

T. H. HABERKORN.  
VALVE MECHANISM FOR OPERATING AIR BRAKES.

No. 549,717.

Patented Nov. 12, 1895.

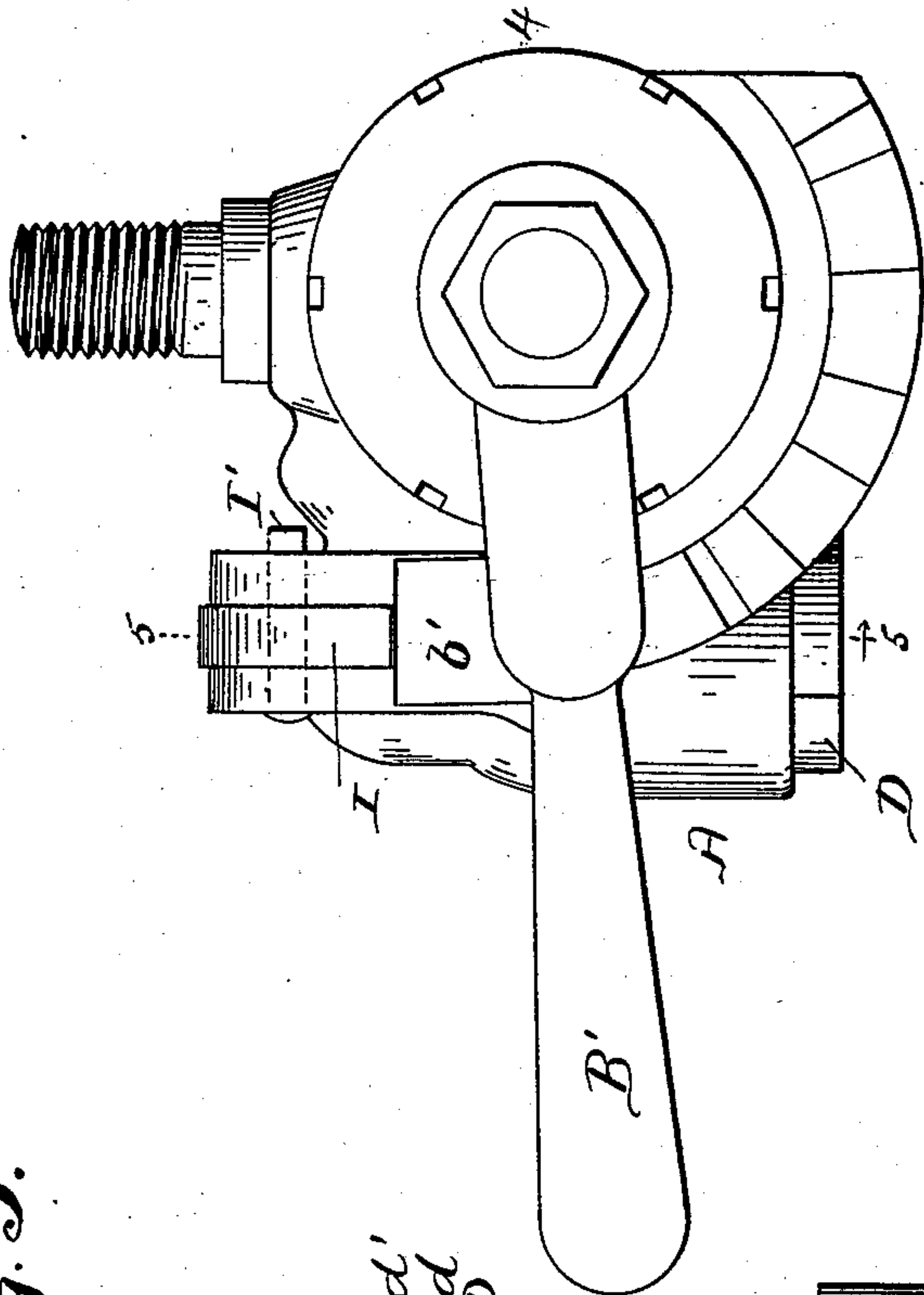


Fig. 1.

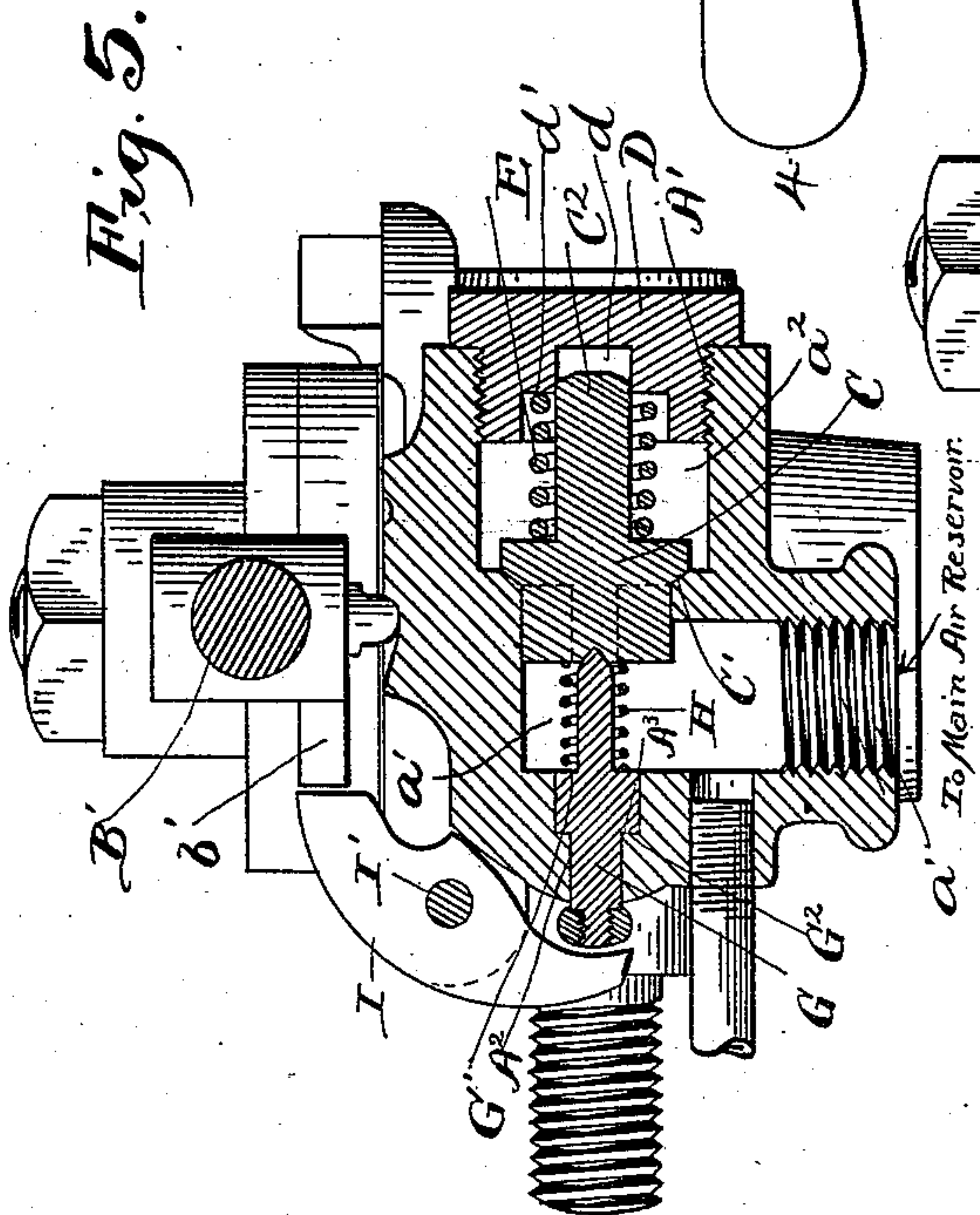


Fig. 5.

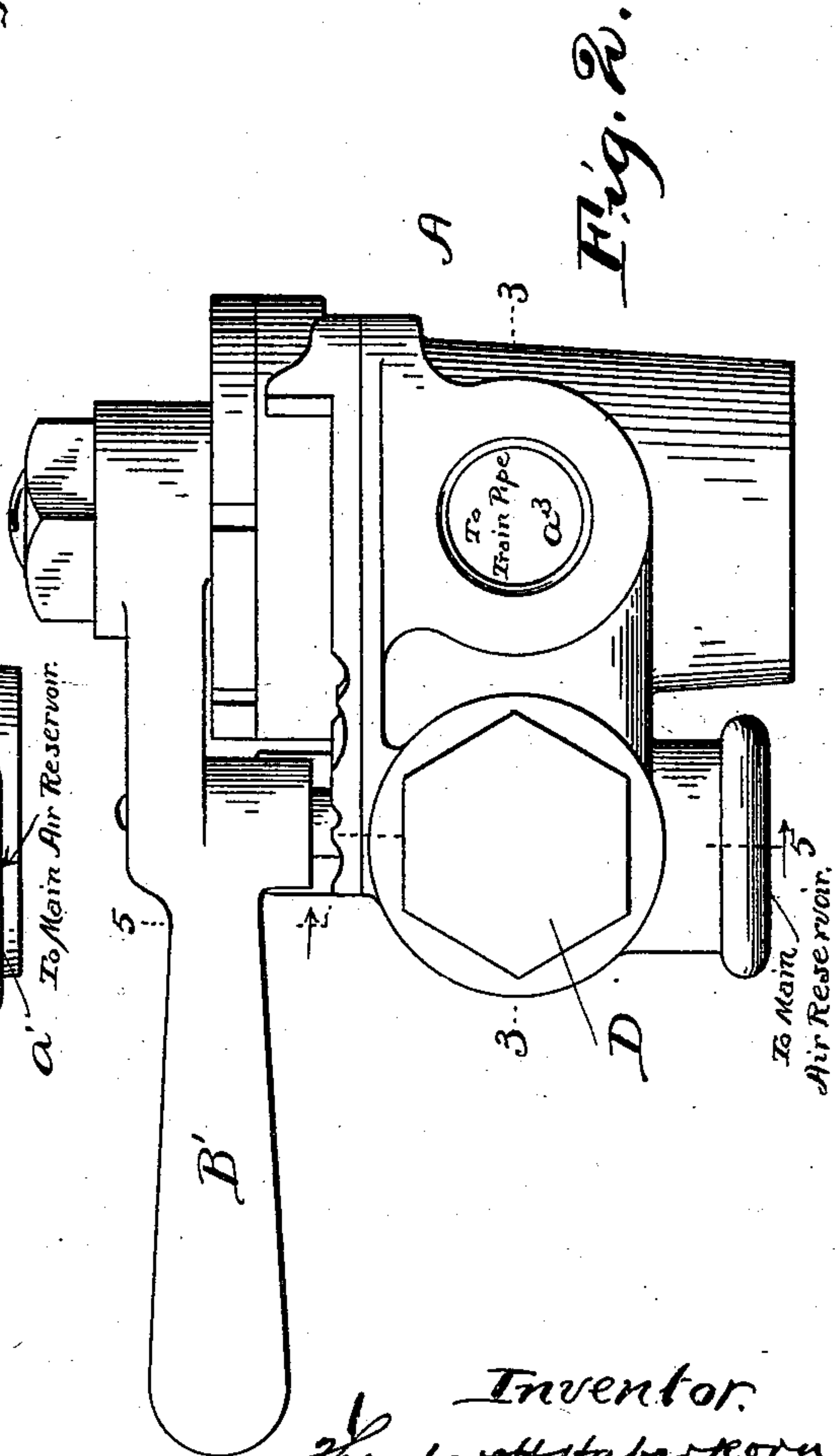


Fig. 2.

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(No Model.)

2 Sheets—Sheet 2.

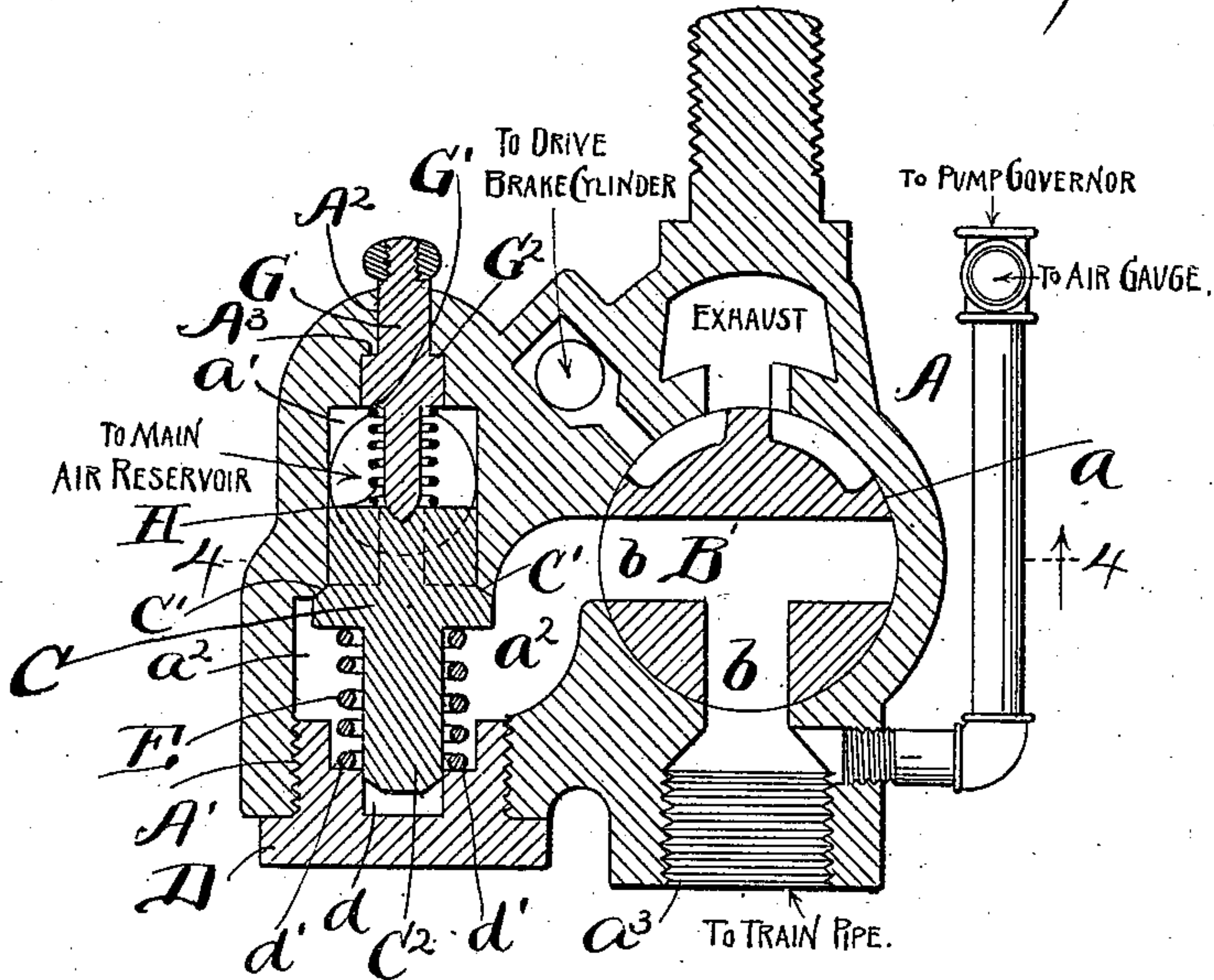
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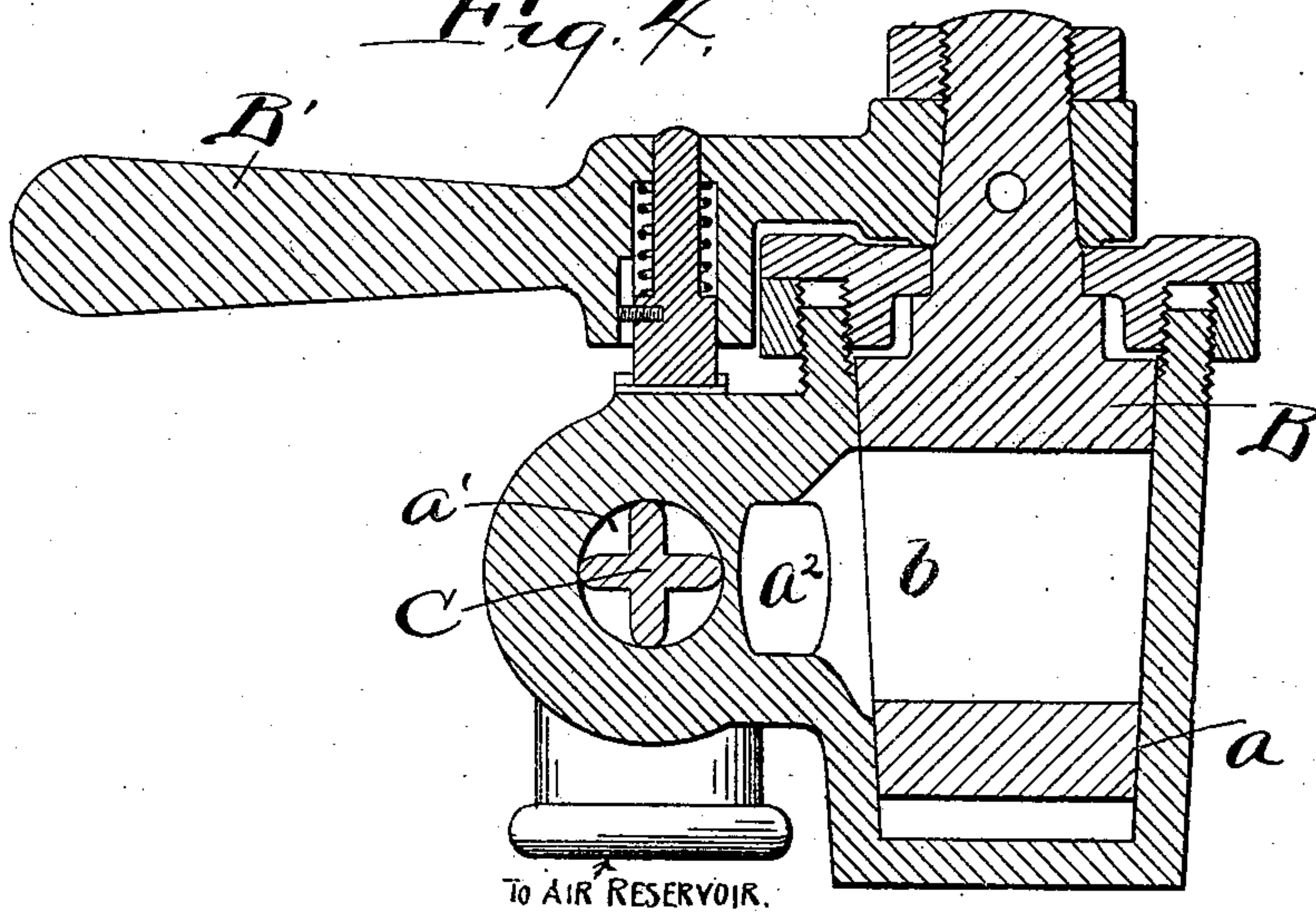
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*Fig. 3.*



*Fig. 4.*



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Inventor,  
Theodore H. Haberkorn.  
By Leggett & Leggett  
his attorneys.



# UNITED STATES PATENT OFFICE.

THEODORE H. HABERKORN, OF FORT WAYNE, INDIANA.

## VALVE MECHANISM FOR OPERATING AIR-BRAKES.

SPECIFICATION forming part of Letters Patent No. 549,717, dated November 12, 1895.

Application filed April 28, 1891. Serial No. 509,294. (No model.)

*To all whom it may concern:*

Be it known that I, THEODORE H. HABERKORN, of Fort Wayne, in the county of Allen and State of Indiana, have invented certain  
5 new and useful Improvements in Valve Mechanism for Operating Air-Brakes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to  
10 which it pertains to make and use the same.

My invention relates to improvements in air-brake-operating valve mechanism, the primary object being to construct valve mechanism of the variety indicated, whereby a  
15 greater air-pressure can be maintained in the main air-reservoir of the air-brake system than in the train-pipe, a very desirable feature in releasing the brakes of a long train.

A preferable construction of valve mechanism embodying my invention is shown in the accompanying drawings, wherein—

Figures 1 and 2 are a top plan and side elevation of the same, respectively. Fig. 3 is a top plan in section on line 3 3, Fig. 2. Fig.  
25 4 is a vertical section on line 4 4, Figs. 1 and 3, looking in the direction of the arrow. Fig. 5 is an elevation, partly in section, on line 5 5, Figs. 1 and 2.

I would here remark that my present invention is an improvement on the mechanism disclosed in United States Letters Patent No. 398,830, granted to me March 5, 1889. The valve mechanism, in the main, is substantially the same as disclosed in said Letters Patent,  
35 excepting the novel features hereinafter more fully described, and it is not considered necessary to refer in this application to any parts excepting those actually involved in my present invention.

Referring, therefore, to the drawings, A represents the valve-casing that is chambered, as at  $a$ , for receiving the main valve B and has ports  $a'$ ,  $a^2$ , and  $a^3$  arranged substantially as indicated, ports  $a'$  and  $a^3$  being designed  
45 to communicate with the main air-reservoir (not shown) and train-pipe, (not shown,) respectively, of the air-brake system and port  $a^2$  being located intermediate of ports  $a'$  and  $a^3$ . The main valve B is ported, as at  $b$ , to  
50 enable it to establish and control communication between ports  $a^2$  and  $a^3$ . Valve B has

operatively connected therewith in the usual manner a lever B' for operating the valve.

C represents a valve that opens and closes or controls communication between ports  $a^2$  55 and  $a'$ , said valve being seated between ports  $a'$  and  $a^2$ , as at C', and being adapted to move into port  $a^2$  in opening. Valve C has a stem C<sup>2</sup> extending through port  $a^2$  into a recess or bore  $d$  in an externally-screw-threaded plug 60 D, that fits a correspondingly-threaded bore in the valve-casing, recess or bore  $d$  being large enough to accommodate the movement of stem C<sup>2</sup> in the operation of the valve. Upon said valve-stem between valve C and 65 a shoulder  $d'$ , formed on the plug by an enlargement of bore  $d$ , is mounted and confined a coil-spring E, that acts in the direction to retain the valve to its seat.

By the construction thus far described it 70 is obvious that when air is pumped into the main air-reservoir it cannot enter the train-pipe until a pressure sufficient to unseat valve B against the action of spring C is obtained, and hence there will a greater pressure in said 75 reservoir than in the train-pipe. To utilize said excess of pressure in the main air-reservoir in releasing the brakes, the following is provided:

G represents a reciprocating bar or stem 80 that extends into port  $a'$  from outside of the valve-casing through a corresponding hole A<sup>2</sup> in the valve-casing.

Bar or stem G is adapted to engage and move valve C off its seat and is held in its 85 normal position, which is that of permitting valve C to occupy its seat by means of a coil-spring H, mounted and confined upon member G between valve C and a shoulder G', formed upon said member G. The outward move- 90 ment of bar or stem G is limited by a stop formed by a shoulder G<sup>2</sup>, formed upon said bar or stem, and which shoulder is adapted to engage a shoulder A<sup>3</sup>, formed by an enlargement of hole A<sup>2</sup> in the valve-casing. Bar or stem 95 G is adapted to be actuated inwardly by a lever I, fulcrumed at its central portion, as at I', to the valve-casing or an attachment of the latter and adapted to be actuated by the operating-lever B' of the valve mechanism, said 100 operating-lever having a flange or projecting member  $b'$  adapted to engage lever I.



By the construction just described it will be observed that lever I constitutes an equalizing-lever and that when the engineer or operator desires to utilize the excess of pressure in the main reservoir in order to release the brakes more quickly, as required in case of an emergency, he, in actuating the operating-lever to release the brakes, also actuates the equalizing-lever to move bar or stem G inwardly against the action of spring H, thereby opening valve C and equalizing the air-pressure in the main air-reservoir and train-pipe, the arrangement of parts being such that valve C shall be unseated in actuating the operating-lever to release the brakes. As soon as the operator releases the operating-lever, spring E will promptly return the operating-lever and main valve to their normal or running position—that is, the main valve is positively shifted or returned to its “running position” and to that extent relieves or lessens the responsibility of the operator.

What I claim is—

1. In valve-mechanism for operating air-brakes, the combination with the valve-casing chambered as at  $a$ , and ported as at  $a'$ ,  $a^2$  and  $a^3$ , suitably ported main valve B seated in chamber  $a$  and adapted to control communication between ports  $a^2$  and  $a^3$ , and operating lever B', of a valve C for controlling communication between ports  $a'$  and  $a^2$ , suitable means acting to retain said valve C on its seat, and suitable mechanism for actuating said valve C to open, substantially as set forth.
2. In valve-mechanism for operating air-brakes, the combination with the valve-casing chambered as at  $a$ , and ported as at  $a'$ ,  $a^2$  and  $a^3$ , suitably ported main-valve B seated in chamber  $a$  and adapted to control commu-

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nication between ports  $a^2$  and  $a^3$ , and operating lever B', of a valve C for controlling communication between ports  $a'$  and  $a^2$ , a spring acting to retain said valve C on its seat, and suitable mechanism for actuating said valve C to open and adapted to be operated by the aforesaid operating-lever, substantially as set forth.

3. In valve-mechanism for operating air-brakes, the combination with the valve-casing chambered as at  $a$ , and ported as at  $a'$ ,  $a^2$  and  $a^3$ , suitably ported main-valve B seated in chamber  $a$  and adapted to control communication between ports  $a^2$  and  $a^3$ , and operating lever B', of a valve C for controlling communication between ports  $a'$  and  $a^2$ , a reciprocating-bar or stem for lifting said valve C off its seat, a lever I for actuating said bar or stem to open said valve C and adapted to be actuated by the aforesaid operating-lever, and suitable means acting to retain said valve C closed, substantially as set forth.

4. In valve-mechanism for operating air-brakes, the combination with the valve-casing chambered as at  $a$ , and ported, as at  $a'$ ,  $a^2$  and  $a^3$ , and bored or perforated as at  $A^2$ , suitably ported main valve B, and operating-lever B' provided with a flange or projecting-member  $b'$ , of valve C having a stem C', spring E, sliding-bar or stem G, spring H and lever I, all arranged and operating, substantially as set forth.

In testimony whereof I sign this specification, in the presence of two witnesses, this 25th day of March, 1893.

THEODORE H. HABERKORN.

Witnesses:

C. W. KUHNE,  
C. H. DORER.