

F. Murgatroyd,

Drilling Metals,

No. 107,946.

Patented Oct. 4. 1870.

Fig. 1.

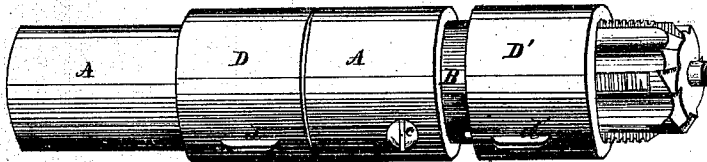


Fig. 2.

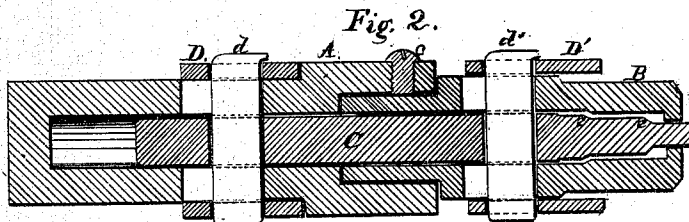


Fig. 3.

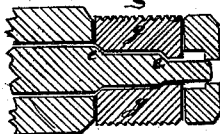
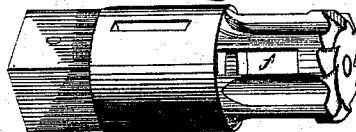


Fig. 4.



Inventor.

F. Murgatroyd

Witnesses.

B. C. Tibbitts,

J. V. Mathews

UNITED STATES PATENT OFFICE.

FRANK MURGATROYD, OF CLEVELAND, OHIO.

IMPROVEMENT IN EXPANDING TAPS.

Specification forming part of Letters Patent No. 107,946, dated October 4, 1870.

To all whom it may concern:

Be it known that I, FRANK MURGATROYD, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Expanding Tap and Drill, of which the following is a specification.

The nature of this invention relates to an expanding tap and drill to be used in drilling and tapping pipe couplings and elbows; and it consists of a drill having thread-cutters arranged in the sides in such a manner that they may be expanded to cut the thread and then collapsed to enable the drill to be withdrawn without the necessity of turning the drill in the reverse direction to withdraw it.

Figure 1 is a perspective view. Fig. 2 is a longitudinal section. Fig. 3 is a section of a drill. Fig. 4 is a perspective view of the drill detached.

A, Figs. 1 and 2, is the end of a mandrel having a square socket in the end to receive the square end of the drill B. Both the mandrel and drill are hollow, having a round bore to receive a center-pin, C. The drill B is secured in the mandrel by the screw *c*. Upon the mandrel is fitted a sleeve or ring, D, through which and the mandrel and the pin C is a slot, into which is fitted a key, *d*, the slot in the mandrel being longer than the others to allow the key to play back and forth a short distance, the purpose of which is hereinafter shown. Upon the drill B is fitted a similar ring, D', with a key, *d'*. The outer end of the

pin C is reduced in size by having two tapering shoulders, *e e*, turned upon it. Through the end of the drill are made mortises *f*, in which are fitted thread-cutters *g g*, the inside edges of which are fitted to the pin C, the action of the pin being to force the cutters outward. The ring D' reaches part way over them, and prevents them dropping out.

The operation is as follows: The mandrel and drill are made to traverse back and forth by means of a cam or other suitable means. When the cutters are to be expanded the ring D comes in contact with a plate for the purpose, when the center-pin will be carried forward and the cutters *g g* forced outward and perform their work; when, by the motion of the mandrel forward, the ring D' will come in contact with the work, causing the pin to be pushed back again, when the cutters will be immediately collapsed, and the work may be freed from the drill. Thus the mandrel by its traverse motion enables the work to be performed very expeditiously.

I claim as my invention—

The rings D and D', keys *d* and *d'*, the pin C, and the cutters *g g*, in combination with the mandrel A and drill B, substantially as and for the purpose set forth.

F. MURGATROYD.

Witnesses:

C. E. TIBBITTS,
GEO. HESTER.