Oct. 27, 1925. 1,559,180

E. PRAT

HEAT EXCHANGER

Filed Aug. 18, 1925

Fig. 1

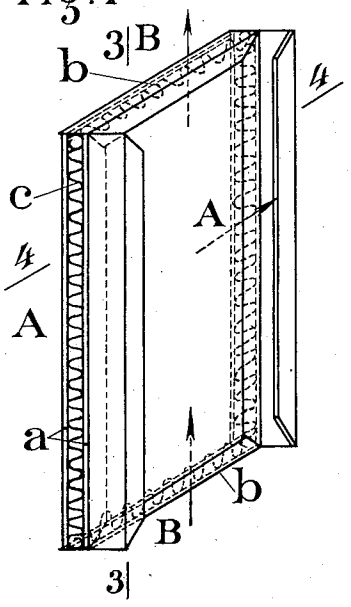


Fig. 3

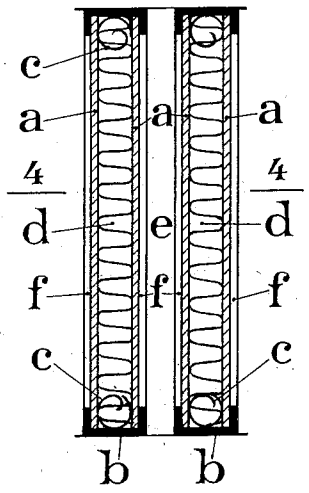


Fig. 2

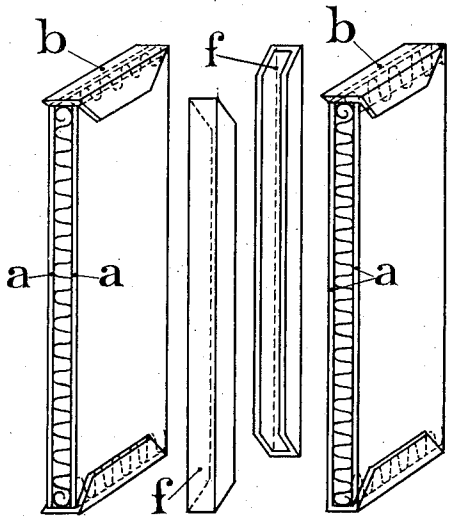
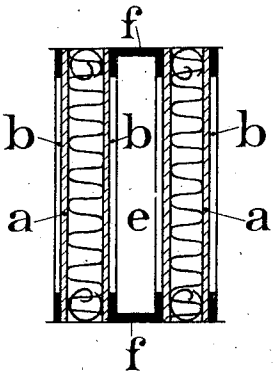


Fig. 4



Inventor:
Emile Prat
By Marks & Clerk
Attys.

Patented Oct. 27, 1925. 1,559,180

UNITED STATES PATENT OFFICE.

EMILE PRAT, OF PARIS, FRANCE.

HEAT EXCHANGER.

Application filed August 18, 1925. Serial No. 51,027.

To all whom it may concern:

Be it known that I, EMILE PRAT, a citizen of the Republic of France, residing at Paris, France, have invented certain new and useful Improvements in Heat Exchangers, of which the following is a specification.

My invention relates to heat exchangers of the type composed of flat plates separated by frames comprising resilient spirals which hold the plates apart and clamp them against the inner surface of the U-shaped channel irons. When such apparatus is intended, for example, for the heating of air by means of flue or combustion gases at high temperature, it is desirable to avoid the circulation of the gases through the spirals, the resiliency of which may be impaired by the high temperature. According to the present invention the spirals are placed exclusively in the elements of the fluid to be heated, said spirals clamping the plates within channel irons surrounding the edges of the plates, the spaces for the circulation of the other fluid being simply provided for by other channel irons securing the spacing of the plates. The accompanying drawing illustrates by way of example an embodiment of a device in accordance with the invention:

Figure 1 is a perspective view of an assembled element with the irons for the passage of gases. Figure 2 shows two elements and the irons spaced apart. Figure 3 is an elevation in section along line 3—3 of Figure 1, and Figure 4 is a horizontal section along line 4—4 of Figure 1.

Each element for the circulation of the fluid to be heated, comprises the flat plates *a*. The edges to be closed are surrounded by U-shaped irons *b b* against which the plates *a* are clamped by resilient spirals or windings *c* of wire. The whole set constitutes an element which can be assembled by itself and forms an inner space *d* for the air. The irons *b b* may be placed on any side to be closed of said element according to the direction in which the air is to circulate; said direction being shown in the present instance by the arrow A. The spirals *c* cause sufficient clamping of the plates *a* against the irons *b* to secure the tightness desirable.

The flue gases circulate, as shown by the arrow B, within the space *e* formed between the aforesaid elements, the spacing being simply obtained by the channel irons *f* being arranged between the unobstructed edges of the plates of adjacent elements so that the space *e* constitutes a gas passage arranged at substantially right angles to the air passage.

What I claim is:

A heat exchange device for the transfer of heat from one fluid to another comprising a plurality of elements each consisting of a pair of spaced plates, channel irons overlapping two opposed edges of said plates, resilient spirals between the plates positioned to hold the plates in contact with the inner surfaces of said channels so as to provide a passage for one of the fluids, and other channel irons placed between the unobstructed edges of the plates of adjacent elements to form a passage for the other fluid at substantially right angles to the first passage.

In testimony whereof I hereunto affix my signature.

EMILE PRAT.