

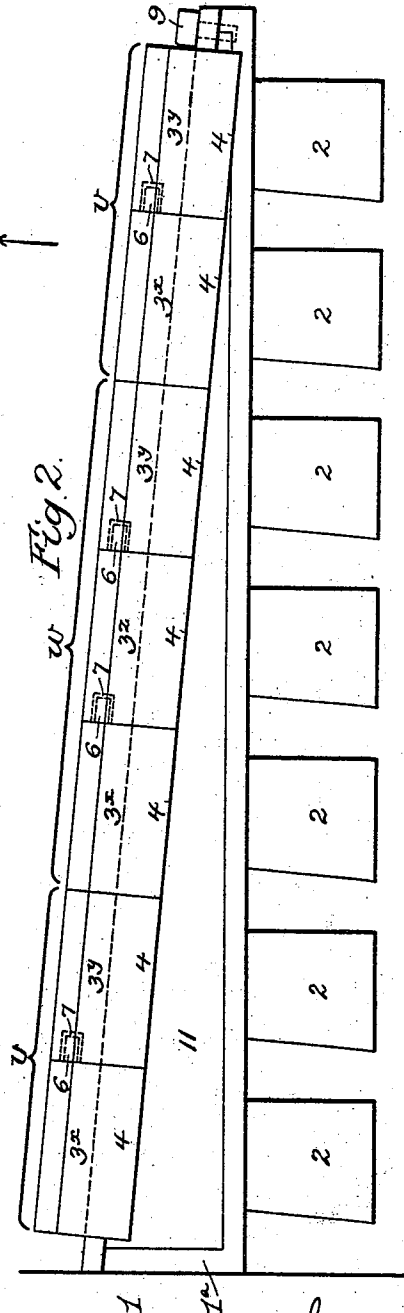
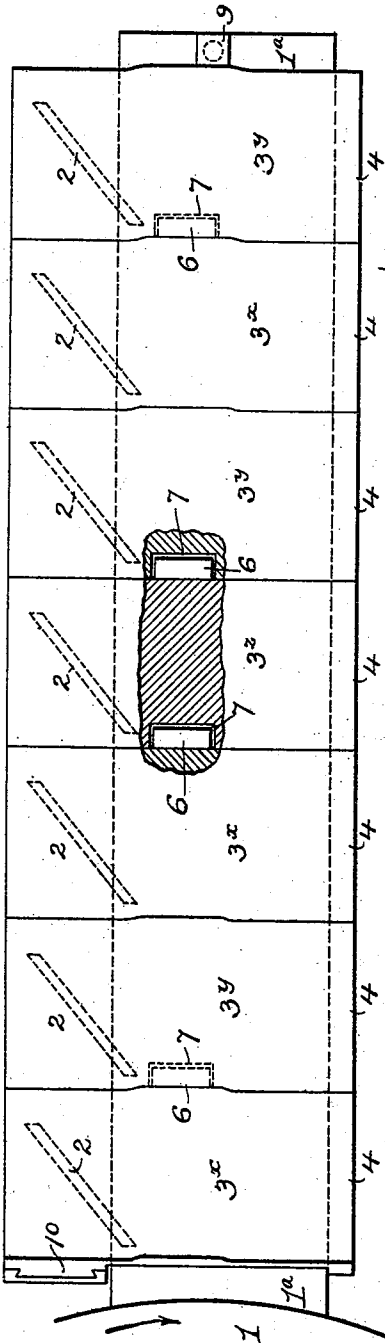
U. WEDGE.
STIRRING DEVICE FOR FURNACES.
APPLICATION FILED JAN. 3, 1910.

980,717.

Patented Jan. 3, 1911.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses
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2 SHEETS-SHEET 2.

Fig 6.

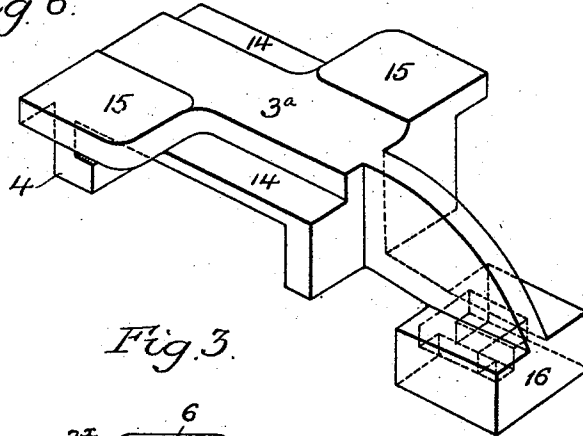


Fig 3.

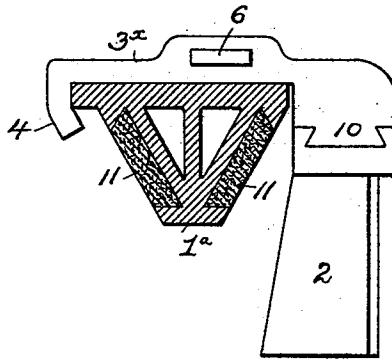


Fig 4.

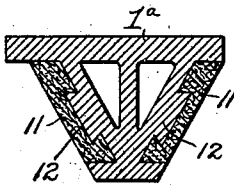
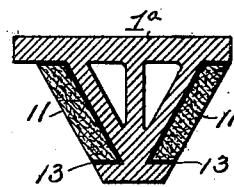


Fig 5.



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UNITED STATES PATENT OFFICE.

UTLEY WEDGE, OF ARDMORE, PENNSYLVANIA, ASSIGNOR TO THE FURNACE PATENT COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

STIRRING DEVICE FOR FURNACES.

980,717.

Specification of Letters Patent.

Patented Jan. 3, 1911.

Application filed January 3, 1910. Serial No. 536,029.

To all whom it may concern:

Be it known that I, UTLEY WEDGE, a citizen of the United States, residing in Ardmore, Pennsylvania, have invented certain
5 Improvements in Stirring Devices for Furnaces, of which the following is a specification.

My invention consists of certain improvements in or modifications of the stirring and
10 conveying device for furnaces forming the subject of my Letters Patent No. 927,389, dated July 6, 1909, the objects of my present invention being to simplify and cheapen the means employed for pivotally mounting the
15 rabbles on the carrying arm, to provide for the ready removal and replacing of a defective rabble, to permit convenient shifting of the rabbles outwardly on the arm, when the outermost rabble becomes so worn as to necessitate its removal, and to provide a more
20 effective means for applying to the arm the material for preventing the absorption of heat thereby.

These objects I attain in the manner hereinafter set forth, reference being had to the
25 accompanying drawings, in which—

Figure 1 is a plan or top view illustrating one of the stirrer arms and its rabbles constructed in accordance with my invention;
30 Fig. 2 is a side elevation looking in the direction of the arrow, Fig. 1; Fig. 3 is a transverse section of the arm, illustrating one of the rabbles and its pivotal mounting device in elevation; Figs. 4 and 5 are sectional
35 views of the rabble-carrying arm, illustrating modifications of one of the features of my invention, and Fig. 6 is a perspective view illustrating a construction of rabble head which I prefer in some cases, to the
40 construction shown in Figs. 1, 2 and 3.

Referring, in the first instance, to Figs. 1, 2 and 3 of the drawings, 1 represents part of the stirrer shaft which is rotated in the direction of the arrow, Fig. 1 and has any desired number of projecting stirrer arms 1^a
45 upon which the rabbles are pivotally mounted. Each of the rabble blades 2 has, at the top, a forwardly projecting head with downwardly and rearwardly bent or hooked forward end 4, the rabble being thereby supported vertically upon the arm and confined to the latter, so far as forward or back-

ward movement is concerned, by contact of the flanges of the arm with the rear portion of the rabble head or with the downwardly
55 bent front end of the same. The rabbles are, however, free to swing upwardly when subjected to such pressure as will overcome their weight, the pivotal axis being the point of contact of the forward flange of the arm 1^a
60 with the bent forward end 4 of the rabble head, consequently, the rabbles will rise and ride over obstructions on the hearth of the furnace which they cannot move. In order, however, to oppose to such lifting movement
65 greater weight than that of a single rabble I provide for locking together two or more of the rabbles, so that neither rabble of the pair or group can rise without imparting corresponding lifting movement to the other
70 rabble or rabbles whereby the aggregate weight of the pair or group of rabbles must be overcome before either of them can rise. I effect the locking together of adjoining
75 rabbles by means of a tongue on one of the rabbles engaging with a corresponding recess in the adjoining rabble. These tongues and recesses may be formed in any desired
portion of the rabble, but I find it most convenient to form them upon or in the side
80 faces of the rabble heads. Some of the rabble heads, such for instance as that shown at 3^x, may have one plain side and one side with a projecting tongue 6, some of the rabble heads, such as that shown at 3^y, may have
85 one plain side and one side with a recess 7 therein, and the other rabble heads, such as that shown at 3^z, may have a recess 7 in one side and a tongue 6 on the other side.

When it is desired to couple the rabbles
90 together in pairs the rabbles having heads 3^x and 3^y adjoin each other on the arm 1^a, as shown for instance at *v* in Fig. 1, but if it is desired to lock together a group of three or more rabbles one or more of the rabbles
95 having a head 3^z is interposed between the rabbles having the heads 3^x and 3^y, as shown for instance at *w* in Fig. 1. By the use of three different forms of rabble heads, therefore, said rabbles can be locked together in
100 any desired groups or combinations. The rabbles cannot be disconnected from the arm 1^a by direct vertical movement, owing to the fact that the forward end 4 of each rabble

head 3 projects beneath the forward flange on the arm 1^a, as shown in Fig. 3, to an extent which will prevent such direct vertical disconnection of the rabble head. Any of the rabbles may, however, be released and removed from the arm 1^a by first moving the rabble heads radially on the arm until the one which it is desired to remove is freed from locking engagement with those adjoining it, whereupon the rabble can be released, either by swinging it forwardly over the arm or by lifting the hooked forward end of the rabble head until it is free from engagement with the arm and then moving the rabble rearwardly.

The extent of movement of the rabble blades over the hearth increases proportionately to their distance from the shaft 1, and the wear upon the blades increases in like ratio, hence the outermost rabble is the one which soonest becomes unfitted for further use, and has to be removed. This can be effected in the manner before set forth, or the rabble head can be removed radially from the arm, after first removing the pin or stud 9 which normally prevents such movement, the other rabble heads being then moved outwardly on the arm and a new rabble applied to the inner end of the arm, and its head moved into locking engagement with that of the next outer rabble. When the rabbles are first applied to the arm, the blade of the innermost rabble is deepest and that of the outermost rabble is shortest corresponding to the condition which they naturally assume on account of wear, and in order that the rabble heads may all bear the same vertical relation to the top of the arm, as well as to facilitate outward movement of the rabbles on the arm, in making renewals or repairs, the top of the arm is inclined downwardly from its inner to its outer end, as shown in Fig. 2. The discarding of the rabble head when the rabble blade is worn out is rendered unnecessary by detachably connecting the blade to the head, the latter having a dovetailed rib 10 which is adapted to a slot of corresponding form in the upper portion of the blade, as shown in Fig. 3.

A rabble such as that which I have shown and described can be cheaply produced, and the pivotal connection of the rabble head with the arm is not affected by the heat of the furnace.

In accordance with the invention constituting the subject of my former patent, the rabble-carrying arm was provided with sleeves of refractory material which was also a non-conductor or a poor conductor of heat, in order to prevent, on the one hand, the burning out of the arm, or, on the other hand, the abstraction of heat from the furnace if the arm was water-cooled. It was found, in practice, that gases gaining access

to the spaces between the arm and its protecting sleeves and condensed by contact with the relatively cool metal of the arm, had a destructive effect upon the latter. In carrying out my present invention, therefore, I so secure the protective covering to the arm that it will be in gas-tight contact therewith. In an arm of the character shown in the drawing, protective slabs one on each side of the same are all that are required, although other forms of protective covering may sometimes be necessary.

The preferable method of securing the slabs or other forms of protective covering to the arm is to place them in the mold in which the arm is to be cast, and to cast the metal in direct contact with them, removal of the slab from the arm being prevented by causing the latter to overlap the slab, as shown in Fig. 3, by causing the slab to engage an undercut rib 12 on the arm, as shown in Fig. 4, or in other ways, or the slabs may be applied to the arm subsequently to the casting of the same, if desired, by coating the slab with a layer of heat-proof cement which will fill all of the spaces between the slab and the arm, as shown, for instance, at 13, in Fig. 5, and thereby prevent the access of gas to those portions of the arm to which the slabs are applied.

In many cases, I prefer to use interlocking rabble heads 3^a of the character shown in Fig. 6, each of these heads having, on each side, a shelf 14 and a projecting lug 15, the relation of the shelf and lug on one side of the head being the reverse of that on the other side of the same, whereby, when a series of the heads are disposed side by side on the arm 1^a, the lugs 15 of one head will overlap the shelves 14 of the heads on each side of the same and its shelves will be overlapped by the lugs of the adjoining heads. The heads 3^a may also be constructed, if desired, with a shelf and lug on one side only, instead of on both sides, as hereinbefore described in connection with the interlocking devices shown in Figs. 1, 2 and 3. The head 3^a also has at the rear a block 16 with undercut recess extending into the same from the front, as shown by dotted lines, for the reception of a similarly shaped projection at the top of the rabble blade.

I claim:

1. The combination of a rabble-carrying arm with a rabble located behind the arm and having a head in direct pivotal contact with the forward portion of the arm.

2. The combination of a rabble-carrying arm with a rabble located behind the arm and having a head in direct pivotal contact with the forward portion of the arm and also engaging said arm to prevent vertical disengagement of said pivotal portion of the head.

3. The combination of a rabble-carrying arm having a flange upon its forward side, and a rabble located at the rear of the arm but having a head with downwardly bent forward end in pivotal contact with said flange.

4. The combination of a rabble-carrying arm having a flange upon its forward side, and a rabble located at the rear of the arm but having a head with downwardly bent forward end in pivotal contact with said flange, and bent in beneath the flange so as to prevent vertical disengagement of the pivotal portion of the head.

5. The combination of a rabble-carrying arm with a rabble having a head which can be engaged with or disengaged from the arm by upward movement and which is also free to move radially on the arm when in engagement therewith.

6. The combination of a rabble-carrying arm with a rabble head which can be engaged with or disengaged from the arm by upward movement, said rabble head having a rabble blade detachably secured thereto.

7. The combination of a rabble-carrying arm with a rabble head which can be engaged with or disengaged from the arm by upward movement, and also moved radially on the arm when engaged therewith, said head having a rabble blade detachably secured thereto.

8. A rabble having a head with a portion which constitutes a fulcrum therefor, and a blade detachably secured to said head.

9. The combination of a rabble-carrying arm with rabbles each having its own head, pivotally mounted on the arm, and means for interlocking said rabbles so as to cause them to rise in pairs or groups.

10. A rabble having a head which constitutes a fulcrum therefor, and means for interlocking said rabble with an adjoining rabble.

11. A rabble having a head which constitutes a fulcrum therefor, and means for interlocking said rabble with adjoining rabbles.

12. A rabble having a head whose forward portion constitutes a fulcrum therefor, and means for locking said rabble to an adjoining rabble or rabbles.

13. A rabble having a supporting head whose forward portion constitutes a fulcrum for the rabble, and means for locking said head to the head of an adjoining rabble or rabbles.

14. A rabble having a head which constitutes a fulcrum for the rabble, means for locking the said head to an adjoining head or heads, and a rabble blade detachably secured to said head.

15. A rabble having a supporting head whose forward portion constitutes a fulcrum

for the rabble, means for locking said rabble head to an adjoining rabble head or heads, and a rabble blade detachably secured to said head.

16. The combination of a rabble-carrying arm having its top inclined downwardly from the inner end toward the outer end, and rabbles having heads movable radially on said inclined top of the arm.

17. The combination of a rabble-carrying arm having its top inclined downwardly from the inner end toward the outer end, and rabbles having heads movable radially on said inclined top of the arm, and having rabble blades detachably secured thereto.

18. The combination of a rabble-carrying arm having its top inclined downwardly from the inner end toward the outer end and rabbles having heads in pivotal connection with said inclined top of the arm.

19. The combination of a rabble-carrying arm having its top inclined downwardly from the inner end toward the outer end, and rabbles having heads in pivotal connection with said inclined top of the arm, and having rabble blades detachably secured thereto.

20. The combination of a rabble-carrying arm having its top inclined downwardly from the inner end toward the outer end and rabbles having heads mounted on said inclined top of the arm and provided with rabble blades graduated in depth.

21. The combination of a rabble-carrying arm having its top inclined downwardly from the inner end toward the outer end and rabbles having heads mounted on said inclined top of the arm and provided with rabble blades graduated in depth, and detachably secured to the rabble heads.

22. The combination of a rabble-carrying arm having its top inclined downwardly from the inner end toward the outer end and rabbles having heads pivotally mounted upon the inclined top of the arm and provided with rabble blades graduated in depth.

23. The combination of a rabble-carrying arm having its top inclined downwardly from the inner end toward the outer end and rabbles having heads pivotally mounted upon the inclined top of the arm and provided with rabble blades graduated in depth, and detachably secured to the rabble heads.

24. A rabble having a head with portion for pivotal contact with the rabble-carrying arm, and a shelf and projecting lug for engagement with the lug and shelf of an adjoining rabble head.

25. A rabble having a head with portion for pivotal contact with the rabble-carrying arm, and a shelf and projecting lug for engagement with the lug and shelf of an adjoining rabble head, and a rabble blade detachably secured to said head.

26. A rabble having a head with portion
for pivotal contact with the rabble-carrying
arm, and on each side a shelf and projecting
lug for engagement with the lugs and
5 shelves of adjoining rabble heads.

27. A rabble having a head with portion
for pivotal contact with the rabble-carrying
arm, and on each side a shelf and projecting
lug for engagement with the lugs and

shelves of adjoining rabble heads, and a rab- 10
ble blade detachably secured to said head.

In testimony whereof, I have signed my
name to this specification, in the presence
of two subscribing witnesses.

UTLEY WEDGE.

Witnesses:

KATE A. BEADLE,
HAMILTON D. TURNER.