

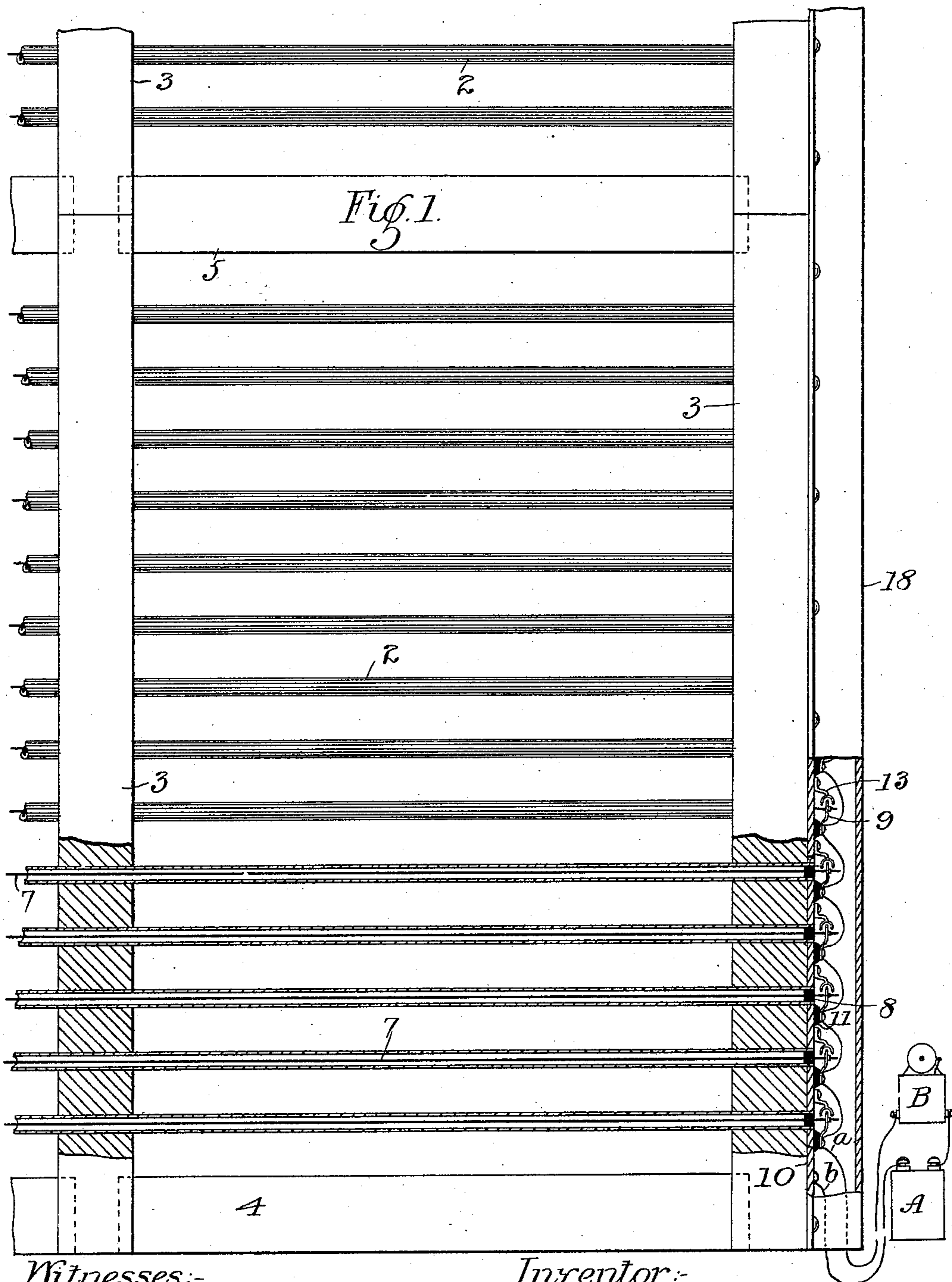
(No Model.)

4 Sheets—Sheet 1.

D. K. OSBOURNE.
JAIL OR VAULT CONSTRUCTION.

No. 485,506.

Patented Nov. 1, 1892.



Witnesses:-

W. H. Caldwell.
A. W. W. W. W.

Inventor:-

David K. Osbourne,
per. Paul D. Merwin
Attorneys.

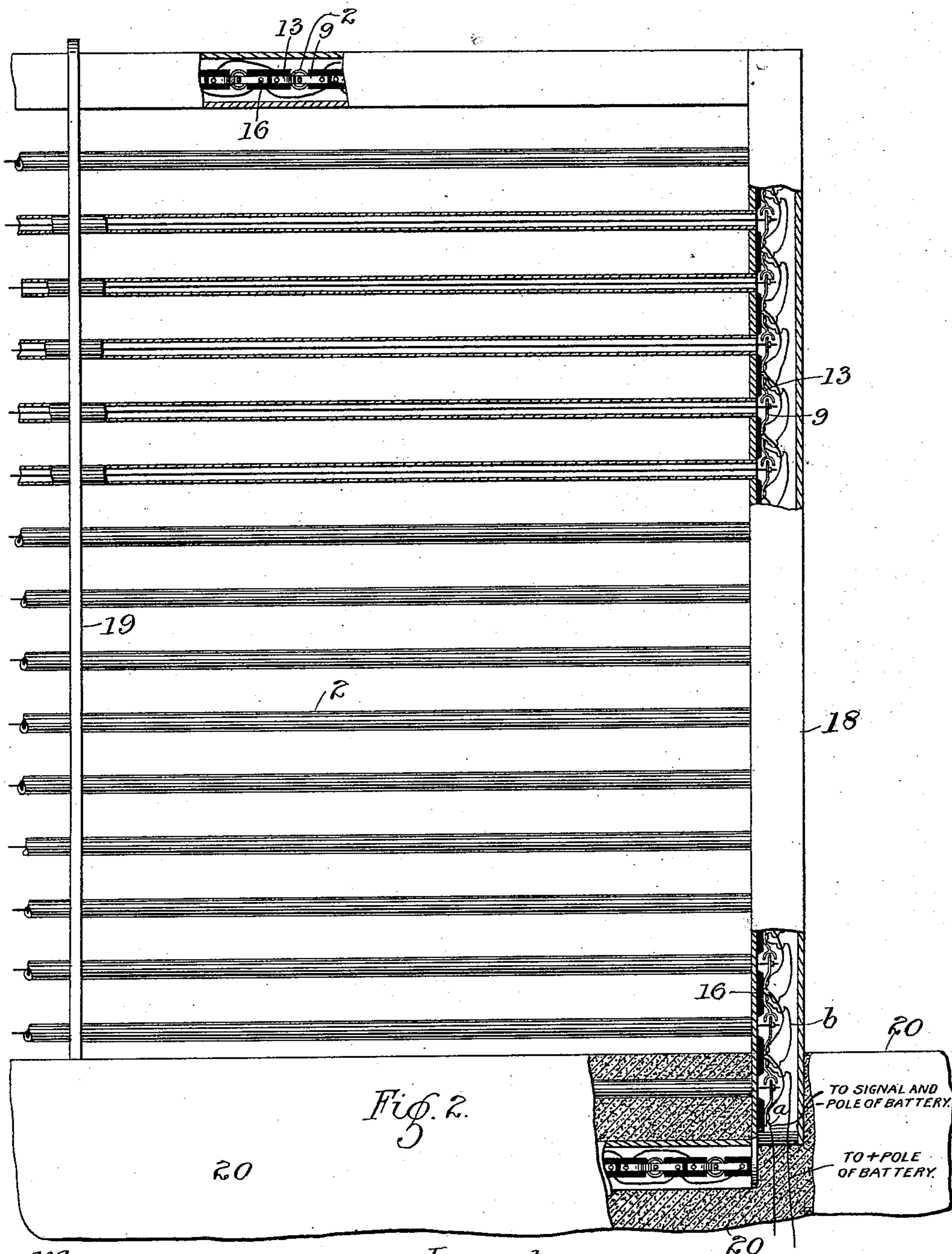
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4 Sheets—Sheet 2.

D. K. OSBOURNE.
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No. 485,506.

Patented Nov. 1, 1892.



Witnesses:-

W. R. Caldwell.
A. Max Welch

Inventor:-

David K. Osbourne,
per Paul Murray
Attorneys.

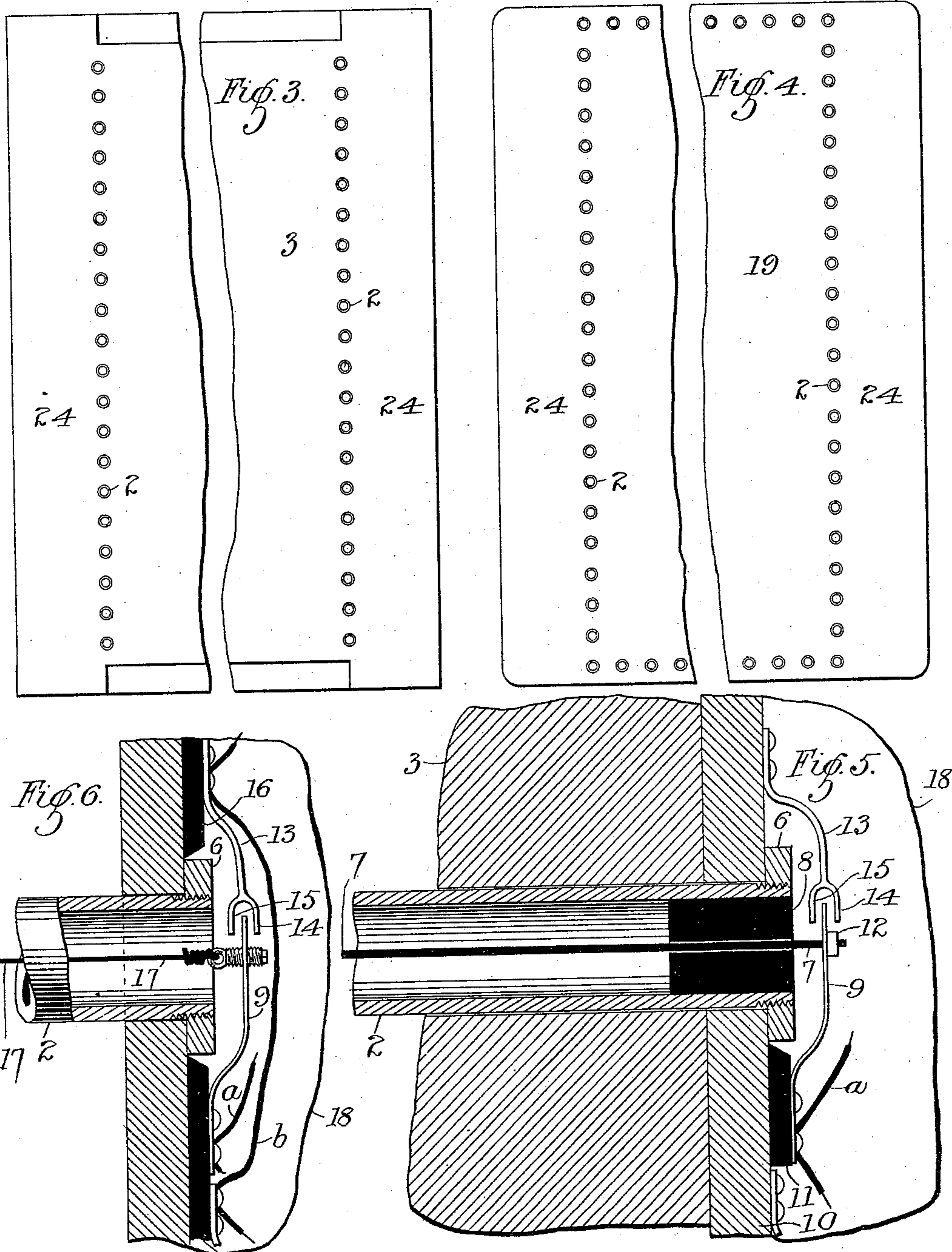
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4 Sheets—Sheet 3.

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JAIL OR VAULT CONSTRUCTION.

No. 485,506.

Patented Nov. 1, 1892.



Witnesses:—
C. R. Baldwin
A. W. Van Velsch.

Inventor:—
David K. Osbourne,
per. Paul Murwin
Attorneys.

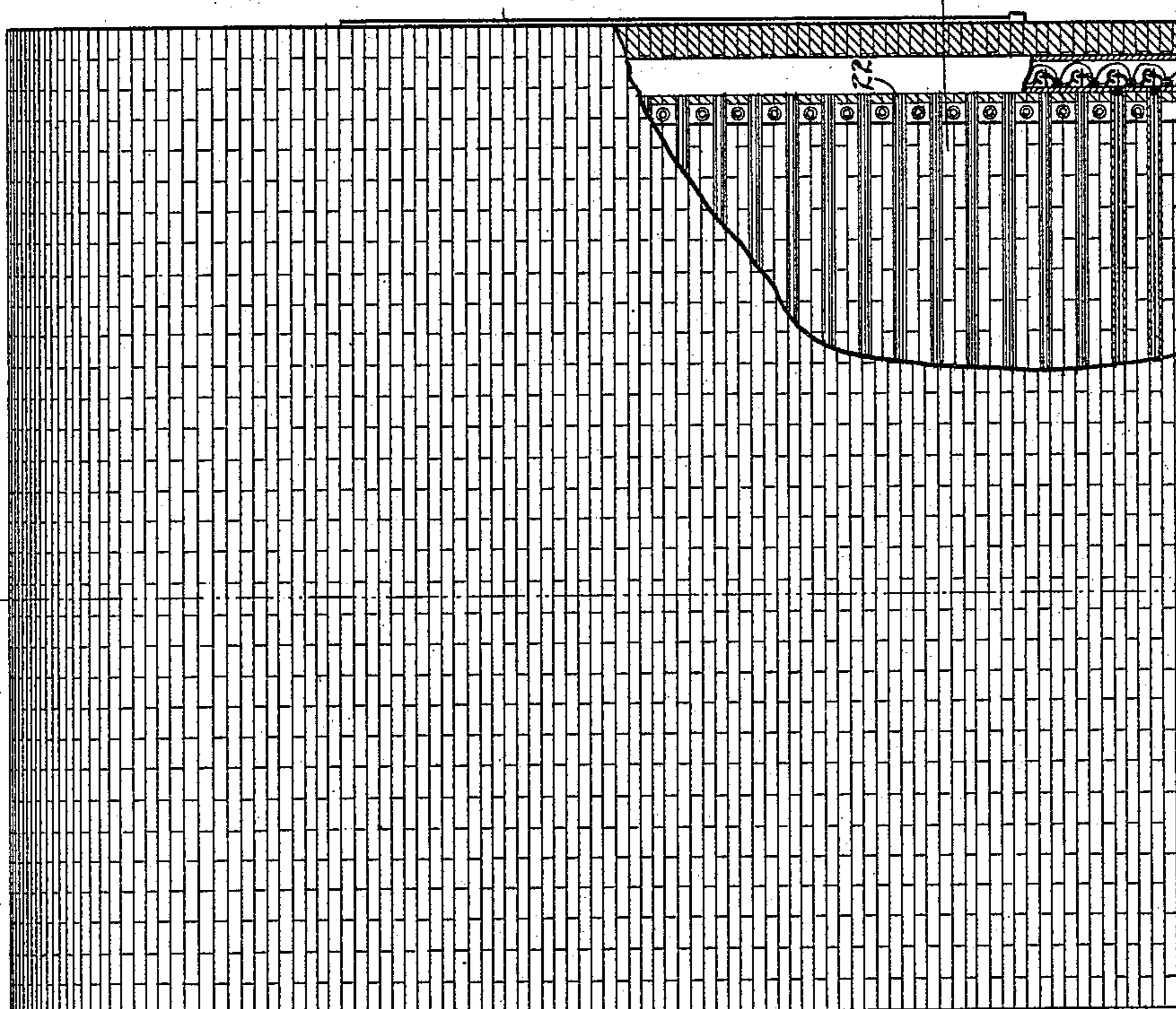
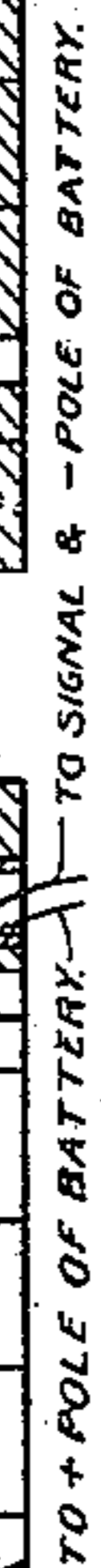
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4 Sheets—Sheet 4.

D. K. OSBOURNE.
JAIL OR VAULT CONSTRUCTION.

No. 485,506.

Patented Nov. 1, 1892.



Witnesses:-

C. R. Baldwin
Arthur Vachon

Inventor:-

David K. Osbourne,
per. Paul Durbin
Attorneys.

UNITED STATES PATENT OFFICE.

DAVID K. OSBOURNE, OF ST. PAUL, MINNESOTA.

JAIL OR VAULT CONSTRUCTION.

SPECIFICATION forming part of Letters Patent No. 485,506, dated November 1, 1892.

Application filed September 8, 1891. Serial No. 405,116. (No model.)

To all whom it may concern:

Be it known that I, DAVID K. OSBOURNE, of St. Paul, Ramsey county, Minnesota, have invented certain Improvements in Jail or Vault Construction, of which the following is a specification.

My invention relates to improvements in the construction of burglar-proof vaults, jails, and similar structures, its object being to provide a structure which is adequately protected by electrical devices against attempts to break through it; and it consists in providing as a main and essential part of the structure systems or series of metallic pipes and in arranging in the pipes wires under adjustable tension, and connecting to the ends of these wires other wires arranged in open circuit with a battery and signaling apparatus, whereby in case of the severing of the wire in the cutting of the pipe the circuit is closed and an alarm is sounded.

My invention further consists in the construction and combination hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 shows a sectional rear elevation of one of a series of cells, part of the structure of the adjacent cell of the series and of those in the tier above being shown, the partition-walls being of granite and the end walls of metallic pipes extending through openings in the granite, and showing, also, the wires arranged in the pipes and their electrical connections. Fig. 2 is a similar view of a modified construction, showing one cell of a single series in which the structure is entirely metallic and showing, also, a different system of electrical connections. Fig. 3 is a detail of the ends of a granite cell-partition, showing the openings for the pipes which form the end walls of the cell. Fig. 4 is a similar detail of the ends of a sheet-steel cell-partition. Fig. 5 is a sectional detail of the electrical contacts and connections, with the wire arranged in one of the pipes, the wire being insulated from the structure and connected to one pole of the battery and the structure itself being in electrical connection with the other pole of the battery. Fig. 6 is a similar detail showing a modified construc-

tion, in which the insulated spring connected to the wire in the pipe is in electrical connection with one pole of the battery, while its insulated contact is in electrical connection with the other pole of the battery. Fig. 7 is a sectional side elevation of a bank-vault, showing the system of pipes arranged in the air-space between the outer and inner walls of the structure and their electrical attachments; and Fig. 8 is a sectional end elevation of the same.

In jails and similar institutions provided with a large number of cells the cells are usually arranged in horizontal series of two or more tiers above each other, in which case the supporting-walls of the structure are usually of granite slabs, with open iron or steel work for the end walls of the cells, as shown in Fig. 1. With a smaller number of cells a single tier suffices, in which case the walls may be made wholly of open iron or steel work, as is shown in Fig. 2. For this metallic open-work in my improved construction I employ a system of iron or steel pipes protected by efficient open-circuit electrical apparatus. This structure forms no part of my present invention, but is covered and included in my prior application, filed August 6, 1891, Serial No. 401,937.

In the drawings, 2 represents the pipes which form the open-work wall of the cell; 3, the granite slabs which serve as side walls and partitions for the cells; 4, the slabs forming the floor of the lower tier of cells, and 5 those forming the ceiling of one tier and the floor of the tier immediately above. The pipes 2 are carried horizontally through openings in the vertical slabs 3, the ends of the pipes being secured at the ends of the structure in any suitable manner, as by means of collar-nuts 6. In order to protect the pipes from being tampered with in the endeavor to break through the structure, I arrange in each of them a bare wire 7, preferably of copper or other good electric-conducting material. This wire is supported at each end of the pipe in an insulated plug 8, so as to be held out of contact with the pipe. The end of the wire is passed through a spring 9, which has suitable insulated support 11 upon the metallic bar or frame-piece 10. The wire is then

stretched to the required degree of tension by means of the nut 12, threaded upon its outer end and bearing upon the outer face of the spring, or by some equivalent connection.

5 By the use of springs of sufficient strength and by proper adjustment of the connection therewith the wires can be held under any desired degree of tension and entirely out of contact with the wall of the inclosing pipe.

10 I also secure upon the metallic frame of the structure and in electrical connection therewith a forked or yoke-shaped contact 13, the prongs 14 and 15 of which stand one on each side of the end of the spring 9, the adjustment of the nuts 12 being such that the spring is held normally intermediate of and

15 out of contact with the prongs. In case of tampering with the wire in any way, so as to move it longitudinally in either direction or sever it, the spring 9 is brought into contact with one of the prongs 14 or 15, so as to electrically connect the spring with the metallic structure and close the circuit therethrough. Similarly the spring is electrically connected

25 with the metallic structure if the pipe be bent so as to bring its wall into contact with the inclosed wire at any point or if in the attempted severing of the pipe the saw or file comes in contact with the wire, the tool thus closing a

30 circuit between the wire and pipe. With this system of electric connections the series of springs 9 is connected to the wire *a*, leading to one pole of a battery A or other source of electrical supply, while the metallic structure is similarly connected to the other wire *b* of

35 the battery. Any suitable alarm or signaling apparatus B being inclosed in the circuit with the battery, both being shown conventionally, when the circuit is closed in any of the ways

40 above indicated a signal will be sounded and the attempted breaking of the structure readily frustrated.

In Figs. 2 and 6 is shown a simpler and less-expensive electrical attachment for the

45 structure. With this construction the contact 13, as well as the spring 9, is insulated from the structure by means of the interposed insulating-block 16 and all the contacts are connected together in series with the wire *b*,

50 whereby the structure itself is not included in the circuit. Each pipe is then threaded with the wire 15, which may be of any material which has sufficient tensile strength. This wire is connected to the spring 9 and

55 held under tension in the same manner as has been described with reference to the wires 7. With this construction the only way in which the circuit is closed between the spring 9 and the contact 13 is by the severing of the wire

60 in the cutting of the pipe, so as to allow the spring to touch the prong 14, or by any undue strain upon the wire, by which the spring is drawn inward against the prong 15, simple contact between the wire and the pipe not

65 affecting the apparatus.

The above-described electrical attachments to the ends of the wires in the pipes are pref-

erably protected by means of a casing 18, which completely covers and guards them.

With the modified structure shown in Fig. 70 2 the partitions between the cells are made of steel plates 19, through openings in which the pipes are carried and held, the bottom of the structure being anchored in a bed of concrete 20. In order to isolate the occupants of the

75 cells as much as possible from each other and prevent communication between them, the ends 24 of the partition-walls, whether of stone or sheet metal, are extended beyond the face of the structure both front and rear, as

80 shown in the detail, Figs. 3 and 4, which effectually prevents conversation between prisoners in adjacent cells.

In the construction of bank-vaults, particularly those arranged with an inclosed dead- 85 air space 21, I protect the structure by inclosing in this space series of pipes 22, having electrical attachments, as above described, so that any attempted cutting through the inclosing walls 23 will be obstructed and pre-

90 vented in the same manner as the cell structure above described.

I claim—

1. In a structure of the class described, the combination, with the metallic pipes, of wires 95 threaded therethrough, insulated springs holding said wires under tension, contacts for said springs, and an open-circuit battery provided with a signaling apparatus and having one pole connected with said springs and the

100 other with said contacts, substantially as described.

2. In a device of the class described, the combination, with the pipes, of wires inclosed in said pipes under tension, electric attachments 105 connected to said wires and to an open-circuit battery, and a signaling apparatus in circuit with said battery, whereby a variation in the tension of any of said wires serves to close the circuit and sound an alarm, substan-

110 tially as described.

3. In a device of the class described, having a tubular metallic structure, the combination therewith of an open-circuit battery 115 having one pole connected to said structure, bare electric wires under tension arranged in but out of contact with the tubes of the structure and connected to the other pole of said battery, and means whereby upon the severing of any of said wires or a variation in its

120 tension the circuit is closed between it and said structure, substantially as described.

4. The combination, with the tubular metallic structure, of bare electric wires inclosed in but out of contact with the tubes thereof, 125 means for applying tension to said wires, and open-circuit electrical connections for said wires, and said structure having an included signaling apparatus, whereby the variation of the tension of said wires or contact be-

130 tween any of them and its inclosing tube will serve to close the circuit and give an alarm, substantially as described.

5. In a device of the class described, the

combination, with the tubular metallic structure, of an open-circuit battery and signaling apparatus, contacts upon said structure electrically connected, respectively, with the poles
5 of said battery, and wires under tension inclosed in said tubes, so connected to said contact as normally to hold the circuit open, but to cause or permit the circuit to be closed by a variation in the tension or severing of any
10 of said wires, substantially as described.

6. The combination, with the tubular metallic structure, the battery, and signaling apparatus, of connected series of terminals for said battery upon said structure and wires
15 under tension through the tubes, holding said terminals normally out of contact with each other, said terminals being adapted to make contact with each other upon a variation of tension or severing of said wires, substantially as described.
20

7. The combination of a tubular metallic structure, a signaling apparatus, and an open-circuit battery having one of its poles electrically connected to said structure, of a series of springs insulated from said structure and electrically connected to the other pole
25 of the battery and electric wires threaded through the tubes of the structure and held normally under tension and out of contact with the same by said springs, substantially as described.
30

8. The combination, with the tubular metallic structure, the signaling apparatus, and the battery having one pole connected to said
35 structure, of the series of springs electrically connected to the other pole of the battery and having insulated support upon said structure, the series of contacts for said springs electrically connected to the structure, the
40 wires threaded through said tubes and having adjustable connection to said springs, whereby the wires are held out of contact with the tubes by the tension of the springs,

and the springs separated from the contacts by the tension of the wires, substantially as
45 described.

9. In a device of the class described, the combination, with the inclosing walls of the structure, of the series of metallic pipes arranged therein, the battery and signaling ap-
50 paratus, the terminals for the poles of the battery connected with said structure, the wires threaded through said pipes and normally holding said terminals out of contact with each other, and adjustable means for
55 applying tension to said wires, substantially as described.

10. In a structure of the class described, the combination, with the tube in electrical connection with one pole of an open-circuit bat-
60 tery, of the electrical conductor supported rigidly in said tube, but not in contact therewith, and connected to the other pole of said battery, substantially as described.

11. In a structure of the class described, the
65 combination, with the tube in electrical connection with one pole of an open-circuit battery, of the insulated conductor supported within said tube and connected with the other pole of said battery, substantially as de-
70 scribed.

12. In a structure of the class described, the combination, with the tube connected with one pole of an open-circuit battery, of the electrical conductor rigidly supported in said
75 tube, but not in contact therewith, and connected with the other pole of said battery, and a signaling apparatus included in said battery-circuit, substantially as described.

In testimony whereof I have hereunto set
80 my hand this 4th day of September, 1891.

DAVID K. OSBOURNE.

In presence of—

T. D. MERWIN,
A. MAE WELCH.