No. 880,367. PATENTED FEB. 25, 1908.

F. A. DECKER.

BATTERY.

APPLICATION FILED MAY 9, 1905.

3 SHEETS—SHEET 1.

Fig. 1

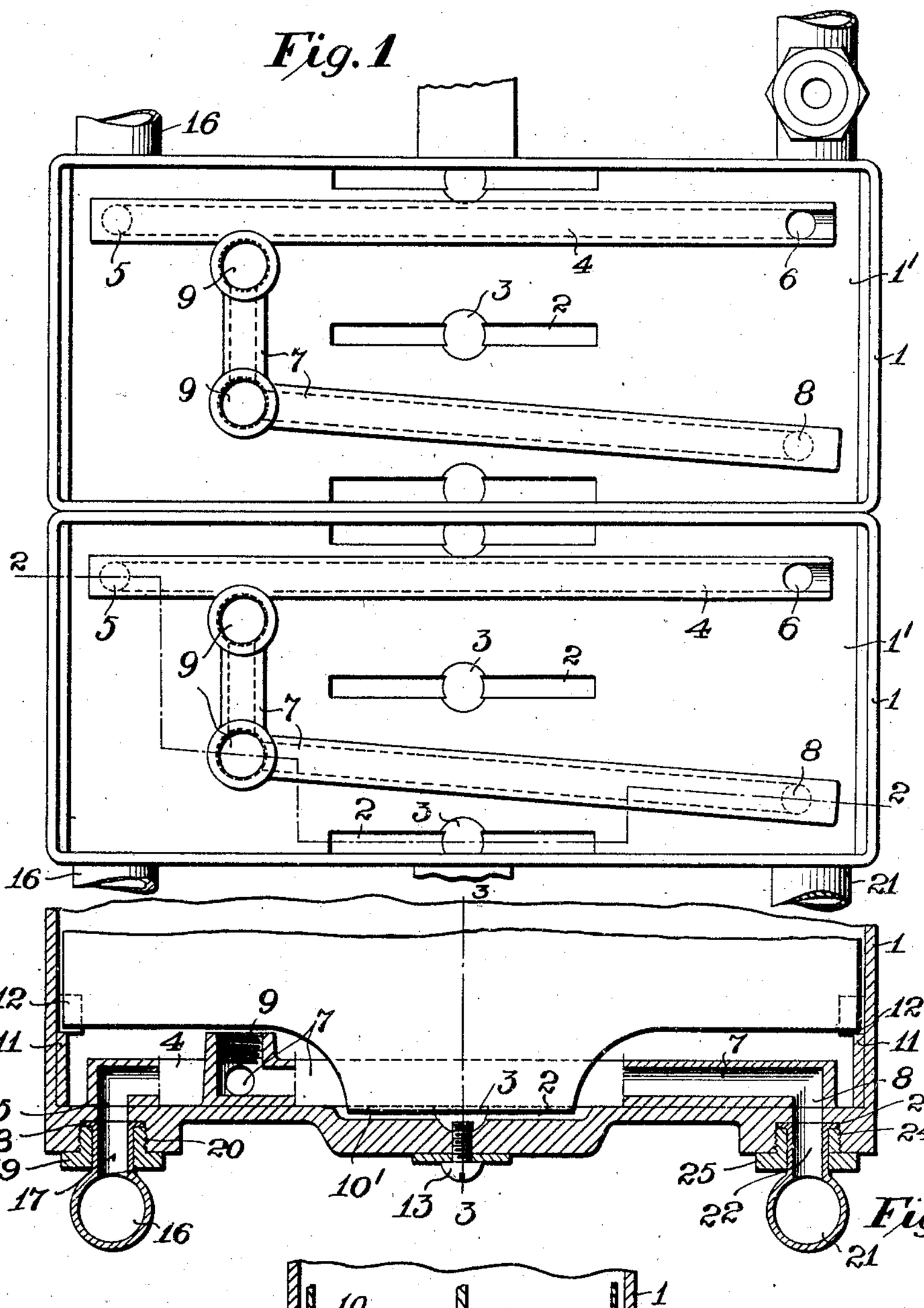

Fig. 2

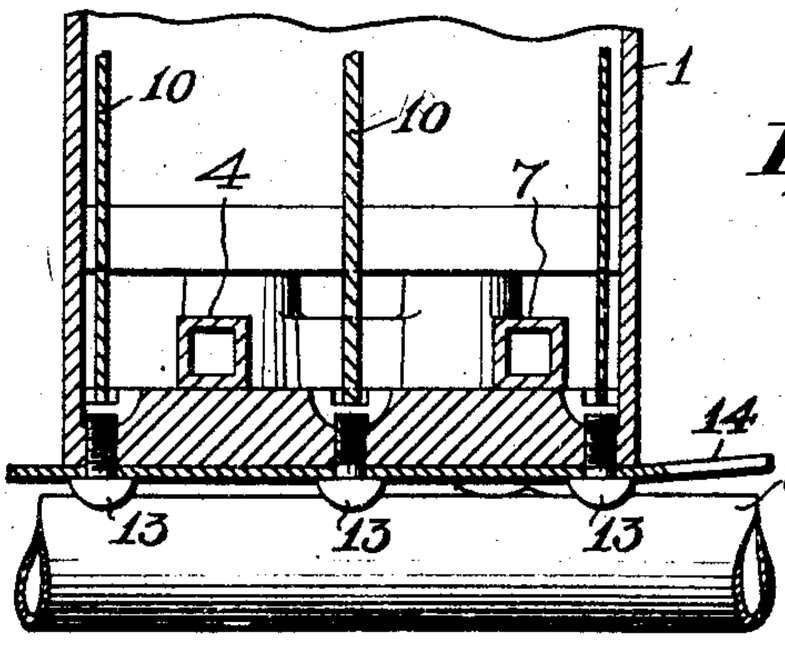

Fig. 3

WITNESSES:

Louis H. Buck.

Wm. C. Craig jr.

INVENTOR:

Frank A. Decker

BY

Chas. N. Burlew

ATTORNEY.

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3 SHEETS—SHEET 2.

Fig. 4

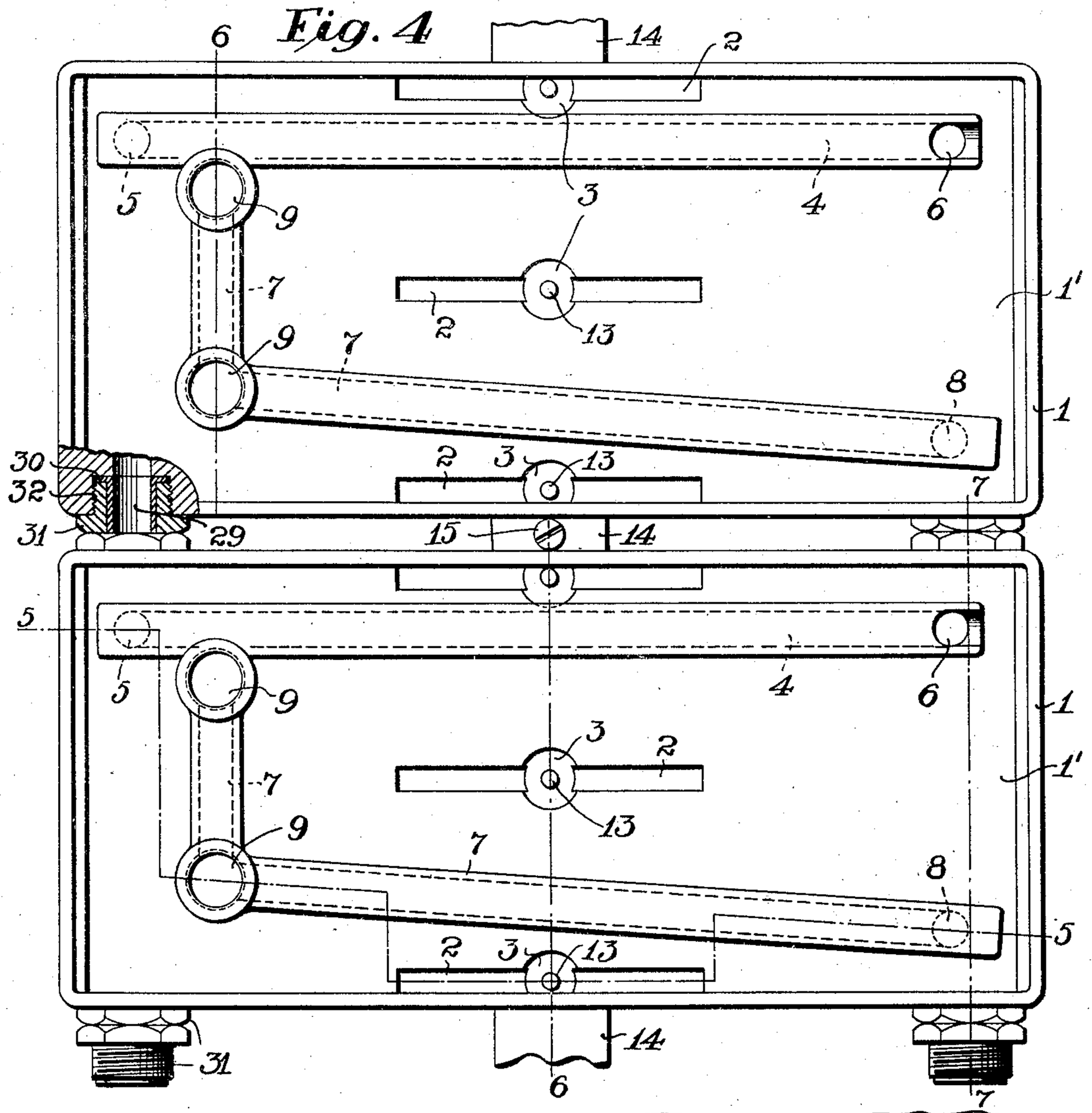

Fig. 5

WITNESSES:

Louis H. Breck

Utley E. Crane Jr.

INVENTOR:

Frank A. Decker

BY

Chas. N. Butler

ATTORNEY.

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F. A. DECKER.

BATTERY.

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3 SHEETS—SHEET 3.

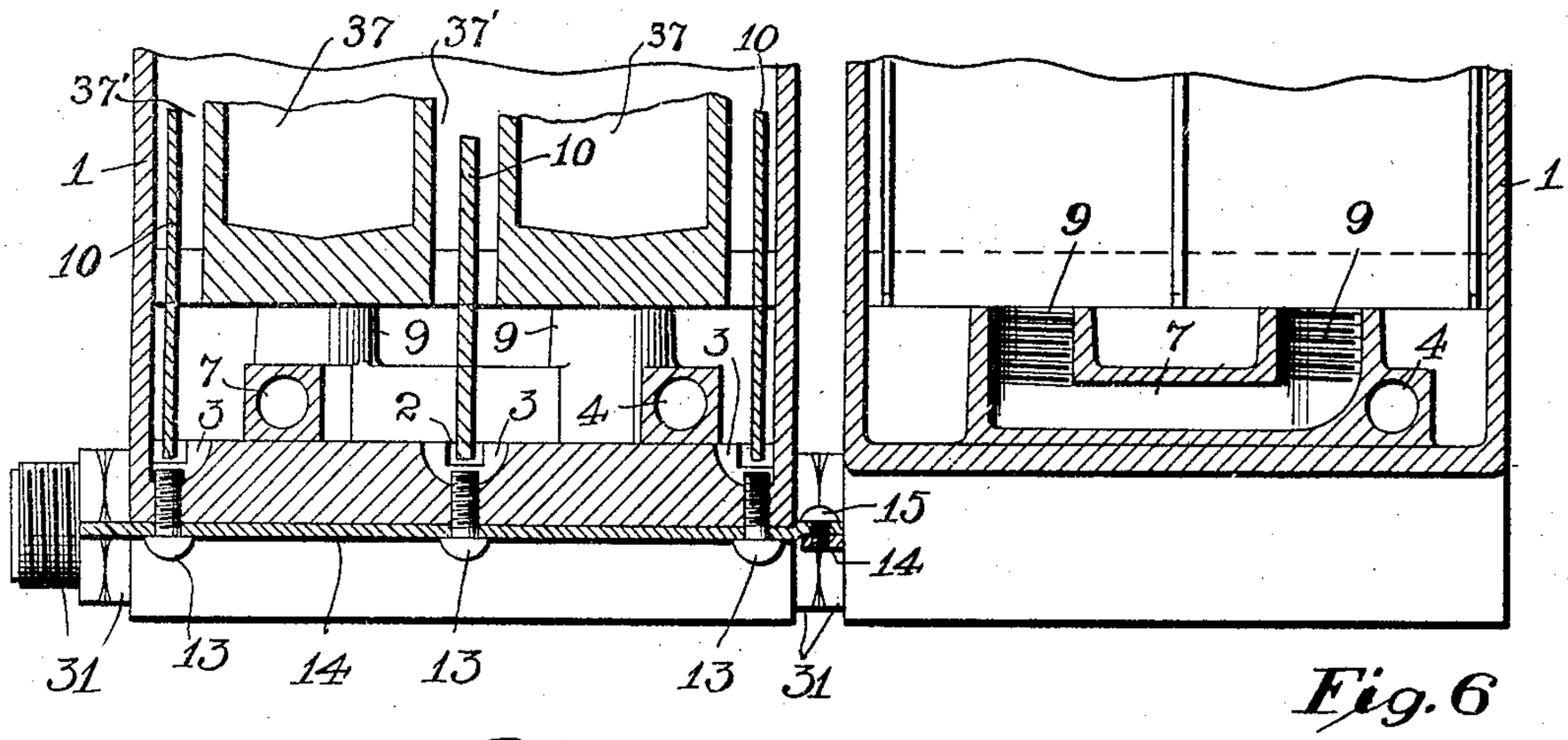

Fig. 6

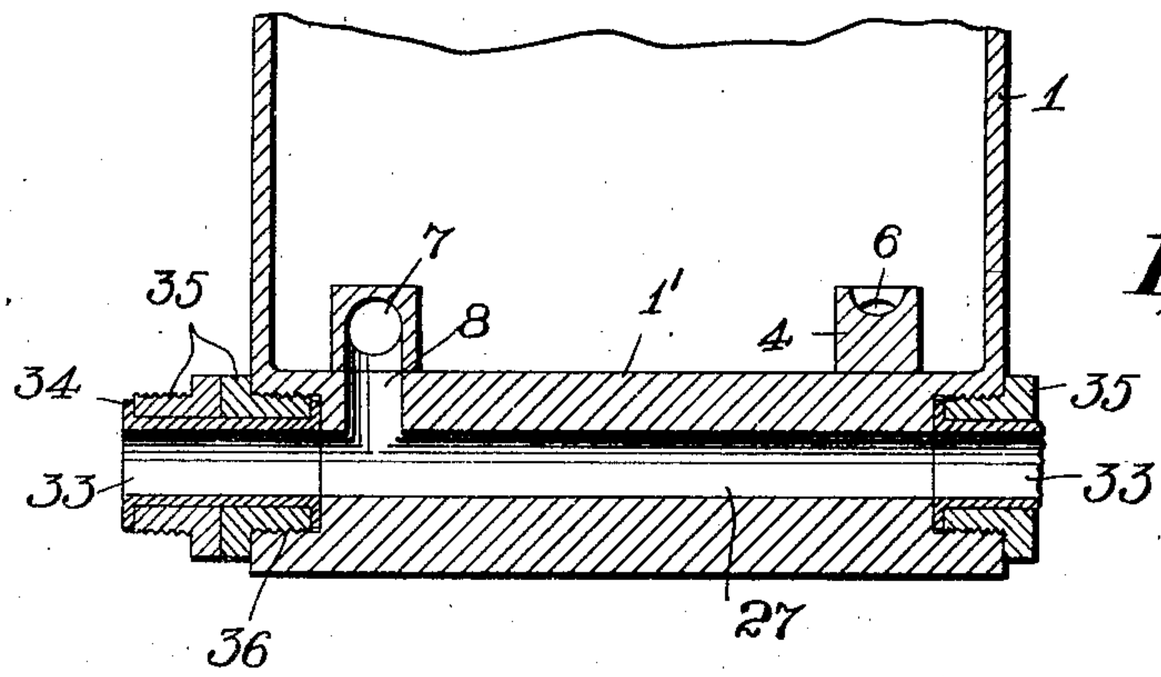

Fig. 7

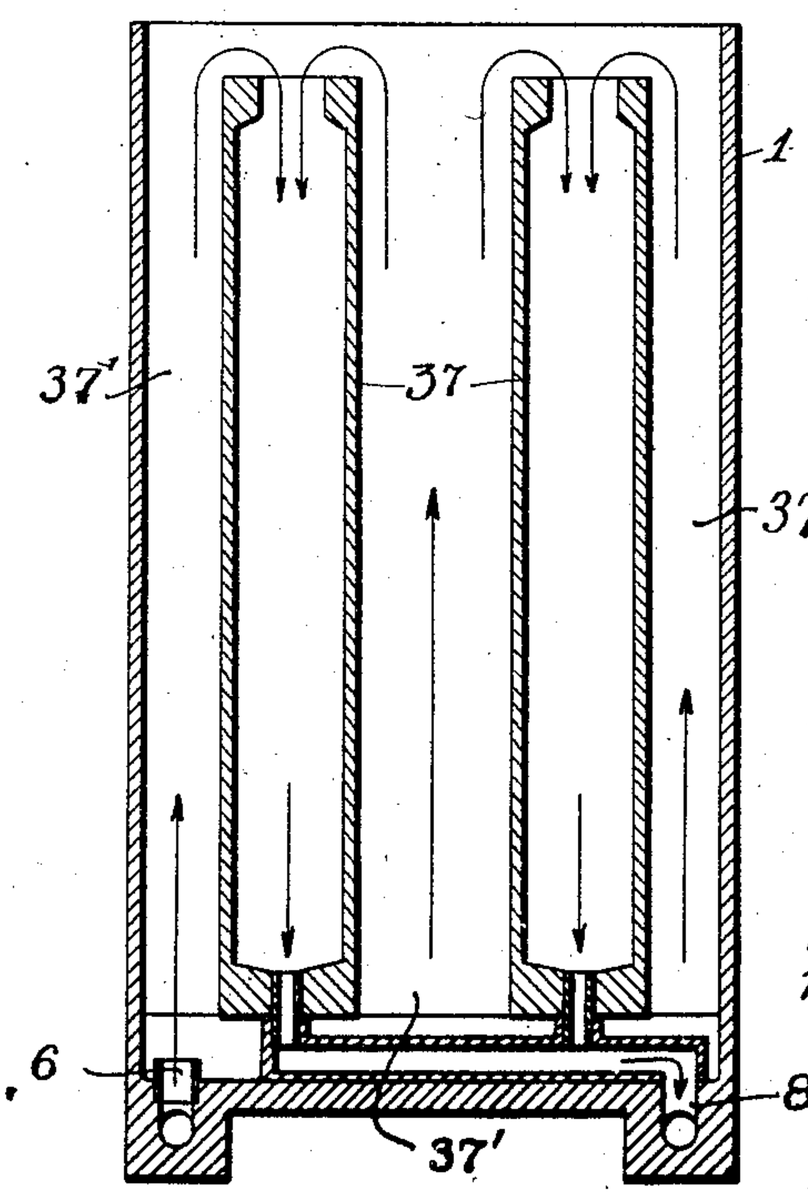

Fig. 8

WITNESSES:

Louis H. Buck.

Utley E. Crane Jr.

INVENTOR:

Frank A. Decker

BY

Charles N. Butler

ATTORNEY.

UNITED STATES PATENT OFFICE.

FRANK A. DECKER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO DECKER ELECTRICAL MANUFACTURING COMPANY, OF WILMINGTON, DELAWARE.

BATTERY.

No. 880,367. Specification of Letters Patent. Patented Feb. 25, 1908.

Application filed May 9, 1905. Serial No. 259,564.

To all whom it may concern:

Be it known that I, FRANK A. DECKER, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain Improvements in Batteries, of which the following is a specification.

This invention is designed to provide a battery having cells with improved means for charging, withdrawing and circulating the solutions and making the electrical connections, the apparatus being readily constructed, connected and separated and efficient in operation.

The nature and characteristic features of the improvements will more fully appear by reference to the following description and the accompanying drawings in illustration thereof, of which:

Figure 1 is a plan view of a pair of connected cells embodying the improvements: Fig. 2 is a vertical sectional view of the bottom of a cell, taken on the line 2—2 of Fig. 1, showing a section of an electrode therein: Fig. 3 is a vertical sectional view of the bottom of a cell, taken on the line 3—3 of Fig. 2: Fig. 4 is a plan view of two connected cells embodying a modified form of liquid conduits and connections: Fig. 5 is a vertical sectional view of the bottom of a cell taken on the line 5—5 of Fig. 4: Fig. 6 is a vertical sectional view of the bottom of two connected cells, taken on the line 6—6 of Fig. 4, showing electrodes and compartments thereof: Fig. 7 is a vertical sectional view of the bottom of a cell, taken on the line 7—7 of Fig. 4: and Fig. 8 is a transverse vertical sectional view showing diagrammatically a cell divided into two sets of compartments with the several compartments of each set connected with a conduit.

In the apparatus, the respective cells comprise the envelops 1, suitably composed of hard rubber, having in their bases 1′ depressions comprising the channels 2 with pits 3 in the bottom thereof, the insulating closed conduit 4 with the exterior port 5 and the interior port 6, and the insulating closed conduit 7 with the exterior port 8 and the interior ports 9.

The conduits 4 and 7, of small caliber and length approximately that of the cell so that solution therein shall have high electrical resistance are formed separately from the base 1′ and are cemented thereto above the general level thereof. The ports 9 communicate with the porous cups 37 through the bottoms thereof, so that the conduit 7 communicates with a plurality of such cups or compartments. The compartments 37′, exterior to the cups and formed thereby, communicate freely beneath them, the bottoms of the cups being elevated above the general level of the bottom of the cell.

The zinc electrodes 10, suitably held in place by the shoulders 11 and the lugs 12 on the interiors of the cells, have the contracted feet 10′ depending into the channels 2 adapted to make contact with the mercury deposited therein.

Conducting devices in the form of screws 13 engage the terminal conducting strips 14 with the bottom of the respective cells and extend into mercury deposited in the respective pits 3, by which the electrodes are electrically connected in multiple with the terminal members 14, these members of juxtaposed cells being connected by binding screws 15.

As shown in Figs. 1, 2 and 3, the cells being placed together, the exterior ports 5 of the several conduits 4 communicate with a main conduit 16 by the branches 17 thereof, the latter having flanges to engaged by sleeve nuts 19 in sockets 20 of the base, and the exterior ports 8 of the several conduits 7 communicate with the main conduit 21 by the branches 22 thereof, the latter having flanges 23 held in sockets 24 of the base by sleeve nuts 25.

As shown in Figs. 4 to 7, the ports 5 and 8 may communicate respectively with main conduits 26 and 27 formed in the base members 28, the corresponding conduits 26 of juxtaposed cells being connected by separable tubes 29 having thereon flanges 30 engaged by sleeve nuts 31 in sockets 32 of the base members, and the corresponding conduits 27 being connected in a similar manner by the separable tubes 33 having flanges 34 thereon engaged by sleeve nuts 35 in sockets 36.

As shown in Fig. 8, the apparatus may be used with a single solution, in which case the solution is charged through the port 6, rises to the top of the cups or compartments 37, washes down the sides thereof as they are filling, and may be drawn off through the port 8.

By the foregoing constructions I am very readily enabled to assemble or separate the cells and their several parts and to distribute the solutions from main conduits through leak proof connections directly to a plurality of cells each having therein insulating minor conduits respectively distributing to a plurality of compartments, providing a compact, practical and efficient scheme for handling the solutions.

Having described my invention, I claim:—

1. In a battery, a cell having a base, an insulating conduit connected with said base, a plurality of compartments connected to said conduit, electrodes in said compartments, depressions in said compartments which receive the bottoms of said electrodes, a conducting device extending through said base in registration with each of said depressions, and a conducting device attached to the exterior of said base in contact with each of said first conducting devices.

2. In a battery, a plurality of juxtaposed cells, an insulating conduit within the bottom of each cell, and an exterior main conduit having flanged branches with nuts thereon, said cells having sockets wherein said flanged branches are secured by said nuts so that said main conduit communicates with said interior conduits.

3. In a battery, a cell having a base with a set of interior depressions therein, an exterior conductiing strip, conducting screws passing through said strip and base into the respective depressions, and electrodes within said cells having depending parts disposed in said depressions.

4. In a battery, a cell, a base with parallel depressions therein, electrodes having parts disposed in said depressions, a conducting strip exterior to said base, screws passing through said strip and said base into said depressions whereby said electrodes are adapted to be connected in multiple, insulating conduits within said cell, a plurality of cups connected with one of said conduits, and compartments formed by and exterior to said cups, said compartments communicating with the other of said conduits.

In testimony whereof I have hereunto set my hand this 6th day of May, 1905, in the presence of the subscribing witnesses.

FRANK A. DECKER

Witnesses:
ROBERT JAMES EARLEY
LOUIS H. BUCK.