

(Model.)

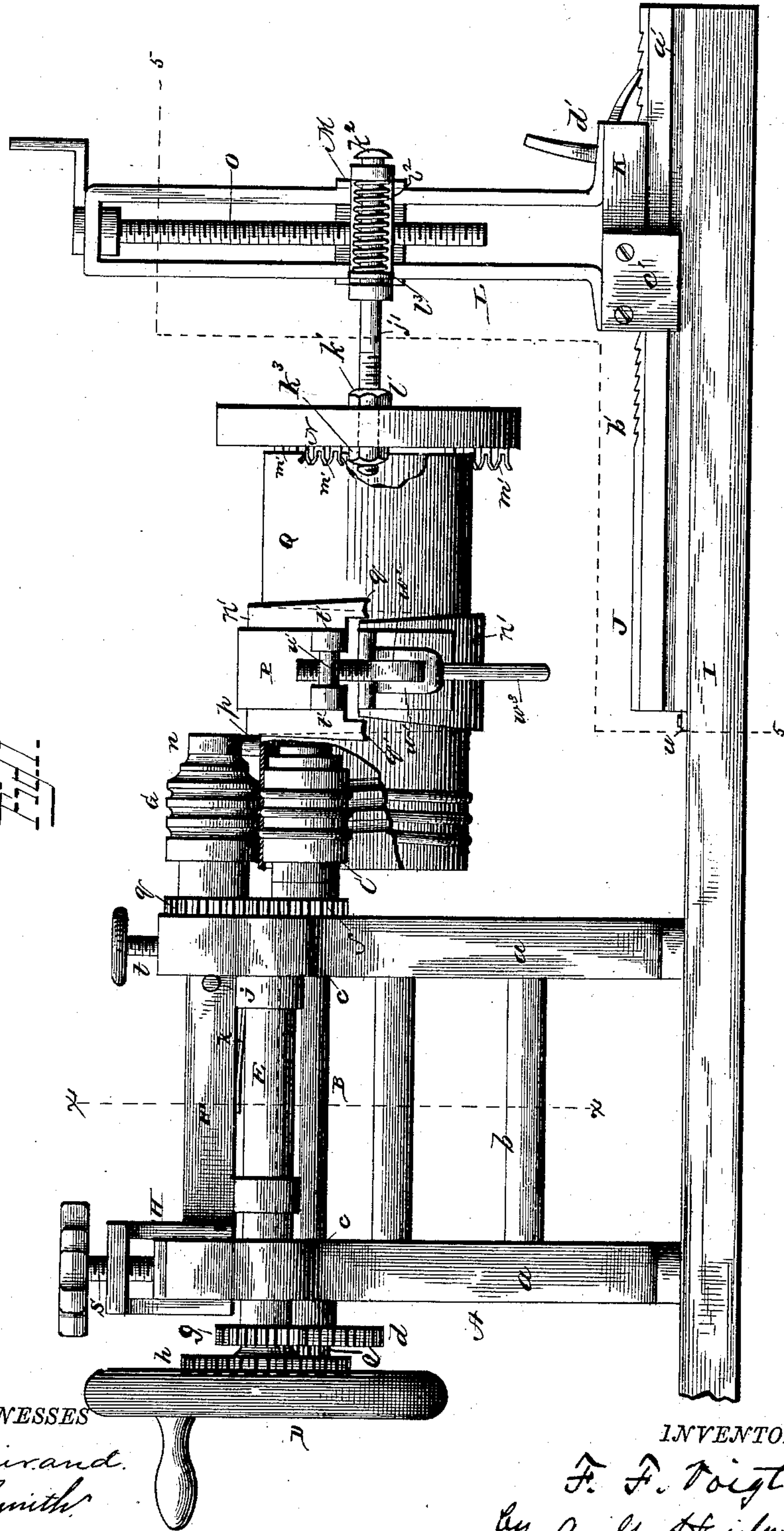
2 Sheets—Sheet 1.

F. F. VOIGT.

MACHINE FOR MAKING SCREW THREADS FOR PIPE JOINTS.

No. 333,904.

Patented Jan. 5, 1886.



WITNESSES

*F. L. Oirand.*  
*P. A. Smith.*

INVENTOR

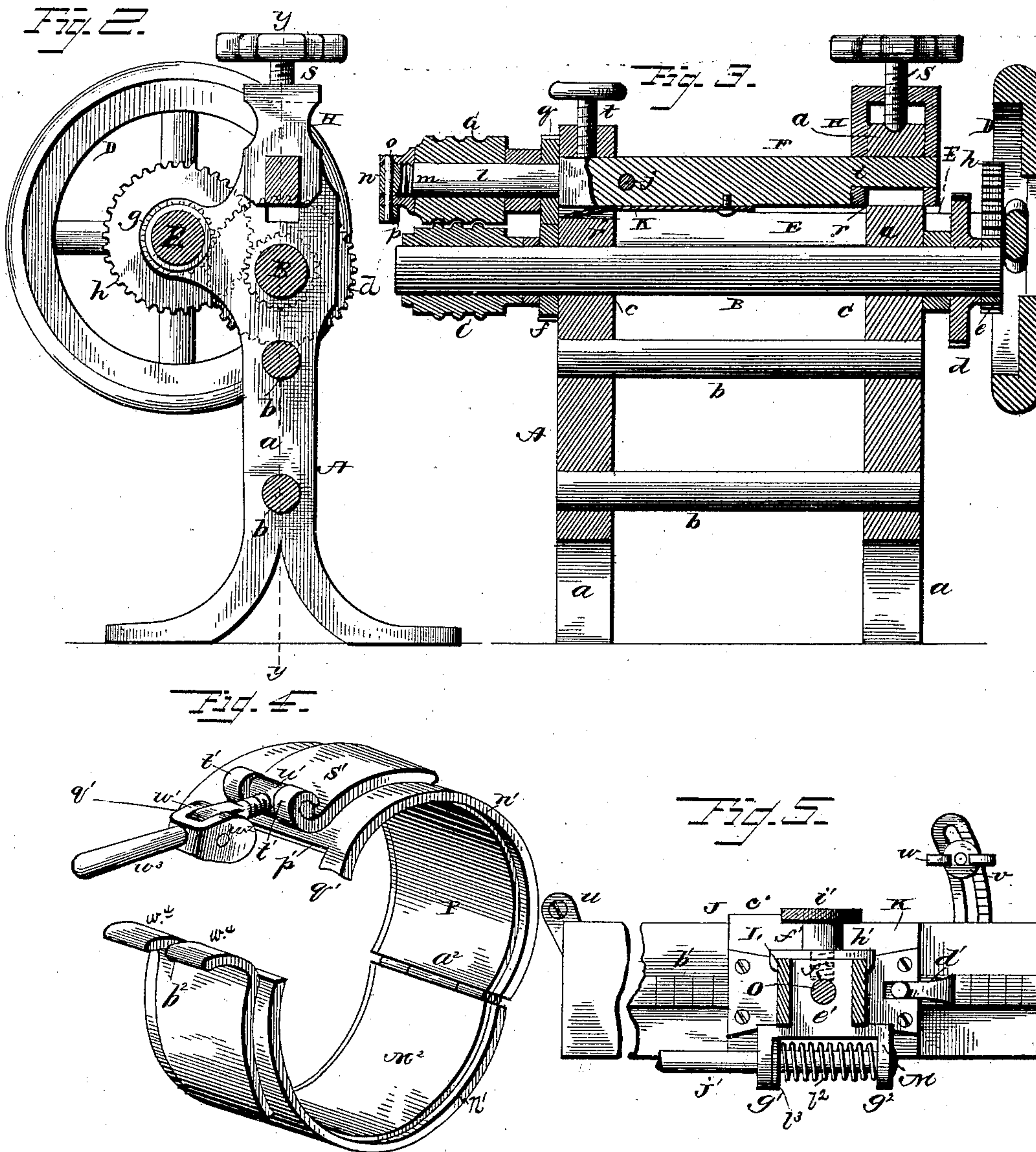
*F. F. Voigt.*  
By *A. G. Heylman.*  
Attorney

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# UNITED STATES PATENT OFFICE.

FERDINAND F. VOIGT, OF WALLA WALLA, WASHINGTON TERRITORY.

## MACHINE FOR MAKING SCREW-THREADS FOR PIPE-JOINTS.

SPECIFICATION forming part of Letters Patent No. 333,904, dated January 5, 1886.

Application filed October 16, 1884. Serial No. 145,677. (Model.)

*To all whom it may concern:*

Be it known that I, FERDINAND F. VOIGT, a citizen of the United States of America, residing at Walla Walla, in the county of Walla Walla and Territory of Washington, have invented a new and useful Machine for Making Stove-Pipes, of which the following is a specification.

My invention has relation to machines for making stove-pipes of that class having a screw-thread or worm formed or swaged on the end.

My invention consists in the improved means for forming or swaging a worm or screw on the ends of a stove-pipe joint, as will be hereinafter more fully described, and specifically pointed out in the claims.

In the accompanying drawings, forming a part of this specification, Figure 1 is a side elevation of my improved machine in operative arrangement, the section of pipe being broken away to show the arrangement of the formers. Fig. 2 is a vertical sectional view taken through the line *x x* of Fig. 1. Fig. 3 is a longitudinal vertical sectional view of the swaging-machine, taken through the line *y y* of Fig. 2. Fig. 4 is a perspective view of a guide-clamp, and Fig. 5 represents a section on the line 5 5 of Fig. 1.

The letter A represents the frame of the swaging or forming machine, which may be of any substantial construction, herein consisting of the standards *a*, held firmly together by cross pieces or braces *b*, the extensions or feet of the frame at the base being adapted to be rigidly secured to the foundation as may be desired. In the upper portion of the frame are formed journal-bearings *c*, in which is mounted the rotating shaft B. This rotating shaft B is provided with the gear-wheel *d*, geared to mesh with the gear fixed to the power, and is also provided with a small gear-wheel, *e*, fixed to the end of the shaft and adjusted to mesh with a larger gear-wheel fixed to the shaft of the power, and also with the gear-wheel *f*, arranged to mesh with the gear on the matrix-roller, hereinafter stated.

The letter C represents the former, formed on or rigidly secured to the end of the rotating shaft B, and having upon its surface a se-

ries of half-round annuli, for the purpose of fitting within the series of grooves formed in the matrix-roller, as hereinafter stated.

The letter D represents the power, having fixed on that part of the shaft extended between the power and the frame the small gear-wheel *g* and gear-wheel *h*, meshing, respectively, with the gears on the rotary shaft and shaft carrying the power-gearing, as designated by the letter E, and is extended in this instance through both standards of the frame.

I have represented the power as being supplied by a crank-handle attached to a small fly-wheel; but it is evident that other means may be applied for rotating the machine.

The letter F represents a bar formed at one end, with an offset, *i*, and having a cross-pin, *j*, projected through the same, adjacent to or bearing against the face of the other cap or top piece of the frame, and on the under side provided with a spring, *k*, adapted upon releasement from pressure at the top of the bar to remove the matrix from contact with the former. That part of the bar F extending outside of the cap of the frame is made round and has on the end thereof screw-threads *m*, to receive a washer, *n*, transversely through which and the end of the shaft is projected a pin, *o*, the projected part of which is supplied with a movable washer, *p*, the purpose of this washer being to press against the edge of the guiding-clamp, hereinafter described, and so to admit of the rotation of the pipe during the operation of swaging.

The letter G represents the matrix-roller, cored out to properly fit the round part of the bar F, and provided with a gear-wheel, *q*, to mesh with the gear *f* on the rotating shaft, as shown. This bar, provided with its adjuncts, as described, is disposed in seats *r r'*, formed in the caps of the frame, substantially as seen in Figs. 1, 2, and 3 of the drawings.

The letter H represents a loop or stirrup, the side arms of which are formed with apertures, through which the offset part of the bar *f* is passed and held. This loop or stirrup is provided with a screw-hole in the bridge thereof, wherein operates the set-screw S, by which means the position of that end



of the bar is set in its relation to the position of the matrix upon the former. In the other cap of the frame is a set-screw, *t*, by which the pressure of the matrix is gaged during the operation of forming the screw upon the pipe.

The letter I represents the base or bed piece on which the frame is set and secured, and the letter J represents an adjustable guide-bed hinged or pivotally attached to the base, so as to admit of a swinging motion from side to side. I have shown it as pivoted at *u*, and the other end of this guide-bed as formed with a graduated slotted arm, *v*, the graduations indicating any pitch which it is desired to give to the thread on the pipe. The clamping-screw or set-screw *w*, passed through the slot in the graduated arm, secures the adjustable guide-plate in any desired position. The adjustable guide-bed J is formed with horizontal grooves *a'*, arranged, preferably, about midway of its depth, and is formed or provided on its upper surface with a rack, *b'*, substantially as shown in Figs. 1 and 5 of the drawings.

The letter K represents the base of an adjustable guide-stand, provided with side pieces, *c'*, secured thereto, and having the lower parts struck at right angles to the side, to engage and move in the slots on the sides of the adjustable guide-bed.

The letter L represents standards, properly connected at the top or formed of a single piece, shaped substantially as shown in the drawings, which standards are secured to the movable base K. In the movable base is a pawl, *d'*, pivotally secured therein and engaging the teeth of the rack, in order that the base may be held against displacement during the operation of making the thread upon a piece of pipe.

The letter M represents a clamp and carrier adjustably secured to the standards. The bed *e'* of this clamping-carrier is fitted to the space between the standards, and is formed with a screw-threaded hole, *f'*, in the end thereof, and also a vertical screw-threaded hole, *f''*, and formed also with the extended arms *g'* and *g''*. The clamping-plate *h'* is set against the sides of the standards and secured in place by a set-screw, *i'*, which passes into the screw-threaded hole in the body of the carrier and clamps the carrier firmly in position. Mounted in the perforations of the extended arms of the carrier is a shaft or rod, *j'*, formed with studs or annulus *k''*, which, in conjunction with nut *l''*, limit its horizontal progression in either direction, and the end of this rod or shaft is formed with screw-threads *l'*, and disposed about it, between the extended arms of the carrier, is a coiled spring, *l''*, whose free end rests and has bearing against a washer or plate, *l'''*, on the shaft *j'*, by which the disk and shafts are thrown forward to a normal position after a section of pipe is removed.

*k'''* represents a nut on the inner end of the shaft *j'*, for the purpose of securing the disk N on said shaft.

Fitted in the top or cross-piece of the standard is an adjusting-screw, O, the screw part of which passes through the screw-threaded hole in the body of the carrier, the purpose of this screw being to adjust the elevation of the carrier, and with it the shaft and its disk.

The letter N represents a disk secured to the shaft *j'*, and having set in its face a series of split studs, *m'*, arranged in radial directions in the face of the disk, the object of these studs being to receive and retain the end of a joint of pipe, while the other end is being passed between the rollers of the swaging-machine.

The letter P represents a guiding-clamp to be placed about and secured to a joint of pipe during the operation of making the grooves upon the ends. This clamp consists of a metallic band, *n'*, made in two sections hinged together, and the sections formed with edges gradually converging from one end to the other, the broadest end *n''* being formed with a cut-away space to receive the narrow end when brought around, the projecting side wings, *g'*, of such cut-away portion being formed with concave ends, to properly adjust themselves to the rotating stud fixed to the end of the non-rotating shaft or bar. At the broad end of the guiding-clamp are formed bearings *t'*, mounted in which is a shaft, *u'*, having a screw-hole in the center to receive an arm of the clamping-lever *w'*. The clamping-arm *w''*, which is pivotally secured to the lower arm, which is adapted to engage with a slot and bring the cam of the clamping-arm in engagement with the projecting ends of the bearing *w''*, formed on the free end of the guiding-clamp, substantially as seen in Fig. 1 of the drawings. The clamping-guide is lined with leather or similar substance, to prevent unnecessary abrasion of the pipe.

In Fig. 1 I have shown a section of pipe, Q, in position in the machine to have the worm or thread pressed upon it.

The operation of the machine may be stated as follows: The adjustable guide-bed having been set by means of the guide-frame and clamping-screw to obtain the desired pitch of the thread, the carrier, with the disk, is adjusted so that the vertical radius of the disk and the pipe thereto attached shall be on a line with the vertical radius of the swaging-rollers, and so that the line of pipe shall be parallel with the line of the axis of the rotating roller. The clamping-guide is then adjusted to the pipe at a position limiting the extent of the screw or worm, and the threaded end of the pipe is then adjusted between the formers with the projection of the clamping-guide resting against the movable washer at the end of the matrix-roller. Then the bar carrying the matrix-roller may be adjusted to a suitable pressure on the section of pipe, when, by



the application of power, the pipe is drawn between the formers and the threads or worm formed thereon, the stud on the end of the bar carrying the matrix-roller, directing uniformly the pitch of the thread.

By means of the sliding base the standard carrying the disk may be arranged at any desired distance to suit any length of pipe, and may be set in such position secured against backward displacement by means of a pawl in the base engaging with the teeth of the rack, while the vertical adjustment of the carrier, shaft, and disk can be made by means of the lifting-screw passed through the screw-hole in the carrier. After such position of elevation is ascertained or reached, the carrier can be secured by means of the clamping-screw.

In the operation a backward movement of the disk is made by reason of the progression of the thread, but the relative position of the pipe is maintained.

In the drawings I have demonstrated the formers as having a series of forming rings and grooves. It is evident that the purpose will be accomplished by a single ring and corresponding groove.

What I claim as my invention, and desire to secure by Letters Patents, is—

1. The rotary shaft formed or provided with a former on the free end thereof, and means, substantially as described, for imparting motion thereto, in combination with a detachable non-revolving shaft or bar mounted parallel with the revolving shaft, a rotary former mounted loosely on a round extension of the non-revolving shaft and having gear engaging gear on a rotary shaft, an adjustable stirrup or loop to carry and adjust the square free end of the non-revolving bar, and means, substantially as described, to raise and lower the bar in its seat next to the former, as set forth.

2. The rotary shaft, formed or provided with a former on its free end, and means, substantially as described, for imparting motion thereto, in combination with a non-revolving adjustable bar or shaft mounted loosely in seats and arranged parallel to the revolving shaft, and provided with a spring fixed to the under side thereof to raise the bar, and a cross-pin projected transversely through the bar to hold it against horizontal movement, an adjusting loop or stirrup to carry and set the free end of the bar, a rotary former mounted loosely on the round extension of the non-revolving shaft or bar and provided with gear engaging with the gear on the revolving shaft, and held in position on its axle by a screw-nut, a rotary guide washer mounted on a stud passed transversely through the end of the fixed rotary shaft, and a clamp for gaging the pressure of the matrix, substantially as described, and for the purpose stated.

3. The rotary shaft formed or provided with a former on its free end and means for imparting rotation thereto, in combination with the non-revolving shaft or bar mounted paral-

lel with the rotary shaft and provided with means, substantially as described, to raise and lower it, a former mounted on a round extension of the non-rotary shaft, and gear to mesh with gear on a rotating shaft, and a rotary guide-washer mounted on a stud or axle projected transversely through the end of the non-rotary shaft, substantially as described.

4. The base-plate formed with horizontal grooves in its side faces, and pivotally secured at one end to admit of movement in a horizontal line, and provided with means to gage and set it in position, and a rack on its upper face, and a sliding base-plate provided with a pawl to engage the rack and having vertical standards secured thereto, in combination with an adjustable carrier on said standards, a horizontal shaft journaled to said carrier, and a revolving disk provided with means upon its outer face to hold a joint of stove-pipe and adjustably secured to said shaft, substantially as described.

5. The vertical standards or frame, a carrier to slide within the frame, a shaft having a limited horizontal movement mounted in the carrier and provided with a spring to return the shaft to position, and means, substantially as described, to adjust the carrier in elevation and clamp it on the standards, in combination with the disk detachable and adjustably secured on the shaft, and having clasps radially set on its outer face, substantially as described, and for the purpose stated.

6. In a stove-pipe-making machine, a rotary disk provided with a series of holding studs or clasps arranged radially to the axis thereto, substantially as described, and for the purpose stated.

7. The guiding-clamp formed with its edges on a line with the pitch of a thread to be impressed or formed on the joint of pipe, in combination with the formers mounted upon revolving and non-revolving shafts, and operated substantially as set forth.

8. The guiding-clamp consisting of two semi-circular pieces hinged together, said pieces being formed of an outer metallic plate and an inner flexible lining, and with its edges conforming to the pitch of a worm or thread to be formed on a pipe, and having the wider end centrally cut away to admit the other end, and provided with projecting side wings adapted to serve as seats for the guiding-stud on the former, substantially as described.

9. In combination, a rotary shaft carrying a former on its free end, means for imparting motion thereto, a non-revolving shaft or bar mounted parallel with the rotary shaft, means, substantially as described, for raising and lowering the non-rotating shaft, a rotary former mounted on a rounded projection of the non-rotary bar and receiving motion from the rotary shaft, and a rotary stud or washer pivotally secured to a stud or axle projected through the end of the non-rotary bar, a revolving disk provided with a series of hold-

ing-studs on its outer face and mounted on a shaft having a limited horizontal movement, and mounted on a carrier having means to adjust and set it in elevation, and a guide-  
5 clamp adapted to clamp about a joint of stove-pipe, substantially as described, and for the purpose set forth.

In testimony whereof I have hereunto set my hand in the presence of two attesting witnesses.

FERDINAND F. VOIGT.

Attest:

F. W. GOODHUE,  
W. C. PAINTER.