This invention relates to coal burning furnaces of the type used in heating houses, and more particularly to ash handling apparatus combined therewith.

It is well known to fire tenders that a very considerable quantity of unconsumed fuel finds its way through the furnace grate from the fire box to the ash pit and that it is economical to reclaim, so far as possible, all unburned fragments.

However the shoveling, sifting and otherwise handling of ashes, cinders, clinkers, slate and salvaged coals is a matter that demands the exertion of a burdensome display of muscular labor, accompanied usually by the infiltration of dust to the lungs, clothing and premises, rendering such tasks onerous and disagreeable in the extreme.

Having these matters in mind it is an object of the present invention to provide an ash sifting device permanently disposed on the bottom wall of a furnace ash pit and so completely enclosed as to prevent the dispersion of ash and dust particles in the surrounding atmosphere.

A further feature is in the provision of a closed excavation below the ash sifting screen accessible to a shovel from a point exterior of the furnace after the sifting operation has been completed.

Another aim is to produce an efficient means for vigorously agitating the sifter screen from beyond the furnace walls, in an exceptionally easy manner, each stroke being cushioned and requiring a minimum of muscular effort to operate.

These and other advantageous objects which will become apparent as the description progresses, are accomplished by the novel construction and arrangement of few and simple parts hereinafter described and illustrated in the accompanying drawings, constituting a material part of this disclosure, and in which:

Figure 1 is a side elevational view of a conventional type of house furnace, partially broken away to show the application of an embodiment of the invention.

Figure 2 is a partial plan, partial transverse sectional view taken on line 2—2 of Figure 1.

Figure 3 is a fragmentary sectional view taken on line 3—3 of Figure 1 and drawn to an enlarged scale.

Figure 4 is a sectional view, similar to Figure 1, showing a modification in construction using a two part screen.

Figure 5 is a transverse sectional view taken on line 5—5 of Figure 4.

Figure 6 is another vertical sectional view of a furnace showing the installation of a further modified type of screen actuating device.

Figure 7 is an enlarged fragmentary view of the same.

Referring in greater detail to the drawings, the numeral 15 designates in general the levelled ground or foundation on which the furnace 16 is disposed, this foundation being ordinarily hard surfaced as by cement.

The furnace base 17 is shown as being provided with a front wall 18 removably bolted in place and having an opening 19 leading to an ash pit chamber 20.

A door 21 is hinged to the front wall to close the opening to the chamber, and surrounding the lower edge of the base is an outstanding flange 22.

Carried by the upper portion of the base is a grate 23 of any approved type and thereabove is a fire box 24 surrounded by the wall of the furnace in which is a fire door 25.

Below the ash pit 20 is an excavation 26 in the foundation, curved at its rear and sloping upwardly at its front which is extended outwardly to some distance in front of the furnace base, and provided with a removable cover plate 27, which upon being withdrawn allows the entrance of a shovel to remove accumulations in an obvious manner.

Secured rigidly to the base 17, preferably, at a point opposite the door, is a support bracket 28 reaching down into the excavation 26 and having a horizontal arm 29 secured to a block 30 disposed below and substantially central of the ash pit chamber.

The block 30 is further supported by a transverse bar 31, its ends being twisted, up-
turned and riveted to the side walls of the ash pit chamber, as at 32.

Rotatably mounted in the block 30 is a pivot stud 33 carrying a hub 34 provided with a plurality of spaced spokes 35 having pads 36 at their ends to which is attached a ring 37 carrying a circular screen 38, adjacent which is a plate ring 39 arranged to prevent ashes, etc. from passing into the chamber 26 from the ash pit.

Fixed to the ring 37, at one side, is a bar 40 carrying a pivot pin 41 on which is mounted the inner end of a rod 42 extending outwardly through the front of the furnace base wall and provided with a handle 43 conveniently maneuvered in shaking the screen 38 by repeated reciprocations of the rod.

The stroke of the shaker rod 42 is limited and cushioned by a rod 45 slidably mounted in the rearmost spoke or arm 35, the pin being encircled on each side of the lug by compression springs 46 held in position by nuts 47, these nuts acting as bumpers with respect to a rigid loop 49 secured on the support arm 29, thus limiting the shaking movement of the ash screen 38.

In the modification, seen in Figures 4 and 5, the chamber 26 is not extended forwardly but rendered accessible for the removal of ashes by reason of the ash screen 38 being made in two sections 38 and 38', the latter, lesser portion being connected by hinges 50 at the opposite sides of the ring 37.

A loop 51 is fixed to the forward element 38' of the screen to be engaged by a poker or similar element whereby to be raised into the broken line position shown in Figure 4.

An arm 52 pivoted at 53 to an extension of the hub 34 and in a different plane than the hinges 50, is engageable with the ring element 38' when raised and operates to retain the forward portion of the screen when required, the arm having an upturned point to contact automatically with a keeper 54 upon being elevated and is released by drawing the arm downwardly by any convenient means at will.

Obviously the ashes in the chamber 26 can be removed after raising the screen element 38' by a shovel entered through the door 21.

However should it be desired to have greater clearance for the removal of ashes, the device shown in Figures 6 and 7 may be substituted.

This arrangement includes the supports carrying at their inner extremities, at the axis of the ash pit, a hub 60 bored to receive a spindle 61 on the upper end of which is mounted the screen carrying elements as described in Figures 1 and 2.

The spindle 61 is provided near its top and bottom with annular grooves 62—63 to receive a hardened sphere 64, or like detent, spring pressed into the grooves as clearly shown, the upper groove 62 being preferably bevelled at its bottom, as at 65, to facilitate raising the screen, spindle and associated parts, this being accomplished by inserting a poker or like lever bar into a loop 66 extending upwardly through the screen 38, the ends of the loop being engaged by the spokes 35, while the bar is engaged in an eye 67 on the element 18.

From the foregoing it will be seen that an entirely enclosed ash sifting device, simple and cheap to construct and install, has been disclosed in the best known embodiments of the invention, but it will be understood that changes in the form, arrangements, proportions, sizes and details thereof may be made without departing from the general tenor and scope of the appended claims.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent, is:--

1. In combination with a furnace ash pit, a chamber therebelow, a circular screen disposed in a horizontal plane in the opening between said pit and chamber, a series of in-reaching brackets fixed to the wall of said pit carrying a pivot mounting for said screen, a plate ring covering the space between the ash pit wall and peripheral edge of said screen, a manually reciprocative bar extending into the ash pit pivoted to the edge of said screen to produce semirotational movement, a spring bumper carried by said screen, and means on one of said brackets to limit the movement of said bumper in either direction.

2. In combination with a furnace ash pit, a chamber therebelow, a circular screen disposed in a horizontal plane in the opening between said pit and chamber, a series consisting of two members respectively front and rear hingedly united in a plane transverse the ash pit, said rear member being permanently horizontal and said front member being foldable vertically upward, manual means for limitedly oscillating said screen on a central axis, and means for cushioning the oscillatory movements thus imparted.

3. In combination with a furnace ash pit, a chamber therebelow, a circular screen disposed in a horizontal plane in the opening between said pit and chamber, a series of in-reaching brackets fixed to the wall of said pit carrying a block, a spindle rotatably and slidably mounted in said block axially of the ash pit, a spoke wheel carried by said spindle on which said screen is mounted, means for raising said spindle and screen, means for retaining said elements when in a raised position, and means for reciprocatively oscillating said screen.

4. In combination with a furnace ash pit, a chamber therebelow a circular screen disposed in a horizontal plane in the opening between said pit and chamber, a series of in-
reaching brackets fixed to the wall of said pit carrying a block, a spindle rotatably and slidably mounted in said block axially of the ash pit, a spoked wheel carried by said spindle on which said screen is mounted, a plate ring circumjacent said screen, a loop set in said screen by which the screen and spindle may be raised, said spindle having annular grooves near its top and bottom, a spring pressed detent carried by said block to engage in either of the mentioned grooves to retain said spindle in its adjusted positions, and a manually actuable rod pivotally engaged with the rim of said wheel to transmit oscillatory movement thereto.

In testimony whereof I affix my signature.

GUSTAF ANDERSON.