

No. 638,467.

Patented Dec. 5, 1899.

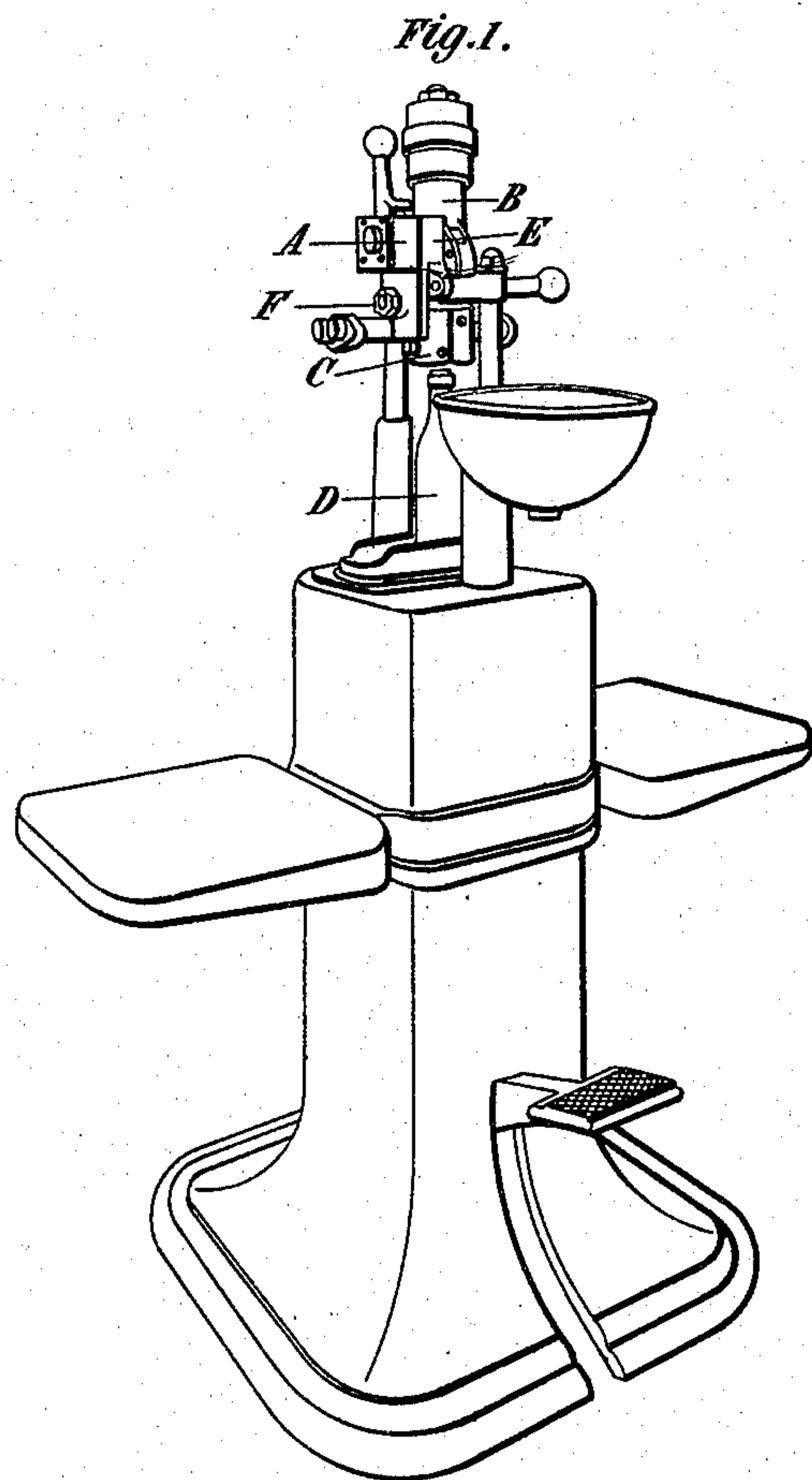
E. K. MOORE.

APPARATUS FOR FILLING BOTTLES WITH LIQUIDS.

(Application filed Sept. 17, 1898.)

(No Model.)

4 Sheets—Sheet 1.



Witnesses

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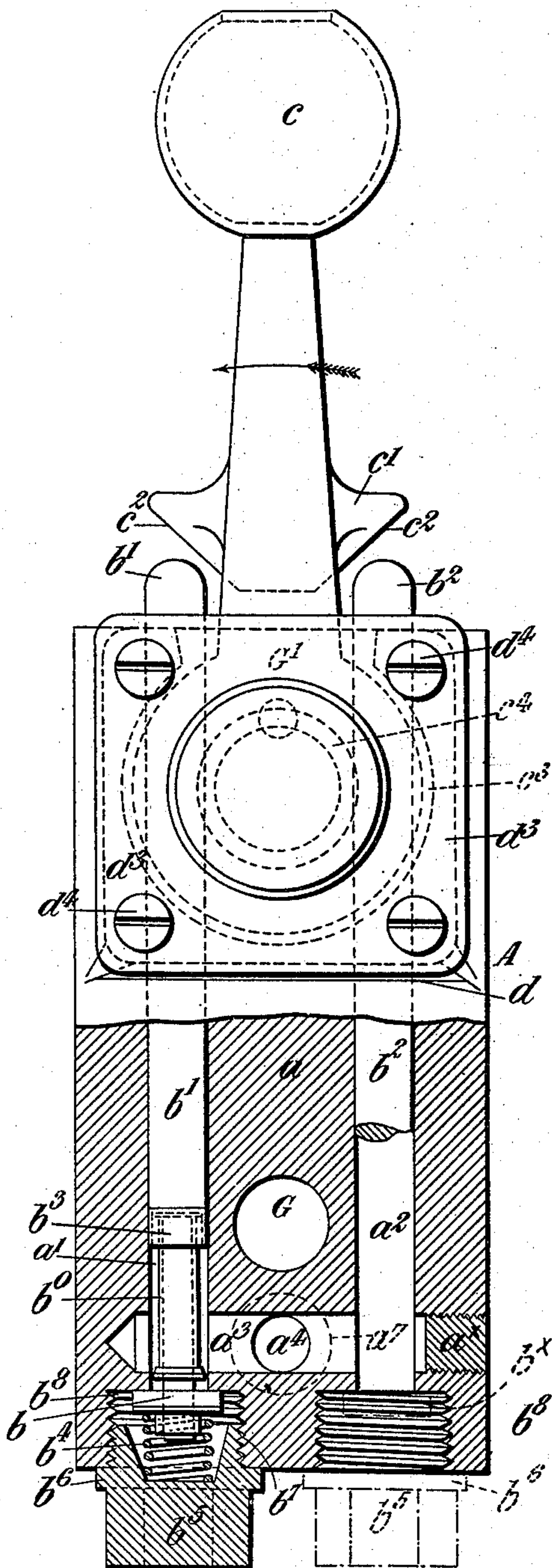
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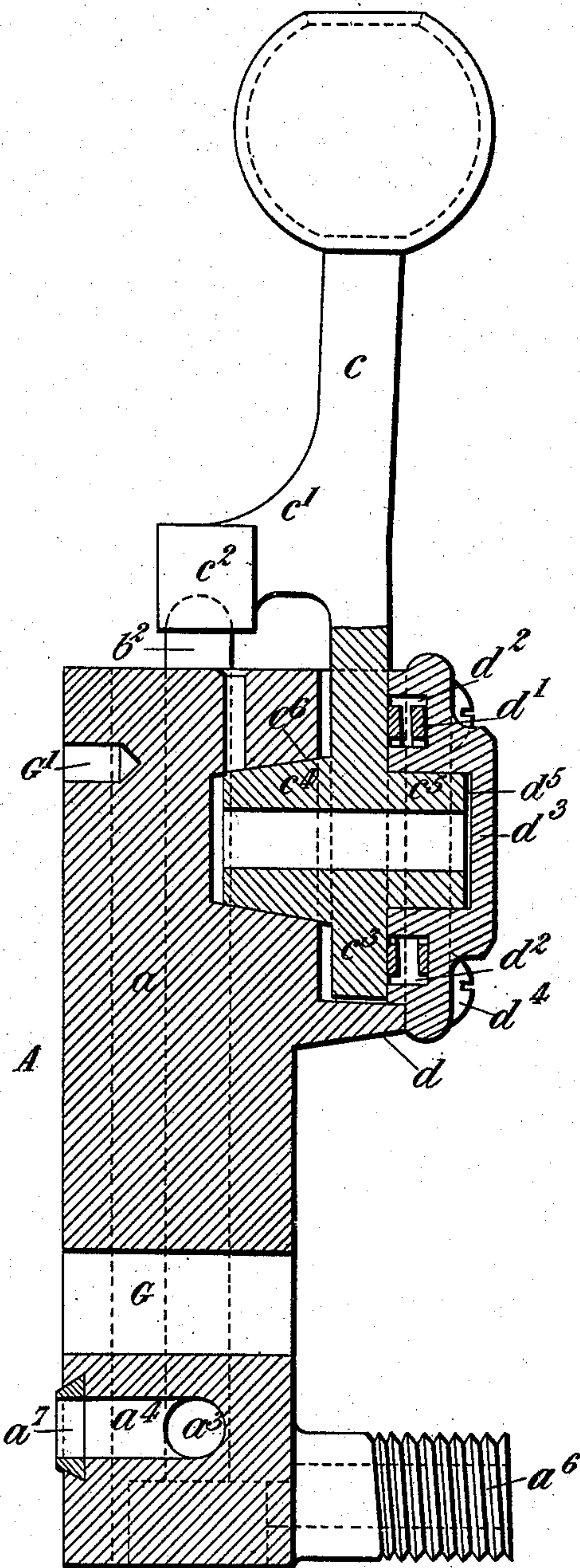
Fig. 2.



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Fig. 3.



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Fig. 5.

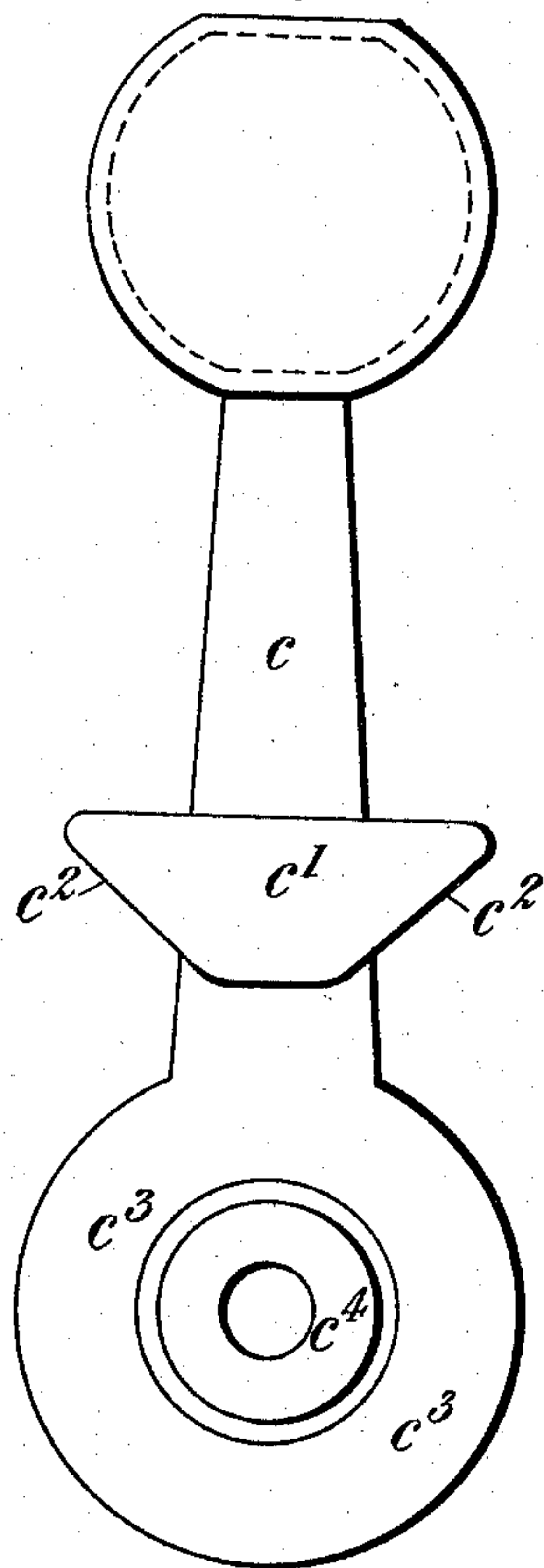
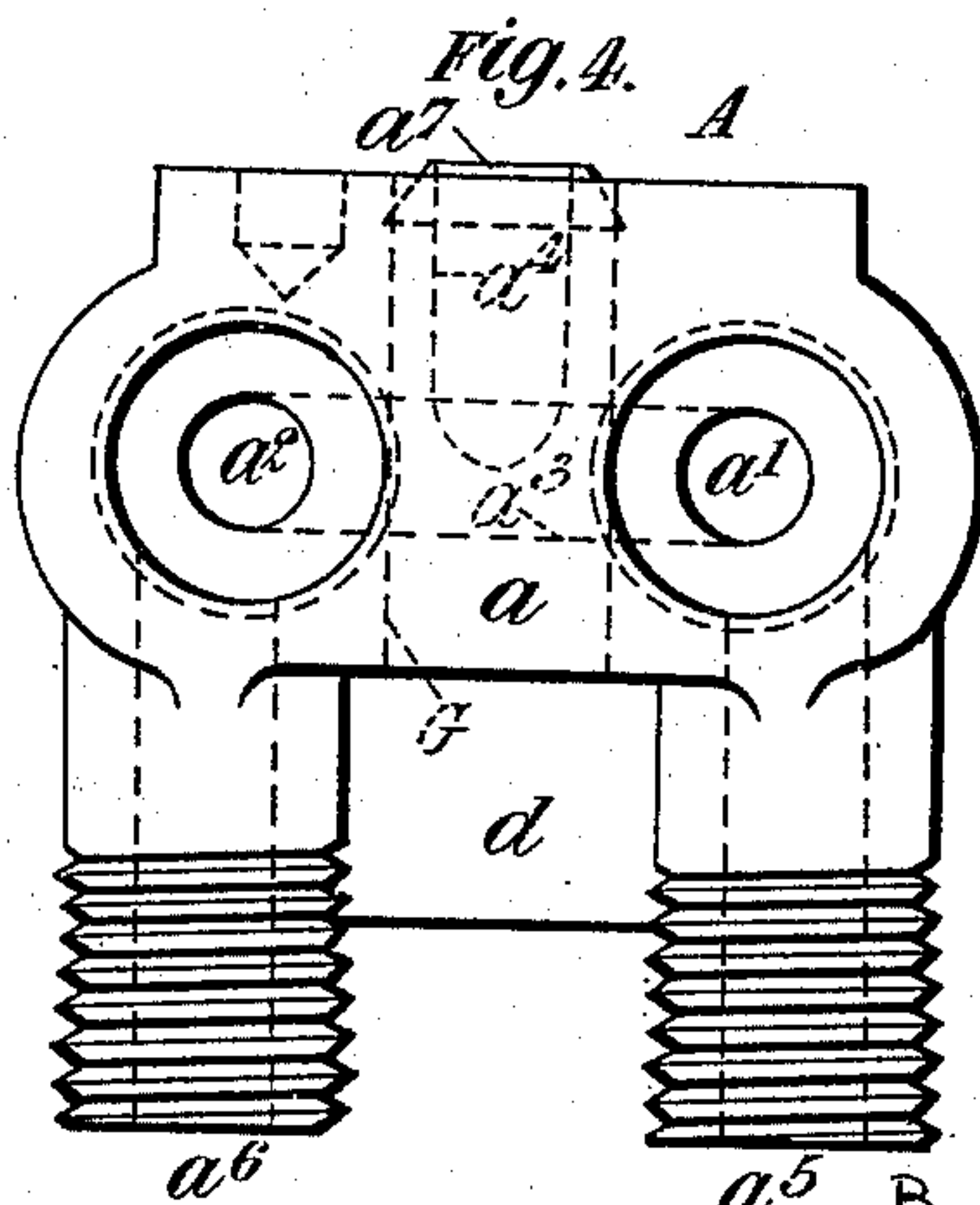


Fig. 4.



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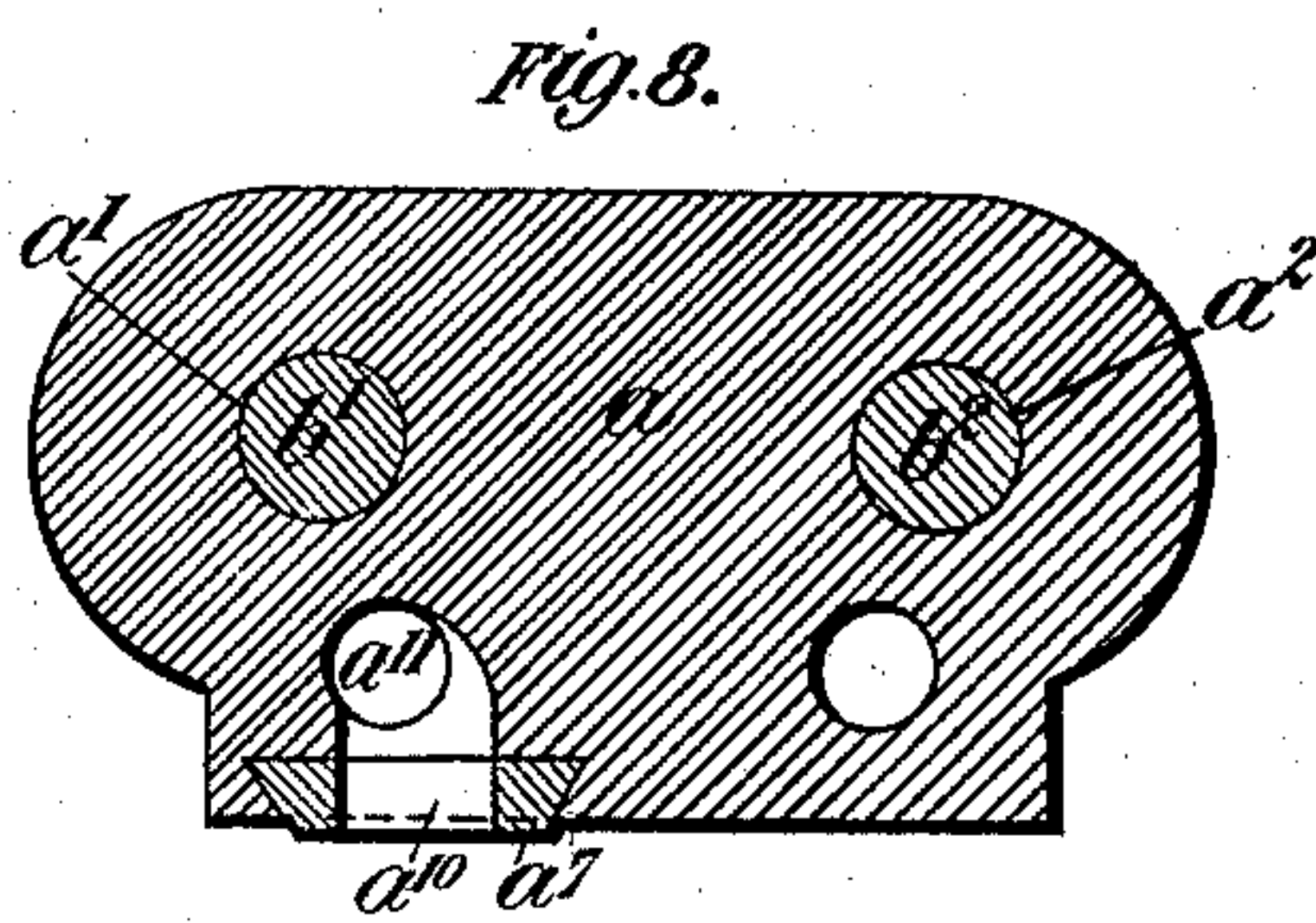
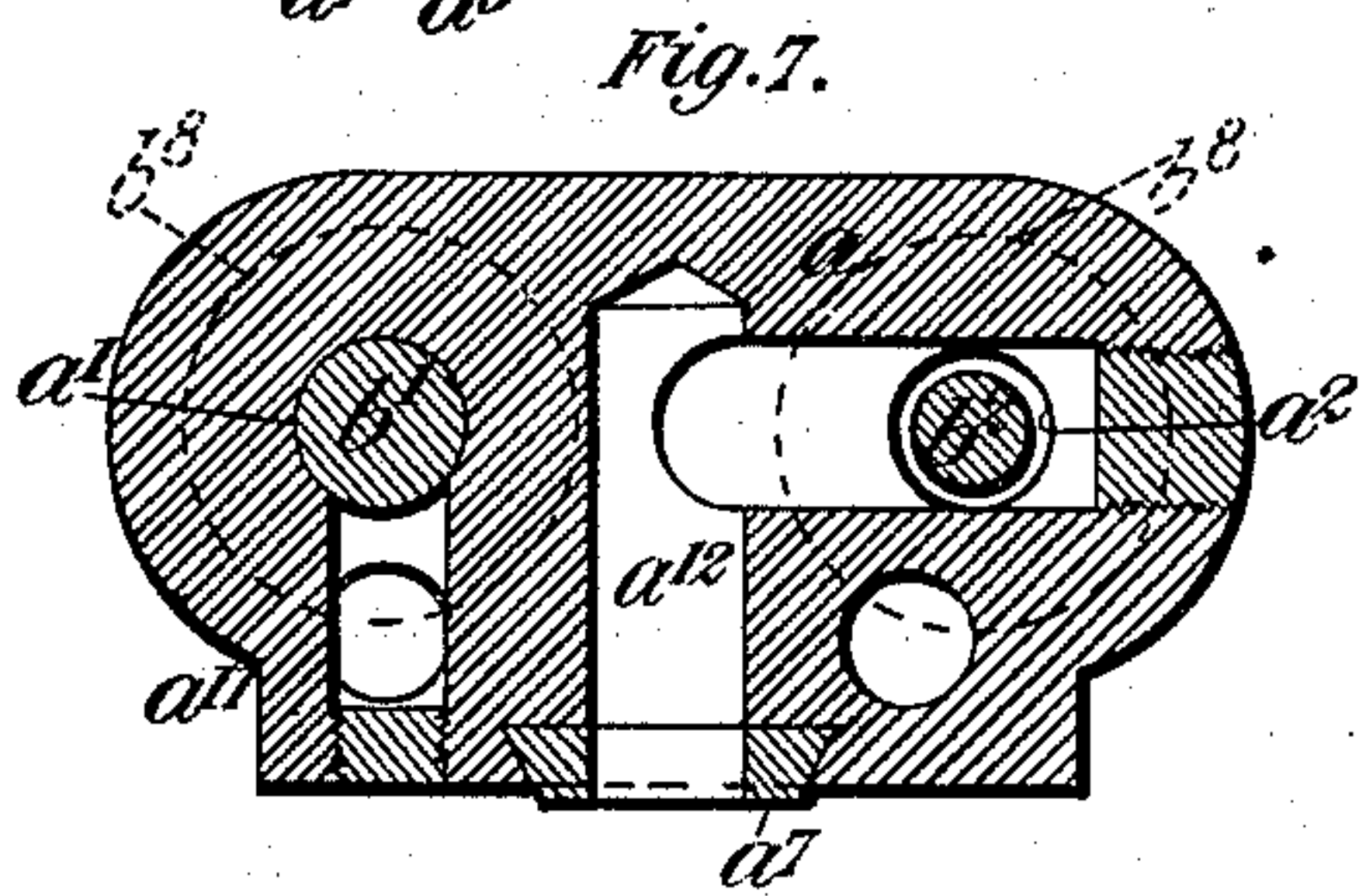
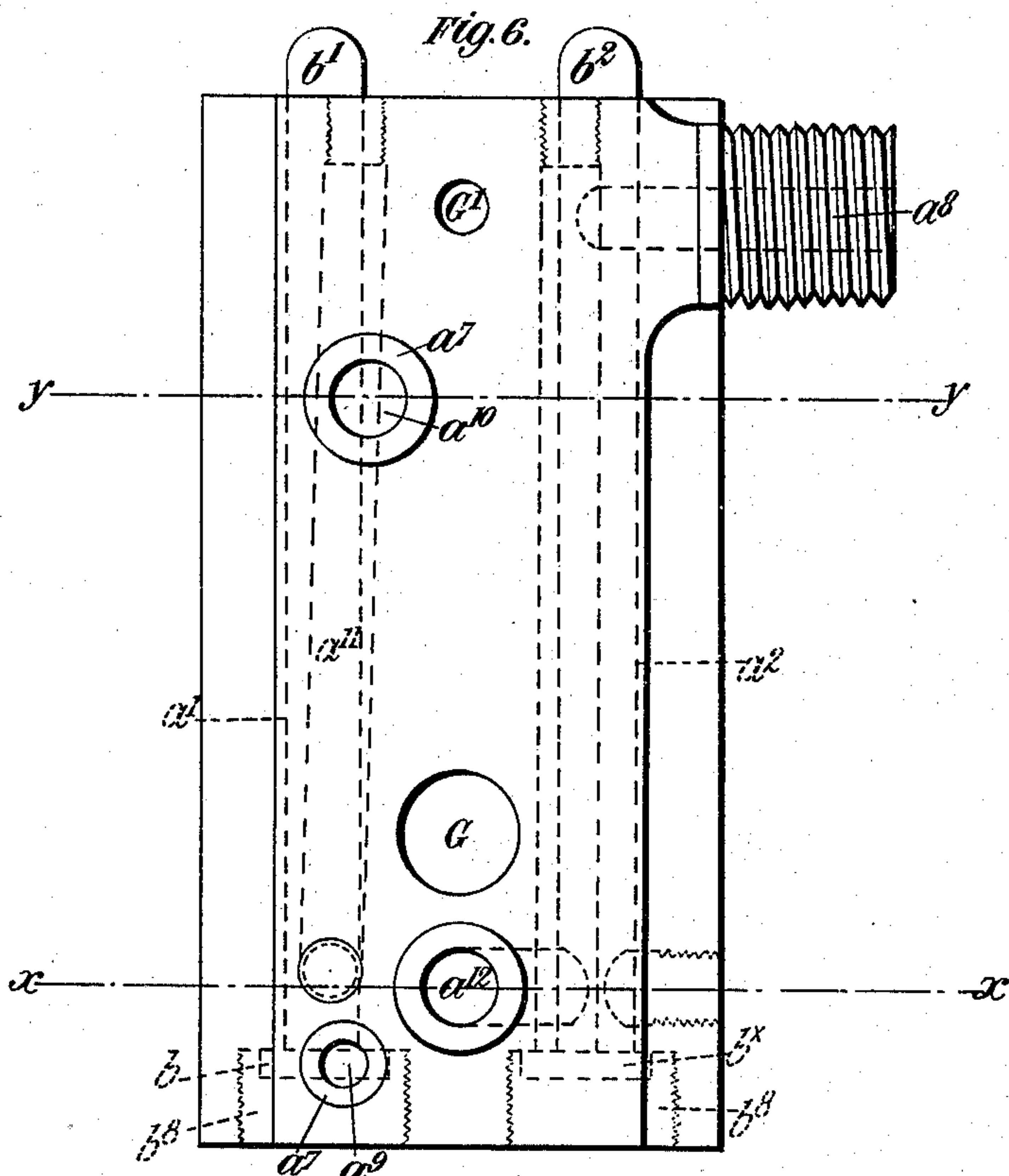
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4 Sheets—Sheet 4.



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UNITED STATES PATENT OFFICE.

ELBERT KIRK MOORE, OF LONDON, ENGLAND, ASSIGNOR TO THE CROWN CORK COMPANY, LIMITED, OF SAME PLACE.

APPARATUS FOR FILLING BOTTLES WITH LIQUIDS.

SPECIFICATION forming part of Letters Patent No. 638,467, dated December 5, 1899.

Application filed September 17, 1898. Serial No. 691,269. (No model.)

To all whom it may concern:

Be it known that I, ELBERT KIRK MOORE, engineer, a citizen of the United States, residing at 79 and 81 Paul street, Finsbury, London, England, have invented certain new and useful Improvements in Apparatus for Filling Bottles with Liquids, of which the following is a specification.

This invention relates to improvements in apparatus for filling bottles with liquids, and has reference to a filling device applicable more particularly to the class of machines described in the specification of former British Letters Patent, No. 7,877 of the year 1892, and now well known as "Crown cork-machines."

The object of the invention is to provide convenient means for enabling bottles which are to be corked to be previously filled in the same machine with either aerated or still liquids.

According to the said invention the filling device comprises two spring-controlled valves arranged in a suitable metal block or casing, which can be readily fitted to the head of the machine. These valves are operated by a handle of special construction which has a limited angular movement and is arranged to open one or other of them when in either of its extreme positions, whereas when released it is caused to assume an intermediate position by the action of the valve-spindles, the valves themselves at the same time closing under the action of their springs.

The invention will be readily understood by reference to the accompanying drawings, in which—

Figure 1 is a general view of a machine of the kind referred to having applied thereto a form of my improved filling device which is suitable for cases wherein the air is to be sucked out of the bottle. Fig. 2 is an elevation, partly in vertical section, showing the said device to an enlarged scale. Fig. 3 is a vertical section at right angles to Fig. 2. Fig. 4 is an under side view of the said device with the handle removed. Fig. 5 is an elevation of the handle as it appears when removed from the device. Fig. 6 is an elevation of another form of the device, which form is suit-

able for cases in which no suction is desired and in which the pressure in the bottle never falls below atmosphere. Figs. 7 and 8 are horizontal sections taken, respectively, on the lines xx and yy of Fig. 6.

Referring more particularly to Figs. 1 to 5, A is the filling device, B is the main head of the machine, and C is the depressible head thereof. This depressible head is operated in the well-known manner and serves both to form a movable connection with the top of the bottle D and also to fix the corks in position in the usual way.

The device A is secured in position against a faced-up portion E of the main head by means of a stud or bolt F, which passes through an aperture G in the device. The side of the latter which abuts against the portion E of the head is also faced up to make a proper fit, and a pin or projection on the head fits in a recess G' to keep the device truly in position.

a is the body of the filling device. This body is formed of a single casting of brass or other suitable metal and has arranged in it a series of passages a' a^2 a^3 a^4 , which communicate with a pair of tubular nipples or projections a^5 a^6 , one of which can be connected to the liquid-supply and the other to a vacuum pump or chamber.

a^x is a plug which serves merely to close the end of the passage a^3 after same has been drilled.

b b^x are the spring-controlled valves, the latter valve being indicated only in dotted lines. The spindles b' b^2 of these valves extend through the passages a' a^2 , respectively, and project slightly at the upper ends of said passages. The connection between the valves and their spindles is formed by short rods b^0 of reduced diameter, which are screwed into the ends of the spindle.

b^3 are cup-leathers for preventing the flow of liquid past the spindles. The valves serve to control the communication between the passages a' a^2 and the nipples a^5 a^6 and are normally pressed upon their seats by brass or other suitable springs b^4 , arranged in hollow hexagonal caps or plugs b^5 . Each of these caps has a flange or collar b^6 and a

screw-threaded portion b^7 , whereby they can be screwed into cavities b^8 in the body of the filling device.

c is the operating-handle, above referred to, which in this arrangement is situated at the upper part of the device. The said handle is provided with a lateral projection c' , on which are formed two inclined faces c^2 , which are adapted to bear against the projecting ends of the valve-spindles b' b^2 when the handle is in one or other of its extreme positions. The handle has an enlarged disk-like boss c^3 and is mounted in a projection d on the body of the device by means of studs or pivots c^4 c^5 , extending laterally from the center of the boss c^3 .

For the purpose of preventing the handle c working slack the pivot c^4 is made of tapered or conical form and is forced into a correspondingly-tapered recess c^6 in the body of the device by means of a spring d' , arranged in an annular recess d^2 in a cap or cover d^3 , which is secured to the projection d by screws d^4 . The other pivot c^5 of the handle may be plain or cylindrical and be fitted into a central recess or cavity d^5 in the cover d^3 . The action of the aforesaid spring d' tends to maintain a moderately-tight fit of the conical pivot c^5 in the recess c^6 , and thus prevents the handle working loose.

The filling device is fitted to a machine in such a manner that the passage a^4 coincides with the usual passage which leads to the depressible head C of the machine. The connection between these passages is rendered fluid-tight by a dovetailed india-rubber washer or gasket a^7 , fitted in the end of the passage a^4 and projecting slightly therefrom, so as to be pressed tightly against the faced portion E of the head of the machine when the device is secured in position thereon.

The action is as follows: When the bottle is in position under the head of the machine, the said head is depressed until the india-rubber ring or gasket with which it is provided makes a tight joint with the upper edge of the mouth of the bottle. Communication is thus established between the interior of the bottle and the passage a^4 through the ordinary passage in the head of the machine. At this time the valves b b^x are both closed and the nipple a^5 is connected to the liquid-supply, while the nipple a^6 is connected to the vacuum pump or chamber. The operator preferably grasps the handle in such a manner that by drawing it back he can cause it to act on the stem of the vacuum-valve b^x , so as to open the latter, while by pressing it forward it can be caused to open the valve b . By working in this way it is much easier to watch the filling operation carefully than it would be if the movements were reversed.

In filling the bottles the depressible head is lowered until it forms a fluid-tight connection with the mouth of the bottle, whereupon by momentarily opening the vacuum-valve

b^x the air is exhausted from the bottle, after which the handle is pressed forward in the direction of the arrow, Fig. 2, and opens the valve b to admit the liquid to the bottle and at the same time allow the vacuum-valve to close.

At intervals during the filling it may be necessary with some liquids to renew the vacuum in the bottle, and this can readily be done by momentarily opening the vacuum-valve when desired.

Referring now to the modified arrangement shown in Figs. 6, 7, and 8, which is, as stated, more particularly suitable for cases wherein no vacuum is set up in the bottle, the construction of the device as regards the valves b b^x , the handle c , and the passages a' a^2 is substantially similar to that hereinbefore described; but instead of the device having two nipples it has only a single nipple a^8 for connection to the liquid-supply. The latter is effected under pressure, so that when the liquid enters the bottle it gradually compresses the air therein to its own pressure, whereupon the filling will stop until the air so compressed is liberated. In order, therefore, to be able to liberate the air at intervals, the device has its valve b arranged as a snift or relief valve, in combination with two air-ports a^9 and a^{10} , having rubber rings or gaskets a^7 similar to that before described. These ports are connected together by a passage a^{11} . The port a^9 admits the compressed air from this bottle, and when the valve b opens the port a^{10} allows the said air to escape through the head of the machine to atmosphere. A second port a^{12} , also having a rubber washer, is arranged at the lower end of the device and communicates with a passage in the depressible head of the machine to admit the liquid to the bottle. The said depressible head can thus communicate with the supply-nipple a^8 through the valve b^x and the port a^2 or with the air-port a^{10} through the port a^9 , the valve b , and the passage a^{11} . It will be readily seen that the valves b and b^x control these communications, so that the bottle can be put either into communication with the liquid-supply or the air-ports at will by merely operating the handle c , as in the previously-described arrangement.

What I claim is—

1. In a filling device, the combination with the body of the filling device, having tapered recess, of the operating-handle having lateral projection with oppositely-inclined acting faces, and a disk-like boss mounted in a projection on said body by studs projecting from said boss, one of said studs being tapered and engaged in the recess of the body, a removable cap having annular interior recess to receive the other stud and an annular recess surrounding the same, and a spring arranged therein acting on said boss to force the tapered stud into its recess, substantially as specified.

2. In a filling device the combination of a pair of valves, a pair of air-ports, a transverse passage connecting said ports, a port for discharging liquid to the passages for filling the
5 bottle, a single nipple connected to the liquid-supply, a passage at right angles to the first-mentioned passage leading from said nipple to the valve-chamber of one of the valves, and a communication between said valve-cham-

ber and the liquid-port substantially as described.

In testimony whereof I have hereunto set my hand, in presence of two subscribing witnesses, this 16th day of May, 1898.

ELBERT KIRK MOORE.

Witnesses:

CHAS. B. BURDON,
H. B. GREEN.