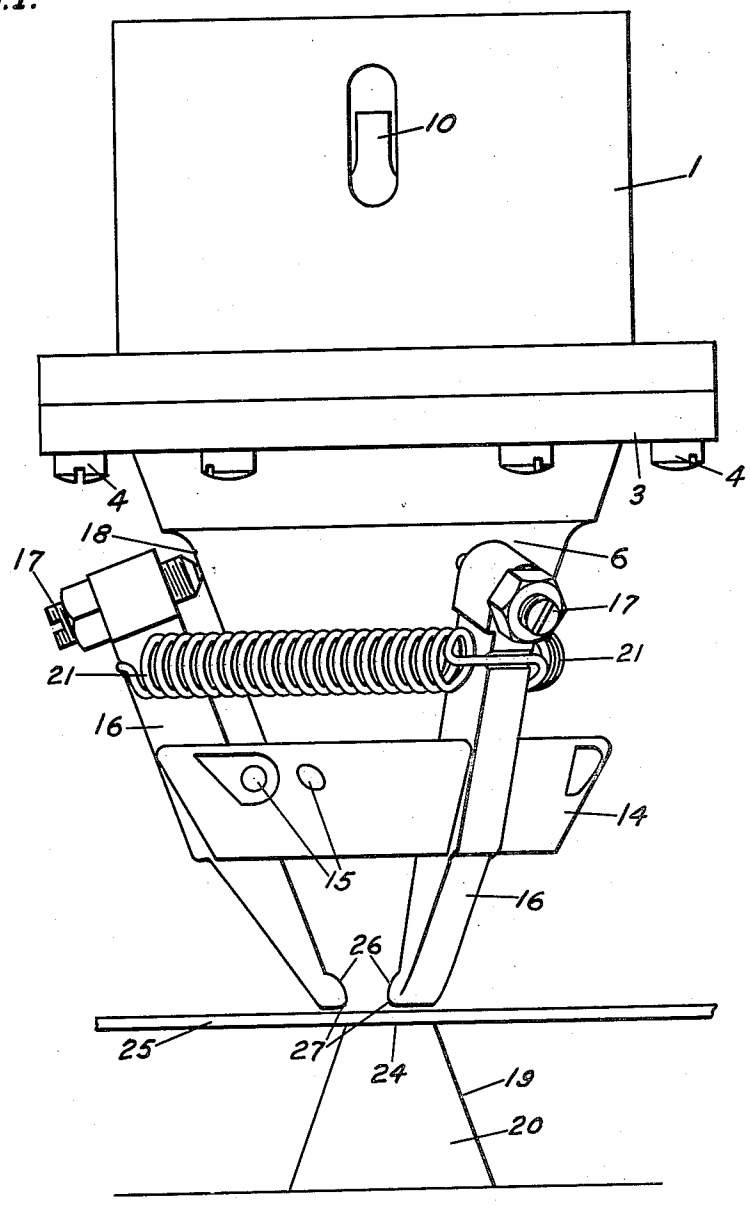
June 27, 1933. T. M. HIESTER 1,915,667

APPARATUS FOR PRESSING AND FORMING METAL ARTICLES

Filed July 10, 1931 4 Sheets-Sheet 1

Fig. 1.



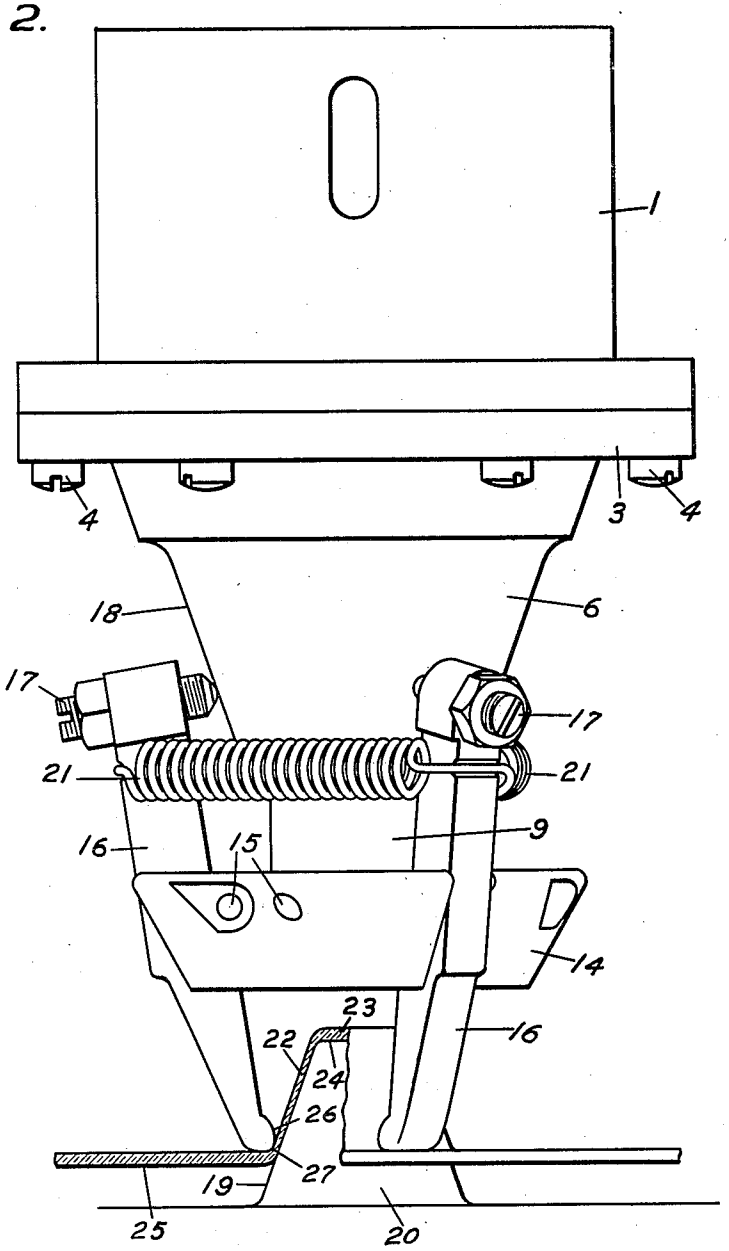
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APPARATUS FOR PRESSING AND FORMING METAL ARTICLES

Filed July 10, 1931 4 Sheets-Sheet 2

Fig. 2.



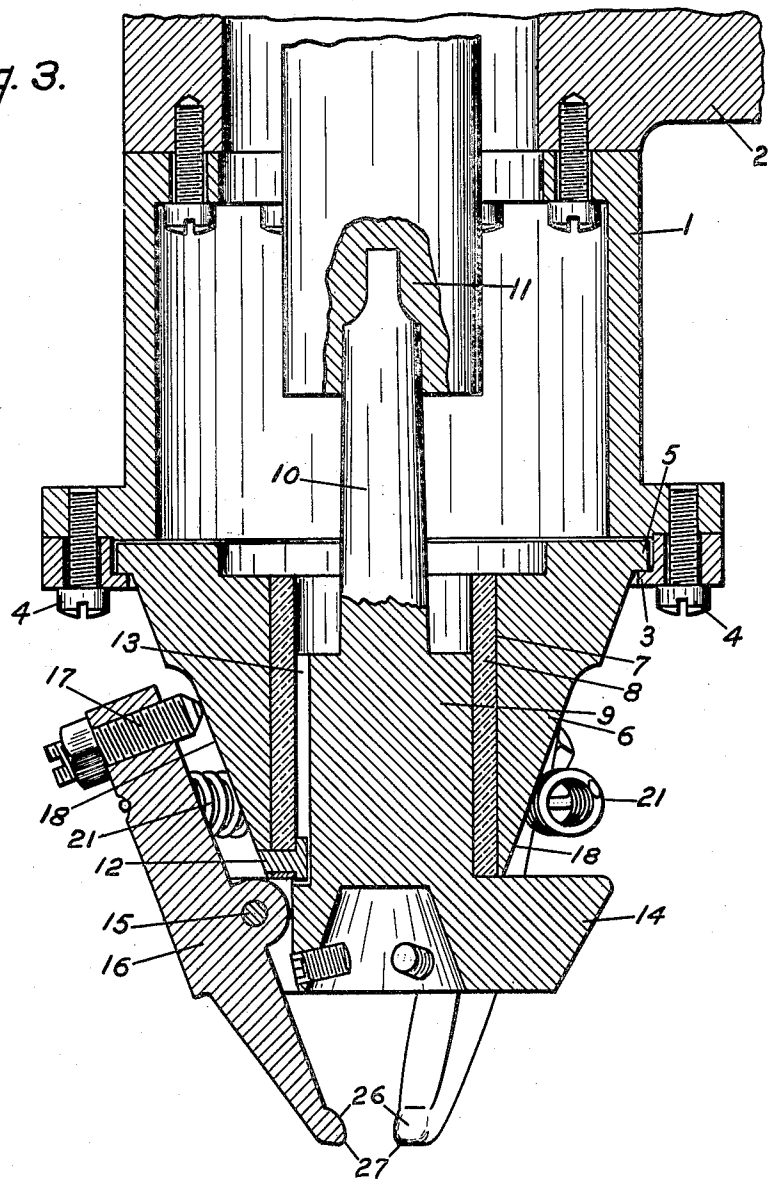
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APPARATUS FOR PRESSING AND FORMING METAL ARTICLES

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Fig. 3.



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APPARATUS FOR PRESSING AND FORMING METAL ARTICLES

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Fig. 4.

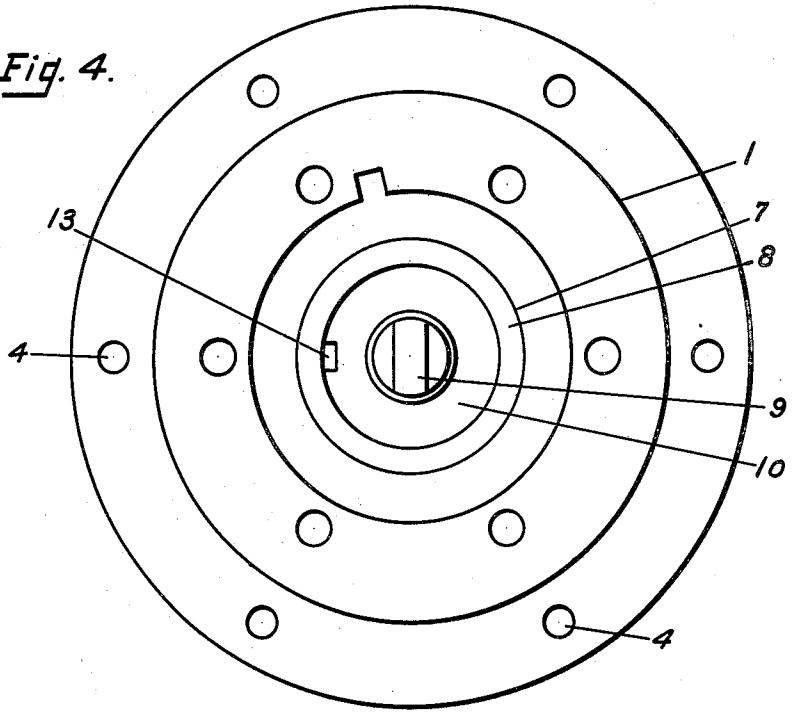
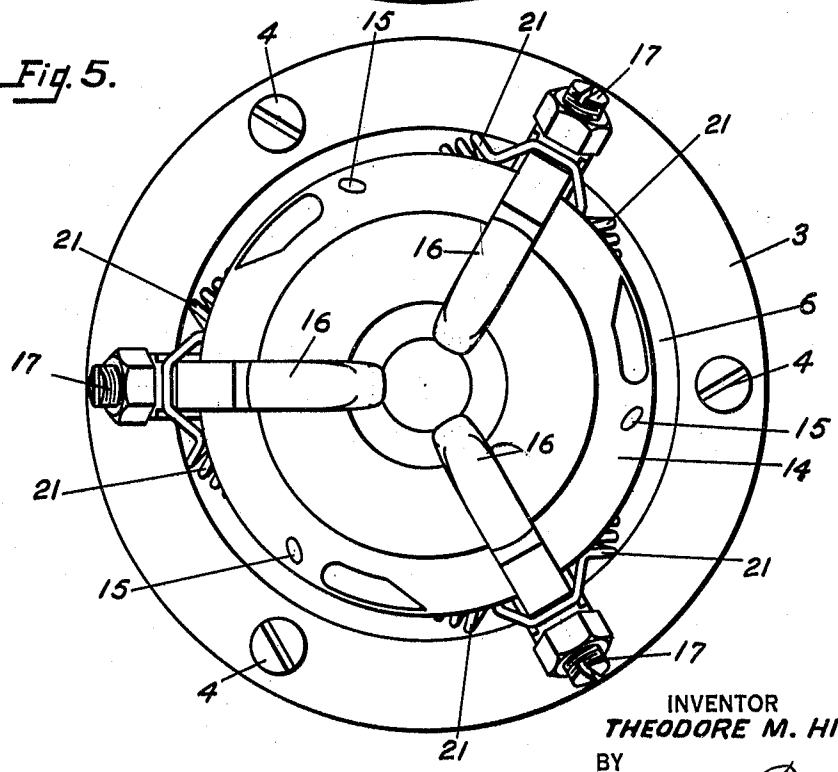


Fig. 5.



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UNITED STATES PATENT OFFICE

THEODORE M. HIESTER, OF DAYTON, OHIO, ASSIGNOR TO UNITED AIRCRAFT PRODUCTS, INC., OF DAYTON, OHIO, A CORPORATION OF OHIO

APPARATUS FOR PRESSING AND FORMING METAL ARTICLES

Application filed July 10, 1931. Serial No. 549,860.

My invention relates to an apparatus for pressing and forming metal articles.

It is the object of my invention to provide a rotating set of pressing and drawing fingers, which will engage with the surface of a sheet of metal to gradually draw it down into form while rotatably pressing it into the configuration desired, thereby pressing it transversely and drawing it down vertically, or substantially so.

In particular, it is my object to provide a form over which the metal is pressed and a guide of similar configuration for guiding the rocking, pressing and forming fingers.

Referring to the drawings:

Figure 1 is a side elevation of the head;

Figure 2 is a similar view showing the head after drawing the metal down in position with the metal partially in section;

Figure 3 is a vertical section through the head;

Figure 4 is a top plan view thereof;

Figure 5 is a bottom plan view thereof.

Referring to the drawings in detail, 1 is a supporting collar that is supported by the head 2 of a tool in a stationary position as to rotation. The collar is provided on its under side with an angular shoulder 3 retained by bolts 4 on the head 1 forming a trackway for the flange 5 to support the guiding head 6 rotatably.

This head 6 is provided with a cylindrical passageway 7 having therein a bearing sleeve 8 in which reciprocates the tool head 9 having an actuating stem 10 which may be connected to a tool press as at 11 for rotation and vertical movement.

The pin 12 carried by the guiding head extends into the slot 13 of the tool head 9 and causes the guiding head and tool head to rotate together. The tool head is provided with a collar having spaced ears 14 carrying pivots 15 for pivotally supporting the tool arms 16, the upper ends of which are guided by adjustable screws 17 engaging the surface 18 of the guiding head 6, which has a conical surface corresponding in angle to the conical surface 19 of the form 20 over which the metal is extruded and formed.

The upper ends of these arms are drawn toward one another and caused to have their stop pins 17 travel on the surface 18 by the interconnecting helical springs 21.

Each rocking lever 16 has a nose 27 used for pressing the metal downwardly in an annular path and thereby thinning it and drawing it as at 22 from the thickness shown at 23 upon the top 24 of the form 20.

The original thickness of metal at 25 remains unchanged.

This tool is so shaped as to have a smoothing surface 26 and a drawing and pressing nose 27.

It will be understood that I desire to comprehend within my invention such modifications as may be necessary to adapt it to varying conditions and uses.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In combination, a stationary support, a cone-shaped guiding head, a rotating and reciprocating tool head in the guiding head, and rocking tool members mounted on said tool head engaging with and guided by said guiding head.

2. In combination, a stationary support, a guiding head, a rotating and reciprocating tool head in the guiding head, rocking tool members mounted on said tool head engaging with and guided by said guiding head, and yielding means for maintaining said tool members in guiding engagement with the guiding head.

3. In combination, a stationary support, a guiding head, a rotating and reciprocating tool head in the guiding head, rocking tool members mounted on said tool head engaging with and guided by said guiding head, yielding means for maintaining said tool members in guiding engagement with the guiding head, and means of adjusting the extent to which said tool members approach to said guiding head.

4. In combination, means to support a guiding head, a reciprocating tool head in the guiding head, means to cause said tool head and guiding head to rotate together, said guiding head having a guiding surface depending thereon, a plurality of rocking,

pressing and forming fingers depending below said guiding head having their upper ends engaging therewith, and yielding means to cause said fingers to engage with the guiding head to be guided thereby as the tool head reciprocates relative to the guiding head.

5. In combination, means to support rotatably a guiding head, a reciprocating tool head, means to cause said tool head and guiding head to rotate together, said guiding head having a guiding surface depending thereon, a plurality of rocking, pressing and forming fingers depending below said guiding head having their upper ends engaging therewith, yielding means to cause said fingers to engage with the guiding head to be guided thereby as the tool head reciprocates relative to the guiding head, and a form supporting a sheet of metal over which said metal is guided, formed and pressed by said fingers.

6. In combination, a plurality of forming and pressing fingers, a form over which metal is formed and pressed by said fingers, guiding means for said fingers at one end to guide their other ends in parallelism with the surface of said form, and means of supporting for reciprocation and rotation pivotally each of said fingers intermediate the pressing end and the guiding end thereof.

7. In combination, a tapered guiding head, a plurality of pivoted fingers adapted to move vertically with respect thereto and to have their inner ends ride thereon, pressing and forming tools on the outer ends thereof and a conical form of similar angularity over which said fingers move.

8. In combination, a tapered guiding head, a plurality of pivoted fingers adapted to move vertically with respect thereto and to have their inner ends ride thereon, pressing and forming tools on the outer ends thereof and a conical form of similar angularity over which said fingers move, means to reciprocate said fingers and means to rotate said reciprocating and guiding means.

9. In combination, a stationary supporting track, a rotating guiding head rotating therein, a reciprocating and rotating tool head rotating said guiding head and reciprocating with respect thereto extending internally thereof to a point below the guiding head, a plurality of tool arms mounted on said tool head pivoted below said guiding head and extending over said guiding head, means on said arms engaging said guiding head, and means on the lower ends of said arms for engaging, forming and extruding a sheet of metal whereby said arms at the lower ends are guided in a path as determined by the configuration of the guiding head.

10. In combination, an externally arranged support having a track, a conical depending guiding head suspended from and rotatable in said track, said guiding head having a guiding passageway therein, a tool head reciprocating within said guide passageway, means for rotating and reciprocating said tool head, means on said tool head for pivotally supporting a plurality of diagonal, downwardly extending tool arms below and along said guiding head having means on one end thereof for engaging said guiding head whereby as said tool head descends the lower ends of said tool arm will diverge in planes corresponding to the surfaces of the guiding head engaged by the upper ends of the tool arms.

11. In combination, an externally arranged support having a track, a conical depending guiding head suspended from and rotatable in said track, said guiding head having a guiding passageway therein, a tool head reciprocating within said guide passageway, means for rotating and reciprocating said tool head, means on said tool head for pivotally supporting a plurality of diagonal downwardly extending tool arms below and along said guiding head having means on one end thereof for engaging said guiding head whereby as said tool head descends the lower ends of said tool arm will diverge in planes corresponding to the surfaces of the guiding head engaged by the upper ends of the tool arms, and means for maintaining said tool arms in engagement with said guiding head.

12. In combination, a head, means to reciprocate and rotate a plurality of converging tool arms pivotally mounted thereon, and a guide head to engage the diverging ends of the tool arms and so guide said tool arms that as they descend and rotate their lower converging ends will be moved apart.

In testimony whereof, I affix my signature.

THEODORE M. HIESTER.