

No. 683,941

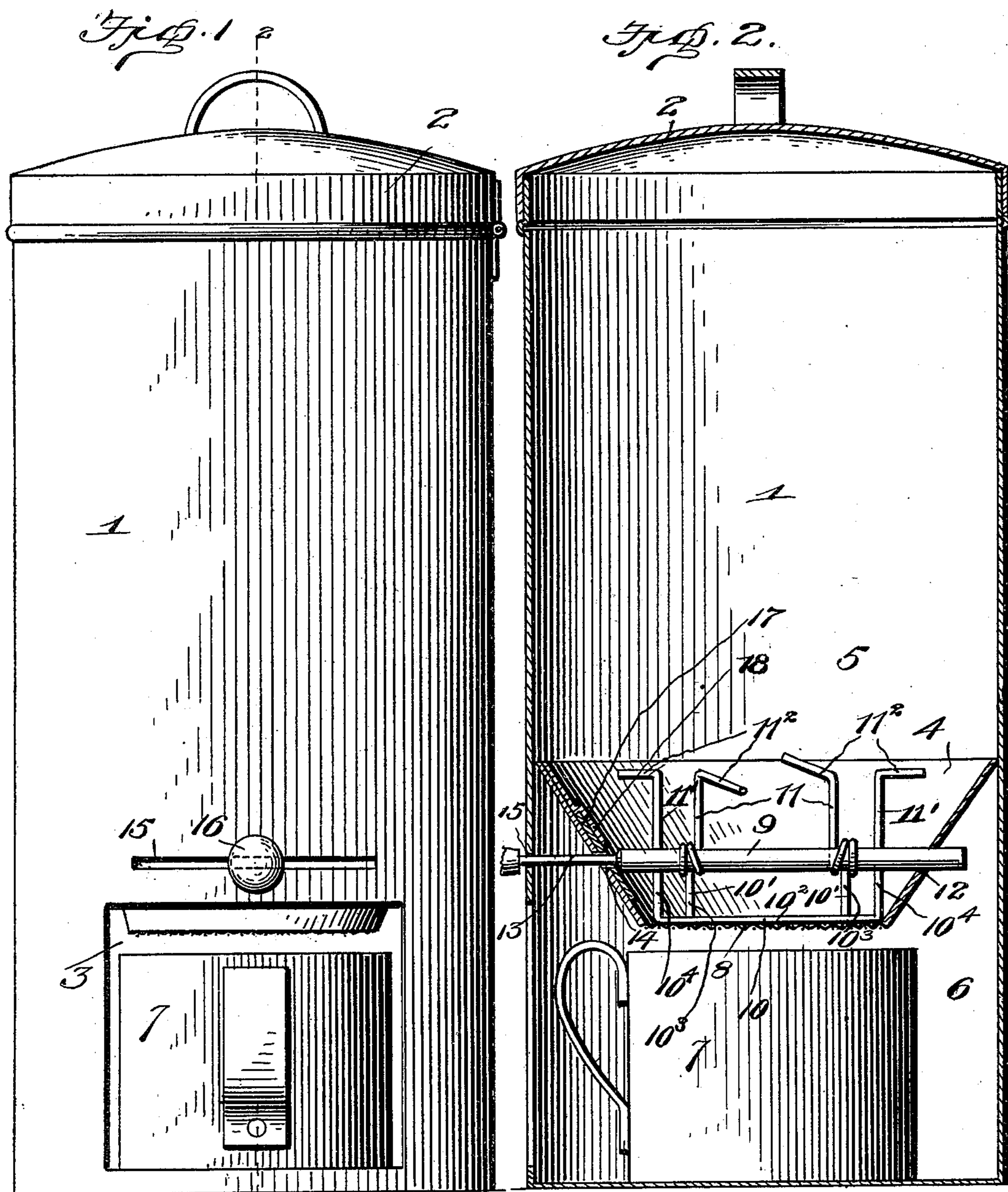
Patented Oct. 8, 1901.

A. HUFFMAN.  
COMBINED MIXER AND SIFTER.

(Application filed Feb. 28, 1901.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses  
*C. Hunt,*  
*D. Wilson*

By

*A. B. Wilson & Co.*

Attorneys

Inventor  
*Andrew Huffman*

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Fig. 3.

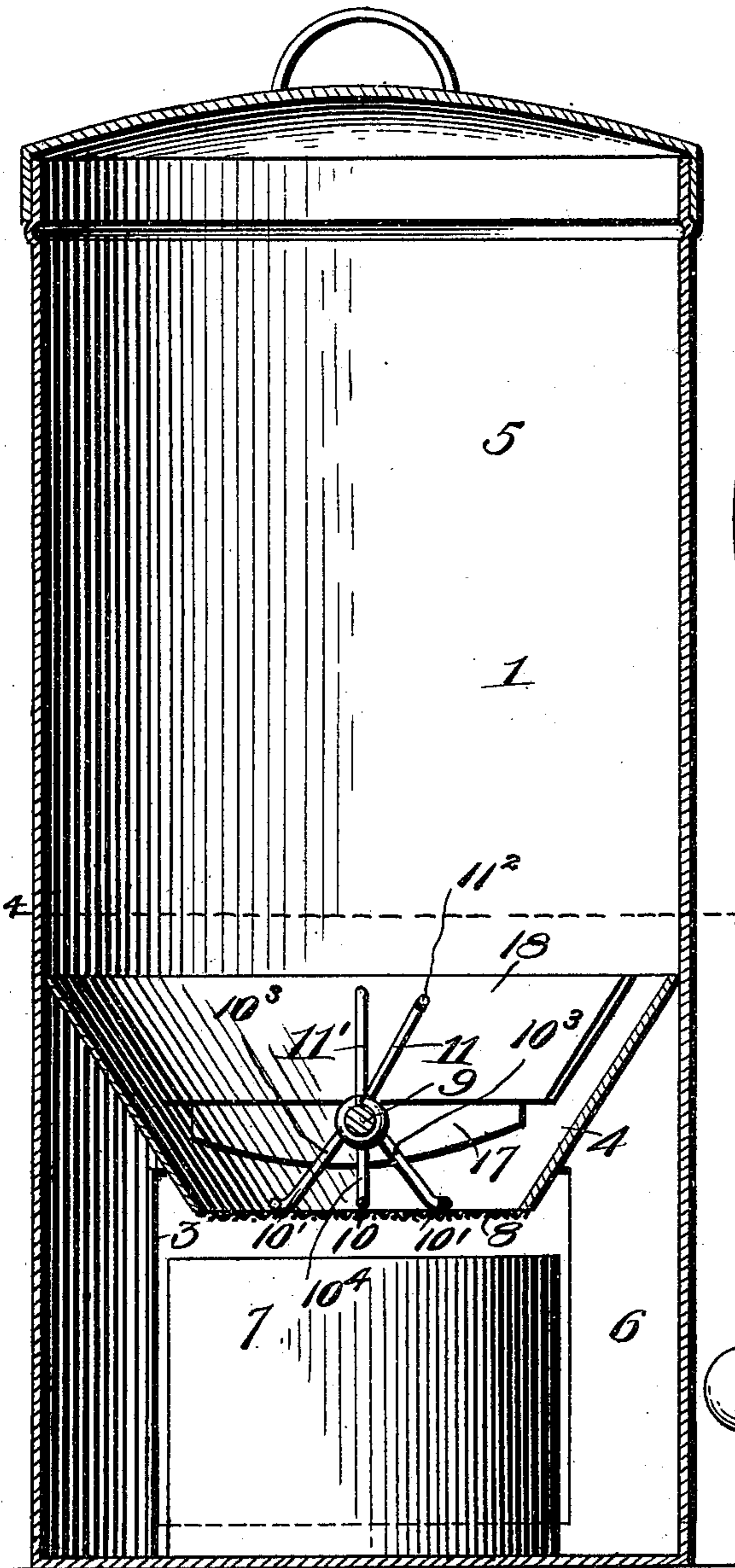


Fig. 4.

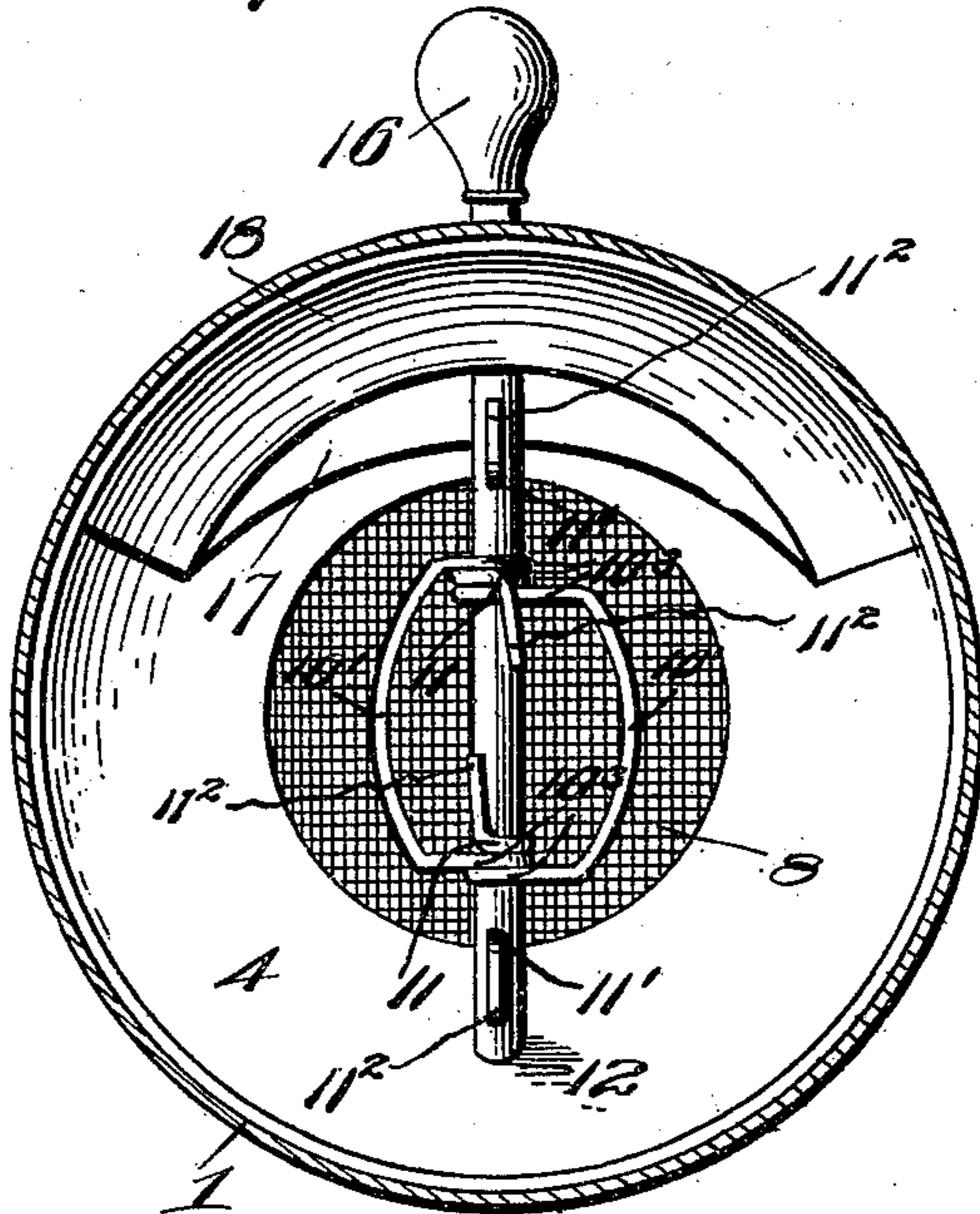
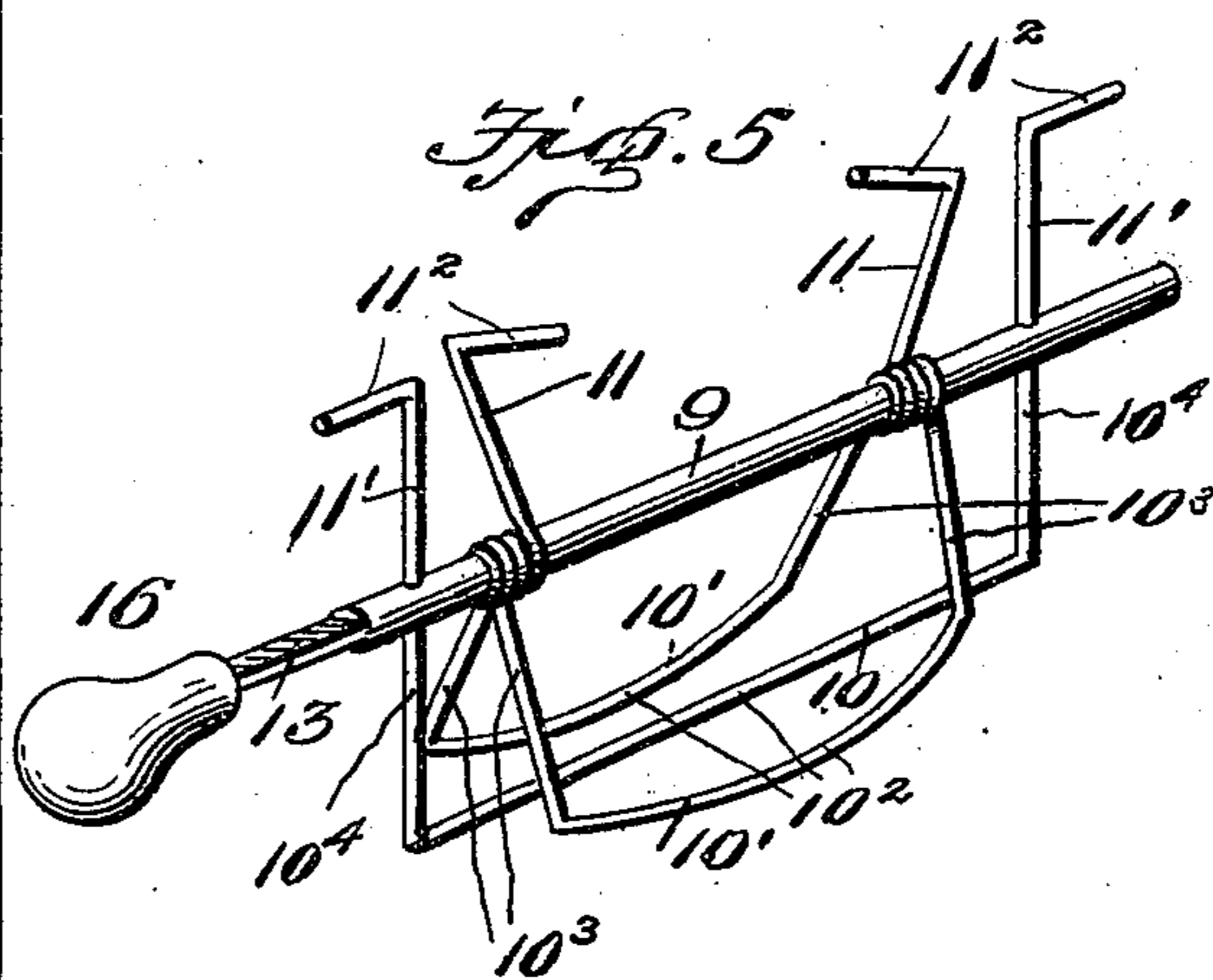


Fig. 5.



Inventor

Andrew Huffman

Witnesses

C. H. Hunt  
J. H. Harrison

By

A. B. Wilson & Co.

Attorneys

# UNITED STATES PATENT OFFICE.

ANDREW HUFFMAN, OF BROOKVILLE, PENNSYLVANIA.

## COMBINED MIXER AND SIFTER.

SPECIFICATION forming part of Letters Patent No. 683,941, dated October 8, 1901.

Application filed February 28, 1901. Serial No. 49,305. (No model.)

*To all whom it may concern:*

Be it known that I, ANDREW HUFFMAN, a citizen of the United States, residing at Brookville, in the county of Jefferson and State of Pennsylvania, have invented certain new and useful Improvements in a Combined Mixer and Sifter; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a combined mixer and sieve for mixing and sifting materials for making plaster for dental use and for mixing and sifting various materials for other purposes.

The object of the invention is to provide a simple, durable, and effective device of this character which shall be comparatively inexpensive of production and is designed to effect a thorough admixture of the materials.

With this and other minor objects in view the invention consists of certain novel features of construction, combination, and arrangement of parts, as will be hereinafter more fully described, and particularly pointed out in the appended claim.

In the accompanying drawings, Figure 1 is a view in front elevation of a combined mixer and sifter embodying my invention. Fig. 2 is a vertical section on the line 2 2 of Fig. 1. Fig. 3 is a vertical section looking toward the front and taken at right angles to that shown in Fig. 2. Fig. 4 is a horizontal section on line 4 4 of Fig. 3, and Fig. 5 is a detail perspective view of the vibrating operating-bar and connections.

Referring now more particularly to the drawings, the numeral 1 represents the cylindrical body of the combined sifter and mixer, which may be of any preferred height and diameter and is preferably made of heavy tin or of tin and zinc, the latter being used, when desired, for the bottom to avoid liability of rusting. The said body 1 is closed by a hinged cover 2 and is provided at its lower front portion with an opening 3 for the insertion and removal of a pan below the screen to catch the siftings. The interior of the body is divided by an inverted frusto-conical partition 4, to form an upper chamber or hopper 5 for the reception of the material to be sifted or

the materials to be mixed and sifted, and a lower chamber or compartment 6 to receive the siftings. A pan 7 may be placed in said compartment 6 to catch the siftings, and, if desired, the incorporation of the material with water or other liquids for making plaster for dental use and for making other substances or compounds may be accomplished while the pan is in said chamber, in which case it is desirable to employ a zinc bottom or a tin bottom suitably coated with a water-proof material to prevent rusting. The opening in the frusto-conical partition 4 is covered by a screen or diaphragm 8 of foraminous or reticulated material and preferably of woven wire of the desired mesh. With this screen coöperates an agitator and mixer comprising a vibrating rod or shaft 9, extending from front to rear of the hopper 5 and carrying a series of agitators 10 10' and a series of stirrers or mixers 11 11'. The rod or shaft 9 is mounted at its rear end in an opening 12, formed in the partition 4 and at its forward end has a horizontal flattened extension 13, which projects to the exterior through and is adapted to slide in a slot 14, formed in the partition 4 and a corresponding slot 15, formed in the front of the body 1 just above the opening 3, and has applied thereto a handle 16. A segmental shield 17 is carried by the rod or shaft 9 and slides against the inner face of the partition 4, at the rear of the slot 14, to prevent the unsifted material in the hopper from discharging through said slot into the base or discharge compartment 6. This shield is retained in proper position by a guide-strip 18, secured to the inner surface of the partition 4, and slides between said guide-strip and partition.

The agitators 10 10' (three in number) extend longitudinally of the shaft or rod 9 and are of bail form, each consisting of a scraper-bar 10<sup>2</sup>, adapted to slide across the screen 8, and depending arms 10<sup>3</sup>, connecting the ends of said bar with the rod or shaft 9. The central agitator 10 hangs vertically in the plane of the rod or shaft 9, while the side agitators 10' project downwardly at an acute outward angle or inclination on opposite sides of said rod or shaft and bear upon the screen 8 at points beyond the vertical plane of said shaft. The scraper-bar 10<sup>2</sup> of the central agitator 10

is straight and longer than the scraper-bars of the side agitators 10' and works across the intermediate portion of the screen, while the scraper-bars of said side agitators 10' are outwardly curved to work clear to the sides of the screen. These agitators loosen and stir up the mass of material at the base of the hopper and adapt the same to pass freely through the screen 8 and also break or crush up the lumpy particles thereof, and by the described construction it will be seen that as the rod or shaft 9 is vibrated back and forth approximately the entire surface of the screen will be worked over by the agitators, thereby keeping the entire mass of material at the bottom of the hopper in a loosened state to prevent packing at any point and facilitate the passage of said material through the screen 8. The material sifted through the screen drops into a suitable pan or receptacle 7 and may be utilized as desired.

The purpose of using a frusto-conical partition 4 is to conduct the material readily to the screen and to provide a surface devoid of angles in which portions of the material may lodge and pack and interfere with the free operation of the vibrators.

The stirrers or mixers 11 11' are four in number and project upwardly from the rod or shaft and have right-angularly-bent ends 11<sup>2</sup>. The outer or end stirrers 11' project upwardly through and above said shaft and constitute continuations of the side arms 10<sup>4</sup> of the central agitator 10, and their bent ends 11<sup>2</sup> lie in the plane of and project from each other and toward the front and rear ends of the shaft. The intermediate stirrers 11, on the other hand, constitute continuations of the reverse ends of the two side agitators 10' and are angularly disposed, so as to project reversely toward opposite sides of the shaft 9, and their right-angularly-bent ends extend toward each other and toward the front and rear ends of said shaft. Preferably the mixers and agitators are formed of stiff wire, and in the case of the side agitators 10' the upper end of one arm 10<sup>3</sup> of each of said agitators is coiled about and secured to the shaft 9, while the upper end of the other arm thereof is also coiled about and secured to the shaft, and thence projects up to form the mixer 11. The action of the stirrers or mixers is to thoroughly stir up and incorporate two or more materials placed in the hopper 5, as will be readily understood, and it will be seen that upon operating the rod or shaft 9 a combined mixing and sifting action will be simultaneously set up.

From the foregoing description, taken in

connection with the accompanying drawings, the construction and mode of operation of the invention will be readily understood without a further extended description, and it will be seen that a convenient and effective form of device adapted for mixing and sifting various materials is provided.

While the preferred form of the invention is as herein described, it will of course be understood that changes in the form, proportion, and minor details of construction may be made within the scope of the invention without departing from the spirit or sacrificing any of the advantages thereof.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

In a combined mixer and sifter, the combination of a body formed with a transverse slot, an inverted frusto-conical partition separating the interior of the body into an upper hopper and a lower siftings-chamber and having a slot in alinement with said slot in the body, a screen across the bottom opening of the partition, a vibrating rod or shaft extending across the hopper above said screen and projecting to the exterior through said slots, a guide-strip upon the inner face of the partition, a shield carried by the shaft and sliding between the partition and guide-strip to cover the slot in said partition, a central and two side bail-shaped agitators formed of wire and secured to and depending from the shaft to move across the upper surface of the screen, the central agitator being longer than the others and arranged vertically in line with the shaft, and the side agitators projecting outwardly on opposite sides of the shaft at an acute angle to the vertical line of the shaft, the ends of said side agitators being coiled about the shaft, and inner and outer pairs of mixing-arms projecting upwardly from the shaft and formed of extensions from said agitators, said arms being provided with angularly-projecting free ends, the angularly-bent ends of the inner pair of arms projecting toward each other and diagonally toward opposite sides of the shaft, and the angularly-bent ends of the outer pair of arms projecting away from each other and in a plane parallel with the shaft, substantially as set forth.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ANDREW HUFFMAN.

Witnesses:

J. M. CHESNUTT.

W. ED. CHESNUTT.