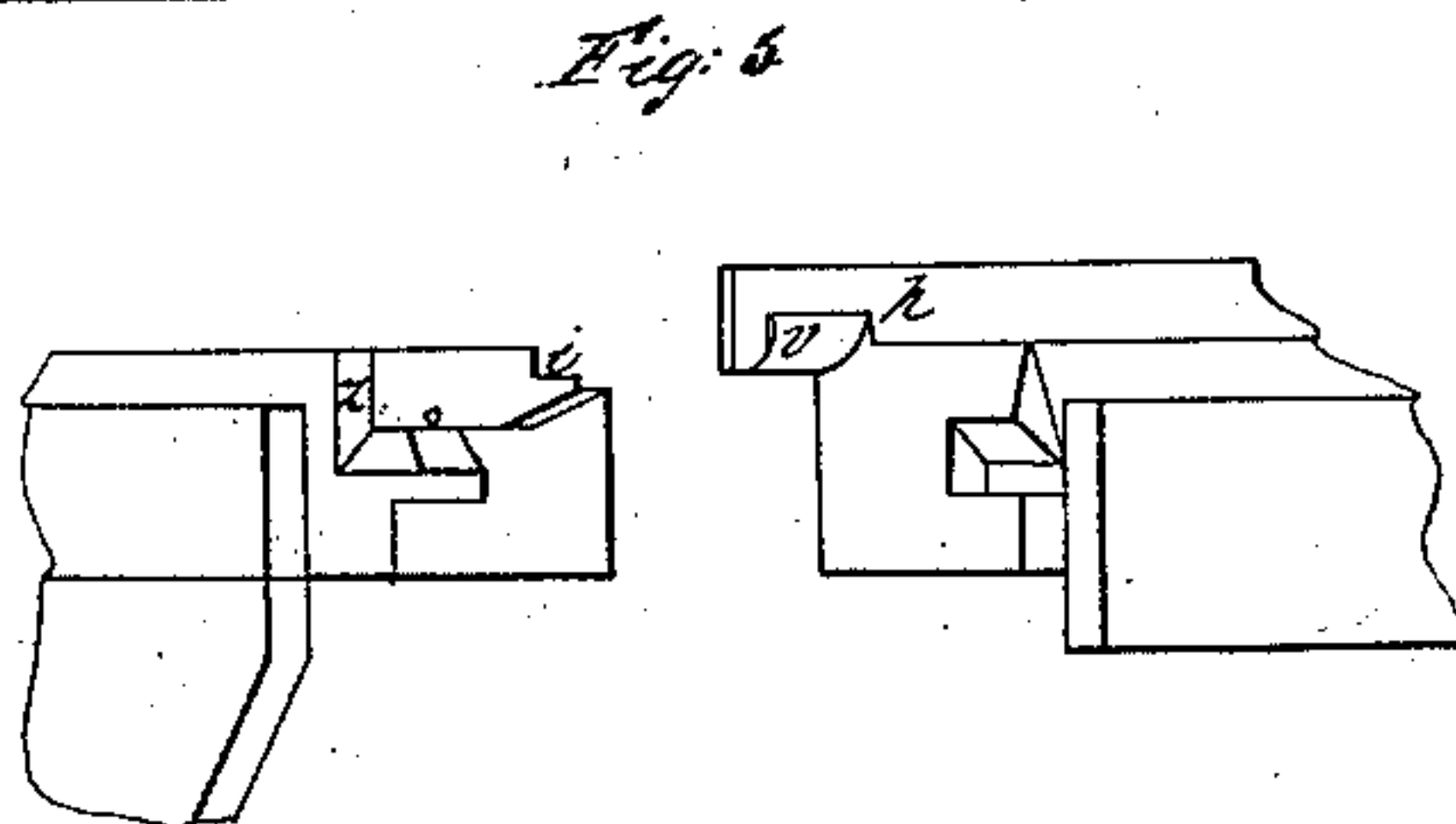
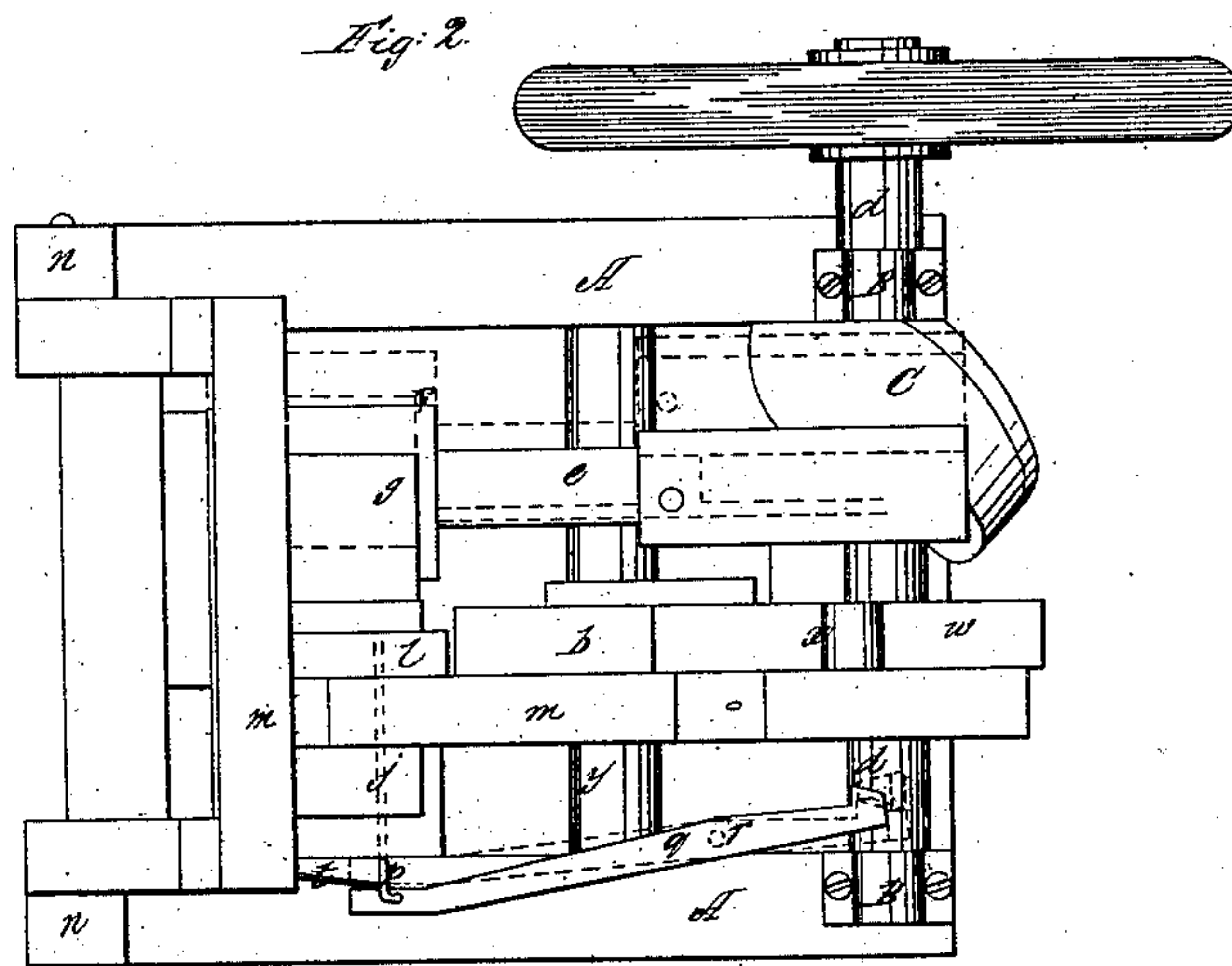
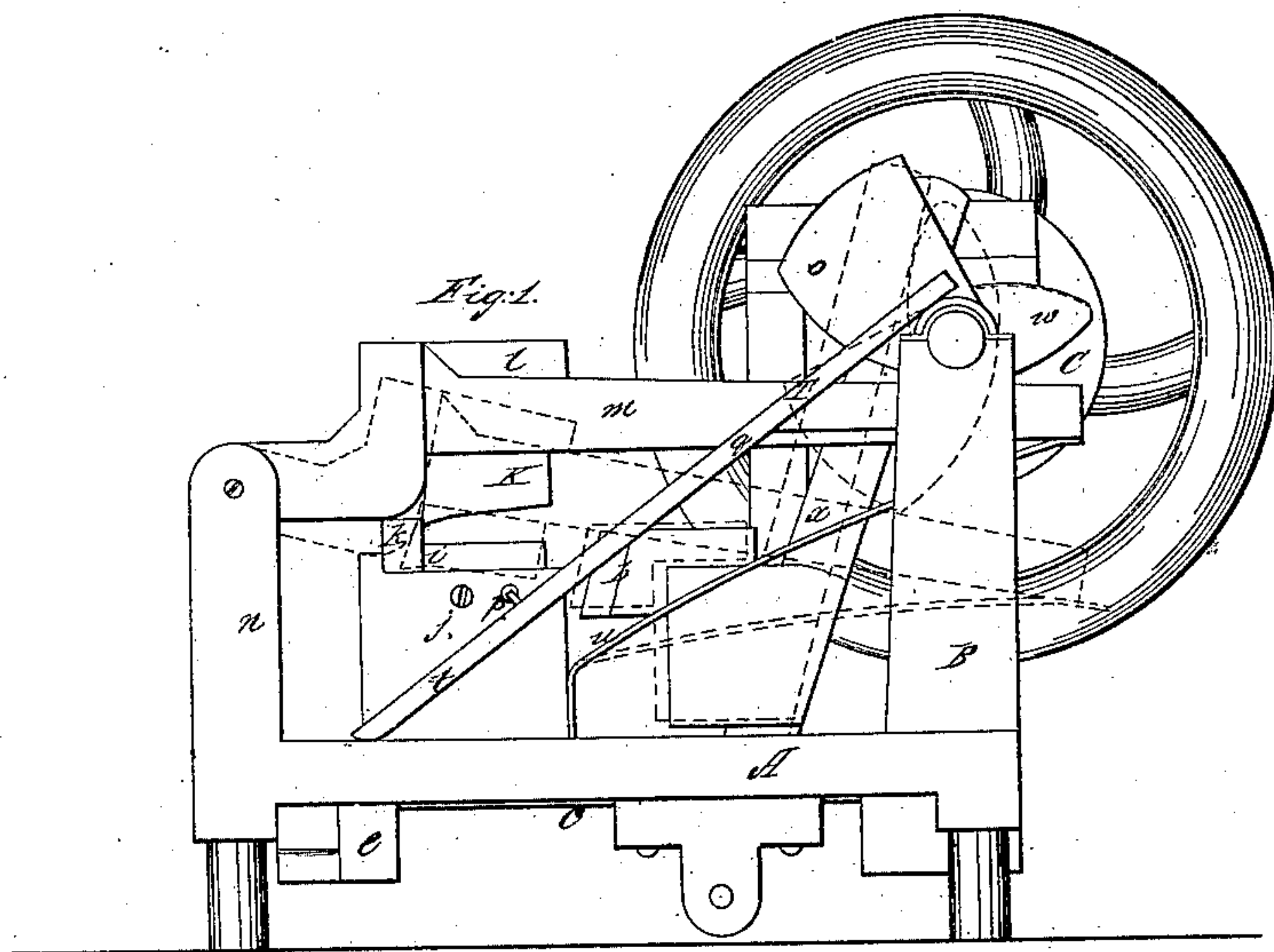


W. Koplin,

Spike Machine,

N^o 61,214.

Patented Jan. 15, 1867.



Witnesses:

James C. Erwin
Edward H. Knight

Inventor:

Wm. Koplin
By Amos A. Atty

United States Patent Office.

WILLIAM KOPLIN, OF NEWCASTLE, PENNSYLVANIA.

Letters Patent No. 61,214, dated January 15, 1867.

IMPROVEMENT IN SPIKE MACHINES.

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, WILLIAM KOPLIN, of Newcastle, in the county of Lawrence, and State of Pennsylvania, have invented a new and improved Spike Machine; and I do hereby declare the following to be a full, clear, and exact description of the nature, construction, and operation of the same, sufficient to enable others skilled in the art to which my invention appertains to understand and use the same, reference being had to the accompanying drawings, which are made a part of this specification, and in which—

Figure 1 is a side elevation.

Figure 2 is a top view or plan.

Figure 3 are detached views of the dies.

The improvement consists in the arrangement of the moving die and knife and the descending pointer, which are so adjusted and adapted that the motion of the pointer follows the cutting movement of the knife, lengthening the point into a recess in the knife-shaft, the pointer being withdrawn before the retraction of the knife. In the drawings—

A is the bed of the machine, from which rise standards B, which support the main shaft *d*, to which the cams *c*, *w*, *o* are attached. *n n* are standards supporting the vibrating lever *m*, carrying the pointer K, which is actuated by the cam *o*, on the main shaft *d*. The rock-shaft *e* carries the movable die *g*; and is actuated by the cam *c*. *j* is the stationary die. The header *b* is carried by the lever *x* on the rock-shaft *y*, and is actuated by the cam *w*.

The operation of the machine is as follows: The square bar (nine-sixteenths of an inch square usually) is laid upon the rest and extends to the face of the header *b*. The first motion is derived from the small cam *c* or the main driving-shaft *d*, actuating the rock-shaft *e*, which carries the die-carriage *f*. On the latter is fixed the moving die *g* with the knife *h* attached, the contact of whose cutting edge with the edge *i* of the stationary die *j* removes the piece of bar which is to form the spike. The piece is grasped between the adjacent faces of the two dies, and is by them held for the action of the pointer and the header. The pointing is accomplished by the descending swage K, which is attached to the head *l* on the lever *m*, which is journaled in the standards *n n*, and is moved by the cam *o* on the main shaft *d*, so as to time the movements of the pointer to follow the cutting movement of the knife and precede its return motion. The form of the point is given by the incline on the bottom of the die, and the descending swage K, which draws out the point, causing it to extend into the recess V, (fig. 3,) beneath the shaft of the knife, which cuts it off the bar. When the pointer K has descended its lower face is not quite parallel with the face of the die upon which the spike is lying, so that the latter is more tightly gripped near its point than at the other end. The effect of this is to permit it to be upset slightly by the action of the header causing the spike to be somewhat larger and stronger underneath the head than at any other point. The piece of iron being fairly gripped and pointed, the header *c* is next brought against the projecting end, which is thereby swaged down into the countersunk faces 3, (fig. 3,) of the die-block, and a finished spike is the result. The header *b* is operated by the cam *w* on the main shaft, which comes in contact with the lever *x*, on the rock-shaft *y*, to which the header is attached. The spike is discharged from the unclosed dies by means of the clearing-rod *p*, which passes through the stationary die and is protruded therefrom and against the spike as soon as the dies are unclosed, pushing the spike out of its bed and allowing it to drop to the ground. The clearing-rod is operated by the lever *q*, which is pivoted to the frame at *r* and moved at the proper instant by the stud *s*, on the main shaft, which comes in contact with the upper end of the lever at the proper time, the spring *t* restoring the clearer *p* and lever *q* to their normal position when the stud *s* has passed from contact with the lever *q*.

It will be perceived that the spike is held firmly for the period during which the head is being formed, the surfaces of the cams *c* and *o* being concentric for a certain space, with their axes of revolution up to the point of ultimate pressure upon the head of the spike. As soon as this is attained the header *b* and top pointer K are withdrawn, but the pressure is still maintained upon the movable die *g*, until such time as the top pointer K shall clear itself from the notch on the under side of the knife-haft into which it had protruded in the act of pointing the spike by drawing it out. The pointer K being freed, the movable die is withdrawn and the spike removed by the clearer *p*, as described. *u* is a spring to restore the lever into its upper position when the cam *o* is withdrawn. The dies *g*, *j* are made respectively in one piece, and of chilled iron, the advantage of

which consists in their cheapness, durability, the economy of fitting, and the absence of marks upon the spike at the points of junction of the pieces.

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

The arrangement of the moving die *g* and knife *h*, with the descending pointer *K*, actuated by cam so as to cause the pointer to follow the cutting movement of the knife and precede the withdrawal of the latter, for the purpose described.

To the above specification of my improvement in spike machines I have signed my hand this fourteenth day of July, 1866.

WM. KOPLIN.

Witnesses:

JAS. L. EWING,

EDWARD H. KNIGHT.