

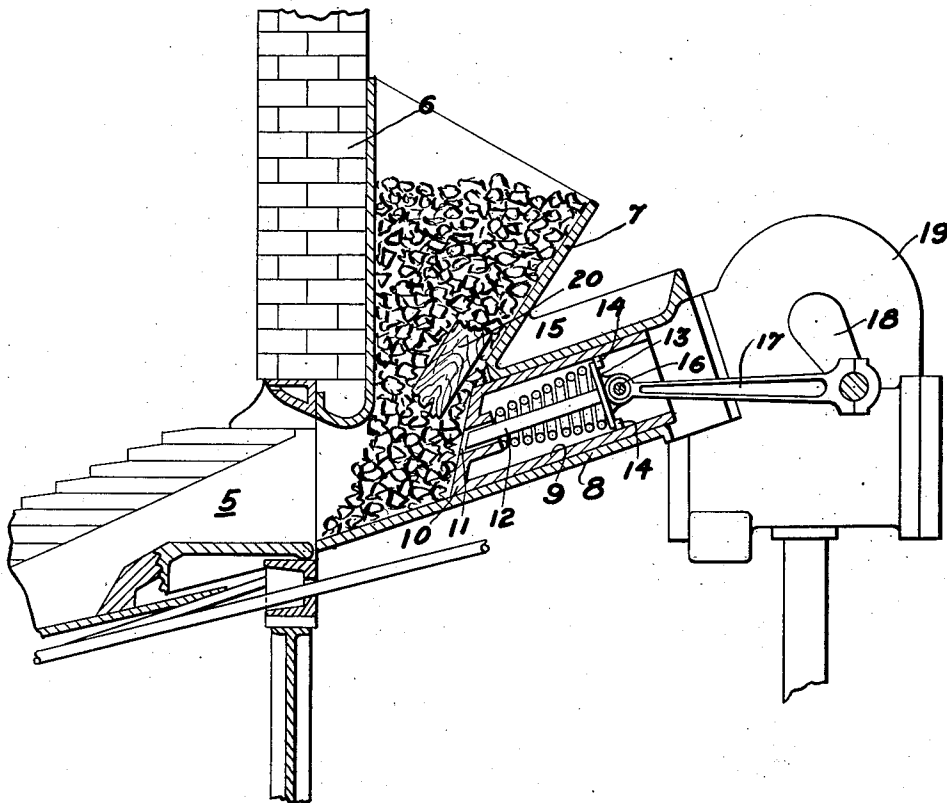
Jan. 26, 1926.

1,570,604

O. ARAM

STOKER RAM

Filed June 4, 1923



WITNESSES:

W. B. Wakefield

Otto Aram
INVENTOR

BY *A. C. Davis*
ATTORNEY

UNITED STATES PATENT OFFICE.

OTTO ARAM, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO WESTINGHOUSE
ELECTRIC AND MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

STOKER RAM.

Application filed June 4, 1923. Serial No. 643,365.

To all whom it may concern:

Be it known that I, OTTO ARAM, a citizen of the United States, and a resident of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Stoker Rams, of which the following is a specification.

My invention relates to fuel feeding rams such as are commonly employed in automatic stokers and it has for its object to provide apparatus of the character designated which shall function without breakage upon the clogging of the rams by foreign material and which shall, as an incident to such operation, function to clear the fuel feeding structure of said foreign material.

The single figure of the accompanying drawing is a side view, partially in section and partially in elevation, of the fuel feeding mechanism of an underfeed stoker embodying a ram constructed in accordance with a preferred form of my invention.

In fuel feeding rams for automatic stokers as previously constructed, it has been usual to dispose a reciprocable ram at the bottom of a fuel-feeding hopper, the ram being actuated by a pitman from a suitable rotating shaft. The passage of a foreign body such, for example, as a brick or a block of wood into the fuel hopper, has prevented the proper reciprocation of the ram and it has accordingly been necessary to employ a relief means such, for example, as a shear pin or equivalent structure, which would fail upon clogging by a foreign body, thus preventing damage to the fuel-feeding mechanism. It has been necessary to subsequently replace the shear pin; a somewhat troublesome task.

In accordance with the present invention, I provide a small auxiliary plunger substantially axially disposed with respect to the main ram and normally held within the ram as by a heavy spring. The reciprocating pitman is connected to the rear end of said auxiliary plunger, with respect to the face of the ram, and normally the reciprocation of the main ram is effected through this spring.

Upon clogging of the main ram by foreign substances, said spring yields, permitting the auxiliary plunger to protrude through a suitable opening in the face of

the ram, thus permitting an operation of the driving mechanism without breakage.

The protrusion of the auxiliary plunger from the face of the ram together with the subsequent backward movement of the main ram will, in most cases, serve to clear the foreign body from the fuel hopper without attention on the part of the operator.

Referring to the drawing for a more detailed understanding of my invention, I show the retort of an automatic underfeed stoker at 5, the structure having the usual front wall 6 and a fuel-feeding hopper 7. A ram box 8 is disposed adjacent the bottom of the fuel hopper 7 and mounted therewithin is a ram 9.

The front face 10 of the ram 9 is provided with a central opening 11 within which is seated a plunger 12 carrying a transversely extending member 13, loosely sliding within the ram 9. The ram 9 is provided with interiorly projecting lugs 14—14 adapted to engage with the member 13.

A powerful conical spring 15 encircles the member 12 and bears against the interior of the face 10 on the one hand and against the transverse member 13 on the other hand.

The rearward end 16 of the member 12 is adapted to take one end of a pitman 17 driven from a suitable crank shaft 18, rotated as by a prime mover 19.

Having thus described the structure of apparatus embodying one form of my invention, the operation thereof is as follows: When functioning in a normal manner, the ram 9 reciprocates exactly as though fastened directly to the pitman 17 and forces fuel from the hopper 7 into the retort 5. When, however, a foreign body, such as indicated at 20, comes in front of the ram, it prevents free forward movement thereof, whereupon the spring 15 yields and the plunger 12 is forced outwardly through the opening 11, tending to break up the accumulation in front of the ram and at the same time permitting the operating mechanism to function as usual. Inasmuch as foreign bodies are usually encountered in the latter part of the forward stroke of the ram, it follows that after the protrusion and withdrawal of the member 12 the ram 9 is drawn backwardly for at least a portion of its stroke and this action, together with the action of the member 12 when protruded,

serves to break up or to assist in breaking up the accumulation in front of the ram. Thus, in the majority of cases, after, for example, six or eight abnormal strokes during which the member 12 is protruded during a portion of each stroke, it will be found that the foreign object 20 has passed down into the retort sufficiently so as to permit the entire device to again function in a normal manner.

While I have shown my invention in connection with an automatic stoker of the underfeed type, it will be understood that it is not so limited but may be used with any form of device wherein material is fed from a hopper by means of a reciprocating ram.

While I have shown my invention in but one form, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various other changes and modifications, without departing from the spirit thereof, and I desire, therefore, that only such limitations shall be placed thereupon as are imposed by the prior art or as are specifically set forth in the appended claims.

What I claim is:

1. In a mechanical stoker, the combination with a fuel hopper, of a fuel ram disposed to eject fuel therefrom, said ram being provided with an opening in its face, a rod axially disposed within said ram and terminating in said opening, spring means for normally restraining said rod within said ram, and drive means for said ram attached to the other end of said rod.

2. In a mechanical stoker, a ram box, a ram reciprocable therein, said ram being provided with an opening in the face thereof, a member telescoping within said ram and seated within said opening, spring means for normally retaining said member within said ram, and reciprocating means for said ram attached to said telescoping member.

3. In a mechanical stoker, the combination with a ram box, of a fuel-feeding ram disposed therewithin, driving means for said ram including an elongated member nor-

mally retained within said ram, and said ram being provided with means permitting the protrusion of said member from the face of the ram only upon clogging of the ram, whereby the driving member may continue to function and the accumulation in front of the ram may be broken up and causing the movement of the ram when the resistance is reduced to normal.

4. In a fuel-feeding device for automatic stokers, a ram-box, a ram disposed therein having a face portion but substantially open at the other end, said face portion having an opening therein, an elongated member having one end normally seated in said opening and the remainder thereof disposed within said ram, a transversely disposed member mounted on said member, interiorly projecting lugs within said ram adapted to contact with said transverse member, spring means for normally forcing said elongated member backwardly from the ram face so that said transverse member is forced into engagement with said lugs, and a reciprocating pitman for said ram attached to the rearward end of said elongated member.

5. In a fuel feeding device for an automatic stoker, a main ram normally functioning to feed the fuel, an auxiliary ram of smaller cross section axially mounted with respect thereto, driving means for said auxiliary ram and a yieldable connection between the main ram and the auxiliary ram, said connection permitting independent movement of the auxiliary ram during abnormal resistance to the main ram and automatically causing the resumption of movement of the main ram upon the reduction of the resistance to normal.

6. In a fuel feeding device for an automatic stoker a main ram normally functioning to feed the fuel, an auxiliary ram of smaller cross section, means for driving the auxiliary ram and a resilient operative connection between said rams.

In testimony whereof, I have hereunto subscribed my name this 24th day of May, 1923.

OTTO ARAM.