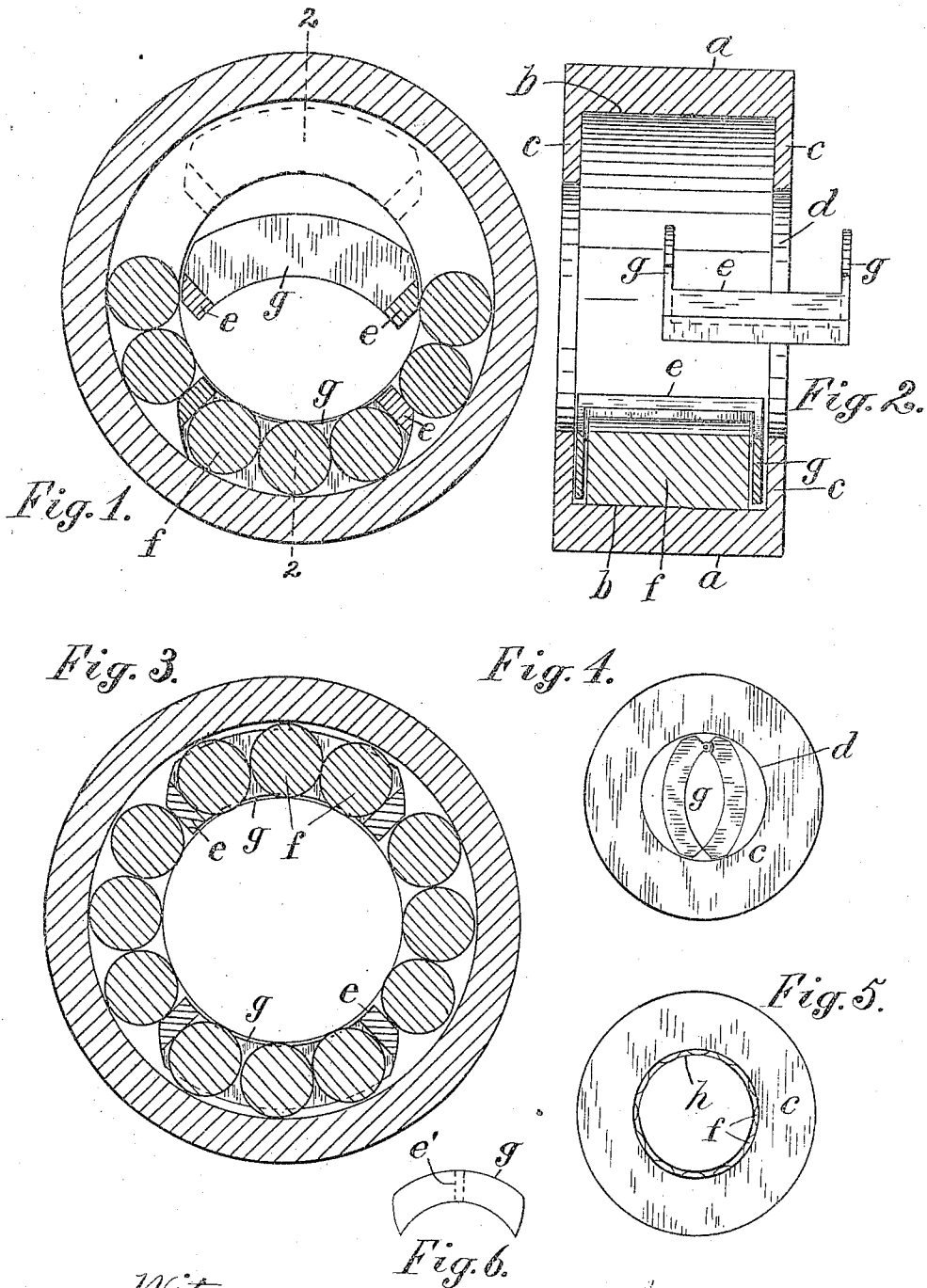


964,285.

Patented July 12, 1910.



Witnesses:
 L. L. Lee,
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UNITED STATES PATENT OFFICE.

CHARLES S. LOCKWOOD, OF NEWARK, NEW JERSEY, ASSIGNOR TO HYATT ROLLER BEARING COMPANY, OF HARRISON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

ROLLER-BEARING WITH TRANSVERSELY-DIVIDED ROLLS.

964,286.

Specification of Letters Patent.

Patented July 12, 1910.

Application filed October 18, 1909. Serial No. 523,283.

To all whom it may concern:

Be it known that I, CHARLES S. LOCKWOOD, a citizen of the United States, residing at 289 Market street, Newark, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Roller-Bearings with Transversely-Divided Rolls, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to a roller bearing in which tubular rolls are employed, the rolls being formed by winding a strand spirally upon a mandrel which leaves a slight space or groove between the successive spiral coils. Such grooves take up the oil used to lubricate the bearing and operate to move the oil toward one end of the roll. It has, therefore, been found advantageous to divide each roll into sections and to make the sections of opposite spirals, so that the oil is constantly distributed back and forth in different parts of the bearing.

The object of the present invention is to furnish a construction for these divided rolls by which the roll-sections which revolve in lateral contact are held automatically from any lateral displacement, and do not require a rod extended through each roll, as has been done heretofore with divided rolls. This object is attained by forming the divisions of the rolls at diverse points in their lengths so as to break joints, thus causing the roll-sections to hold one another in place and avoiding any opportunity for any of the roll-sections to crowd into the place occupied by an adjacent roll-section. This construction wholly avoids the expense and labor of inserting rods through the rolls and retains the roll-sections in their places automatically.

The invention will be understood by reference to the annexed drawing, in which—

Figure 1 is a longitudinal section of a bearing-box, with rolls and a guide embodying the invention; Fig. 2 is a transverse section of the same at the divisions of the rolls; and Fig. 3 is an elevation of the rolls and guide detached from the bearing.

a designates a casing having cylindrical bore, in which twelve rolls are shown di-

vided at *a'* intermediate their ends into unequal sections *b* and *b'*, one of such sections in each roll being longer than the other, and the ends of the two sections in each roll normally touching one another when in operation.

The two sections of the roll are shown formed of strands wound in opposite directions so that one roll-section *b* is wound left-hand, and the other section *b'* is wound right-hand, in the upper part of the casing which, as is well known, tends to feed the oil inward toward the middle of the casing and not to carry it solely toward one end, as when the roll has a continuous spiral twist from one end to the other.

In Figs. 1 and 3, the long section in each roll is shown contiguous to the short section in the adjacent roll, and the adjoining sections thus hold one another from displacement laterally. The adjacent rolls in lateral contact have the strands of their contiguous sections preferably wound in opposite directions, so that while the oil is moved toward the middle of the bearing by the sections of one roll it is moved toward the two opposite ends of the bearing by the sections of the adjacent roll.

I do not claim the mere use of roll-sections oppositely wound to distribute the oil in the bearing; but the arrangement of rolls divided into such oppositely wound sections in lateral contact with other rolls having their sections oppositely wound, so that the different roll-sections hold one another in place laterally, and also exert an opposite influence upon the oil.

In Fig. 2, the rolls are shown fitted in a cage consisting of circular beads *c* connected by two guide-bars *d*, but the cage forms no part of the present invention and may be made of any desired construction.

Having thus set forth the nature of the invention what is claimed herein is:

In a roller bearing, the combination, with a cylindrical shaft and casing, of spirally wound tubular rolls fitted in lateral contact with one another and divided transversely into unequal sections intermediate the ends of the bearing, the roll-sections in the adjacent rolls breaking joints with one another, the two sections of each roll having

any one of the clinker chambers. In this construction, air supplied to the furnace comes through the main duct H, as in the previous instance, and under ordinary circumstances passes to the ash pit C through the valve M', the passage J' between the clinker cooling grates A' and the valves M². When a grate B has been cleared of clinker and the hot clinker has been deposited upon the clinker grate A', the valves M' and M² are closed and the air is directed through the hot clinker and thence to the ash pit through the valves N' and N² which are opened to allow the air to pass through them. In both forms of the invention the door or opening through which the clinker passes during its travel from the combustion chamber is arranged exteriorly of the furnace.

What I claim as my invention and desire to protect by Letters Patent is:—

1. A furnace comprising a combustion chamber having a closed bottom and a fuel supply opening and a clinker discharge opening at a point opposite the fuel supply opening and located above the grate, and a clinker receiving chamber arranged below and separate from the combustion chamber and having an inclined grate therein and also provided with an upper clinker inlet opening adjacent to the clinker discharge opening of the said combustion chamber, the heat of the clinker in the clinker receiving chamber being utilized to heat the air supply for the combustion chamber.

2. A furnace comprising a combustion chamber having a grate and a fuel supply opening, a clinker receiving chamber below and separate from the combustion chamber, the combustion and clinker chambers having openings for the withdrawal of the clinker from the combustion chamber and deposit thereof into the clinker receiving chamber, a main air supply duct in communication with the combustion chamber and having distinct means for establishing communication with the clinker chamber, and independently operative means for cutting off the supply of air to either the combustion chamber or the clinker receiving chamber, the clinker heating its chamber, and the heat

utilized in heating the air supplied to the combustion chamber.

3. A furnace comprising a combustion chamber having a fuel supply opening and a clinker outlet above the grate thereof and independent of the supply opening for the fuel, a clinker receiving chamber separate from the combustion chamber and having a clinker receiving opening adjacent to the outlet of the combustion chamber, a main air supply duct in communication with the combustion chamber and provided with means for establishing communication with the clinker receiving chamber, communicating means between the upper portion of the clinker receiving chamber and the combustion chamber, and means for cutting off the supply of air to either the combustion chamber or clinker receiving chamber.

4. A furnace comprising a combustion chamber having a fuel supply opening and an additional opening passing through to the exterior thereof for withdrawal of clinker therefrom and independent of the fuel supply opening, a clinker receiving chamber separate from the combustion chamber and having a clinker introducing opening exterior of the furnace and adjacent to the clinker withdrawal opening of the combustion chamber, the clinker receiving chamber also having an outlet opening below the said clinker introducing opening for the discharge of the cooled clinker, and an inclined grate in the said clinker receiving chamber and leading from a point near the clinker introducing opening to the discharge opening for the cooled clinker and over which the clinker gravitates toward said discharge opening, the heat units of the clinker in the clinker receiving chamber being utilized to heat the air supply for the combustion chamber.

In witness whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

HENRY NORMAN LEASK.

Witnesses:

I. OWDEN O'BRIEN,
HARRY BARNFATHER.