(No Model.)

J. FOX.

MACHINE FOR CUTTING SCREW THREADS.

No. 451,169. Patented Apr. 28, 1891.

Fig. 1.

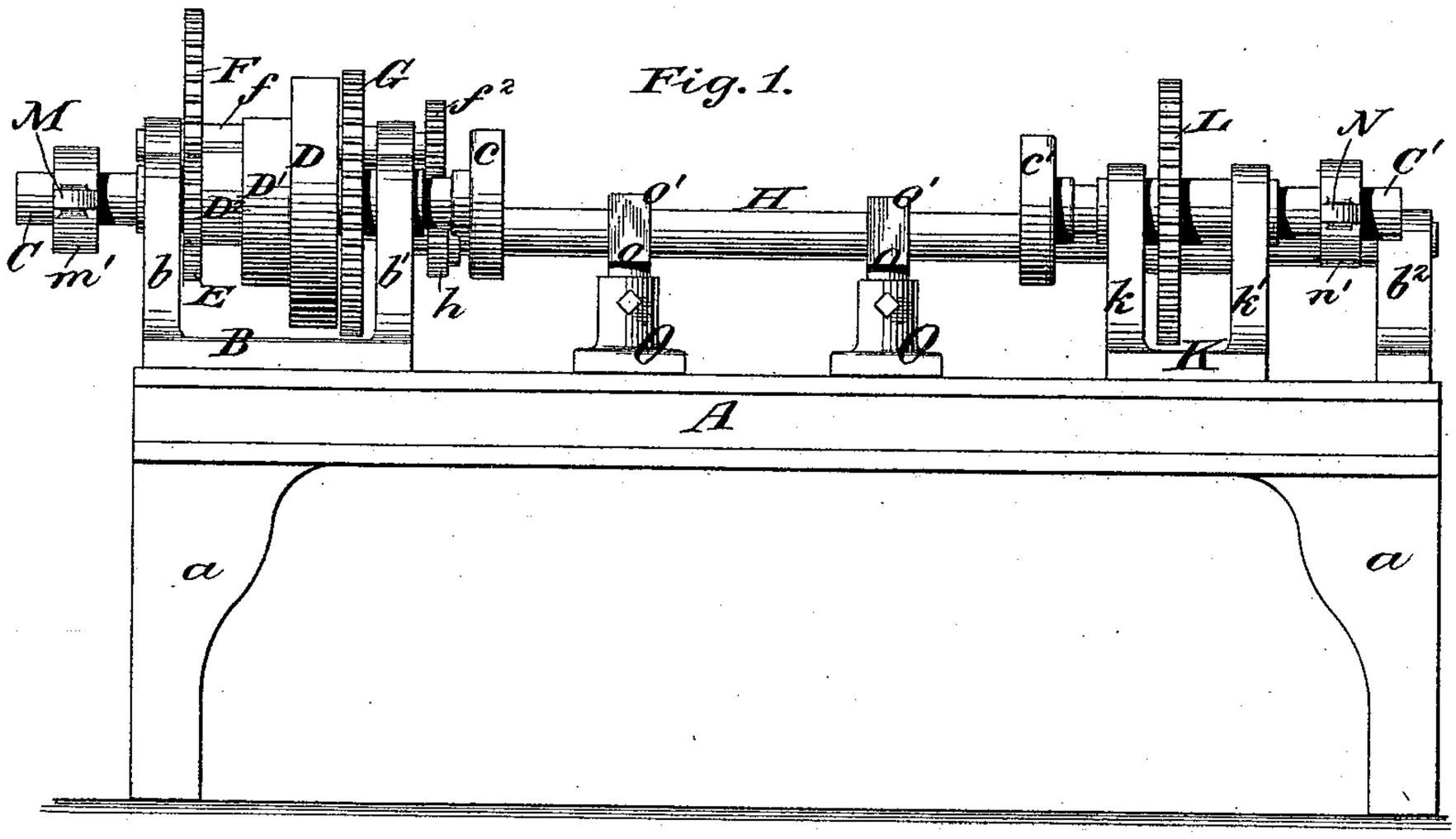


Fig. 2.

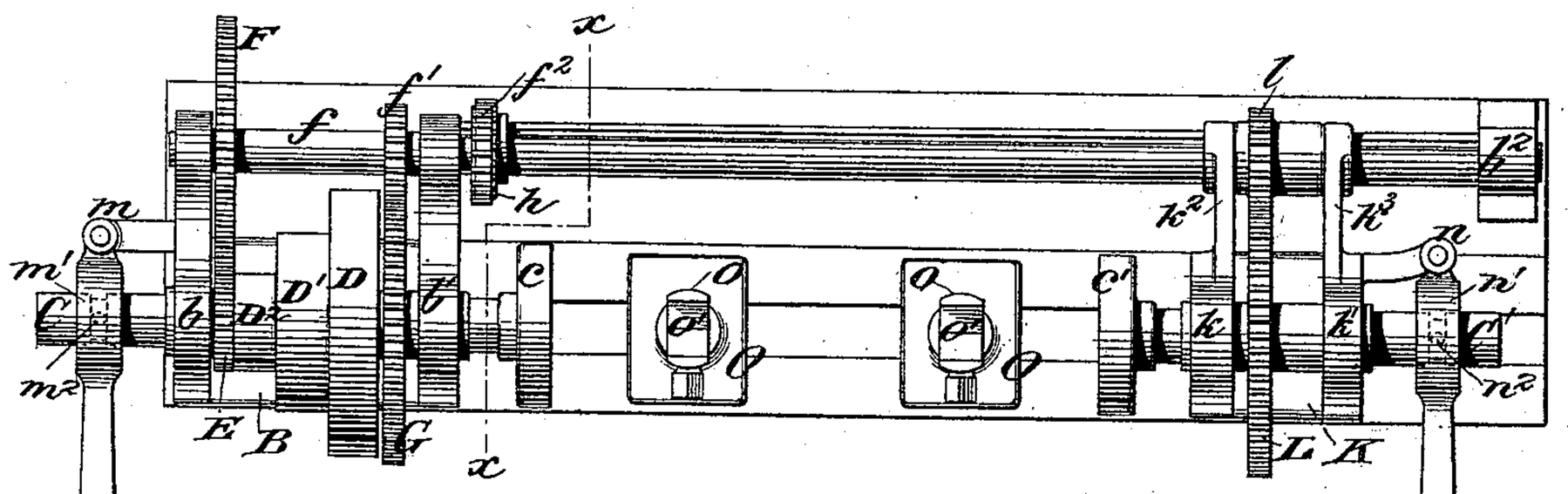
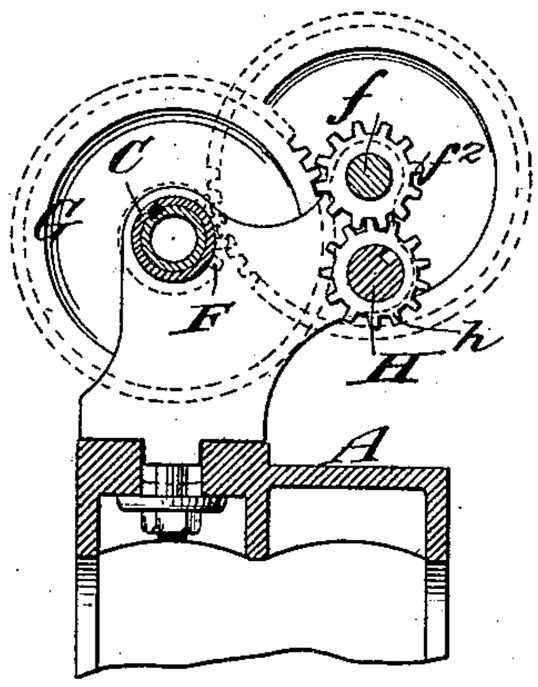


Fig. 3.



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UNITED STATES PATENT OFFICE.

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MACHINE FOR CUTTING SCREW-THREADS.

SPECIFICATION forming part of Letters Patent No. 451,169, dated April 28, 1891.

Application filed September 30, 1890. Serial No. 366,633. (No model.)

To all whom it may concern:

Be it known that I, JOHN FOX, of the city and county of New York, in the State of New York, have invented a new and useful Improvement in Machines for Cutting Screw-Threads, of which the following is a specification.

My invention relates to an improvement in machines for cutting screw-threads, and more particularly in machines for cutting screw-threads upon the opposite ends of sections of pipe.

The object is to provide simple and effective means for simultaneously operating upon the opposite ends of a pipe or rod, feeding the cutters simultaneously toward one another, and for adjusting the cutters toward and away from one another to suit sections of pipe of widely different lengths.

With these ends in view my invention consists in certain features of construction and combinations of parts, as will be hereinafter described, and pointed out in claims.

A practical embodiment of my invention is represented in the accompanying drawings, in which—

Figure 1 represents the machine in front elevation. Fig. 2 is a top plan view; and Fig. 3 is a transverse vertical section through line $x\ x$ of Fig. 2, looking toward the end of the machine on which the driving-pulley is located.

A represents the bed of the machine. Here shown as supported upon legs a. At one end of the machine a bracket B is fixed to the top of the bed-plate and provided with a pair of uprising arms or plates $b\ b'$ for supporting the driving-pulley, one of the cutter-head spindles, and a shaft for transmitting motion to the opposite cutter-head. The cutter-head spindle secured in the uprising arms or plates of the fixed bracket is denoted by C, and is journaled in suitable bearings in the plates or standards $b\ b'$, so that it may freely rotate and slide longitudinally therein. The cutter-head c, fixed on its inner end, may be of any well-known or approved construction, adapted to cut a thread upon the periphery of a pipe or rod, the end of which is inserted therein.

Upon the spindle C and intermediate between the arms or plates $b\ b'$ the driving-pulley D is located and is free to rotate upon its support. The said pulley is provided with a larger intermediate and smaller section, the intermediate and smaller sections being denoted by D′ and D^2 for changing the speed, as is usual. To the hub of said driving-pulley there is secured a pinion E, which meshes with a spur-wheel F, fixed on a short shaft f, journaled in suitable bearings in the uprising plates or arms $b\ b'$ and extending parallel with the spindle C.

Fixed upon the shaft f is a pinion f', which is preferably located between the supporting-plates and in proximity to the inner plate, and said pinion intermeshes with a spur-wheel G, which is locked to the spindle C, so as to cause the said spindle to rotate therewith, but at the same time allow the said spindle to slide longitudinally through it. Such connection may be made, for example, by the ordinary feather-and-groove mechanism. There is also secured to the shaft f, and preferably located in proximity to and upon the opposite side of the support b' from the pinion f', a pinion f^2, which intermeshes with a pinion h, fixed upon a shaft H, which extends longitudinally of the machine and a short distance to the rear of the cutter-heads. One end of said shaft is journaled in suitable bearings in the uprising arm b, and its opposite end is journaled in a suitable bracket or standard b^2, fixed at the opposite end of the bed-plate. A sliding bracket K, provided with a pair of uprising arms or plates k and k', is adapted, either by means of a set-screw or other suitable clamping device, to be slid toward and away from the fixed bracket B to suit different lengths of pipes or rods to be operated upon. The opposite spindle C′, provided with its corresponding cutter-head c', is journaled in suitable bearings within the uprising arms or plates $k\ k'$, so that it may freely rotate and slide longitudinally. A pinion l, secured in sliding adjustment upon the shaft H, intermeshes with a spur-wheel L, mounted upon the spindle C′, and is locked to the spindle, so as to cause the said spindle to rotate therewith, and at the same time admit of said spindle sliding freely therethrough.

As a simple means of causing the pinion l

to rotate with the shaft H, and at the same time hold it in proper relation to the spur-wheel L during the adjustments of the latter which are liable to take place, I have provided the uprights k k' of the sliding brackets K with overreaching arms k^2 and k^3, which partially embrace or abut against the opposite ends of the hub of the pinion l, so as to cause it to slide, together with the bracket K, while the pinion itself is caused to rotate with the shaft H by means of a feather-and-groove connection therewith.

From the above construction it will appear that when the pulley D is driven the spindle C and its cutter-head c will be slowly driven in one direction through the intermeshing gear E, F, f', and G, while the spindle C′ and its cutter-head c' will be driven slowly in the opposite direction through the intermeshing gear f^2, h, l, and L. It is intended that the pinions f', f^2, h, and l shall be of the same size, and that the wheels G and K shall be of the same size, whereby the cutter-head c will have the same rate of movement in one direction as the cutter-head c' has in the opposite direction.

For the purpose of bringing the cutter-heads into contact with the opposite ends of the pipe or rod to be acted upon and holding them there until the cutters begin their work, I provide levers M and N, fulcrumed at the opposite ends of the machine in suitable bearings m and n and provided intermediate their ends with loops or ring portions m' and n', which embrace the outer ends of the spindles C and C′ and are engaged with annular grooves in said spindles, by means of studs or screws m^2 and m^2. As the strain will be exerted simultaneously in opposite directions upon the pipe or rod, there will be little or no necessity for clamping the same against rotation; but for the purpose of holding it against sagging and keeping it steadily in position, particularly when longer lengths are being operated upon, I provide longitudinally-adjustable supports O, carrying a vertically-adjustable head o, having upwardly and outwardly diverging jaws o', between which the pipe or rod being operated upon may be held. By constructing both cutter-heads so that they may move simultaneously toward and away from each other the length of travel of either one is materially reduced, while the shaft H, for transmitting reverse motion to the opposite cutter-head, forms at the same time a convenient means for accomplishing the adjustment of the movable head to suit different lengths of pipe without in any wise interfering with the operation of the parts or requiring any adjustment other than the simple sliding of the movable bracket and fastening it in position.

What I claim as my invention is—

1. In a machine for cutting screw-threads, a pair of rotary cutter-heads having a simultaneous movement toward and away from each other, and means for imparting a rotary movement to the cutter-heads in opposite directions, substantially as set forth.

2. In a machine for cutting screw-threads, the combination, with a longitudinally-movable cutter-head, a spindle supported in a fixed bracket, and a longitudinally-movable cutter-head spindle supported in an adjustable bracket, of a drive-pulley, gear in connection with the drive-pulley for rotating one of the spindles in one direction, and gear for moving the other of the spindles in the opposite direction, a portion of said last-named gear having an adjustment together with the movable spindle-support, substantially as set forth.

3. In a machine for cutting screw-threads, the combination, with a suitable bed-frame, a fixed spindle-support, and a movable spindle-support, of longitudinally-movable and rotary spindles secured in each of said spindle-supports, a drive-pulley loosely mounted upon one of the spindles, a shaft provided with gear journaled in said fixed support, a spindle-actuating wheel in engagement with the gear on said shaft, a second shaft journaled longitudinally of the machine and geared with said first-named shaft, a sliding pinion fixed to rotate with said second shaft, a spindle-actuating wheel geared with said pinion, and a connection between said sliding pinion and movable spindle-support, whereby the said pinion may be adjusted simultaneously with the adjustment of said movable spindle-support, substantially as set forth.

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