

(No Model.)

2 Sheets—Sheet 1.

H. GRUSON.

GUN CARRIAGE.

No. 295,245.

Patented Mar. 18, 1884.

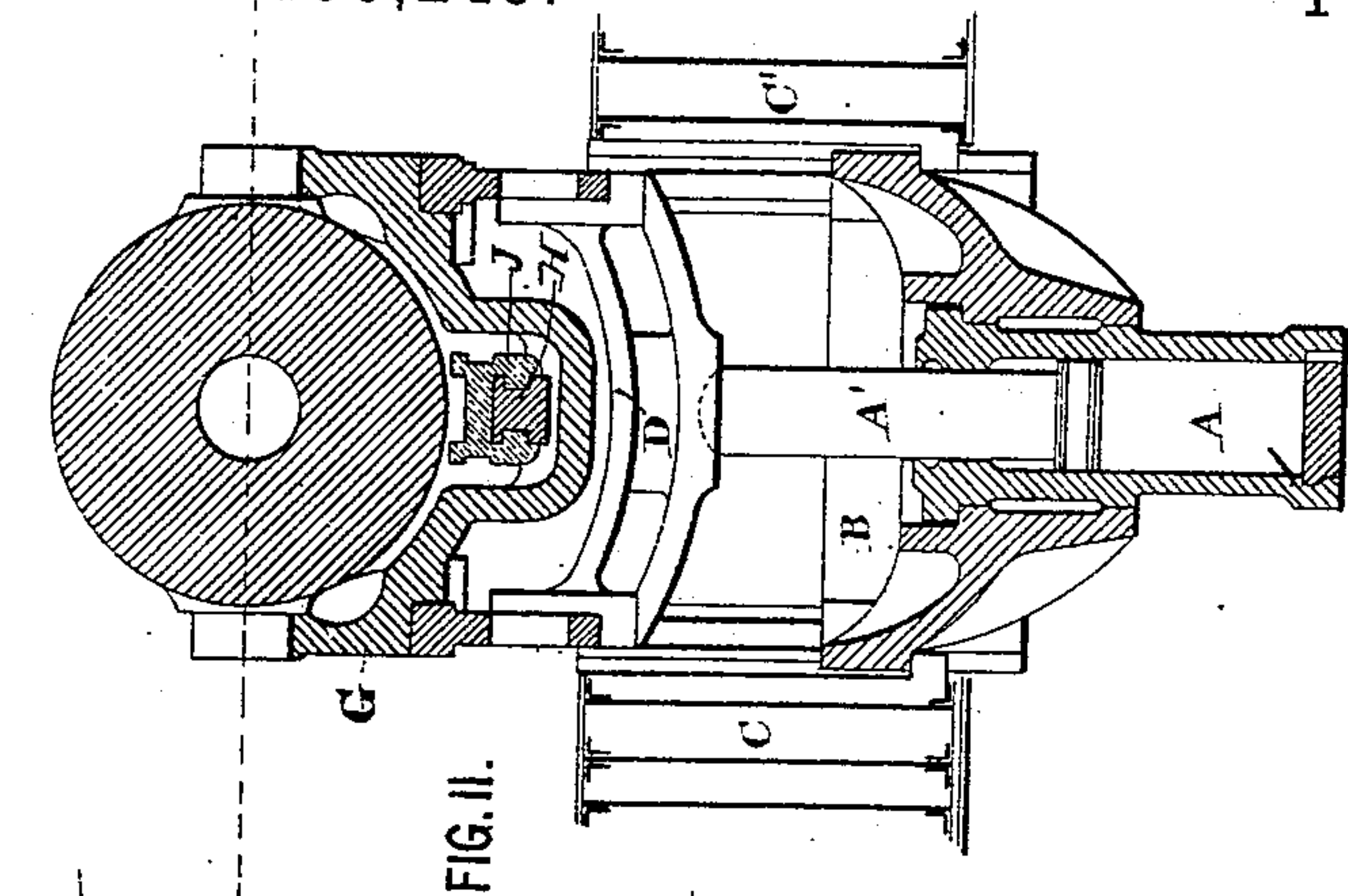


FIG. II.

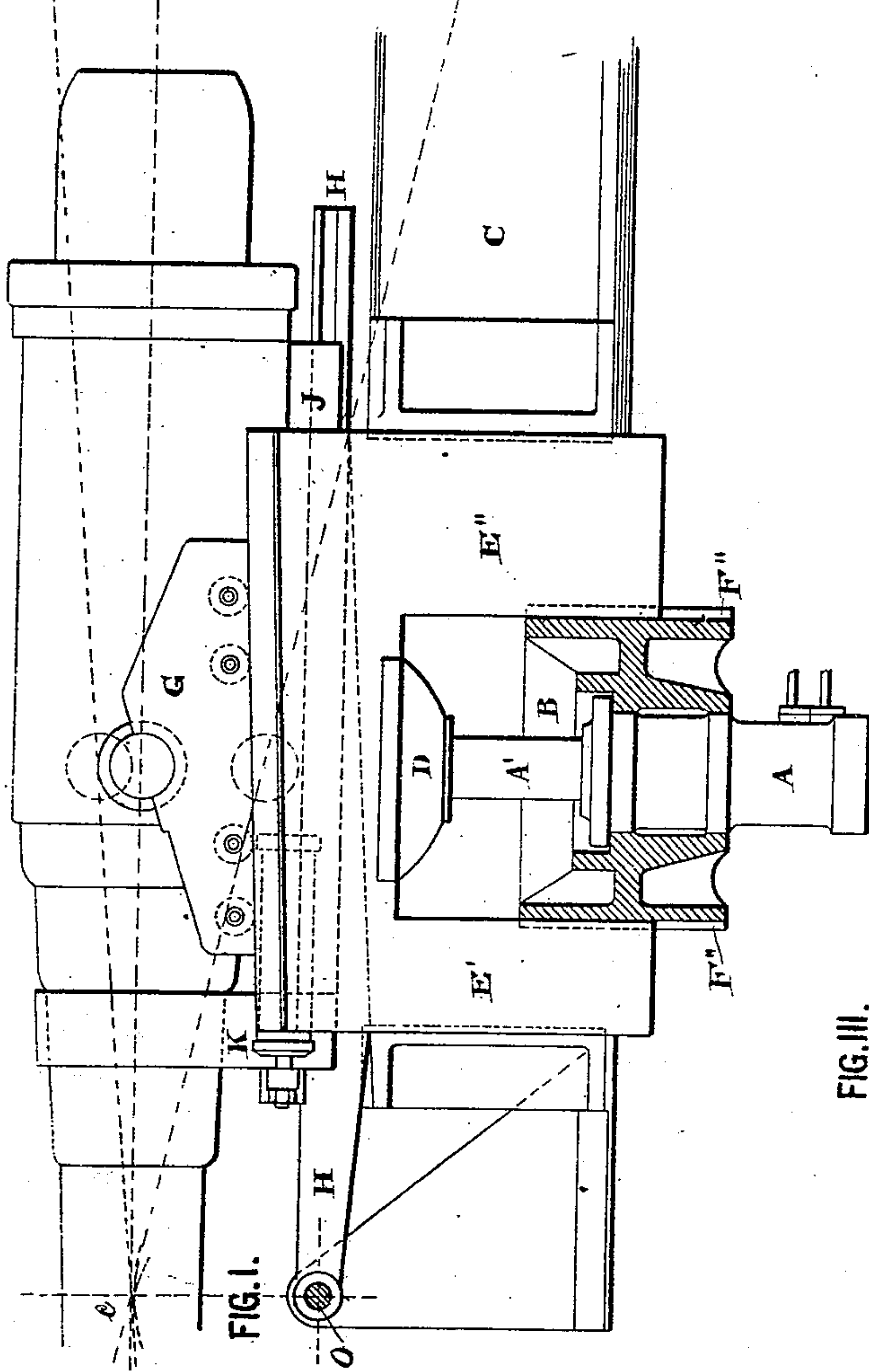


FIG. I.

FIG. III.

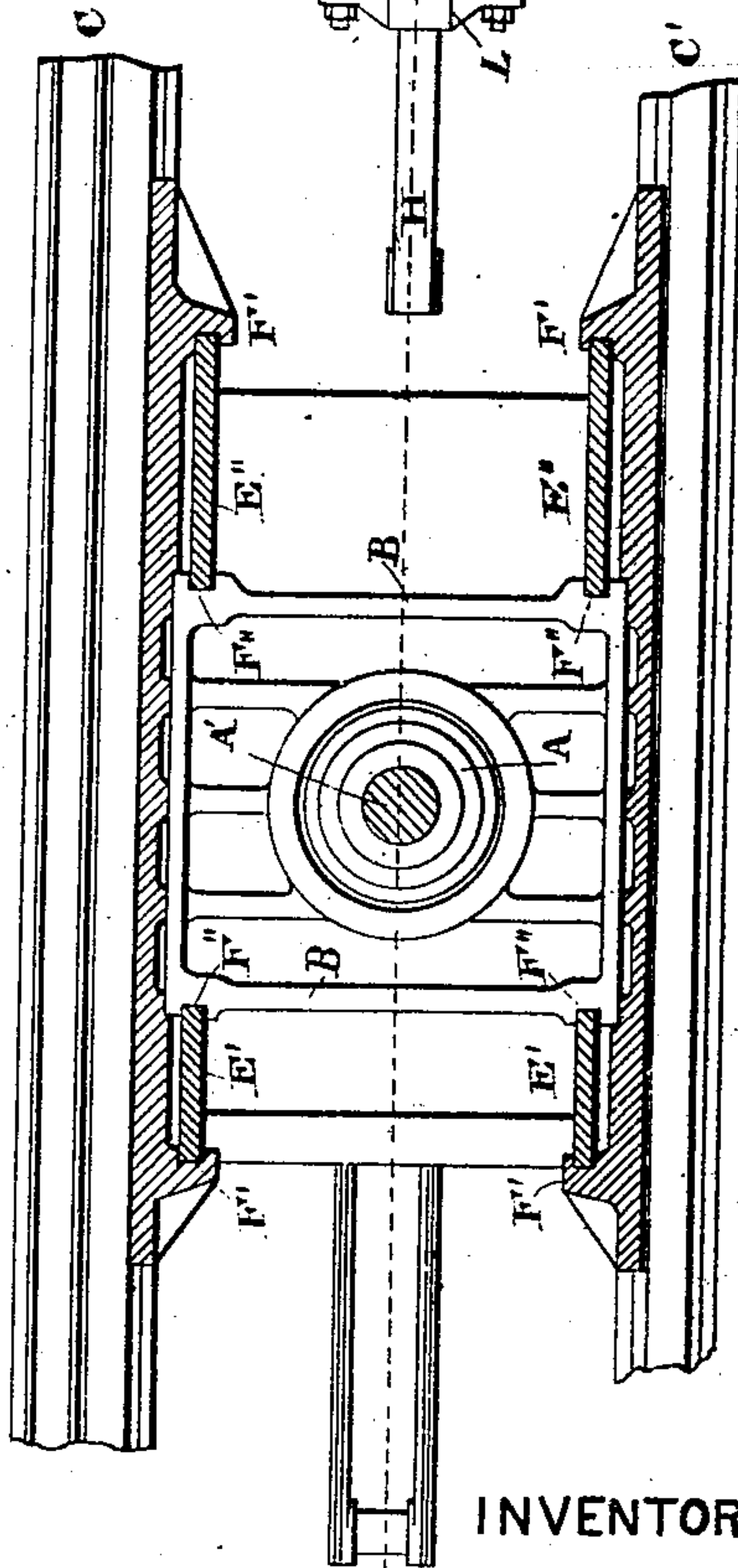
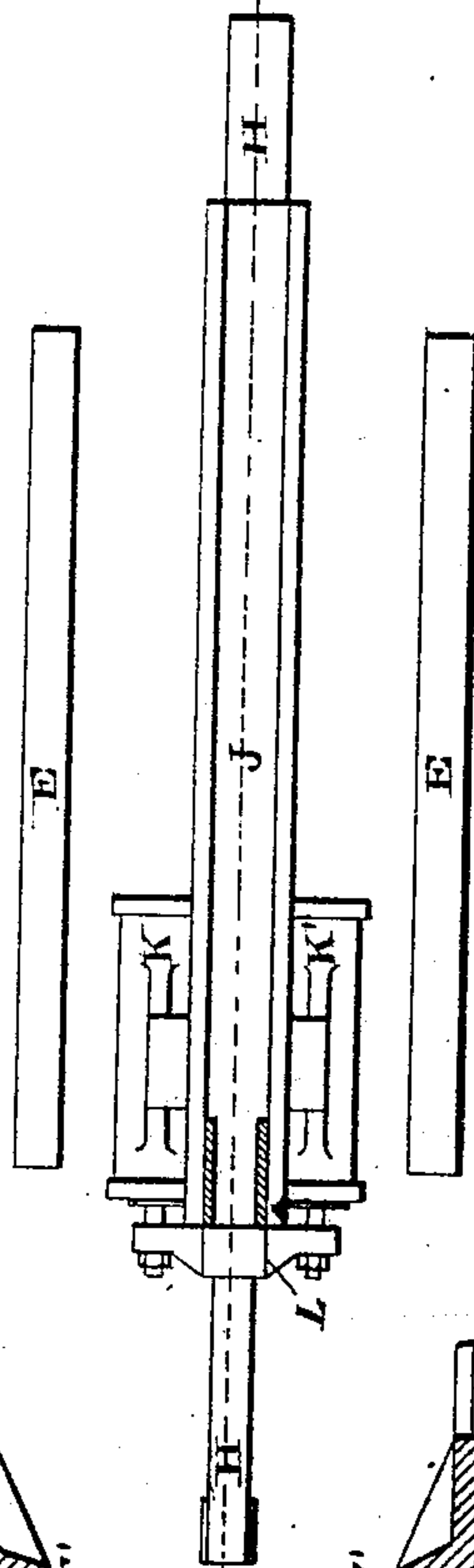


FIG. IV.



ATTEST.

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INVENTOR.

Hermann Gruson.
By *Knight & Sons* atty.

9 Recoil Checks,
Fluid.

Mounts. .

2 Sheets—Sheet 2.

GUN CARRIAGE.

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Geo. F. Smallwood.
J. Henry Kaiser.

INVENTOR.

Hermann Gruson.
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UNITED STATES PATENT OFFICE.

HERMANN GRUSON, OF BUCKAU, NEAR MAGDEBURG, PRUSSIA, GERMANY.

GUN-CARRIAGE.

SPECIFICATION forming part of Letters Patent No. 295,245, dated March 18, 1884.

Application filed September 12, 1883. (No model.) Patented in Belgium March 24, 1883, No. 60,870; in France April 3, 1883, No. 154,638, and in Italy June 30, 1883, XVII, 15,425.

To all whom it may concern:

Be it known that I, HERMANN GRUSON, of Buckau, near Magdeburg, Prussia, Germany, have invented certain new and useful Improvements in and relating to Gun-Carriages and Apparatus to be used in connection therewith, of which the following is a specification.

This invention relates to improvements in gun-carriages with minimum embrasures.

In other similar gun-carriages hitherto constructed the lower frame of the gun-carriage is stationary and the lifting-cylinder is connected with the upper part, so that the barrel only is lifted; but according to the present invention I make only the lifting-cylinder stationary, and the gun-carriage as a whole is vertically raised or lowered in order to point the gun or place the same in position for firing.

In order that my invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure I is a side elevation, partly in section, of my improved gun-carriage. Fig. II is a vertical transverse section, and Fig. III a horizontal section, of the same. Fig. IV is a plan of the guide-rod removed, showing the recoil-cylinders attached thereto. Figs. V and VI are detail views, showing modifications in the arrangement of the recoil-cylinders and their accessories.

To this end the hydraulic cylinder A is firmly connected with two bearers, C C', by means of the cross-piece B. The piston A', by means of a cross-head, D, carries the lower gun-carriage, E, the sides of which extend in the form of two shoulders, E' E'', which are arranged to move up and down in four guides, F' F'', when the gun-carriage is raised by the piston A'. Upon the frame E rests the upper portion, G, of the gun-carriage, which portion is supported by friction-rollers, and the walls of which serve as bearings for the trunnions. The barrel may be caused to turn on the front pivotal point in various manners—for example, by means of a guide-rail, as shown in Fig. I, or by means of an embrasure-ring, as shown in Fig. VI.

The guides do not form part of the present

invention, and therefore to explain Fig. I it need only be mentioned that the barrel is mounted on a block, J, sliding upon a guide-rail, H, which lies parallel to the axis of the barrel, and this rail turns upon the pivot O, so that the axis of the barrel must coincide in every position with the center C. The arrangement of the guiding devices is simpler in Fig. VI, the guiding being effected by means of an embrasure-ring which turns upon two pivots. If a horizontal movement be required, then pulleys are placed under the bearers C C' and a pivot is placed beneath O.

Another improvement consists in the modified arrangement of the brake-cylinders K K' for the purpose of diminishing the effect of the recoil. (Hydraulic brake-cylinders, as is well known, are filled with a fluid, which is forced through the perforated pistons when the piece of ordnance recoils.) The brake-cylinders, contrary to the mode of construction hitherto employed, are, according to the present invention, not attached to the gun-carriage frame, but to the barrel itself, while the piston-rods are firmly secured to some part outside of the gun-carriage. In the construction represented in Figs. I to IV the brake-cylinders are attached to the sliding block J, Fig. IV, connected with the barrel, while the piston-rods are attached to the guide-rail H by means of the cross-piece L. In Fig. V the cylinders K K' form the sliding block, while the piston-rods form the two guide-rails, which are pivoted at O, and the number of parts is thus reduced by two. Fig. VI shows, by way of barrel-guide, an embrasure-ring. The brake-cylinders are each provided with an eye fitting onto the trunnions, and the piston-rods are similarly connected to extensions of the pivots of the embrasure-ring. The reverse of this arrangement may be adopted, if desired—that is to say, the piston-rods can be connected to the barrel, and the cylinders can be secured firmly to a point outside of the gun-carriage. In Figs. V and VI the barrel-guides and brake-cylinders only are shown, while the other portions shown in Fig. I are omitted. By connecting the brake-cylinders with the barrel, the embrasure is completely protected from the strain caused by the recoil of the gun,

and for this reason it can be considerably reduced in its dimensions as compared with those heretofore employed.

I claim—

5 1. The combination, with a vertically-moving gun-carriage, of a barrel whose trunnions have bearings therein, said barrel having through intermediate connections a fixed pivotal point distant from the vertical plane of
10 the axis of said trunnions, on which it turns, as set forth.

2. The combination, with a vertically-moving frame and a sliding gun-carriage mounted thereon and supporting the trunnions, of the
15 barrel pivoted through intermediate connections to a part of the frame distant from the vertical plane of the axis of said trunnions, which is stationary as regards vertical and independent horizontal movement, as and for
20 the purpose set forth.

3. The combination, with a vertically-moving gun-carriage affording bearings in which the trunnions work, and the barrel having

through intermediate connections a fixed pivotal point distant from the vertical plane of 25 the axis of said trunnions, of a hydraulic press for operating said carriage, as set forth.

4. The combination, with the vertically-moving frame E and carriage G, of the barrel pivotally connected to a part of the frame 30 through the medium of the buffer K and rod H, sliding in a suitable groove in a block fixed to the under side of the barrel, as and for the purpose set forth.

5. The combination, with the vertically-moving frame E, carriage G, and the barrel, having through the medium of suitable intermediate connections a fixed pivotal point distant from the vertical plane of the axis of the trunnions, of a hydraulic press, A, as and for 40 the purpose set forth.

HERMANN GRUSON.

Witnesses:

JULIUS VON SCHÜTZ,
EMIL KIRLLUMKEY.