O. J. MOUSSETTE.

ROTARY MIXER.

APPLICATION FILED AUG. 14, 1912.

**1,091,752.**

Patented Mar. 31, 1914.

2 SHEETS—SHEET 1.

Fig. 1.

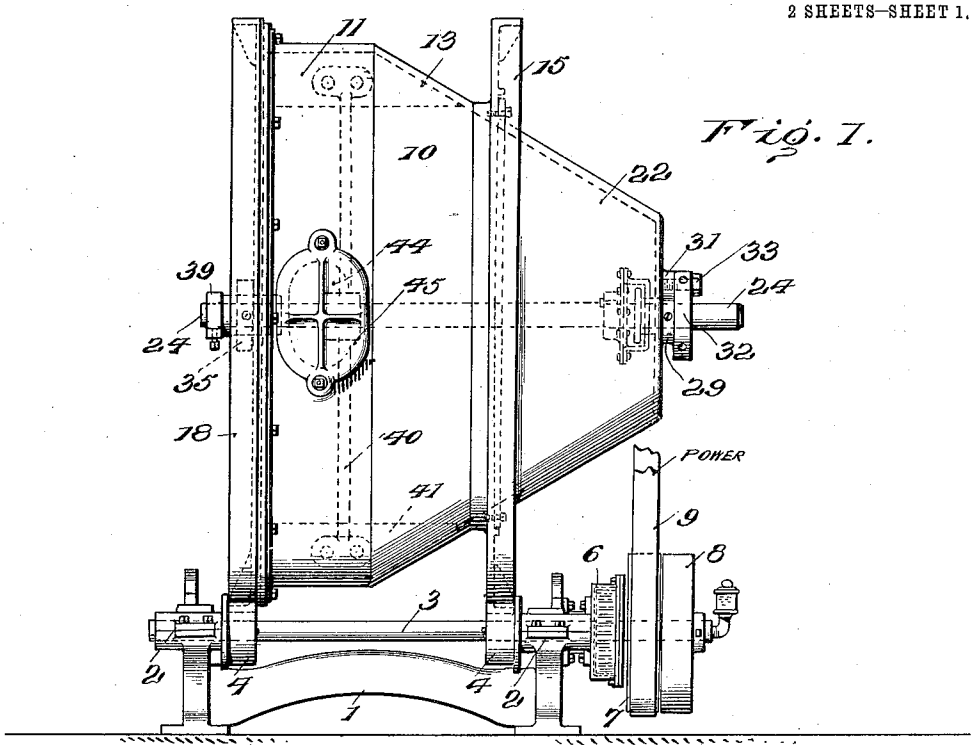
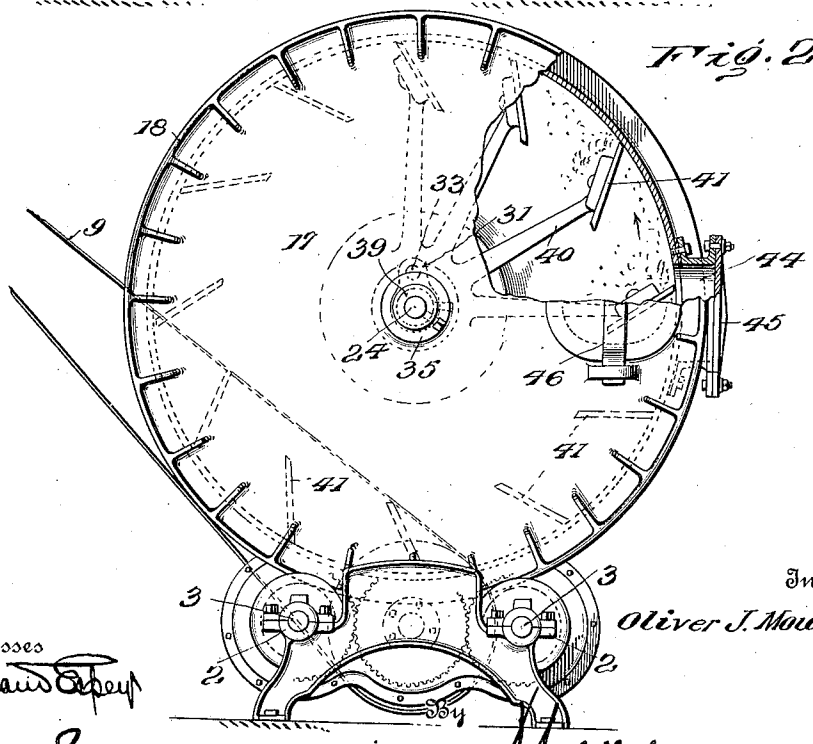



Fig. 2.




Witnesses

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ROTARY MIXER.

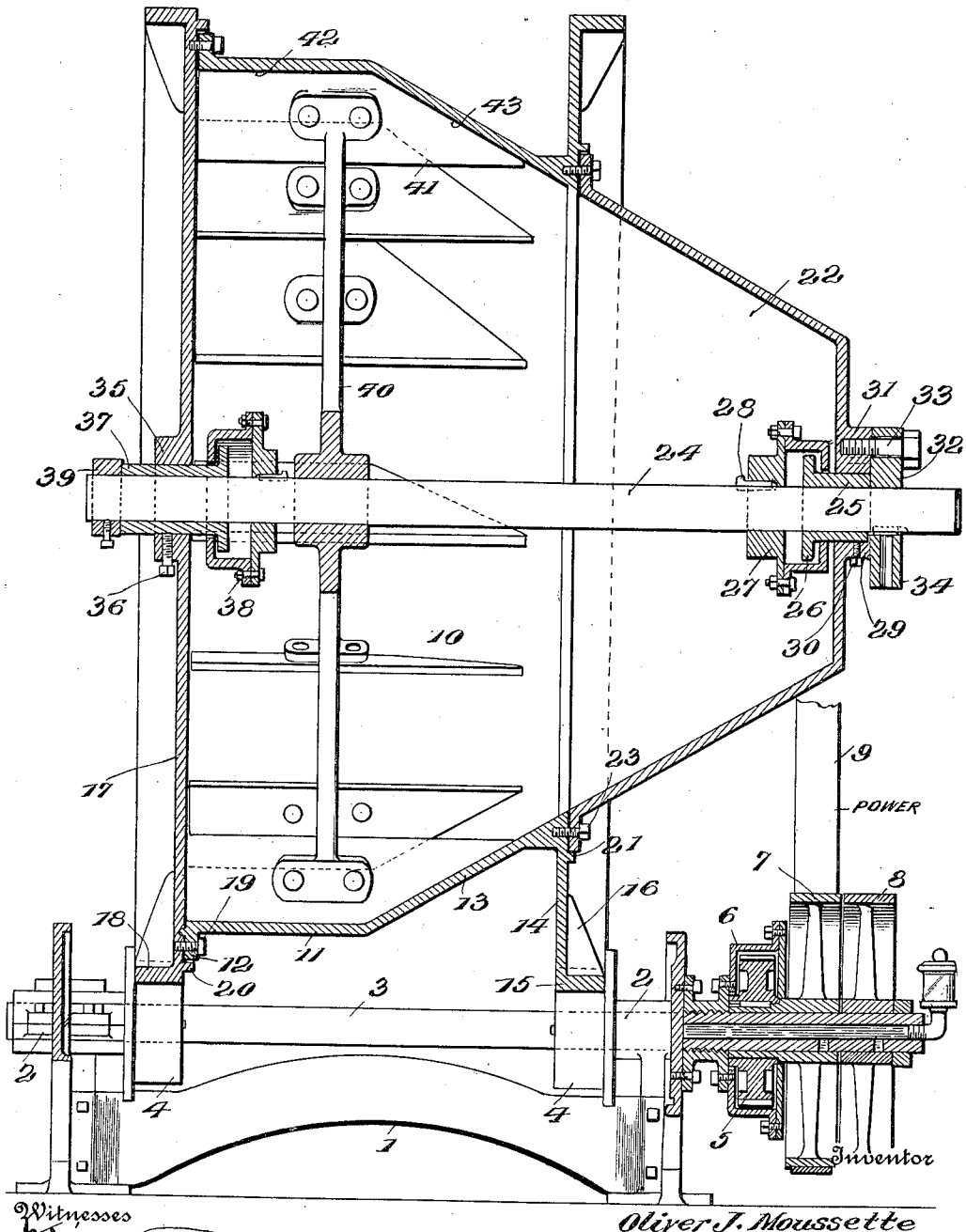
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2 SHEETS—SHEET 2.

Fig. 3.




Witnesses

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# UNITED STATES PATENT OFFICE.

OLIVER J. MOUSSETTE, OF BROOKLYN, NEW YORK.

## ROTARY MIXER.

1,091,752. Specification of Letters Patent. Patented Mar. 31, 1914.

Application filed August 14, 1912. Serial No. 715,097.

*To all whom it may concern:*

Be it known that I, OLIVER J. MOUSSETTE, citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Rotary Mixers, of which the following is a specification.

This invention is a mixing machine intended more particularly for use in mixing the waste matter from jewelry factories and similar establishments.

The waste products of jewelry factories and similar establishments contain much valuable material which is now commonly ground up so as to be thoroughly pulverized and the valuable particles thereby separated from the particles of no value. The finely ground material is collected in barrels or other receptacles and is then shipped to smelters to be assayed and thoroughly reclaimed. The finely ground matter will vary greatly in its value so that there will be a wide range in valuation of the contents of the different receptacles shipped at one time. For various commercial reasons it is highly desirable that the several barrels constituting a single shipment shall be approximately equal in value, and to attain this end it is necessary to thoroughly mix the material obtained by several different grindings so that the values of the resultant products will be equalized.

It is the object of my present invention to provide a machine for mixing these ground products which will perform its work in a highly efficient manner and may be easily operated and readily cleaned.

The stated object of the invention, and such other objects as will incidentally appear as the description proceeds, are attained in the use of a machine of the general character illustrated in the accompanying drawings, and the invention consists in certain novel features which will be hereinafter first fully described and then more particularly pointed out in the appended claims.

In the drawings: Figure 1 is a side elevation of my improved mixing machine; Fig. 2 is an end elevation thereof with parts broken away and in section; Fig. 3 is a longitudinal vertical section on a larger scale.

In carrying out my invention, I employ a base 1 which is preferably of rectangular form and is provided on its upper side with bearings 2 in which shafts 3, extending along the opposite sides of the frame, are journaled. The said shafts are provided adjacent the ends of the frame with flanged pulleys or rollers 4 through which motion is imparted to the mixing drum, as will be presently more fully set forth. The shafts are extended beyond one end of the frame and are connected through a train of gearing, indicated at 5 and inclosed in a suitable housing 6 to protect it against dirt, whereby the said shafts will be simultaneously rotated in the same direction. The operating gearing comprises fixed and loose pulleys 7 and 8, over which a belt 9 may run from any convenient prime motor so as to impart motion to the train of gearing and thereby actuate the mixing drum.

The mixing drum comprises an intermediate portion or body 10 having a cylindrical portion 11 provided at one end with an external annular radial flange 12 and having a conical portion 13 extending from its opposite end and terminating in an expanded radial annular flange 14. The outer edge of the flange 14 is extended axially so as to provide a friction gear ring 15 adapted to rest upon the pulleys 4, and triangular ribs or fins 16 are provided in the angle formed by the flange 14 and the said ring 15 to re-inforce the said parts. The flange 12 fits closely against a head 17 which is provided with an axially extending annular flange 18 constituting a gear ring adapted to rest upon the rollers or pulleys 4 at that end of the base opposite the pulleys engaged by the ring 15, as clearly shown and as will be readily understood. The flange 12 is secured to the head 17 by bolts 19 inserted therethrough, and the said head is provided with an annular bead 20 which constitutes a centering device or guide so that the concentric relation of the main body of the drum and the head 17 will be insured. The flange 14 is provided with a similar centering bead 21, and within the space defined by said bead a conical head 22 is secured to the flange 14 by bolts 23, the said head 22 being of such dimensions that its side or converging walls will form a continuation of the conical or converging portion 13 of the main body 10 of the drum.

The outer smaller end of the head 22 is closed, except for a central opening which accommodates the shaft 24, and within the said opening, around the said shaft, is fitted a bushing 25. The said bushing 25 has an

annular bead or flange 26 at its inner end around which is fitted a hood or boxing 27 which is keyed to the said shaft, as shown at 28. This boxing and bushing constitutes an effectual guard to prevent the escape of material placed in the drum and to prevent collection of the same around the shaft or its bearing so as to interfere with the operation of the same. Upon the outer surface of the head 22 is formed an offset or boss 29 through which a set-screw 30 is inserted to engage the bushing 25 and thereby secure the same in position. This boss 29 is provided with an enlargement 31 at one side, and a collar 32 which is keyed to the shaft 24 is secured to the said enlargement 31 by a screw or bolt 33 inserted through the collar into the enlargement, as shown. The collar 32 is provided at one side with a radial socket 34 which may receive an operating lever or handle of any convenient type, when it is desired to rotate the shaft independently of the drum. The head 17 is provided with a central boss 35, and a set-screw 36 is mounted in said boss to secure a bushing 37, as shown. The inner end of the said bushing 37 is inclosed by a boxing 38, similar in all respects to the boxing 27 previously described, and around the adjacent end of the shaft is secured a cap 39 which fits close against the end of the bushing 37 and thereby prevents endwise movement of the shaft.

Within the drum upon the shaft, I secure a plurality of spokes or radial arms 40 to the outer ends of which are rigidly secured scraper blades 41 fitting closely against the inner surface of the main body 10 of the drum and having their outer edges formed on lines 42 extending parallel with the axis of the drum and on lines 43 disposed at an angle to the said axis corresponding to the inclination of the conical portion of the drum and fitting thereagainst, as clearly shown in Fig. 3. A filling and discharge opening 44 is provided at any point of the cylindrical portion 11 of the drum and is closed by a gate 45, as shown, In the head 17, adjacent the said filling and discharge opening, is a man-hole 46 through which access may be had to the interior of the drum for cleaning the same, when such operation is necessary.

When it is desired to mix ground materials in my machine, the matter to be mixed is placed in the drum through the filling opening 44 and the said opening is closed, after which the train of gearing 5 is actuated to rotate the shafts 3. The rollers or pulleys 4 will thus be set in motion and the frictional contact between the said rollers and the gear rings 15 and 18 will rotate the drum. As the shaft 24, with the blades carried thereby, is locked to the drum through the screw 33 and the parts engaged by said screw, the blades will act as agitators and rotate with the drum, and as a result the material in the drum will be carried around in the radial planes of the drum, and, as the different parts of the material successively reach the highest point, they will be thrown by the blades upon the main portion of the material, this tendency carrying them outwardly toward the inclined walls of the drum and the conical head so that they will be thrown outwardly toward the end of said head. As they are carried downward by the continued rotation of the drum, they will be thrown toward the larger end of the drum and, consequently, again taken up by the blades and carried to the highest point of the drum. The material is thus given a rotary movement in the radial planes of the drum and also a movement in the axial planes of the drum so that the several ingredients will be thoroughly agitated and mixed and, consequently, the value of the mass will be uniform so that an assay of a sample taken at random will accurately indicate the value of the entire mass. When it is desired to discharge the contents of the drum, the drum is rotated so as to bring the opening 44 to the lowest point thereof, after which the drum may be locked against movement by inserting any convenient wedging device between the gear rings on the drum and the rollers 4 engaging the same. The screw 33 is then withdrawn and a lever of any convenient form inserted in the socket 34 so that the shaft 24 may then be rotated without rotation of the drum. This rotation of the said shaft will cause the blades 41 to move as scrapers over the inner surface of the drum and force the contents thereof to the opening 44 and through the same into a convenient receptacle placed below the drum.

It will be readily observed that my device is exceedingly simple in its construction, being composed of few parts which are not liable to get out of order and it will be found highly efficient in practice. The gear rings are formed integral with the members carrying the same so that the liability of the said rings being detached or sheared off through continuous operation of the machine is minimized. Moreover, this construction reduces the cost of manufacture and facilitates the assembling of the parts, besides imparting great strength to the finished machine.

The substantially frusto-conical shape of the mixer causes a very thorough and uniform blending of the contents inasmuch as the contained material is given a rotary movement and also an axial movement from one end of the drum to the other, great uniformity throughout the entire mass being thereby attained and a single homogeneous mixture is produced.

With mixers now in use in jewelry factories the contents of the drum must be moistened before mixing to prevent loss by the escape of finely divided particles of precious metal, as dust from the drum. This requires the drying of the mixture before shipment. To avoid this, I have so constructed the mixing drum that when closed it is hermetically sealed, all escape of the contained material, either when dry or moist, being therefore prevented.

What I claim is:—

1. A mixing machine comprising a rotary drum having a cylindrical portion and a conical portion extending from one end thereof, and a plurality of blades within the drum having their outer edges provided with an axially extending portion conforming to the cylindrical portion of the drum and an obliquely disposed portion conforming to the conical portion of the drum immediately adjacent the cylindrical portion thereof, each blade lying entirely within a single axial plane of the drum.

2. A mixing machine comprising a drum having a cylindrical portion and a conical portion extending from one end thereof, means for rotating the drum, a shaft disposed concentrically within the drum, scrapers carried by said shaft and shaped to bear against the inner surface of the cylindrical portion of the drum and the conical portion thereof immediately adjacent the cylindrical portion, and means for locking said shaft to the drum.

3. In a mixing machine, a drum having a cylindrical portion at one end and a conical portion extending from the cylindrical portion to the opposite end, a conical head having a permanently closed outer end secured to the drum and forming a continuation of the conical portion thereof, a plane radial head secured to and closing the larger end of the drum, a shaft mounted in said heads concentric with the drum, radial arms extending from said shaft, and scrapers carried by said arms and bearing against the inner surface of the drum and against said plane radial head, the interior of the conical head being unobstructed.

4. In a mixing machine, a frusto-conical drum having annular radial flanges at its ends, the flange at the smaller end of the frame being extended and provided with a gear ring at its edge, a head having a centering bead closely surrounding the flange at the opposite end of the drum, said head being provided with a gear ring at its edge, fastening devices inserted through said flange and said head, a centering bead on the outer face of the extended flange at the smaller end of the drum, and a head fitted against and secured to said flange closely within the bead thereon.

In testimony whereof I affix my signature in presence of two witnesses.

OLIVER J. MOUSSETTE. [L. S.]

Witnesses:

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**Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."**