

S. PEACOCK.

FURNACE FOR TREATING SULFIDS, PHOSPHIDS, &c., IN ATMOSPHERES OF VARIOUS GASES.

APPLICATION FILED SEPT. 19, 1910.

1,009,559.

Patented Nov. 21, 1911.

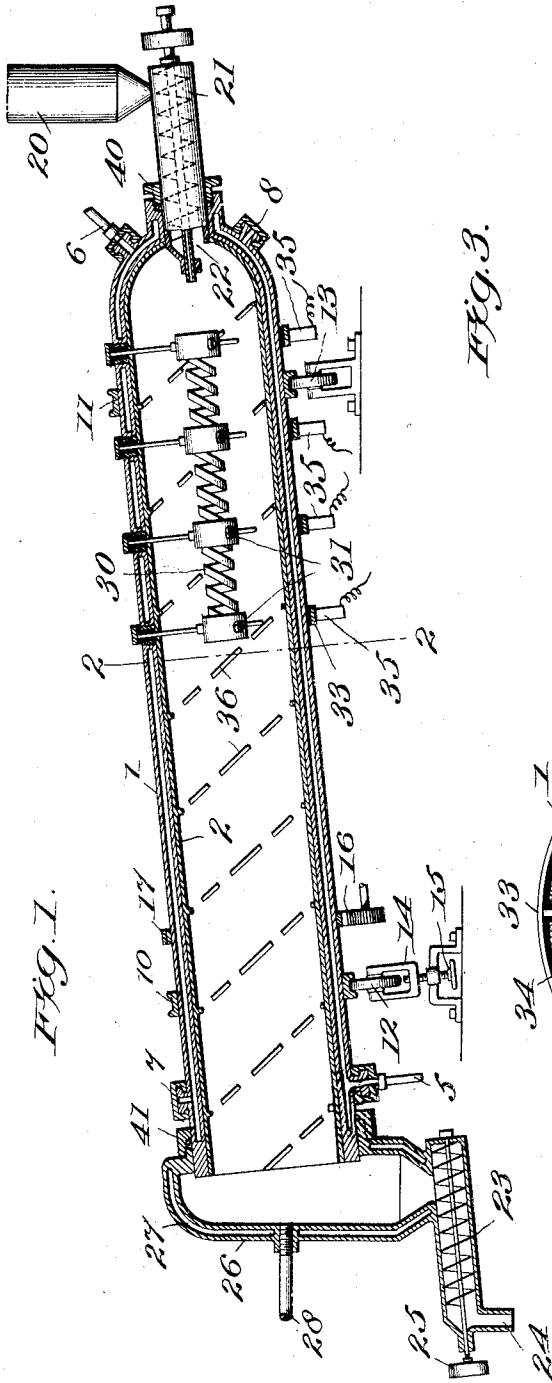


Fig. 1.

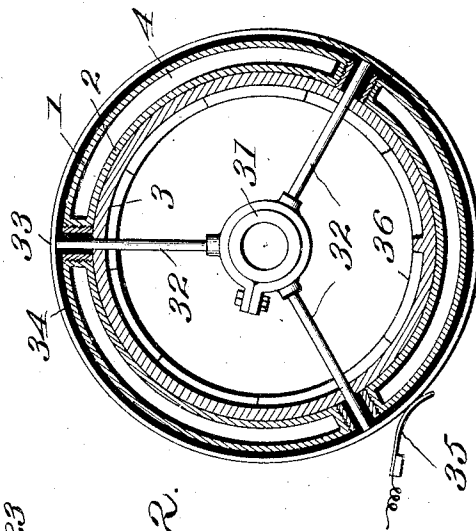
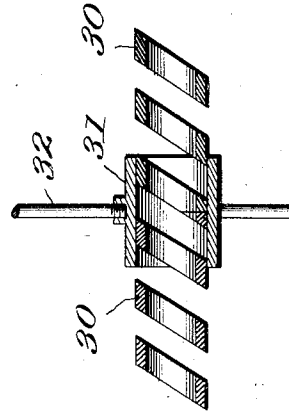


Fig. 2.

Witnesses
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UNITED STATES PATENT OFFICE.

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FURNACE FOR TREATING SULFIDS, PHOSPHIDS, &c., IN ATMOSPHERES OF VARIOUS GASES.

1,009,559.

Specification of Letters Patent.

Patented Nov. 21, 1911.

Application filed September 19, 1910. Serial No. 582,778.

To all whom it may concern:

Be it known that I, SAMUEL PEACOCK, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Furnaces for Treating Sulfids, Phosphids, &c., in Atmospheres of Various Gases; and I do hereby 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 furnace for treating sulfids, phosphids, carbids, selenids and similar compounds in atmospheres of various gases or mixtures of gases, and at temperatures and pressures subject to control and convenient regulation.

To these ends the invention consists in the novel details of construction and combination of parts more fully hereinafter disclosed and particularly pointed out in the claims.

Referring to the accompanying drawings forming a part of this specification, in which like numerals refer to like parts in all the views, Figure 1 is a sectional view of a furnace made in accordance with my invention, Fig. 2 is an enlarged sectional view taken on the line 2—2 of Fig. 1, and Fig. 3 is a detail sectional view showing a clamp for connecting contiguous sections of the resistor.

1 indicates the outer shell of a furnace and 2 the inner shell of the same, which is preferably provided with a refractory lining such as 3. Between the outer and inner shells a space 4 is left, in which water may be forced as by the pipe 5, or said space may be filled with air. When water is employed in the space 4, it is preferably discharged as at 6, and suitable rings 7 and 8 are provided in order to make a tight joint. The furnace body is further provided with supporting rings 10 and 11, in which fit the supporting rollers 12 and 13 respectively, and the bracket 14 supporting the roller 12 is preferably provided with an adjusting means 15 for regulating the inclination of the axis of the furnace.

16 represents a driving gear, and 17 a driven ring attached to the furnace, and through which the said furnace may be rotated, as will be readily understood.

The feed end of the furnace is provided

with a suitable hopper 20 leading to a screw conveyer 21, the end 22 of which is somewhat constricted, in order that the material in said conveyer may pack as it enters the furnace and thereby prevent a free escape of the gases therefrom. The delivery end of the furnace is likewise provided with a screw conveyer 23 having a constricted end 24 as shown, and provided with a power pulley 25 for the purpose of rotating said conveyer 23. The delivery end of the furnace is also provided with the closure 26, having the air space 27, and the induction pipe 28 for gases.

At the center of the furnace and extending a suitable distance along the axis of the same is a resistor 30 preferably of carbon, and preferably made in sections as best illustrated in Fig. 3. Clamps 31 unite the sections together as shown, and each of these clamps is supported by spokes 32 passing to the outside of and suitably insulated from the furnace walls, as indicated in Fig. 2. Said spokes are electrically connected with the conducting rings 33, which are likewise insulated from the outer shell 1 by the non-conducting material 34, as will be readily understood. Suitable contacts 35 are provided for conveying current to the rings and through the resistor sections 30, which contacts are preferably of carbon, and of the nature of the well known brushes employed in dynamos and motors. The furnace is further preferably provided with deflectors 36 for the purpose of stirring material passing through the furnace, and causing the same to intermittently contact with the gases while in a heated condition.

In operation the material to be treated is fed from the hopper 20 by means of the screw conveyer 21 in a thin stream into the body of the furnace, while the latter is slowly revolved. The temperature of the interior of the furnace is then brought to the desired degree by controlling the amount of current passing through the resistor 30, and the pressure of the gas in the furnace is brought to the desired point by observing suitable instruments not shown, and connected with the induction pipe 28. The material is then examined as it emerges at the orifice 24, and the speed of the furnace is regulated until the desired product is produced.

By adjusting the screw 15, and by regulating the speed of the driving gear 16, the time the gases act upon the material can be controlled, and therefore the quality of the product can be regulated. The joint between the shell of the screw conveyer 21 and the furnace may be regulated by the stuffing box 40, and the joint between the closure 26 and the furnace proper may be kept tight by means of the screw ring 41.

By making the resistor 30 in the form of a spiral, it readily adjusts itself in contracting and expanding to the different temperatures, and all danger of rupture is avoided. Further by making said resistor in sections as illustrated, less expense is encountered, and when one portion burns out it can be readily replaced.

What I claim is:

1. In a furnace for subjecting compounds to the action of gases, the combination of a conveyer for feeding the material to be treated into the furnace body; a gas inlet; a conveyer for delivering the treated material from said body; means to regulate the inclination of said body; means to rotate said

body; a resistor of a spiral form in said body adapted to heat the same; and a water jacket surrounding said body, substantially as described.

2. In a furnace for subjecting compounds to the action of gases, the combination of a conveyer for feeding the material to be treated into the furnace body; a gas inlet; a conveyer for delivering the treated material from said body; means to regulate the inclination of said body; means to rotate said body; a resistor of a spiral form in said body adapted to heat the same; clamps for supporting said resistor; spokes connected to said clamps; rings on the outside of said furnace connected to said spokes and insulated from said furnace; and a water jacket surrounding said body, substantially as described.

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

SAMUEL PEACOCK.

Witnesses:

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