

March 9, 1926.

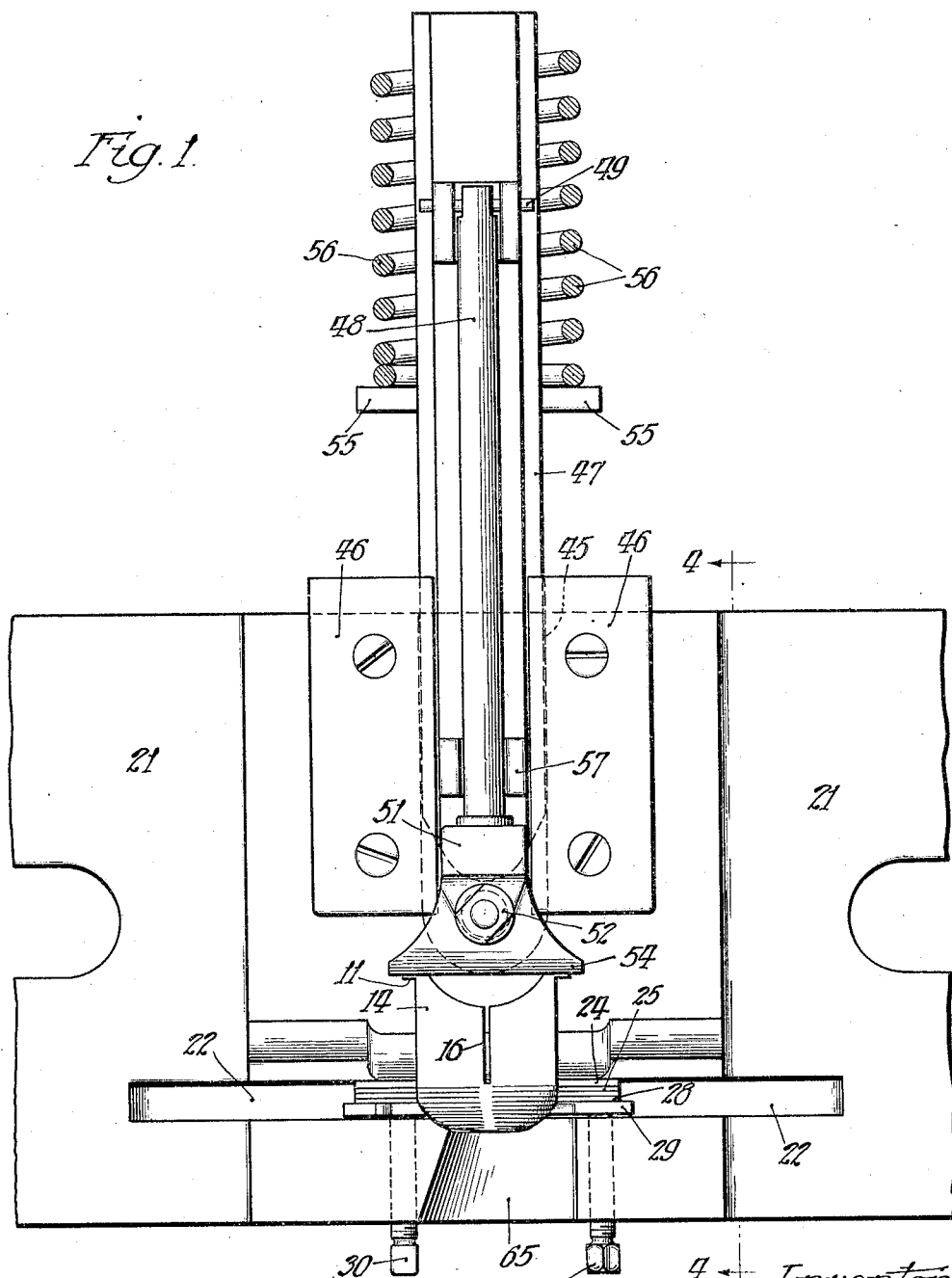
1,575,670

J. WROBLEWSKI

METHOD OF AND APPARATUS FOR MAKING FUEL VAPORIZERS

Filed May 5, 1922

4 Sheets-Sheet 1.



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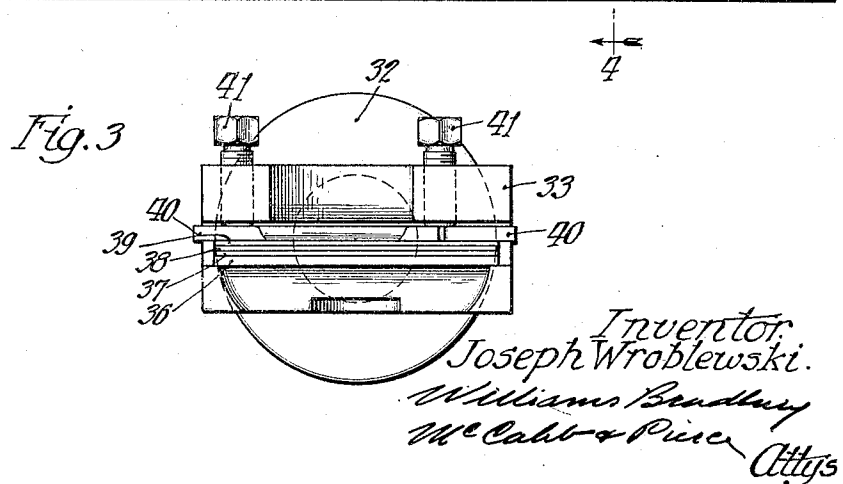
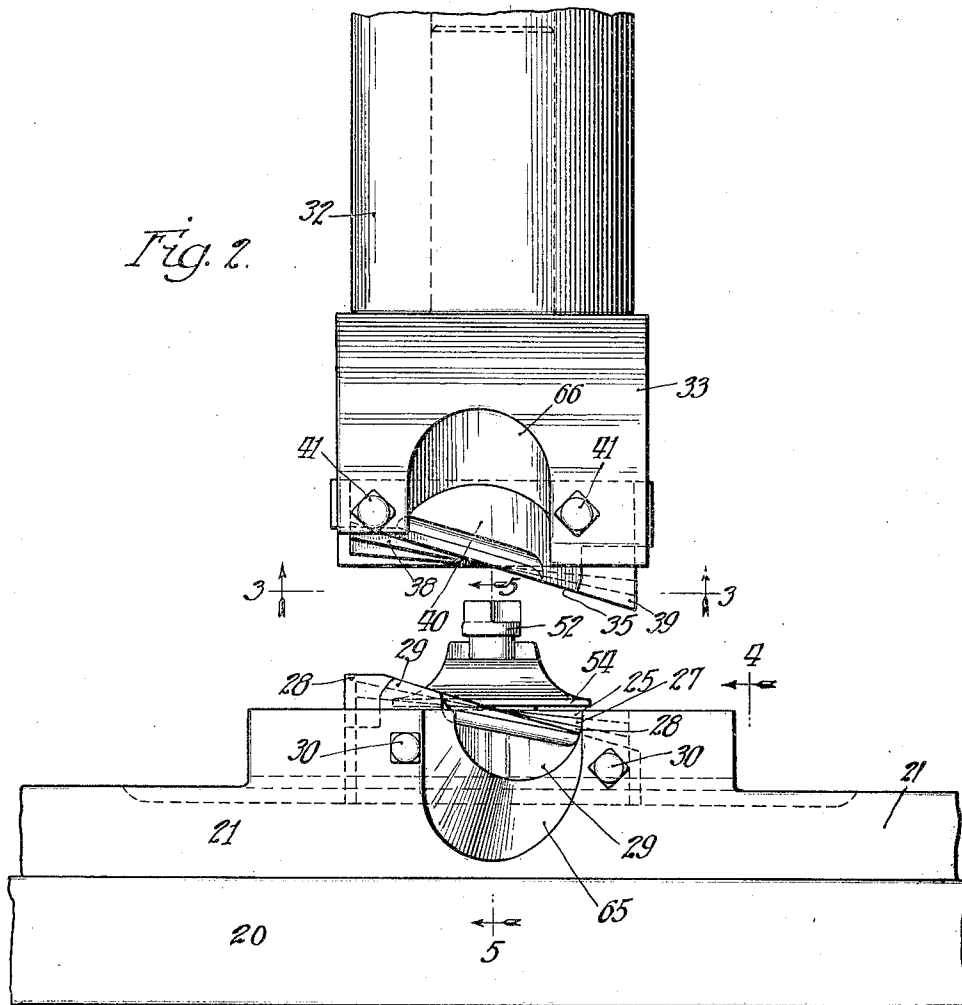
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METHOD OF AND APPARATUS FOR MAKING FUEL VAPORIZERS

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4 Sheets-Sheet 2



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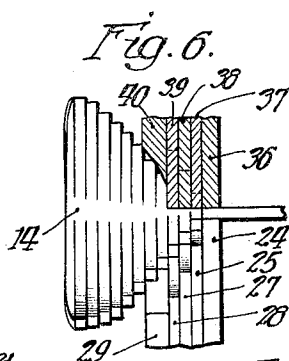
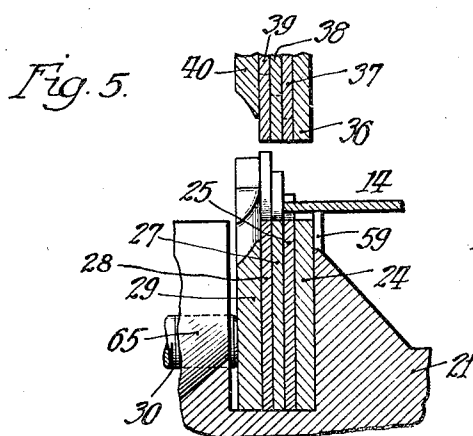
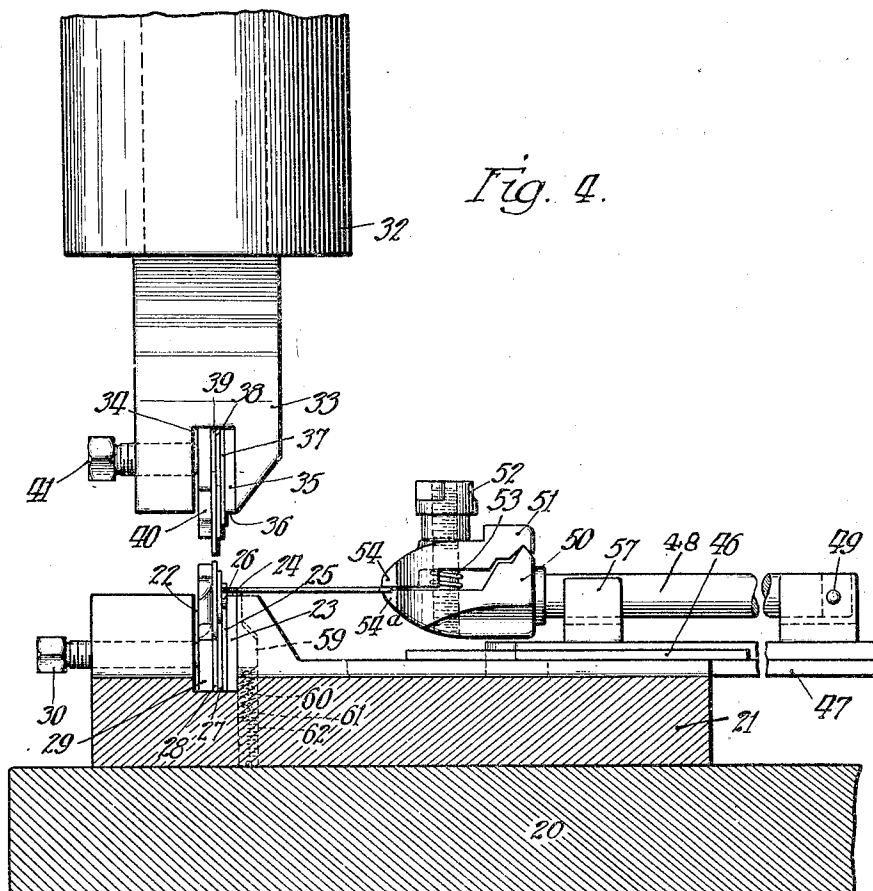
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METHOD OF AND APPARATUS FOR MAKING FUEL VAPORIZERS

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4 Sheets-Sheet 3



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Fig. 7.

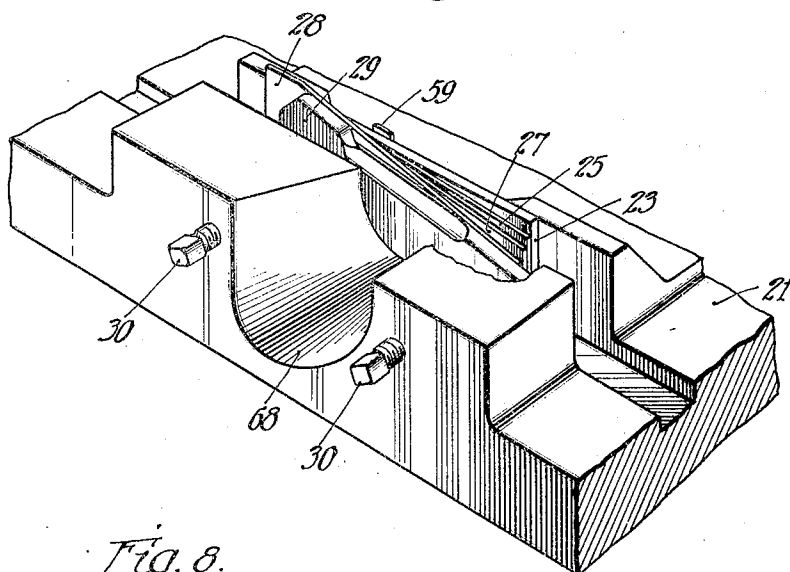


Fig. 8.

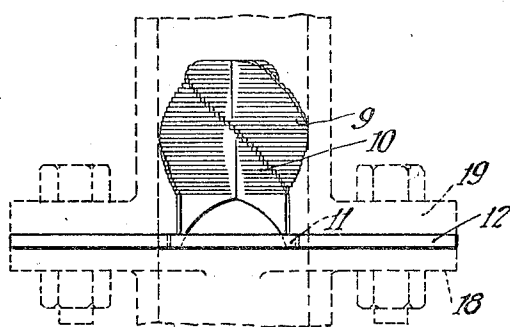


Fig. 9.

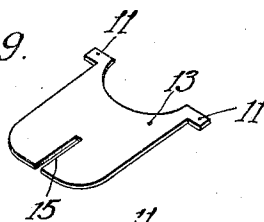


Fig. 10.

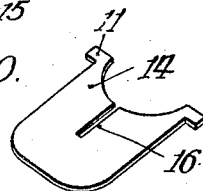


Fig. 12.

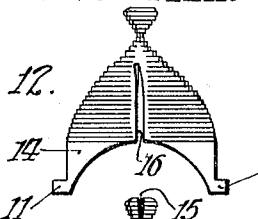
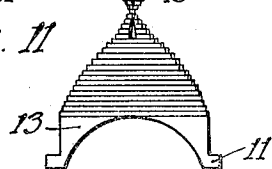


Fig. 11.



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UNITED STATES PATENT OFFICE.

JOSEPH WROBLEWSKI, OF CHICAGO, ILLINOIS.

METHOD OF AND APPARATUS FOR MAKING FUEL VAPORIZERS.

Application filed May 5, 1922. Serial No. 553,739.

To all whom it may concern:

Be it known that I, JOSEPH WROBLEWSKI, a citizen of the United States, and resident of Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Methods of and Apparatus for Making Fuel Vaporizers, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to a method and apparatus for making devices known as fuel mixers which comprise a pair of baffle plates adapted for disposition within the fuel intake passage of an internal combustion engine for the purpose of securing a high vaporization of the combustible mixture.

The preferred form of the vaporizer is made of two plates, each formed in a spiral shape to an extent that one end of each plate is turned at an angle of substantially 90° to the other end. Suitable means is provided to mount the two plates as a unitary structure within the inlet pipe so that none of the fuel may pass the device without being deflected. By reason of the spiral shape of the device, the vapor is given a whirling path of travel outwardly toward the inner walls of the intake manifold, which, being warm in the normal operation of the engine, highly vaporizes the mixture. To secure the highest possible degree of vaporization, the plates are serrated or corrugated to present ridges to the inflowing mixture, whereby any drops of fuel are broken.

The objects of my invention are, therefore,

First, to provide a method and apparatus for forming serrated or corrugated baffle plates, primarily intended for use in fuel mixers;

Second, to provide apparatus to effectively serrate the blanks without "buckling" or otherwise deforming the material;

Third, to provide an apparatus which may be employed in various special machines automatically to make fuel vaporizers;

Fourth, to provide an apparatus which may be employed in standard machines to accomplish the operations desired, and

Fifth, to provide an apparatus which is

sturdy in construction, and cheap to manufacture, and in which apparatus replacements may be quickly and easily made.

Similar characters of reference refer to similar parts throughout the several views.

In the drawings,

Figure 1 is a plan view, partly in section of the preferred embodiment of my invention;

Fig. 2 is a view in end elevation of the base and reciprocating die member employed by me;

Fig. 3 is a bottom plan view of the reciprocating die member shown in Fig. 2, this view being taken on the line 3—3 of Fig. 2;

Fig. 4 is a view, partly in section and partly in elevation, of the apparatus shown in Fig. 2, this view being taken on the line 4—4 of Fig. 2;

Fig. 5 is an isolated detail sectional view of the stationary and reciprocating die members, showing a blank being received between the die members but before the serrating operation has commenced;

Fig. 6 is an isolated detail view of the die members showing a blank in the process of being formed according to my invention;

Fig. 7 is an isolated perspective view of the stationary die member;

Fig. 8 is a view showing in elevation a fuel vaporizer within a fuel intake passage;

Figs. 9 and 10 are views in perspective of the blanks before being formed into the spiral baffles of the fuel vaporizer; and

Figs. 11 and 12 show the blanks of Figs. 9 and 10, respectively, formed into serrated and spiral shaped baffle plates.

The fuel vaporizer heretofore referred to comprises three members, baffle plates 9 and 10 having keys 11 secured within keyways in the third member, the gasket 12. The baffle members 9 and 10 are made of blanks 13 and 14 having co-operating slots 15 and 16, respectively. According to my invention, the blanks 13 and 14 are subjected to successive cutting and feeding operations, which provide a series of serrations and form the blanks into spiral baffle plates, one end of each baffle plate extending, after being formed, at an angle of substantially 90° to the other end of the plate. When the two plates are completely formed, they are

fitted into co-operative relationship, as shown in Fig. 8, and secured to the gasket 12 so that the fuel vaporizer is a unitary structure, and in this form it may be conveniently secured between a flange 18 of the carburetor of an internal combustion engine and the flange 19 of the intake manifold thereof.

When the fuel vaporizer is in position in the fuel intake pipe, it obstructs the straight passage of fuel and causes the same to travel with a whirling motion outwardly toward the inner walls of the fuel pipe which are warm and cause the fuel to vaporize to a great extent. The baffle plates being serrated present ridges to the inflowing fuel, and any drops of fuel are broken and vaporized.

As shown in the drawings, the machine may comprise a base support 20 and a base member 21 having a depression 22 to receive the lower die members. The lower die members include a base or stationary plate 23 having its upper face 24 lying in a horizontal plane, and an offsetting plate 25 having its upper face 26 lying in an oblique plane. Immediately adjacent the offsetting plate 25 is a pair of forming plates 27 and 28 having their upper faces inclined so that all of the several plates 23, 25, 27 and 28 are in stepped relation to each other. To secure the several members in position, a plate 29 is provided and adapted to be engaged by screws 30—30 operating in the base member 21.

A movable die member co-operates with the stationary die, and comprises a reciprocating member 32 carrying a holder 33 having an opening 34 to receive a reciprocating plate 35, having its lower operating face 36 lying in a horizontal plane and in alignment with plate 23. Adjacent the plate 35 is an offsetting blade 37 having an oblique operating face, and also within the opening 34 are forming plates 38 and 39 having oblique operating faces. To retain the several plates in place, I provide the plate 40 engaged by screws 41—41 operating in the holder 33.

Operating in a depression 45 and between plates 46—46 and the base 21 is a longitudinally movable member 47 provided with a stem 48 pivoted at 49 to a portion of the movable member 47. As best shown in Figs. 1 and 4, stem 48 carries a stationary jaw 50 co-operating with a movable jaw 51 closed by means of a screw 52 and separated by a spring 53. Portions 54 and 54^a are adapted to hold and firmly embrace a blank to be presented to the die members for the forming operation. To automatically feed the longitudinally movable member toward the dies, the member 47 may be provided with lugs 55 against which a compression spring 56 operates.

To serrate and form spirally a blank 13 or 14, the stem 48 may be swung upwardly on the pivot 49 and the jaws adjusted to receive the blank. The stem is then returned to its position within the guide 57 and moved toward the die members until, as shown in Figs. 4 and 5, the front end of the blank engages the plate 27. The blank is yieldingly held away from the base plate 23 by means of a spring pressed plunger 59, operated by spring 60 within a recess 61 closed by the screw 62. Upon downward reciprocation of the member 32, face 36 of plate 35 engages the blank and brings it into engagement with face 24 of plate 23. At the same time, offsetting plates 25 and 37, co-operating with each other and with plates 23 and 35, offset a portion of the blank equal to the width of the blades 25 and 37. Upon upward movement of the member 32, plunger 59 pushes the blank upwardly so that the step formed in it is brought out of engagement with the plates 23 and 25. The spring pressed longitudinal member 47 is then moved forwardly to bring the step just formed into engagement with blade 27 so that another flat surface is presented to the offsetting blades. Upon further downward reciprocation of the member 32, a portion of the blank is again offset, and the portion already offset is held between blades 27 and 38 to prevent it from springing from the desired form.

Again, upon the upward stroke of member 32, the blank is moved upwardly by plunger 59 and the steps formed in the blank are moved forwardly to engage plates 27 and 28, and upon downward movement of member 32, the flat part of the blank is offset and the portions already offset are held between the forming plates 27 and 38 and forming plates 28 and 39. The pairs of "forming" plates 27—38 and 28—39 may be proportioned and inclined so that they will assist the first pair of plates 25—37 by shearing a portion of each step, generally the inner portions thereof removed slightly from the outer ends of the blank, which outer ends are sheared by the first plates 25—37.

As will be best understood by reference to the accompanying drawings, the offsetting blade 25 and forming blades 27 and 28 incline downwardly from one side of a central longitudinal axis of the blank acted upon and incline upwardly from the other side of that axis, and that the offsetting blade 37 and forming blades 38 and 39 co-operate to form the blank spirally as well as to serrate it as the blank is successively stamped and fed. The member then formed passes through the opening formed by the cutaway portion 65 of base 21 and cutaway portion 66 of holder 33. When the blank has been subjected to the stamping and forming

operation to the desired extent, the machine may be stopped and the finished baffle plate removed.

The dies described may be used with punch presses of ordinary construction, or may form part of automatic mechanisms for stamping and feeding the blanks.

Having thus described my invention, what I claim is new and desire to secure by Letters Patent of the United States is:

1. The method of making a serrated baffle plate from a flat metal blank which comprises stamping the lateral edges of the blank in successive steps to form successive offsets, and twisting the blank spirally during said stamping operation.

2. The method of making a baffle member of the class described which comprises subjecting the blank to a pair of shearing dies disposed obliquely to the plane of said blank, said dies cutting steps in the opposite edges of said blank, said steps being offset in opposite directions.

3. The method of making a baffle member of the class described which comprises subjecting the blank to a pair of shearing dies disposed obliquely to the plane of said blank, said dies cutting offsets in the opposite edges of said blank, the offsets at opposite edges extending in opposite directions from the plane of the original blank.

4. The method of making baffle members of the class described which comprises subjecting the blank to a first pair of dies disposed obliquely to the plane of said blank and transversely thereof, said first pair of dies cutting offsets in the opposite edges of said blank, the offsets along one edge of said blank projecting in an opposite direction to

the offsets along the other edge of said blank, and subjecting said blank to the action of the second pair of dies co-operating with said first pair of dies to twist the blank.

5. Means for making baffle plates of the class described, comprising a base, a reciprocating member co-operating therewith, means for feeding a blank relative to said base and said reciprocating member, and a pair of offsetting dies carried by said base and said reciprocating member, each of said dies comprising an intermediate portion which moves only to the plane of the blank and an end portion moving past the plane of said blank, whereby the opposite edges of said blank are offset in opposite directions.

6. Apparatus of the class described comprising a base, a reciprocating member co-operating therewith, an offsetting die supported on said base, an offsetting die carried by said reciprocating member, means for automatically advancing successive portions of the blank between said dies, said dies extending transversely of the path of movement of said blank and being inclined with respect to the plane of said blank, the end portion of one die extending above the plane of said blank and the end portion of the other die extending below the plane of said blank whereby the opposite edges of said blank are offset in opposite directions, and means for moving said blank in the plane of the die operation for co-operating with said feeding means.

In witness whereof, I hereunto subscribe my name this 29th day of April, 1922.

JOSEPH WROBLEWSKI.