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IN ADVANCE

A NOVELTY IN BOLT CUTTERS.

All machinists are aware that, in making bolts which require the face of the head or nut to be at exact right angles to the axial line, to insure accurate fits on finished work, it has been necessary to chase the threads on a screw-cutting lathe. To this operation there are many objections, among which may be noted the requirement of skilled workmen to grind properly and to set the tool, and also to watch the work, in order to obtain uniformity in size, through constant tests of each piece, as the chasing tool makes its last cut. With all these precautions, however, it is almost impossible to thread any number of bolts, in a screw-cutting lathe, to exactly the same diameter; variations of size occur, to the detriment of accurate fitting, so that, in fine, the process is comparatively imperfect and slow, and, as a consequence, far from economical.

With the above facts in view, Mr. Aurin Wood, of Worcester, Mass., has recently applied, to a bolt-threading machine, centers for holding the work exactly as it is secured in lathes, so that the finished bolts, while retained with the same axial accuracy as in the last mentioned machines, may be threaded by the dies with the certainty of the line of the thread having correct relation to the axial line of the piece. By combining this improvement with a bolt cutter of his own invention, Mr. Wood has produced the apparatus represented in our engravings, which, we are informed, has proved, in every particular, a complete success.

The reader conversant with this class of tool will require no explanation to aid him in perceiving the general arrangement and relation of the actuating mechanism; so that without considering details in this particular, we may at once pass to the notice of the important improvement above suggested. Fig. 1 affords a perspective view of the machine, and in Fig. 2 the same is shown tilted, to exhibit more clearly the essential portions. A is the die holder, which supports the dies for threading the bolt in the usual manner. The bearing, B, which is caused to revolve by proper mechanism, carries the head, through which passes longitudinally a mandrel, C, moving freely back and forth. D is the carriage which holds the bolt to be threaded, and which is so actuated as to slide to and from the cutting head. Parallel to the axis of the latter is a bar, E, which moves longitudinally in the supports shown. This bar is connected to the mandrel, C, and also to the carriage, D, by arms, so that, when the carriage travels toward the head, the mandrel will be correspondingly moved and *vice versa*. The mandrel has a center or point, F, which is the actual center of revolution of the head; and a corresponding point is arranged in the carriage, both centers being in axial line with the cutting dies of the head. The center to the carriage is made adjustable by means of the screw, G.

The bolt to be threaded is first centered and turned in the usual manner, as if to be cut in a screw-cutting lathe. It is then placed on the centers of the machine and secured so as to be run into the dies, guided only by the longitudinal movement of the movable center, F, and the carriage, D. For different lengths of bolts, the arm, in connection with the carriage, is disengaged from the bar, E, and the carriage is moved to the desired relative position and again secured. In order to prevent the work from turning, an ingenious device is provided in the forward end of the carriage, at H. The bolt is arranged upon the centers between the roughened faces of two cams, which, when two slides are adjusted rela-

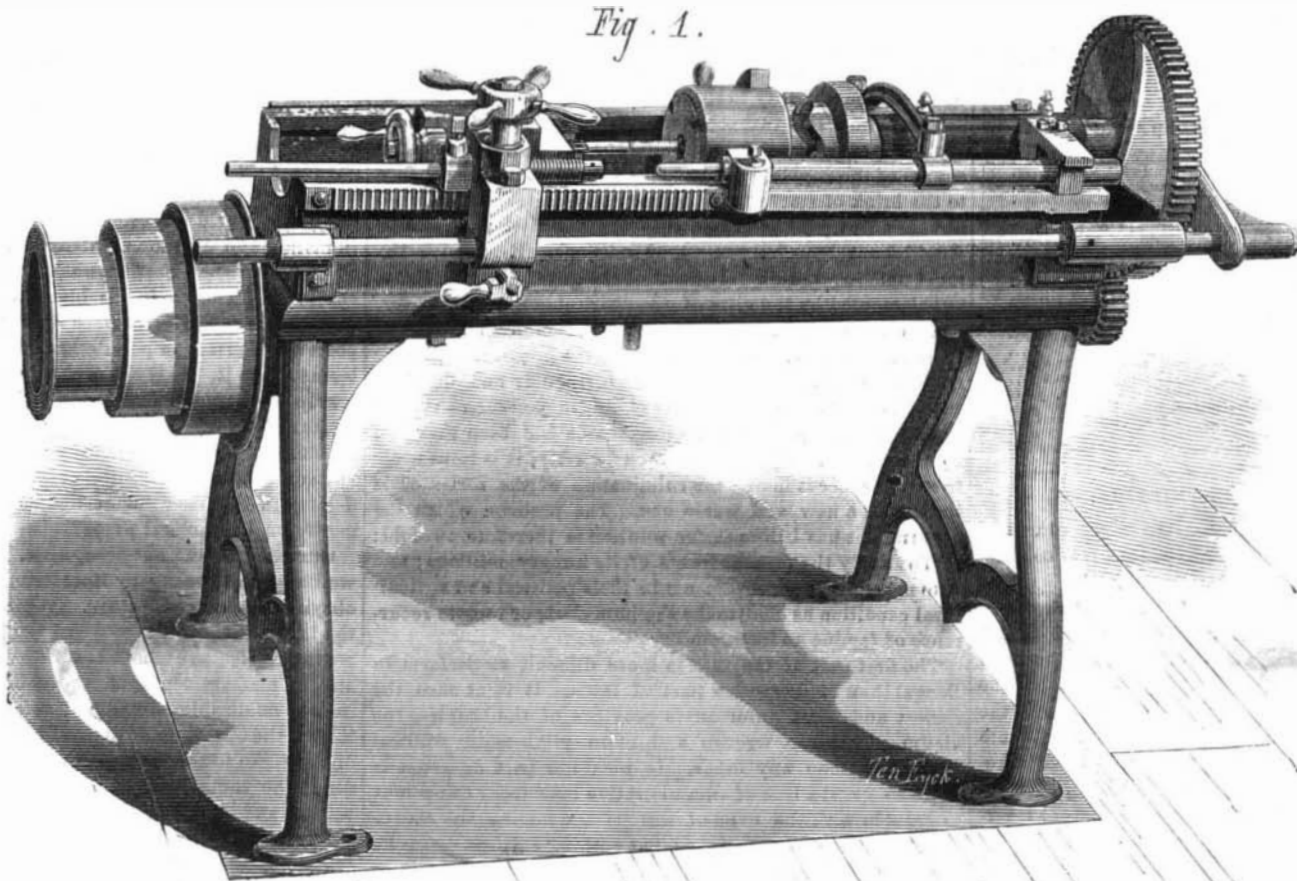
or variation often noticeable in machines in which the set of the dies is given by levers or other devices, uncertain in positive results.

Another feature of merit in this machine is the automatic arrangement by which the dies, after being set to the desired length of thread, are instantly opened at that point, and the bolt carrier thrown back to receive a new bolt. This arrangement, besides insuring uniform length of cut, avoids the danger of accident or breakage owing to running the holder against the dies, through inadvertence or inattention of the workman. One operator, through this device, readily keeps two or more machines continually at work.

This improvement, of adding centers, for the axial holding of bolts, to bolt-threading machine, which we have now fully described, was patented in the United States by Mr. Wood, February 10, 1874, and similar protection has also been obtained in Canada and several European countries. These machines, as at first patented in July, 1868, without the centers, were exhibited at the American Institute Fair of 1869, and there, we are informed, gained a gold medal over several competing machines. They have since been successfully introduced in many prominent locomotive and railroad shops throughout this country and Canada.

These machines are made in three different sizes, ranging in cut from 5-16 inch to 2½ inches; and, with or without the new improvement, are manufactured by the Wood and Light Machine Company, of Worcester,

WOOD'S IMPROVED BOLT CUTTER.



tively to the diameter of the piece, bear firmly against it. The tendency of the bolt to rotate with the cutting device causes, by contact, a corresponding motion of the arms, which finally, by their shape, offer a rigid resistance, and thus firmly hold the work. For considerable difference of diameters, a suitable bolt, joining the sides, allows of their proper adjustment, but ordinarily the apparatus forms a self-adjusting dog.

It is claimed that, by the aid of this machine, an ordinary hand is capable of threading bolts as accurately and nicely as,

ter, Mass., to whom inquiries for further information may be addressed.

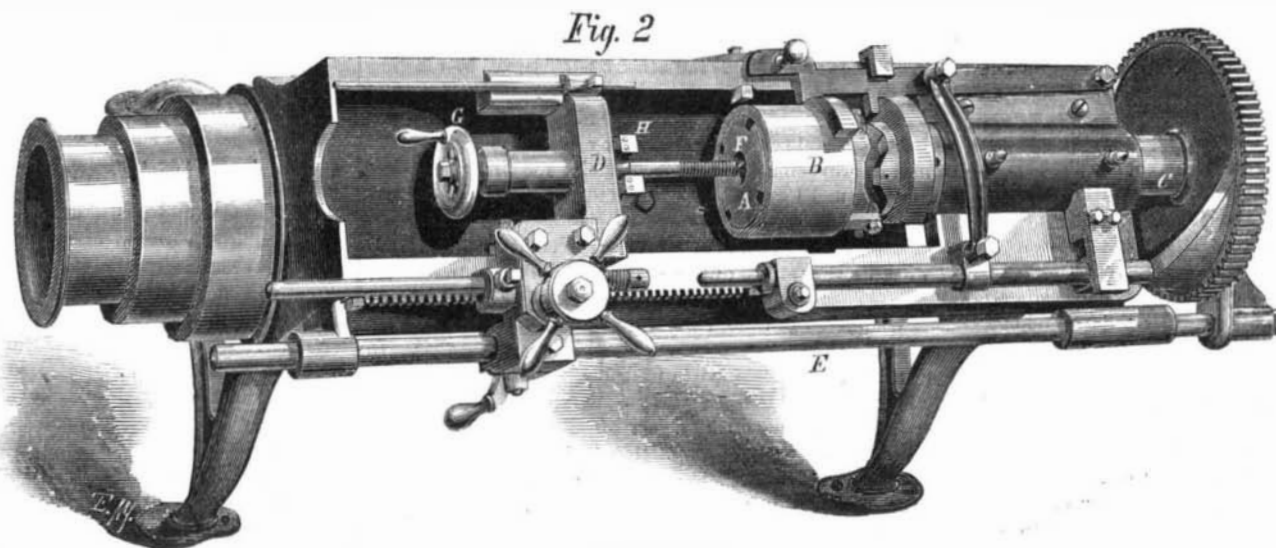
Practical Use of Velocipedes.

The bicycle, after going entirely out of fashion as a toy, is now being put to some practical use. Messengers, called "veloce men," thus mounted, convey dispatches in Paris from the Bourse—or stock exchange—to the central telegraph bureau. The distance is about six miles, going and coming, and is accomplished in 25 minutes, at a charge of 50 cents. A

company is being formed to place a very large number of velocipedes upon the streets and to supply messengers to go to any part of the city. The Parisian journals are also using the bicycle to obtain quick reports. During the trial of Marshal Bazaine, the *Moniteur* employed daily a large number of vehicles, running from the palace of Versailles to Paris. The distance, about 13 miles, was made in 45 minutes, and quicker than the ordinary trains on the railroad. Carrier pigeons were also used by the papers, the birds easily traversing the distance

above mentioned on clear days at the rate of a mile a minute.

J. P. F. suggests using a reflector (a tin plate will do), adjusted in front of the furnace door of a boiler, so as to throw light on to the flue sheets, when caulking leaks.



and with greater precision in size and fit than, the most skillful workman with a chasing tool in a lathe. It is also stated that from four to ten times as many bolts can be cut in a given time as by the last mentioned means. The uniformity of size is the result of the method of holding the dies rigidly in the solid ring of the cutter head, thus avoiding the spring