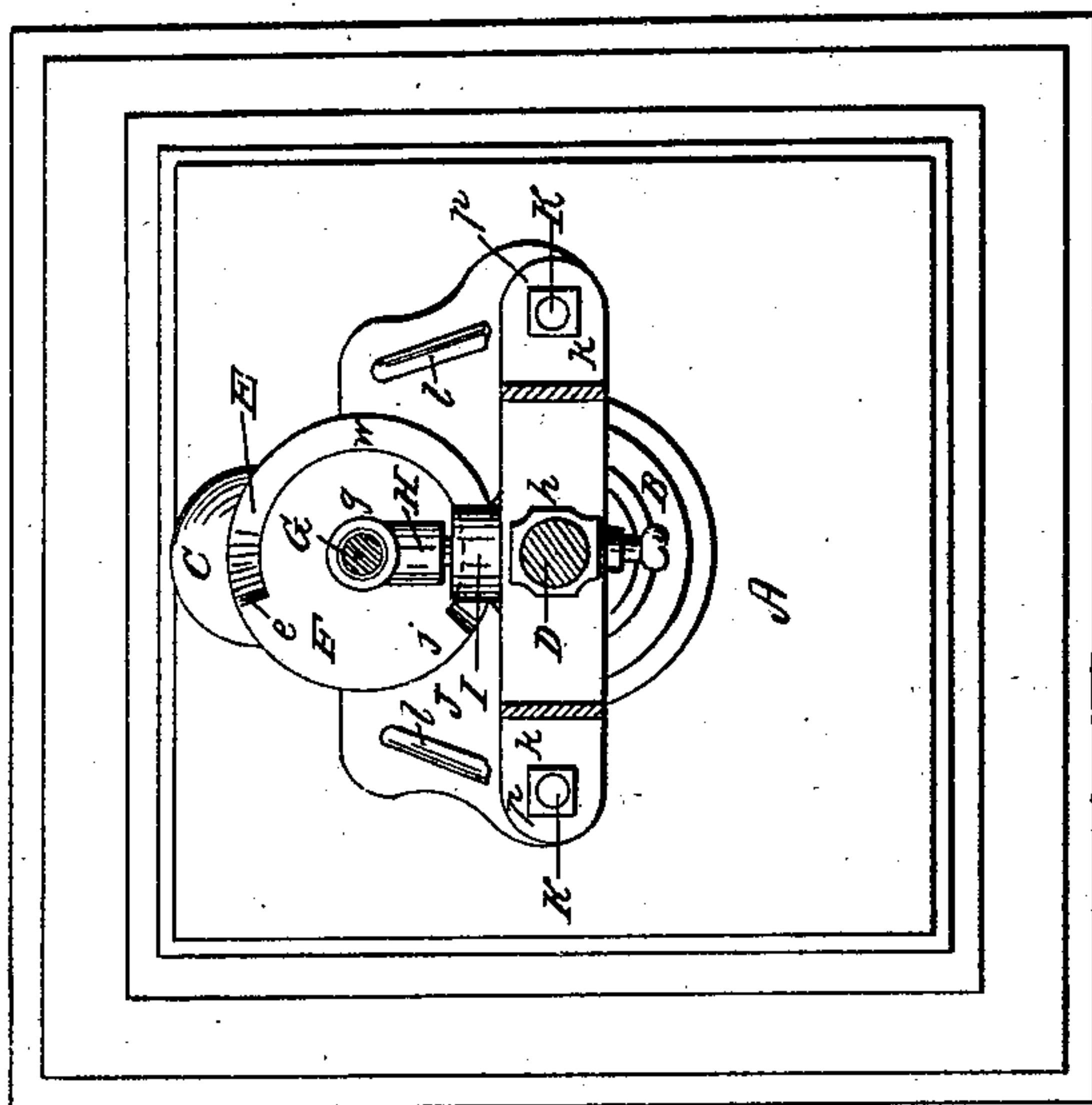


Fig. 2.

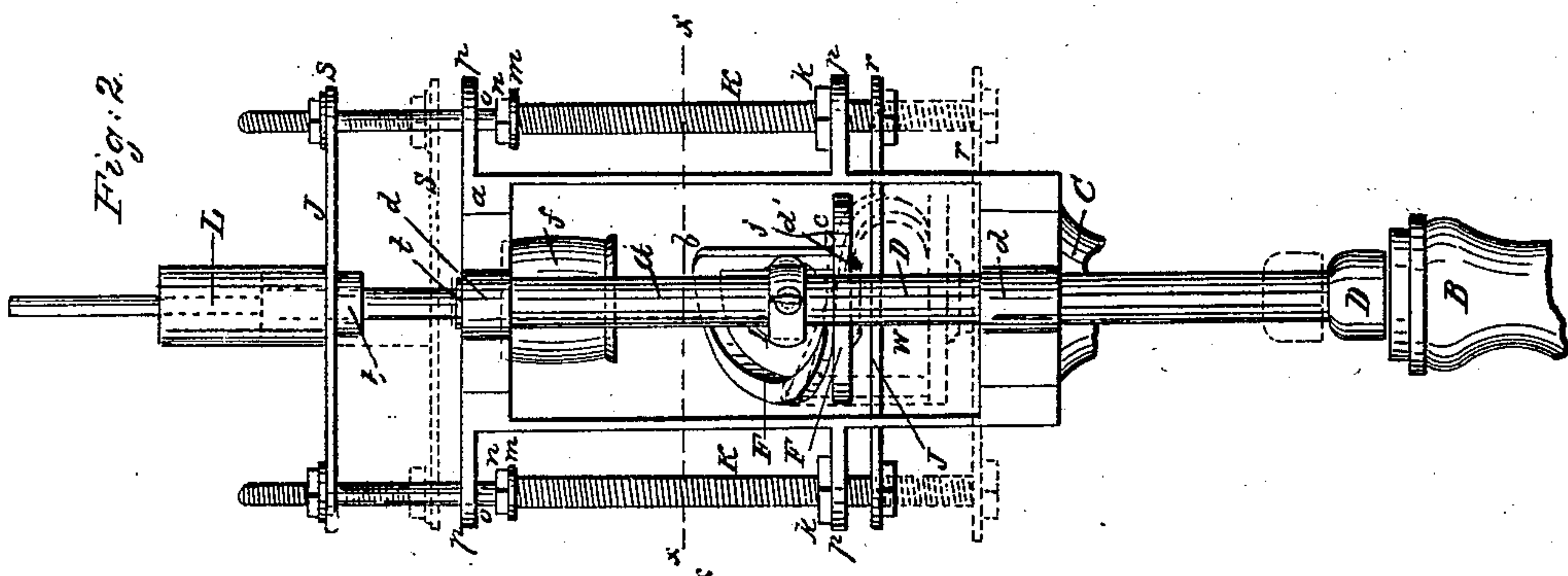
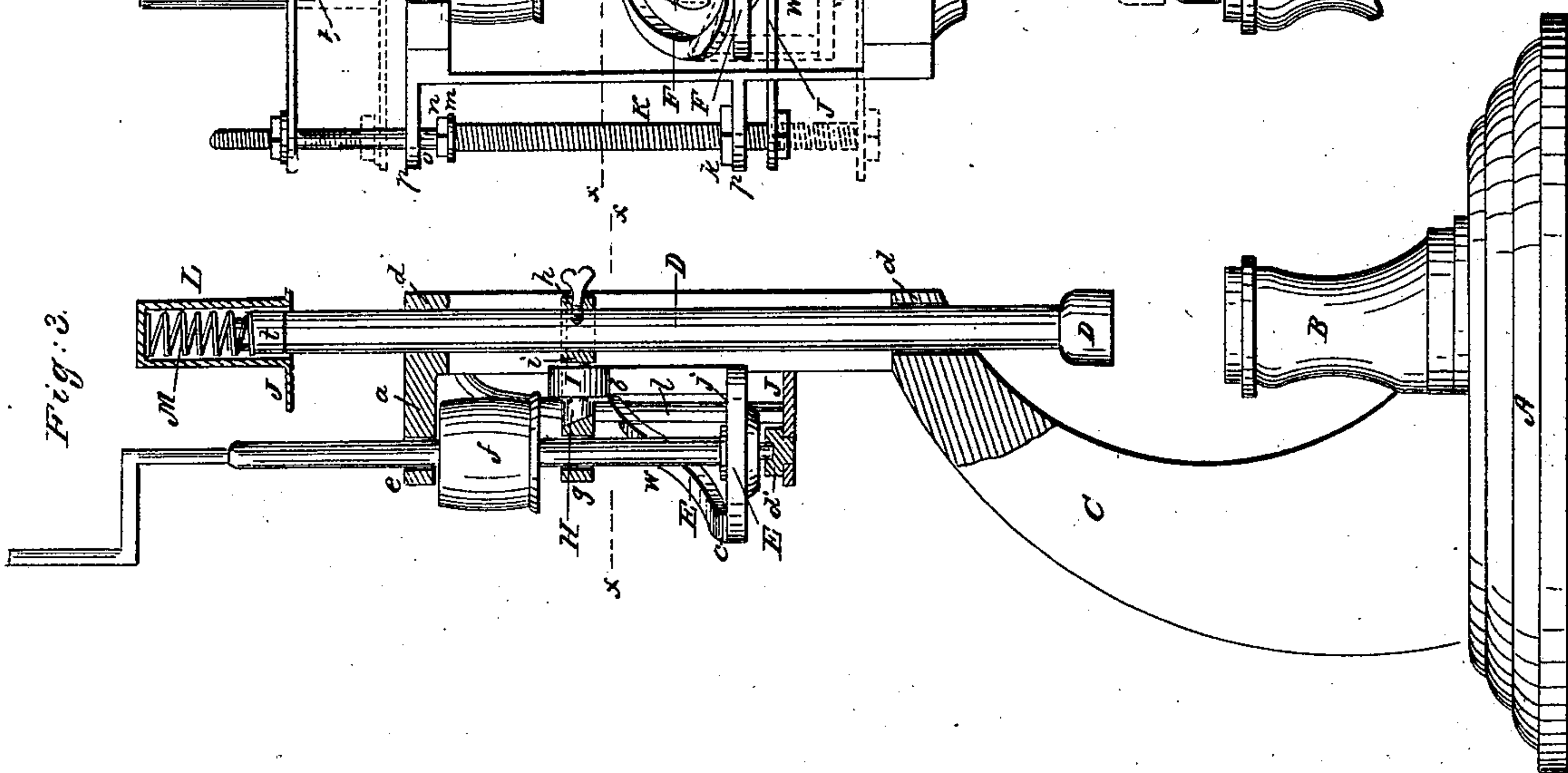


Fig. 3.



UNITED STATES PATENT OFFICE.

JOHN W. PEER, OF SCHENECTADY, NEW YORK.

TRIP-HAMMER.

Specification of Letters Patent No. 10,274, dated November 29, 1853.

To all whom it may concern:

Be it known that I, JOHN W. PEER, of Schenectady, in the county of Schenectady and State of New York, have invented a new and useful Improvement in Vertical Trip-Hammers; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1, is a horizontal section of the hammer through the line x, x , in Figs. 2, and 3, this view shows a plan of the arrangement for elevating the hammer. Fig. 2, is a front elevation of the same, and, Fig. 3, is a vertical central longitudinal section of the same.

Similar letters of reference in each of the several figures indicate corresponding parts. The nature of my invention consists in raising and lowering the hammer by means of a screw cam arranged upon a circular plate secured fast on a revolving shaft, and connected to the helve of the hammer by means of a horizontal lifting arm which has one of its ends attached fast to the hammer by set screws and its other end sliding freely up and down over the vertical cam shaft as the hammer rises and falls; said arm carrying a small friction roller which, as the cam shaft revolves, turns freely and plays upon the top of the screw cam and prevents friction from the weight of the hammer upon the cam as said hammer is gradually raised by the cam.

My invention consists, 2nd, in arranging the screw cam upon an adjustable frame so that it may be adjusted to any position desired and the length of the blow to be given to the hammer regulated, so that if a full or half blow be required, they may be secured.

To enable others skilled in the art to make and use my invention I will proceed to describe its construction and operation.

A represents the base or platform; B, the anvil resting upon the same; C, represents a standard secured to the platform; this standard supports the whole working mechanism of the hammer; the upper part of it forms a box or guide for the hammer to move up and down in as seen in Figs. 1, 2, and 3; the two vertical sides of this box being connected together at top by the cross piece a , and at the bottom in the manner shown in Figs. 2 and 3; the box and standard are cast in one piece.

D, is the hammer; it moves up and down in the guides, d, d ; as seen in Fig. 3.

E, is the screw cam; it is secured on top and near the periphery of a circular plate F, and extends more than half around it as seen in Fig. 1. The plate upon which it rests is secured fast on the revolving shaft G. This cam forms a gradual incline in the line of a screw, as seen in the drawing, its lowest end being almost on a plane with the top surface of the circular plate while its highest end, b , is, for ordinary sized hammers, placed about 10 inches above the end c . The lower end of the shaft G, of this cam rests in the step, d^1 , of an adjustable frame, hereafter described, and extends up and passes through the ear e , of the top cross piece a , of the stationary frame and turns freely in the same; it carrying a driving pulley f , by which it is set in motion through a band transmitting power from the engine or other mover. This shaft is connected to the hammer by the arm H, in the manner shewn in the drawing, this arm has two collars g, h , on it; that g , sliding freely over the shaft G, as the hammer rises and falls, while that h , is fitted around and secured fast to the hammer by set screw or otherwise; it is by thus securing this arm fast to the hammer and loose on the cam shaft G, that the hammer can be elevated and depressed, by the cam E.

I is a friction roller secured and turning loosely on the circular part i , of the arm H, this roller is so situated that it first comes in contact with the top surface of the cam at the lowest point c , as shown in Fig. 2, and then as the cam revolves gradually comes in contact with the highest points of the screw cam, simultaneous with which, the friction roller, its shaft, and the hammer rise and assume the position shown in Fig. 3. In this view the highest point b , of the cam is shown resting under the friction roller I, and ready to be moved from under it, when which is done the hammer falls to the position shown in black in Fig. 2, and the friction roller and arm fall into the open space, j , between the ends of the cam. By continuing to move the cam shaft, G, the cam will again be brought under the friction roller and gradually elevate it and the hammer as before; and so the operation may be continued. The action of the cam is such, by reason of its peculiar shape that it causes very little concussion or jarring

when it comes in contact with the friction roller.

J, is the adjustable frame which supports or carries the cam and its shaft, it is made to move up and down on screws K, K, which move through holes in the ears p, p, p', p' , they being provided with nuts k, k , by which the upward movement is effected, the descent of the frame being caused by its weight simultaneous with the loosening of the nuts, k, k ; l, l , are braces, having collars, m, m , which fit around the screws and are provided with nuts, n , to keep them in place. The smaller portions o, o , of the screws K, K, are made plain for a short distance so as to slide through holes in the ears, p, p , of the stationary frame, as the adjustable frame rises and falls. These screws have heads on their lower ends and are attached fast to the cross pieces, r, s , of the adjustable frame J, in the manner shown in Fig. 2, so that all can move together up and down.

L, is a spring barrel, attached fast to the top piece s , of the adjustable frame and arranged directly over the top of the hammer, and carries a spring M, for the hammer to strike against in its upward movement. This spring accelerates the blows of the hammer. The end of the hammer passes into the barrel and compresses the spring through the plug t , attached to the same.

By examining Fig. 2, the utility in thus making the frame J, adjustable may be apparent. It is well known that it is necessary sometimes to have a full stroke of the hammer, and at other times only a half stroke is required. Now by making the

frame adjustable I can obtain any desired length of blow, for by raising the frame to the position shown in black lines in Fig. 2, the cam will be raised to its highest position, and its lowest end c , will first, necessarily, come in contact with the friction roller on the lifting arm, and the lifting of the hammer will commence at this point and terminate at the highest point b ; and consequently a full stroke of the hammer will be obtained. Now to obtain a half stroke the adjustable frame J, must be lowered to the position shown in red lines in Fig. 2, this operation lowers the cam to the position shown in red in same figure, and therefore when the cam is set in motion its central point w , will first strike the friction rollers seen in Fig. 2, and the hammer will only be raised half the distance that it was when the cam occupied the position shown in black, and the friction roller came in contact with its lowest point c .

The advantage of this arrangement is its simplicity of action; its compactness, and the peculiar construction and arrangement of the parts, render it more convenient for use and admits of the iron being turned in every direction necessary.

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

The arrangement of the screw cam, E, and the adjustable table to which it is attached, for the purposes described.

JOHN W. PEER.

Witnesses:

JAMES WALKER,
ABM. A. VAN VORST.