July 3, 1934. W. K. COATES 1,965,489

BALL FORGING MACHINE

Filed Dec. 5, 1933

Fig. 1.

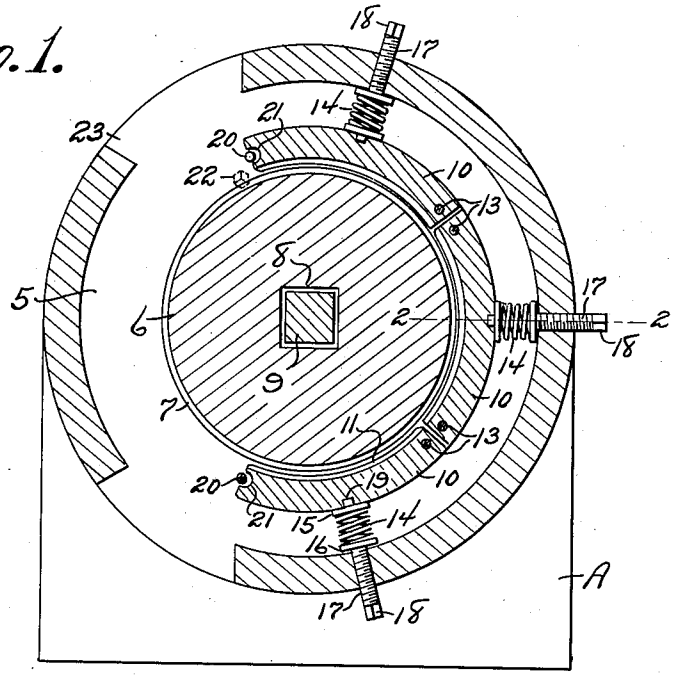


Fig. 2.

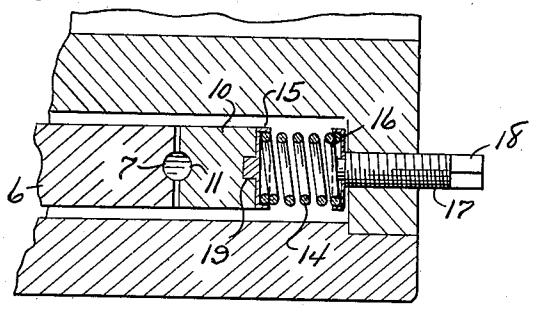
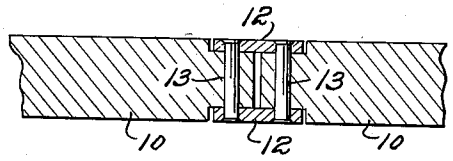


Fig. 3.



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BALL FORGING MACHINE

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Application December 5, 1933, Serial No. 701,073

2 Claims. (Cl. 80—18)

The invention relates to a ball forging machine and more especially to improvements over the subject matter of Letters Patent No. 1,522,416, dated January 6, 1925.

The primary object of the invention is the provision of a machine wherein the dies for forming balls from hot cubes of metal are mounted in a novel manner so that the uneven cubes can be rolled and forged into a ball without cutting into the units, the dies being permitted lateral, front and back displacement, which permits functioning for the true forging operation.

Another object of the invention is the provision of a machine of this character, wherein the dies for the forging or rolling of balls are in the form of segments connected in a manner for hinging action and such dies are arranged in position with the roll that carries the units or hot cubes to prevent the roll rubbing directly on the dies and sustaining proper position at all times, the dies being readily adjustable and their construction being an improvement over Letters Patent No. 1,522,416, dated January 6, 1925.

A further object of the invention is the provision of a machine of this character, wherein the roll is mounted upon its drive shaft in a novel manner in that such roll has a wobbling action which enables the forging or shaping of hot cubes of metal into ball formation.

A still further object of the invention is the provision of a machine of this character which is extremely simple in construction, thoroughly reliable and efficient in its purposes, and inexpensive to manufacture.

With these and other objects in view, the invention consists in the features of construction, combination and arrangement of parts as will be hereinafter more fully described in detail, illustrated in the accompanying drawing, which discloses the preferred embodiment of the invention, and pointed out in the claims hereunto appended.

In the accompanying drawing:

Figure 1 is a vertical sectional view through a machine constructed in accordance with the invention.

Figure 2 is an enlarged fragmentary sectional view on the line 2—2 of Figure 1.

Figure 3 is a sectional view on the line 3—3 of Figure 1.

Similar reference characters indicate corresponding parts throughout the several views in the drawing.

Referring to the drawing in detail, A designates generally the body of the machine and the same may be of any approved construction, having the circular chamber 5 in which is arranged the roll 6, the latter being provided with the peripheral groove 7, it being half-circular in cross section, and this roll contains a squared center opening 8 for accommodating a squared hub 9, the latter being slightly less in size than the hole or opening 8 and this hub is formed on a turning shaft (not shown).

About the roll 6 for a distance of its major diameter is a series of segmental-shaped dies 10, these at their confronting faces with respect to the roll 6 being provided with half-circular grooves 11 alike to the groove 7 in the roll 6. Counterseated in opposite sides of the dies 10 at their ends next to each other are connecting links 12 receiving the pivots or hinge pintles 13 which are engaged in the ends next to each other of said dies 10 so that the dies are linked with each other for chain-like flexing thereof.

Disposed midway of the length of each die 10, between the same and the wall of the chamber 5, is a coiled compression spring 14, its opposite ends being seated in cup-like bearings or seating members 15 and 16, respectively, the latter having swiveled therein an adjusting screw 17 which is threaded in the wall of the chamber 5 and projects without the body A, this projected end being formed with a wrench-engaging head 18 so that it can be manually turned for varying the tension or compression of the spring 14, the bearing or seating member 15 being formed with a lug 19 which is countersunk into the die 10 next thereto.

Mounted in the body A, at the ends of the series of dies 10, are slack bolts 20 which hold the dies within the chamber 5 and these bolts fit in recesses 21 in the ends of the dies next thereto. Each hot cube of metal 22 is delivered through the opening 23 at the uppermost portion of the wall of the chamber 5 for entrance of such cube between the roll 6 and the dies 10, the roll being rotatable clockwise so that the cube 22 will pass through the grooves 7 and 11 confronting each other in the said roll and dies, so that the cube will be rolled or forged into ball shape. It is also to be understood that the roll 6 is of less width than the chamber 5 so that the said roll will have a wobbling action on the hub 9 and the coaction of the dies with this roll permits the rolling and forging of uneven blanks or units into balls without cutting into the blanks or units, the dies being permitted to move laterally, forwardly and backwardly so as to accommodate these to the work and also to sustain proper position at all times.

What is claimed is:

1. A ball forming machine comprising a body

forming a circular chamber, a roll within said chamber and having a peripheral groove half-circular in cross section and also provided with a squared center opening, a squared hub received in said squared center opening, the hub being slightly less in size than the squared center opening, a series of segmental-shaped dies within the chamber concentrically with respect to the roll to confront the periphery of the latter, the confronting faces of the said dies being provided with half-circular grooves alike to the peripheral groove of the roll, links connecting the dies of the series, coiled compression springs imposed against said dies, and means carried by the body and acting against the springs for varying the tension thereof, the dies being of less width than the chamber.

2. A ball forming machine comprising a body forming a circular chamber, a roll within said chamber and having a peripheral groove half-circular in cross section and also provided with a squared center opening, a squared hub received in said squared center opening, the hub being slightly less in size than the squared center opening, a series of segmental-shaped dies within the chamber concentrically with respect to the roll to confront the periphery of the latter, the confronting faces of the said dies being provided with half-circular grooves alike to the peripheral groove of the roll, links connecting the dies of the series, coiled compression springs imposed against said dies, means carried by the body and acting against the springs for varying the tension thereof, the dies being of less width than the chamber, and means in the chamber to prevent undue circumferential movement of said series of dies.

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