

F. E. & F. W. WELLS.
DIE STOCK.
APPLICATION FILED JAN. 6, 1908.

939,648.

Patented Nov. 9, 1909.

3 SHEETS—SHEET 1.

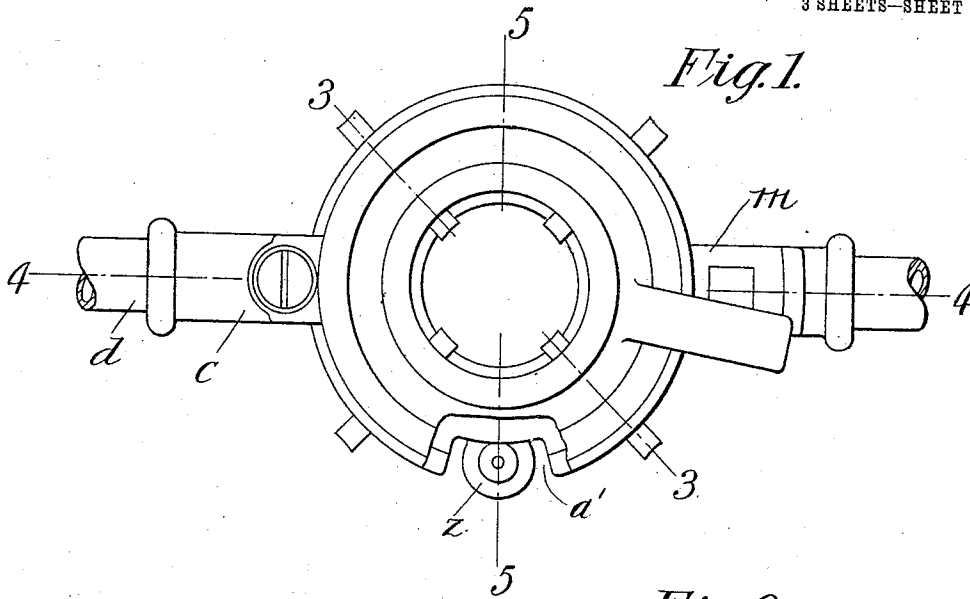


Fig. 2.

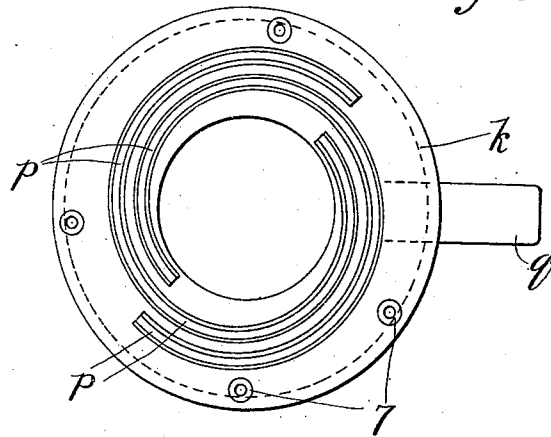
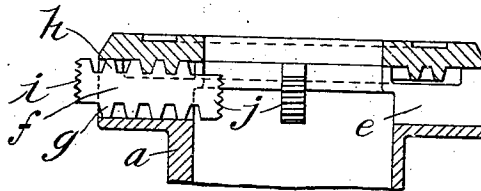


Fig. 3.



Witnesses.
H. L. Sprague
H. W. Bowen.

Inventors,
Frederic E. Wells.
Fred W. Wells.
by *Chapin & Co.*
Attorneys.

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Fig. 5.

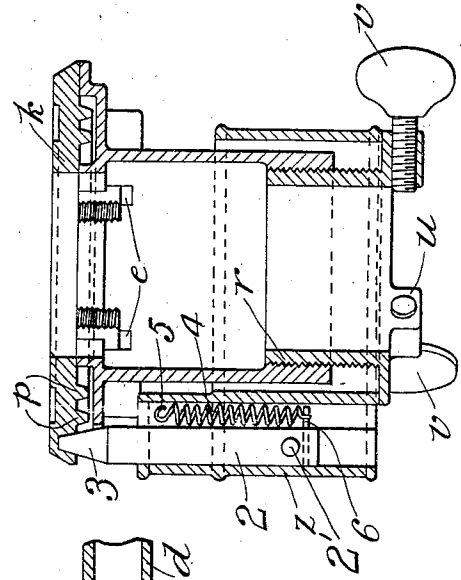
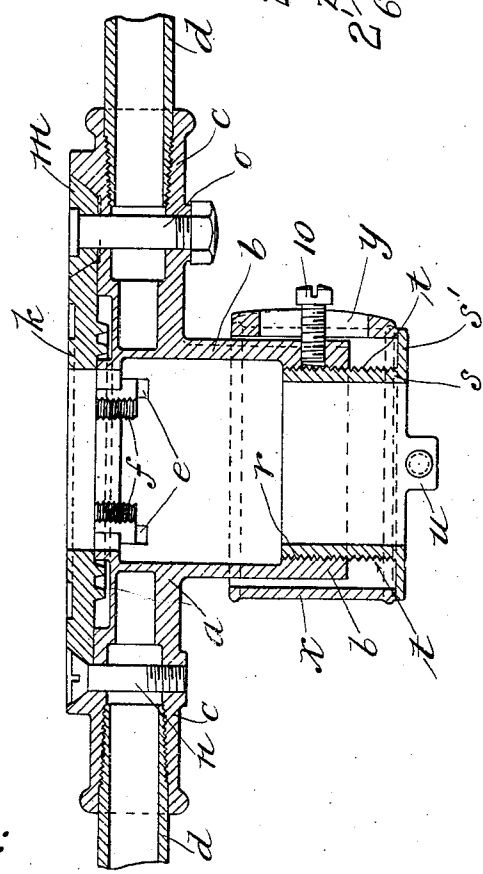


Fig. 4.



Witnesses:
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H. W. Bowen.

Inventors,
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by Chapin & Co.
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3 SHEETS—SHEET 3.

Fig. 7.

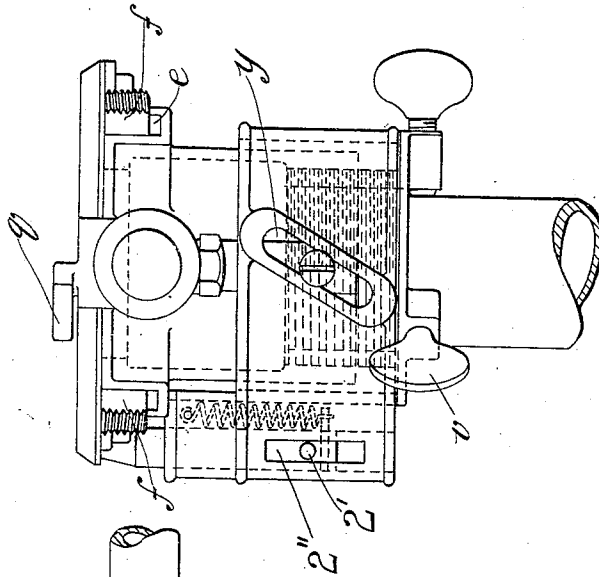
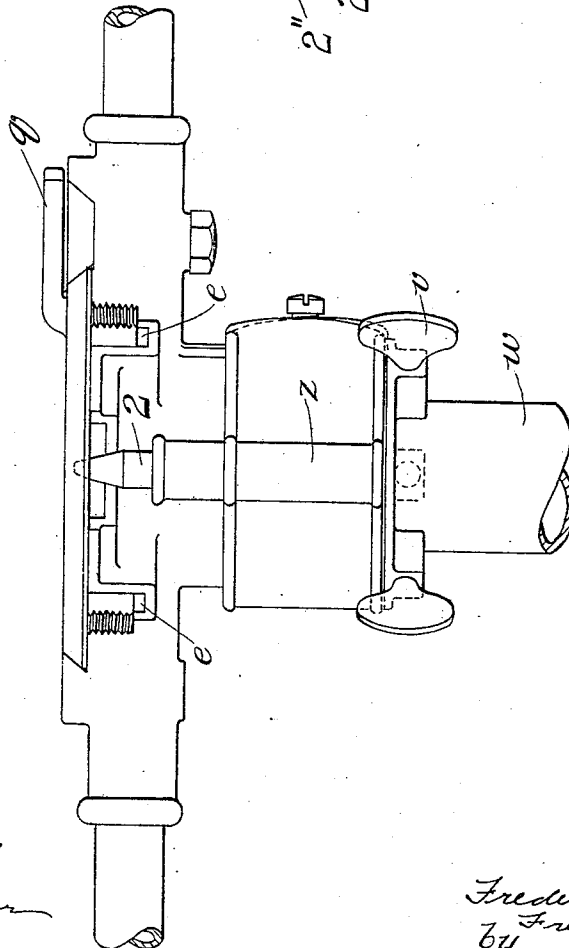


Fig. 6.



Witnesses:
H. L. Sprague
H. W. Bowen.

Inventors,
Frederic E. Wells.
Fred W. Wells.
by *Chapin & Co.*
Attorneys.

UNITED STATES PATENT OFFICE.

FREDERIC E. WELLS AND FRED W. WELLS, OF GREENFIELD, MASSACHUSETTS; SAID
FREDERIC E. WELLS ASSIGNOR TO SAID FRED W. WELLS.

DIE-STOCK.

939,648.

Specification of Letters Patent.

Patented Nov. 9, 1909.

Application filed January 6, 1908. Serial No. 409,443.

To all whom it may concern:

Be it known that we, FREDERIC E. WELLS and FRED W. WELLS, citizens of the United States of America, residing at Greenfield, in the county of Franklin and State of Massachusetts, have invented new and useful Improvements in Die-Stocks, of which the following is a specification.

This invention relates to improvements in die-stocks and it has for its object to provide a device for cutting threads on the ends of pipes, and particularly it is designed for automatically cutting a tapering thread as the tool advances from the end of the pipe; a further object of the invention lies in the ready adjustment of the same whereby threads may be cut on different sizes of pipe; another object of the invention is to provide a structure that can be readily assembled and taken apart in case of breakage of any of the elements of the same and one that is at the same time strong and compact; further objects of the nature of the invention will appear in the body of the specification and will be more particularly pointed out in the claims.

In the drawings forming a part of this application,—Figure 1 is a top plan view of the assembled die-stock; Fig. 2 is a detail bottom plan view of the rotatable chaser-adjusting element for moving the "chasers" or cutters in the stock. Fig. 3 is a detail sectional view of one end of the stock showing the rotatable chaser-adjusting element in engagement with the threads on the upper edge of one of the "chasers" on the line 3—3 and with one of the chasers removed. Fig. 4 is a vertical sectional view on line 4—4, Fig. 1, showing the manner of securing the rotatable chaser-adjusting element to the body portion of the die-stock and also the lead screw construction. Fig. 5 is a vertical sectional view on the line 5—5, Fig. 1 showing the location and arrangement of the spring-actuated plunger in engagement with the rotatable chaser-adjusting element. Fig. 6 is a vertical side elevational view of the die-stock and illustrating a section of pipe secured therein. Fig. 7 is a side elevation of Fig. 6 looking from the right thereof.

Referring to the drawings in detail, *a* designates the body portion of the die-stock, and the same is provided with a hub or barrel part *b*, integral therewith, and tubular

extensions *c* also integral therewith, into which the operating handles *d* are screwed, and at the same time to permit their removal when not in use. The body portion *a* of the die-stock is provided with radial grooves *e* for receiving the chasers or cutters *f* which, as shown in Fig. 3, are provided on their opposite edges with threads or teeth *g* and *h*, and on their opposite ends with threads *i* and *j*, whereby the same can be reversed and used for cutting right or left-hand threads or for cutting teeth of different sizes, or so that right-hand threads can be cut with one end and left-hand threads with the other end of the chasers on the same size pipe.

k designates, as a whole, a rotatable chaser-adjusting plate that is secured to the upper portion of the body portion *a* by means of the cap-pieces *m* and the bolt *n*. The cap-pieces *m* are held to the body portion *a* by means of the bolt *o*.

The beveled edge of the chaser-adjusting plate *k* engages correspondingly beveled edges of the cap-piece *m* and the bolt *n* whereby the plate is removably retained in position on the portion *a* in a rotatable manner, as readily understood. The lower face or under side of the plate *k* is provided with teeth *p* that are arranged in a spiral manner, as shown in Fig. 2, and which engage the teeth *g* and *h* of the chasers *f*, as shown in Figs. 3, 4, and 5 most clearly.

The teeth *p* on the chaser-adjusting plate *k* and the grooves between the teeth *g* and *h* of the chaser or cutters *f* are preferably made with beveled or inclined sides for the following reasons:—first, in order that the chasers may be firmly held to their seats in the bottom of the radial grooves *e* in the die-stock; and second, that both the scroll on the plate *k* and the grooves on the opposite edges of the chasers will be stronger than if the sides were straight; and third, that unless there is an angle on the scroll they cannot be forged, and if they cannot be forged the cost will be greatly increased.

q designates a radially arranged handle integral with the plate *k* for use in rotating the same whereby the chasers can be readily adjusted in a radial direction, either inward or outward, when the plate *k* is rotated, when it is desired to cut threads on the end of a particular size of pipe.

It will be noticed that the outer end of the hub portion *b* is internally threaded, as indicated at *r*.

s designates a cylindrical element that is threaded on its outer surface, as indicated at *t*. The threads *r* and *t*, of the hub portion *b* and the cylindrical element *s* are shown in engagement in Figs. 4 and 5. The threads *r* may be more properly termed a "lead screw". The cylindrical element *s* is provided with radially disposed lugs *u* that are threaded for receiving the thumb-nuts or set-screws *v*, which are for the purpose of engaging and centering a pipe on which a thread is to be cut, as designated at *w* in Figs. 6 and 7, and also for preventing rotary movement of the element *s* when the stock is in use, as will be explained in the operation of the tool.

Rotatably and slidably mounted on the hub *b* of the die-stock is a barrel or collar element *x* which is provided with an inclined slot *y*. Located on one side of the barrel element is a cylindrical hub or boss *z* that is integral therewith, the axis of which is parallel with the hub portion *b*. Within the boss *z* is slidably mounted a locking pin 2 that is preferably tapered at its upper end at 3. This pin can be operated by means of the pin 2¹ in the opening 2².

4 designates a spiral spring that is attached at its opposite ends to the pin 2 and boss *z* respectively by means of the pins 5 and 6. This spring is normally under tension so that the pin 2 is thereby constantly held in an elevated position.

It will be noticed that the rotatable chaser-adjusting plate *k* is provided with openings or recesses 7 that are circumferentially spaced from each other. These openings are for the purpose of receiving the tapered end 3 of the pin 2, and after the plate *k* has been rotated an amount corresponding to the size of pipe on which threads are to be cut, the plate *k* can then be locked in this position by means of the pin 3 engaging the openings 7 which correspond with this size of pipe. In practice, these openings are suitably designated by numerals indicating the different sizes of pipes for the convenience of the operator. The body portion *a* is cut away at *a*¹ so as to permit the pin 2 to engage the openings or recesses 7, and also to allow for its rotary movement when the stock is in use as will be described.

Referring now to the operation of the improved die-stock, it being understood that the pipe *w* has been previously clamped by any suitable means, as a vise, and properly centered by means of the thumb-nuts *v* in the lugs *u*: the rotatable chaser-adjusting element *k* is turned so that the pin 2 engages the proper opening 7, which indicates the size of the pipe. When the operating handles *d* are rotated, the stock as a whole will

travel on the cylindrical element *s* that is held against rotation by means of the nuts *v*, and the hub *b* with its pin 10, will in turn, impart a rotary movement to the barrel or collar element *x*. The element *x* will bear against, and rotate on the annular ledge or rim *s*¹ of the fixed cylindrical element *s*. The collar element *x* will be rotated by reason of the pin 10 engaging the inclined slot *y*. This rotary movement of the barrel element *x* is, in turn, by means of the pin 2, imparted to the plate *k*; and the plate *k* will, in turn, by means of the spirally disposed threads *t* engaging the threads *g* and *h* on the chasers move the said chasers or cutters *f* radially outward during the operation of the cutting of the threads on the end of the pipe *w*. A continued rotation of the die-stock will ultimately cause the depth of the threads to be brought out flush with the outer surface of the pipe, a reverse rotary movement of the die-stock being only necessary to disengage the same from the cut thread, or the plate *k* may be moved by hand whereby the chasers are radially drawn outward still farther permitting the stock to be lifted from the end of the pipe.

The chasers *f* may have the threads *g* and *h* on their opposite edges uniform, that is to say, so that the same rotatable plate *k* with its spiral threads or teeth *p* will operate the chasers either when reversed or in an inverted position. On the other hand the threads *g* and *h* may be of different pitch, so that the rotatable plate *k* and its teeth *p* will only operate the chasers when in a certain position. In such a case, the thread-cutting teeth *i* and *j* may be constructed by having one set right-handed and the other set left-handed, in which case one of the sets of threads *g* or *h*, would only fit a particular plate *k* and the threads *p*, where special work was being done.

What we claim, is:—

1. As an improvement in die-stocks having, in combination, a main body portion, a hub integral therewith and interiorly threaded at the outer end thereof, a cylindrical element engaging said threaded portion, a second cylindrical or collar element engaging the outer surface of the hub, chasers provided with teeth on an edge thereof, said chasers being radially disposed with relation to the main body portion, and operative means between the teeth of said chasers and the second cylindrical element for radially moving the chasers during the operation of cutting a thread, whereby a tapered thread may be cut.

2. In combination, a main body portion provided with radially disposed grooves therein a support for said body portion, thread-cutting chasers located in said grooves and provided with teeth receiving grooves

and thread-cutting teeth, as described, a rotatable plate mounted on said main body portion and provided with spirally arranged threads for engaging said grooves of the chasers, operative means carried by the main body portion for operating the rotatable plate, whereby the thread cutting chasers will be moved in a radial direction during the thread-cutting operation, said operative means including a collar element having an inclined slot therein, means on the body portion engaging said slot and said collar being operable from said body support, as described, whereby a tapered thread may be cut.

3. A tool for cutting a tapering thread having, in combination with the main body portion, a collar element, a support for the body portion and provided with an abutment for engaging said collar element, means carried by the main body portion for imparting a rotary movement to the collar element, chasers radially arranged with relation to the main body portion, a chaser adjusting element and means for transmitting the rotary movement of the collar element to the chaser-adjusting element so as to move the chasers radially, and means for adjustably locking said last mentioned means

whereby the chasers can be adjusted to a predetermined radial position, said adjustable locking means including a spring-actuated pin engaging the chaser adjusting element.

4. A die-stock comprising a body portion internally threaded at one end, a lead-screw engaging the same and provided with a flange, a rotatable collar element mounted on the body portion and having an inclined slot therein, a fixed pin carried by the body portion and engaging the slot, the collar element being operated by the fixed pin, chasers mounted in the body portion, a chaser-adjusting plate provided with means for operating the chasers and provided with recesses therein, a spring-pressed pin carried by the collar element and engaging the recesses whereby when the lead-screw is operated the collar element will have a rotary movement imparted thereto, and whereby the rotary movement of the collar element will be imparted to the chaser-adjusting plate, and the chasers operated as described.

FREDERIC E. WELLS.

FRED W. WELLS.

Witnesses:

GEORGE H. WILKINS,
ALFRED F. SMEAD.