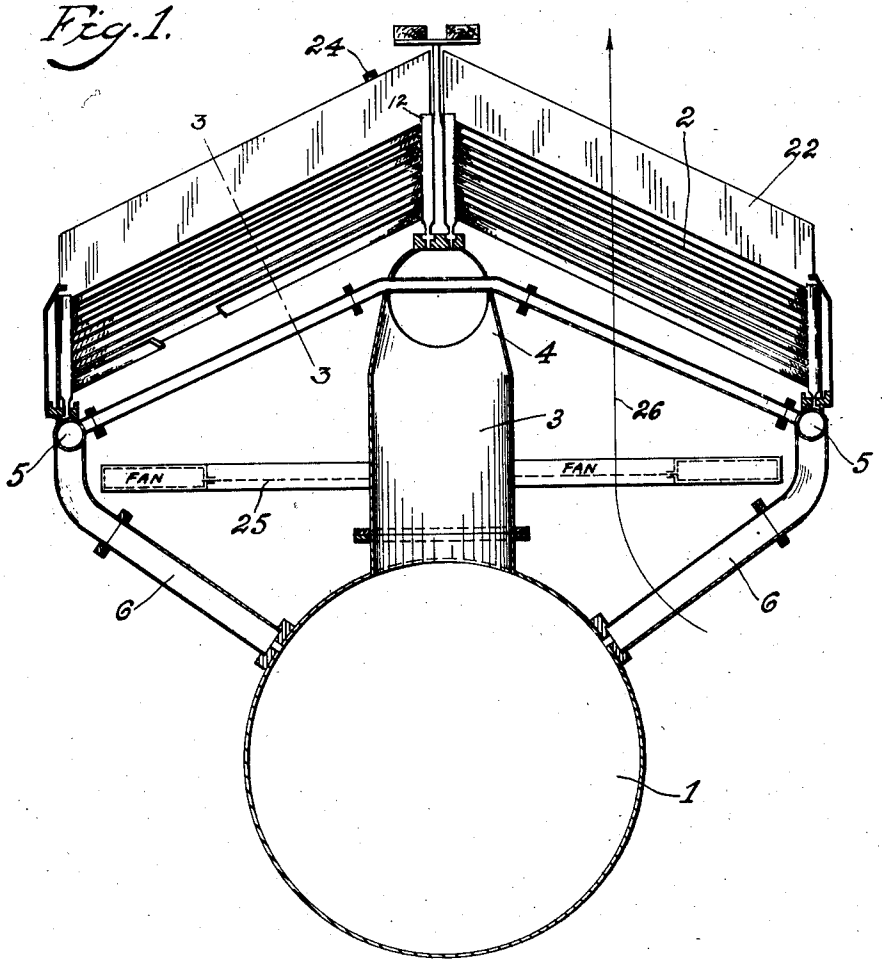
Sept. 15, 1925. 1,553,808

E. O. ERIKSSON

AIR COOLED CONDENSER FOR LOCOMOTIVES

Filed May 3, 1922 3 Sheets-Sheet 1

Fig. 1.



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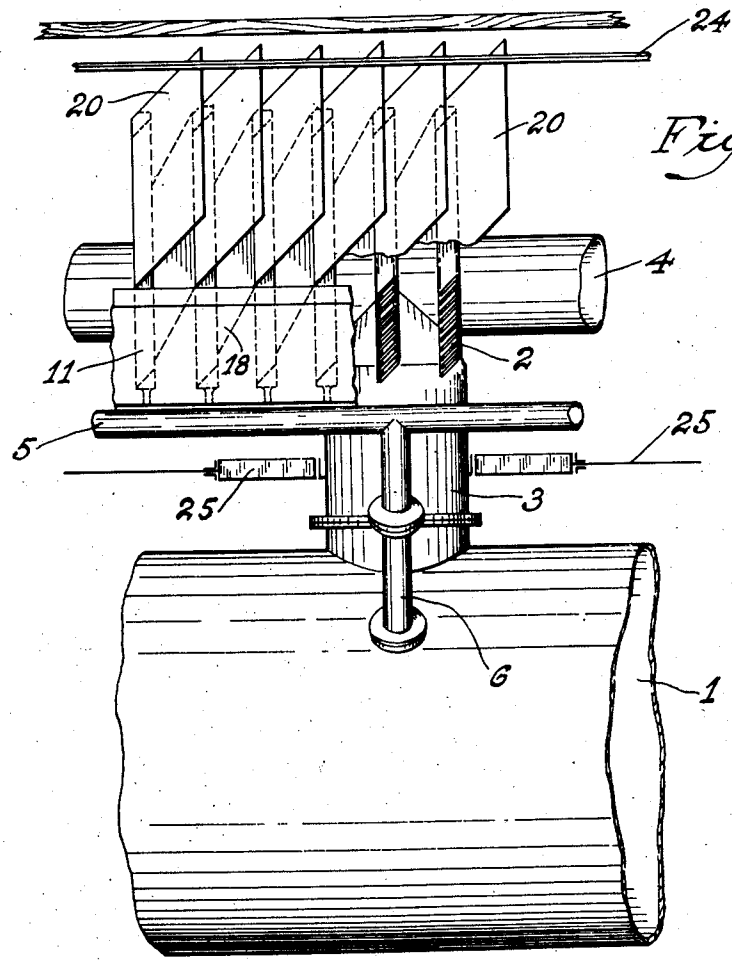


Fig. 2.

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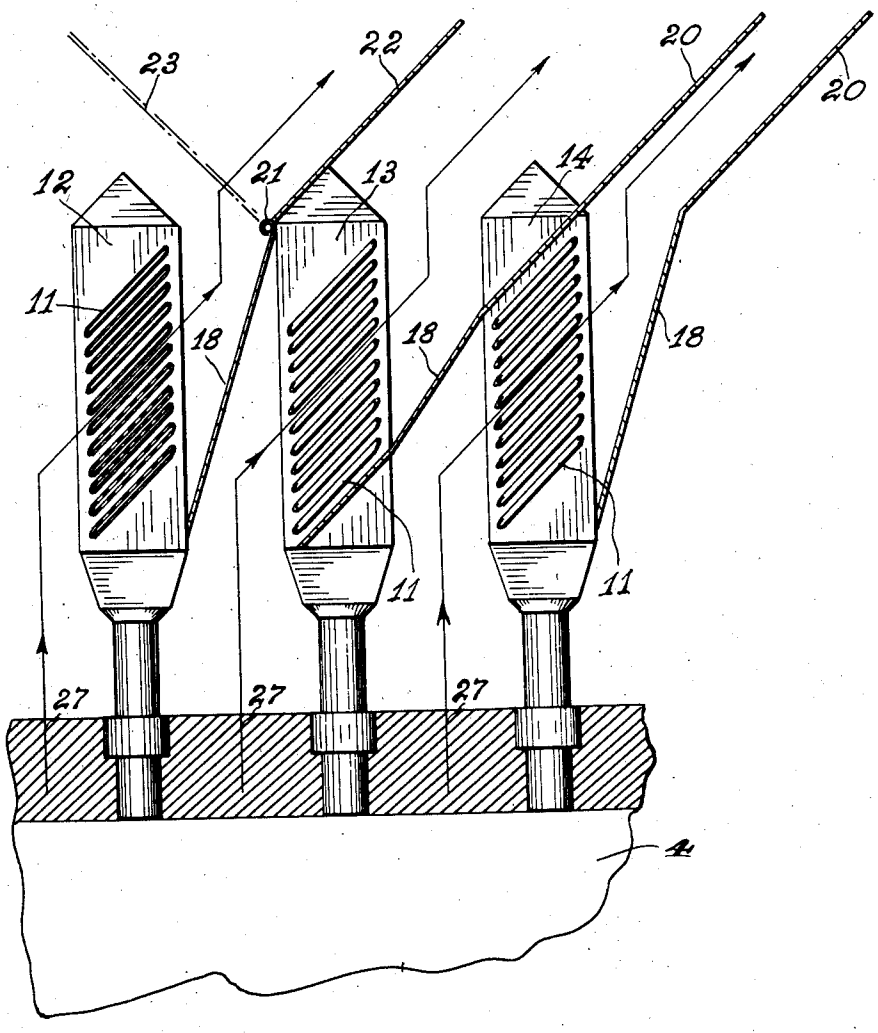
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Fig. 3.



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UNITED STATES PATENT OFFICE.

ERIK OTTO ERIKSSON, OF ORMBUNKEN, LIDINGO-BREVIK, SWEDEN, ASSIGNOR TO AKTIEBOLAGET LJUNGSTROMS ANGTURBIN, OF STOCKHOLM, SWEDEN, A CORPORATION.

AIR-COOLED CONDENSER FOR LOCOMOTIVES.

Application filed May 3, 1922. Serial No. 558,073.

To all whom it may concern:

Be it known that I, ERIK OTTO ERIKSSON, engineer, a subject of the King of Sweden, residing at Ormbunken, Lidingo-Brevik, Sweden, have invented certain new and useful Improvements in or Relating to Air-Cooled Condensers for Locomotives, of which the following is a specification.

In locomotives and similar carriages it has previously been suggested to conduct the steam supplied to the condenser through a number of elements preferably consisting of flattened pipes placed side by side and played upon by cooling air forced by means of fans.

This invention relates particularly to condensers of said type but may also be applied to air cooled condensers or water cooling apparatus of other types. The object of the invention is to effect such a placing of the elements that the condenser may be made of smaller dimensions, particularly in its longitudinal direction.

To this purpose the elements of the condenser are collected into groups each containing several elements placed one above another, the groups being situated in a row parallel or approximately parallel to one another and spaced apart. The invention consists further in that the groups of elements are composed of inclined elements placed vertically one above another, the groups being interconnected by means of plates or the like so as to cause the cooling air to pass through the channels formed thereby upwards and rearwards, reckoned in the normal running direction of the locomotive. The greater the number of elements in each group the smaller is the length of the condenser, since the interspace between the groups necessary for the cooling air of a group of elements may always be taken smaller than the width of a group of elements.

The accompanying drawing illustrates an embodiment of the invention applicable to air-cooled condensers for locomotives in which the steam passes to the air-cooled condenser as well as to a fluid receptacle which, upon a large supply of waste steam to the condenser, accumulates steam under vacuum, the receptacle, upon less quantity of steam or no steam at all being supplied to the condenser, delivering steam to the air-cooled part which on account thereof nearly always is cooling steam.

Fig. 1 is a cross-section of the condenser and Fig. 2 a partial side view of the same. Fig. 3 is a detailed view on the line 3—3 of Fig. 1 showing the arrangement of the elements into groups.

Referring to Figs. 1 and 2, 1 designates the accumulating fluid receptacle and 2 the air-cooled condenser. 3 is one of the many steam pipes connecting the fluid receptacle to the steam distributing pipe 4, the steam passing from the said pipe 4 to the condenser 2 where it is condensed to water which is collected in the pipes 5 and flows down through the pipes 6 to the fluid receptacle 1. The cooling air is forced through the condenser 2 by the fans 25 about in the direction of the arrow 26.

The elements of the condenser are collected into groups, as will appear particularly from Fig. 3, showing a section to a greater scale of the condenser on line 3—3 in Fig. 1. The elements 11 are in this case arranged parallel in relation to one another and in groups, each group attached to one collecting pipe 12, 13 or 14. The several groups are separated by means of walls 18. These walls may be placed in various manners depending upon the situation of the elements in the groups. At all events however the walls should form channels conducting the cooling air from the groups or to the same about in the direction of the arrows 27. In the embodiment shown the air is divided into parallel currents.

Figure 3 illustrates how guiding partitions or plates 20 conduct the air passing from the groups of elements rearwards in relation to the running direction of the locomotive, the current of air flowing between the plates 20 on account of the speed of the locomotive. In the same figure 21 denotes a device by means of which said plates may always be directed rearwards independent of the running direction of the locomotive, the plate 22 being reversed, if desired, automatically by the air pressure to the position 23 shown by stippled lines upon the running direction being contrary to that supposed in the drawing. Fig. 2 illustrates how all

the plates 20 may be reversed for instance from the driver's cabin by pulling or pushing a rod 24.

Obviously a greater number of elements may be collected into each group than that shown on the drawing. Since the arrangement of the elements in the condenser depends upon the requisite room which in case of locomotives is limited by the determined loading gauge, the groups should contain such a number of elements as is necessary in order that the condenser within a limited length shall be of sufficient size so as to be able to condense the supplied quantity of steam.

Several modifications of the invention may be imagined without surpassing the scope of the same. Thus the elements may be otherwise shaped as for instance being provided with ribs at the outer side or with enlarged surfaces in any other manner. The elements may also according to the invention be placed in other angular positions than those described above, and the direction of the cooling air may be opposite. The accumulating fluid receptacle can be dispensed with in a construction made according to the invention.

What I claim as new and desire to secure by Letters Patent of the United States is:—

1. An air-cooled condenser for locomotives comprising elements situated close to one another, and means for forcing air through the interspaces between said elements, said elements being collected into groups each containing several elements situated one above another and having an inlet and an outlet common to all elements of said group and adapted to serve only said group, the groups being placed in a row substantially parallel to one another and spaced apart.

2. An air-cooled condenser for locomotives comprising elements situated close to one another, and means for forcing air through the interspaces between said elements, said elements being collected into groups each containing several elements placed vertically and in inclined position one above another and having an inlet and an outlet common to all elements of said group and adapted to serve only said group, the groups being placed in a row substantially parallel to one another and spaced apart.

3. An air-cooled condenser for locomotives comprising elements situated close to one another, means for forcing air through the interspaces between said elements, said elements being collected into groups each containing several elements situated one above another, and having an inlet and outlet common to all elements of said group and adapted to serve only said group, the groups being placed in a row substantially parallel to one another and spaced apart, and plates provided in the interspaces between the groups of elements and guiding the cooling air to the different groups of elements.

4. An air-cooled condenser for locomotives comprising elements situated close to one another, means for forcing air through the interspaces between said elements, said elements being collected into groups each containing several elements placed vertically and in inclined position one above another and having an inlet and an outlet common to all elements of said group and adapted to serve only said group the groups being placed in a row substantially parallel to one another and spaced apart, and plates provided in the interspaces between the groups of elements and guiding the cooling air to the different groups of elements, the inclination of the elements of the groups and the position of said guiding plates being such as to cause the cooling air to flow in the upward and rearward direction reckoned in the normal running direction of the locomotive.

5. An air-cooled condenser for locomotives comprising elements situated close to one another, means for forcing air through the interspaces between said elements, said elements being collected into groups each containing several elements situated one above another and having an inlet and an outlet common to all elements of said group and adapted to serve only said group, the groups being placed in a row substantially parallel to one another and spaced apart, and guiding partitions provided at the top of the groups of elements and conducting the issuing air in the rearward direction reckoned in the running direction of the locomotive.

6. An air-cooled condenser for locomotives comprising elements situated close to one another, means for forcing air through the interspaces between said elements, said elements being collected into groups each containing several elements situated one above another and having an inlet and an outlet common to all elements of said group and adapted to serve only said group, the groups being placed in a row substantially parallel to one another and spaced apart, plates provided in the interspaces between the groups of elements and guiding the cooling air to the different groups of elements, and guiding partitions provided at the top of the groups of elements and conducting the issuing air in the rearward direction reckoned in the running direction of the locomotive.

7. An air-cooled condenser for locomotives comprising elements situated close to one another, means for forcing air through the interspaces between said elements, said elements being collected into groups each containing several elements placed vertically and in inclined position one above another and having an inlet and an outlet common to all

elements of said group and adapted to serve only said group, the groups being placed in a row substantially parallel to one another and spaced apart, plates provided in the interspaces between the groups of elements and guiding the cooling air to the different groups of elements, the inclination of the elements of the groups and the position of the said guiding plates being such as to cause the cooling air to flow in the upward and rearward direction reckoned in the normal running direction of the locomotive, and guiding partitions provided at the top of the groups of elements and conducting the issuing air in the rearward direction reckoned in the said running direction.

8. An air-cooled condenser for locomotives comprising elements situated close to one another, means for forcing air through the interspaces between said elements, said elements being collected into groups each containing several elements situated one above another and having an inlet and an outlet common to all elements of said group and adapted to serve only said group, the groups being placed in a row substantially parallel to one another and spaced apart, and reversible guiding partitions provided at the top of the groups of elements and conducting the issuing air in the rearward direction reckoned in the running direction of the locomotive.

9. An air-cooled condenser for locomotives comprising elements situated close to one another, means for forcing air through the interspaces between said elements, said elements being collected into groups each containing several elements placed vertically and in inclined position one above another and having an inlet and an outlet common to all elements of said group and adapted to serve only said group, the groups being placed in a row substantially parallel to one another and spaced apart, plates provided in the interspaces between the groups of elements and guiding the cooling air to the different groups of elements, the inclination of the elements of groups and the position of the said guiding plates being such as to cause the cooling air to flow in the upward and rearward direction reckoned in the normal running direction of the locomotive, and reversible guiding partitions provided at the top of the groups of elements and conducting the issuing air in the rearward direction reckoned in the said running direction.

In testimony whereof I affix my signature.

ERIK OTTO ERIKSSON.