

W. D. SQUIRES.
Machines for Enlarging the Bore of Gun-Barrels.
 No. 157,034. Patented Nov. 17, 1874.

Fig. 1.

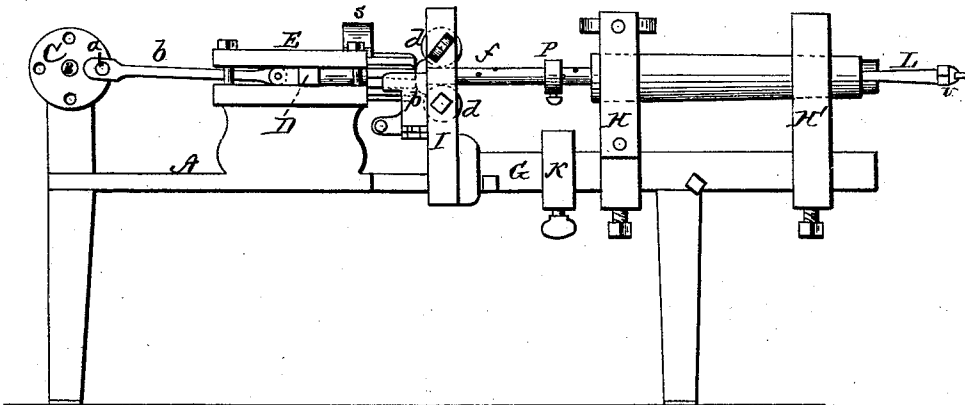
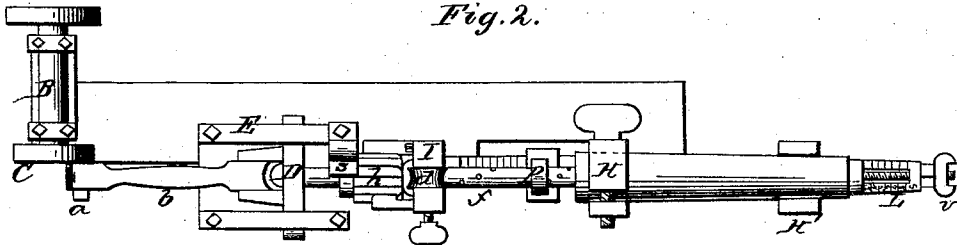


Fig. 2.



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Fig. 3.

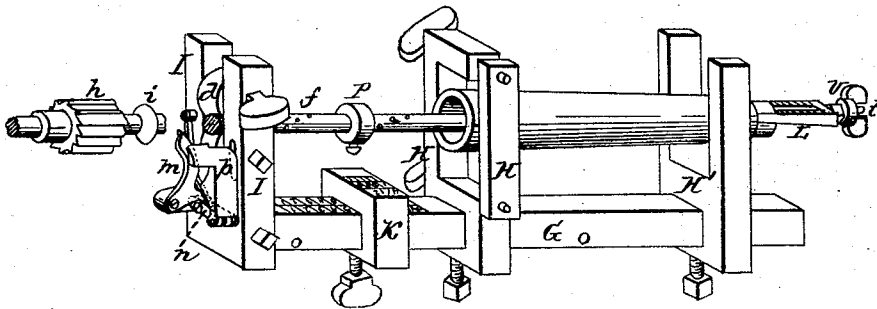


Fig. 4.

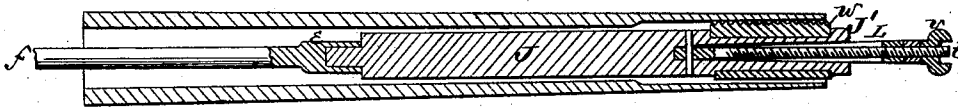


Fig. 5.

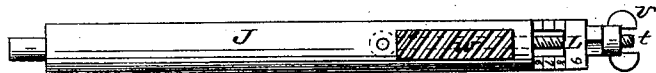
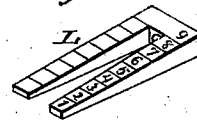


Fig. 6.



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UNITED STATES PATENT OFFICE.

WILLIAM D. SQUIRES, OF SIOUX CITY, IOWA, ASSIGNOR OF ONE-HALF HIS
RIGHT TO JOHN L. KERR, OF ALLEGHENY, PENNSYLVANIA.

IMPROVEMENT IN MACHINES FOR ENLARGING THE BORES OF GUN-BARRELS.

Specification forming part of Letters Patent No. **157,034**, dated November 17, 1874; application filed
July 18, 1874.

CASE B.

To all whom it may concern:

Be it known that I, WILLIAM D. SQUIRES, of Sioux City, in the county of Woodbury and in the State of Iowa, have invented certain new and useful Improvements in Improved Gun-Jack; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

The nature of my invention consists in the construction and arrangement of a machine for enlarging the bore of a gun-barrel for any desired length at the outer end, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawings, in which—

Figure 1 is a side elevation, and Fig. 2 a plan view, of my machine. Fig. 3 is a perspective view of a part of the machine. Fig. 4 is an enlarged longitudinal section of the gun-barrel, with the mechanism therein for cutting the enlargement of the bore. Fig. 5 is a side view of said mechanism, and Fig. 6 is a perspective view of a peculiar wedge used in said mechanism.

A represents the bed of the machine, supported upon suitable legs, and provided at one end with standards, in which a shaft, B, has its bearings. On one end of this shaft is a belt-pulley for running the machine, and on the other end is a wheel or disk, C, provided with an adjustable crank or wrist pin, *a*. On this pin is placed a pitman, *b*, which connects with a cross-head, D, sliding in a frame, E, attached to the bed A of the machine. G represents a horizontal bar attached to the side of the bed A, and upon which are two adjustable clamps, H H', for holding the gun-barrel while being operated upon. At the inner end of the bar G is attached a forked standard, I, in which are two circumferentially-grooved rollers, *d d*, forming guides for a rod, *f*, connecting the cross-head D with the bolt J. The rod *f* is swiveled in the cross-head, and upon the other end of the rod is a stationary screw-sleeve, *e*,

into which a tenon on the end of the float J is screwed. On the rod *f*, between the cross-head D and forked standard I, is secured an elongated toothed wheel, *h*, at the front end of which, upon the shaft, is also secured a collar or washer, *i*. At the forward movement of the cross-head this collar strikes an elbow-lever, *m*, pivoted to a projection on the standard. The lower end of this elbow-lever rests upon one end of an arm, *n*, pivoted to the standard, and the other end of said arm is pivoted to a pawl or dog, *p*, which moves perpendicularly up and down, it being guided in its movement by a pin thereon entering a slot in the standard. As the collar *i* strikes the upper end of the lever *m* the lower end thereof, operating on the arm *n*, raises the pawl *p*, and this pawl engages with the elongated toothed wheel *h*, and turns the same, with the rod *f*, the distance of one tooth. A pawl, *s*, attached to the frame E, immediately engages with said toothed wheel to prevent it turning backward. The outer end of the bolt J is cut forked, forming two prongs, J' J', between which is secured a screw-rod, *t*, extending beyond the end of the bolt. Between the prongs J' is inserted a forked wedge, L, the rod *t* passing through the outer end thereof, which wedge is forced inward by means of set-nuts *v*, to press the prongs outward. In the outer face of the prongs J' the cutting-tools *w* are inserted. On the bar G is a movable head, K, fastened at any point desired by means of a set-screw between the standard I and clamp H. The bar G is graduated, as shown, the scale being divided into feet and fractions of a foot—say, one-twelfth of a foot. The object of this scale is as a guide by which to set the end of the barrel according to the length of the same, so that when the wrist-pin *a* is placed in the hole on the disk or face-plate C, corresponding to the number on the above scale, the rod *f*, attached to the bolt J for cutting the tube, will cause the bolt, when the face-plate A is rotating, to move in a longitudinal direction sufficient to produce the length of enlargement of muzzle required. The scale on the movable head K is divided into inches and fractions of inches, and is designed as only to

be used at the discretion of the operator, by which to vary the position of the barrel in the clamps H H', to prevent a swelling of a thin light barrel by the cutting-tool, which variation wants to be measured by small fractions of an inch.

When the inner end of the gun-barrel is set over the desired point or mark on the graduated bar G, the head K is also to be moved up to said mark. Then, if any slight variation in the position of the barrel is rendered necessary, it can be graduated by the scale on said head. This obviates the necessity of having the bar G full of the small graduations, nothing less than one inch being marked on the same.

The face-plate C may have holes bored in it, as shown, at various defined distances, or be provided with a slot, graduated, in which the wrist-pin may be clamped at any desired point.

The wedge or wedge-shaped expander L is so graduated in feet and fractions of a foot that when the float is inserted in the barrel, and the bolt is expanded to the full size of the bore, and record or note being made of the number on said wedge-shaped expander coming even with the end of the bolt which holds the cutting-tool, or the point at which the tool begins to cut, the amount of expansion may be readily determined by simply deducting such recorded number from the number on the scale indicating the desired enlargement.

To more fully explain—supposing that when the bolt is expanded to fill the bore sufficient to allow the float to just begin to cut the barrel the wedge-shaped expander has entered the bolt to the point marked 2, and it is desired to still expand the bolt until an enlargement of six one-hundredths of an inch is attained—the thumb-nut *v* is turned, as the float works back and forth, until the edge is found to enter the open end of the bolt to the point marked 8. The recorded or noted number 2

being taken from 8 will indicate that the enlargement beyond the original size of the bore is six one-hundredths of an inch.

In a working machine the wedge-shaped expander L is to be so made that each division of the scale shall indicate an expansion of the bolt one-hundredth of an inch, and so in regard to any other desired enlargement of bore.

The main object of this device is to insure an accurate parallel enlargement of bore for the length desired, and to which the other parts of the machine are set.

When the cross-head and shaft, with face-plate and pitman, are removed from the machine, the machine can be used by hand by inserting set-screw in the collar P into one of the holes *x* in the float-rod *f*, to guide and control the movement of the cutting-tool within proper limits or distances each way.

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

1. The combination, with the float-rod *f* and collar *i* thereon, of the elbow-lever *m*, arm *n*, pawl *p*, and toothed wheel *h*, substantially as and for the purposes herein set forth.

2. The graduated wedge-shaped expander L, in combination with the bolt J, carrying the tools, the screw-rod *t* and set-nut *v*, for the purposes herein set forth.

3. The graduated bar G, with movable graduated head K, in combination with the movable clamps H H', as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 29th day of June, 1874.

WILLIAM D. SQUIRES.

Witnesses:

CHAS. KENT,
C. B. STEDMAN.