

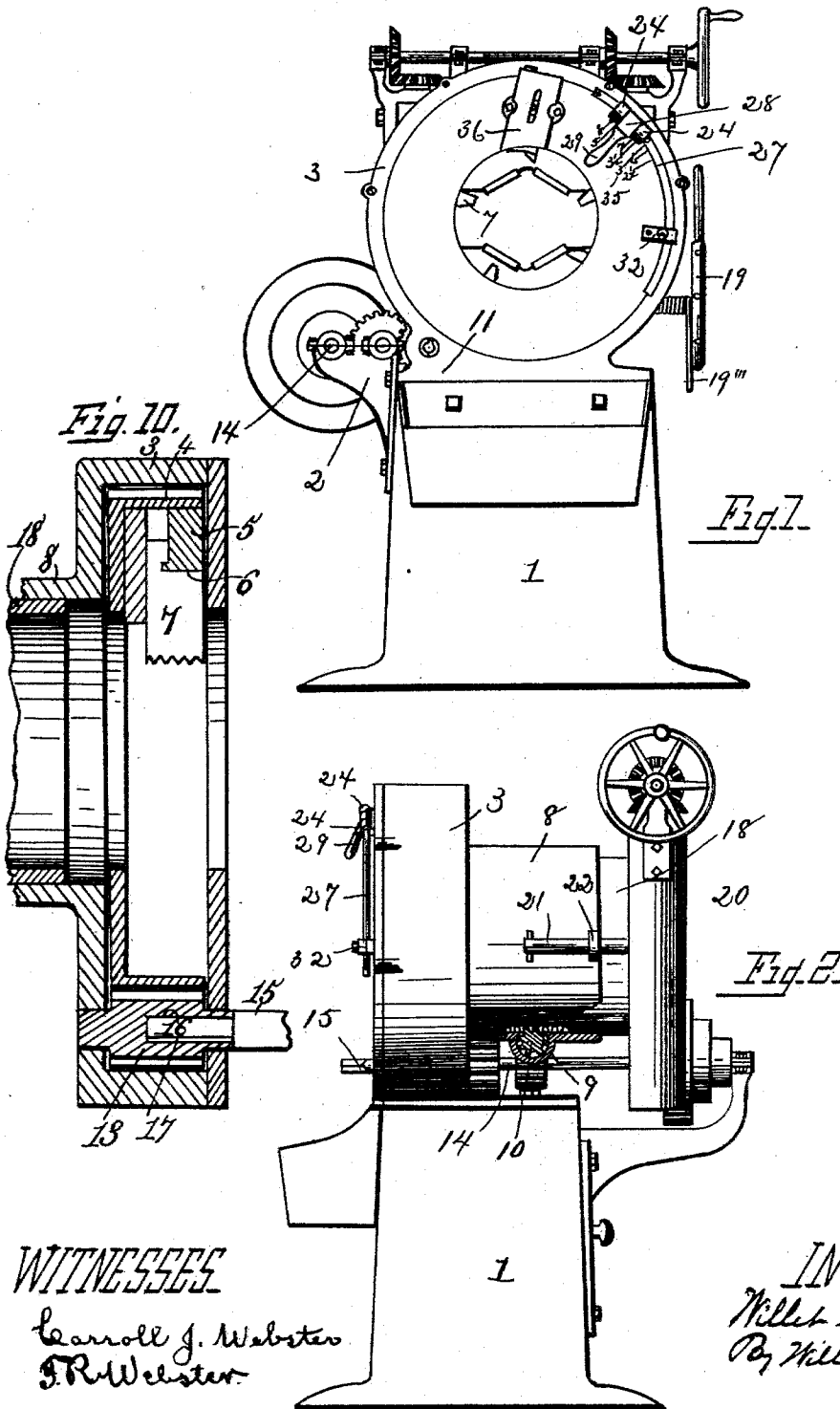
(No Model.)

3 Sheets—Sheet 1.

W. C. WELLS.
SCREW CUTTING MACHINE.

No. 584,026.

Patented June 8, 1897.



WITNESSES

Carroll J. Webster
J. R. Webster

INVENTOR

Wells & Wells
By William Webster
att'y.

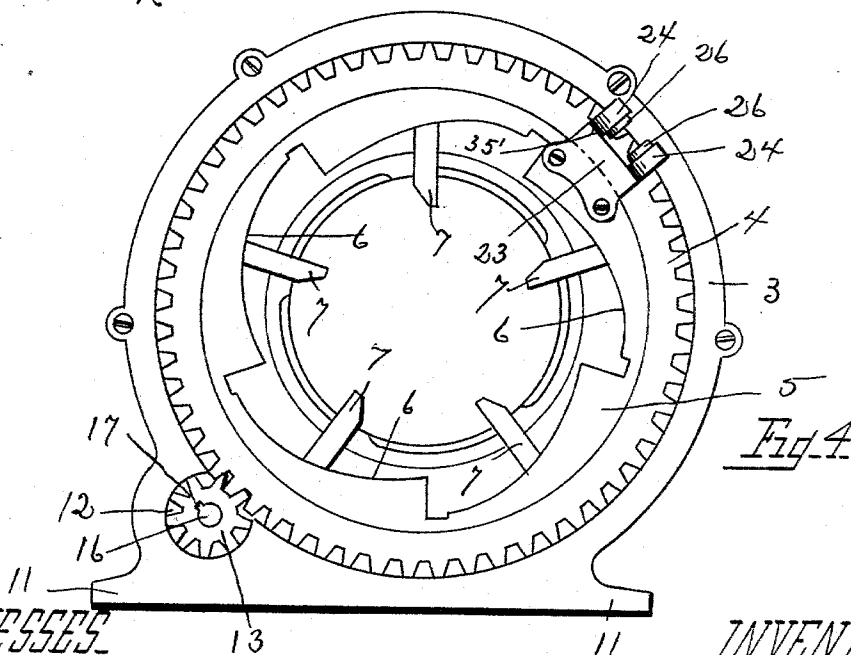
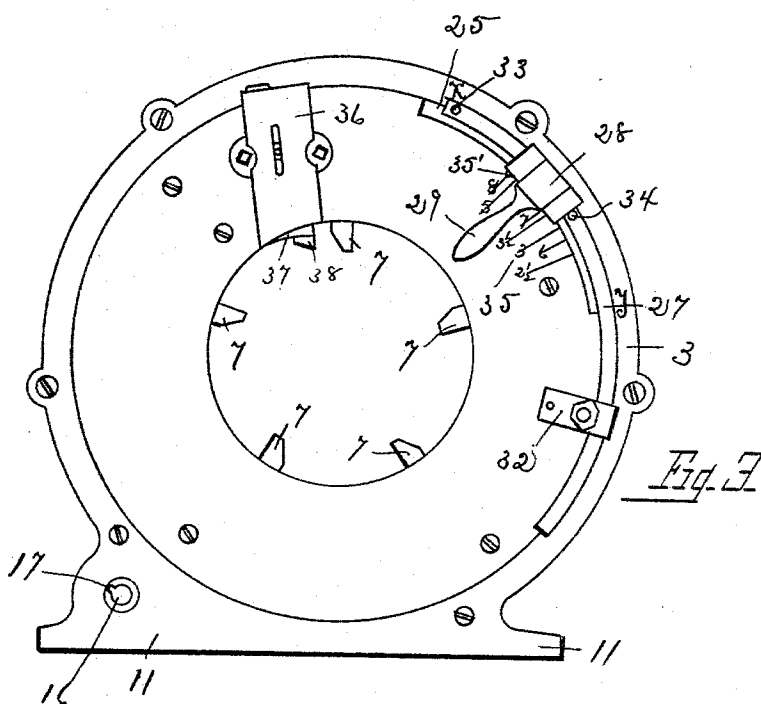
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INVENTOR

Willet C. Wells
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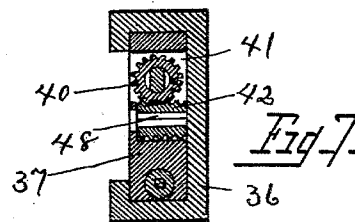
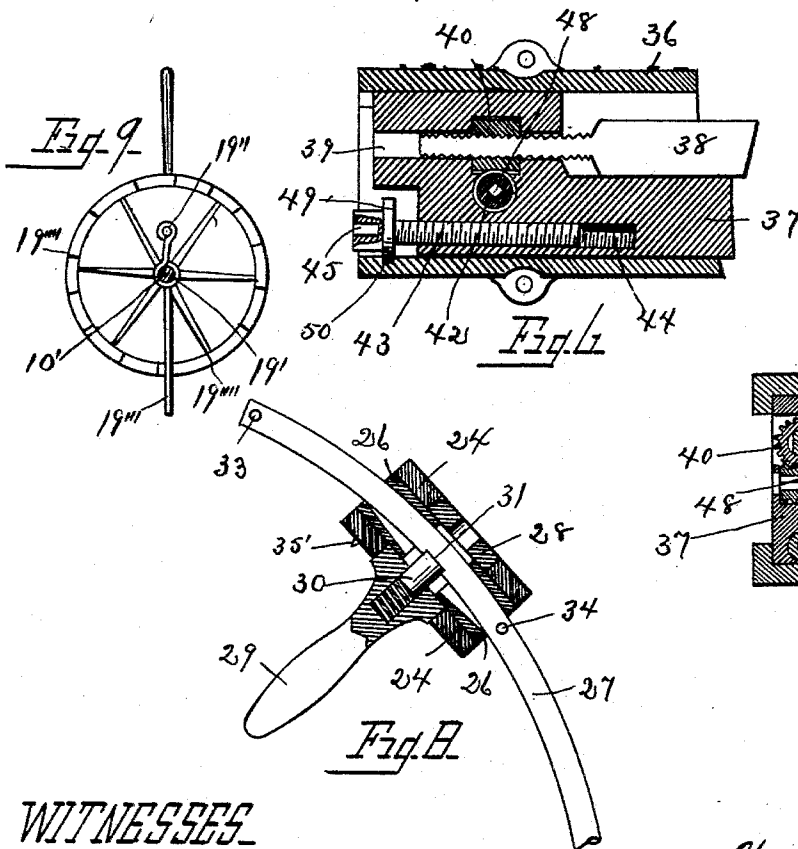
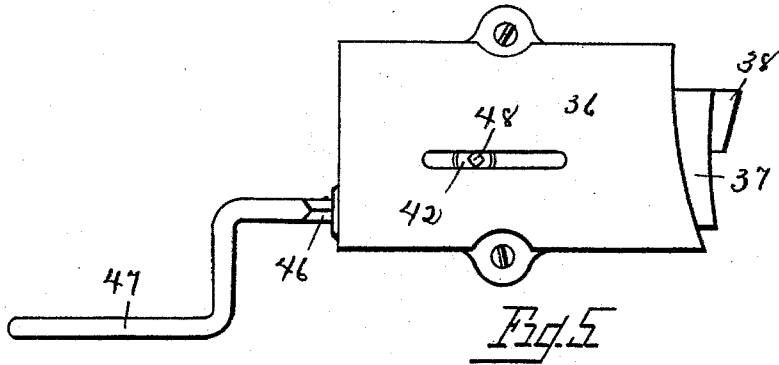
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8 Sheets—Sheet 3.

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Willet C. Wells
By William Webster
Atty

UNITED STATES PATENT OFFICE.

WILLET C. WELLS, OF TOLEDO, OHIO.

SCREW-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 584,026, dated June 8, 1897.

Application filed July 17, 1893. Serial No. 480,718. (No model.)

To all whom it may concern:

Be it known that I, WILLET C. WELLS, of Toledo, county of Lucas, and State of Ohio, have invented certain new and useful Improvements in Screw-Cutting Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form part of this specification.

My invention relates to a screw-cutting machine, having especial relation to economy of construction and convenience in operation.

The objects of the invention are to journal the pinions in housings formed in the casing, which serve as a bearing along the entire length of the pinion, whereby the pinions are steadied and the wear distributed along the entire length of the same.

A further object is to provide a revoluble die-head having a face-plate and a multi-cam ring and connections between the two, so that the chasers may be adjusted by means of a lever upon the outer side of the face-plate, which is connected with a graduated scale upon the face-plate to indicate the adjustment, thereby not only rendering the adjustment convenient, but perfectly accurate.

A further object is to provide for an automatic feed of the pipe to the chasers by means of an adjustable tension-arm actuating the shaft which advances the vise.

A further object is to provide a cutting-off mechanism, with convenient means for adjusting the knife-carrier to the various sizes of pipe to be cut and gage the knife while cutting, and also for advancing the knife.

The invention consists in the parts and combination of parts hereinafter described, and pointed out in the claims.

In the drawings, Figure 1 is a front and Fig. 2 a side elevation of a complete machine, a portion of the latter being broken away to disclose the pinion and housing. Fig. 3 is a front elevation of the cutter-head and housing removed from the pedestal. Fig. 4 is a like view with the face-plate removed. Fig. 5 is a side elevation of the cutting-off device. Fig. 6 is a like view with the front plate re-

moved to disclose the knife and knife-carrier and mechanism for adjusting the carrier and advancing the knife. Fig. 7 is a transverse sectional view. Fig. 8 is a detail view of the lever, curved bar, and conical bearing employed in the adjustment of the chasers. Fig. 9 is a sectional elevation of the rear side of the hand-wheel and the spring for automatically turning the same to advance the pipe to the cutters. Fig. 10 is a detail sectional view of the head, illustrating the spur-gear and pinion.

1 designates the pedestal, upon which are secured the housing and framework of the threading mechanism and having secured thereon an arm 2, in which the power-shaft is journaled. The housing comprises a tubular shell of two diameters, the larger portion 3, in which is journaled an annular peripherally-toothed gear 4, having a plate 5 closely fitting its inner periphery and formed with a plurality of cam-faces 6, with which are attached the chasers 7 in a manner to be advanced or retracted by the movement of the plate 5, as more clearly shown and described in the application, Serial No. 480,717, filed contemporaneously herewith. The smaller diameter 8 of the shell is formed with a transverse enlargement 9, bored to a true circular internal diameter to journal a pinion 10 of a diameter to closely fit therein, whereby the entire circumference of the pinion less the teeth in engagement is provided with a journal-bearing in which the pinion is held in perfect alinement with the teeth with which it is to mesh and the wear incident to merely journaling the shaft is avoided.

11 designates the broad base of the shell adapted to be secured upon the pedestal or any other fixed object and having a journal-housing 12 formed therein to journal a pinion 13, which meshes with gear 4, the housing being bored to a true circular diameter to allow pinion 13 to closely fit therein and journal with the same effect as pinion 10. Power-shaft 14 is journaled longitudinally of and at one side of the machine and is provided with any preferred form of gearing for properly speeding the revolution of gear-wheel 4 through the medium of gear 13, secured upon a parallel counter-shaft and having means for connecting a shaft 15 thereto for hand-

power, which comprises a central perforation 16, formed in the pinion and having a key-way 17 connecting therewith, into which the spline of shaft 15 enters as said shaft is inserted in perforation 16, whereby the pinion may be turned by hand by means of a crank upon the outer end of shaft 15, and the shaft may be removed when power is employed.

18 designates a drum telescopically arranged within a portion 8 of the shell and having a rack formed upon the under side, into which a pinion 10 meshes, whereby when hand-wheel 19 is revolved the drum is advanced or retracted, according to the direction in which the wheel is revolved.

The shaft 10', upon which pinion 10 and hand-wheel 19 are secured, is provided with a coiled spring 19', one end 19'' of which is secured to the frame and the coil of the spring embracing the shaft. The opposite end 19''' is bent at right angles to be engaged with any desired projection 19'''' upon the inner side of the periphery of wheel 19, whereby the tension of the spring will revolve the wheel-shaft and pinion and cause the drum 18 to move forward to feed the pipe to the chasers.

Drum 18 is connected with a housing 20 for a vise, whereby the pipe may be passed between the vise-jaws, when opened, to the cutter-head and urged into contact with the chasers by means of a pinion 10, the telescopic drum serving to guide the vise and hold the pipe from lateral movement, and is held from revolving by means of rods 21, connected with the vise-housing and running through guide 22 on shell 8.

The chasers are projected or retracted by means of the movement of plate 5, which is accomplished in the following manner: Upon plate 5 is secured a plate 23, having two arms 24 projecting at right angles thereto and passing through a slot 25 in the periphery of the face-plate, and having circular openings in which are secured bearings 26, each having a conical circular recess in which is a bar 27, preferably having a curvature coincident with the slot in the face-plate, and upon the inner projecting ends of the boxings is journaled the tubular head 28 of a lever 29, having a spring-dog 30 arranged to seat in a notch 31 in bar 27 when brought into coincidence therewith or to ride out of the notch when the lever is turned.

Bar 27 is adjustably held in position upon the face-plate by means of a clamp 32 upon the face-plate and is provided with a pin 33 upon the outer end to limit the throw of lever 29 in retracting and a pin 34 to limit the movement in advancing the chasers, and upon the face-plate is a graduated scale 35, whereby when bar 27 is adjusted by means of clamp 32 to cause point 35' to register with the proper scale-mark the throw of the lever will at all times advance the chasers to cut to the desired diameter—a feature of great importance.

I have provided a convenient cutting-off

mechanism comprising a knife-box 36, attachable to the face-plate, in which is a sliding knife-holder 37, having a recess to accommodate the blade 38 of the knife and an opening 39 for the threaded stem, there being a centrally-threaded pinion 40 run upon the stem and seated in a recess 41 in the holder 37, the pinion having worm-teeth upon its periphery, into which a worm 42, journaled in the holder at right angles to worm-wheel 40, meshes, by which means the revolution of worm-wheel 40, through the medium of worm 42, will advance or retract the knife.

The knife-holder is adjustable within the knife-box 36 by means of a screw-shaft 43, run into the screw-threaded hole 44 longitudinally of the knife-holder.

Screw-shaft 43 is formed with a square socket 45 in the outer end to receive the square end 46 of a crank 47, which also enters a square hole 48 in worm 42, and the screw-shaft is held from longitudinal movement by means of a collar 49, arranged thereon and secured in a recess 50, formed in a knife-holder. By this arrangement the knife-holder may be advanced to abut against the pipe by means of the screw-shaft 43, to gage the cut of the knife, while the knife is being advanced independently by means of the worm-gear.

In operation pinion 10 is revolved to retract the vise. Lever 29 is revolved upon the bearings to cause spring-dog 30 to ride out or notch 31, when the lever is moved, until the arm 24 of plate 23 contacts with pin 33, this movement revolving the plate 5 and retracting the chasers. The pipe is now passed between the vise-jaws until the end of the pipe is in contact with the chasers either by means of spring 19' (tension being previously placed thereon by manually engaging end 19''' of the spring with any desired projection 19'''' upon wheel 19) or by revolving wheel 19 manually, when lever 29 is moved to contact with pin 34, when the pipe is further advanced by revolving pinion 10 until the pipe has fully entered the chasers, when it will be fed by the spirality of thread of the chasers until the pipe is threaded the desired length, the spring being automatically released from engagement with the lugs when the tension of the spring is spent, the wheel being free to turn.

If desired to cut the pipe, the knife-holder is advanced in the knife-box until it comes in contact with the pipe to be cut by means of the screw-shaft 43, thus forming a gage for the knife, a feed for knife 38, and the knife is fed by means of worm 42 until the pipe is severed.

Should it be desired to adjust the chasers to pipe of different diameters, clamp 32 is released and bar 27 is moved the desired distance to cause a pin 35' upon one of the arms 24 to register with the scale-mark upon the face-plate, indicating the proper thread to be cut, thereby allowing free observation and accurate adjustment when the clamp is firmly seated upon the bar.

I regard the novel means of adjustment of chasers entirely outside of the cutter-head as of especial value, as it allows of great range and adjustment with greater ease and accuracy than heretofore and is accomplished in shorter time.

It will be apparent that bar 27 may be of any curvature or it may be straight, if desired, and move tangentially of the periphery—as, for instance, from X to Y, Fig. 3—in which event an ordinary boxing may be employed.

What I claim is—

1. In a screw-cutting machine, a shell formed with an annular housing, an annular gear therein connected with a screw-cutting mechanism, a drum integral with the housing formed with a transverse bore, a pinion journaled in the bore, a telescopic drum carrying a vise and having a rack with which the pinion meshes, and a spring for automatically revolving the pinion when desired to advance the vise and present the pipe to the die-head.

2. In a screw-cutting machine, the combination of a die-head, a vise movable thereto, a rack and pinion for moving the vise to the die-head, and a spring adapted to be put in tension to revolve the pinion to automatically advance the vise.

3. In a screw-cutting machine, the combination of a die-head having a tubular extension, a vise secured upon a cylinder telescoping therein, a rack upon the cylinder, a pinion journaled in the tubular extension, a wheel upon the pinion-shaft having projections, and a spring secured fixedly at one end and adapted to be engaged at the opposite end with the wheel.

4. In a screw-cutting machine, the combination of a casing, a gear journaled therein,

a cam-plate secured therein, chasers connected with the cam-plate, a face-plate having a circular recess, a plate secured upon the cam-plate having angled arms projecting through the recess, formed with transverse openings, boxes in the openings, a bar within the boxes, and a lever journaled upon the boxes having a dog to engage the bar, and means for holding the bar upon the face-plate in any desired adjustment.

5. In a screw-cutting machine, a knife-holder connected therewith, a knife within the holder having a screw-threaded shank, an internally-threaded gear upon the shank having peripheral gear-teeth, a pinion meshing therewith, and means for advancing the knife-holder whereby the knife may be adjusted to any desired size of pipe to be cut, and independent means for advancing and gaging the knife to its work.

6. In a screw-cutting machine, the combination with a fixed knife-box, of a knife-holder adjustably mounted in said box, a knife longitudinally movable in said holder in the line of travel of the latter, means for positively feeding the knife-holder back and forth within the fixed box, and means carried by the knife-holder for positively feeding the knife back and forth in the holder independently of the feed of the latter, substantially as described.

In testimony that I claim the foregoing as my own I hereby affix my signature in presence of two witnesses.

WILLET C. WELLS.

Witnesses:

WILLIAM WEBSTER,
F. R. WEBSTER.