

N. BEAUREGARD.

Bolt and Rivet Machines.

No. 142,193.

Patented August 26, 1873.

Fig. 1.

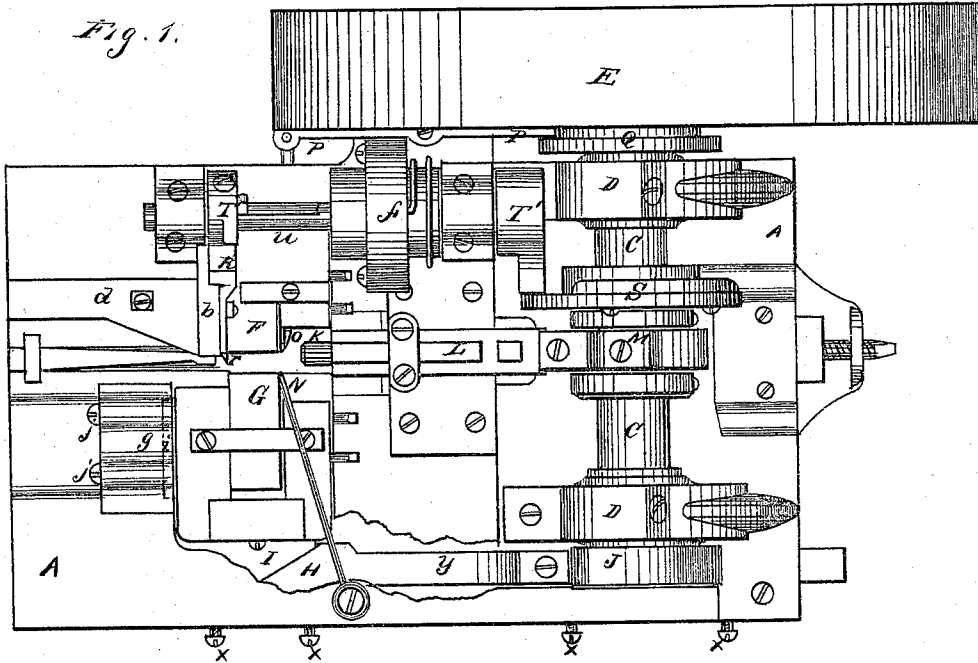
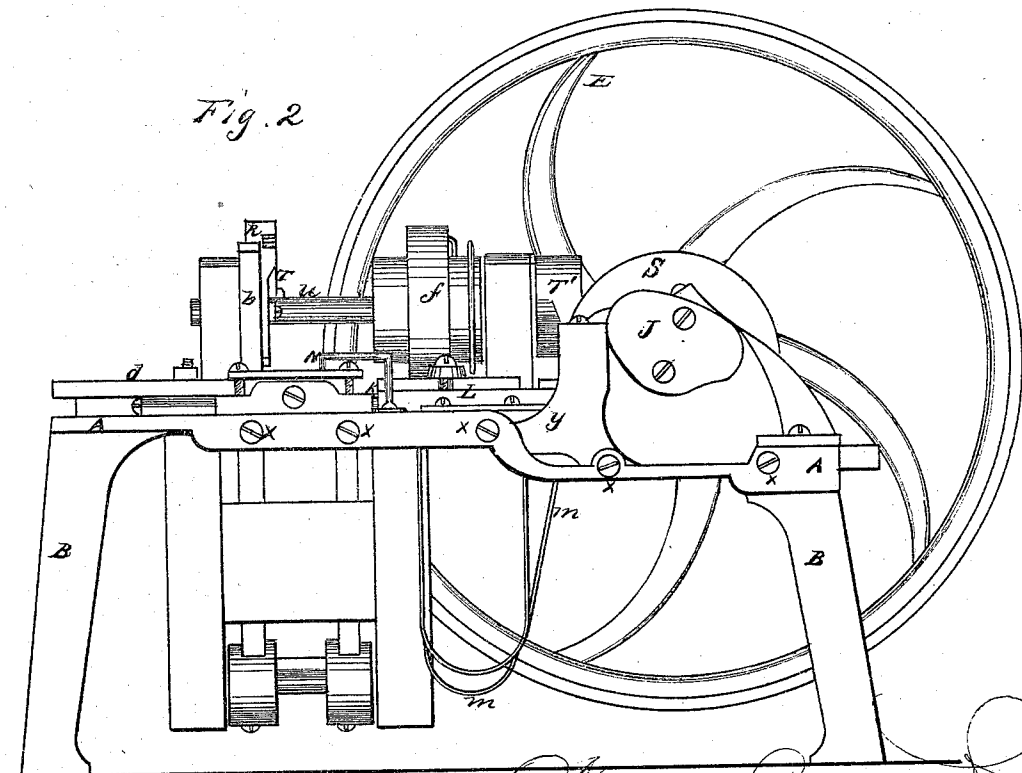


Fig. 2



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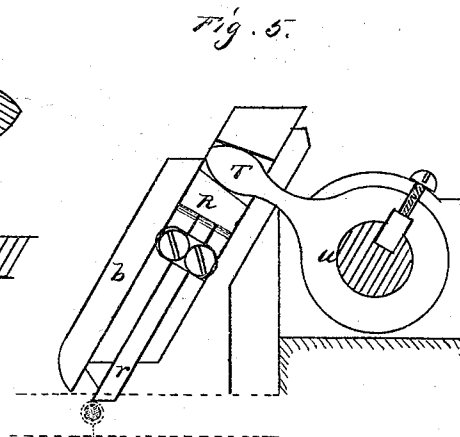
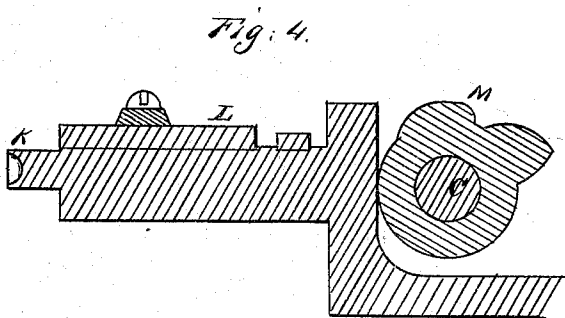
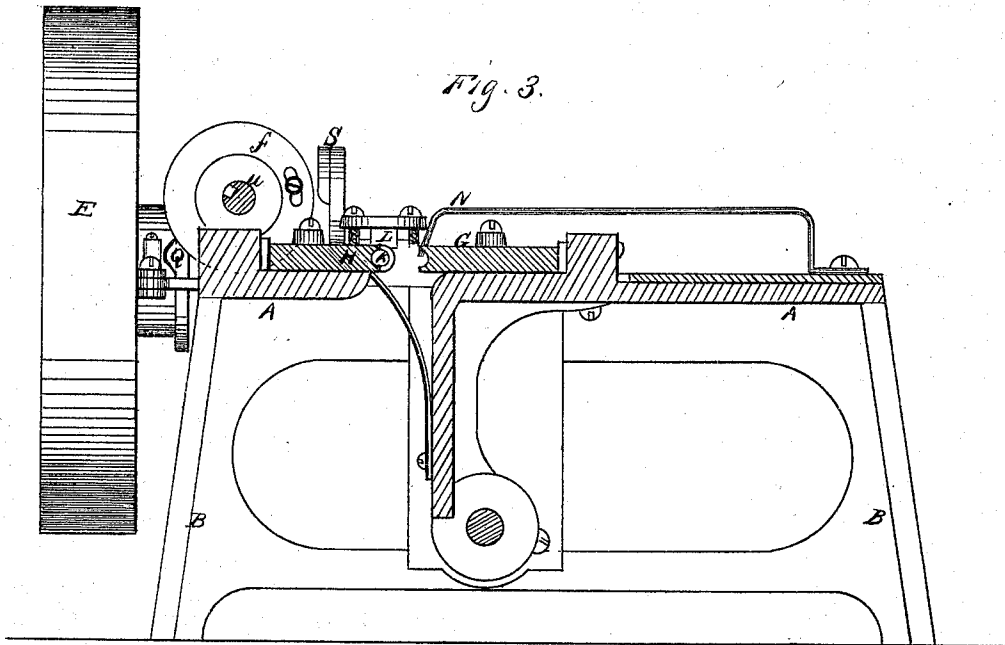
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2 Sheets--Sheet 2.

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UNITED STATES PATENT OFFICE.

NAPOLEON BEAUREGARD, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN BOLT AND RIVET MACHINES.

Specification forming part of Letters Patent No. **142,193**, dated August 26, 1873; application filed June 18, 1873.

To all whom it may concern:

Be it known that I, NAPOLEON BEAUREGARD, of San Francisco city and county, State of California, have invented a Bolt and Rivet Machine; and I do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use my said invention or improvement without further invention or experiment.

My invention relates to certain improvements in that class of bolt and rivet machines in which one stationary and one movable holding jaw are employed to grasp the rod and hold it while the bolt is being formed; and it consists more particularly in the employment of an independently-working knife or cutter for severing the bolt after it has been grasped by the two jaws of the machine, and which remains in position against the severed end of the bolt until the plunger has moved up and formed the head. This knife or cutter is removable for the purpose of sharpening without disturbing any of the other parts of the machine. My invention also consists in the employment of a double cam upon the driving-shaft, by which the plunger is first forced forward to the proper point to give the right length of rod for a rivet-head, and is then slightly retracted after the holding-jaws are closed, and while the rod is being cut off. It is then forced forward again to form the head, after which it is retracted as the jaws separate to a sufficient extent to allow the head of the rivet to pass it, when the rivet drops from between the jaws.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is a plan or top view. Fig. 2 is a side elevation. Fig. 3 is an end elevation in section taken through the holding-jaws. Fig. 4 is an enlarged view of the double cam for operating the plunger or former. Fig. 5 is an enlarged view of the cutter.

A is a strong frame, suitably constructed to support and hold the various operative parts, and standing upon legs B. C is a shaft which extends across one end of the frame, turning in boxes D, and having at one end a heavy fly or driving wheel, E. The clamping appa-

ratus consists of two jaws, F G, one of which is stationary, and the other movable. Both jaws are grooved upon their meeting faces in the usual way, so as to receive and hold the rod from which the bolt or rivet is to be formed.

The jaw G is moved forward by two inclined planes, H I, one of which is formed upon the end of the bar Y, at the rear of the sliding frame on which the jaw is fixed, while the other is operated by a cam, J, upon the end of the shaft C. As these two inclined planes are forced past each other, the movable jaw is forced against the stationary jaw with a powerful pressure. The plunger K is adjustably mounted in a sliding block, L, and this block is forced forward by a cam, M, upon the shaft C. This cam acts, first, to press the plunger forward against the end of the rod from which the bolts are to be made before it is clamped, and thus determine the length to be cut off. This length will be sufficient for the rivet and its head. The plunger is then allowed to retract a little, just as the rod is seized by the clamp and while it is being severed by the cutter *n*. The cutter remains down after severing the bolt, and thus serves as a back against which the short length of rod which forms the rivet or bolt is firmly held, while the cam again forces the plunger forward close against the holding-jaws to make the head. After the head is formed, the plunger is again retracted by the spring *m* into its farthest extent out of the way, the movable jaw is withdrawn and the finished bolt is allowed to drop out. A rod, N, extends down by the side of the movable jaw at such a point that when the jaw moves back, if the bolt or rivet should stick in the groove, it will be loosened so as to drop out by striking the rod. An upright arm, O, extends from below upward by the side of the stationary jaw, and is operated by the lever P and a cam, Q, on the shaft C, so as to be moved forward past the half groove in the stationary clamp as the jaws separate, and thus serves to throw the bolt out of this jaw, if it should stick in the groove. The cutter is firmly secured on a sliding frame, R, which moves in a fixed inclined way or guide, *b*, entirely independent of the jaws. This guide stands at such an angle to the joint between the jaws F and G, that the cutter will

cut across the line of the joint and at an angle downward, thus giving the least possible strain upon the jaws and joint.

By having the cutter independent of the jaws, the rod is cut squarely off after it is firmly clamped between them, thus avoiding the bending of the rod at this point, which happens when the cutter is attached to the movable jaw, and commences cutting before the jaws are firmly closed.

An arm, T, is fixed upon the transverse shaft U by means of a key, so that its extremity will rest in a groove in the cutter-slide. The shaft U is partially revolved at the proper instant by means of a cam, S, on the main shaft C, and an arm, T', on the extremity of the shaft U, so that the cutter is forced downward across the opening in which the rod is held, thus cutting it off close up against the jaws. A spring rotates the shaft U back and retracts the cutter after the cam has passed the arm T. The tension of this spring can be regulated by shifting the circular plate *f*, in which one of its ends is held. The cutter R is made removable from the guide so as to be sharpened, and it can also be easily adjusted forward as it is worn by use, the space being filled by pieces of metal. The frame or guide *b*, in which the cutter is held, has a horizontal portion, *d*, which rests upon and is fastened to the frame of the machine by a bolt and nut, as shown. This horizontal portion is grooved on its under side, so as to fit upon a corresponding projection on the frame in the manner of a slide, so that by loosening the nut the cutter-frame can be moved to or from the plunger, as desired. The operating arm T is keyed to the shaft U, so that it can also be shifted to accommodate the position of the cutter.

When a short bolt is to be made, it is evident that narrow jaws must be substituted

for the wide ones. In this case the cutter and its operating arm are shifted to the proper position toward the plunger to cause them to cut the rod close up against the jaws, thus permitting the use of a short plunger, no difference what width of jaw is used. When jaws of narrow width are used, a suitable metal block will be inserted between them and the outside of the frame, in which they are held in order to fasten or wedge them securely in place.

The permanent projection *g*, against which the outside edge of the frame which carries the movable jaw moves, is provided with a recess on its inner face, and a block of metal, *i*, is placed in the recess. This block can be moved outward against the side of the sliding frame by means of screws *j*, which pass through from the outside of the projection, in order to keep it steady in its movement. Adjusting-screws *x x* serve to set the bar Y with its incline H, so as to close the clamp more tightly. The clamping-dies are also provided with holding-screws, so that they can be easily moved from the jaws, if necessary.

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

The adjustable inclined way or guide *b*, with its horizontal portion *d*, the slotted sliding frame R, and cutter *r*, in combination with the transverse shaft *u*, adjustable arm T, fixed crank-arm T', and cam *f* on the main driving-shaft, substantially as and for the purpose set forth.

In witness whereof I hereunto set my hand and seal.

NAPOLEON BEAUREGARD. [L. S.]

Witnesses:

J. L. BOONE,
C. M. RICHARDSON.