No. 674,930. Patented May 28, 1901.

M. MAURAN.

ELECTROLYTIC CELL.

(Application filed Mar. 26, 1900.)

(No Model.) 4 Sheets—Sheet 1.

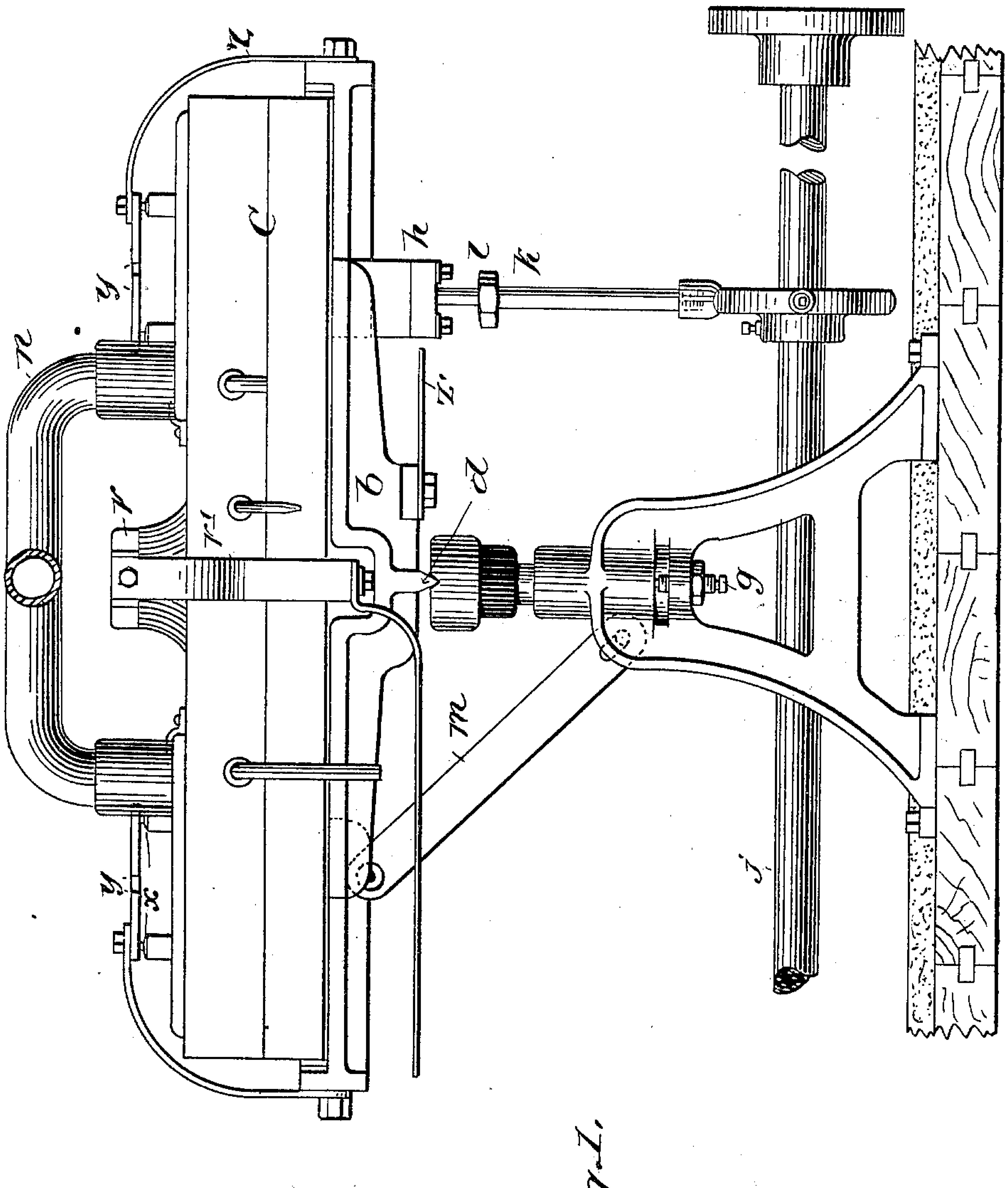

Fig. 1.

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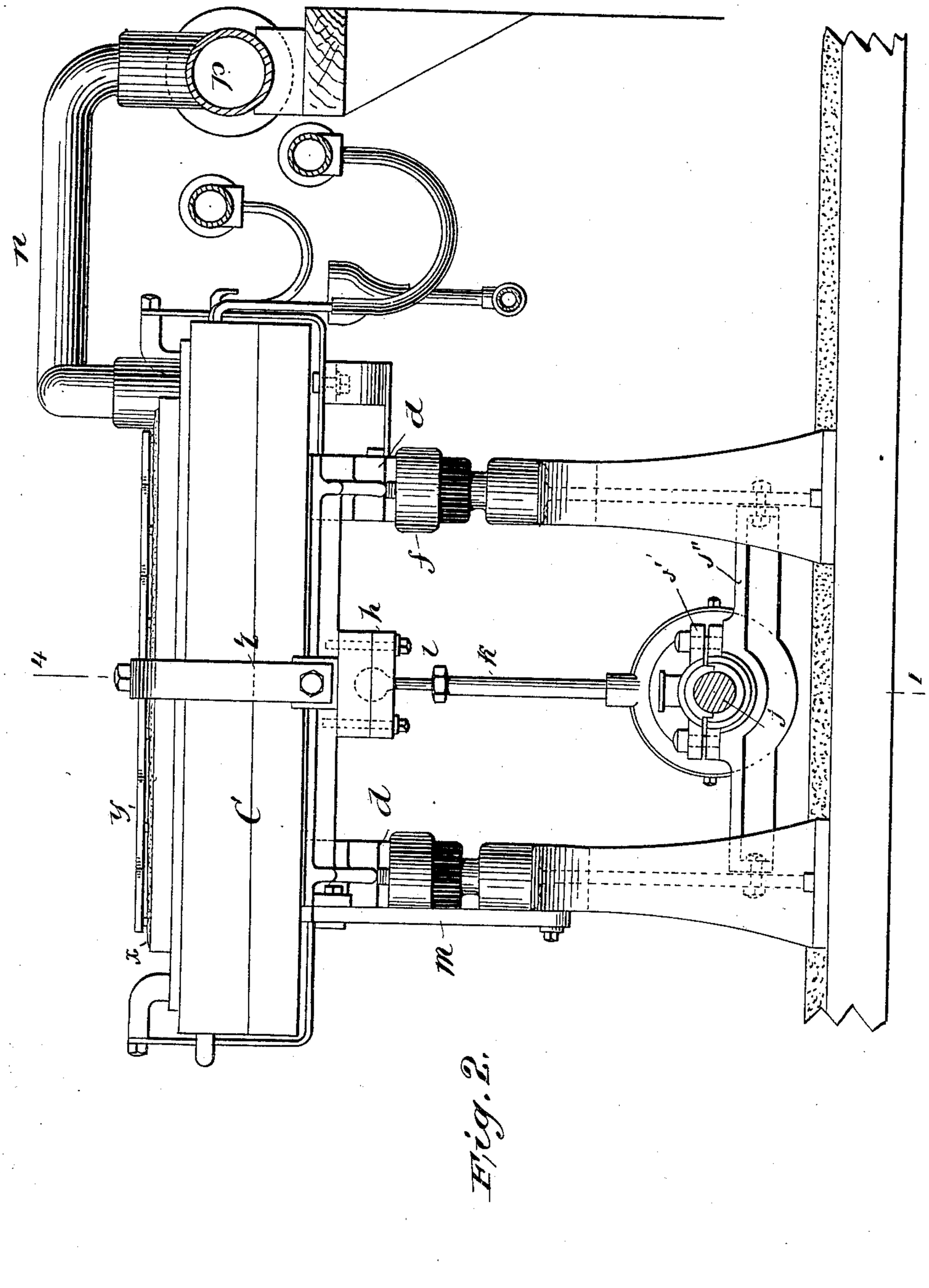

Fig. 2.

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(No Model.) 4 Sheets—Sheet 3.

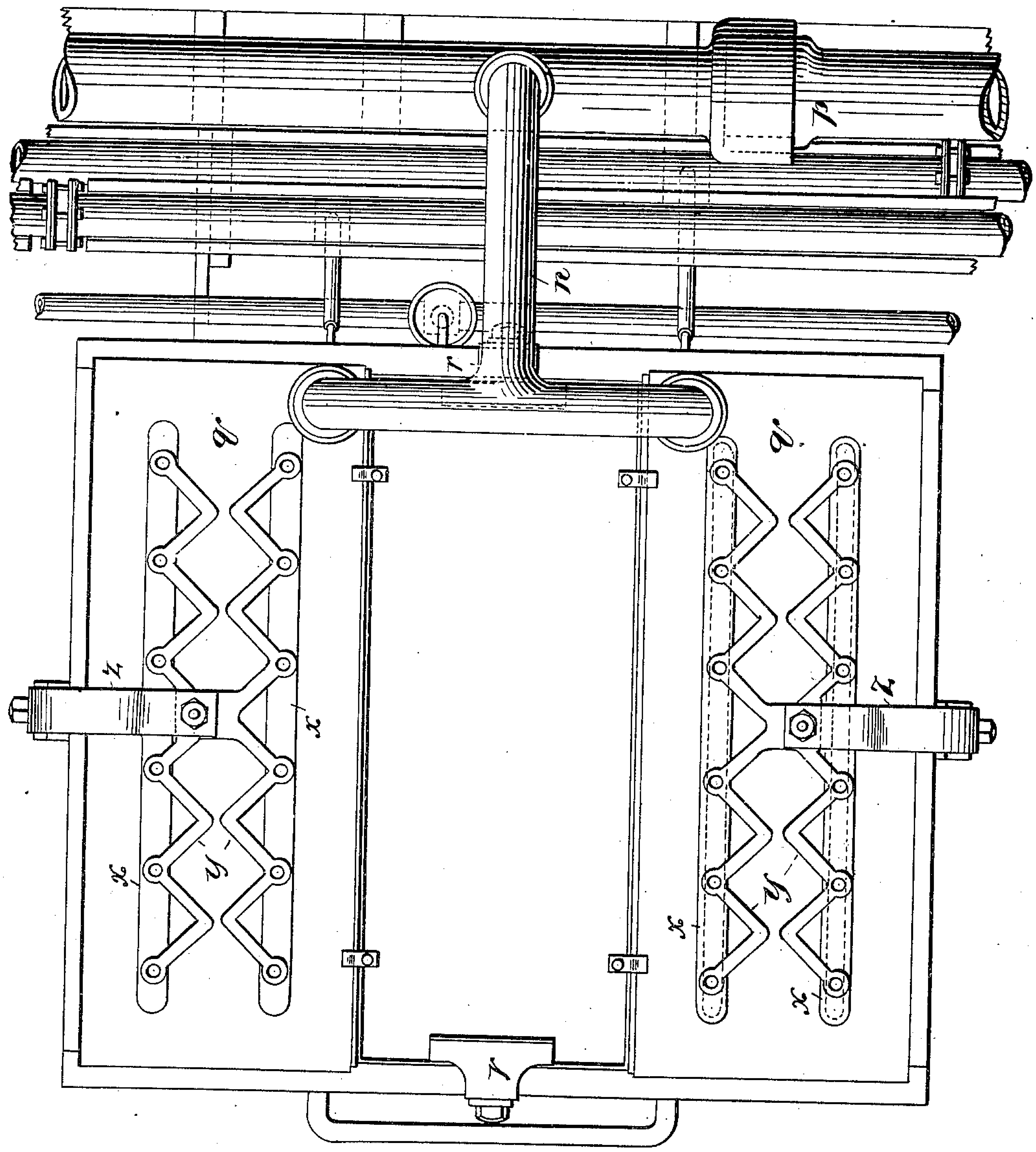

Fig. 3.

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(Application filed Mar. 26, 1900.)

(No Model.)

4 Sheets—Sheet 4.

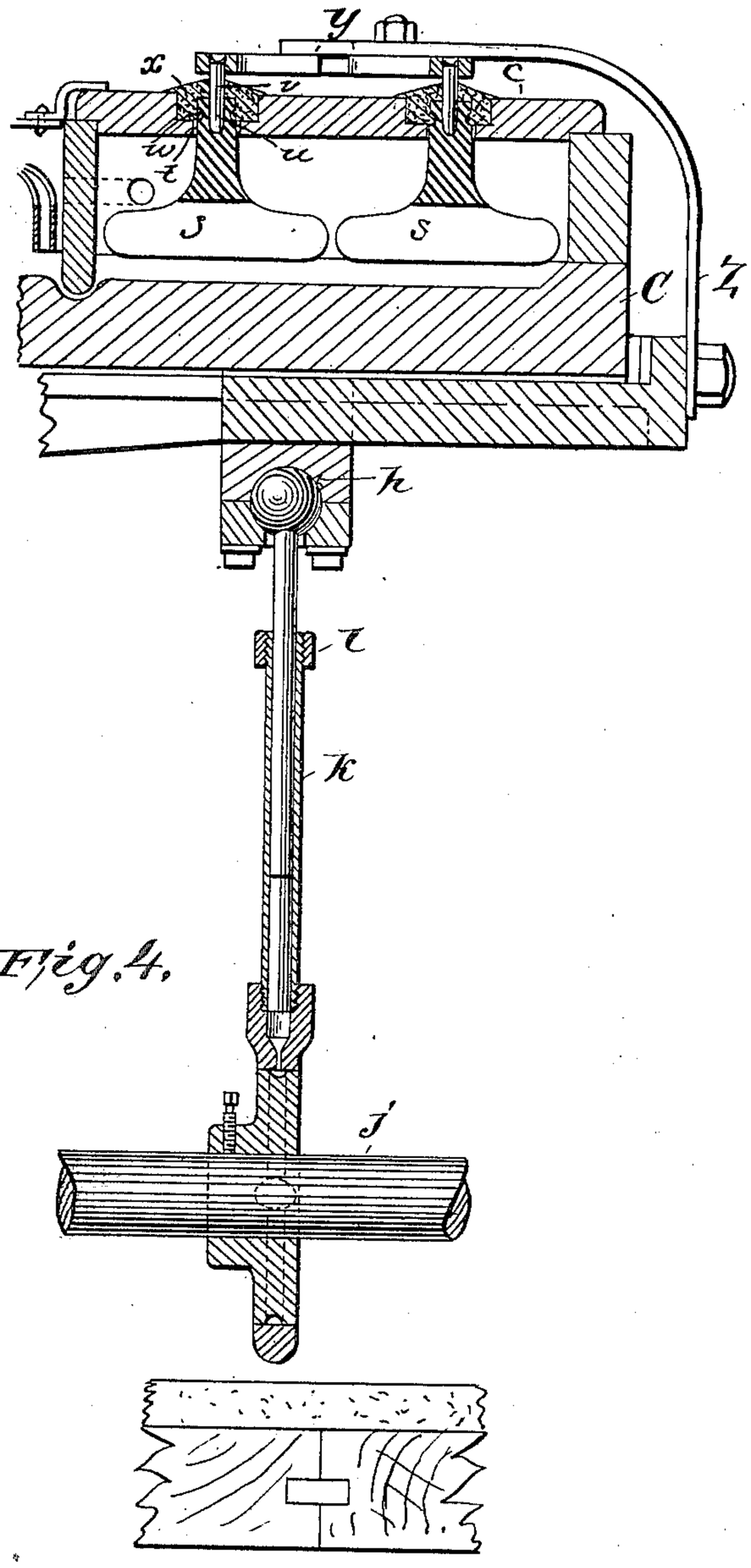

Fig. 4.

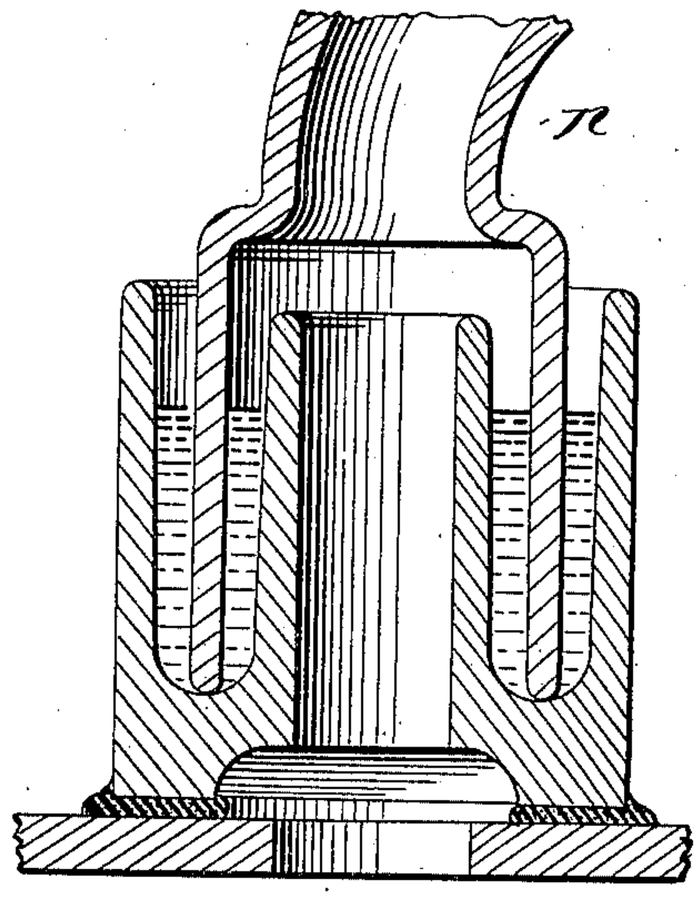

Fig. 5.

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UNITED STATES PATENT OFFICE.

MAX MAURAN, OF NIAGARA FALLS, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENTS, TO CASTNER ELECTROLYTIC ALKALI COMPANY, OF VIRGINIA.

ELECTROLYTIC CELL.

SPECIFICATION forming part of Letters Patent No. 674,930, dated May 28, 1901.

Application filed March 26, 1900. Serial No. 10,220. (No model.)

To all whom it may concern:

Be it known that I, MAX MAURAN, a citizen of the United States, with residence and post-office address at Niagara Falls, New York, have invented certain new and useful Improvements in Electrolytic Cells, (Case No. 3,) of which the following is a description, referring to drawings which accompany this specification.

The invention is especially related to oscillating cells designed for the electrolytic decomposition of common salt and other compounds of the halogens and the alkalies. Examples of such cells are set forth in the United States patents to Castner, Nos. 518,135 and 528,322; but the invention is not restricted to such use.

The object of the invention is to improve the mounting, operation, and connections of the cell.

In the drawings, Figure 1 is an elevation of the improved cell as seen from the side near the stationary brine and gas conducting pipes. Fig. 2 is an elevation at right angles to Fig. 1. Fig. 3 is a plan view. Fig. 4 is a detail in section of part of the rocking mechanism. Fig. 5 is a detail of the gas-educting connection.

The special form of anode shown in Fig. 4 forms no part of my present invention, but is described and claimed in a divisional application filed June 14, 1900, Serial No. 20,264.

Throughout the drawings like letters of reference indicate like parts.

The cell *c*, which is preferably rectangular, is mounted in a cast-iron bed or frame *b*, provided with two or more knife-edges *d*, which rest in channels in suitable insulators *f*. It must be understood that I am describing only one preferred embodiment of my invention without enumerating the many possible variations. The knife-edges *d* may be directly under or slightly displaced from the center of gravity of the cell, so that the cell may rock easily upon the knife-edges. These so-called "knife-edges" may be as sharp as is consistent with the necessary strength to support the very considerable weight of the cell. Each of the insulators or supports *f* is vertically adjustable by a screw *g* or other suitable means. The cell is also supported and the rocking motion given to it at a third point, where an insulating or insulated ball-and-socket joint *h* is provided. The ball thereof forms one end of a pitman or eccentric rod operated by the shaft *j*. The cell is vertically adjustable at the ball-and-socket connection *h* by means of the extensible connection *k*, one member being a split sleeve, which embraces and is adjustable upon the other member of the extensible connection, as seen in the drawings. When the proper adjustment has been obtained, the connection is fixed by screwing up the nut *l*, which confines the split sleeve against the inner member or rod and fixes the two parts together by friction. Preferably the split sleeve is secured directly to the strap of the eccentric, while the inner member or rod of the extensible connection is made in one piece with the ball *h*, as shown in Fig. 4. Of course these relations may be inverted and other extensible connections may in the broad aspect of the invention be used. The shaft *j* runs in bearings *j'*, which are adjustably fastened to the bracket *j''*, forming part of the stationary supporting-frame. By this design the distance between the cell-frame *f* and rocking-shaft *j* remains invariable when all has once been adjusted. In prior arrangements it has been common to support the shaft-bearings placed on the floor or at least outside of the bearing-frame, thereby causing trouble on account of the bearings getting out of line and altering the level of the cell. A wooden link *m*, with a loose slot connection at one end, is provided, so that even when the support of the cell at the ball-and-socket joint *h* is removed the cell cannot upset. The lost motion offered by the slot in the link *m* prevents it interfering with the normal rocking motion of the cell. It will be noticed that by loosening the nut *l* and also the link *m* the cell may be entirely freed from its three points of support. Furthermore, because of the separate adjustments of each of these three points the level of the cell is universally adjustable.

I have invented and adopted a gas connection of a form that is free to move and is supported at three points only, so as to allow a relative rising and falling of any of the three points without interference with the cells.

This connection forms the subject of a divisional application filed October 10, 1900, Serial No. 32,623. In the drawings this triple connection is shown of the T-form *n*. The shank of the T extends down into a water or liquid seal, as shown in Fig. 5, upon the stationary gas-educting pipe *p*. The two arms of the T turn down and extend, respectively, into the two similar seals in the covers *q* of the two gas-producing compartments of the cell. Preferably these seals or lutes are so designed that the free passage-way for the gas is of equal diameter within the T and within the seal, as shown in section in Fig. 5.

A cell provided with my improvements combines adjustability in all vertical planes, great durability, ease, and accessibility for repairs, and great facilities for quickly disconnecting and entirely removing the cell when desired without interfering with the neighboring cells.

Having now set forth one preferred form of my invention and explained in what manner it may be applied and employed, I claim, without enumerating the many modifications that may be made without departing from the principles of the invention, the following several characteristic features:

1. In an electrolytic oscillating cell, and in combination with the electrical connection of the cell, an adjustable insulating-mounting comprising an insulating-block having a recess, means for vertically adjusting said block, and a downwardly-directed knife-edge bearing beneath the oscillating portion of the cell which rests in the recess in the said block, substantially as set forth.

2. An oscillating cell, mounted on three independent supports; means for severally adjusting said supports, and means for vibrating one of the said supports to rock or oscillate the cell, substantially as set forth.

3. In an electrolytic cell mounted to freely oscillate on suitable supports, as a safety device, mechanical means consisting of a link having a slot-and-pin attachment to the cell to permit lost motion, substantially as set forth.

4. In an electrolytic oscillating cell, and in combination with stationary supporting-frames therefor upon which the cell is movably mounted, an actuating-shaft for the cell mounted in bearings adjustably secured in the said frame and actuating connections from the shaft to the cell, substantially for the purposes set forth.

5. In an electrolytic oscillating cell, and in combination with stationary supporting-frames therefor upon which the cell is movably mounted, an actuating-shaft for the cell mounted in bearings, actuating connections from the shaft to the cell, and means for adjusting the supports of the cell upon the frame, substantially for the purposes set forth.

6. In combination with an electrolytic cell, three or more supports therefor, upon two of which the cell is free to oscillate, and the third of which comprises a rod connected to the cell by a ball-and-socket connection and means for vertically reciprocating the rod, substantially as set forth.

7. In combination with an electrolytic cell, three or more supports therefor, upon two of which the cell is free to oscillate, and the third of which comprises a rod connected to the cell by a ball-and-socket connection and means for vertically reciprocating the rod, the said rod having an extensible connection for adjusting the inclination of the said electrolytic cell upon its three supports, substantially as set forth.

8. In combination, an electrolytic oscillating gas-producing cell mounted on three supports, means for vertically reciprocating one of the said supports to rock the cell, and a gas-educting pipe making an articulate connection with the said cell and resting loosely in one or more lutes or seals provided therefor upon the said cell, substantially as set forth.

Signed this 9th day of March, 1900, at New York, N. Y.

MAX MAURAN.

Witnesses:
EDWARD A. FRESHMAN,
HENRY T. MORTON.