(No Model.) 2 Sheets—Sheet 1.

T. J. LEAVY.

MACHINE FOR THREADING SHEET METAL PIPES.

No. 425,516. Patented Apr. 15, 1890.

Fig 1

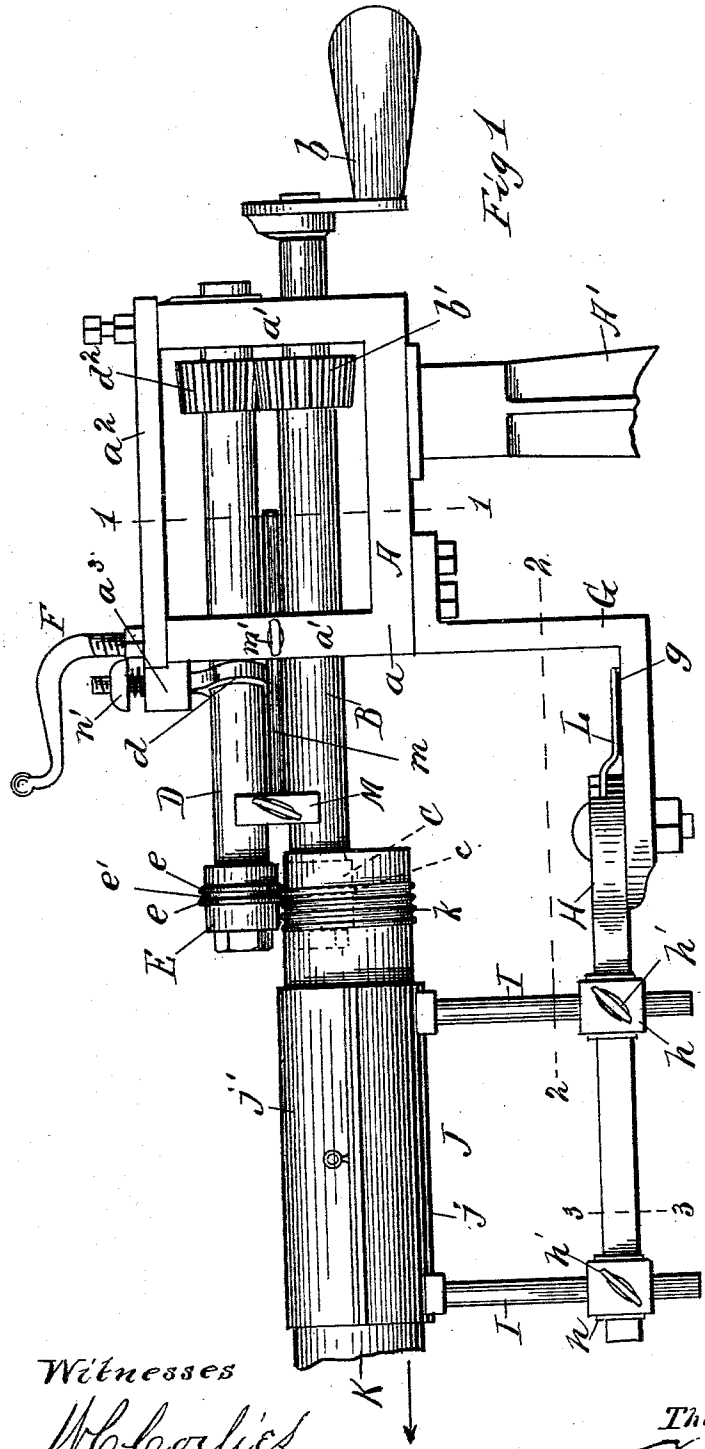
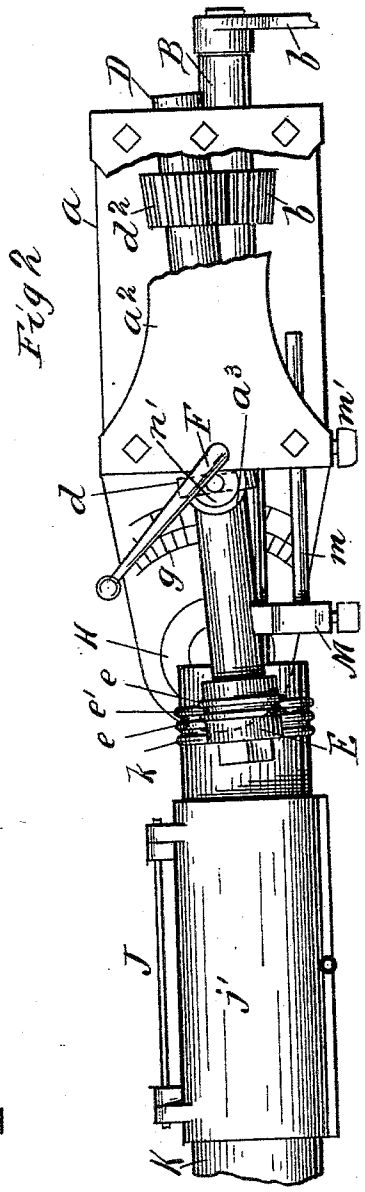


Fig 2



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(No Model.) 2 Sheets—Sheet 2.

T. J. LEAVY.

MACHINE FOR THREADING SHEET METAL PIPES.

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Fig 3

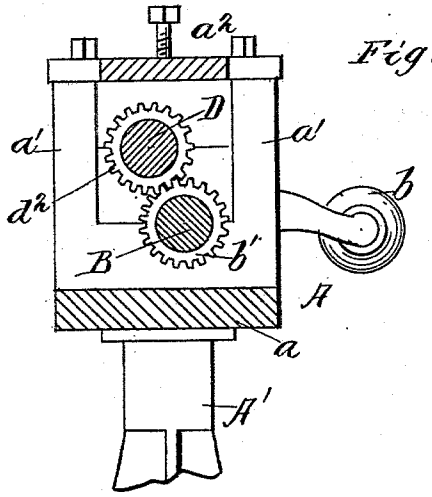


Fig 4

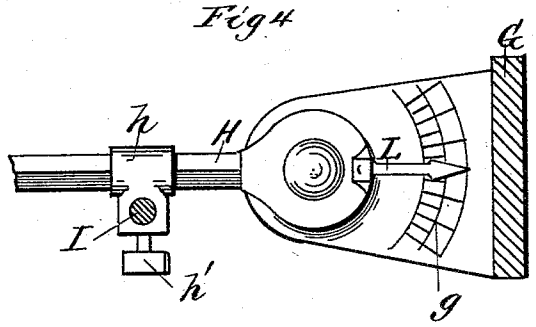


Fig 5

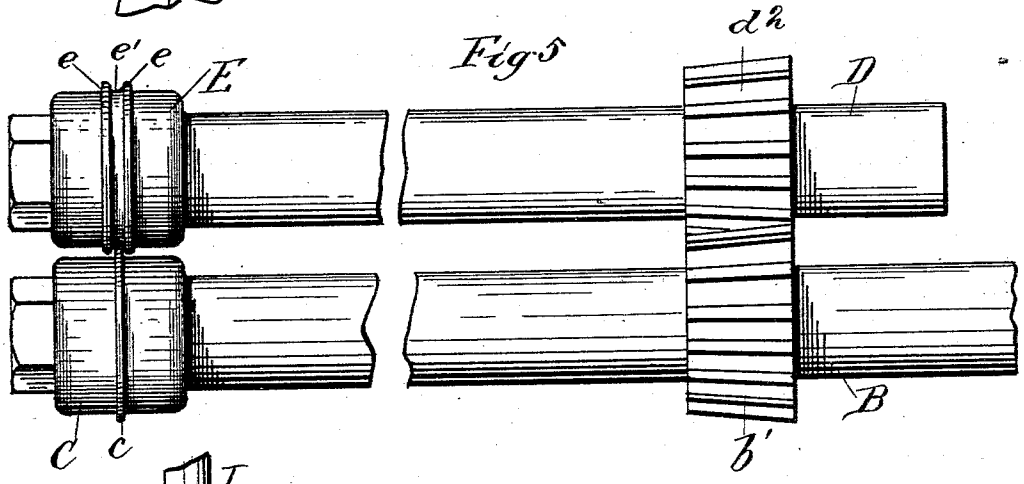


Fig 6

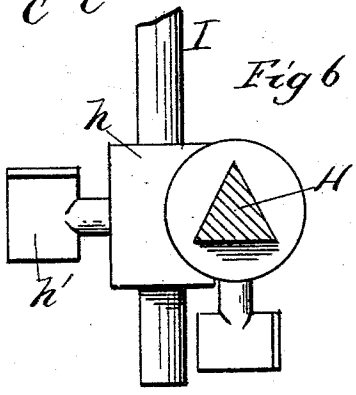
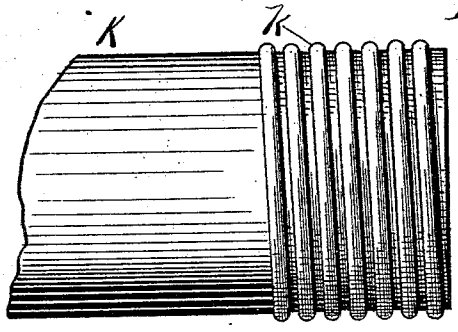


Fig 7



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UNITED STATES PATENT OFFICE.

THOMAS J. LEAVY, OF CHICAGO, ILLINOIS, ASSIGNOR TO LUTHER A. MARSHALL, OF SAME PLACE.

MACHINE FOR THREADING SHEET-METAL PIPES.

SPECIFICATION forming part of Letters Patent No. 425,516, dated April 15, 1890.

Application filed July 22, 1889. Serial No. 318,264. (No model.)

To all whom it may concern:

Be it known that I, THOMAS J. LEAVY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Machines for Threading Sheet-Metal Pipes, which is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a side elevation of a machine embodying my improvements; Fig. 2, a plan view of the same; Fig. 3, a cross-section of the same, taken on the line 1 1 of Fig. 1; Fig. 4, a detail plan-section taken on the line 2 2 of Fig. 1; Fig. 5, an elevation of the threading devices and their shafts detached from the machine; Fig. 6, a detail section taken on the line 3 3 of Fig. 1, and Fig. 7 an elevation of the end of a pipe threaded by this machine.

In the drawings, Figs. 1 to 4, inclusive, are upon the same scale, and Figs. 5 to 7 upon the same scale, but enlarged from that of the preceding figures.

My invention relates to a machine for rolling a screw-thread upon metal pipes, instead of cutting the same in the dies which are usually employed for this purpose. The invention consists in certain improvements in the roller-dies and the means for operating them, which will be hereinafter more fully described and pointed out.

I will describe in detail a machine in which I have carried out my invention practically in one way, and will then define more specifically in claims the improvements which I believe to be new and wish to secure by Letters Patent.

In the drawings, A represents the frame in which the rollers are mounted, and which is itself supported in any suitable manner. In the drawings it is shown mounted upon a pedestal A′. This frame is of a general rectangular shape, the base *a* being a plane bed-piece and the end pieces *a′* being forks, as seen in Fig. 3 of the drawings, upon which is mounted and secured a cap-piece a^2. A shaft B is mounted in suitable journal-boxes in the lower part of this frame, and is provided with a crank *b*, by means of which it is turned, and at the opposite end projects some distance beyond the supporting-frame, and has mounted upon this extremity and secured to the shaft a circular die C, which is provided with a single flange *c*, running straight around the body of the die. This die, therefore, constitutes the male member of the threading-dies. The second shaft D is mounted just above the shaft B and in suitable journal-boxes in the main frame; but this shaft is not arranged parallel to the shaft B. Its outer end, which is to carry the die, is arranged directly over the lower shaft, so that it stands just above the die C; but inward toward the frame it is inclined away slightly to the right of the shaft B, as shown in Figs. 2 and 3 of the drawings. A circular die E is secured upon the outer end of this shaft D, so that it will stand just over the die C, and is provided with two flanges *e*, running straight around the die and having a slightly-concaved groove *e′* between them, which is adapted to receive the flange *c* of the die below. This die *e* becomes, therefore, the female member of the roller threading-dies, and the two dies are arranged so that the male die enters the groove of the female die, as shown in Figs. 1 and 5 of the drawings; but the female die stands at an angle to the male die, as seen in Fig. 2 of the drawings.

The outer journal *d* of the shaft D is suspended from the main frame by a rod extending upward through a portion a^3 thereof, the upper end of this rod being threaded and provided with a nut *n′*, whereby the suspended box may be adjusted vertically, so as to properly adjust the upper die to the lower one. A screw-clamp F is also set in the frame at this end thereof immediately over the upper shaft, whereby the latter is held down firmly to its adjusted position. This clamp and the device for suspending and adjusting the journal *b* are of the same construction as in tinners' corrugating-machines, which have been long known and in public use. As their construction is perfectly well known, a specific description is unnecessary here.

The shafts B and D are provided, respectively, with slightly-tapering gear-pinions *b′* and d^2, which are arranged to engage with each other; but in order to do this properly

the teeth of these pinions, instead of being straight, are inclined to the axis of the gear, as seen in Fig. 5 of the drawings, and the angle of inclination should be the same as the angle between the two shafts.

An angular bracket G is fastened to the under side of the supporting-frame, depending therefrom and then projecting outward horizontally underneath the threading-dies, and to this horizontal portion of the bracket a bar H is pivoted, as shown in Figs. 1 and 4 of the drawings. On this pivoted bar are blocks *h*, through which pass upright posts I, which are movable vertically in said blocks and which are secured in any position by set-screws *h'*. The blocks *h* are slipped upon the bar H, which is angular in cross-section, to prevent their turning, and the blocks are adjustable on said bar, being fixed in any position by ordinary set-screws.

Upon the upper ends of the posts I is a receiver J, of cylindrical form and made in two parts, the lower portion *j* being fastened to the posts, while the upper portion *j'* is hinged to the lower, so that it may be thrown up therefrom. This receiver forms a bearing and support for the inner end of the pipe K which is to be threaded, the outer end being left unsupported unless it is so long as to require additional support, in which case it may be held up by any movable device. The pipe is free to move lengthwise in the receiver J, and must also be free to move in the same direction on any other support which may be provided. Now, the end of the pipe is run in between the threading-dies, the lower die entering the pipe and the upper one being raised by loosening its shaft sufficiently to permit the proper adjustment of the pipe. The upper die is then forced down upon the pipe over the lower die by means of the screw-clamp operating upon its shaft, and the die-shafts are rotated by means of the crank *b*. Owing to the inclination of the upper shaft to the lower, the revolution of the roller-dies will form a screw-flange *k* on the pipe, rotating the pipe between them and at the same time feeding it forward by reason of the angular arrangement of the dies and their shafts.

If the pipe to be threaded is always set in line with the lower die-shaft, as shown in the drawings, the thread formed thereon will of course always be of the same pitch; but the pitch may be varied by changing the position of the pipe, so that when entered between the dies it will be inclined more or less to the axis of the said lower shaft, and it is for this adjustment that the support H is pivoted so that it may be swung around to one side or the other. In order to determine the position of this pivoted support for any pitch desired, a pointer L is fastened to its inner end and directly below it on the bracket G is an arc *g*, graduated to indicate the exact position of the pointer for any given pitch. A gage M is mounted on a supporting-arm *m*, arranged at one side of the die-shafts and mounted in the main frame in a bearing through which it may slide out and in horizontally. The gage determines the distance to which the pipe is to be entered between the dies, and so determine the length of the section which is to be threaded, and this gage is adjusted by moving its support back and forth, the latter being secured in any position desired by means of a set-screw *m'*.

The machine, as will be seen, is simple in construction but efficient in its operation, and is sufficiently accurate for ordinary work.

I do not wish to be understood as limiting myself to the precise construction and arrangement of all the parts herein shown and described, for changes may be made in mechanical details and in the relative arrangement of some of the devices thereof without losing the characteristic features of my invention, the principal one of which is the angular arrangement of the dies, whereby a single thread and a single groove are sufficient and the pipe is fed automatically by the operation of the dies themselves, while the latter have no movement except a rotary one.

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

1. In a machine for threading sheet-metal pipes, a revolving male die provided with a single flange, in combination with a revolving female die provided with a single groove and arranged with its axis at an angle to the axis of the former die, substantially as and for the purposes specified.

2. In a machine for threading sheet-metal pipes, the shaft B, in combination with the circular die C, secured upon one end of said shaft and perpendicular to the axis of the latter, the shaft D, arranged at an angle to the said shaft B, the corresponding circular die E, secured on the end of said shaft D and perpendicular to the axis thereof, and the pinions b' b^2, substantially as and for the purposes specified.

3. In a machine for threading sheet-metal pipes, a pair of revolving roller-dies mounted on axes arranged at an angle to each other, in combination with a pivoted support for the pipe, whereby the latter may be set at different angles to the axes of the said dies, substantially as and for the purposes specified.

4. The shafts B and D, arranged at an angle to each other, in combination with the roller-dies C and E, mounted, respectively, on said shafts and perpendicular to the respective axes thereof, and the die-support H, pivoted just below the said dies and extending outward from the latter, substantially as and for the purposes specified.

THOS. J. LEAVY.

Witnesses:
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