C. B. ALLEN.

Bolt-Heading Machine.

No. 203,982. Patented May 21, 1878.

Fig. 1.

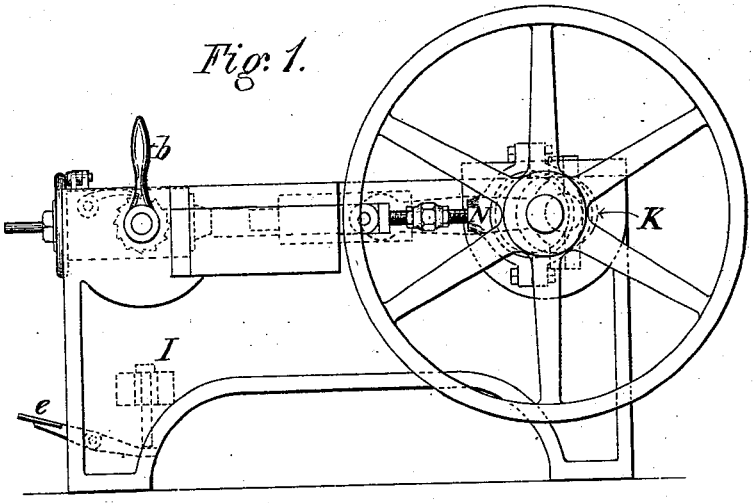


Fig. 2.

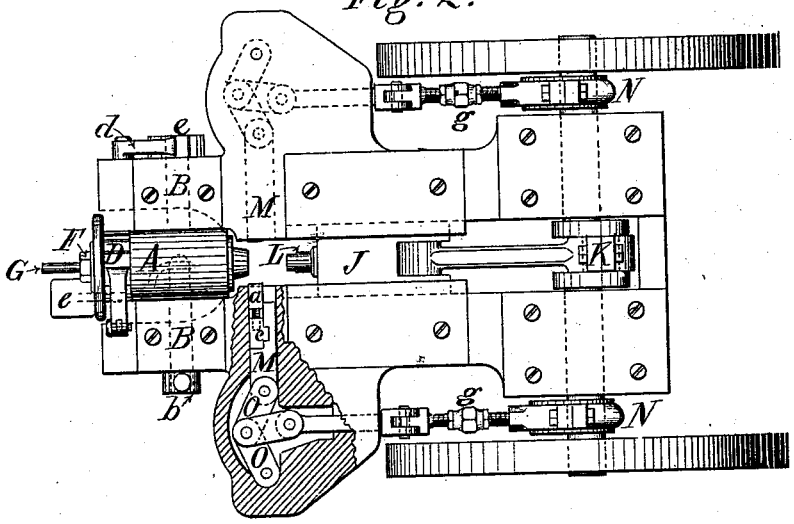
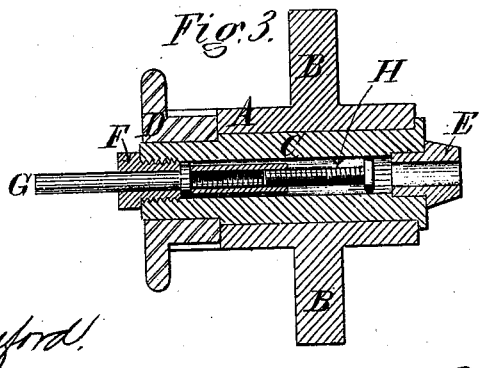


Fig. 4.

Fig. 3.



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CHARLES B. ALLEN, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN BOLT-HEADING MACHINES.

Specification forming part of Letters Patent No. **203,982**, dated May 21, 1878; application filed September 21, 1877.

To all whom it may concern:

Be it known that I, CHARLES B. ALLEN, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Machines for Heading Bolts or Rivets; and I do hereby declare that the following is a full, clear, and exact description of the same.

The objects of my invention are to simplify the construction of the machine, to protect the working parts from injury, and to bring the work directly under the control of the operator.

These objects I attain in the following manner, reference being had to the accompanying drawing, in which—

Figure 1 is a side view of my improved machine for heading bolts and nuts; Fig. 2, a plan view, partly in section; and Figs. 3 and 4, detached views of parts of the machine, drawn to an enlarged scale.

A is the die-holder, which swings vertically on trunnions B B, adapted to bearings in the frame of the machine. One trunnion is provided with an operating-handle, *b*, and the other with a toothed wheel, *e*, to which is adapted a pawl or catch, *d*, hung to the frame of the machine.

C is a tube adapted to the holder A, so as to revolve therein for the purpose of bringing all sides of the bolt-head in contact with the hammers.

D is a ratchet or detent wheel attached to the rear end of the tube C, in order to so gage the movement of the die as to form the style of head required, this ratchet being provided with a suitable hand-wheel, by which it may be operated.

E is a tubular die secured in the outer end of the tube C. In this die the blank is placed previous to forming the head. F is a tubular bolt, which screws into the opening in the tube C at the end opposite the die E. G is a rod or bar extending through the bolt F, and having on the inside a head, which bears against the said bolt, thus preventing the rod from being forced out by the pressure upon the blank during the heading operation.

H is an extension-screw, one end of which rests upon the rod G, while the other forms an abutment for the blank. The object of this screw is to gage the length of the bolts made. This screw can be removed and the blank allowed to rest directly upon the rod G, if the length of the bolt is such as to require it.

I is a trip, held upon the body of the machine by a suitable bearing, in which it is allowed to slide vertically, this trip being operated by means of a foot-lever or treadle, *e*, so as to act upon the rod G when the die-holder A is in a vertical position, for the purpose of ejecting the bolt or rivet from the die.

J is a cross-head, which slides in suitable ways, and is operated by a crank or eccentric, K, on the main shaft. This cross-head carries a die, L, which upsets the blank and forms the top of the head.

M M are plates, operated by eccentrics or cams N N and toggles O O, the plates and toggles being arranged horizontally in recesses in the bed or table of the machine, and being covered by suitable plates, which protect them from injury when the machine is in operation, but which can be readily removed in order to gain access to the plates or toggles.

The plates M M are provided with dies *a*, held to the body of the plate by means of a tongue or dovetail, *c*, as shown in Figs. 2 and 4. These dies are made in two separate parts, as shown in Fig. 4, furnished with a male and female screw. When the die is in place the body of the plate M bears against the side of the die, and prevents it from turning. When it is removed, however, it can be set at any length required.

In this way I make one set of dies answer for all the different sizes of bolt-heads, whereas without this arrangement a different set would be required for each size.

The eccentrics N N are set in such a position on the shaft opposite the crank K, which drives the cross-head J, as to allow the said cross-head to nearly finish its work of upsetting the blank before the hammers are brought into action; and in order to bring the work to a closer caliper measurement, I place upon the eccentric-rod right and left hand adjusting-screws and nuts *g g'*, which increase or diminish the stroke of the hammer to allow for the adjustment which may be found necessary after the dies *a* have been set.

The operation is as follows: The extension-screw H is first set to suit the length of bolt required, as shown in Fig. 3, and the heated blank of the proper length is then inserted in

the die E while the holder A is in a vertical position. The said holder A is then tilted forward to a horizontal position by means of the handle *b*, and is held in this position by the latch *d*. The cross-head J, advancing, upsets the blank. The dies *a a* next come in contact with it, and then recede, and two sides of the head are formed. The tube carrying the die is then turned, by means of the detent-wheel D, to such an extent as to bring the next two sides in position to be operated upon by the dies *a*. The same operation then takes place as before, and so on until all the sides have been sufficiently operated upon. The latch *d* is then raised, and the holder A again brought to a vertical position. This brings the end of the rod G in contact with the trip I, and the operator, by placing his foot upon the treadle *e*, forces the bolt out of the die, and the operation is completed.

I wish it to be understood that I do not desire to claim, broadly, the combination of a rotating and tilting bolt-holder with heading-dies operated by means of toggles, as such a combination is shown in the patent of Taft, No. 14,258, February 12, 1856; but

I claim as my invention—

1. The combination of the eccentrics N and the toggles O, plates M, and dies *a*, arranged horizontally, with the die-holder A hung to the frame of the machine, so as to be capable of being turned from a horizontal to a vertical position, as set forth.

2. The combination of the tilting die-holder A and its central tube C with the ratchet D and its hand-wheel, carried by and moving with the said holder A, as specified.

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Witnesses:
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