

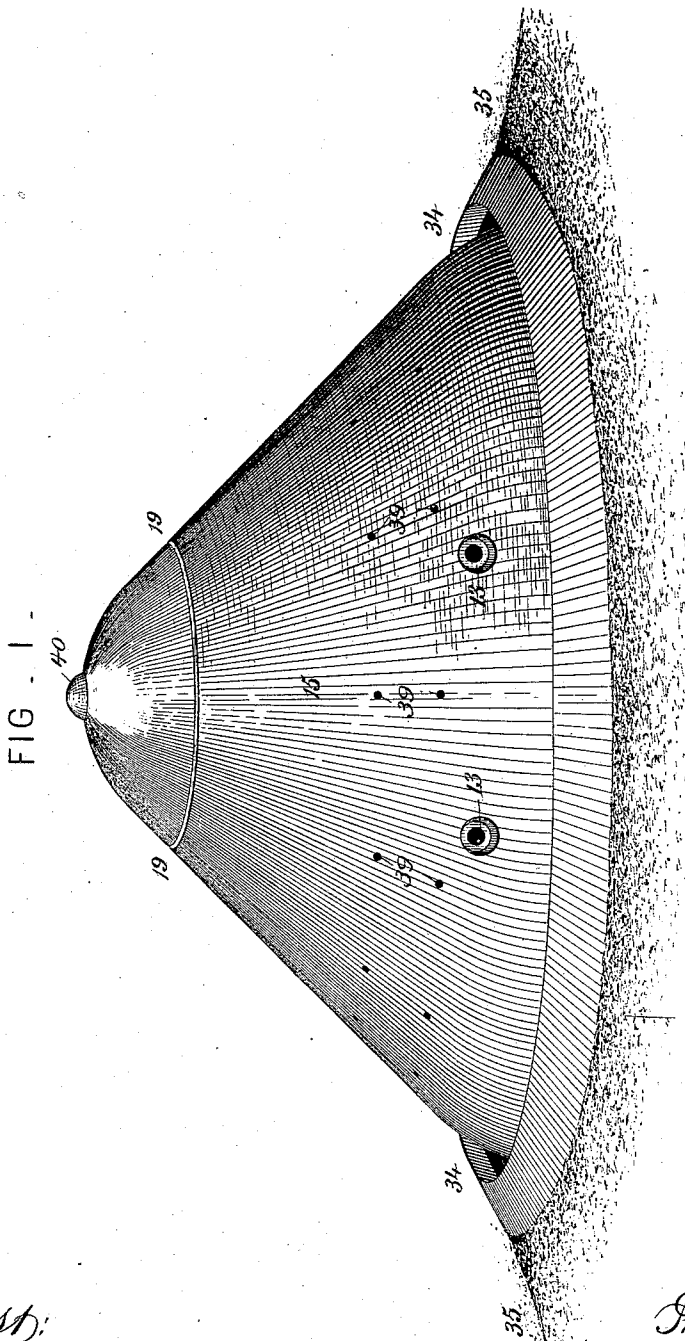
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5 Sheets—Sheet 1.

T. R. TIMBY.
REVOLVING TOWER FORTIFICATION.

No. 474,271.

Patented May 3, 1892.



Attest:
Geo. T. Smallwood,
Harry S. Rohrer.

Inventor:
Theodore R. Timby
By Knight Bros
Attys.

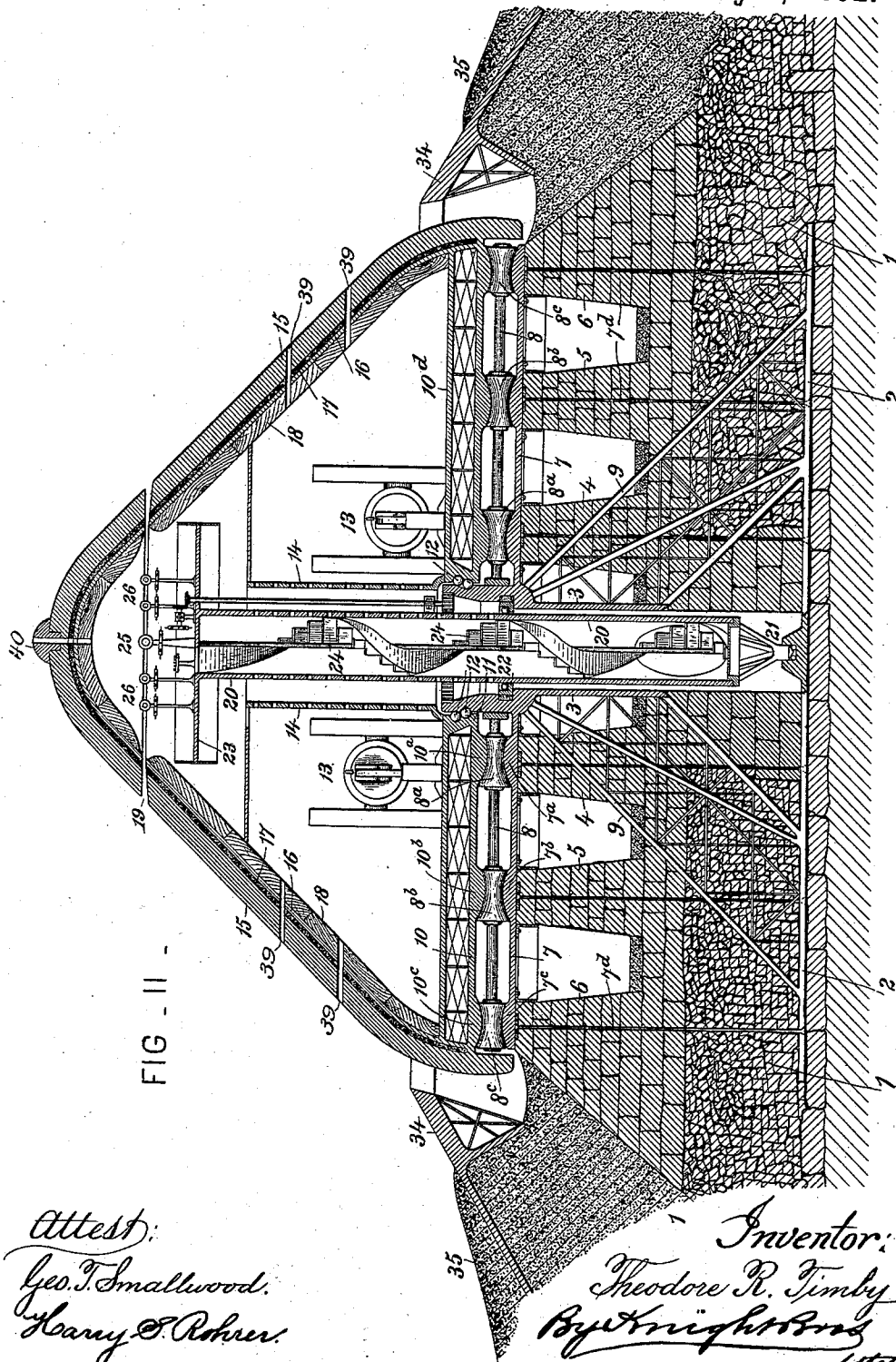
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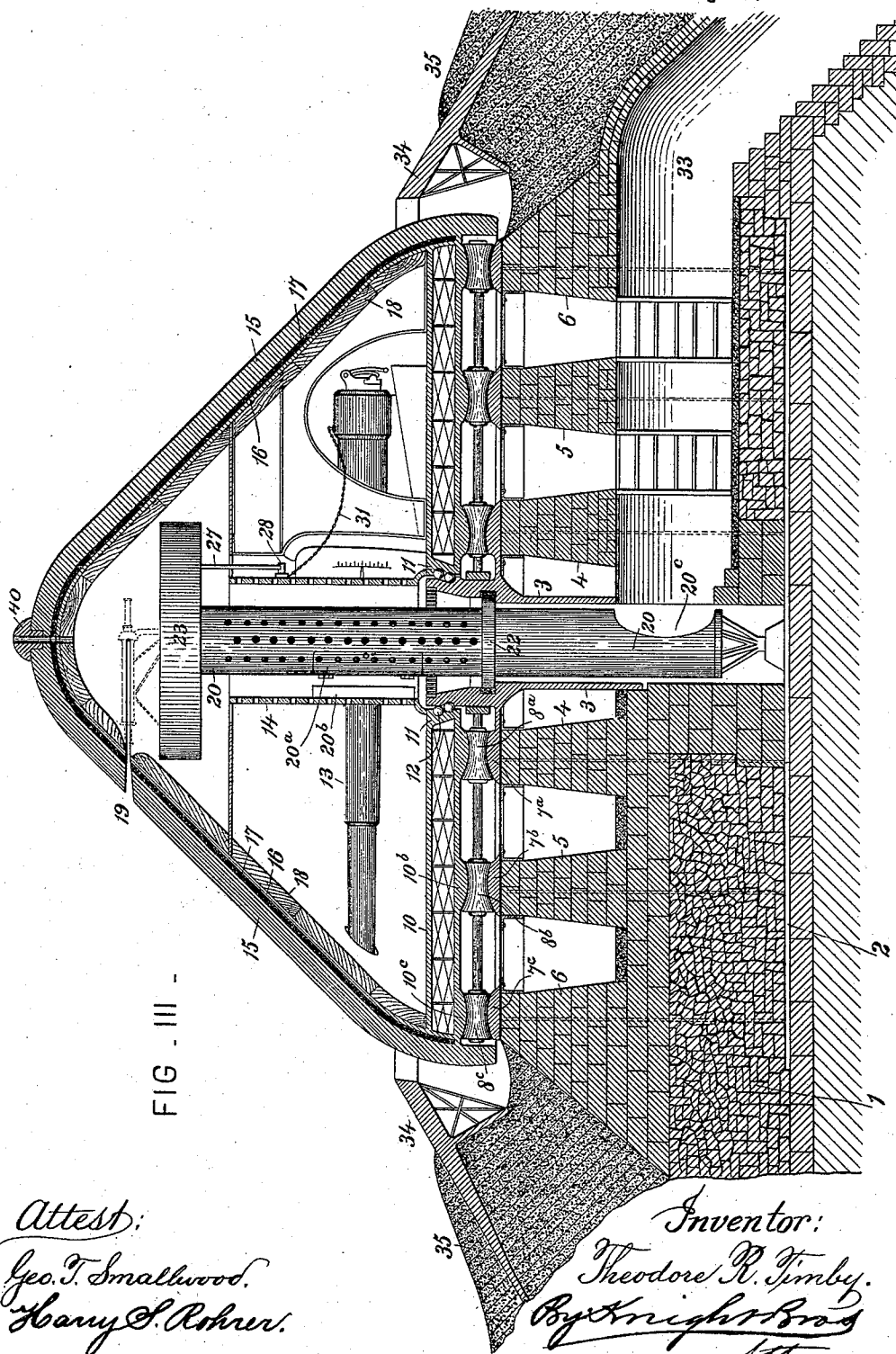
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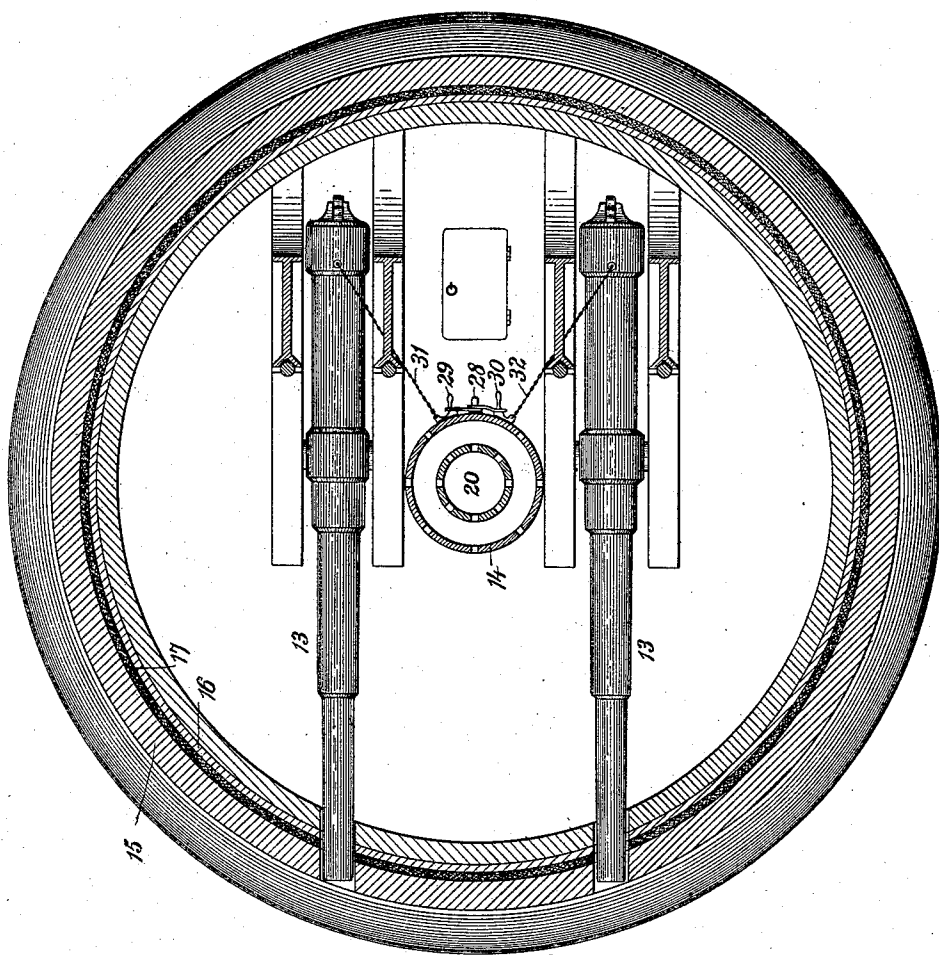


FIG. IV.

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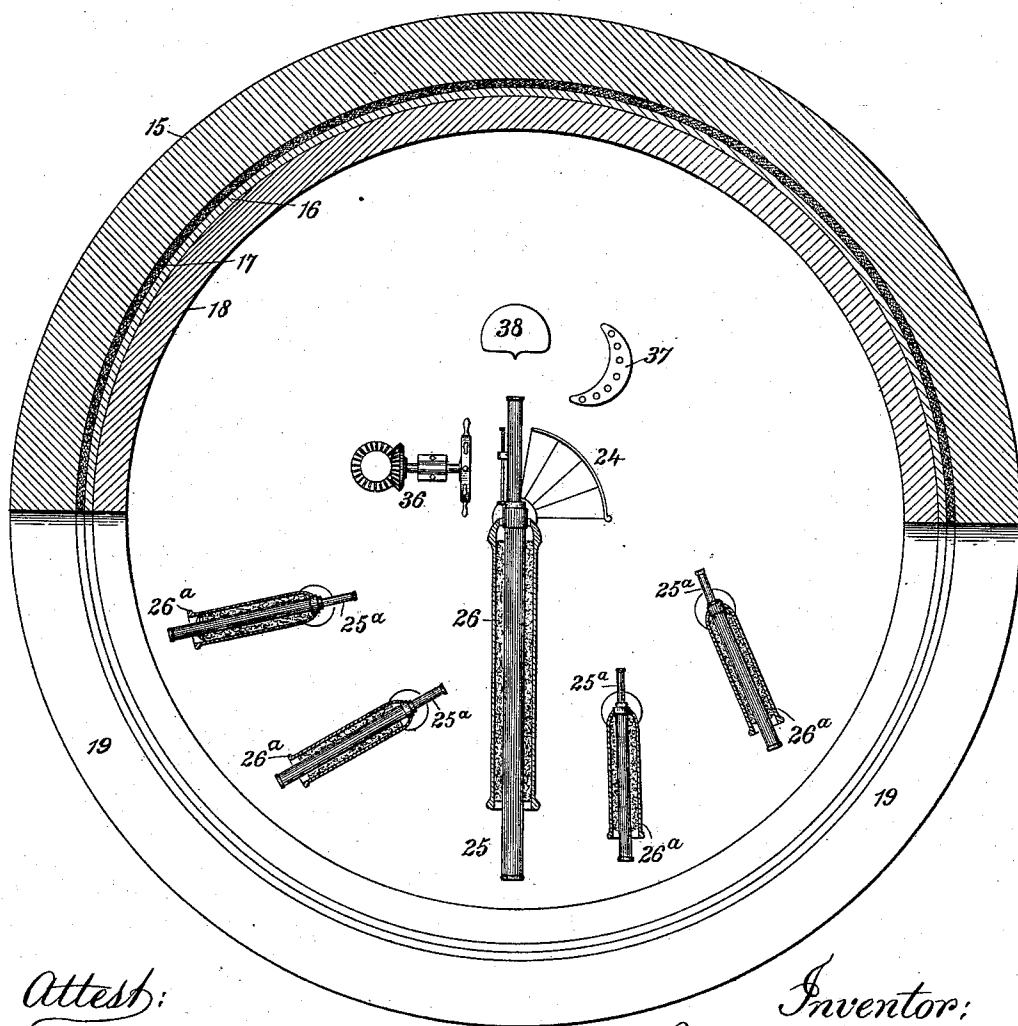
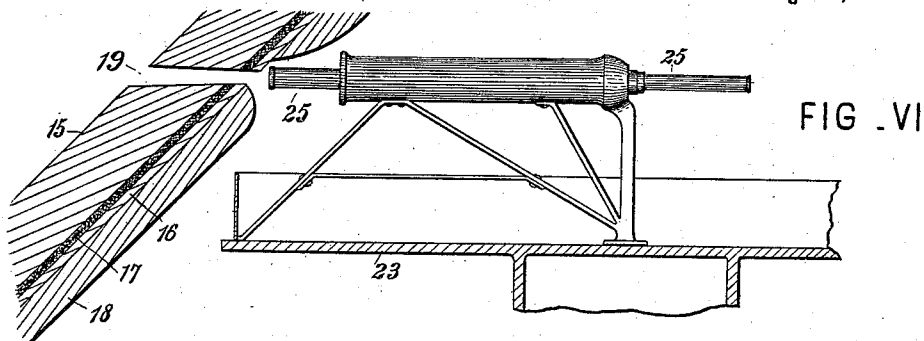
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FIG. V -

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UNITED STATES PATENT OFFICE.

THEODORE R. TIMBY, OF WASHINGTON, DISTRICT OF COLUMBIA.

REVOLVING-TOWER FORTIFICATION.

SPECIFICATION forming part of Letters Patent No. 474,271, dated May 3, 1892.

Application filed January 27, 1892. Serial No. 419,454. (No model.)

To all whom it may concern:

Be it known that I, THEODORE R. TIMBY, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Revolving-Tower Fortifications, of which the following is a specification.

The object of my invention is to produce a fortification for coast defense of greater efficiency than any heretofore devised. To this end I construct a revolving tower or turret of bell or funnel shape supported by rollers upon a firm foundation, constructed as hereinafter described. The walls of the revolving tower or turret are inclined, preferably at an angle of about forty-five degrees, extending at about this angle in substantially straight converging lines from a vertical skirt at bottom, forming the margin of the revolving tower, to the dome-shaped apex, so as to afford the greatest extent of deflecting-surface, and are constructed of two shells of steel or other metal with an interposed packing of elastic fibrous material to deaden the force and sound from the impact of projectiles, the outer metallic shell being of much greater thickness and the inner metallic shell being backed or supported by a body of wood, which has a further effect in deadening blows which may be received on the outer surface of the tower. The foundation is constructed with a number of concentric walls of masonry, affording direct support to the ways on which the supporting-rollers travel and with a fixed central hollow standard, from the upper portion of which extends in all directions the stationary floor on which the carrying-rollers of the revolving tower or turret travel upon annular concentric ways directly over the concentric foundation-walls before referred to, which thus afford firm and unyielding support to the revolving tower or turret. The fixed central hollow standard of the foundation and the floor connected thereto are furthermore braced and supported by radial stays or trusses of metal. Ball or other anti-friction bearings are provided between the floor or base of the revolving tower or turret and the fixed central standard, about which it revolves. The foundation is provided with one or more horizontal tunnels, affording a subterranean approach to the base of the fortification and to the inte-

rior of a hollow independently revolving column, which carries a sighting-platform within the dome of the revolving tower or turret, and through which the gun-floor and the sighting-platform are reached by means of a suitable stairway. Upon the floor of the revolving tower or turret a pair of heavy guns are mounted in parallel position on opposite sides of a concentric well, within which the central hollow column carrying the sighting-platform is capable of reciprocating rotation independently of the tower or turret to any necessary extent, which usually need not exceed one hundred and eighty degrees. This central hollow column is supported at bottom on a suitable step, and is braced and stayed concentrically within the fixed hollow standard of the foundation by means of a supporting-packing of fibrous material, which prevents the transmission of shocks to the revolving column, and thence to the sighting-platform. The hollow revolving column, besides affording access to the gun-floor and sighting-platform is useful in affording ingress of air for ventilation, and also accommodates electrical or other conductors for power and by which the guns may be automatically fired. Upon the sighting-platform is carried a sighting-telescope mounted in an elastic bearing or support which prevents the transmission of shocks to the sighting-telescope. The sighting-platform is also provided with one, two, or more additional telescopes, also mounted in elastic supports and adapted for independent use in surveying the field. The sighting is done through a narrow horizontal slot in the dome extending partially around upon the side toward which the guns are presented. The electric contacts for effecting the discharge of the guns automatically at the proper point by the movement or position of the sighting-platform are located on the exterior of the central well of the revolving tower so as to be in full view of the gunners upon the gun-floor of the tower, and thus avoid danger of accidents by the closing of the firing-circuits when the guns are not ready for firing. A fixed cover of metal surrounds the skirt or base of the revolving tower, so as to afford light and ventilation to the interior of the foundation, while effectually protecting the base of the tower, said cover being embedded at

its lower part in concrete and presenting an oblique surface, so as to deflect an enemy's missiles and prevent their direct impact.

In order that the invention may be fully understood, I will proceed to describe it in detail with reference to the accompanying drawings, in which—

Figure I is a perspective view of the structure. Fig. II is a vertical section of the same. Fig. III is a vertical section of the same in a plane at right angles to that shown in Fig. II, representing the revolving column and the sighting-platform in elevation and the sighting-telescope in dotted lines. Fig. IV is a horizontal section above the gun-floor, showing the guns and firing-conductors in plan view. Fig. V is a detail plan view of the sighting platform and telescope, on a larger scale, showing the tower-wall and the housings of the telescopes in section in the plane of the horizontal sighting-slot. Fig. VI is a detail elevation of the sighting-telescope, also on a larger scale.

1 represents a base or bed of concrete, in which are embedded plates of metal forming a base-floor 2. The bed 1 also affords support to a number of concentric annular foundation-walls 4 5 6, which are surmounted by a bearing-floor 7 for the revolving tower or turret, said bearing-floor 7 being formed with annular ways 7^a 7^b 7^c directly over the annular foundation-walls 4 5 6, respectively, which are thus adapted to sustain the said bearing-ways and the load carried thereon. Fitted on the respective ways 7^a 7^b 7^c are a series of concave-faced conical rolls 8^a 8^b 8^c, mounted upon radial horizontal shafts 8, any desirable number of which are arranged equidistantly around the foundation to carry the revolving tower or turret and permit its ready rotation. The foundation is furthermore constructed with a central hollow supporting-standard 3, firmly supported at bottom on the bed 1 and at the top by the foundation-floor 7, above which it extends to furnish a central bearing for the revolving tower or turret. The fixed hollow standard 3 is braced by radial trusses 9, and the entire foundation is securely tied together by rods 7^d, secured beneath the floor 2 and above the concentric walls 7^a 7^b 7^c.

The revolving tower or turret is constructed with a base-floor 10, formed with annular bearing ridges or ways 10^a 10^b 10^c, resting on the carrying-rolls 8^a 8^b 8^c, respectively, and with a central annular flange 11, between which and the upper part of the hollow standard 3 are fitted anti-friction balls 12 to accurately center the revolving tower or turret while permitting its easy rotation. A pair of heavy guns 13 are mounted on the gun-floor 10^d in parallel position on each side of a concentric well 14, which rises from the central annular flange 11 of the tower-floor. The external walls of the tower or turret are approximately bell or funnel shaped, inclined about forty-five degrees, in order to afford the greatest possible extent of deflecting-surface with-

in given dimensions. Said walls are constructed of a massive outer shell 15, of steel, and an inner shell of steel 16, of less thickness, and an interposed packing 17, of fibrous material, for the purpose of deadening the shock and sound produced by the impact of projectiles upon the exterior of the tower. The interior shell 16 is supported by a wooden backing 18.

At a suitable height in the dome of the revolving tower is a horizontal sighting-slot 19, which I prefer to extend about one-half way round the tower or one hundred and thirty degrees of the circumference, this being the maximum extent to which it is necessary to make observations. Additional sighting-ports may be provided on the opposite sides of the dome, if desired.

Within the hollow foundation-standard 3 is a vertical hollow column 20, supported on a step 21 and capable of revolution independently of the tower. Said revolving column is stayed near the upper end of the fixed hollow standard 3 by an anti-friction collar 22, backed by a fibrous packing, which, while it supports the column in central position, serves to deaden and prevent the transmission of shocks. Access is had to the gun-floor by means of a stairway 24 within the hollow column and through suitable doors 20^a and 20^b in the hollow column 20 and well 14. The hollow column 20 is surmounted by a sighting-platform 23, to which access is had by the stairway 24. Upon this platform is mounted a telescope 25 upon elastic bearings 26, so that any shocks or vibrations which may be received by the sighting-platform will not impart vibration to the telescope. The telescope 25 is intended for use in sighting an object in order to accurately determine the line upon which the guns shall be discharged automatically when the said line is reached in the revolution of the tower. The two guns are advantageously used by firing one at one revolution of the tower or turret and the other at the next revolution, or, on an emergency, both can be fired at once. Additional telescopes 25^a are also mounted upon elastic bearings 26^a upon the sighting-platform for other observation purposes.

To effect the automatic discharge of the guns, a suitable conductor 27 is carried from the sighting-platform downward into position to reach a contact-plate 28, which is connected by independent switches 29 30 with conductors 31 32, connecting with the fuse or primer of the respective guns 13.

36 represents gearing by which the column 20 and the sighting-platform 23 are rotated, and 37 a keyboard for controlling electric circuits for revolving the tower, firing the guns, signaling, and other purposes.

38 may indicate a seat for the operator. The electric circuit may be formed by means of wires carried from a battery or dynamo through the tunnel 33 in the foundation and upward through the column 20. The said

tunnel 33 and hollow column 20, besides giving access to the interior of the tower, also afford ingress for ventilation and permit the carrying in of a hose or other conduits by which electric wires may be conveyed for signaling or for automatic firing, as described, or for power for any purpose, the aperture 20° shown in the lower part of the column 20 being of sufficient capacity to admit of the vibration or reciprocating rotation of the hollow column and sighting-platform in a horizontal plane, which revolution need not have a maximum extent beyond one hundred and eighty degrees. At 39 40 are shown suitable ventilation-apertures in the walls and top of the tower.

To protect the skirt or lower margin of the revolving tower or turret, I provide a fixed annular cover 34 of massive metal, the outer portion of which is protected by the upper concrete foundation 35. The cover 34 is formed and constructed to present an oblique surface, so as to deflect impinging shots and prevent their striking directly against the surface of the revolving tower or turret.

The manner of constructing the protecting cover, while effectually preventing the direct impact of shots, affords ample light and ventilation to the foundation of the structure.

The construction of the foundation provides ample well ventilated and lighted chambers, which may be used for garrison-stores and for other purposes.

By constructing my revolving tower with an outer surface formed on straight converging lines inclined at a proper angle, preferably about forty-five degrees, I combine the advantages of effectually deflecting shots striking at any point with the largest possible amount of room for working the guns and height to accommodate the sighting-platform and its accessories.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. A revolving-tower fortification constructed with a bell or funnel shaped tower the surface of which extends upward or nearly straight, and converging lines at an angle of about forty-five degrees to the horizon, as shown and described.

2. A revolving tower for fortifications, having an outer surface formed on substantially straight converging lines and with a dome-shaped apex and a nearly perpendicular skirt around its lower margin, as shown and described.

3. A revolving tower or turret constructed, as herein described, with walls inclined on substantially straight converging lines and formed of an inner and outer shell, with an interposed body or packing of yielding material to deaden or break the shock or concussion from the impact of shots, as explained.

4. A revolving tower or turret constructed with inclined walls, in combination with an

annular fixed cover of metal masking the outer margin of the revolving tower and presenting an inclined surface for the deflection of shots, and a glacis or embankment in which the outer margin of the fixed metal cover is embedded, as herein shown.

5. A revolving-tower fortification constructed with a central hollow column supporting a sighting-platform communicating with a passage-way in the foundation of the structure, giving access to the sighting-platform and affording ingress of air for ventilation, a conduit for electrical and other conductors for power and other purposes, said column being capable of rotary movement independently of the tower, as explained.

6. The combination of the revolving tower or turret, a central hollow column 20, supporting a sighting-platform 23 and giving access thereto, and a packing 22, bracing the hollow column concentrically in the foundation of the tower and preventing the communication of the shock from the impact of projectiles.

7. A revolving-tower fortification constructed with a turret having a well 14, in combination with a central hollow column 20, sighting-platform 23, carried thereby, electrical conductors and connections 27 28 31, external to the well, and guns 13 to be fired automatically by said conductors, as explained.

8. The combination of the revolving tower or turret with a central well 14, the central hollow column 20, moving independently therein, sighting-platform 23, carried by said column, external electrical conductors and connections 27 28 31, guns 13, and switches 29 30, and flexible conductors 31 32, permitting the automatic discharge of the guns, either simultaneously or independently, as explained.

9. In combination with a revolving tower or turret, the foundation constructed, as herein described, with concentric walls 4 5 6, having chambers between, tunnel 33, giving approach to the interior, and hollow column 20, having an opening 20^a communicating with the tunnel, said column being capable of oscillating movement independently of the tower, as explained.

10. The combination of the independent annular foundation-walls 4 5 6, base-plate 2, upper foundation-floor 7, tie-rods 7^a, connecting the plate 2 and floor 7, and the revolving tower or turret supported on the floor 7, as explained.

11. In a revolving-tower fortification, the combination of a sighting-platform capable of rotary or oscillating movement independently of the tower, and one or more sighting telescopes mounted on said platform in cushioned bearings to take up shocks or vibrations, substantially as described.

THEODORE R. TIMBY.

Witnesses:

OCTAVIUS KNIGHT,
EDWARD Q. KNIGHT.