(No Model.)

H. C. BRADFORD.

PIPE DIE.

No. 423,410. Patented Mar. 18, 1890.

Fig. 1.

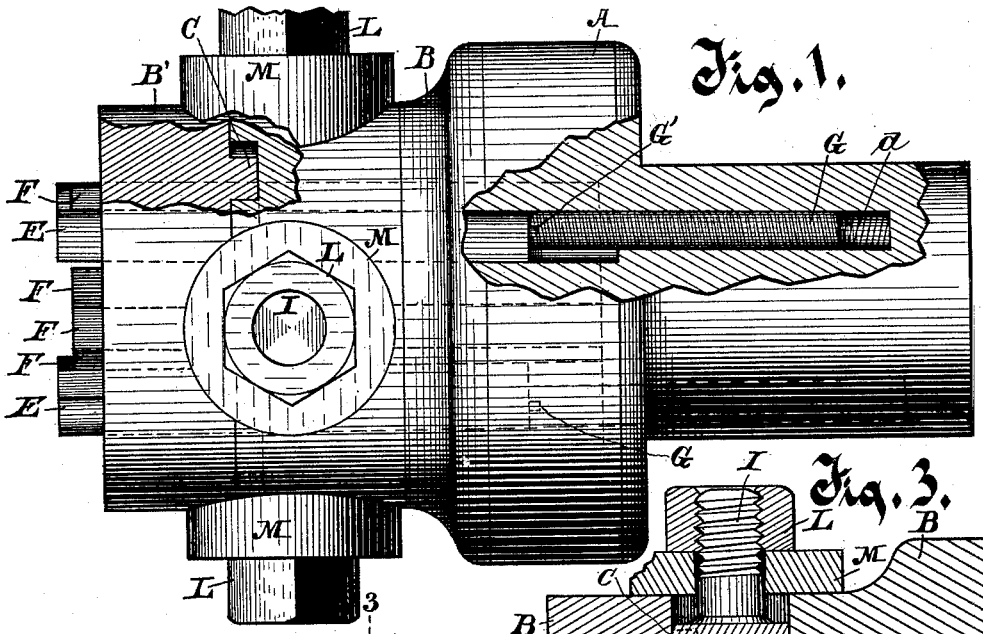


Fig. 3.

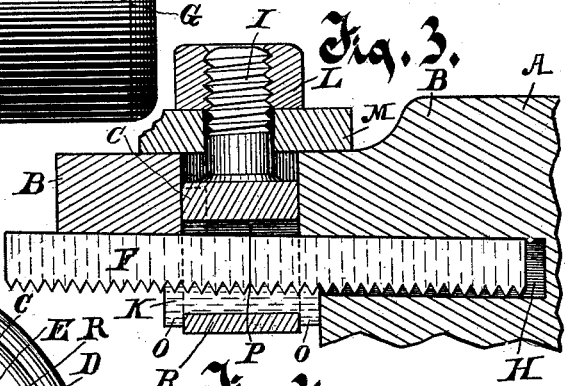


Fig. 2.

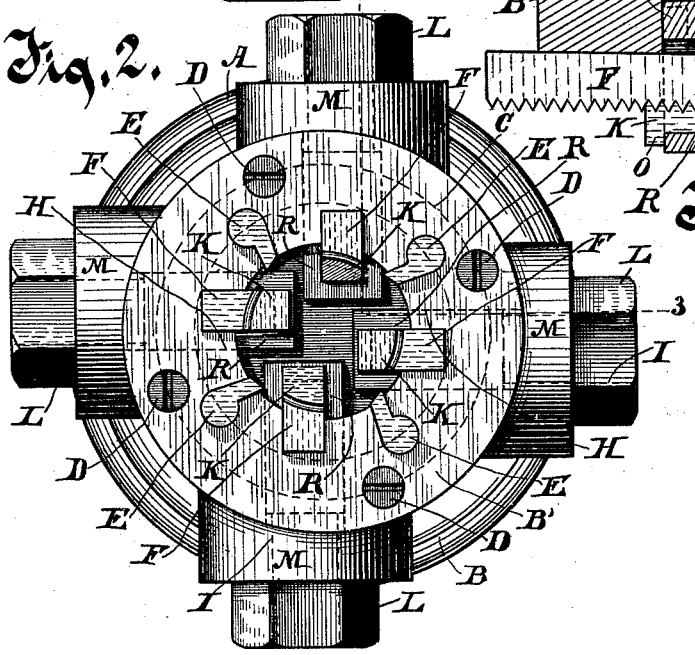


Fig. 4.

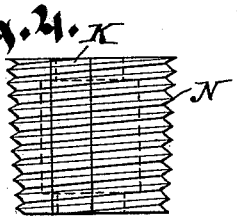
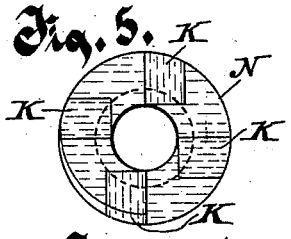


Fig. 5.



Witnesses.

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UNITED STATES PATENT OFFICE.

HORACE C. BRADFORD, OF MILWAUKEE, WISCONSIN.

PIPE-DIE.

SPECIFICATION forming part of Letters Patent No. 423,410, dated March 18, 1890.

Application filed October 26, 1889. Serial No. 328,319. (No model.)

To all whom it may concern:

Be it known that I, HORACE C. BRADFORD, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Pipe-Dies; and I do hereby declare the following to be a full, clear, and exact description of said invention, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in pipe-dies for cutting screw-threads on the exterior surface of steam, gas, and water pipes, and also to the mechanism by which the chasers and reamers are adjusted and held in place when at work. It is a well-known fact that the greater part of the work of the chasers and reamers is performed by their front ends, whereby such parts become first worn away and rendered inoperative, while the rear threads of the chasers are comparatively but little worn.

The object of my improvement is to provide a pipe-die in and by which the chasers and reamers, as their front ends become worn and dull, may be ground away and adjusted forward from time to time, whereby the unworn part of the chasers and reamers are brought in position for work, and the life of the tool thereby greatly prolonged.

In the drawings, Figure 1 is a side view of my device, partly broken away to show the interior construction. Fig. 2 is a front end view of the same device. Fig. 3 is a longitudinal section of part of the device, taken on line 3 3 of Fig. 2. Fig. 4 is a side view of the screw-threaded cylinder of steel, from which the gibs or clamping-pieces are cut. Fig. 5 is an end view of the cylinder shown in Fig. 4.

Like parts are represented by the same reference-letters in all the views.

A is the collet by which the chasers and reamers are held in place and operated. The collet is formed in two parts B and B′ for convenience of construction. The part B′ forms the outer end of the collet, and is provided with an annular tongue C, which fits into a groove therefor in the end of the part B, and is held securely in position by screws D. The collet A is provided with a central longitudinal socket, around which the reamers E and the screw-cutting chasers F are held in place. The reamers E are inserted removably endwise in the sockets therefor in the collet, and are each adjusted longitudinally and held up to its work by a headless adjusting-screw G by turning a screw-thread in an aperture therefor in the socket at the rear end of the reamer. The front end of this screw is provided with a groove G′ across its face for the reception of a screw-driver, by which it is turned forward or backward, as required, for the proper adjustment of the reamer, the reamer being first removed from its socket for the reception of the screw-driver. These reamers are so adjusted as to project outwardly a little in front of the dies or chasers, and are adapted to smooth or cut down the pipe in advance of the chasers.

The chasers F are provided throughout their length upon one side with screw-thread-cutting teeth corresponding in size and pitch to the thread to be cut upon the pipe. These chasers, of which there are preferably four, are inserted and held in place in grooves H H, provided therefor in the collet about the central socket, the bottom of the grooves H H being slightly tapered from the axis of the chuck outwardly, so that at its outer end the inner surface of the chasers, when in position for work, are slightly farther from each other than they are at their inner ends, whereby the required taper is given to the thread upon the pipe.

The several dies are held in position adjustably by means of bolts I, located in radial apertures provided therefor in the chuck. These bolts are each provided with a transverse slot P through its inner end or head R, through which slot a chaser F passes, and a gib or clamping-piece K, having a grooved or threaded surface corresponding with the thread of the chaser, is inserted through the slot beneath the chaser. Then the chaser is drawn down and held tightly to its seat by turning the nut L on the bolt I against the washer M, which washer M bears against the outer surface of the stock or chuck.

To insure great accuracy in the construction of the gibs or clamping-pieces, they are preferably formed as follows: A cylindrical

block of steel N is first provided with a screw-thread upon its periphery of the desired pitch and taper, as shown in Fig. 4, when an aperture is turned out upon its interior, as indicated by dotted lines in Fig. 4, when said cylindrical block is then cut longitudinally in sections in the manner indicated by the black lines in Figs. 4 and 5. It will be understood that by this method of construction the bearing-surfaces of the several gibs or clamping-pieces will form segments of the same circle, and that when these gibs or clamps are arranged in the retaining-slots of the bolts I and against the several chasers F the cutting-edges of said chasers will be thereby brought into the proper relative position to each other for work, and when operated will form a continuous thread of the desired pitch and taper upon the pipe. When the end threads of the several chasers or any one of them become dull or inoperative, said chaser is readily removed by first unscrewing the nut L upon the screw I, when the front or worn end of the chaser thus removed is ground away, when it is replaced and secured by again turning down the nut L. The several reamers are held in place by their retaining-grooves, and are adjusted forward from time to time as they are worn, as before stated, by turning forward the headless screw G. The gibs or clamping-pieces are each provided on one edge at both ends with inward-projecting lugs O O, which are adapted to extend beyond and engage against the edges of the headless bolts I. The heads R of the bolts I are made to nicely correspond in width with and fit the apertures formed therefor in the stock or collet.

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

1. In an adjustable pipe-die, the combination of a collet A, provided with a longitudinal central socket, and a series of longitudinal grooves H, formed in its interior walls, radial clamping-bolts I, provided with retaining-slots for the reception of the cutting-chasers F, cutting-chasers F, retaining clamps or gibs K, located in the slots of said bolts I and having screw-threaded bearing-surfaces for the reception of the screw-threaded surfaces of the cutting-chasers, and nuts L, turning on the bolts I, substantially as and for the purpose specified.

2. In an adjustable pipe-die, the combination of a collet A, provided with a longitudinal central socket, a series of screw-threaded apertures *a* for the reception of the reamers E and the reamer-adjusting screws G, and a series of longitudinal grooves H for the reception of the cutting-chasers F, cutting-chasers F, reamers E, and reamer-adjusting screws G, radial clamping-bolts I, provided with retaining-slots for the reception of the cutting-chasers F, cutting-chasers F, retaining clamps or gibs K, located in the slots of said bolts I and having screw-threaded bearing-surfaces for the reception of the screw-threaded surfaces of the cutting-chasers, and nuts L, turning on bolts I, all substantially as and for the purpose specified.

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

HORACE C. BRADFORD.

Witnesses:
JAS. B. ERWIN,
C. T. BENEDICT.