

P. NEFF.
PIPE CUTTING AND THREADING MACHINE.
APPLICATION FILED JAN. 9, 1908.

978,190.

Patented Dec. 13, 1910.

2 SHEETS-SHEET 1.

Fig. 8.

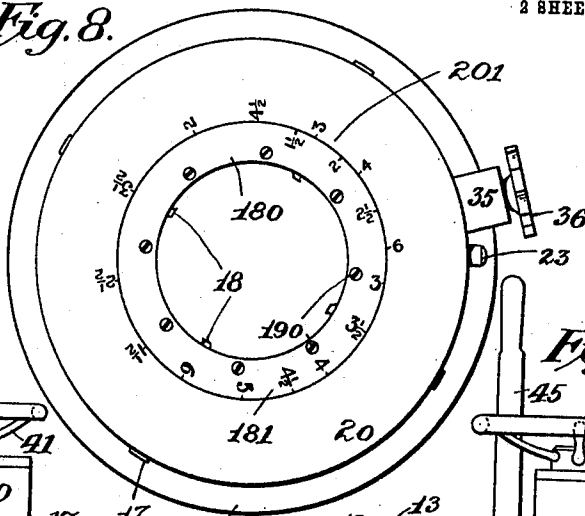


Fig. 1.

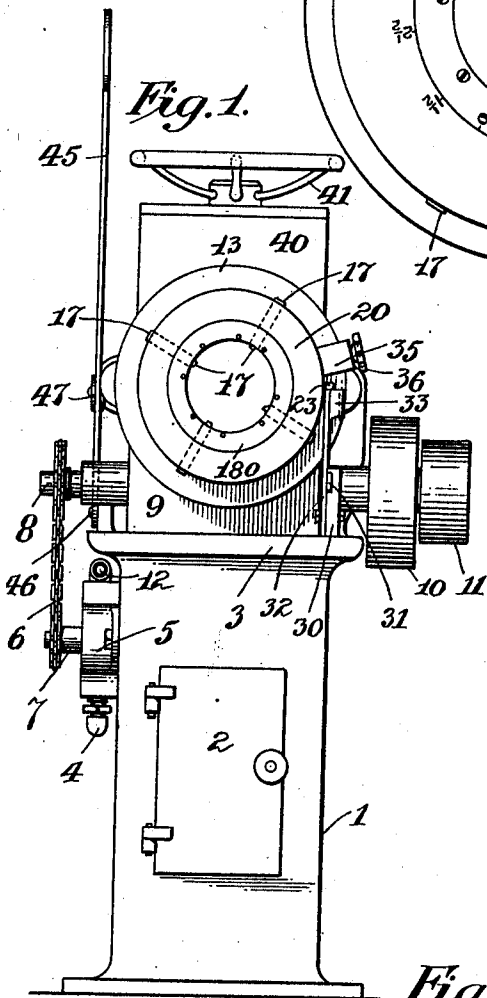


Fig. 2.

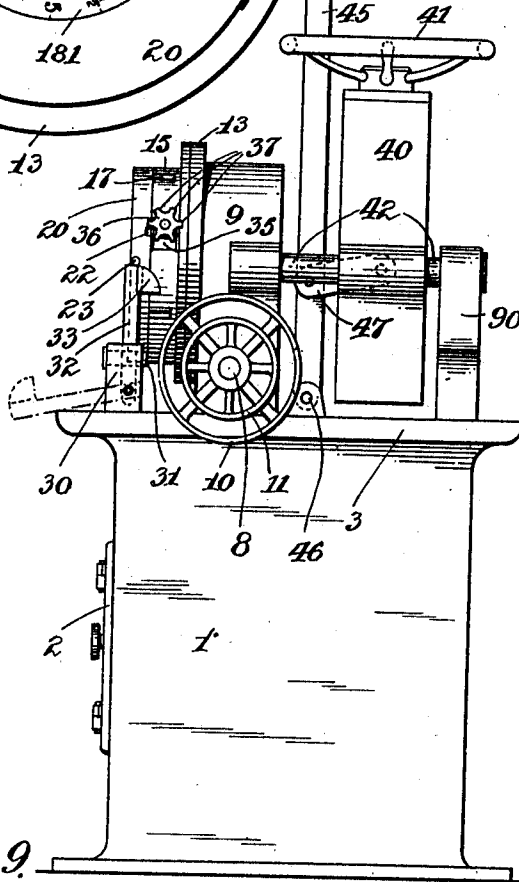
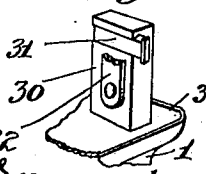


Fig. 9.



Attest:

Sara H. Rowke
Alan C. McDonnell.

by

Peter Neff, Inventor:

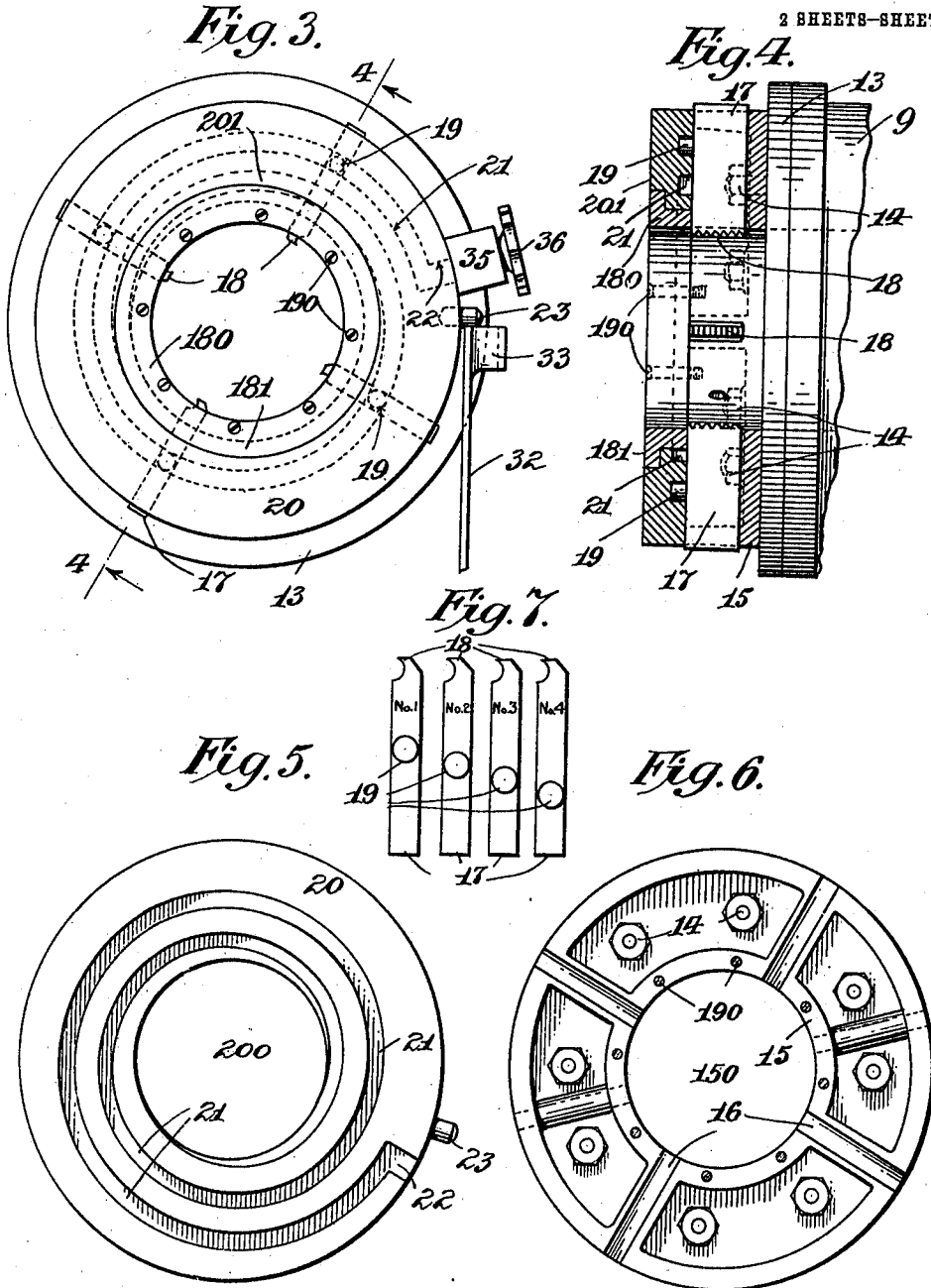
William R. Baird
his Atty.

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2 SHEETS-SHEET 2.



Attest:

Sara G. O'Rourke
Alan C. McDonnell

Peter Neff, Inventor:
 by *William R. Baird*
 his Att'y.

UNITED STATES PATENT OFFICE.

PETER NEFF, OF CLEVELAND, OHIO, ASSIGNOR TO THE LOEW MANUFACTURING COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

PIPE CUTTING AND THREADING MACHINE.

978,190.

Specification of Letters Patent.

Patented Dec. 13, 1910.

Application filed January 9, 1908. Serial No. 409,904.

To all whom it may concern:

Be it known that I, PETER NEFF, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Pipe Cutting and Threading Machines, of which the following is a specification.

This invention relates to pipe cutting and threading machines and its novelty consists in the construction and adaptation of the parts.

In the drawings, Figure 1 is a front elevation of a machine embodying the invention, Fig. 2 is a side elevation of the same. Fig. 3 is an enlarged front elevation of the cam plate and die head, Fig. 4 is a transverse section of the same on the plane of the line 4-4 in Fig. 3. Fig. 5 is a rear elevation of the cam plate, Fig. 6 is a front elevation of the die head with the cam plate removed. Fig. 7 illustrates the dies and their pins. Fig. 8 the graduations on the die head and cam plate and Fig. 9 is a detail view intended particularly to show the latch, forming one of the elements for automatically adjusting the cutting dies.

In the drawings 1 is a base or standard for the machine. It is preferably made hollow and access is given to its interior by a door 2 so that it may be used for the storage of tools or similar purposes. On its upper surface it is expanded laterally and provided with an upturned flange so that it constitutes a tray 3 for the reception of oil which flows downward into a suitable reservoir (not shown) located in the standard 1. A pipe indicated at 4 leads from this reservoir to a small pump 5 attached to the side of the standard 1 and which pump is actuated by a sprocket chain 6 adapted to rotate the shaft 7 of the pump, the chain being driven from a sprocket wheel mounted on the end of a shaft 8 adapted to revolve in bearings 9, secured above the base 1, and actuated through pulleys 10 and 11 mounted thereon and connected by a belt (not shown) to a suitable motor or engine. A pipe 12 leads from the pump up into the die head and serves to lubricate the pipe while it is being operated upon. The course of this pipe is not shown in the drawings because it forms no part of my invention and is not uncommon in the art. It will be understood that the oil discharged from this pipe 12 falls

into the tray 3, thence into the reservoir provided to receive it and passes through the pipe 4 into the pump 5 so that it is used over and over again.

The bearing or housing 9 is provided in front with a spindle 13 which is adapted to revolve with the power shaft 8 and is connected thereto by a worm gearing (which is not shown in order that it may not confuse other parts of the device).

Secured to the spindle 13 by any suitable means such as bolts 14, 14, is a die head 15 provided with a central aperture 150 to receive the pipe to be operated upon and with radial grooves 16 in which the dies 17 are adapted to reciprocate. Each die is provided with a cutting head 18 and an outwardly projecting pin 19, the purpose of which will presently appear. A cam plate 20 is held against the die head 15 by a collar 180 secured to the die head by screws 190 or by some similar suitable means. It has a central aperture 200 to permit of the passage of the pipe to be operated upon and is provided with a continuous spiral groove 21 which is extended to the outer surface of the plate through a passage way 22. The face 181 of the collar 180, which is practically the face of the die head 15 being rigidly secured to it is suitably graduated with notations corresponding to the different usual sizes of the pipe to be operated upon. The face 201 of the cam plate 20 is likewise similarly and suitably graduated.

Projecting upwardly from the tray 3 and preferably secured to or made integral therewith or with the standard 1 is a dog post 30 provided with a rearwardly extending projection 31 serving as a latch to engage the points of a star wheel 36 presently to be described. Pivoted to the post 30 is a dog 32 having a cam shoulder 33, and which is adapted to engage with the pin 23 on the cam plate 20, when the dog 32 is in a vertical position.

Mounted on the die head 15 is a cutting tool case 35, inclosing a screw attached to a star wheel 36 projecting outwardly from the casing 35 and having radiating points 37. The screw is adapted to engage with a cutter bar which extends through the die head 15 into the aperture 150 and is provided at its inner extremity with a cutter and at its outer extremity is bored out and feeds into the star wheel screw, so that as

the star wheel (which is retained in position by a collar, or similar suitable means) rotates the cutter bar is caused to advance toward or retreat from the aperture 150. As the die head 15 rotates the star wheel rotates with it and each time one of its points 37 comes into contact with the latch 31, the wheel is turned a fraction of a revolution corresponding to the number of points 37 on the wheel, this gradually advances the cutter bar and feeds the cutter blade into the pipe. After the pipe has been completely cut off the latch 31 is thrown out of engagement and the die head continues to revolve without any further forward feed of the cutter bar.

Means are provided for holding the pipe while it is being operated upon. A vise box 40 provided with the usual jaws (not shown) and adjusted by means of a hand wheel 41 is mounted to slide horizontally on bars or vise ways 42, the front ends of which are secured to the housing 9 and the rear ends of which are secured to a bracket 90 extending upwardly from the standard 1. A lever 45 pivoted to the standard 1 at 46 is secured by a link 47 to the vise box 40 so that as the lever is swung on its pivot the vise box 40 is reciprocated horizontally.

The mode of using the machine is as follows: The pipe is first inserted in the vise box 40, between the jaws of the vise contained therein, and its extremity is moved forward until the point where it is to be severed is in the aperture 150 opposite the cutter blade of the cutter cooperating with the star wheel 36. The jaws of the vise are then clamped by means of the hand wheel 41, and the star wheel 36 is manually rotated until the blade of the cutter is in contact with the other surface of the pipe. The latch 31 is then thrown into position to engage the star wheel 36 and the main shaft of the machine is then started. As the die head 15 revolves, the points 37 of the wheel 36 successively engage the latch 31 and thus gradually force the cutter bar and its blade inward and finally cut off the pipe at that point.

If the pipe is to be threaded by means of the dies 17 and not cut off, the star wheel 36 is first rotated backward until the cutter blade no longer projects within the aperture 150, and the latch 31 is thrown out. The dies are then adjusted to the size of the pipe to be threaded. This is accomplished by rotating the cam plate 20 until the proper graduation on its face 201 representing the size of the pipe, say $3\frac{1}{2}$, is opposite the graduation of the same number on the face 181 of the collar 180 of the die head 15. The dies 17 it will then be found have moved inwardly in the radial grooves 16 of the die head 15, because of the engagement of their respective pins 19 with the spiral groove 21

of the cam plate 20 until they are just in proper positions to engage the pipe. The vise lever 45 is then swung on its pivot to bring the vise box 40 forward and thus to move the pipe into the housing 9 and within the aperture 150 of the die head 15 until it engages with the cutting edges of the dies 17. The machine is then started and the rotation of the dies causes the thread to be cut upon the pipe. When the thread has been cut the operator moves the dog 32 to a vertical position, when it becomes a die releaser because as the cam plate revolves the pin 23 on its periphery engages with the dog and the further rotation of the cam is stopped. The die head 15 however continues to revolve and as it so moves the pins 19 of the dies 17 engaging with the spiral groove 21 of the cam plate 20, the dies are moved outwardly along radial grooves 16 and away from the pipe which they no longer cut. As the die head 15 continues to revolve, the casing 35 of the star wheel 36 comes into contact with the curved surface of the shoulder 33 and moves the dog 32 out of engagement with the pin 23 and once more permits the cam plate to revolve, and permits the insertion of another pipe. Without the use of the dog 32 to serve as a releaser, it would be necessary to use a hand spike or some similar tool with which to move the dies away from their engagement with the pipe.

If it is desired to remove the dies 17 from the die head 15 and replace them with other or different dies, this can be done as follows: The die head is turned until that one of the dies which has its pin nearest to the periphery of the head is at the top. The cam plate is then turned until it stops, thus bringing the passage way 22 to register with this die. This will permit the die to be withdrawn from the head because its pin 19 can move out through the way 22. If the cam plate is again turned as far as it will go, the next die will be brought to register with the way 22 and can be removed. This operation may be repeated until all are removed. By reversing the operation the same or other dies may be inserted without removing the cam plate.

What I claim as new is:—

1. In a machine of the character set forth, the combination with a rotatable die support, of a die-adjusting member rotatable with and with respect to the die support, means for effecting the relative rotation of the die-support and member, a cutting die, and feeding means therefor, said feeding means also engaging and operating the means that effects the relative rotation of the die-support and member, to release the die adjusting member therefrom and permit the simultaneous rotation of both members.

2. In a machine of the character set forth,
the combination with a rotatable die sup-
port, of a die-adjusting member rotatable
with and with respect to the die support, a
5 stop movable into and out of the path of
movement of the die-adjusting member, to
hold the same against rotation with the die
support, a cutting die mounted on the ro-
tatable die support, and means also mounted
10 on the die support for feeding the cutting

die to its work, said feeding means also con-
stituting means for moving the stop out of
engagement with the die-adjusting member.

In testimony whereof I affix my signature
in presence of two witnesses.

PETER NEFF.

Witnesses:

E. H. GROF,

BERTHA H. BIERMANN.