

June 19, 1923.

1,459,503

R. C. GLOVER

RADIATOR CONSTRUCTION

Filed April 27, 1917

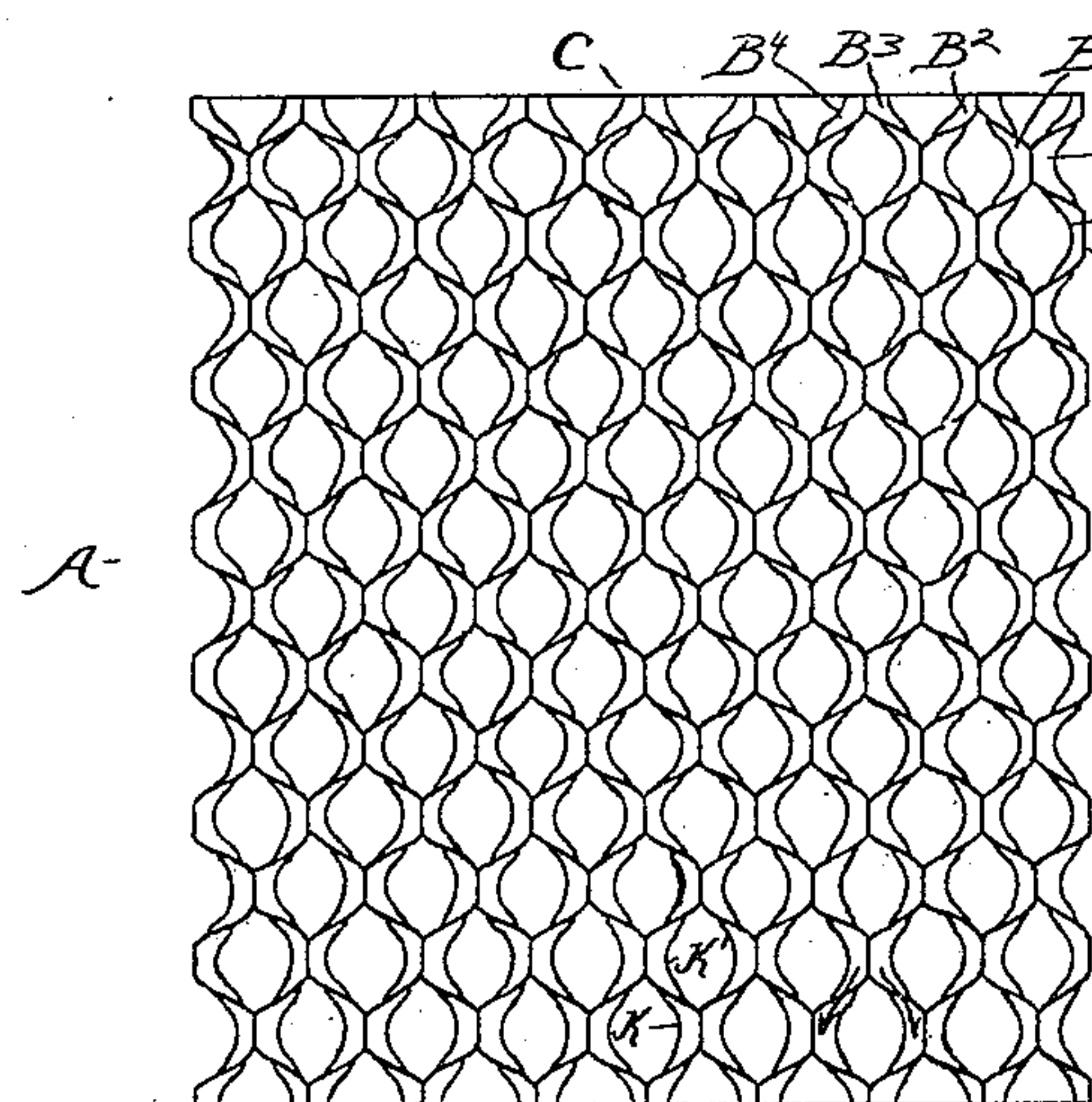


Fig. 1. m m' D'

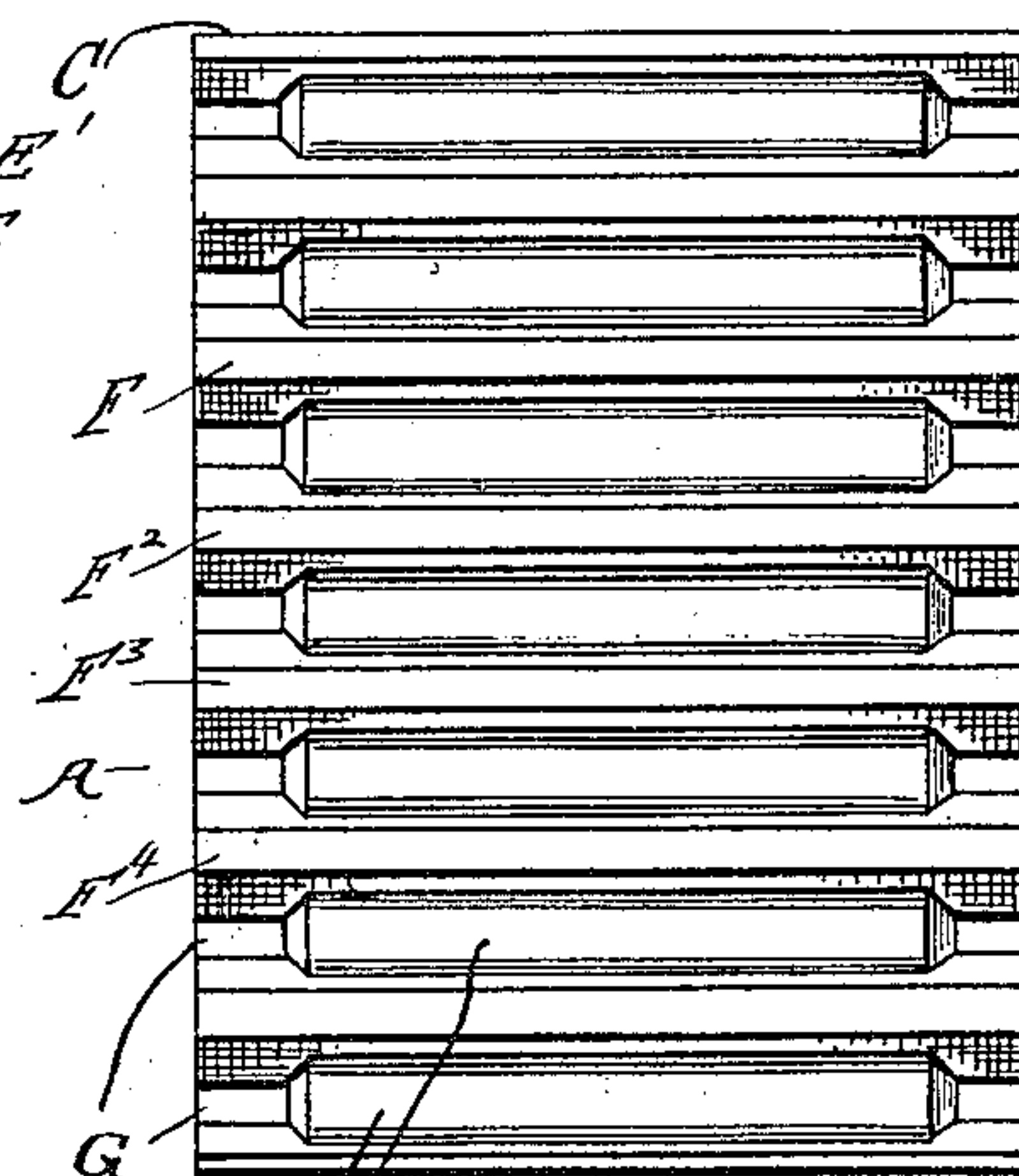


Fig. 2.



Fig. 3.

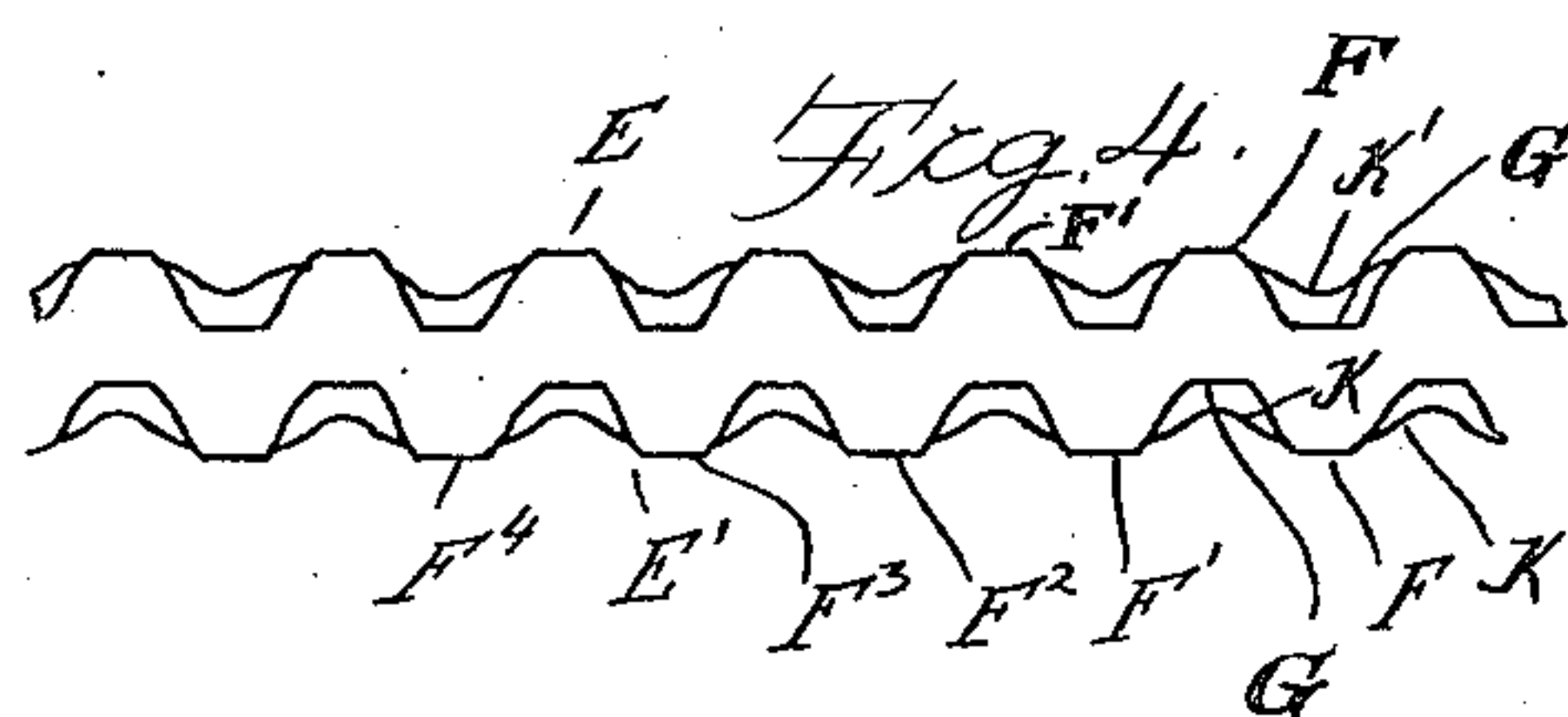


Fig. 4.

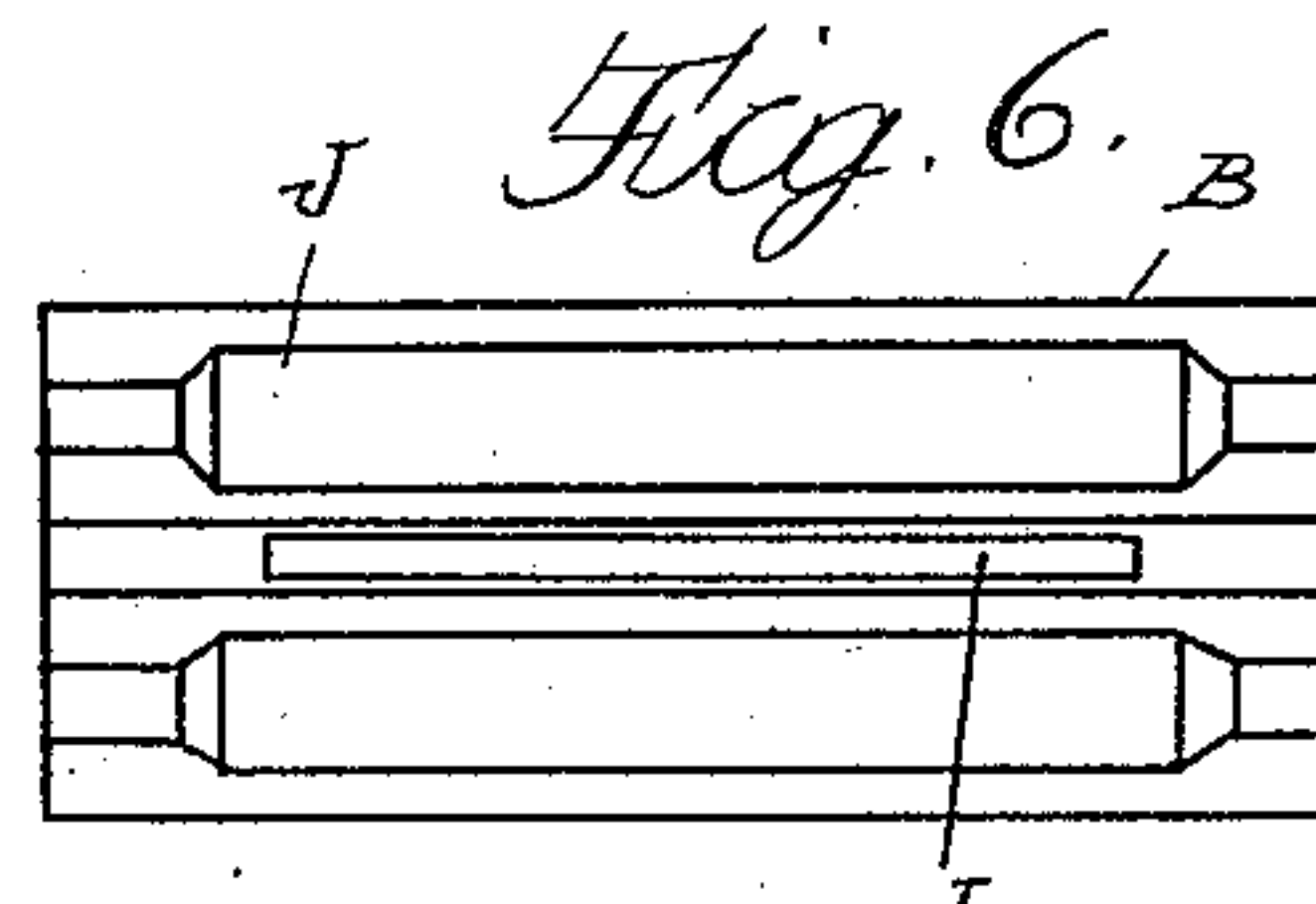


Fig. 6.

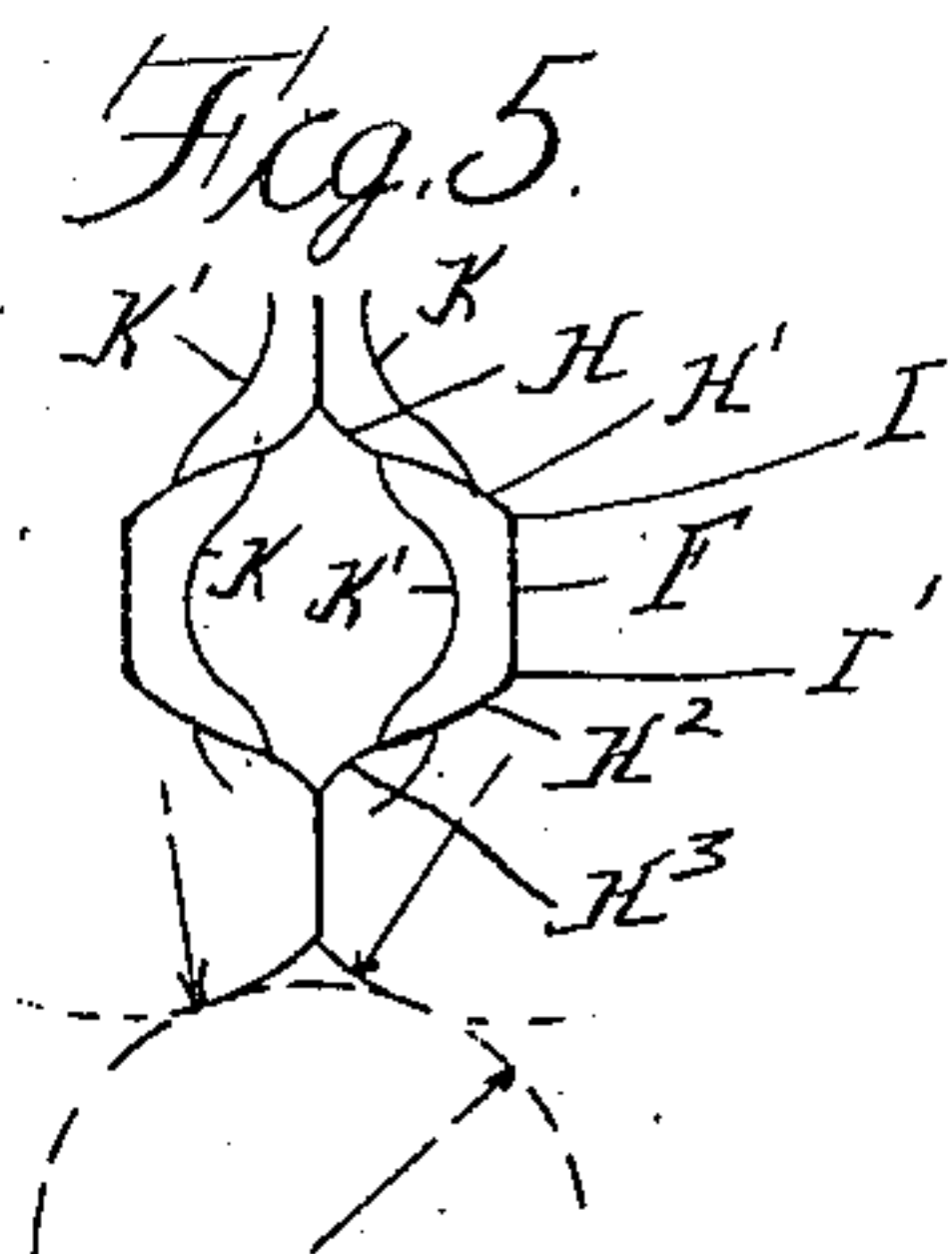


Fig. 5.

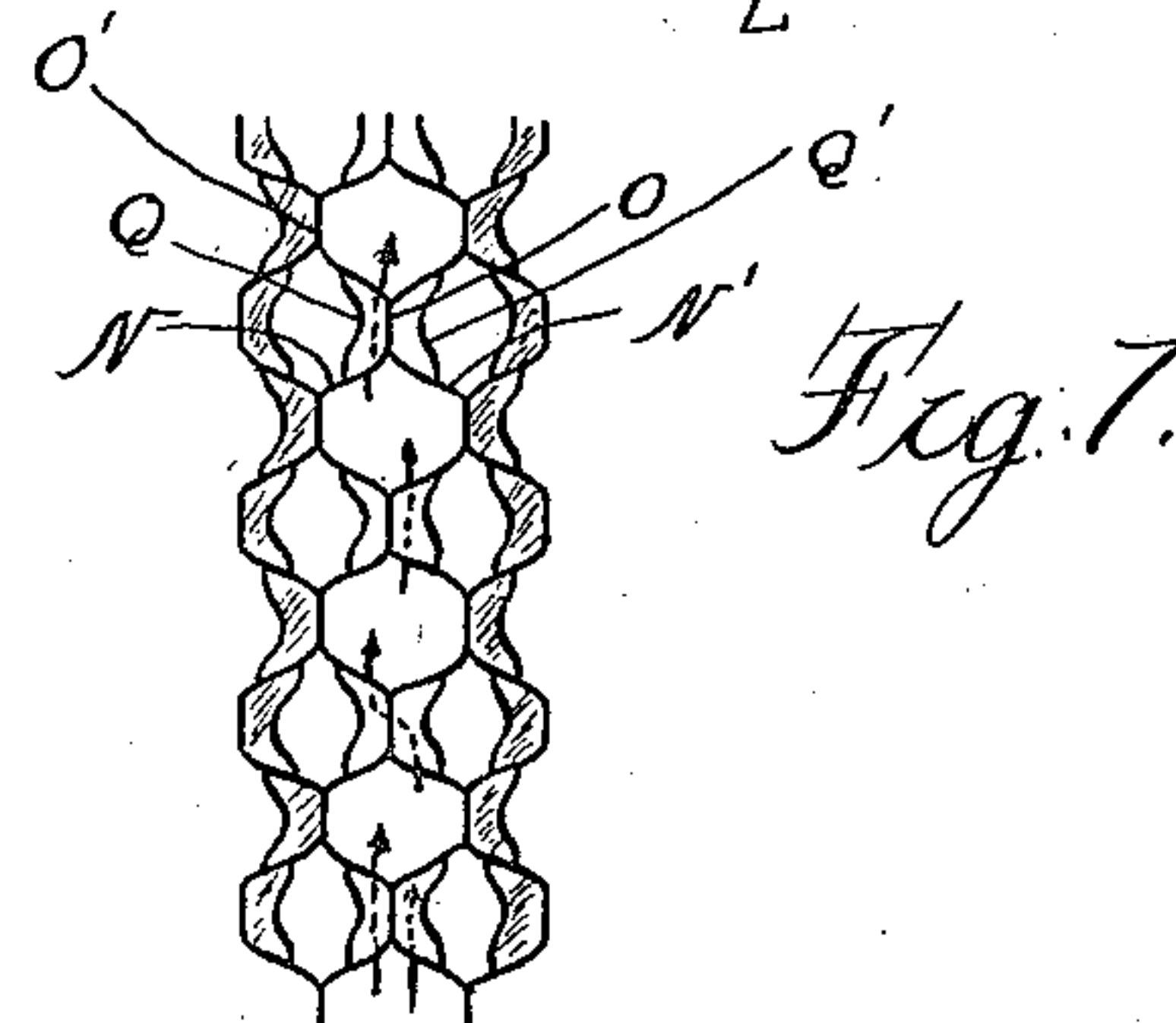


Fig. 7.

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UNITED STATES PATENT OFFICE.

REX C. GLOVER, OF FLINT, MICHIGAN.

RADIATOR CONSTRUCTION.

Application filed April 27, 1917. Serial No. 164,831.

To all whom it may concern:

Be it known that I, REX C. GLOVER, a citizen of the United States of America, residing at Flint, in the county of Genesee and State of Michigan, have invented certain new and useful Improvements in Radiator Constructions, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to radiators and refers more particularly to radiators such as are adapted for automobiles, aeroplanes or the like, although the invention in its broader aspects is designed for any purpose where the contents of the chamber or other member are cooled by radiation.

Among the objects of the invention are to provide a radiator construction which can be entirely constructed from rolled or drawn brass or other suitable material; to provide a construction in which the water spaces are contained in a unit which is complete in itself and has a continuous water space from the top to the bottom; to so shape and construct the units that both walls are identical in shape but nested in reversed position; to provide a construction in which the air spaces are formed by assembling together two complete independent water space units; to allow the reduction of a number of water space units by permitting the substitution for any complete unit of a unit consisting of but one of the usual walls; to so form the walls of the water units that when the two units are placed together there is a multiple thickness at the front or edge portions and a surface contact throughout the entire depth so as to provide greater rigidity; to provide a novel construction of unit in which each half of the air space wall comprises a gear-tooth-like arrangement, thus permitting the rolling or drawing of the metal without injuring or weakening the portions thereof; and in general to provide a new, improved and simplified construction of the character above referred to.

In the drawings:

Figure 1 is a front elevational view of a portion of a radiator embodying my invention;

Figure 2 is a side elevational view of the construction shown in Figure 1;

Figure 3 is a top edge view of one of the sheets which form the unit;

Figure 4 is a front elevational view showing

the two sheets which comprise the unit spaced from each other;

Figure 5 is an enlarged diagrammatic view showing the gear-shaped arrangement of the walls of the unit;

Figure 6 is a side elevational view showing a slightly modified construction;

Figure 7 is a front elevational view showing also a slightly modified construction.

Describing in detail the particular embodiment of my invention shown in the drawings, A designates a section of a radiator which is built up of a plurality of water units B, B', B², etc. Each of these water units runs from the top C of the radiator to the bottom D and is a separate unit in itself.

The invention particularly contemplates the building up of the separate water units by walls E and E' which can be rolled or pressed from brass or other suitable material. These walls are identical in shape but are nested in reversed position. As shown in Figure 2 each wall has a plurality of plane surfaces F, F', F², etc., between which there is positioned depressed portions G which are substantially of a shape corresponding to that of a gear-tooth, that is, each part is built up of curved portions H, H', H² and H³. The curved parts H' and H² are connected to the flat surfaces F, etc., by curves of small radius I and I' so that in rolling or drawing the material to form the units the danger of injuring the metal is practically eliminated. Said portions G have their central portions offset as indicated at K.

The arrangement of parts is such that when one of the finished sheets such as E' is nested in reversed position to one of the other sheets such as E, the offset portions K and K' will overlap, thus allowing the water to flow from the top to the bottom of the unit by a somewhat staggered course through the alternate overlapping passages K to K' to K back to K', etc. In the modified construction shown in Figure 6 the water is permitted to pass from one of the units B to the next adjacent unit by means of apertures such as shown at L which register with a corresponding aperture in the adjacent unit. The nested walls E and E' have their ends M and M' dipped in solder so as to tightly seal the edge portions and form a complete water-tight passage from the top to the bottom of the unit.

In assembling the radiator the various water units are arranged side by side and soldered together. As these units have on their outside a continuous series of flat surfaces F, F', etc., there will be a very rigid construction but one in which repairs can be easily made by taking out any particular unit or portion of unit without in any way interfering with the remaining units.

It will be noticed that the water units completely surround the air space so that the air passing through the radiator serves to cool a relatively large area of water. Where, however, it is desired to cut down the number of water units, this can be done by the employment of additional filler members N and N' by simply arranging intermediate the water units one or more units formed from a single wall, as shown in Figure 7. Thus if the manufacturer is producing four, six or eight cylinder motors he can use the same units, but by putting in single wall filler members of the same material, can cut down the radiation to any amount desired. Moreover this is accomplished by the same shaped walls that are used to build up the water units so that the entire construction can be manufactured on one machine and by a simple rolling or drawing process.

It will also be noticed that where the filler members N and N' are employed there will

be but two thicknesses at the point marked O, while at the point marked O' there will be three thicknesses of metal. However the filler members have great strength owing to the arrangement of the offsets Q and Q', which in effect, form a substantially bridge-like support for the filler members as well as for the water tubes.

Various changes, however, in the details of construction and arrangements and combinations of parts can, of course, be made within the scope of my invention.

What I claim as my invention is:

1. A radiator water unit formed by a pair of adjacent plates each having a plurality of gear tooth shaped portions nested in alternate relation to provide a continuous water passage between said plates.

2. A radiator, comprising a plurality of water tube units each formed from a pair of duplicate sheet metal members nested in alternate relation, and a pair of sheet metal members duplicating those forming the water tubes and arranged with their corresponding portions in opposed relation between adjacent water tube units to serve as filler members each filler member forming air circulation spaces with said water tube units.

In testimony whereof I affix my signature.

REX C. GLOVER.