D. T. YEAKEL.

Breech-Loading Ordnance.

No. 34,388. Patented Feb 11, 1862

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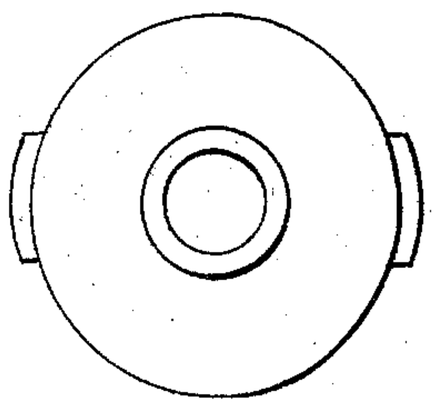

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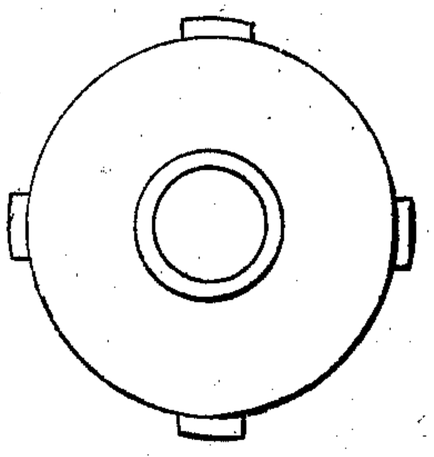

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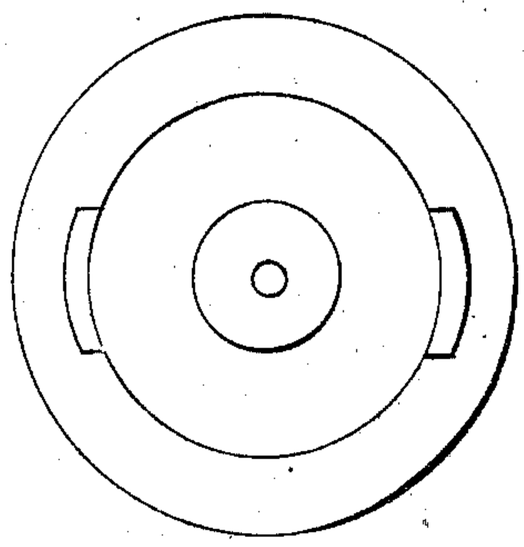

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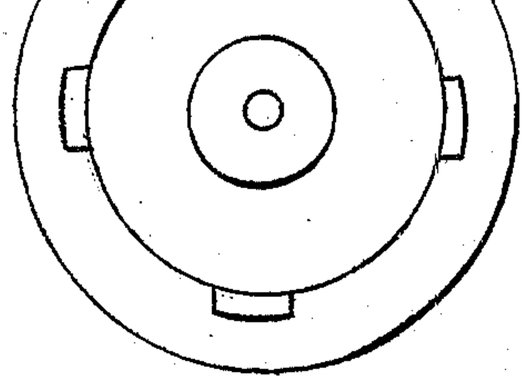

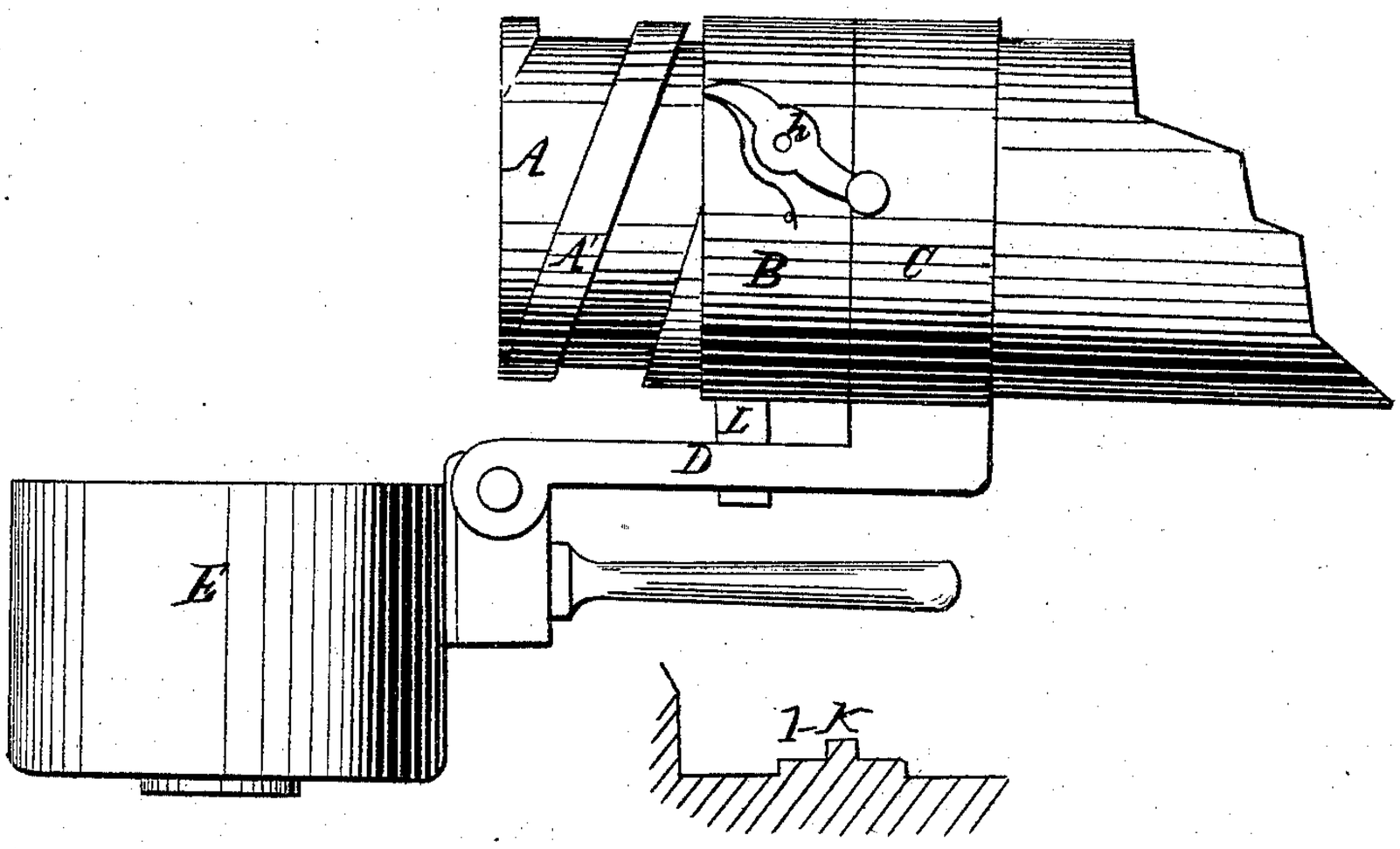

Witnesses.

Johnston Lemmon

Jno J McCollum

Inventor.

D T Yeakel

UNITED STATES PATENT OFFICE.

DAVID T. YEAKEL, OF LAFAYETTE, INDIANA.

IMPROVEMENT IN BREECH-LOADING ORDNANCE.

Specification forming part of Letters Patent No. **34,388**, dated February 11, 1862.

To all whom it may concern:

Be it known that I, DAVID T. YEAKEL, of Lafayette, county of Tippecanoe, in the State of Indiana, have invented a new and improved mode of constructing breech-loading cannon so as to obviate derangement of the several parts thereof by the expansion of the metals from rapid firing; and I do hereby declare that the following is a full and exact description of said invention.

The gun is composed of these several parts, to wit: a tube or barrel, a breech-cap hinged to a shaft or arm, which is made to revolve upon the breech of the gun by connection with a revolving hoop behind the trunnions, and a trunnion-band. The breech of tube has two, four, or more male screw-threads cut upon its exterior surface, to correspond with female screw-threads cut on inside of the breech-cap. These screw-threads are cut upon the tube and cap and are carried around less than one circumference. When the cap is adjusted to the end of the tube and screwed on, a perfect gas-tight friction-joint is made between the inside surface of cap and end of tube, and is retained in that position by a self-adjusting rachet-bar and spring. The bore of the tube at the breech end is made a little larger, as at *f*, to receive a metal powder-canister, and is countersunk to receive a corresponding projection, K, of the cap, made to fit accurately against the rear portion of powder-canister, with an additional metal protuberance in its center to prick or open said powder-charge by penetrating an opening in its center while the cap is being screwed on, as will be made plainer by reference to the accompanying drawing.

The nature of my invention consists of a new and useful method of securing, adjusting, and operating a breech screw-cap on the end of a gun, by which I greatly facilitate the operation of loading and firing the same. For this purpose, instead of one thread, I propose to start two, four, or as many as may be deemed necessary at equal distances from each other on the outside circumference of the breech, and to continue them around for a distance of less than one circumference. This method of applying the screw as a fastening for the breech of cannon insures the greatest facility of closing and opening with perfect security; but its greatest value is in the fact that in this form and by this method it becomes the means of adjusting the expanded surfaces of cap and tube before and after each powder-discharge. This expansion of the metals has been the greatest difficulty in the way of serviceable breech-loading cannon, and has not been in any way obviated or overcome by either Mr. Armstrong or Mr. Whitworth in their guns, which are acknowledged the best of this form of gun. In their guns the screw, as the power used in fastening, is either made to act in the bore itself or between bore and outer circumference, where it soon becomes so hot as to be useless by expansion. These gentlemen have further committed the unscientific error of using a metal which expands most in the most exposed situation, and have thereby increased their difficulty; but by placing the screw-fastening upon the largest and coolest part of breech, consequently the strongest and least affected or last to be heated portion of breech, and adjusting the breech-cap exactly to the rear end of tube, it will matter but little how much these parts expand, inasmuch as the screw on the outside, made to flow loosely, will adjust the heated surfaces after each discharge.

The screws as illustrated in drawing are of rapid gain. The screw used for power in the lifting-jack for elevating great weights—as buildings, &c.—is a very gradual gain—say a gain of three-eighths of an inch in seven-eighths of a revolution on a diameter of one and three-eighths inch. Now, the gain or increase of this very gradual form of screw is entirely applicable for fastening of breech-cap, and could not be moved a particle by concussive explosion of powder-charge; but an ascertained medium, while it would be free from danger of movement from rapid firing, might be deemed preferable by its embracing more surface of the breech of gun, the object of self-adjusting ratchet-bar being only to secure the breech-cap against possible displacement from jars and shocks communicated to gun in moving it while loaded over rough ground.

L is a stop secured near the breech of the gun, which the shaft D comes in contact with the moment the screw-cap is released from the breech-screw A, thus preventing any further revolution of the hoop *e*. This stop entering a recess or rabbet on the lower side of the shaft D, when said shaft reaches it the hoop is

prevented from slipping forward, and the screw-cap is kept in position to be readily moved by means of its handle and the hinged joint, and presented to the screw on the breech of the gun and quickly run up.

I am aware breech-loading cannon have been made with caps to screw on the outside of the breech. This I do not desire, broadly, to claim; but in the construction of mine I greatly prefer using two or more threads, as described.

What I claim as new, and desire to secure Letters Patent for, is—

The combination and arrangement of the hinged screw-cap E, shaft D, hoop *e*, ratchet *h*, stop L, and breech A, constructed and operated substantially as described.

DAVID T. YEAKEL.

Attest:

JOHN S. HOLLINGSHEAD.

WM. J. MCCOLLAM.