Patented June 27, 1939 2,163,727

UNITED STATES PATENT OFFICE

2,163,727

REMOVABLE TOP FOR SOAKING PITS

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Original application October 12, 1936, Serial No. 105,336. Divided and this application May 17, 1937, Serial No. 143,226

3 Claims. (Cl. 268—10)

This application is a division of my application Serial No. 105,336, filed October 12, 1936, for Soaking pits and like heating furnaces, and the invention relates specifically to covers or doors for said pits and the means for retracting the same.

Retractable covers or doors as heretofore built leave much to be desired in point of life and insulation. Where such covers are supported by a truck carried on rails along the side of the pit, sufficient space for overlap is lacking; the view of the pit by the craneman is limited; and high cover and pit top repairs follow. Where the covers are carried on trucks, it is impossible to secure good sealing because, if the cover be lowered to seat well, the weight is off the axles and no traction remains. Unless covers are well sealed, they permit serious heat losses as well as infiltration at times and damage to the cover edge castings and channeling of pit tops. For small pits, covers may be made with a cast steel frame lined with a spherically shaped arch of fire brick. For large pits, however, it is necessary to use structural cover frames, for which spherical arches are not suitable because of the difficulty of providing for the arch thrusts and because of the volume of space formed beneath such arches. This has forced the use of flat or suspended arches of refractory units, supported by special hanger castings that rest upon the structural frame members. This type of cover is expensive in first cost and short lived because there is no means of keeping the brick elements tight, and further insulation cannot be applied as the hanger castings becomes overheated. The racking of such covers due to movements accentuate the difficulties.

One object of the present invention is to provide a multiple arched cover which will afford ready access to recuperators for inspection and cleaning and which may be insulated; also a cover that will remain tight in spite of movements, reduce the number of special brick shapes required, and eliminate hanger castings susceptible to damage by heat.

Other objects are to provide means for lowering and sealing covers on pit tops; to avoid the use of retracting mechanism in hot zones; and to eliminate hydraulic cover operating mechanism.

In the accompanying drawing—

Figures 1 and 2 are, respectively, a vertical longitudinal section of a portion of the pit, and a top plan view of the same together with its portable cover and the carriage through means of which the said cover is transferred from open to closed position; and

Figure 3 is a detail sectional view, on an enlarged scale, of one of the intermediate suspending skews employed in the cover organization shown in Figure 1.

Referring to Figure 1 which shows a partial sectional elevation of a soaking pit with an improved cover **28**, to Figure 2 which shows a partial plan view of same, and to Figure 3 which shows a section through one of the intermediate skew backs **28***b* and alloy supports for said cover, the cover comprises a series of short arches **28***a* across the short dimension of the cover. The end skew backs **28***c* are supported by the end frames **28***d* at each end and by suspended alloy bars **28***e* at intermediate points. The arch thrust is taken by the side frames of the cover supplemented by a heavy central arch tie rod **28***f*. The skews are made from first quality fire brick and are the only special shapes required. The arch brick **28***a* may be standard 9" brick or may be 2500 degree insulating brick, requiring no extraneous insulation and greatly reducing the total weight of a cover. If standard fire brick arches be used, additional insulation may be added without fear of destroying the supporting hangers. As shown in Figure 3, skews **28***b* are made in two mated parts that embrace the alloy hanger bar **28***e*, while copper radiator bar **28***g* is welded to the alloy hanger bar between the supporting alloy bolts **28***h* and projects above the brick skews for exposure to atmosphere in giving off its heat and preventing overheating of the alloy bar which is entirely surrounded by brick. In practice, the alloy bar is rolled from chrome-nickel (18/8) one and one-half by two inches and the radiator bar is one-quarter inch by six inches.

The cover frame comprises structural channels and beams **28***i* with bar cross bracing **28***k* (Figure 2), all securely welded. A series of simple steel or alloy castings 28L along the ends, bolted to the frame members, support the end skews **28***c*, while similar castings along the sides support standard fire brick blocks **28***m* and close the ends of the cross arches.

The completed cover is supported pivotally on its transverse center line from a pair of cantilevers **29** extending from a truck **30** placed at one end of the pit, as shown. The truck is provided with four wheels **30***a*, **30***b*, keyed to axles **30***c* and partially counterweighted and actuated by a motor drive comprising a motor **31**, reducer **31***a* and chain drive **31***b* to one rear axle **30***c*. When the cover is in place as shown, its weight

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Original Filed Oct. 12, 1936

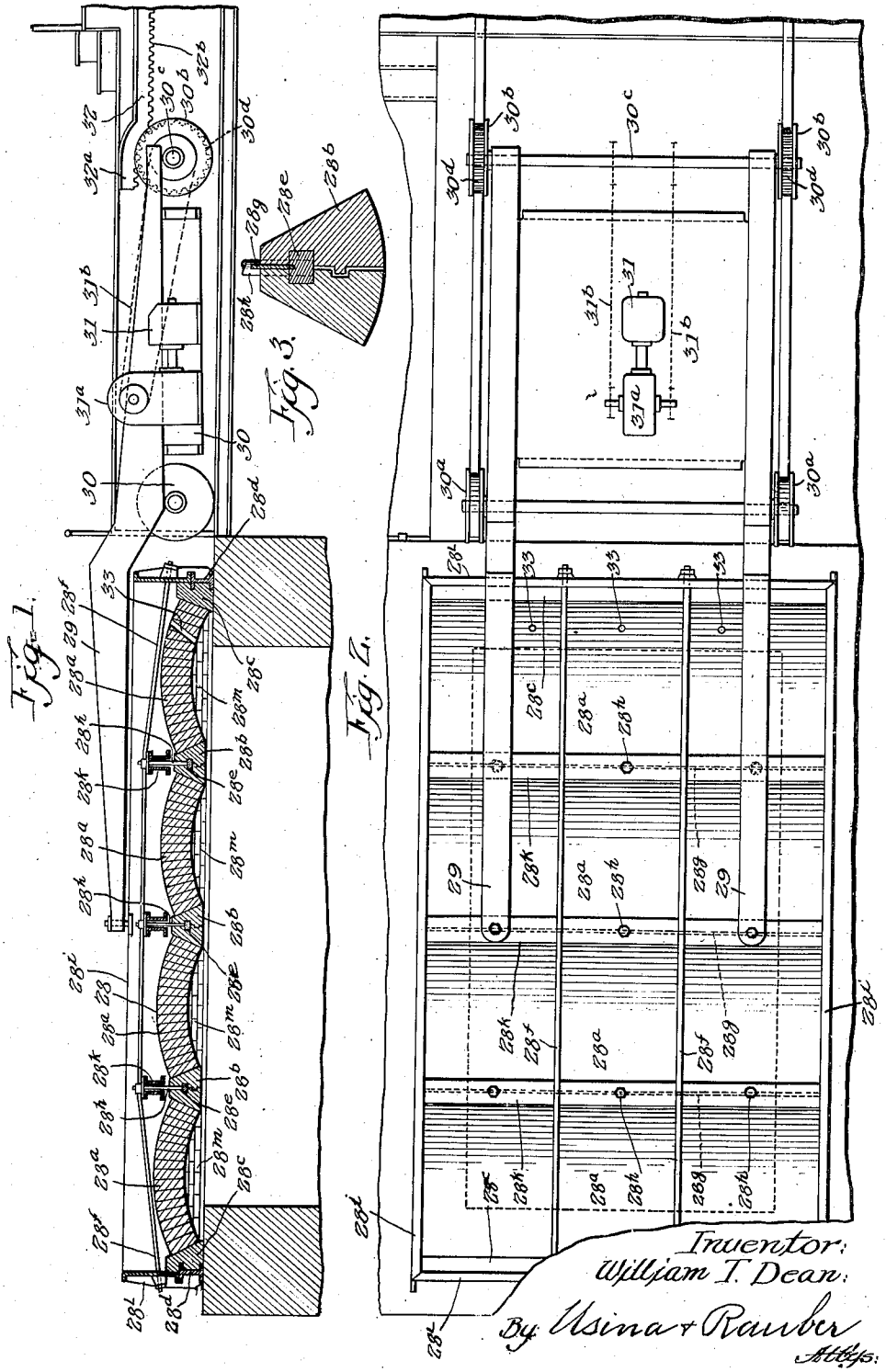


Fig. 1.

Fig. 3.

Fig. 2.

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