

958,503.

2 SHEETS—SHEET 1.



**WITNESSES**

RA Baldwin  
Walter Fumariss

**INVENTOR**

INVENTOR  
Jno. C. Lindworth,  
By ~~Robert~~ Byrnes Parmelee,  
his Atty.

J. L. KLINDWORTH.  
TIPPING FURNACE, MIXER, &c.  
APPLICATION FILED JULY 29, 1909.

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Patented May 17, 1910.

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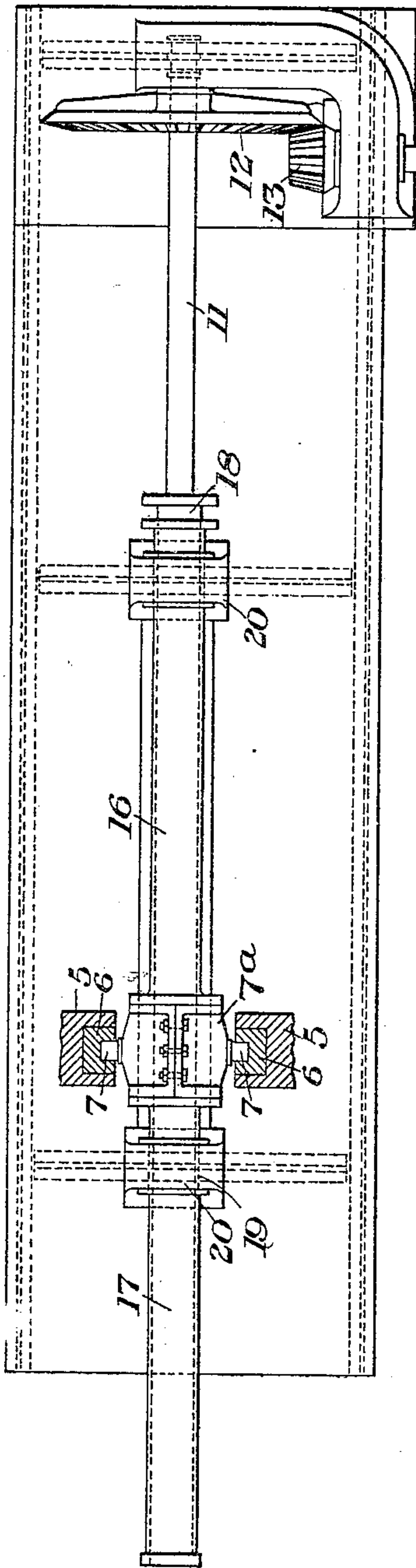


Fig. 2.

Fig. 4.

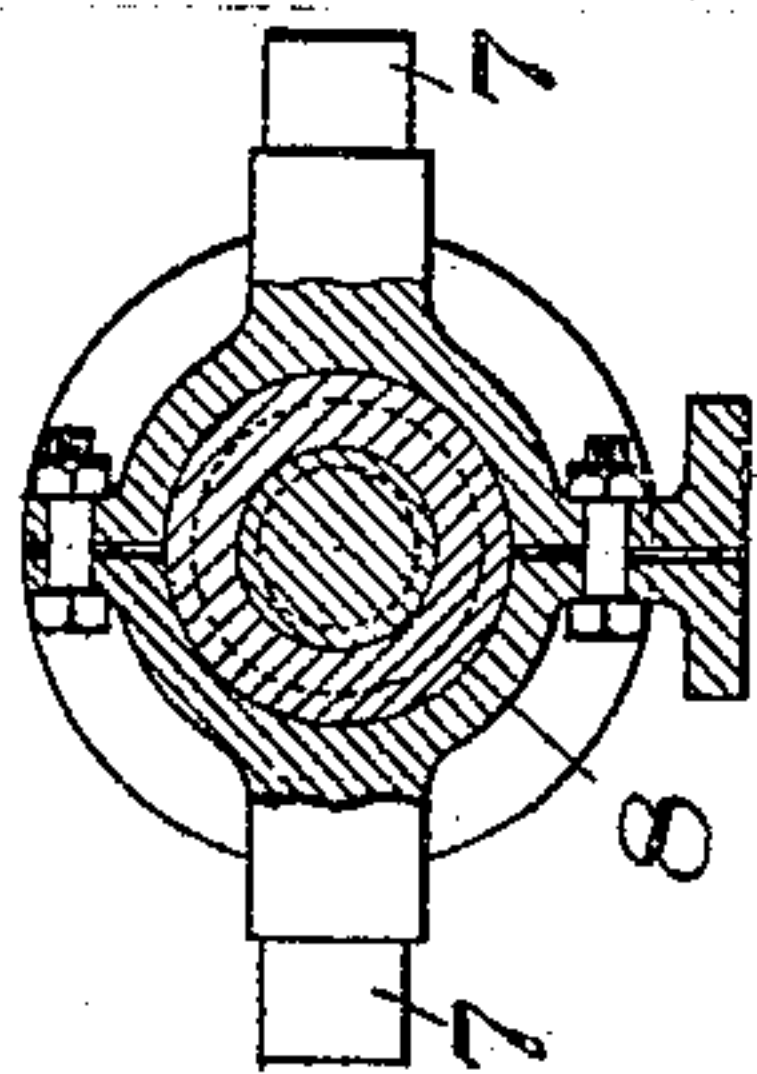
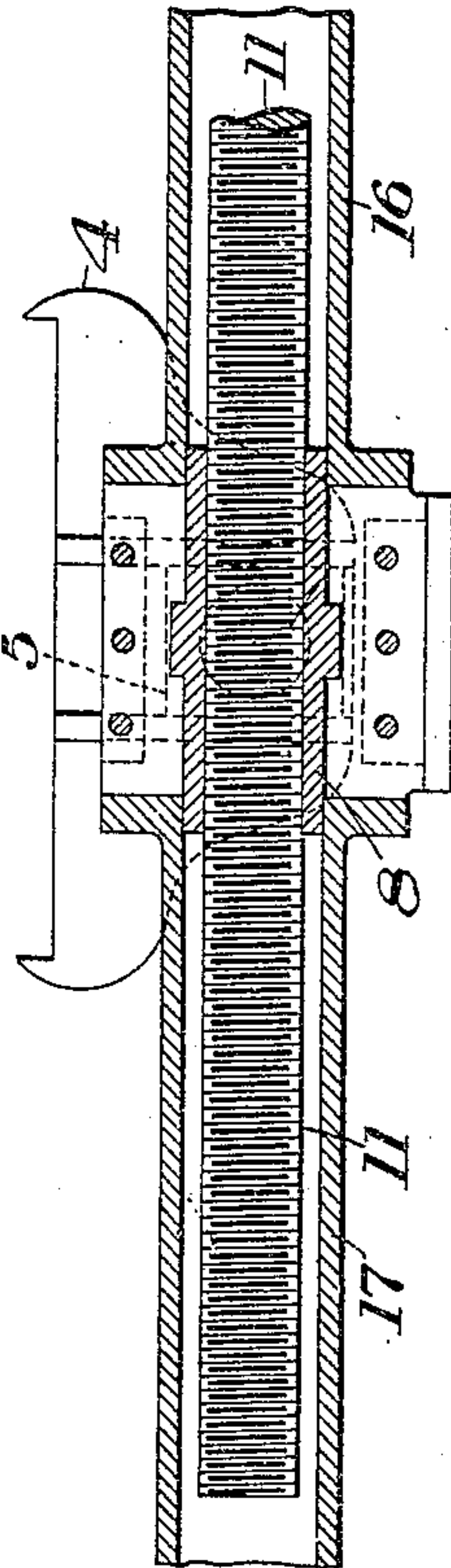


Fig. 3.

WITNESSES

R. A. Baldwin  
Walter Pamariss

INVENTOR

Jno. L. Klindworth,  
by Baker, Byrnes & Parnell,  
his Attys



# UNITED STATES PATENT OFFICE.

JOHN L. KLINDWORTH, OF BELLEVUE, PENNSYLVANIA, ASSIGNOR TO MESTA MACHINE COMPANY, OF PITTSBURG, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

TIPPING FURNACE, MIXER, &c.

958,503.

Specification of Letters Patent.

Patented May 17, 1910.

Application filed July 29, 1909. Serial No. 510,160.

*To all whom it may concern:*

Be it known that I, JOHN L. KLINDWORTH, of Bellevue, county of Allegheny, and State of Pennsylvania, have invented a new and useful Improvement in Tipping Furnaces, Mixers, &c., of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a transverse section showing my invention applied to a tipping mixer vessel. Fig. 2 is a plan view showing the actuating gearing and Figs. 3 and 4 are respectively transverse and longitudinal sections of a portion of the actuating mechanism.

My invention has relation to tipping furnaces, mixers, etc., and more particularly to the actuating mechanism therefor.

The invention is designed to provide means of simple and efficient character for protecting the actuating screw from contact with dirt, molten metal, or other foreign matter, and further, to provide means of novel character for relieving the actuating screw and nut from vertical and lateral thrusts and pressure.

The nature of my invention will be best understood by reference to the accompanying drawing in which I have shown the preferred embodiment thereof, and which will now be described, it being premised, however, that various changes may be made in the details of construction and arrangement of the parts, by those skilled in the art, without departing from the spirit and scope of the invention as defined in the appended claims.

In these drawings, the numeral 2 designates a metal mixing vessel of any well known or suitable character which is tiltably supported upon the series of rollers 3 in the usual manner. Secured to the lower portion of the vessel 2, is a bracket 4 having a yoke portion 5 provided with bearings 6 to receive trunnions 7 of a cross-head 7<sup>a</sup>, carrying a nut 8. This cross-head is preferably provided with a slidable bearing on a suitable track or way 9 on the base 10 of the tipping mechanism.

11 is a screw shaft extending transversely underneath the mixer and through the nut 8. This shaft is provided with a beveled gear wheel 12 at one end portion, driven by a beveled pinion 13 on a shaft 14, which

is driven by an electric motor 15 and preferably forms a direct extension of the armature shaft of said motor.

Secured to opposite sides of the nut 8 are two cylinders 16 and 17 which surround the threaded portion of the shaft 11, said cylinders being closed at the ends, and the cylinder 16 having a stuffing box 18 for the unthreaded portion of the shaft 11. These cylinders are slidably supported in suitable bearings 19, carried in the posts or standards 20 supported on the base of the tipping mechanism.

The operation will be readily understood. To tip or tilt the mixer vessel, the shaft 11 is actuated by the electric motor 15, the threads of said shaft engaging the threads of the nut 8 and thereby effecting the desired movement of the vessel. The shaft 11 has no endwise movement, but simply rotates within the nut, thereby causing a back and forth travel of the nut, the cylinders 16 and 17 moving with the nut. These cylinders are preferably filled with oil so as to insure a perfect lubrication of the screw and nut at all times. The cylinders not only protect the screw from contact with dirt, hot metal or other foreign matter, but they also serve to take the vertical and lateral pressure and thrusts of the nut in operation, and thereby relieve the screw.

The shaft 11 may be actuated by any suitable motor, but I prefer to employ an electric motor for the reason that it can be placed at a distance from the shaft and mixer where it is not likely to be injured by contact with molten metal.

While I have shown the invention as applied to a metal mixer, it will be readily understood that it is equally applicable to tilting or tipping furnaces.

What I claim is:

1. The combination with a tilting or tipping vessel, having a bracket member secured to its lower portion, of a cross-head trunnioned in bearings carried by said bracket, a nut carried by the cross-head, a slideway in which said nut is mounted to travel, an actuating screw engaging the nut, and casings or cylinders surrounding the screw; substantially as described.

2. The combination with a tilting or tipping vessel having an actuating nut, of a screw shaft engaging said nut, means for rotating said shaft, cylinders or casings con-

needed to said nut and inclosing the screw portion of said shaft, and bearings for the cylinders or casings in which they are guided and have a sliding bearing; substantially as described.

3. The combination with a tipping or tilting vessel having an actuating nut, of a screw shaft engaging said nut, means for rotating said shaft, cylinders or casings connected to the nut and surrounding the shaft and forming lubricant reservoirs, and bearings for the cylinders or casings in which they are guided and have a sliding bearing; substantially as described.

4. The combination with a tipping or tilt-

ing vessel having an actuating nut, of a screw shaft engaging said nut, means for rotating said shaft, cylinders or casings connected to the nut and surrounding the shaft and forming lubricant reservoirs, and bearings for the cylinders or casings in which they are guided and have a sliding bearing; the nut also having a guide bearing; substantially as described.

In testimony whereof, I have hereunto set my hand.

JOHN L. KLINDWORTH.

Witnesses:

JOHN M. GRANT,

WILLIAM A. DAVIS.