lesser than the other part. Hence, extra shut down required to replace those liners which is not desirable. Hence, this design was also not sacrosanct in all respects so far as functioning of mixing drums along with the lining system are concerned, namely preparing a homogeneous mixture of all ingredients fed into it by way of churning during drum rotation and formation of balls in the sinter mix particles for effective sintering in the sintering machine. Research is on in this field for a considerable period of time, but significant improvement is yet to be achieved.

US-5178457-A mentions rotary drum mixers lined with polymeric material such as polyurethane having ceramic tiles or chips dispersed therein.

Accordingly, there was a long felt need to develop a mixing drum for a blast furnace provided with an improved lining system whereby, homogeneous mixture is obtained out of mixing drums with greater precision and the formation of balls in the sinter mix particles for effective sintering is generated out of the mixing drums with greater precision and efficiency.

The present invention meets the aforesaid long felt need.

All through out the specification including the claims, the words "mixing drum", "liners", "lifter bar ", "abrasion resistant", "wear resistant" are to be interpreted in the broadest sense of the respective terms and includes all similar items in the field known by other terms, as may be clear to persons skilled in the art. Restriction/limitation, if any, referred to in the specification, is solely by way of example and understanding the present invention.

OBJECTS OF THE INVENTION

It is a principal object of the present invention to provide a mixing drum for a blast furnace whereby homogeneous mixture is obtained out of mixing drum with greater precision and the formation of balls in the sinter mix particles for effective sintering is generated out of the mixing drum with greater precision and efficiency.

It is a further object of the present invention to provide a mixing drum equipped with a specially designed lining for a blast furnace whereby homogeneous mixture is obtained out of mixing drum with greater precision and the formation of balls in the sinter mix particles for effective sintering is generated out of the mixing drum with greater precision and efficiency.

It is yet another object of the present invention to provide high quality sinter raw material mix at a low cost, for a blast furnace.

WE CLAIM:

1. Mixing drum for a blast furnace including a body and adapted to accommodate materials for mixing, said drum having suitable lining system, said lining system including liners of polyurethane ~~with ceramic blocks impregnated~~ wherein said liners include inserted ceramic blocks, and~~.~~

~~2. The mixing drum as claimed in claim 1 wherein~~ said lining system includes lifter bars, said lifter bars being made of highly wear resistant poly-urethane with ceramic blocks ~~impregnated~~ inserted towards the leading edge of said lifter bars.

~~3~~2. The mixing drum as claimed in claim ~~2~~1 wherein the size, shape and number of inserted ceramic blocks ~~impregnated~~ are selected, depending upon the material wear rate.

~~4~~3. The mixing drum for a blast furnace as claimed in claim 1 wherein said body is cylindrical and length of drum is longer than the diameter and placed at an inclination.

~~5~~4. The mixing drum as claimed in claim 1 wherein said materials include iron ore, limestone, coke and dolomite.

~~6~~5. The mixing drum as claimed in claim ~~5~~4, wherein said drum is adapted to be rotated for churning of a mixture of iron ore, limestone, coke and dolomite.

~~7~~6. A blast furnace installation having a plurality of mixing drums, each said mixing drum being as claimed in any of the claims 1 to ~~6~~5.

~~8~~7. A method of manufacturing a mixing drum for a blast furnace, said method including:
-molding the drum to desired shape such that it is adapted to accommodate materials for mixing,
-procuring raw material for preparing the liners of the lining system of the drum, said raw material including polyurethane and ceramic blocks,
-molding the liners to desired shape and design including trimming and finishing the same ~~such~~wherein the liners comprise highly wear resistant poly-urethane with ceramic blocks ~~impregnated~~ inserted towards the leading edge of said liners~~—~~, and wherein said liners include lifter bars with ceramic blocks inserted towards the leading edge of said lifter bars, and
-installing said liners to said mixing drum with suitable means.

~~9. The method of manufacturing a mixing drum of a blast furnace as claimed in claim 8 wherein said liners include lifter bars~~

8. The method of manufacturing a lifter drum of a blast furnace as claimed in claim 7, wherein ~~and~~ the step of installing the lifter bars to the mixing drum is carried out with stud, washer and nylock nut~~.~~

~~10~~9. The method of manufacturing a mixing drum as claimed in claim ~~9~~8 wherein said lifter bars are molded such that ~~it comprises~~ lifter bars include highly wear resistant polyurethane with ceramic blocks ~~impregnated~~ inserted towards the leading edge of said lifter bars, the size, shape and number of ceramic blocks ~~impregnated~~ inserted being selected, depending upon the material wear rate, said method further including regular monitoring of the lifter bars to access the linear wear and to establish the life achieved.