G. H. LOBER.

MACHINE FOR FORMING RADIATOR CORES.

APPLICATION FILED MAR. 18, 1918.

1,285,260.

Patented Nov. 19, 1918.

Fig. 1.

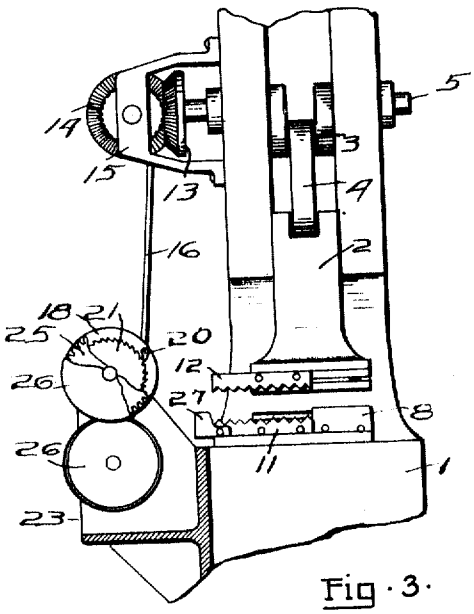


Fig. 2.

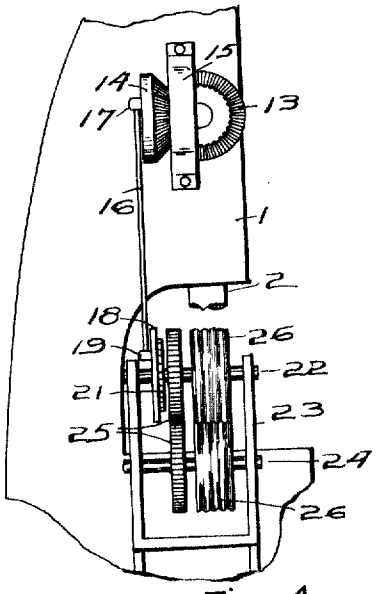


Fig. 3.

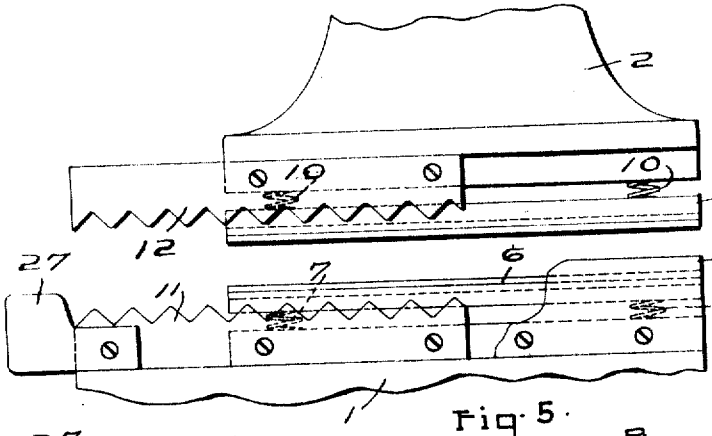


Fig. 4.

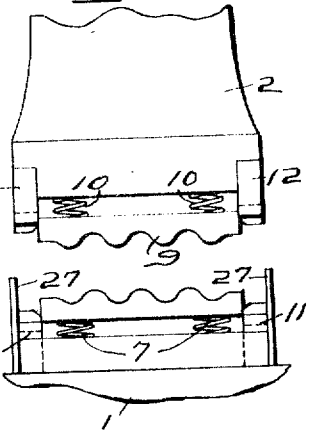
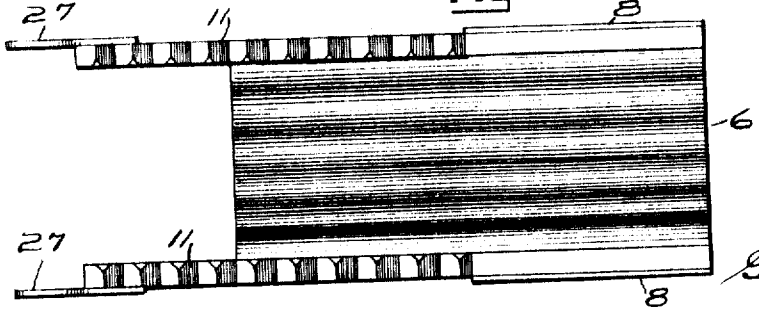


Fig. 5.



INVENTOR.

George H. Lober,

by

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UNITED STATES PATENT OFFICE.

GEORGE H. LOBER, OF TOLEDO, OHIO, ASSIGNOR OF ONE-THIRD TO NELSON J. QUINN AND ONE-THIRD TO F. W. HINES, JR., BOTH OF TOLEDO, OHIO.

MACHINE FOR FORMING RADIATOR-CORES.

1,285,260. Specification of Letters Patent. Patented Nov. 19, 1918.

Application filed March 18, 1918. Serial No. 223,128.

To all whom it may concern:

Be it known that I, GEORGE H. LOBER, a citizen of the United States, and a resident of Toledo, in the county of Lucas and State of Ohio, have invented a certain new and useful Machine for Forming Radiator-Cores; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

My invention relates to means for forming automobile radiator core strips, the radiator having longitudinal corrugations that form water passage-ways for the water used in cooling the engine of the automobile and corrugated edges which space the strips or pairs of strips transversely to permit the air to pass through the radiator.

The object of the invention is to produce automobile radiator strips that when placed together form water passage-ways and air passage-ways without unduly stretching and thus weakening the strip. A further object is to form a continuous strip which may be cut off at different lengths to form when properly placed, passage-ways having the cooling medium and passage-ways for the air for cooling ~~the medium~~.

By my invention is provided a means whereby strips are first corrugated longitudinally and subsequently corrugated transversely at the edges of the strips. The corrugated portions of the strip coact with the corrugated dies to form a guide for the strip, while the edge corrugations are being formed.

The invention may be contained in structures of different forms. I have selected one of such constructions and shall describe it hereinafter. The construction selected is illustrated in the accompanying drawings.

Figure 1 of the drawings illustrates a front view of the machine, Fig. 2 illustrates an end view, Fig. 3 illustrates a front view of the dies, Fig. 4 illustrates an end view of the dies, and Fig. 5 illustrates a top view of the lower set of dies.

1 is the supporting structure of the machine. It is provided with a ram 2 that is guided by the frame 1 in a manner well known in the art. Reciprocatory movements are imparted to the plunger 2 by means of the crank 3 which is connected to the plunger by a link or rod 4. The crank 3 is driven by the drive shaft 5. On the base of the structure is located a die 6 having longitudinal corrugations. The die 6 is raised a short distance by the springs 7 or other suitable elastic means. Guide plates 8 are located on each side of the corrugated die 6. The plates 8 form a means for guiding the strip that is moved over the corrugated die 6. The plunger 2 is provided with a die 9 that matches the die 6. It is secured through the springs 10 to the plunger and consequently is removed slightly from the plunger a short distance when the plunger rises from the table of the machine. A gradual pressure is thus brought to bear upon the strip operated upon until the dies are forced one against the supporting bed or table, and the other is forced against the plunger, whereupon the full pressure of the plunger is brought to bear upon the strip through the dies 8 and 9. This gives the material of the strip opportunity to shift beneath the dies and be drawn inward so that the edges of the strip will be closer together when the strip has been corrugated by the operation of the plunger and the die. The strip being moved but a short distance along the dies between the strokes of the plunger, the corrugated surfaces of the dies and the corrugations ~~of the~~ strip form a means for guiding the strips and keeps it centered with respect to the dies.

Near the delivery end of the dies and preferably along about half of the length of the dies, there are located two pairs of dies 11 and 12 for corrugating the edges of the strips. The pairs of dies are provided with transversely extending corrugations of a sufficient width to operate upon the edges of the strip. The dies 11 and 12 may be formed V-shaped in order to form substantially square openings for the air. This will produce a cellular appearance to the front and the rear of the radiator. The inner corners of the V-corrugations of the dies 11 and 12 are rounded and sloped to permit the metal to shape itself to the short transverse corrugations formed on the edges of the strips. The strip as it is moved along the dies 8 and 9 is raised by the die 6 so as to raise the strip relative to the dies 11 and so that the lower corners of

the Vs formed in the edges of the strips will rise to near the top corners of the dies 11 which will permit the strip to be moved along over the dies a short distance though with a yielding and an escapement-like movement.

Means may be provided for automatically feeding the strip between the dies. A gear wheel 13 connected to the crank 3 may be used to drive a gear wheel 14 supported on a short shaft movable in the bracket 15 supported on the frame 1. A rod 16 may be secured to the gear wheel 14 by means of a rotatable pin 17. The rod 16 is connected to a disk 18 through the rotatable pin 19. A pawl 20 may be secured near the periphery of the disk 18 and so as to operate upon the ratchet wheel 21. The disk 18 may be rotated on the shaft 22, while the ratchet wheel 21 is keyed to the shaft 22 and consequently in the reciprocatory movements of the rod 16, the ratchet wheel 21 and the shaft 22 are advanced certain distances according to the distance between the pin 17 and the axis of the gear wheel 14, or according to the distance of the pin 19 from the axis of the shaft 22. The shaft 22 is supported in a bracket 23. The bracket 23 is also provided with a shaft 24 and gear wheels 25 are located on the two shafts 22 and 24 in order to cause them to move together. Corrugated wheels 26 having surfaces that match the longitudinal corrugations formed by the dies 6 and 9 in the strip draw the strip between the dies, proportionate to the extent of movement of the disk 18 relative to the ratchet 21 intermediate each stroke of the plunger, the movement of the strip being caused during the half cycle of the time that the plunger is away from the dies.

For the purpose of guiding the strip from the dies, tongues 27 may be secured to the ends of the dies 11.

I claim:

1. In a strip forming machine, a pair of dies having corrugated surfaces extending lengthwise of the strips and two pairs of dies having transverse corrugations located at the ends of the dies having the longitudinal corrugations, the dies having the longitudinal corrugations having yielding means for raising the strip so that the edge corrugations will be raised above the top corners of the dies having the edge corrugations.

2. In a strip forming machine, a pair of dies having corrugated surfaces extending lengthwise of the strips and two pairs of dies having transverse corrugations located at the ends of the dies having the longitudinal corrugations, the dies having the longitudinal corrugations having yielding means for raising the strip so that the edge corrugations will be raised above the top corners of the dies having the edge corrugations, means for moving the strip step by step between the dies.

In testimony whereof, I have hereunto signed my name to this specification.

GEORGE H. LOBER.

Correction in Letters Patent No. 1,285,260.

It is hereby certified that the name of the second-mentioned assignee in Letters Patent No. 1,285,260, granted November 19, 1918, upon the application of George H. Lober, of Toledo, Ohio, for an improvement in "Machines for Forming Radiator-Cores," was erroneously written and printed as F. W. Hines, Jr., whereas said name should have been written and printed as *F. W. Hines, Jr.*, as shown by the records of assignments in this office; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 11th day of March, A. D., 1919.

[SEAL.]

R. F. WHITEHEAD,

Acting Commissioner of Patents.

Cl 153—76.