

# H. Reynolds. Chain-Making Machine.

N<sup>o</sup> 94,441.

Patented Aug. 31, 1869.

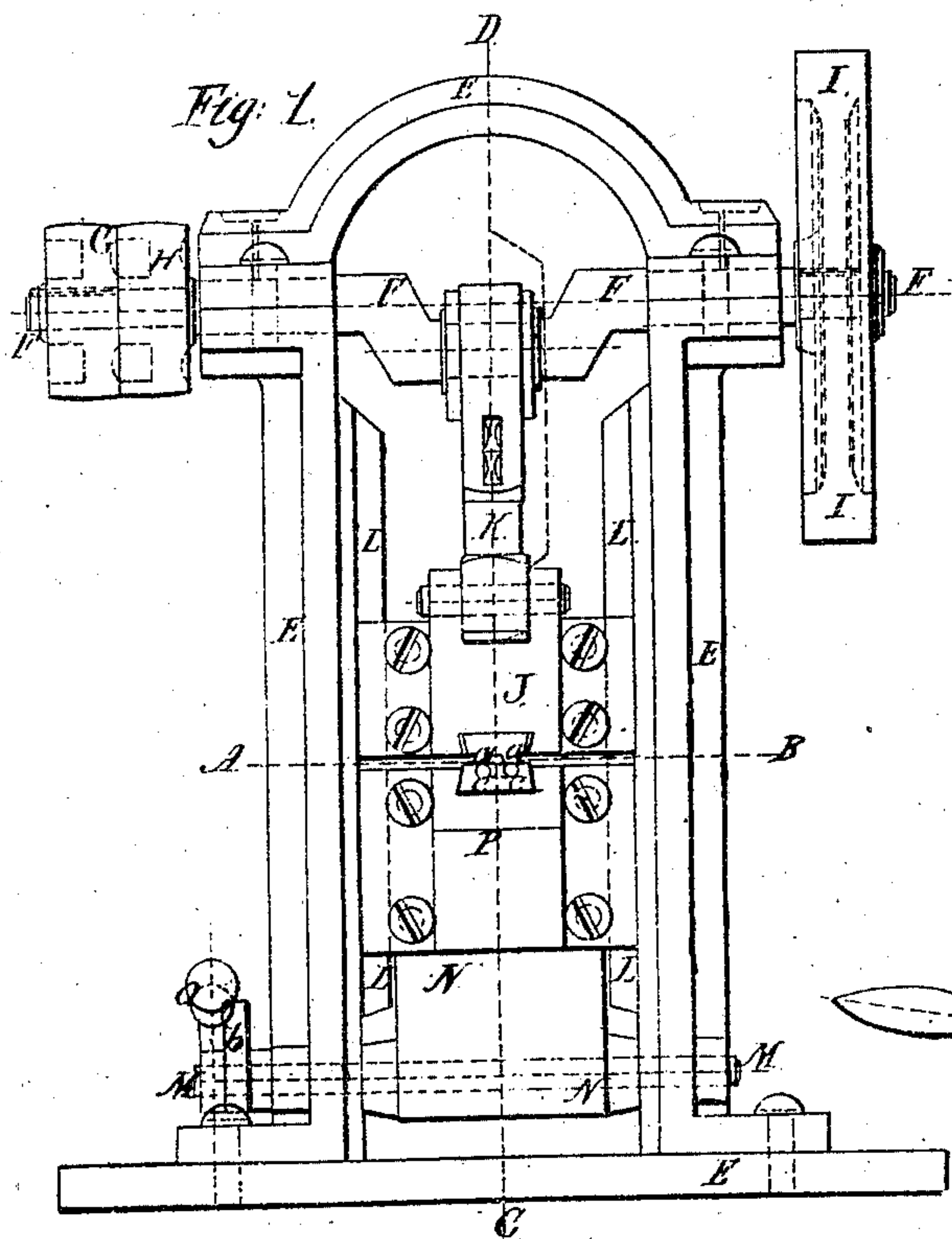


Fig. 1.

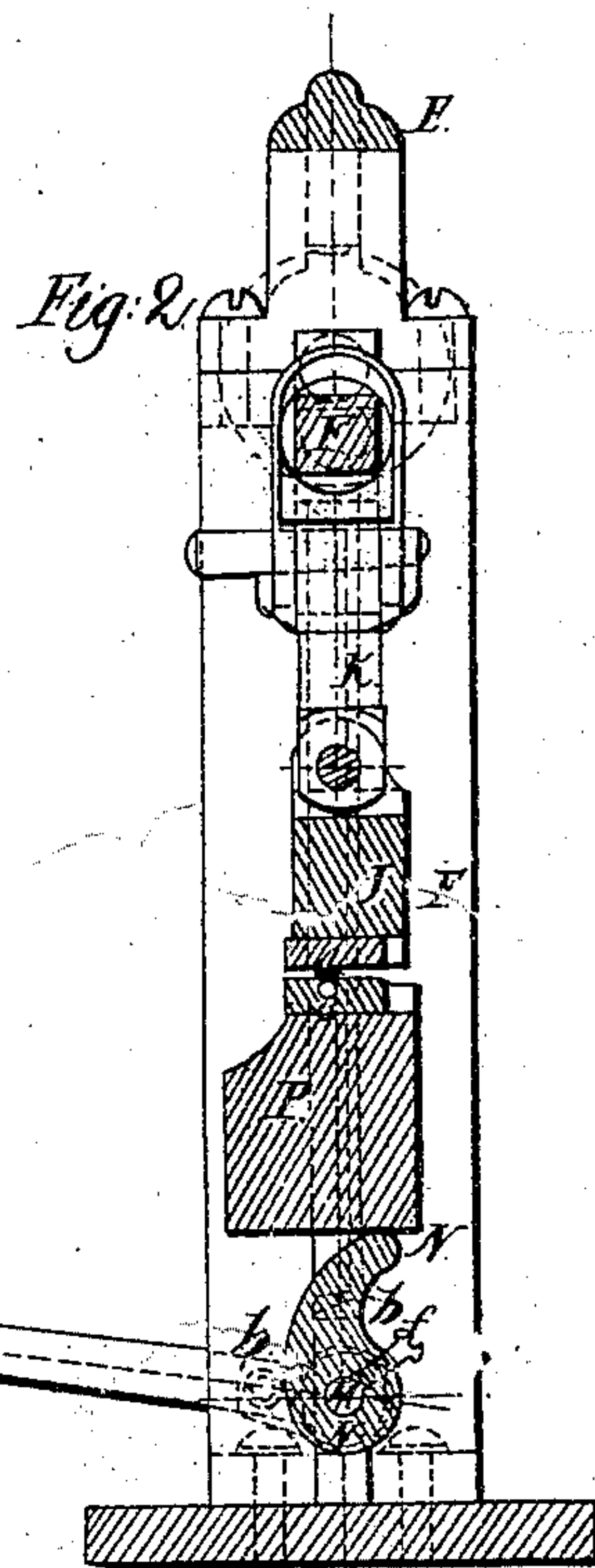


Fig. 2.

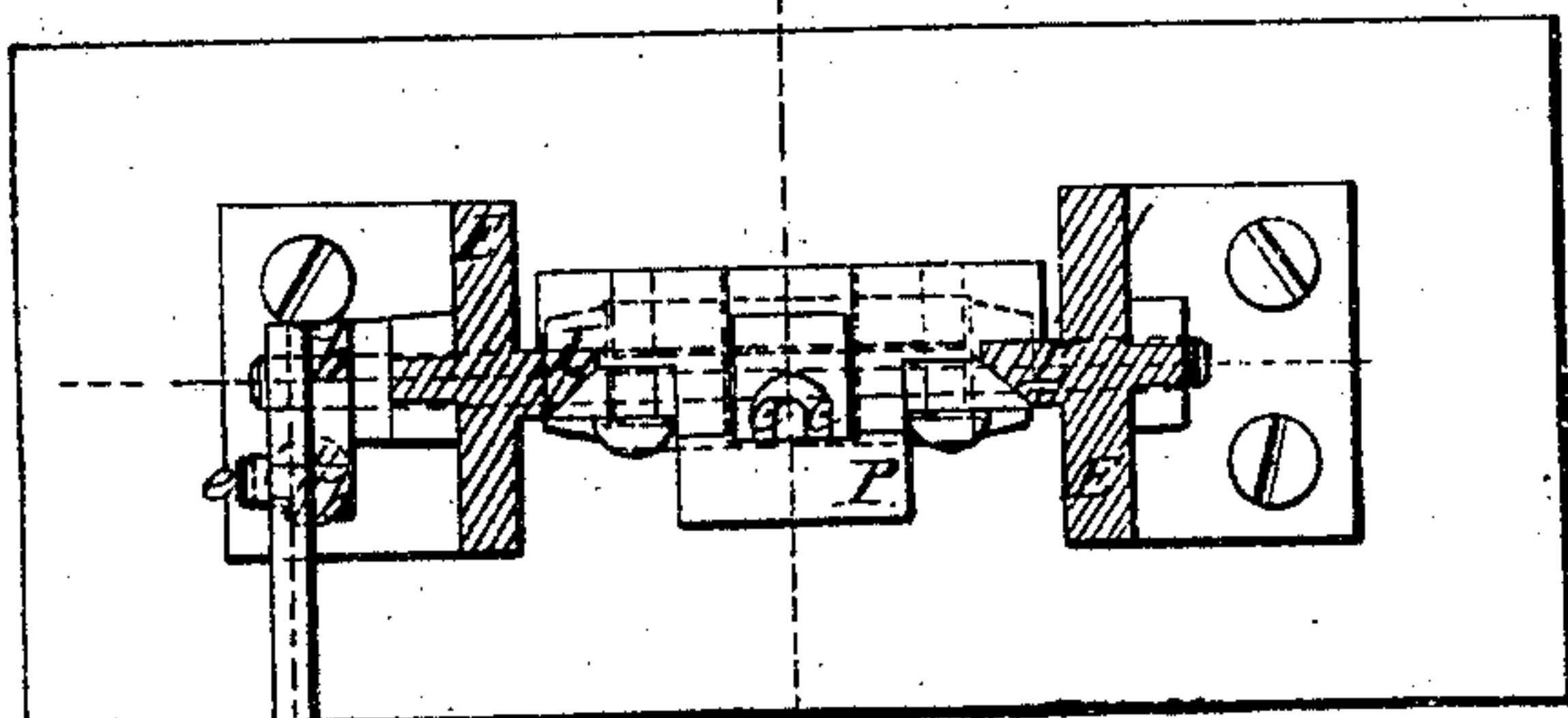


Fig. 3.

Section at A. B.

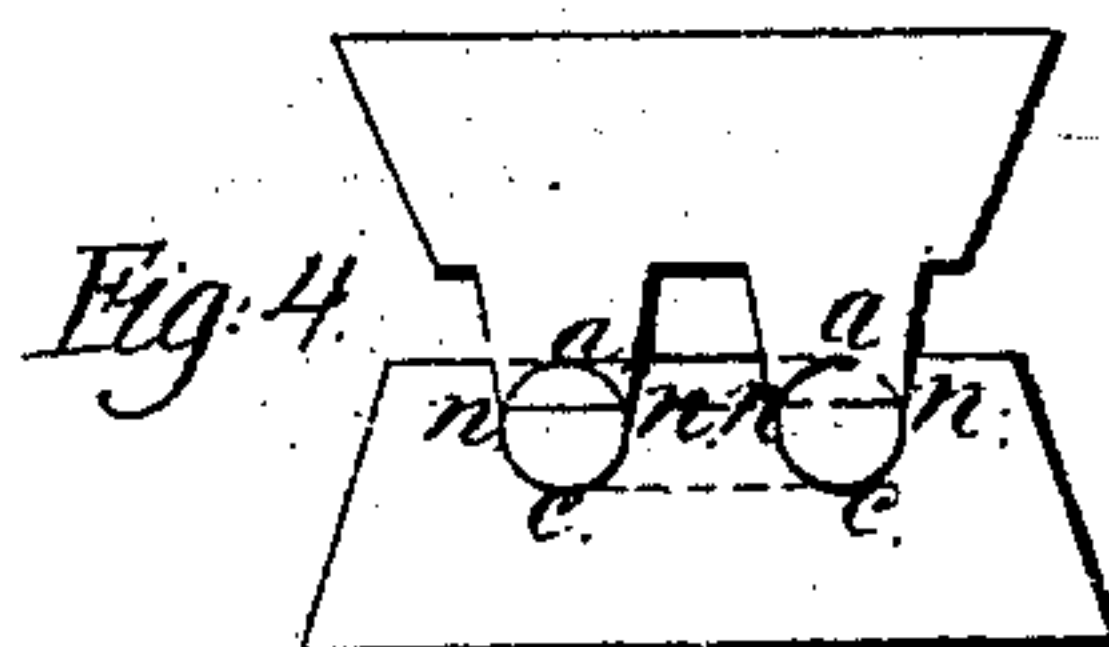


Fig. 4.

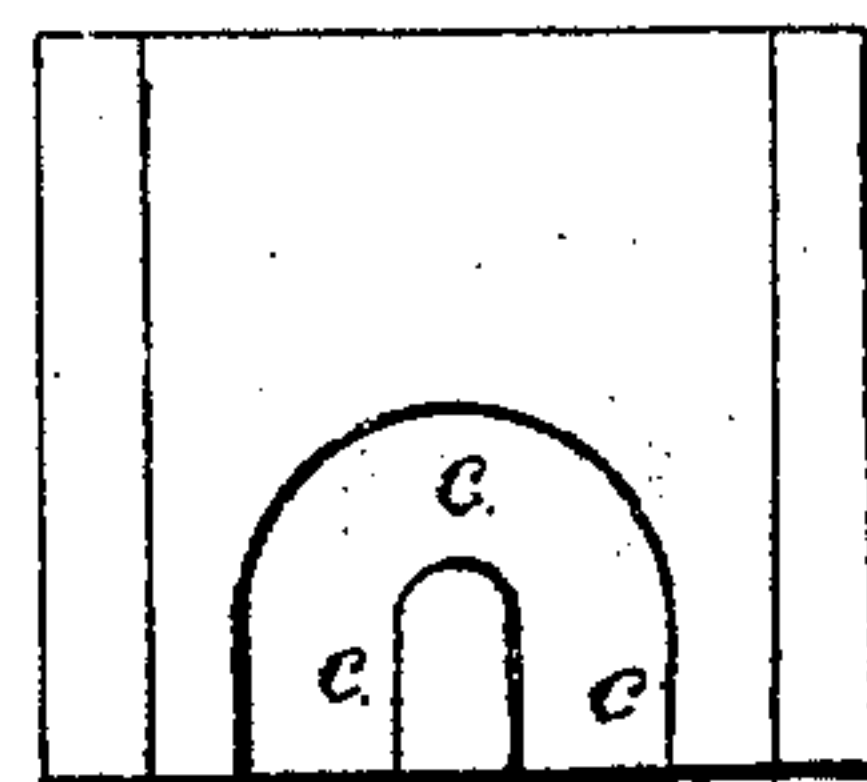


Fig. 5.

Witnesses:

Jno. D. Patten  
S. M. Port

Inventor:

Henry Reynolds  
By atty. A. B. Stoughton.



# United States Patent Office.

HENRY REYNOLDS, OF AURORA, NEW YORK.

Letters Patent No. 94,441, dated August 31, 1869

## IMPROVED APPARATUS FOR WELDING CHAIN-LINKS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, HENRY REYNOLDS, of Aurora, in the county of Cayuga, and State of New York, have invented certain new and useful Improvements in Machines for Welding Chain-Links; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a front elevation of the machine.

Figure 2 represents a vertical section through the same, taken at the line C D of fig. 1.

Figure 3 represents a horizontal section through the machine, taken at the line A B of fig. 1.

Figures 4 and 5 represent the anvil and hammer-dies, for welding and finishing the links, on an enlarged scale.

Similar letters of reference, where they occur in the separate figures, denote like parts of the machine in all of the drawings.

The object and purpose of my invention are to weld up links in forming chains, by a series of graduated blows between dies of peculiar form, and so that no fin shall be formed at the line of meeting of the dies, and thus weld and finish the links at the same time.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

In a suitable housing or frame, E, is arranged a crank or eccentric-shaft, F, which may be turned or stopped by an endless belt running upon the fast pulley G, or shipping it upon the loose one H, as the case may be.

On the end of said crank-shaft, opposite to the fast and loose pulleys, is a balance fly-wheel, I, for giving steadiness of motion to the shaft, and to the hammer J, connected to it by the pitman or crank-rod K, said hammer moving upon guides or ways, L, in the housing.

In the under part of the hammer J, a portion of the shaping-die is formed, better seen at *a a*, fig. 4, this die working, not against, but into the under or anvil-die *c c*, as will be explained.

Upon a shaft, M, supported in the housing or frame E, and at or near the lower end thereof, there is an adjustable cam, N, which can be set, and then fastened to said shaft.

And upon one of the ends of this shaft M, there is arranged a hand-lever, O, which can, if found desirable, be made adjustable by its set-screw *e* taking into one of a series of holes in an arc, *b*, secured to the shaft M.

Upon the cam N, rests the anvil P, which can be raised up or let down by said cam, through the lever O.

The cam N is slipped upon the shaft M. and when

adjusted, is fastened by a set-screw or other device, *f*, and by shifting the cam or the lever upon the shaft, and then fastening them, the anvil can be raised or kept at its working-position with less or more motion, as the character of the work may require.

The anvil moves and is guided in its movements by the ways L, and on the top of the anvil is formed a portion of the welding, shaping, and trimming-dies, as seen at *c c*.

The anvil-dies *c c*, it will be perceived, are of greater depth than half the diameter of the finished link, and the hammer-die *a a* is less in depth than the half diameter of the link, so that the die *a a* enters into the die *c*, and their line of contact is within the under die, leaving no space or joint in which an objectionable fin or die-mark can be made. The hammer does not touch the anvil, but the hammer-die enters into the anvil-die, and when the two dies approach each other as near as they can, the space formed by the two unequal cavities in the dies makes a complete circular cavity, in cross-section, for giving that form to the welded link, as seen in fig. 4.

The hammer and its die move through a uniform space, which is defined by the crank on the shaft F.

The anvil-die is moved up gradually, so that the first blows of the hammer-die may be light, just reaching the metal to be welded, but by bringing down the lever or raising the cam N, the anvil and its die are brought nearer and nearer to the hammer-die, and thus receiving increased or graduated blows, until the hammer-die enters the anvil-die, and not only completes the weld, but shapes and neatly finishes the link, so that there is scarcely a fin or a die-mark perceptible.

Different dies may be used in the machine for different-sized links, and the adjustment of the cam is such that the anvil-die can be so accurately raised that the upper die will work into it, without jamming or sticking. From the points *n*, of the anvil-die *c*, it flares outward, so that the upper die is readily worked into it, without any danger of marring it.

I am aware that hammers or drop-dies have been used, and that anvils with dies in them have also been used. These I do not claim; but having thus fully described my invention,

What I do claim herein as new, and desire to secure by Letters Patent, is—

The combination of the hammer J and its dies *a*, with the anvil P and its dies *c*, when operating together, substantially as herein described, for welding and finishing welded links, as set forth.

HENRY REYNOLDS.

Witnesses:

E. T. BROWN,

TALLMS. DELAFIELD.