

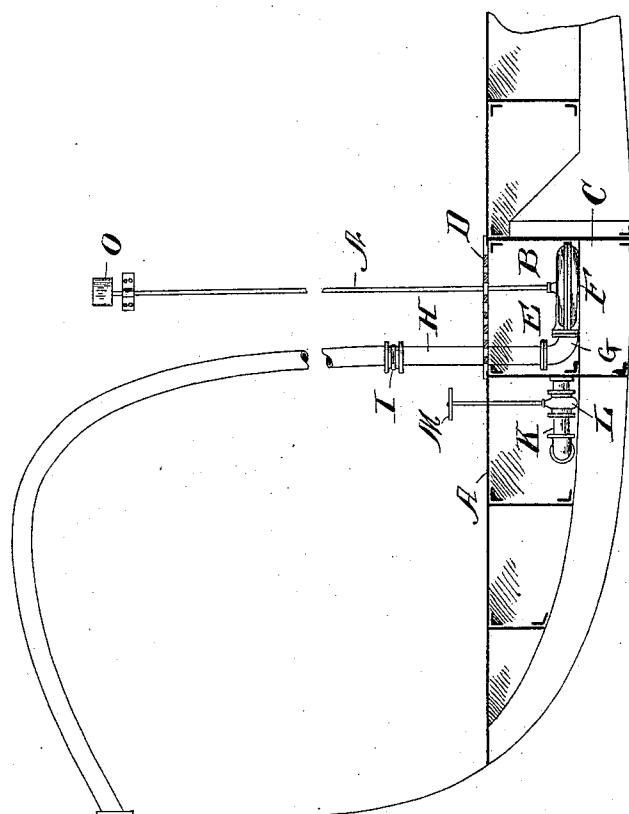
(No Model.)

A. McDOUGALL.

APPARATUS FOR REMOVING ASHES FROM FIRE HOLDS OF VESSELS.

No. 530,851.

Patented Dec. 11, 1894.



Witnesses:

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UNITED STATES PATENT OFFICE.

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APPARATUS FOR REMOVING ASHES FROM FIRE-HOLDS OF VESSELS.

SPECIFICATION forming part of Letters Patent No. 530,851, dated December 11, 1894.

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To all whom it may concern:

Be it known that I, ALEXANDER McDOUGALL, a citizen of the United States, residing at Duluth, in the county of St. Louis and State of Minnesota, have invented certain new and useful Improvements in Apparatus for Removing Ashes from the Fire-Holds of Vessels; and I do hereby declare the following to be a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My present invention relates to various improvements in apparatus for removing ashes from the fireholds of vessels and the object of the invention is to provide and produce an apparatus for that purpose by means of which ashes may be removed from the fireholds of vessels, or elsewhere wherever such ashes may accumulate, in a more expeditious manner than is now possible, and without creating any dust or dirt.

In an application for Letters Patent of the United States, filed January 9, 1893, and numbered serially 457,795, I have described an apparatus for the same purpose having similar objects in view and while that apparatus is more efficient and performs its functions in a better way than any other prior device for the purpose, with which I am familiar, still I believe that occasions may arise when my present improvement had best be used. Such occasions will arise in some varieties of steam vessels, such as men-of-war and trans-Atlantic passenger boats, where the greatest economy of space in the fire-holds is absolutely essential, and my present invention is well suited for such uses, since little or no space will be taken up. In my prior device, as described in said application, I make use of an ash box in which the ashes are placed as they accumulate, being precipitated in such ash box by water flowing in from the outside of the vessel. To one side or in front of this ash box, I mount a centrifugal pump which is operated by a steam engine and which draws the mixture of ashes and water out of the ash box, and forces such mixture overboard, either above or below the water line. In some varieties of vessels, like the steamers above mentioned, the desire for economy of space

in the fire-hold might make the employment of such apparatus objectionable, and it is for this purpose alone, *i. e.* to economize space, that I have devised the present improvement.

What I propose to do in the present invention is to utilize a portion of the water bottom of the vessel for the ash box, and instead of placing the centrifugal or rotary pump to one side or in front of the ash box, as described in said application, I will mount said pump within the same. What I propose further to do, is to lead the pipe for precipitating the ashes, in through the water bottom, beneath the false bottom, instead of directly through the firehold, as in my prior device; and finally, I will, by preference, though not absolutely essential, operate said centrifugal or rotary pump by means of a long shaft extending up through the fire-hold and connected with a suitable engine placed on an intermediate deck where economy of space is not so desirable as in the firehold. By doing this, in the manner to be hereinafter described, the only parts of the device occupying space in the fire-hold will be the outlet pipe for the ashes, the vertical shaft for pump, and the valve stem for controlling the flow of water in the precipitating pipe. These three elements being small, may be located adjacent to or within suitable partitions or stanchions so that, as a matter of fact, the apparatus will occupy but little space in the fire-hold, which is a prime necessity in certain varieties of vessels as above mentioned.

For a better comprehension of my present invention, attention is directed to the accompanying drawing which shows in section the parts of a vessel necessary for the correct understanding of my invention, and, in elevation, the pump and its connections, and the outlet and precipitating pipes.

The vessel illustrated is an iron vessel. The invention however is as capable and as effective in use with wooden, composite, and other vessels, as with iron vessels.

Iron vessels, and especially steamers, greatly predominate at present and I shall describe my invention in combination therewith, it being understood that I make the usual reservations respecting equivalents and analogous uses.

The vessel is provided with a false bottom A, which constitutes the floor of the fire-hold and upon which the boilers of the vessel are mounted, either directly or upon suitable foundations. The space beneath the false bottom A, is called the "water bottom" of the vessel, the functions and uses of which are understood by all conversant with the construction of vessels. I utilize a portion of this water bottom for an ash box B, which I have shown as being directly adjacent to the keelson C, of the vessel. The said ash box B, may be placed elsewhere but it should be so located as to be near the fires. The ash box is preferably water tight to prevent water from leaking from the water bottom into the fire-hold.

D, is a heavy grating which constitutes a top for the ash box and which should be flush with the false-bottom A. The bars which form the grating D, should be sufficiently far apart to allow ashes to pass readily through the same, and may be removable, to allow the inside of the ash box to be reached.

E, is a centrifugal or rotary pump which is of any desired construction, and which is mounted on one of its sides at the bottom of the ash box. As is well known, pumps of this variety are provided with rotating fans or wings which need not fit closely within the casing of the pump. Such a pump is therefore well adapted for pumping ashes, as I shall presently explain, since it can not become clogged up or affected by the ashes. It may be possible, however, to use other varieties of pumps and therefore I do not wish to be limited to a centrifugal or rotary pump, although I consider the same preferable.

F, is the mouth of the pump and G, the discharge pipe thereof. The discharge pipe G, connects directly with the pipe H, which passes up through the grating D, and extends through the fire-hold and passes out through the skin of the vessel, either above or below the waterline, as may be desired.

The pipe H, may extend adjacent to one of the usual stanchions of the vessel, so as to be out of the way, or it may constitute, itself, a support for the deck immediately above the false bottom A.

I, is a valve in the pipe H, which regulates the flow through said pipe and by means of which the flow can be cut off entirely.

K, is a pipe which enters the ash box A, preferably near the lower part thereof and which connects with the outside water, either directly or indirectly, *i. e.* with the water bottom, which is generally filled with water for purposes of ballast. The pipe K, which I have before referred to as the precipitating pipe, is provided with a valve L, therein for controlling the flow of water therein and this valve is to be regulated above the false bottom A, such as by means of a hand wheel M, as shown.

N, is a metal shaft, which is connected with

the rotating or operating element of the pump E, and which extends up through the ash box, preferably above one of the decks immediately above the firehole. The said shaft is shown as being provided with a pulley O, at its upper end, by means of which, through suitable belt connections, it may be operated by any desired form of motor, such as a small steam engine or an electric motor.

In the drawing, I have shown the mouth F, of the pump, as being adjacent to the mouth of the precipitating pipe K, so that when the pump E, is operating, and the valve L, in the precipitating pipe is open, a strong current of water will flow directly from said precipitating pipe to the pump, but this particular arrangement of parts may be changed as desired.

The parts being assembled, as I have described above, I propose to remove ashes thereby, as follows: I first open the valve L and allow a quantity of water to flow into the ash box B, say sufficient to fill the ash box a quarter full. The ashes, as fast as they accumulate are dumped on top of the grating D, and will drop into the ash box B, or such ashes may be swept or brushed therein. The ash box B, being partly full of water will effectively prevent the creation of dust, as will be understood. The ashes dropping into the water will mix with the same. When a sufficient quantity of ashes has been thus accumulated, the valve I, is opened and the pump started, which will force the mixture of water and ashes out through the pipe H. When the pump E, is operating the valve L, may be left wholly or partially open, so that more or less of a current of water will flow from the mouth of the precipitating pipe K, to the mouth F, of the pump. This current of water will take up a portion of the mixture of ashes and water into the pump with it, on the principle of an injector so that the water will greatly predominate. Such a method will lessen materially any danger of the pump becoming clogged up.

Having now described my invention, what I claim as new therein, and desire to secure by Letters Patent, is as follows:

1. In an apparatus for removing ashes, the combination of the ash box B, the precipitating pipe K, entering the same; the discharge pipe H and the pump E within said ash box and connecting with said discharge pipe, substantially as described.

2. In an apparatus for removing ashes, the combination of the ash box B, the precipitating pipe K, entering the same, and communicating with the outside water, the discharge pipe H, extending outside of the vessel and the pump E, within said ash box and connecting with said discharge pipe, substantially as described.

3. In an apparatus for removing ashes, the combination of the ash box B, formed within; and a part of, the water bottom of a vessel;

the precipitating pipe K, entering the same; the discharge pipe H, and the pump E, within said ash box and connecting with said discharge pipe substantially as described.

5 4. In an apparatus for removing ashes from the fireholds of vessels, the combination of the ash box B, the precipitating pipe K, the discharge pipe H, the pump E, within said

ash box and the grating D, at the top of said ash-box substantially as described.

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

ALEXANDER McDOUGALL.

Witnesses:

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