No. 885,144. PATENTED APR. 21, 1908.

J. F. CRUDGINTON.

PIPE THREADING DIE.

APPLICATION FILED NOV. 4, 1907.

Fig. 1.

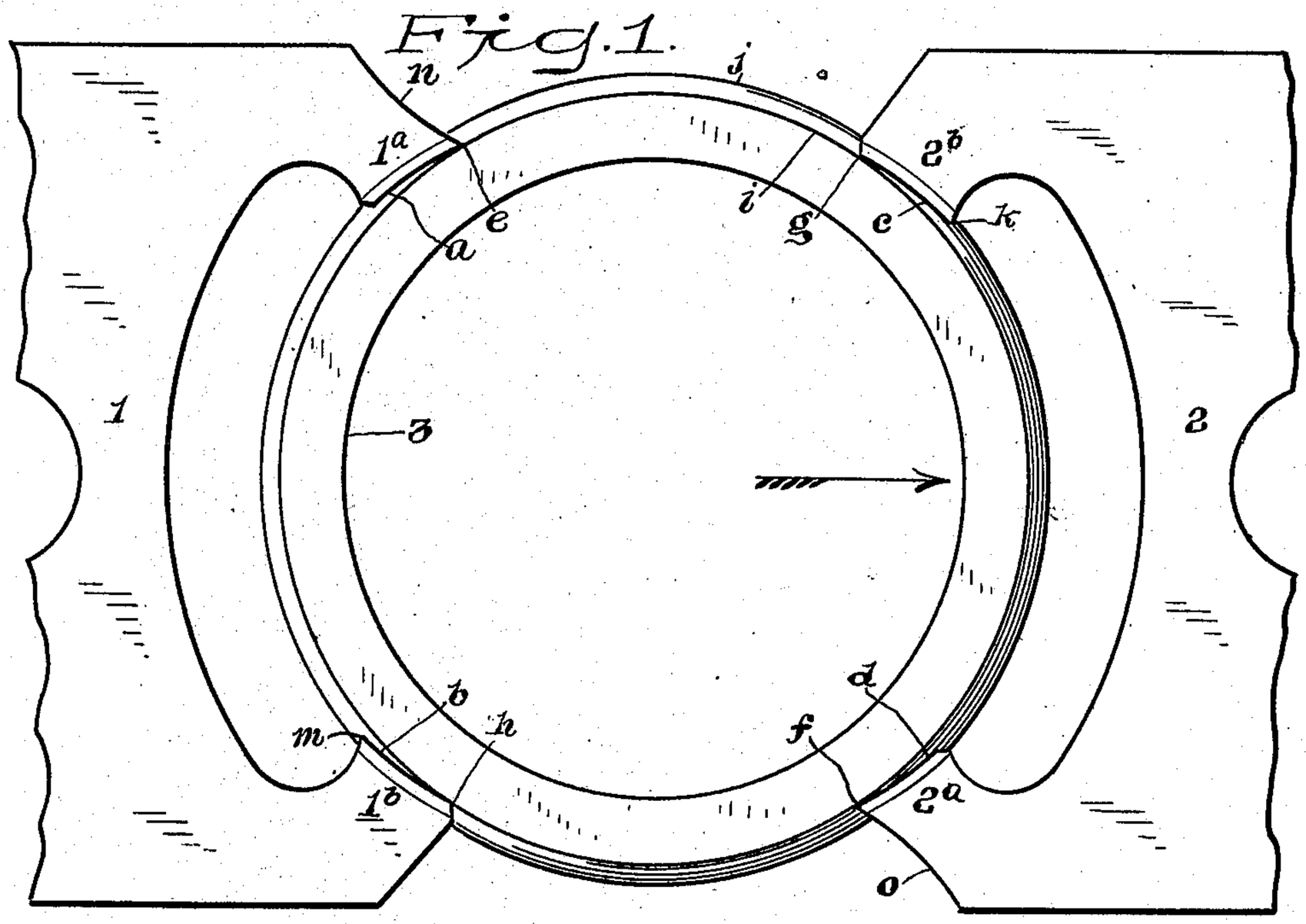


Fig. 2.

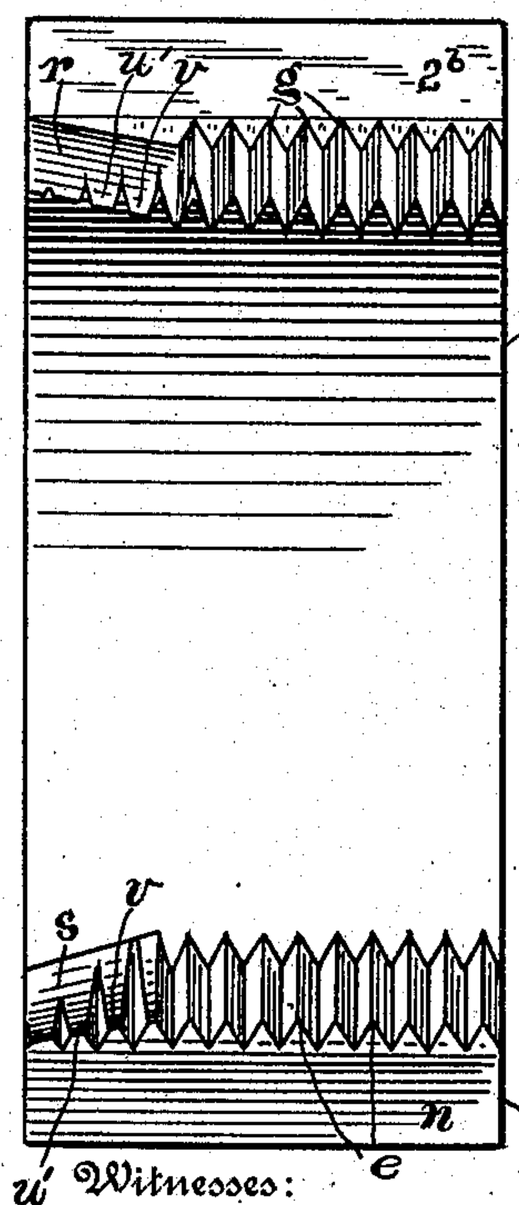
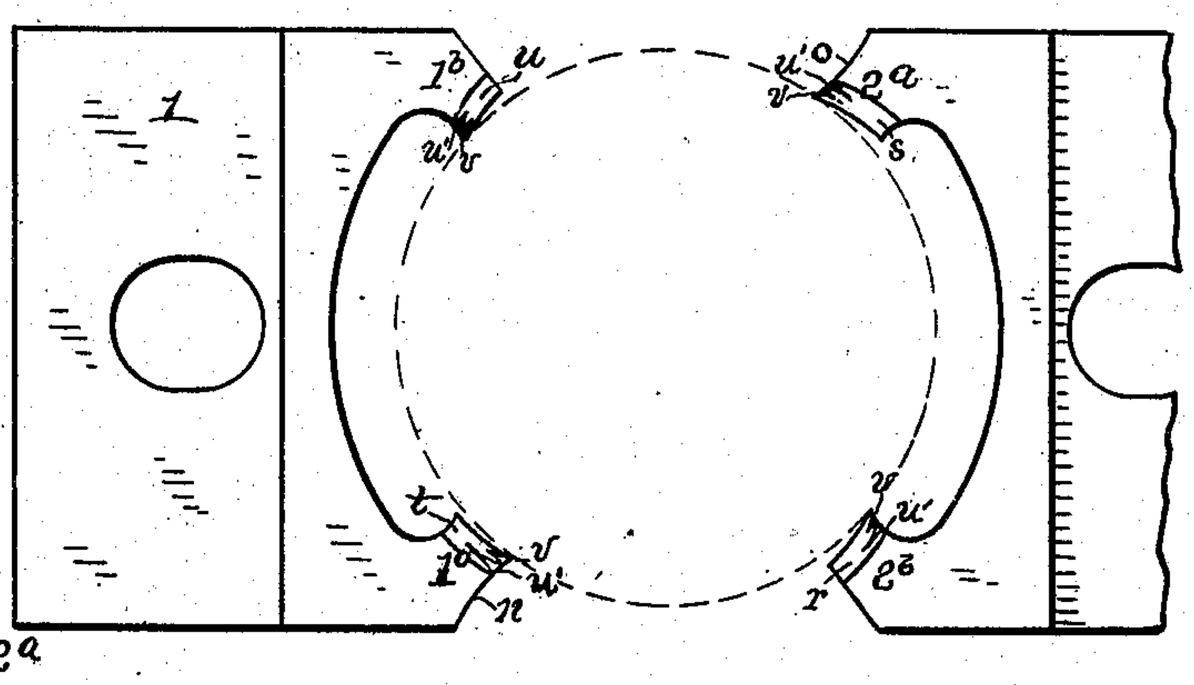


Fig. 3.



Witnesses:
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UNITED STATES PATENT OFFICE.

JAMES F. CRUDGINTON, OF BRIDGEPORT, CONNECTICUT.

PIPE-THREADING DIE.

No. 885,144. Specification of Letters Patent. Patented April 21, 1908.

Application filed November 4, 1907. Serial No. 400,490.

To all whom it may concern:

Be it known that I, JAMES F. CRUDGINTON, a citizen of the United States, and a resident of Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Pipe-Threading Dies, of which the following is a specification.

My invention relates to pipe threading dies, and its object is so to construct the dies that they will not only cut and back off freely, but cannot gouge or dig in. To this end, the threaded bits, when the dies are in operative position, are located an equal distance from the center of the pipe with two opposite bits cutting the thread, while the other two bits act as trailers to steady the cutting bits and prevent their gouging. Each section of the die carries a cutting bit and a trailing bit relieved in opposite directions.

To enable others to understand my invention, reference is had to the accompanying drawings, in which:

Figure 1 represents a broken rear view of a pair of dies and the end of a pipe with the dies in cutting position; Fig. 2 is a detail view of one of the dies looking in the direction of the arrow shown at Fig. 1; Fig. 3 is a front elevation of the dies, one of which is shown as broken.

1 and 2 are sections of dies of the common form adapted to be inserted in a die stock to be operated either by hand or power. Integral with the dies are the threaded bits 1^a, 1^b, 2^a and 2^b. 1^a and 2^a represent the cutting bits, while 1^b and 2^b are the trailing bits. The clearance curves *a* and *b* of the bits of the die section 1 are projected in opposite directions with respect to each other, and this is true with respect to the curves *c* and *d* of the die section 2. The cutting edges *e f* of the cutting bits 1^a and 2^a and the trailing edges *g h* of the bits 1^b and 2^b are all an equal distance from the center of the pipe 3 when the dies are in cutting position with respect to the pipe.

As each bit is provided with a full thread back of its mouth with the trailing edges *g h* and the cutting edges *e f* an equal distance from the center of the pipe, it is quite evident that the trailing edges *g h* will fill the threads formed by the cutting bits and thus prevent the cutting bits deviating in the least from a true circular path. In other words, were it not that the trailing edges *g h* rested on the bottom *i* of the thread *j*, an uneven pull on one of the handles of the die-stock would cause the cutting bits to dig in, but supported as they are by the trailing bits, this is impossible.

In the common form of dies of this character now in use, all of the bits are cutting bits. In other words, the edges *k m* of the trailing bits 1^b and 2^b would be cutting edges as well as the edges *e f*, with the relief curves of the trailing bits projecting in the same direction as the relief curves of the cutting bits. This arrangement not only required greater power to operate the die-stock, but the increased inward pressure of the dies would distort the pipe so that there would be about as much resistance offered in backing off as when cutting. In my improved construction, only two of the bits do the cutting, thereby greatly reducing the resistance both in cutting and backing off, the trailing bits merely supporting and steadying the cutting bits without adding to the friction or resistance. To still further add to the free cutting qualities of the bits 1^a and 2^a, they are provided with the concave faces *n* and *o*. This feature will give sufficient clearance to enable the chips to roll off with a minimum amount of resistance.

The mouth *r s t u* (Figs. 2 and 3) of all the bits are the same taper and of the same distance from the center of a pipe when said dies are in cutting position, and the teeth on the taper face or mouth of both the cutting and trailing bits cut. In other words, the relief of the taper mouth of both the cutting and trailing bits is projected in the same direction, as shown more clearly at Fig. 3. The partially formed teeth *u' v*, etc. (Fig. 2), serve to remove the surplus stock on the pipe and form a lead for the full teeth of the cutting bits 1^a and 2^a. While the partially formed teeth of the mouth of the bits 1^b and 2^b are cutters, the full teeth on said bits are trailers, with their clearance curves *b c* projected in opposite directions to the clearance curves of their mouths, while the clearance curves *a d* of the full teeth of the cutting bits and the clearance curves of the partial teeth of the mouth of these bits coincide.

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

Thread cutting dies comprising the sections 1 and 2, each section having a screw threaded cutting bit and a screw threaded

trailing bit, the bits of each section having oppositely projecting clearance curves, said curves projecting away from the center of the working circle when the sections are in operative position so that one edge of the teeth of the trailing bits will be the same distance from the center of the working circle as the cutting edges of the teeth of the cutting bits, each bit having a taper mouth with the clearance curves projecting in the same direction so that all of the bits will cut at their mouths, for the purpose set forth.

Signed at Bridgeport in the county of Fairfield and State of Connecticut this 10th day of Oct. A. D. 1907.

JAMES F. CRUDGINTON

Witnesses:
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