May 18, 1948. T. WUTSCHER 2,441,862

ROTARY STAMPING MACHINE

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Fig. 1.

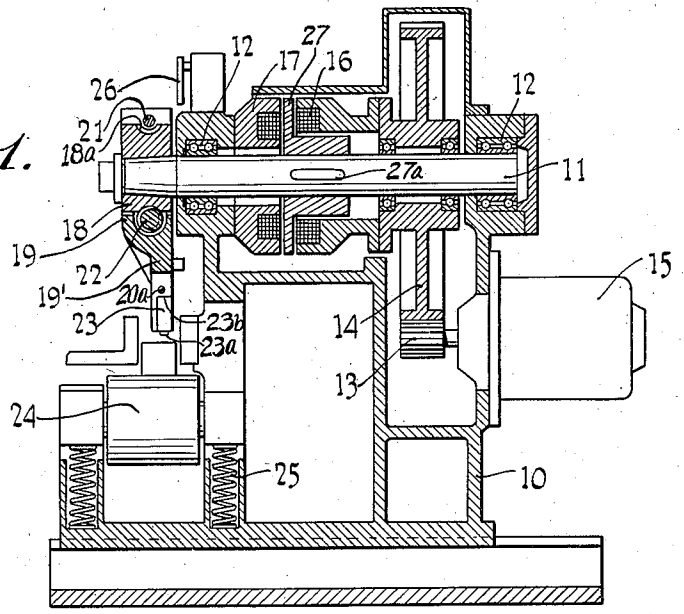
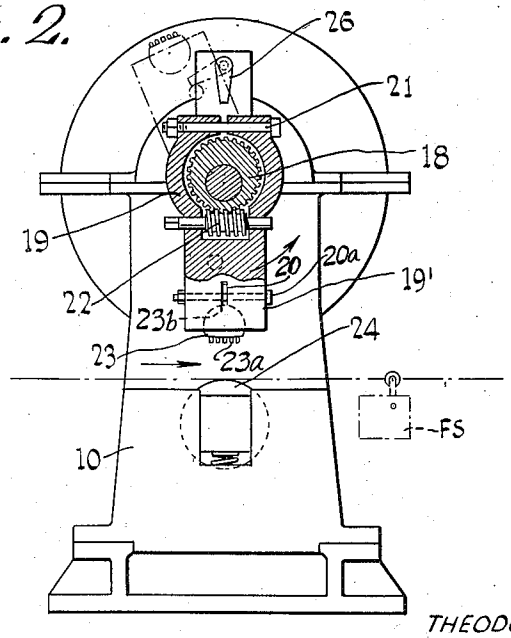


Fig. 2.



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ROTARY STAMPING MACHINE

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2 Claims. (Cl. 101—6)

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This invention relates to a stamping machine which is used for marking at regular intervals a piece of material or a succession of pieces in the course of their manufacture. A special field of application for machines of this kind is a rolling mill, where it is frequently desired to apply distinctive markings to the rolled articles as they leave the last stand of the mill.

In one form of stamping machine the stamping die is attached to an arm radially extending from a motor-driven shaft which overhangs the track or conveyor on which the articles to be stamped are advanced. A stamping operation will then be performed each time the die meets an article on this track or conveyor on passing through its lowermost position.

In machines of this kind, means have to be provided to alter the minimum distance between the die and the surface on which the articles to be stamped are supported in order to obtain markings of equal depth of impression with articles of different thickness. This adjustment has to be exact, as a small difference in the depth of the marking will considerably impair its clearness.

In one known form of rotary stamping machine the distance above referred to was altered by raising or lowering the shaft on which the die-carrying arm was mounted. This required the use of some complicated mechanism comparable to the screwdown mechanism of a rolling mill whereby the stamping machine became rather bulky and expensive.

It is an object of the invention to provide a rotary stamping machine of the kind described in which the minimum distance between the die and the surface on which the articles to be stamped are supported can be adjusted in an easy manner by simple means.

According to the invention, the radius of the circle which the die will describe during the rotation of the die-carrying arm can be varied so that the minimum distance between the die and the surface on which the articles to be stamped are supported can be altered at will without having to alter the position of the driving shaft in the stamping machine.

This can be accomplished by providing on the driving shaft an eccentric seat for the arm carrying the die, the angular position of the arm on the eccentric seat being adjustable so that the eccentricity of the arm relative to the motor-driven shaft, and thereby the minimum distance between the die and the surface on which the

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articles to be stamped are supported, can be altered.

With a stamping machine according to the invention, provision has to be made to maintain the face of the die in a position perpendicular to the central radial plane of the die-carrying arm, irrespective of the angular adjustment of this arm on its eccentric seat. This can be achieved by mounting the die or die-holder in the arm so that it can be oscillated about a horizontal axis in this plane and then set at its proper position depending upon the angular adjustment of the arm.

Means are further provided in the stamping machine according to the invention which permit the machine to be arrested in an ineffective position, i. e., a position in which the die-carrying arm is directed away from the material-supporting surface. These means may consist of a brake which is preferably of the electro-magnetic type so that it can be controlled by a limit switch operated by the die-holder arm and combined with an electro-magnetic clutch.

One example of a rotary stamping machine according to the invention will now be described more in detail with referenec to the accompanying drawings in which:

Figs. 1 and 2 are a sectional elevation and an end view respectively of a rotary stamping machine according to the invention.

In frame 10 of the machine a shaft 11 is supported on bearings 12 and driven through pinion 13 and spur-wheel 14 from a motor 15. An electro-magnetic clutch 16 is interposed between the wheel 14 and the shaft 11, the clutch being combined with a brake 17 mounted on frame 10 so that one or the other of them, when energized electrically, will attract and hold an axially slidable armature 27 which is splined at 27a to the shaft 11.

Seated on the overhanging end of shaft 11 is an eccentric collar 18 on which a split head 19 is loosely mounted. The head 19 can be fixed in any desired angular position on the eccentric collar 18 by means of a bolt 21. Rotation of head 19 on collar 18 is brought about by means of a worm 22 arranged in head 19 and operable by hand. The worm 22 meshes with the toothed periphery 18a of the collar 18, so that these meshing parts cooperate to adjust the relative angular positions of head 19 and collar 18, and thereby to adjust the radius of rotation of die 23, when the worm 22 is turned for this purpose. The holder 23 for the die, of which the impression elements appear at 23a, has a swivel or oscilla-

tive mounting in a cylindrical seat 23b formed in the end of the radially extending arm 19' of head 19. This will enable the die to be turned to and then set by any suitable means in a position in which its face will be perpendicular to the central radial plane of the arm 19', so that the working surface 23a of the die 23 can be made to register properly with the surface of the billet to be stamped at any position of adjustment of the arm 19' relative to its axis of rotation, i. e. irrespective of the angular position of the center line of the arm relative to its line of eccentricity. In other words, a single die can be set at whatever position is necessary in order for the plane of symmetry of its semi-cylindrical shape to coincide with the axis of the rotating shaft 11, so that the die will give even and uniform impressions in any position of adjustment of the arm 19' relative to the eccentric collar 18 on the shaft. Among the various known means suitable for holding the die 23 in its desired position, there may be mentioned slotting the lower end of arm 19', as indicated at 20, from the apex of the semi-cylindrical surface 23b and clamping the bifurcated ends of the arms against the die by means of a bolt 20a; or an adhesive between the die surface and the socket 23b might be employed, as will be apparent to those skilled in the art.

Mounted in frame 10 is, further, a roller 24 which forms part of the delivery track for the material to be stamped.

As will be apparent from the foregoing, the distance of the die above the roller 24 can be adjusted at will in a very simple manner merely by turning the worm 22 which will rotate the head 19 about collar 18. To avoid breakage in the event of faulty adjustment of the head 19, the roller 24 is supported on springs 25.

When not in operation, the head 19 will be in the position, shown in dotted lines in Fig. 2, in which it will be held by the brake 17. When material is to be stamped, the brake 17 is de-energized and the clutch 16 energized. This can be effected, for example, by means of a flag-switch, shown diagrammatically at FS, which is actuated by the moving material. Every time the arm 19' passes through its lowermost position and the die meets an article to be stamped on the roller 24, the die will sink into this article and mark it. When all the material has passed and been stamped, the clutch 16 will be de-energized and a limit-switch 26 actuated by head 19 will energize the brake 17 again to hold the head 19 in its inoperative position.

A machine according to the invention can also be equipped with two stamping heads, side by side. In this case, the clutch and the shaft will have to be duplicated. One machine can then be so operated that only one of the two heads will rotate while the other is at a standstill so that its die can be exchanged.

What I claim is:

1. A rotary stamping machine having a rotary driving shaft, a stamping arm extending radially with respect to said shaft, a stamping die carried by the end of said arm, means for adjusting the radial distance of said die from the axis or rotation of said shaft, said means comprising a collar fixed eccentrically to the shaft, a head portion of said arm surrounding said collar, cooperating means on said arm and said collar for adjusting the relative angular position thereof and means for fixing the arm to the collar in any position of their relative adjustment, a cylindrical seat on said arm for carrying said die, on which seat the die is adapted to be oscillated so that the die may be so positioned and held relative to said shaft that the axis of the shaft will lie in the plane of symmetry of the die in any relative angular position of said arm and said collar, and means for releasably setting said die on said seat in any position of oscillation at which the die is so positioned.

2. A rotary stamping machine having a rotary driving shaft, a stamping arm extending radially with respect to said shaft, a stamping die carried by the end of said arm, means for adjusting the radial distance of said die from the axis of rotation of said shaft, said means comprising a collar fixed eccentrically to said shaft, a head portion of said arm surrounding said collar, cooperating means on said arm and said collar for adjusting the relative angular position thereof and means for fixing the arm to the collar in any position of their relative adjustment, said die comprising a substantially semi-cylindrical holder having a chord-like face and impression elements providing a working surface projecting from said face, a substantially semi-cylindrical socket in the end of said arm in which said holder fits and is adapted to be oscillated so that the die may be so positioned and held relative to said shaft that the axis of the shaft will lie in the plane of symmetry of the die in any relative angular position of said arm and said collar, and means for releasably setting said holder in said socket in any position of oscillation at which the holder is so positioned.

THEODOR WUTSCHER.

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