No. 684,030. Patented Oct. 8, 1901.

W. F. WRIGHT.

APPARATUS FOR PRODUCING RAIN.

(Application filed Dec. 28, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1

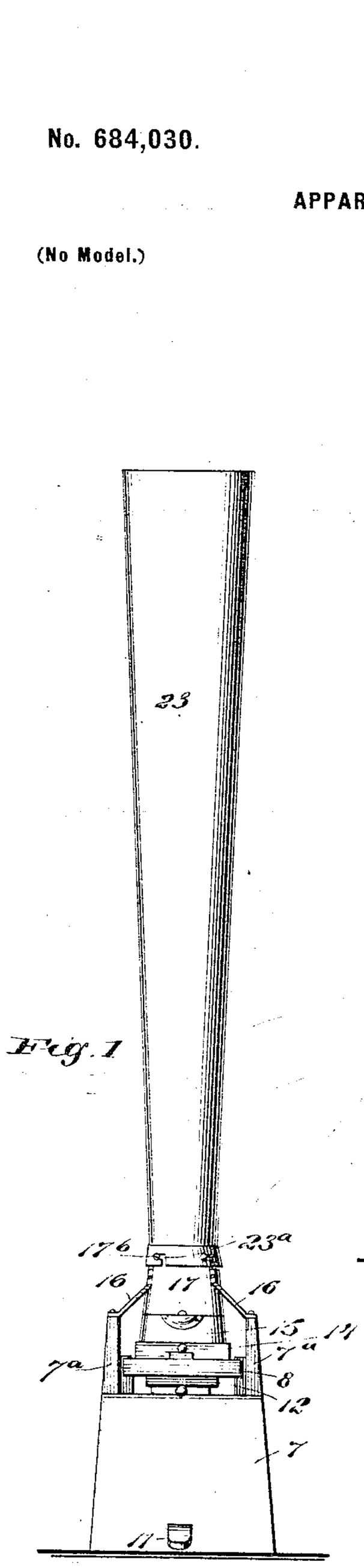


Fig. 2

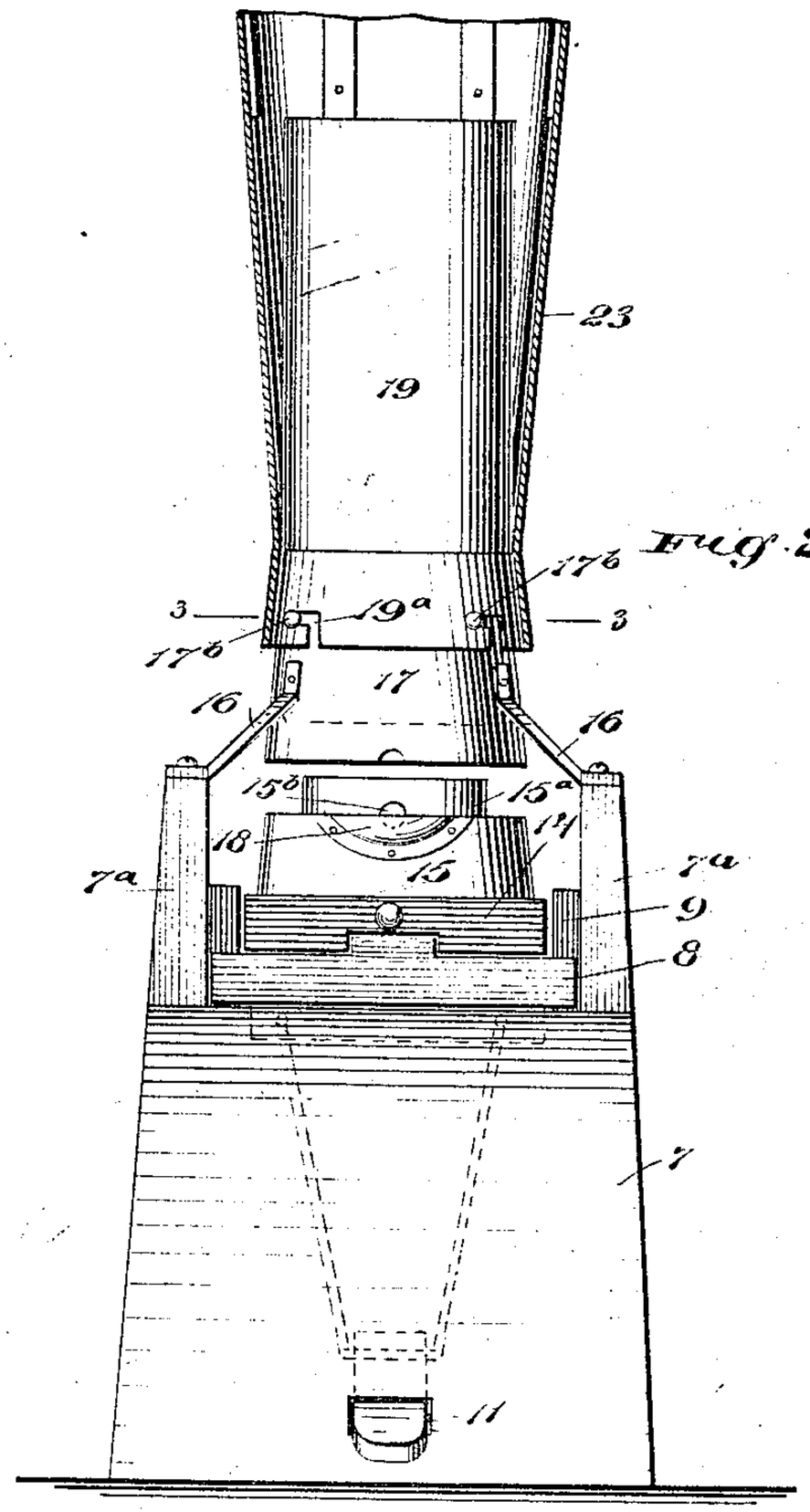
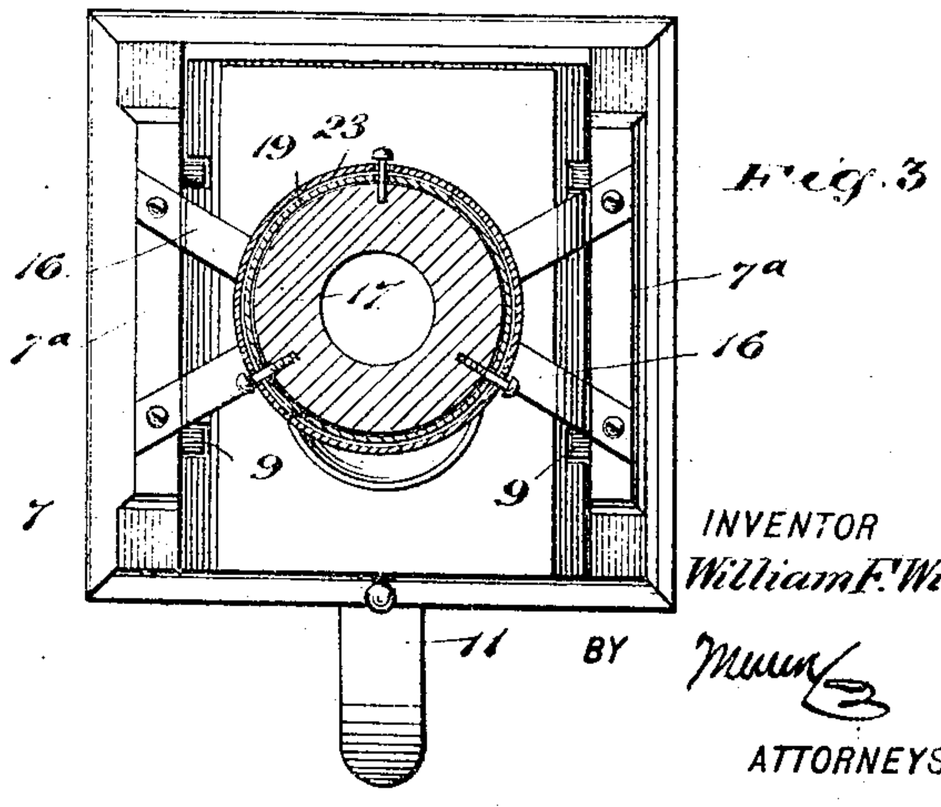


Fig. 3



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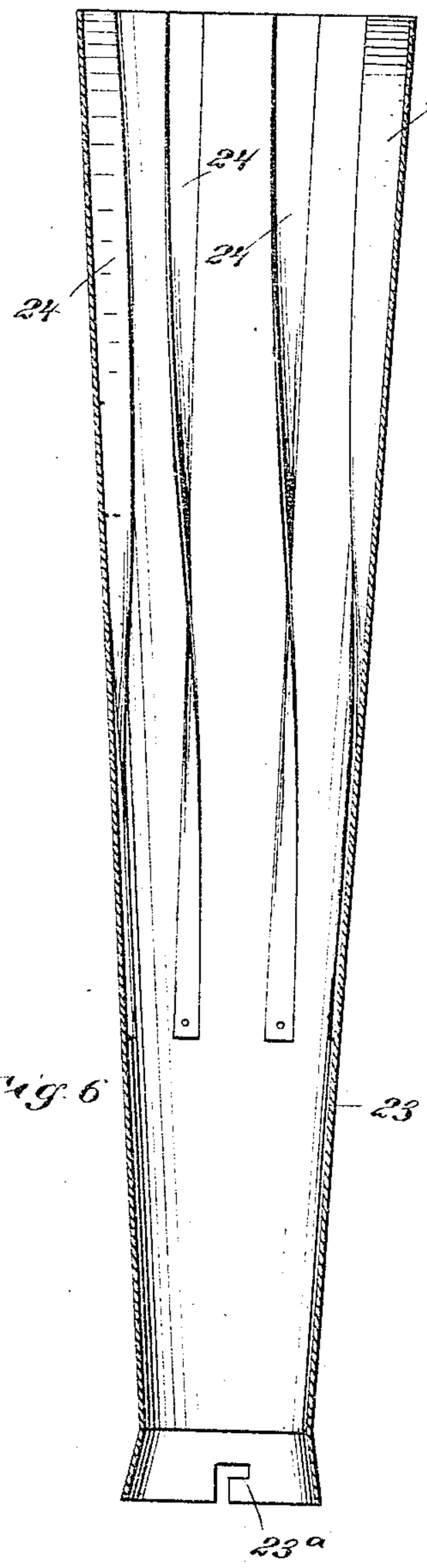

Fig. 6

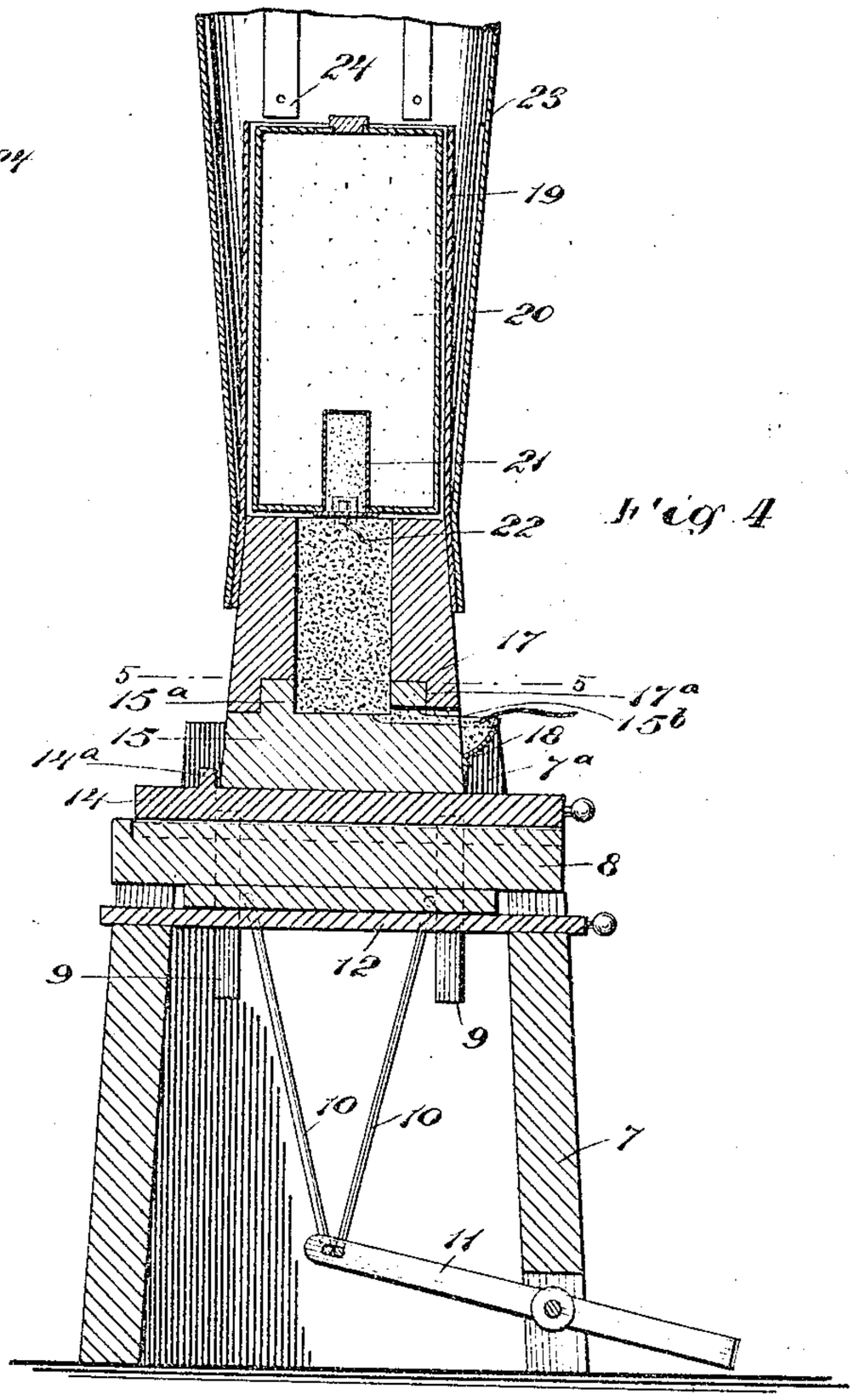

Fig. 4

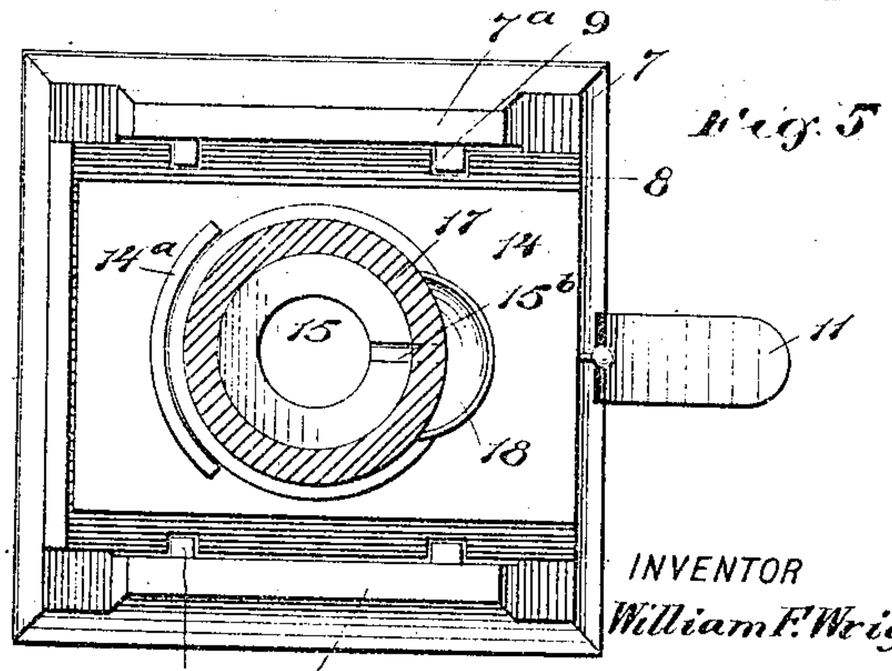

Fig. 5

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UNITED STATES PATENT OFFICE.

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APPARATUS FOR PRODUCING RAIN.

SPECIFICATION forming part of Letters Patent No. 684,030, dated October 8, 1901.

Application filed December 28, 1900. Serial No. 41,367. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM FRANCIS WRIGHT, a citizen of the United States, and a resident of Lincoln, in the county of Lancaster and State of Nebraska, have invented a new and Improved Apparatus for Producing Rain, &c., of which the following is a full, clear, and exact description.

This invention relates to a novel apparatus for firing explosive charges into the atmosphere for the purpose of producing rain at will and to bring about other beneficial meteorological effects, as the prevention and destruction of hail-storms, tornadoes, drouths, hot winds, frosts, forest and prairie fires, and for the modification of atmospheric conditions, largely preventing spontaneous combustion, and for the purpose of sustaining vegetation and for sanitary and other purposes.

To this end the invention comprises a form of mortar from which charges may be fired upward into the atmosphere, the mortar being also capable of discharging a bomb which by a time-fuse or like means may be caused to explode near the surface or at a low altitude, thus forming upward currents of air and supplying deficiencies of gases necessary to the various effects desired.

This specification is a specific description of one form of the invention, while the claims are definitions of the actual scope thereof.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is an elevational view of the invention. Fig. 2 is an enlarged view with parts in section, showing the base of the apparatus. Fig. 3 is a sectional plan on the line 3 3 of Fig. 2. Fig. 4 is a vertical section on the same scale as that of Figs. 2 and 3. Fig. 5 is a sectional plan on the line 5 5 of Fig. 4, and Fig. 6 is an enlarged section of the barrel of the mortar.

7 represents a base of any suitable construction, but preferably hollow, to support the working parts of the apparatus. Opposite side walls of this base are extended upward to form cheek-pieces 7^a, and between these cheek-pieces 7^a is mounted to slide a carrier 8, having notches in its sides, which receive ribs 9 on the adjacent inner sides of the walls of the base 7, so as to guide the carrier 8 in moving vertically. The carrier 8 is connected by links 10 with a foot-lever 11, mounted in the lower portion of the base 7, and by manipulating this foot-lever the carrier may be raised or lowered, as indicated in Figs. 2 and 4. When the carrier is raised, as shown in Fig. 4, it is sustained by a key 12, which bears on the upper edges of the front and back walls of the base 7 and engages beneath the carrier. When it is desired to lower the carrier, the key 12 is withdrawn, and then the carrier will drop by gravity to the position shown in Fig. 2.

On the carrier 8 is arranged a bed 14, sustaining the breech-block 15 of the mortar. The bed 14 has a curved rib 14^a at its rear, against which the breech-block 15 bears, thus holding the breech-block in proper position, as will be hereinafter fully explained. Sustained on the cheek-pieces 7^a by arms 16 is the breech 17 of the mortar. This is arranged over the carrier 8 and bed 14 and is adapted to have the breech-block 15 moved up under it when the parts are in operative position, as shown in Fig. 4. The breech-block 15 has an annular rib 15^a at its top, which fits in a corresponding groove 17^a in the lower end of the breech 17, and the breech-block is formed with a touch-hole 15^b to permit the firing of the charge, the outer end of the touch-hole communicating with a cup 18, adapted to receive a priming charge, with which a fuse of any suitable sort should communicate.

The mortar may be loaded either with a cartridge or with a powder charge rammed into place. It is immaterial as far as my invention is concerned which of the two is employed. In Fig. 4 I have illustrated the breech of the mortar filled with a powder charge. It is obvious that the same effect will be attained by a cartridge fitted into the breech, as in an ordinary cannon. When it is desired to clean or otherwise adjust the parts, the key 12 may be drawn out of position and the carrier 8, with its bed 14 and breech-block 15, lowered. The breech-block may be moved off of the bed 14, and then if a cartridge is employed this cartridge may be inserted from below, after which the breech-block may be replaced. The mortar may also

be charged from the top by removing the barrels and other parts which are arranged above the breech.

Fastened onto the breech 17 by bayonet-slots 19^a, engaging pins 17^b on the breech 17, is an inner or minor barrel 19, which forms a continuation of the mortar-breech 17 and serves to direct the charge upward from the breech. This inner or minor barrel 19 may also serve to carry an explosive bomb 20, which is illustrated in Fig. 4. This bomb is arranged on the top of the breech 17, so as to be fired into the air from the breech. The bomb may be of any construction desired and filled with a gas necessary to supply the deficiencies of the atmosphere occurring at various times and to assist in forming upward currents of air. To liberate this gas within the bomb, a small tube is affixed to the inner part of the bomb and charged with gunpowder 21 to be fired by time-fuse 22, so that at the proper moment the bomb is exploded and the gas within the bomb is liberated to assist in producing the desired effects. This bomb 20 is not necessarily employed, but it may be used when the conditions are such as to render its use advantageous. The absence or presence of such conditions will be known to a skilled operator, and this knowledge will aid him in determining whether to use or not to use the explosive bomb. When the bomb is not used, the charge of the breech 17 is exploded and fired upward into the atmosphere to produce the desired disturbances.

Held on the breech 17 of the inner barrel 19 is an outer or major barrel 23, which is fastened by bayonet-slots 23^a, engaging the pins 17^b or other pins similar thereto, if it be desired to provide separate pins for each of the barrels 19 and 23. In order to give a swirling or turning movement to the charge as it passes from the mortar, I fasten within or form on the inner surface of the outer or major barrel 23 a number of spiral ribs 24. These ribs may be of any form desired and fastened by any means, the sole essentiality being that they be capable of imparting a swirling or turning movement to the expanding gases as they rush through and from the barrel. This turning or swirling movement tends to produce a peculiar disturbance of the atmosphere, which facilitates the attainment of the object of my invention. It is not necessary, however, for me to go at length into a discussion of the peculiar conditions which exist and the effect of the explosion upon them.

Various changes in the form, proportions, and minor details of my invention may be resorted to without departing from the spirit and scope of my invention. Hence I consider myself entitled to all such variations as may lie within the scope of the claims.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A concussion-mortar, having a base, a breech mounted thereon, a vertically-movable breech-block, means for raising the breech-block into engagement with the breech, and a barrel supported on the breech.

2. A concussion-mortar having a base, a breech supported thereon, a vertically movably mounted breech-block below the breech, and a barrel carried by the breech.

3. A concussion-mortar having a base, a breech supported on the base and spaced therefrom, a breech-block, and means for mounting the breech-block to move vertically toward and from the breech.

4. A concussion-mortar, having a breech, two barrels carried by the breech and arranged one within the other, the inner barrel being capable of carrying a bomb and a vertically-movable breech-block below the breech.

5. A concussion-mortar, having a flaring barrel with one or more spiral-form ribs arranged along its inner surface, for the purpose specified.

6. A concussion-mortar having a base, a breech, a carrier, means for adjustably mounting the carrier, a key adapted to engage beneath the carrier to hold it raised to operative position, and a breech-block supported on the carrier.

7. A concussion-mortar having a breech, and an inner or minor barrel and an outer or major barrel, the inner barrel being cylindrical and the outer barrel being flaring and provided with spiral ribs on its inner surface.

8. A concussion-mortar having a hollow base with upwardly-extended oppositely-disposed side walls forming cheek-pieces, a carrier vertically movable between the cheek-pieces, means for sustaining the carrier in raised or operative position, a breech-block supported on the carrier, and a breech mounted on the base over the breech-block.

9. A concussion-mortar having a base, opposite side walls of which are projected upward to form cheek-pieces, a carrier vertically movable between the cheek-pieces, a key adapted to fit beneath the carrier to sustain the same on the base, a breech mounted on the base over the carrier, and a breech-block held by the carrier and working with the breech.

10. A concussion-mortar having a base, a carrier vertically movable thereon, a bed slidably mounted on the carrier, a breech-block held by the bed, and a breech mounted on the base over the carrier.

11. In a concussion-mortar, the combination with a base, and a breech carrying a barrel, said breech being supported on the base and spaced therefrom, of a breech-block slidably mounted in the base, means for raising the breech-block into engagement with the breech, and means for locking the breech-block in its raised position, substantially as described.

12. In a concussion-mortar, the combination with a base, and a breech carrying a bar-

rel, said breech being supported on the base and spaced therefrom, of a carrier mounted to slide vertically in the base, a breech-block on the carrier, means for raising the carrier to bring the breech-block into engagement with the breech, and means for locking the carrier in its raised position, substantially as described.

13. In a concussion-mortar, the combination with a base, and a movable breech-block carried by the base, of a breech supported on the base, and a barrel detachably secured upon the outer surface of the breech, substantially as described.

14. In a concussion-mortar, the combination with a base, and breech-block movably mounted in the base, of a breech supported on the base, and an inner and outer barrel detachably secured upon the outer surface of the breech, the inner barrel being cylindrical and the outer one flaring, substantially as described.

15. In a concussion-mortar, the combination with a base, and a breech-block movably mounted in the base, of a breech supported on the base, and two barrels detachably secured to the breech, the inner barrel being cylindrical and the outer one flaring and provided with spiral ribs on its inner surface, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM FRANCIS WRIGHT.

Witnesses:
CHARLES Q. DE FRANCE,
SAMUEL PATTERSON.