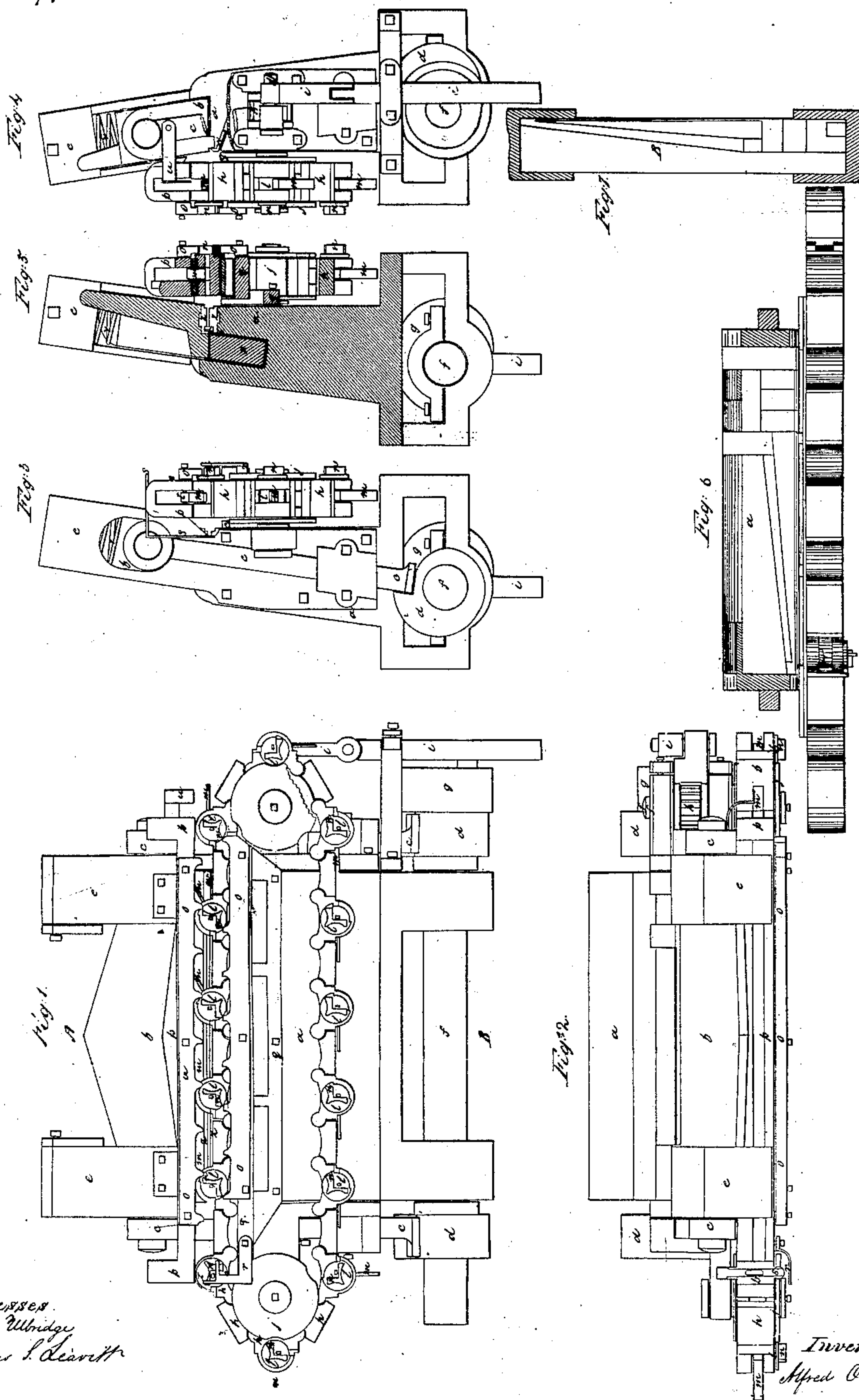


A. Owen,
Making Wrought Nails,

Patented Feb. 12, 1861.

No 31,397-



Witnesses.
Geo. W. Bridge
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UNITED STATES PATENT OFFICE.

ALFRED OWEN, OF BUFFALO, NEW YORK.

NAIL-MACHINE.

Specification of Letters Patent No. 31,397, dated February 12, 1861.

To all whom it may concern:

Be it known that I, ALFRED OWEN, of Buffalo, in the county of Erie and State of New York, have invented certain Improvements in Machinery for Making Wrought-Nails; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 represents the elevation of the machine. Fig. 2 is the plan of the same; Figs. 3 and 4 the two end views; Fig. 5 is a vertical section taken through A, B; Figs. 6 and 7 represent the hammer and anvil.

The machine consists of the stationary anvil *a* securely fastened to a block of wood bedded in the ground so as to insure solidity. The hammer *b*, is operated by the arms *c, c*, whose lower ends have flat projections that rest on the faces of cams *d, d*, the other ends of the arms *c, c*, are fastened to the hammer which has two guides *e, e*, one on each end, these guides are secured to the ends of anvil *a*.

f is the main shaft giving motion to the cams *d, d*, and the cam *g*. *h*, (Fig. 1), is an endless chain revolving around two wheels *j, j*, that run in their respective bearings cast on the guides *e, e*, said wheels are operated by the cam *g*, on main shaft *f*.

i, is a connection that transmits the motion from the cam *g* to the ratchet wheel *k* with its pawl and which is secured on a shaft *f f*, on which is keyed the wheel *j*—the wheels *j, j*, have grooves the size and shape of the hinge of the endless chain *h*, so as to take firmly hold of it.

Every alternate link in the chain *h* has a round hole in which is fitted the grippers *l, l, l*, having a rectangular hole through its length for the nail rod to pass through while introducing the rod under the hammer *b*.

m is a lever for holding the rods, while the nails are being forged. The levers have flat places so as to loosen the rod by bringing these places opposite the rod.

n, n, n, are projections on the grippers *l, l, l*, for turning said grippers, these projections match in the toothed bars, *o, o*, opposite to each other, and fastened to the two guides *p*, and *q*, on which the endless chain *h* travels, or if desired these bars may be made movable (reciprocating) without changing the nature of the invention by

having bars *o, o*, opposite to each other a vibrating motion is imparted to the grippers *l, l, l*, for every move the chain *h* makes.

r (Fig. 1) is a rest for guiding the rods while introduced in the machine.

s (Fig. 2) is a movable gage placed opposite to the rest *r* for gaging the right amount of material for the nail.

t (Fig. 3) is a friction roller for the purpose of tightening the levers *m, m, m*, down on the rod while the levers *m, m, m*, pass that point.

u (Fig. 1 and Fig. 4) is a knocker operated by the motion of the arm *c, c*, and serves the purpose of loosening the rods in the grippers *l, l, l*, as each one in its turn passes under the knocker.

v, v, v, (Figs. 3, 4, 5) are springs operating on each end of the hammer *b*, to increase its velocity while descending.

x (Fig. 5) is a packing or spring of india rubber or any other elastic material for the hammer *b*, to strike against so as to take away the injurious jar, caused by the striking of the hammer *b* against the face of anvil *a*; it also serves the purpose of regulating the force of the blow.

w, w, (Fig. 4) are two cutters for severing the nails from the rod after passing through the whole length of the machine, one of them is fastened in the anvil *a*, the other in hammer *b*, both being adjustable, they are operated by the movement of the hammer *b*.

y (Fig. 5) is a cutter or shear for the purpose of cutting off any surplus of iron that may be in the nail (caused by unevenness of the rod) before the nail passes under the finishing dies.

z (Fig. 5) are the two faces of hammer *b*, and anvil *a* or the dies which shape the nail.

By referring to the drawing the operation of the dies on the iron can be more readily seen, which is substantially this, the first die merely squares that part of the rod intended to make a nail, the following blows to within the four or five last blows merely forge out the iron under the machine to the required length, commencing near to where the head is formed and continuing until the point on the nail is reached, when so far advanced the nail begins to receive blows from the dies which have the desired shape.

The operation of the machine is as follows: The rods are heated in a suitable furnace stationed near the machine; and placed

upon the rest *r* (Fig. 1,) and pushed through the rectangular aperture in the grippers *l, l, l*, when they present themselves, the gage *s* prevents the rod from being pushed too far.

5 At the next move from the endless chain *h* the rod is fastened securely in the grippers *l, l, l*, by the levers *m, m, m*, coming in contact with the friction roller *t* (Fig. 3) which depresses the levers *m, m, m*. At the next

10 move of the endless chain *h*, the grippers *l, l, l*, receives a motion equal to a quarter turn, and then the hammer *b* which receives its motion from the main shaft *f* and which also imparts motion to the endless chain *h*

15 reaches the point on cams *g, g*, which allows the hammer *b* to drop giving the rod a blow. Instantaneously with dropping, the hammer *b* is moved out of the way for the rod to advance and for the grippers *l, l, l*,

20 to turn back the quarter turn previously made so as to receive the next blow. This is continued until within a few blows of being finished where a cutter *y* is attached for the purpose of cutting off the point of the

25 nail in case the rods contain too much material. The remaining blows of the hammer *b* give to the nail the desired shape. The next move of the endless chain *h* brings the rod between the cutters *w, w*, which

30 separates the now forged nail from the rod, allowing it to drop in a suitable receptacle. The next move of the chain brings the lever *m, m, m*, in position to receive a blow from

the knocker *u*, which loosens the rod from the grippers *l, l, l*, the rod then is ready to 35 be taken out and heated over for making another nail.

What I claim and desire to secure by Letters Patent, is, first—

1. In combination with a stationary anvil, 40 and a moving hammer, each provided with suitable shaping dies, an endless chain carrier that brings up, and carries past the dies, the nail rods, substantially in the manner described. 45

2. In combination with an endless chain carrier, the series of grippers traveling with it, for firmly holding, and turning the nail rods, to bring their several sides to the action of the hammer, substantially as described. 50

3. In combination with a series of grippers that hold, carry, and turn the nail rods, the levers *m*, for causing an increased gripping force, when the hammer is acting 55 upon the spike rod.

4. In combination with a traveling chain carrier, and a series of grippers that hold, carry, and turn the nail rod, a delivering mechanism for releasing the nail when finished substantially as described. 60

ALFRED OWEN.

Witnesses:

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