

No. 887,727.

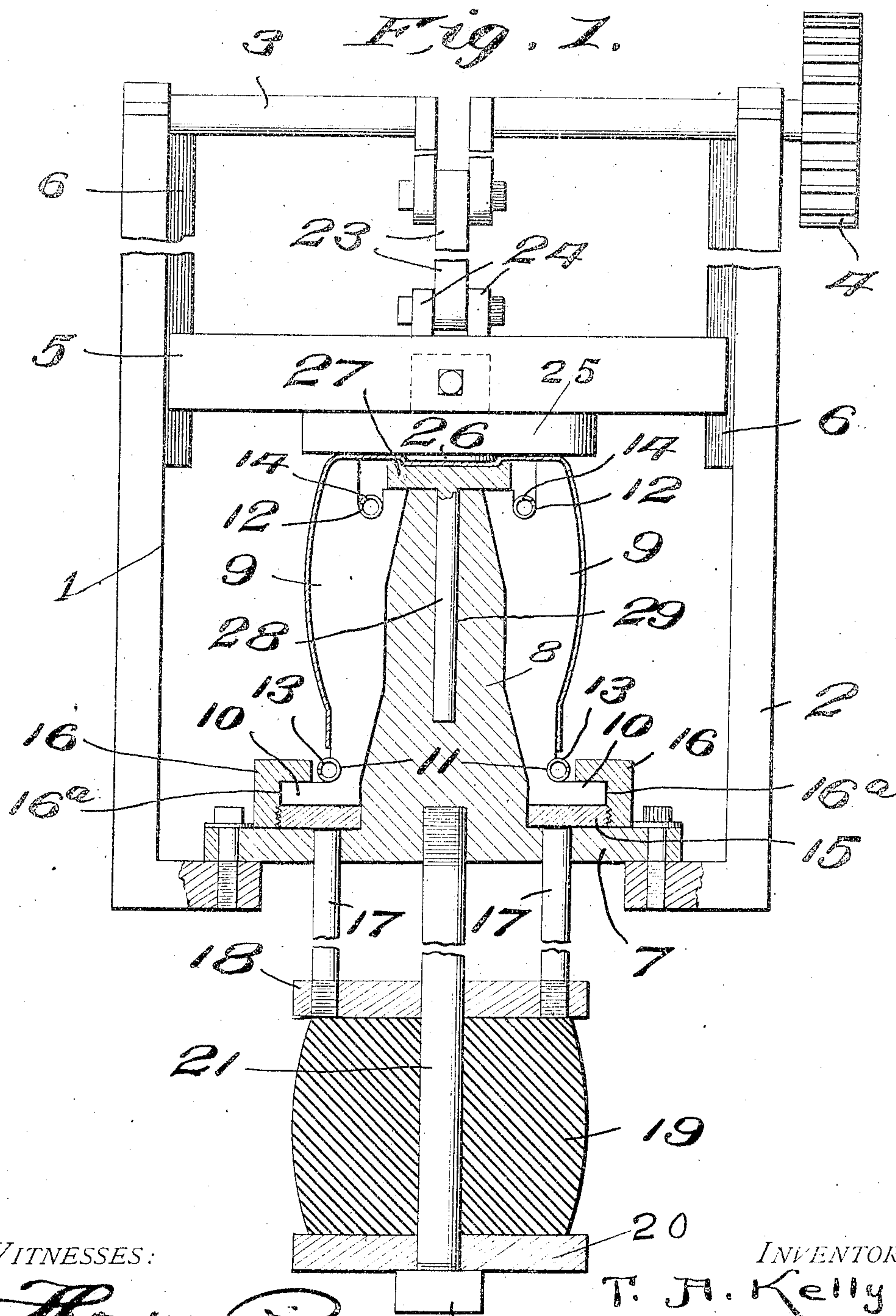
PATENTED MAY 12, 1908.

T. A. KELLY.

EXPANDER FOR SHEET METAL UTENSILS.

APPLICATION FILED JULY 10, 1907.

3 SHEETS--SHEET 1.



WITNESSES:

Thos. W. Riley
L. W. Anderson.

INVENTOR

T. A. Kelly

BY

W. J. Fitzgerald
Attorneys

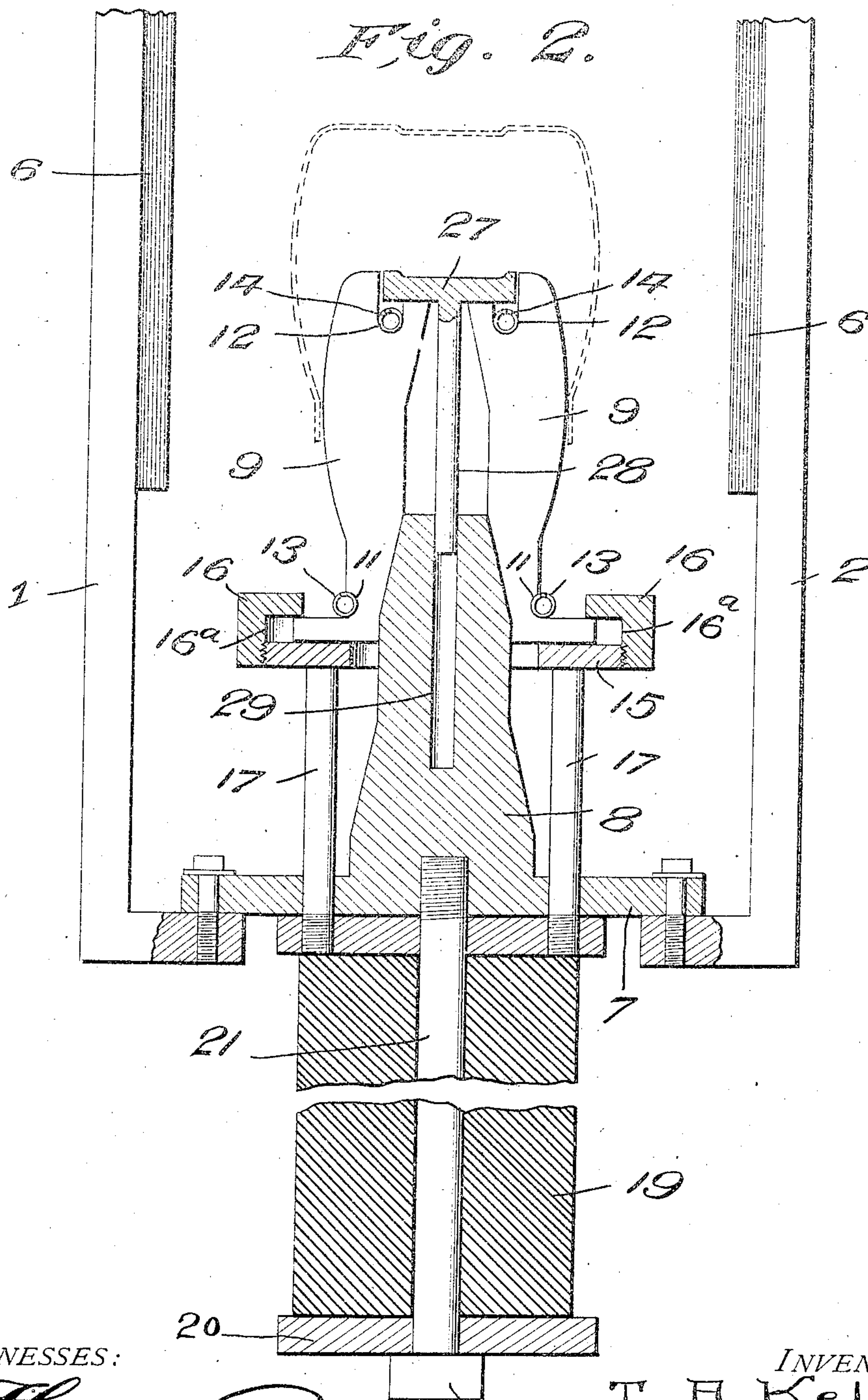
No. 887,727.

PATENTED MAY 12, 1908.

T. A. KELLY.
EXPANDER FOR SHEET METAL UTENSILS.

APPLICATION FILED JULY 10, 1907.

3 SHEETS—SHEET 2.



WITNESSES:

Thos. W. Ray
W. H. Scammell.

22
BY

INVENTOR

T. A. Kelly

W. J. Fitzgerald & Co.
Attorneys.

No. 887,727.

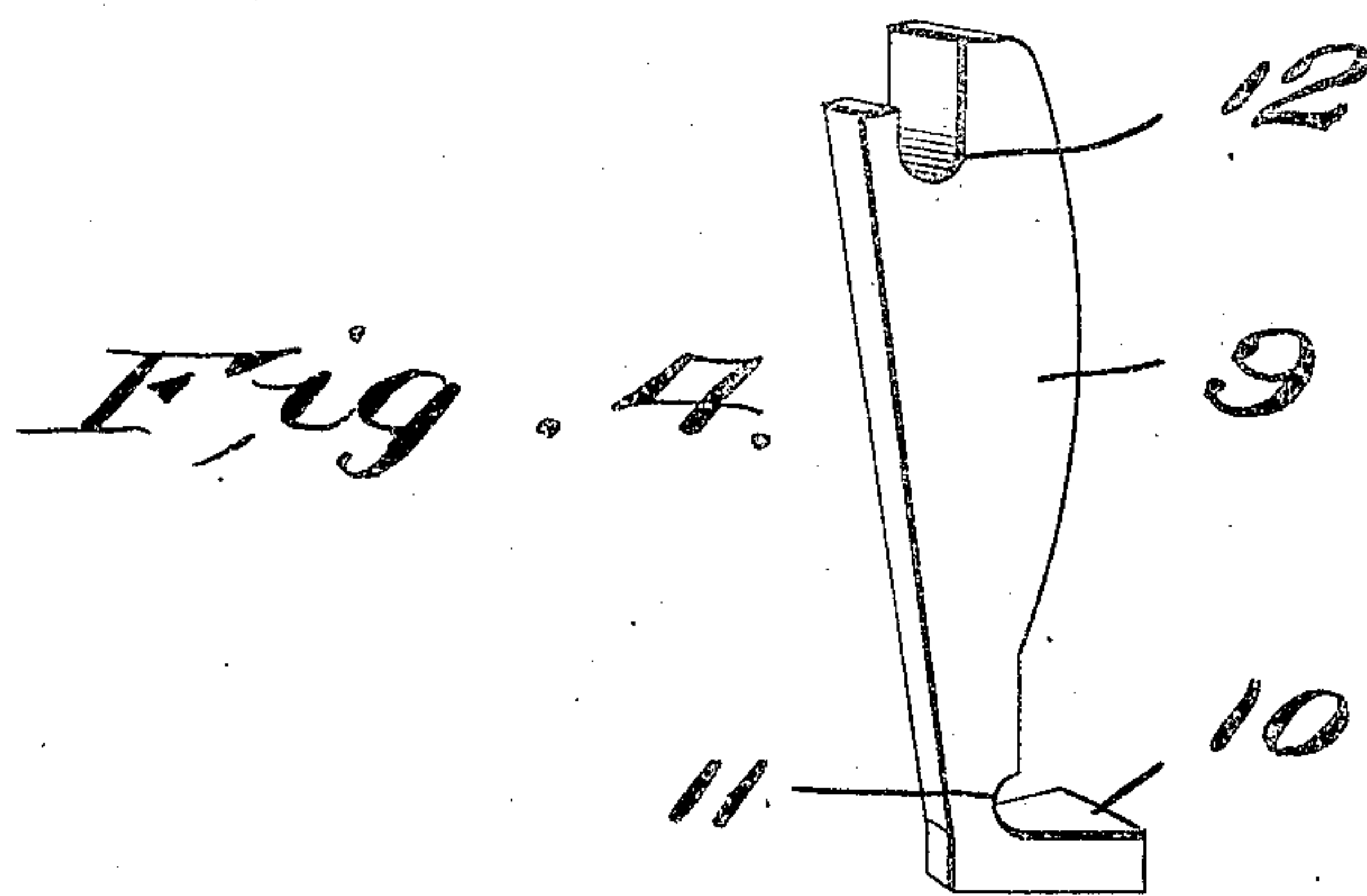
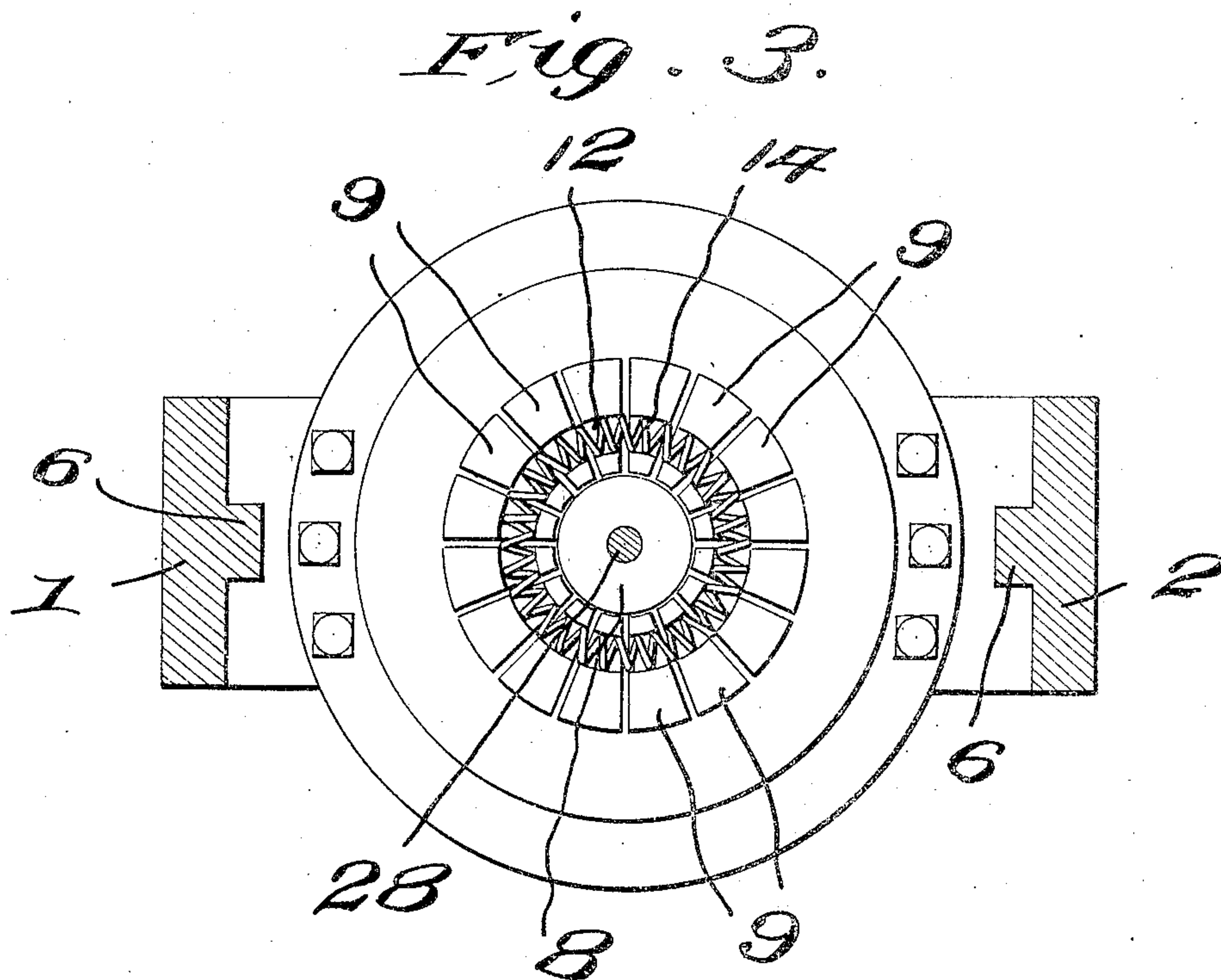
PATENTED MAY 12, 1908.

T. A. KELLY.

EXPANDER FOR SHEET METAL UTENSILS.

APPLICATION FILED JULY 10, 1907.

3 SHEETS—SHEET 3.



WITNESSES:

Thos. W. Riley
L. W. Anderson.

INVENTOR
T. A. Kelly
BY *W. J. Fitzgerald & Co.*
Attorneys

UNITED STATES PATENT OFFICE.

THOMAS A. KELLY, OF MOUNDSVILLE, WEST VIRGINIA, ASSIGNOR TO THE UNITED STATES STAMPING CO., A CORPORATION OF WEST VIRGINIA.

EXPANDER FOR SHEET-METAL UTENSILS.

No. 887,727.

Specification of Letters Patent.

Patented May 12, 1908.

Application filed July 10, 1907. Serial No. 383,125.

To all whom it may concern:

Be it known that I, THOMAS A. KELLY, a citizen of the United States, residing at Moundsville, in the county of Marshall and State of West Virginia, have invented certain new and useful Improvements in Expanders for Sheet-Metal Utensils; 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.

My invention relates to means for expanding or imparting to the sides of various kinds of vessels, as culinary utensils and the like, outwardly curved or bulging sides and is applicable for use upon all utensils made of sheet metal, to which it is desired shall be imparted a graceful, outwardly curved surface, and my object is to provide reliably efficient means for the accomplishment of this result at a minimum cost of both time and labor.

Other objects and advantages will be hereinafter referred to and more particularly pointed out in the claims.

In the accompanying drawings which are made a part of this application, Figure 1 illustrates my machine ready for use showing a vessel being acted upon by the machine to accomplish the expansion of the walls of said vessel. Fig. 2 is a similar view to that presented in Fig. 1, showing the machine in position to receive a vessel to be expanded. Fig. 3 is a top plan view of the members constituting the expansible body designed to enter the vessel to be treated and also showing the top plate of the expanding cone removed. Fig. 4 is a perspective detail view of a modification of one of the component elements of my expansible body.

The various details of my invention and cooperating accessories, will, for convenience, be designated by numerals, and referring in detail to the drawings, 1 and 2 indicate standards, comprising parts of the frame work of my machine, said standards providing means for journaling the crank shaft 3, having the controlling gear 4 or equivalent means, it being understood that said standards are properly connected together in any desired manner to afford a rigid frame for the vertical reciprocation of the cross head 5 in the guide ways 6, or equivalent devices. The lower ends of the standards are bolted to the

flange 7 of the expanding cone or body 8. Designed to cooperate with said cone and surround the same, are a plurality of expanding or spreading members 9, the outer edges of which are properly curved or shaped to impart the desired form to the vessel to be acted upon, as will be hereinafter set forth. The plurality of expanding devices 9, one of which is illustrated in detail in Fig. 4, are each provided at its lower end with the outwardly extending section or foot 10 and a curved seat 11 near the point of union of said extension, while a correspondingly curved seat 12 is provided in the upper end of each member, said curved portions affording a continuous annular seat for the coiled retaining springs 13 and 14, respectively.

The plurality of expanding members 9 are properly assembled to surround the conical body 8 and are secured in their operative position by resting upon the plate 15, which is provided upon its outer edge with the retaining flange 16, held in union with said plate in any preferred way, preferably by being threaded thereon, as shown. I also provide a plurality of supporting members 17, which extend upwardly loosely through apertures in the flange 7 and support the plate 15, while their lower ends are seated in threaded apertures in the compression plate 18, resting upon the compressible resilient body 19 formed of any suitable substance, as rubber, or properly arranged compression springs (not shown). The compressible body 19 is mounted upon the base section and is provided with a central bore to receive the bolt or standard 21, the upper end of which is secured in the base of the conical body 8, while the lower end is attached in any preferred way to the base member 20, as by means of a nut 22. It will thus be observed from the foregoing description that the plurality of expanding members have a relative movement to the conical member 8, when pressure is brought to bear upon the upper ends of said members, as shown in Fig. 1.

The vessel to be acted upon is placed in position over the group of expansible members 9, after the latter have been raised to their normally initial position. The shaft 3 is then rotated by means of any suitable source of power and communicates a downward movement to the cross-head 5, through the medium of the piston 23, attached to

said cross head by means of brackets 24, or equivalent device.

A vessel engaging plate 25 is attached to the under side of the cross head 5, said plate being provided with a shaper or extension 26 to engage the bottom of the vessel and form depressions or projections thereon or shape the same as may be deemed desirable, it of course being understood that a top plate 27, designed to fit against the inside of the bottom of the vessel, is also placed in position below the vessel and provided with a properly formed upper surface to cooperate with the shaper 26, said parts 26 and 27 thereby acting as complementary parts of a die. The member 27 may rest directly upon the contiguous ends of the members 9 and, if desired, may be further sustained in its position by a stem 28 designed to enter a corresponding bore 29 in the upper end of the conical body 8. By suitably shaping or impressing the opposite or contiguous surfaces or faces of the members 26 and 27, it is apparent that the outline or contour thus imparted thereto, may be transferred to the interposed vessel bottom, rendering it unnecessary to illustrate any preferred detail of such surfaces. Also it is noted that by means of these members, the vessel bottom is formed with a central upraised portion, leaving the outlying portion of said bottom capable of having impressed or formed thereon, concentric or radial ribs to contact with the surface or object upon which the vessel may be placed, as is obvious.

In operation, the vessel to be acted upon by the expanding members 9, is placed over the group of said members after they have been elevated relative to the conical body 8, which insures that said expanding members, by the action of their controlling springs 13 and 14, will be drawn towards each other, thereby greatly reducing their circumferential measurement as a group, so that the vessel may be easily slipped over the same. After the vessel has been disposed in its position over said expanding members, the machine is started, which incidentally forces the cross head downwardly, thereby bringing the member 25 to bear firmly upon the bottom of the vessel and carrying said vessel and the group of expanding members downwardly, thereby simultaneously moving all of the expanding members 9 in an outward direction in contact with the straight parallel walls of the vessel and imparting to said walls an outwardly curved condition, according to the configuration of the outer surface of the expanding members.

The adjustment of my machine is so complete and accurate, that one full downward stroke of the piston 23 incident to the rotation of the shaft 3, will be sufficient to complete the expansion of a vessel placed over the group of expanding members and at the

same time insure the close approximation of the die members 26 and 27 sufficient to insure that the bottom of the vessel will also be completed in the manner desired. My machine, therefore, will be found to possess great capacity, the limit of its capacity being measured only by the ability of the attendant to place and replace upon the assembled group of expanding members, the vessels to be acted upon thereby.

It will be clearly apparent that when the pressure of the cross head is removed from the assembled group of expanded members and the vessel disposed thereon, said group of expanding members are carried upward to their normally elevated position, by the expanding action of the compressible body section 19, formed of rubber, or the like, as before stated, through the mediation of the supporting members 17. The retaining flange 16 disposed upon the plate 15 is so formed as to provide a sufficient, annular space 16^a to afford the requisite play for the extensions or feet of the assembled expanding members 9, when said members are forced downwardly in engagement with the conical body 8. When the assembled group of expanding members is elevated, the compression springs 13 and 14 will draw them together in closely assembled form, as shown in Fig. 2, thus permitting the vessel to be readily lifted off and replaced by another vessel to be treated. The body 8 is tapered adjacent its upper and lower end, while the central portion of the periphery thereof is vertical and the inner faces of the members 9 are accordingly tapered, the object in so arranging the body and members being to provide equal pressure on the members 9 and causing them to work in and out squarely and thereby preventing the members from tilting as the body 8 is being entered therebetween.

Believing that the advantages and manner of using my improved expanding machine have thus been made clearly apparent, further description is deemed unnecessary.

While I have described the preferred construction and combination of parts, I desire to comprehend such equivalents and substitutes as may fall fairly in the scope of my invention.

What I claim is:

1. In a machine of the character described, a fixed conical member having its apex upward, complementary die-members for shaping the bottom of a metal utensil, a resilient member, a plurality of expanding members, a supporting base-member for said expanding members, means effecting connection between said base-member and said resilient member, and means for carrying said complementary die-members, said conical member having upper and lower inclined surfaces of graduated diameters, with an intermediate cylindrical surface and said expanding mem-

bers having corresponding surfaces engaged by the aforesaid surfaces of said conical member.

2. In a machine of the character described, a fixed conical member having its apex upward, complementary die-members for shaping the bottom of a metal vessel, means for carrying said complementary die-members, a resilient member, a plurality of expanding members, a supporting base-member for said expanding members, means for effecting connection between said resilient member and said base-member, said expanding members having their upper ends downwardly recessed and thus adapted to receive the means carrying the lower one of said complementary die-members.

3. In a machine for shaping the side walls of a sheet metal vessel, a conical member having its apex upward, a suitable frame

for its support and a compressible body, said conical member being connected to and superposed with relation to said compressible body, a plurality of outward, movable expanding members, a supporting base member having a slidable connection with said compressible body and carrying said expanding members and means to force the group of expanding members downwardly, whereby a vessel placed over said group of expanding members will be acted upon thereby and have its walls outwardly bulged and its bottom simultaneously formed.

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

THOMAS A. KELLY.

Witnesses:

J. M. SANDERS,

J. E. SHUPE.