April 5, 1932.

F. R. KEMMER

1,852,525

CONDENSER SEAL

Filed Feb. 6, 1930

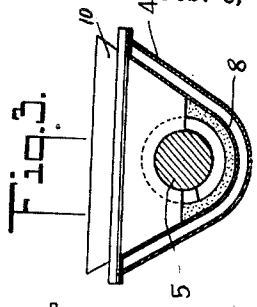

Fig. 3.

Fig. 1.

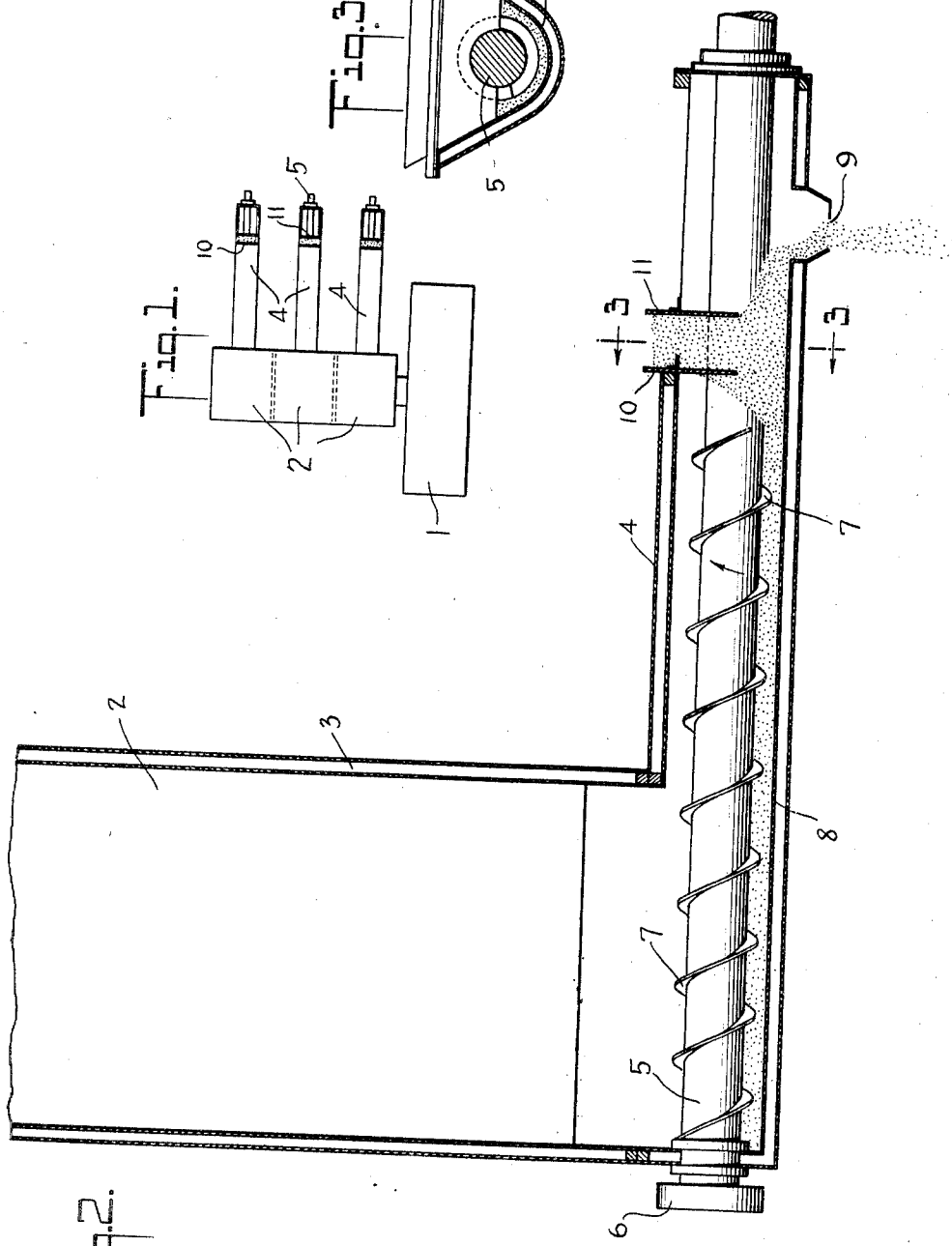

Fig. 2.

INVENTOR
FRANK R. KEMMER
BY
ATTORNEY

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UNITED STATES PATENT OFFICE

FRANK R. KEMMER, OF LARCHMONT, NEW YORK, ASSIGNOR TO AMERICAN CYANAMID COMPANY, OF NEW YORK, N. Y., A CORPORATION OF MAINE

CONDENSER SEAL

Application filed February 6, 1930. Serial No. 426,238.

My present invention relates to a seal adapted for condensers and to a method of obtaining the same. The invention is specifically concerned with the operation of an apparatus for discharging zinc dust or blue powder from a condenser within which the same is produced.

In the production of zinc dust it is common practice to connect a condenser or a series of condensers, with a smelting furnace for the condensation of the zinc to the powdered form. In the operation of such an apparatus the smelting furnace and condensers are filled with carbon monoxide and it is of extreme importance that air not be permitted access to the interior of the condensers or the smelter as explosive mixtures would thus be formed.

It is, therefore, among the primary objects of the invention to provide for the discharge of the condensed zinc in a manner which will preclude the leaking and back-passage of air through the discharge apparatus into the condenser.

To this end the invention contemplates in connection with a condenser, a discharge means at the bottom thereof for moving the condensed zinc towards a discharge port. A housing is provided surrounding the discharge means and a baffle or baffles are provided depending from the top of the housing and straddling the feeding means at a point between the end of said means and the discharge port. As a result of the operation of such a mechanism, the condensed powdered or granular material builds or banks up against the baffle or baffles and in conjunction with the baffle or baffles forms a complete seal against in-coming air. The condensed material is discharged through the discharge port beyond the banked-up mass.

The invention further consists in the novel arrangement, combination and construction of parts and in the method of operating the same, more fully shown in the accompanying drawings and in the specification.

In the drawings,—

Fig. 1 is a diagrammatic plan view of a smelter-condenser-discharge combination,

Fig. 2 is a fragmentary sectional view through one of the condensers showing the invention, and

Fig. 3 is a sectional view along the line 3—3 of Fig. 2.

Referring now with particularity to the embodiment illustrated, I have shown in Fig. 1 a smelting unit diagrammatically indicated at 1 which may be of ordinary type, delivering vaporized zinc to a series of three condenser units 2. Obviously the condenser may be in single units or a plurality thereof as desired.

As shown, the walls 3 of the condensers are hollow for the circulating of a cooling medium to increase the condensation efficiency thereof. At the bottom of the condensers longitudinally extending housings 4 are provided, likewise with hollow walls for a cooling medium to be circulated therethru if found necessary or desirable.

Suitably journaled within each housing 4 is a shaft 5 driven by pulley 6 and provided with a spiral screw conveyer 7 which constitutes the discharge means. As shown in Fig. 3, the bottom of the housing 4 conforms as at 8 substantially to the configuration of the feeding means although a space exists between the bottom of the screw and the bottom of the housing 8.

The spiral screw 7 terminates within the housing 4, and between the end of the screw and the discharge port 9 there is located one baffle or a pair of baffles 10 and 11 depending from the top of the housing 4 and straddling the feeding means 5, although terminating short of the bottom of the housing.

In operation the condensed zinc dust or blue powder descends within the condenser 2 into the bottom thereof, and upon rotation of the screw conveyer 7, moves toward the discharge port 9. When the material reaches the end of the screw 7, its movement is no longer positive and a mass thereof will be built up at this point. Continued movement of the screw 7 will cause a sufficient amount of material to accumulate at the end thereof so that it will reach the bottom of the baffle 10 and be banked against the rear side thereof.

Where two baffles are provided, as shown in Fig. 2, this banked up material will build

up against the rear faces of both baffles and partially fill the space between the two. In both cases the condensed material will be discharged from the far end of the pile through the open port 9. In this way the open end of the housing is closed by the condensed material itself and back leakage of air into the condenser will be prevented.

In some instances it may be desirable to manually supplement the pile of banked up condensate by adding more of the same material to the pile through the space between the baffles, but ordinarily the operation of the condenser will supply material fast enough to keep this pile of the proper size to seal the housing.

While the invention has been shown and described as being applied to a zinc condenser for blue powder, yet obviously it may be used in any situation where it is desirable to convey granular or powdered material to an outlet while maintaining a seal around the conveying means. This may be necessary to either prevent back-passage of air or to prevent the escape of desirable gases within the housing and associated mechanism. I am not limited to the details of operation and of construction above set forth, as various changes may be made therein in accordance with my invention, the scope of which is set forth in the claims appended hereto.

I claim:—

1. In combination, a condenser, means to discharge granular material condensed therein toward a discharge port said discharge means comprising a shaft carrying a spiral conveyer vane, a housing for the discharge means, a fixed baffle depending from the top thereof and straddling said shaft said vane terminating short of said baffle and a discharge port beyond the baffle.

2. In combination, a condenser, means to dischage granular material condensed therein toward a discharge port said discharge means comprising a shaft carrying a spiral conveyer vane, a housing for the discharge means, a plurality of spaced apart baffles depending from the top of the housing and straddling said shaft said vane terminating short of said baffle, and a discharge port beyond the baffles.

3. In combination, a condenser, means to discharge granular material condensed therein toward a discharge port said discharge means comprising a shaft carrying a spiral conveyer vane, a housing for the discharge means, a fixed baffle depending from the top thereof and straddling said shaft said vane terminating short of said baffle, the baffle terminating short of the bottom of the housing and a discharge port beyond the baffle.

4. In combination, a condenser, means to discharge granular material condensed therein toward a discharge port said discharge means comprising a shaft carrying a spiral conveyer vane, a housing for the discharge means, a plurality of spaced apart baffles depending from the top of the housing and straddling said shaft said vane terminating short of said baffle, the baffles terminating short of the bottom of the housing, and a discharge port beyond the baffles.

5. In combination, a condenser, means to discharge granular material condensed therein toward a discharge port, and including a screw conveyer, a housing therefor having a curved bottom substantially conforming to the configuration of the conveyer, the screw portion of the conveyer terminating short of a discharge port, and a fixed baffle depending from the top of the housing and straddling the conveyer beyond the screw portion and a discharge port beyond the baffle.

6. In combination, a condenser, means to discharge granular material condensed therein toward a discharge port, and including a screw conveyer, a housing therefor having a curved bottom substantially conforming to the configuration of the conveyer, the screw portion of the conveyer terminating short of a discharge port, and a baffle depending from the top of the housing and straddling the conveyer beyond the screw portion, the top of the housing beyond the baffle being open.

7. In combination, a condenser, means to discharge granular material condensed therein toward a discharge port and including a screw conveyer, a housing therefor having a curved bottom substantially conforming to the configuration of the bottom of the conveyer, the screw portion of the conveyer terminating short of a discharge port and a plurality of spaced apart baffles depending from the top of the housing and straddling the conveyer beyond the screw portion.

8. In combination, a zinc dust condenser, an elongated housing at the bottom thereof adapted to receive the condensed material, a conveyer for carrying the zinc dust from the bottom of the condenser into the housing, a discharge port in the housing, a plurality of baffles between the condenser and the discharge port, depending from the top of the housing, the conveyer terminating short of the baffles whereby the material discharged from the condenser will be banked up in a pile against the baffles and thus seal the housing against in-coming air the top of the housing between the baffles being open.

In testimony whereof, I have hereunto subscribed my name this 3rd day of February 1930.

FRANK R. KEMMER.