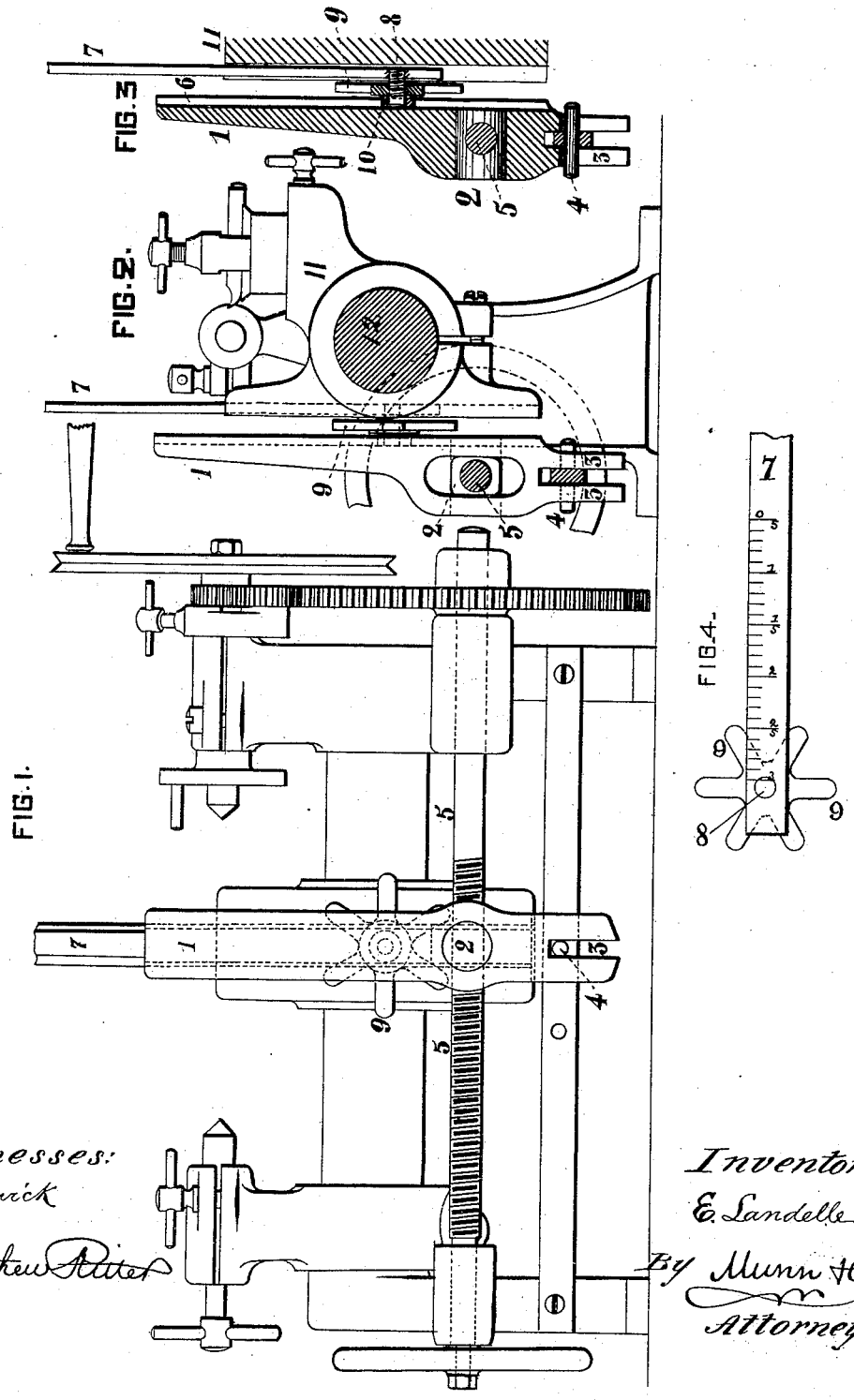
(No Model.)

E. LANDELLE.

SCREW CUTTING MACHINE.

No. 342,520. Patented May 25, 1886.



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UNITED STATES PATENT OFFICE.

ERNEST LANDELLE, OF PARIS, FRANCE, ASSIGNOR TO NATHAN BLUM, OF SAME PLACE.

SCREW-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 342,520, dated May 25, 1886.

Application filed June 6, 1885. Serial No. 167,888. (No model.) Patented in France August 30, 1884, No. 164,029, and in Belgium September 15, 1884, No. 66,316.

To all whom it may concern:

Be it known that I, ERNEST LANDELLE, of the city of Paris, France, have invented a new and Improved Parallel Lathe Adapted for Cutting Screws of any Required Pitch Without Intermediate Wheel-Gearing, of which the following is a full, clear, and exact description.

The apparatus which forms the object of the present application for Letters Patent differs from other screw-cutting lathes in the device for controlling the slide-rest, which, instead of being actuated directly by the screw-shaft, is regulated by a lever of variable effective length propelled by the screw-shaft, whereby the travel of the tool may be augmented or diminished at will while keeping the screw-shaft and the object under operation at a uniform speed, the requisite adjustment being made by simply altering the intermediate lever.

In order to show clearly the method of carrying out this invention in practice, the apparatus forming the object of the present application will be described in detail. It comprises, like other lathes, a frame, a chuck-head, and two centers. The exact arrangement of these various organs will vary according to shape and dimensions of the objects to be threaded. The pitch of the thread will obviously depend on the proportion between the speed at which the slide travels along the screw-shaft and the speed of rotation of the piece to be threaded. This proportion is adjusted in ordinary apparatus by means of a train of toothed wheels. This complicated device is replaced according to the present invention by a simple lever fixed and actuated as hereinafter described.

Referring to the annexed drawings, in which is depicted a lathe of my invention, by way of example, Figure 1 is an elevation of the whole apparatus. Fig. 2 is a transverse section. Fig. 3 is a longitudinal section of the lever. Fig. 4 shows a graduated scale, the use of which is explained farther on.

In all these figures like numbers indicate like parts.

The lever 1 is articulated upon the screw-nut 2, which travels on the screw 5 and serves to convert the rotary motion of the screw-shaft into a rectilinear backward and forward movement of the slide-rest 11, which latter is mounted to travel longitudinally upon the arbor 12, and carries the scale-bar 7, the connection between which slide-rest or scale-bar and the lever will appear farther on. The end of the lever 1 is provided with a fork or slide, 3, which enables the workman to alter the effective length of the lever and to turn it around the stud 4, in consequence of the movement of the screw-nut 2 along the screw-shaft 5. The inner side of the lever (that which is turned toward the slide-rest) is provided with a groove, 6, opposite which is disposed the graduated scale-bar 7, Fig. 4, sliding in a groove, 11, cut in the slide-rest, and indicating by its graduation the various pitches obtainable.

Upon the scale-bar 7 is fixed a screw-threaded stud, 8, the end whereof, which, however, is plain or unthreaded, bears a block, 10, fitting in the groove 6 of the lever, and which is free to turn upon said plain or unthreaded end of the stud 8 as the lever is more or less inclined. Upon the position of this stud, which in turn depends on that of the graduated scale-bar 7, upon which it is fixed, depends the effective length of the arm of the lever 1, and, consequently, the speed communicated to the slide-rest and the pitch of the thread.

To fix and maintain the scale-bar 7 in the required position which determines the pitch of the thread, I make use of the rayed nut 9, mounted on the stud 8, and whose shape facilitates the adjustment of the scale.

The above details will make it clear that my screw-cutting machine, notwithstanding the simplicity of its construction and mode of operation, permits of the depth or the pitch of the thread being varied as desired by altering the effective length of the lever 1, comprised between the fixed pin 4 and the adjustable point of articulation of the lever 1 with the slide-rest. It is therefore obvious that the smaller the required pitch the closer must the stud 8 upon the scale-bar 7 be approached to the pin 4.

The precise form of the other details of the lathe may be varied to suit special requirements, and the special design is only shown in the drawings by way of illustration.

The gist of the invention is in the arrange-

ment of the lathe and in the mode of applying the lever.

The apparatus works as follows: The article to be turned and threaded is mounted on the centers, to center which the screw-shaft 5 is first disconnected and the piece is turned by hand in the way it is done for the slide-rest in small lathes, and on lathes of larger size the piece is centered as in ordinary lathes. A rotary motion being given to the screw 5, the lever will be more or less inclined on the nut 2, and the block 10 will turn upon the unthreaded end of the screw or stud 8 and at the same time have a vertical movement, which latter will be communicated to the screw or stud 8, and then to the scale 7 and slide-rest or carriage 11. As the height of the axis of the pin 8 in relation to the axis of the cylindrical nut 2 can be regulated at pleasure, the greater this distance the greater the furrow obtained in the screw. For cutting the thread, the effect of the action of the screw-shaft is dependent on the respective number of teeth in the gear-wheels, the speed of the piece to be threaded, and the length of the lever. It will therefore only be necessary to put the scale-bar 7 in a position corresponding to the pitch desired, as shown by the division, to fix it there by means of the rayed nut 9, and to set the machine to work.

The scale may be divided either metrically or to an arbitrary scale to suit standard or foreign gages.

The thread may be cut right-handed or left-handed by aid of intermediate gearing, clearly indicated in the annexed drawings.

I claim as my invention—

In a screw-cutting machine, in which the slide-rest is actuated by a lever of variable effective length in order to change the pitch of the thread cut in a corresponding degree, the mechanism for the control of the slide-rest, consisting, essentially, of the lever 1, having screw-nut 2 on the screw-shaft adjustable in a slot of the said lever, which terminates in a fork, 3, traversed by the pin 4, the lever having, moreover, a groove or channel, 6, in combination with the graduated scale 7, bearing the stud 8, which terminates in a projection adapted to slide in the groove 6 of the lever, transmitting the motion of the screw-shaft to the slide-rest, as described and shown.

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