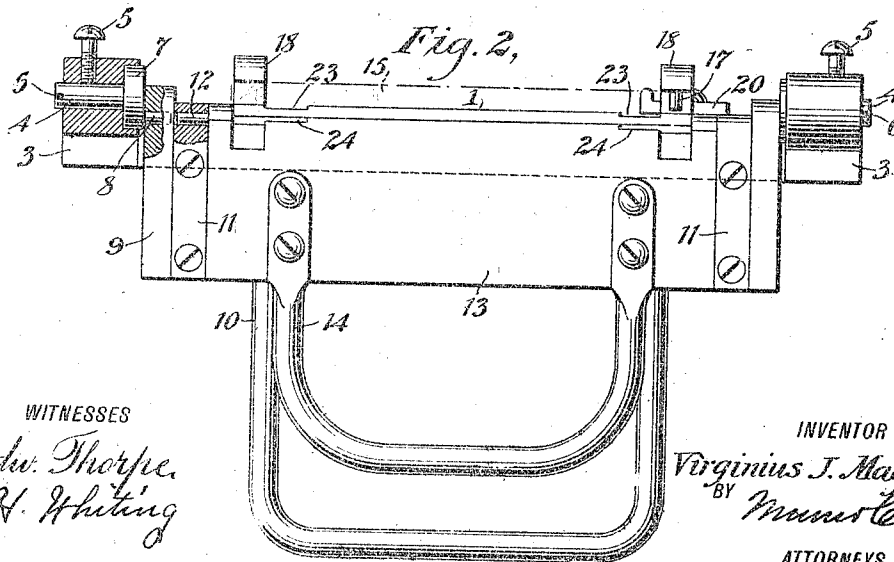
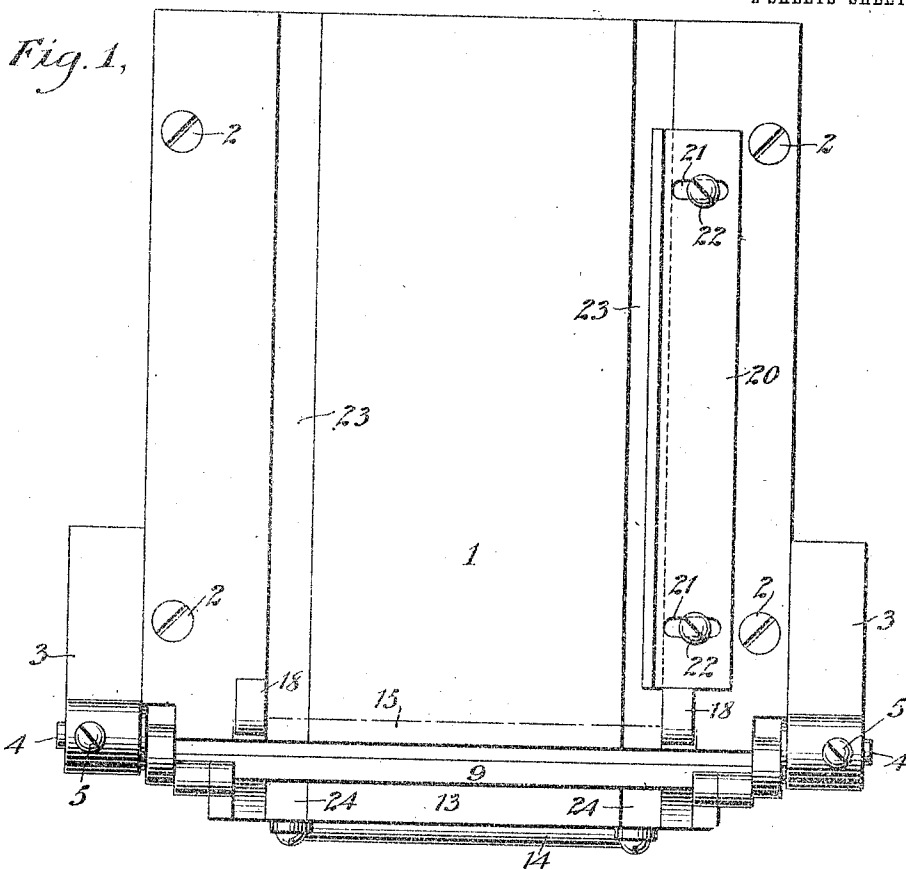


1,081,136.

Patented July 2, 1912.

2 SHEETS-SHEET 1.



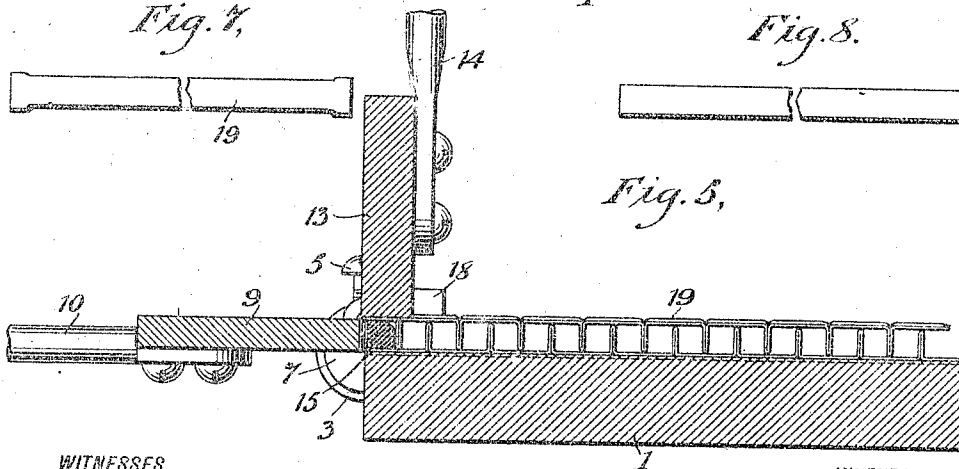
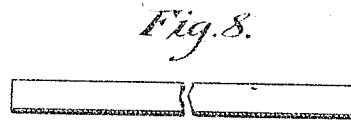
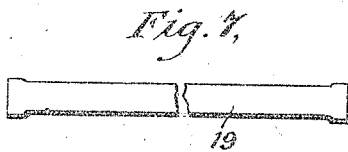
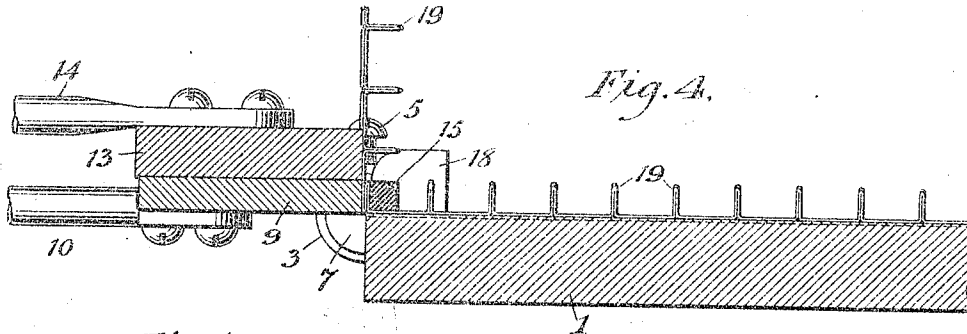
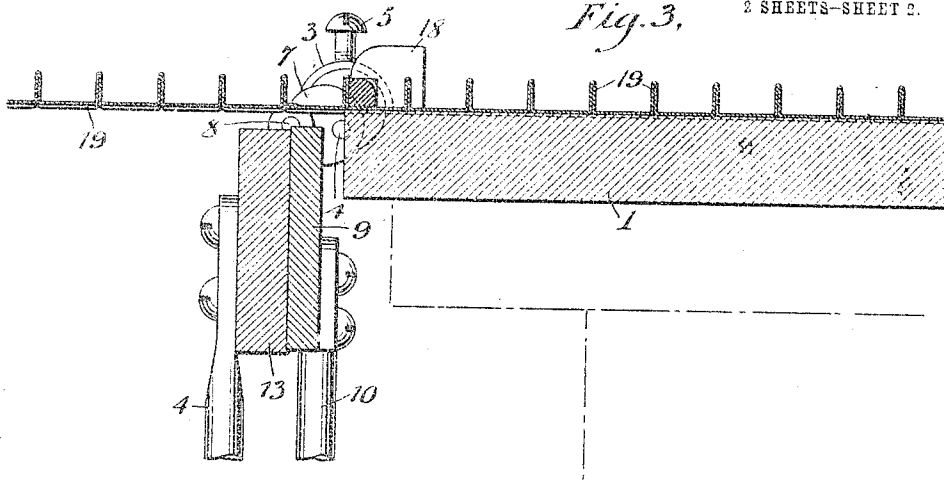
WITNESSES
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ATTORNEYS

1,031,136.

Patented July 2, 1912.

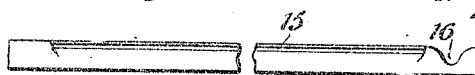
2 SHEETS-SHEET 2.



WITNESSES

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Fig. 6.



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UNITED STATES PATENT OFFICE.

VIRGINIUS J. MAYO, OF NEW HAVEN, CONNECTICUT.

METAL-BENDER.

1,031,136

Specification of Letters Patent.

Patented July 2, 1912.

Application filed April 23, 1909. Serial No. 491,703.

To all whom it may concern:

Be it known that I, VIRGINIUS J. MAYO, a citizen of the United States, and a resident of New Haven, in the county of New Haven and State of Connecticut, have invented a new and Improved Metal-Bender, of which the following is a full, clear, and exact description.

This invention relates to a device adapted to bend plaited strips of metal, to form sections of radiators to be used in cooling the water used in the jacket of an internal combustion engine on motor vehicles or the like. These strips of metal may be expanded at the ends or not, according to the type of radiator to be made.

The object of the invention is to provide a device which will be simple, quick and accurate in its operation, and which will be strong and durable and have the least number of parts consistent with good workmanship.

Generally speaking, the invention consists in a support, means connected to said support to perform an initial bending operation, and means adapted to perform a secondary bending operation, the whole so acting as to form a plaited strip of metal into a section, with the plaits extending in opposite directions and acting as spacing members for the strip.

The invention further consists in the construction and combination of parts, to be more fully described hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views, and in which—

Figure 1 is a plan view; Fig. 2 is a vertical front end view, partly in section; Fig. 3 is a vertical longitudinal section, showing the device with a plaited strip of metal therein before the first bending operation; Fig. 4 is a view similar to Fig. 3, showing the device after the first bending operation has been completed, the section lines being omitted from the strip of metal for the sake of clearness; Fig. 5 is also a view similar to Figs. 3 and 4, showing the device at the end of the bending operation, the section lines on the plaited strip of metal being omitted for the sake of clearness; Fig. 6 is a plan view of the die-rod; Fig. 7 is a transverse section through a plaited strip of metal hav-

ing offset ends; and Fig. 8 is a transverse section of a plaited sheet of metal without offset ends.

Referring more particularly to the separate parts of the device, 1 indicates a bed-plate, which may be of any suitable form and material and is adapted to be attached to a suitable support, as indicated in dotted lines in Fig. 3, by any suitable fastening means, such as screws 2.

There is provided at each side of the bed-plate 1, near the front end thereof, a pair of supports 3, which may be secured thereto in any suitable manner, and have suitable openings therein, which form bearings for suitable trunnions 4, which are adapted to be adjustably secured in said openings by any suitable means, such as set-screws 5. These trunnions 4 have at one end thereof a slot 6, which is adapted to be engaged by any suitable means, such as a screw-driver, to turn the same, to adjust it relative to the bed-plate, and at the other end, they have an enlarged portion 7, on each of which is eccentrically located a suitable shaft 8. These shafts 8 form a pivot for a metal-bender 9, which may be of any suitable form and material, and is adapted to be operated by any suitable means, such as a handle 10, secured in any well-known manner to the bender 9.

Suitably secured to the bender 9, on the upper surface there are provided a pair of members 11 which have at one end thereof suitable openings, to form bearings for pins 12, on which is rotatably supported in any well-known manner a metal bender 13, which is adapted to be operated by any suitable motive means, such as a handle 14, which is secured thereto in any well-known manner.

For the purpose of bending a plaited strip of metal, there is provided a die 15, which is adapted to co-act with the metal benders 9 and 13, and may be of any suitable form and material, but preferably consists in a square rod having one of its corners cut off and curved intermediate its ends, and also having a notch 16 in one of its sides, which is adapted to co-act with a locking member 17 on one of a pair of retaining hooks 18, which are secured in any well-known manner to the bed-plate 1.

In order to guide a plaited strip of metal 19 on the bed-plate 1, there is provided a suitable guide 20, which may be of any suitable form and material, but preferably con-

sists in an angle-iron having a number of slots 21 therein, through which it is adapted to be adjustably secured to the bed-plate 1 by any suitable means, such as screws 22.

5 The reason for this adjustment is to provide for different widths of strips of metal that the device may be called upon to bend. The plaited strip of metal 19 is shown with offset ends in the majority of the views, and
10 there is provided in the bed-plate 1 and the bender 13, a pair of slots 23 and 24, which are adapted to allow for this offset portion in the operation of the device. The device is, however, just as well adapted to bend a
15 plaited strip the ends of which are not expanded, as indicated in Fig. 8.

In the operation of the device, the plaited strip of metal is placed on the bed-plate with the plaits extending upwardly and the
20 die-rod 15 placed in the position shown in Fig. 3, where it is locked by means of the groove 16 and the lock 17. The pair of benders 9 and 13 are then lifted to the position shown in Fig. 4, by any suitable motive
25 means, such as the handle 10, and this operation bends the strip of metal between the die-rod 15 and the bender 9, so that the portion between a pair of plates is bent back onto one of the plates. The second stage of
30 the operation consists in revolving the bender 13 about its pivot to the position indicated in Fig. 5, by which operation the strip of metal is bent at substantially right-
35 angles to the position shown in Fig. 4, and forms, by means of the next plait a parallelepiped around the die-rod 15, the upper right-hand corner of which is cut away to allow the plait to slide by more
40 easily. The benders 9 and 13 are then allowed to assume their original position, as shown in Fig. 3, and the strip of metal, together with the die-rod 15, removed from the bed-plate, and the die-rod slipped out of the
45 end. The plaited strip of metal is thus bent at one end and intermediate its ends, so as to form a radiator section, the plaits on the parallel portions of which extend in opposite
50 directions, acting as spacing means between the body portions of the strip, the plaits on one portion of the strip being preferably located midway between the plaits on the other parallel portion of the strip. The bender 9 is eccentrically and adjustably pivoted to the bed-plate 1, so that
55 it can be adjusted to a nicety, so as to co-act exactly with the die-rod 15 in the operation of bending the metal.

Having thus described my invention, I claim as new and desire to secure by Letters

60 Patent:—

1. In a device of the class described, the combination with a bed-plate, of a bender, means for adjustably pivoting said bender to said bed-plate, an auxiliary bender pivoted
35 to said first-mentioned bender, and a re-

movable die having a plurality of right-angle edges adapted to co-act with said benders.

2. In a device of the class described, the combination with a bed-plate, of a bender
70 eccentrically pivoted to said bed-plate, and an auxiliary bender pivoted to said first-mentioned bender.

3. In a device of the class described, the combination with a bed-plate, of a bender
75 eccentrically pivoted to said bed-plate, an auxiliary bender pivoted to said first-mentioned bender, and a die adapted to co-act with said benders.

4. In a device of the class described, the combination with a bed-plate, of an adjustable trunnion, means for securing said trunnion to said bed-plate in any adjusted position, a shaft eccentrically located on said
80 trunnion, and a bender pivotally hung at one end to said shaft.

5. In a device of the class described, the combination with a bed-plate, of an adjustable trunnion, means for securing said trunnion to the bed-plate in any adjusted position, a shaft eccentrically located on said
90 trunnion, a bender pivoted to said shaft, and an auxiliary bender pivoted to said first-mentioned bender.

6. In a device of the class described, the combination with a bed-plate, of a pair of adjustable trunnions, means for securing
95 said trunnions to said bed-plate in any adjusted position, a pair of shafts eccentrically secured one on each of said trunnions, and a bender pivotally hung at one end to said shafts.

7. In a device of the class described, the combination with a bed-plate, of a pair of adjustable trunnions, means for securing
105 said trunnions to said bed-plate in any adjusted position, a shaft eccentrically located on each of said trunnions, a bender pivotally hung on said shafts, and an auxiliary bender pivoted to said first-mentioned bender.

8. In a device of the class described, the combination with a bed-plate, of a die-rod for said bed-plate, means for locking said die-rod in position on said bed-plate, and a bender for said bed-plate adapted to co-act
110 with said die-rod.

9. In a device of the class described, the combination with a bed-plate, of a removable die-rod for said bed-plate, means for locking said die-rod in position, a bender
120 pivoted to said bed-plate, and an auxiliary bender connected with said first-mentioned bender, said benders being adapted to co-act with said die-rod.

10. In a device of the class described, the combination with a bed-plate, of a removable die-rod having a groove in one end thereof and having one of its corners beveled off, means on said bed-plate adapted to hold
130 said die-rod in position, means on said last-

mentioned means adapted to engage said groove in said die-rod to lock said die-rod in position, a bender connected to said bed-plate, and an auxiliary bender connected to
5 said last-mentioned bender.

11. In a device of the class described, the combination with a bed-plate having a pair of grooves therein, of a guide adjustably secured to said bed-plate, a bender connected
10 to said bed-plate, means for adjustably pivoting said bender to said bed-plate, an auxiliary bender having grooves therein, pivoted to said first-mentioned bender, a die-rod adapted to co-act with said benders, and
15 means for operating said benders.

12. In a device of the class described, the combination with a bed-plate, having a pair of grooves therein, of a guide for said bed-

plate, means for adjustably securing said guide to said bed-plate, a bender for said
20 bed-plate, means for adjustably pivoting said bender to said bed-plate, an auxiliary bender pivoted to said first-mentioned bender and having a pair of grooves therein extending in alinement with said grooves
25 in said bed-plate, a die-rod connected to said bed-plate and adapted to co-act with said benders, and handles for operating said benders.

In testimony whereof I have signed my
30 name to this specification in the presence of two subscribing witnesses.

VIRGINIUS J. MAYO.

Witnesses:

WM. A. WRIGHT,
JOHN F. FABIAN.