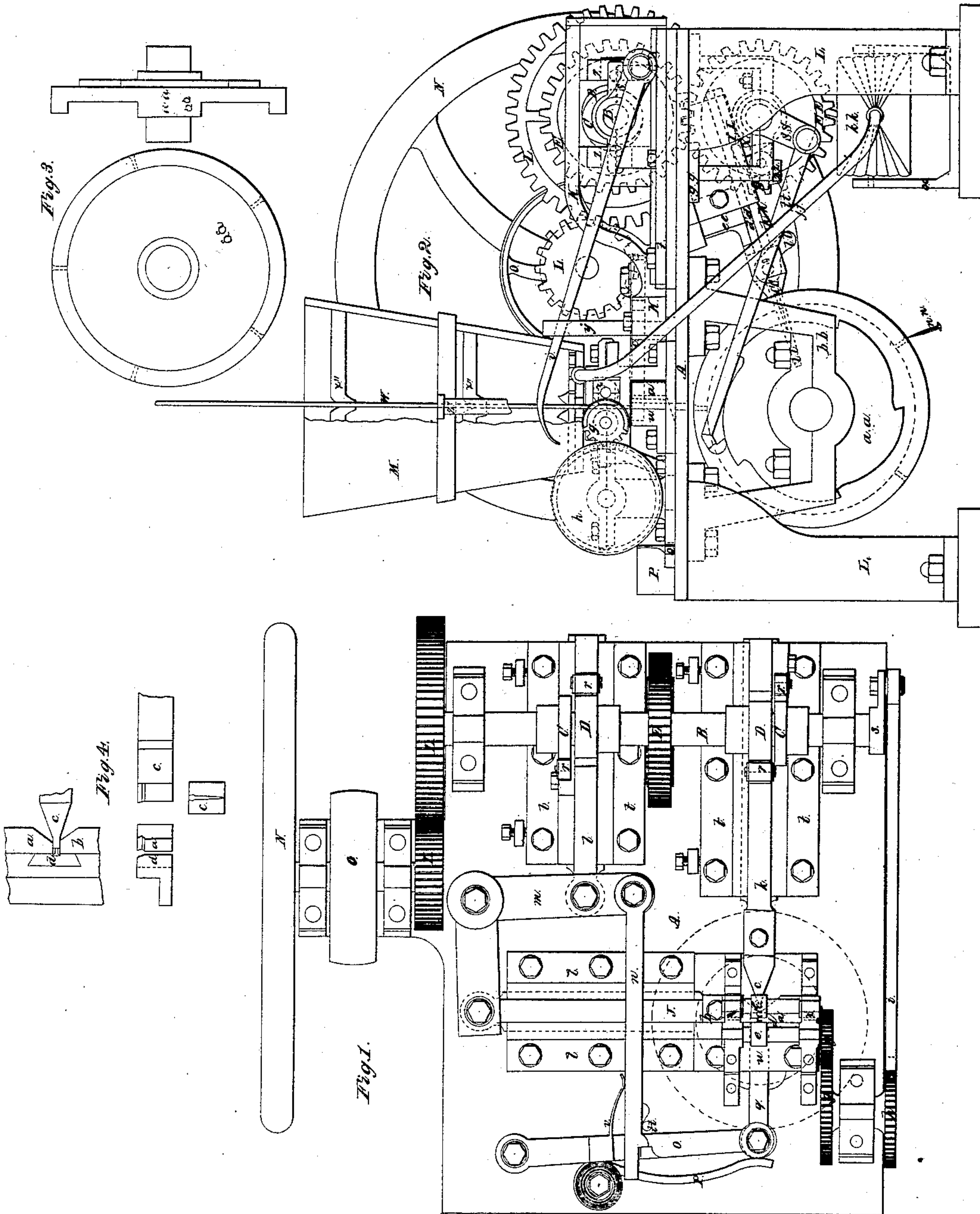


O. Breden,
Making Wrought Nails,

N^o 21,812.

Patented Oct. 19, 1858.



UNITED STATES PATENT OFFICE.

OTIS BREDEN, OF ST. LOUIS, MISSOURI.

WROUGHT NAIL.

Specification of Letters Patent No. 21,812, dated October 19, 1858.

To all whom it may concern:

Be it known that I, OTIS BREDEN, of the city of St. Louis and State of Missouri, have invented a new and Improved Machine for Manufacturing Wrought Nails, Spikes, and Horseshoe-Nails; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon.

The nature of my invention consists in the employment and attachment of the furnace M, over the machine, together with the several die faces, movable and stationary forming the die, by which the nail is made, and the machinery attached thereto, for operating the same, also the chisel *q*, for cutting of the bar W, and the heading apparatus under the bed plate A, as shown on the drawing.

In each of the figures wherein like parts are shown they are designated by the same letters of reference.

A, is the bed plate, upon which all the operating parts are sustained.

B, is the shaft, upon which is attached the cams for working the die faces, the spur wheel for working the heading apparatus under the bed plate, and the crank for moving the feed gear for feeding the iron into the die.

C, D, C, D, are the cams operating on the rollers in the adjustable brass boxes attached in the yoke of slides *k* and *l*. The brass boxes are arranged in the yokes in order that they may be adjusted or set up by means of set screws, as the cams and rollers wear off.

E, and E, E, are the spur wheels for driving the heading apparatus; O, the pulley for driving the machine; L, L, the spur gearing for driving the machine; M, the furnace which is made of boiler iron lined with fire clay and sustained by a stand with three legs (as shown in Figure 2, leg *z* broken off) immediately over the die *x*, *x*, are guides *m'*, the furnace through which the bar of iron W, passes; N, the fly wheel; *d* and *b*, stationary die faces, *a* and *c*, movable die faces. *e* and *e*, feed rollers for drawing the iron through the furnace and feeding into the die.

f and *f*, are adjustable boxes for adjusting the rollers, as the thickness of the iron may require. These boxes are adjusted by means of a wedge driven in the space be-

tween the boxes and stands for setting the rollers; *g* and *g* gearing for moving the feed rollers. *h*, rag wheel; *i* the rod operating on the rag wheel *h*; J the slide to which is attached the movable die face *a*; *k*, the slide to which is attached the movable die face *c*; *l*, the slide for moving the crank motion *m*, attached to the slide J; *n*, bar attached to the crank *m*, moving the arm *o*, by means of a catch; *t*, *t*, a pin against which the projection on the bar *n*, works, causing it to slip the catch on the arm *o*; *o*, an arm to which is attached the chisel *q* for cutting off the nail; *q*, the chisel.

P, is a spring either spiral or elliptical to force the chisel *q*, under the die cutting off the nail; *r*, *r*, *r*, *r*, adjustable brass boxes in which are rollers for the cams C, D, C, D, to work on. The brass boxes *r*, *r*, *r*, *r*, are arranged in the yokes, in order that they may be adjusted or set up by means of set screws as the cams and rollers wear off; *s*, the crank for operating the rod *i*.

t, *t*, *t*, *t*, *t*, *t* are ways; *v* spring attached to the arm *o*, pressing against the bar *n*; W, bar of iron as it passes through the furnace; *d* *d*, header wheel; *b* *b*, hangers supporting the header wheel; *c* *c*, the header die; *d* *d*, slide to which is attached the die *c* *c*; *e* *e*, spring either spiral or elliptical operating on the slide *d* *d*; *f* *f* rod working on the header wheel in order to bring the nail directly opposite the header die *c* *c*; *g* *g*, hangers supporting the shaft for driving the heading apparatus; *h* *h*, projection on the slide *d* *d*; *y*, pawl for holding the slide back; *z* *z*, spring to hold the pawl *y*, against the slide *d* *d*. The dotted lines *l* *l*, shown on the header represents a finger for drawing the nail out of the header wheel; *s* *s*, crank for operating the rod *f* *f*; X cam for raising the pawl *y*, and the header slide *d* *d*; L L, legs supporting the bed plate A; *k* *k*, bellows worked by a crank attached to the header shaft, to cause a blast through the pipe *j* *j* into the bottom of the furnace M.

Having thus given the names and object of all the different parts of my machine with their respective letters, I will proceed to describe the operation of the machine in making wrought nails and spikes. The bar of iron W, is placed in the furnace and allowed to remain until the end is heated to a welding heat it is then passed down through the guides X, X, until it is caught by the feed rollers *e*, and *e*, which are worked

by the rod *i*, attached to the crank *s*, operating on the rag wheel *h*, moving the spur wheels *g g*, moving outside roller *e*, drawing the bar *W*, from the furnace into the space
 5 between the die faces *a*, *b*, *c*, and *d*. The die face *a*, is then forced up by means of the cam *D*, operating on the roller in the yoke of slide *l*, drawing back the end of the crank motion *m*, to which it is attached, and forcing
 10 in the end attached to slide *J*, pressing the iron tightly against the stationary die face *b*, forming two sides of the nail, then the advancing of the slide *k*, by means of the cam *D*, operating on the roller in the
 15 yoke of slide *k*, forcing the die *c*, up to its place, pressing and pointing the nail. Then the die faces *a*, and *c*, move out together by means of the cams *C*, and *C*, operating alternately on their respective rollers in the
 20 slides *k*, and *l*, the bar *n*, attached to the crank motion *m*, shoving out the arm *o*, drawing the chisel *q*, from under the die leaving an opening through the bed plate *A*, through which the rollers *e*, and *e*, force
 25 the now pressed nail out of the die and enters it in the hole or opening in the header wheel *a a*. In the mean time the bar *n*, is forcing out the arm *o*, the projection on the bar *n*, moving past the pin *t t*, will cause
 30 it to slip the catch on the arm *o*, leaving it free to be forced in by means of the spring *P*, causing the chisel *q*, to cut the nail off, immediately under the die, letting it drop into the header wheel *a a*, as far as the
 35 shoulder formed on the nail by the top of the die faces *a*, *b*, *c*, and *d*, will admit at the same time the nail is forced below the die faces *a*, *b*, *c*, and *d*. The iron is drawn out of the furnace and entered into the space
 40 between the die faces, and directly after the nail is cut off, the cams are ready to operate as before. The header wheel *a a*, is then drawn around by means of the rod *f f*, attached to the crank *s s*, working in the rag
 45 or notches on the header wheel *a a*, drawing it around until it becomes directly opposite the header disk *c c*, which is forced against the nail forming the head by means of the spring *e e*. The cam *X*, then revolves around
 50 drawing back the slide *d d*, at the same time the finger *l l*, which is attached to the header slide *d d*, extending inside of the header wheel *a a*, drawing the nail out and letting it drop as it revolves around until
 55 the projection *h h*, gets opposite the pawl *y*, which is forced up by means of the spring *z z*, holding the slide *d d*, up until another

nail passes around opposite the header die *c c*. The cam *X*, then moves around striking the trigger on the end of the pawl *y*,
 60 leaving the slide *d d*, free to be forced against the nail forming the head as before, and so on until the bar of iron is worked up into nails. There may be one or more
 65 bars of iron in the furnace heating the ends ready to put into the slides *x*, *x*, and passed through into the rollers *e*, *e*, immediately after the bar of iron is worked up, thereby losing no time or fuel in heating the iron.

The operation for making spikes is the
 70 same as making wrought nails.

On making horse shoe nails the operation is the same as that described for making
 nails, with the exception of the heading apparatus, which will be dispensed with alto-
 75 gether, as the head being square will be formed in the top of the die faces *a*, *b*, *c*, and *d*, (as shown by Fig. 4, which represents a set of die faces for a horse shoe nail) the nail will therefore be finished immediately
 80 after it is cut off by the chisel *q*.

Having thus described the operation of my machine, what I claim as my invention and wish to secure by Letters Patent are as
 85 follows:

1. The die faces *a*, *b*, *c* and *d*, constructed and fitted as described, operated in connection with the slides *k*, *l*, and *j*, the crank *m*, and the cams *C*, *D*, *C*, *D*.

2. The use of the bar *n*, for moving out
 90 the arm *o*, and the spring *P*, for forcing in the chisel *q*, which is attached to the arm *o*, to cut off the nail.

3. The attachment of the rod *i* to the crank *s*, working the feed gearing *g g*, causing the rollers *e*, *e*, to revolve and feed the iron from the furnace *M*, into the die faces
 95 *a*, *b*, *c*, and *d*.

4. The employment of the header wheel *a a*, and the operation of the rod *f f*,
 100 attached to the crank *s s*, for moving the same around in order to bring the nail opposite the header die *c c*.

5. The employment of the header die *c c*, with the slide *d d*, for the purpose of form-
 105 ing the head together with the pawl *y*, for holding up the slide *d d*, and the motion of the cam *X*, in lifting the trigger of the pawl *y*, leaving the slide *d d*, free to be forced in to head the nail by the spring *e e*.

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Witnesses:

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 GEORGE W. COTTON.