To all whom it may concern:

Be it known that I, JULES HECTOR HIRT, a citizen of the United States, residing at El Paso, in the county of El Paso and State of Texas, have invented certain new and useful Improvements in Sawdust-Burning Furnaces, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention is a sawdust-burning furnace.

Sawdust in mass frequently contains 50 per cent. or more of water, and below the surface of large masses is usually soaking wet. In that condition it is difficult to burn.

The object of this invention is to produce a furnace in which wet sawdust can be rapidly burned.

Referring to the accompanying drawings illustrating the principle of this invention in the best mode now known to me of applying that principle, Figure 1 is a top plan view, and Fig. 2 a central vertical section at line 2—2 of Fig. 1, of a side-feed form of my new furnace. Fig. 3 is a vertical section at line 3—3 of Fig. 1, and is typical of a corresponding section at line 3º—3º of Fig. 4, and Fig. 4 is a vertical section at line 4—4 of Fig. 3, of a central-feed form of the furnace.

In the drawings, 1 is a grate, and 2 the ash-pit of a furnace the outer wall 3 of which is best made of or lined with fire brick.

4, 4 are two side walls of a central vertical conduit or flue 5 for the combustion products. Between outer walls 3 and inner walls 4, a vertical space 6 is provided for downflow of sawdust from the hopper-like extensions 7, one at one side and the other at the other side of the furnace structure. The upper end of each space 6 communicates by a passage 8 with a chamber under the usual arch or furnace-head 9 below which the usual exit-flue opening 10 communicates with the vertical central flue 5 for the combustion products.

Each interior wall 4 is conveniently supported at its bottom by a transverse arch 5º anchored in the outer side walls of the furnace above the grate, so that the lower end of the flue or conduit 5 is above the grate, which is preferably provided with upwardly and outwardly extending extensions 1º at the foot of each supply-conduit.

As the sawdust-supply-conduit is opened immediately above the grate into the combustion-products flue, and also communicates at its upper end with the upper end chamber of the furnace, provision is made for upflow of steam through the mass of sawdust as it gravitates to the grate, and the suction on the exit flue of the furnace causes the steam generated in the hot or burning sawdust mainly to ascend through the mass of sawdust and finally to pass out of the exit flute. Sawdust is indicated by S in one of the two sawdust-conduits thus provided.

In the other form of the furnace, illustrated by Figs. 3 and 4, grate 1 is provided centrally with an upwardly-extending sawdust-deflector 2, the apex of which points toward the open lower end of the central passageway down through which the sawdust gravitates to the grate, sawdust being put into the furnace through the funnel y in arch 9. In this form the combustion products ascend through the side spaces 6º provided between the outer walls of the furnace structure and the inner walls 4, 4.

The invention may be embodied in various other forms.

What I claim is:

A sawdust-burning furnace comprising an ash-pit and above the ash-pit a grate; from the grate level, upwardly-extending solid side walls inclosing a combustion chamber and also inclosing a conduit for downflow to the grate of sawdust and for upflow from the sawdust of steam generated therein; at the upper part of the furnace a solid top wall extending over the combustion chamber and conduit; the upper portion of the furnace having a sawdust-inlet communicating with the conduit; the conduit having a wall supported at its bottom by an arch above the grate to form an opening between the lower portions of the conduit and combustion chamber, and also having at its lower end a deflector for directing the downflowing sawdust on the grate; said conduit wall rising toward but not contacting with the top wall, whereby an opening is formed be-
tween the upper portions of the conduit and the combustion chamber for outflow of steam; and a side wall of the furnace having an exit opening from the combustion chamber for outflow of the steam and of the combustion products.

In testimony whereof I affix my signature in presence of two witnesses.

JULES HECTOR HIRT.

Witnesses:

G. BLAKE,

EDWARD E. BLACK.