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DEVICE FOR MARKING ARTICLES

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2 Sheets-Sheet 1

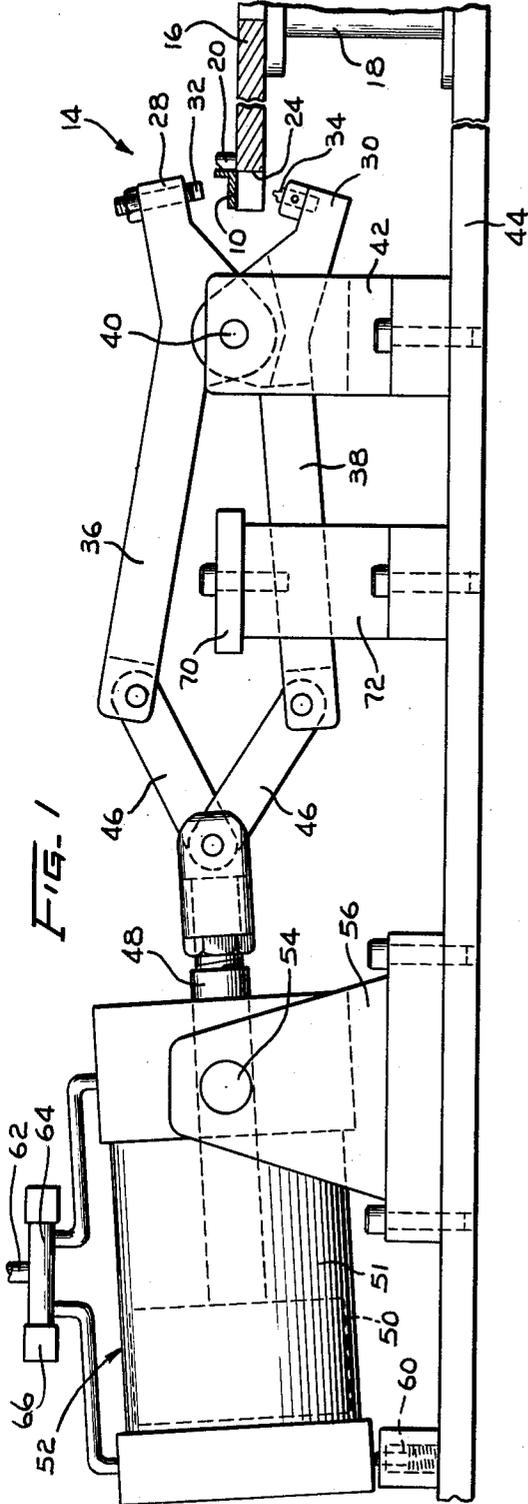


FIG. 1

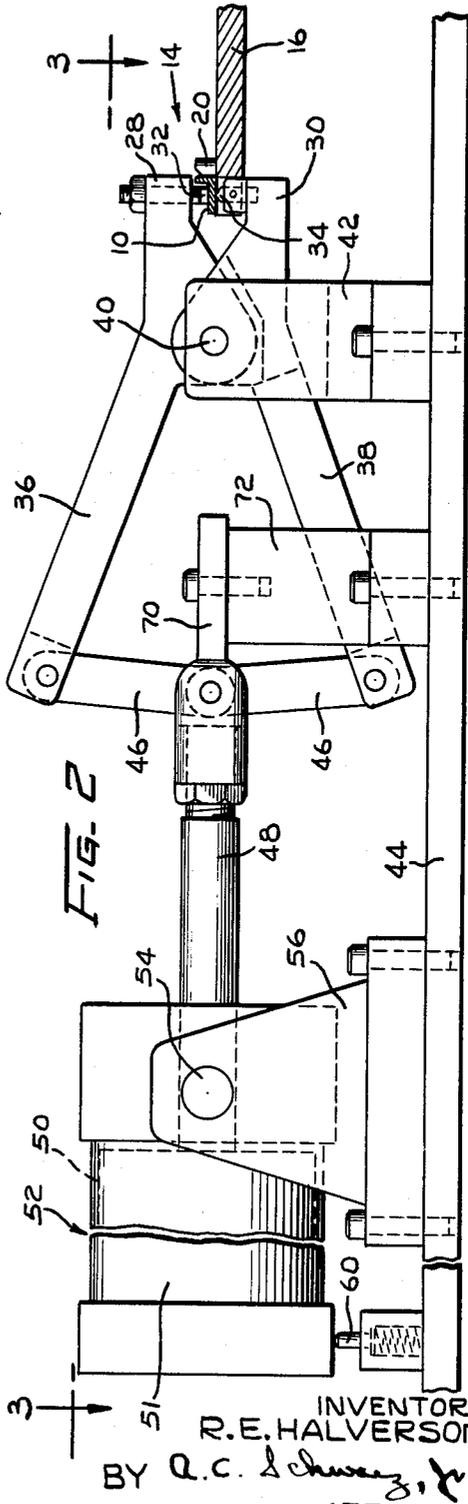


FIG. 2

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DEVICE FOR MARKING ARTICLES

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4 Claims. (Cl. 101-4)

This invention relates to a device for marking articles, and more particularly to a device for stamping indicia onto an article.

In the fabrication and assembly of certain composite articles, it is desirable to identify the article by a code number or other indicia applied to one of the parts. In order that the indicia be permanent and where the part is made of metal, it has been found advisable to impress the mark into the part at one of the work stations through which the part passes. Where the part is supported with the marking surface directed downwardly during such fabricating and assembling operations, it is necessary to apply the mark to the underside of the parts.

An object of the present invention is to provide an effective device for marking articles.

A further object of the invention is to provide a device for impressing indicia onto the underside of the piece part while it is supported on a carrier.

A device illustrating certain aspects of the invention for impressing indicia on articles may include a holder for supporting the article in a predetermined position and a pair of levers supported intermediate their ends for pivotal movement about a horizontal first axis, each lever having a jaw at one end for clamping the article therebetween and the lower jaw being formed to impress the indicia into the article. The opposite ends of the levers are interconnected by a pair of toggle links, the intermediate joint of which is connected to a piston rod, the piston of which is reciprocable in a cylinder of a fluid-operated actuator. The actuator is supported adjacent one end thereof for pivotal movement about a second axis in parallel and fixed relation to the first axis and operates when the piston is in the retracted position to pivot about the second axis to an oblique position and thereby cause the levers to move the jaws to predetermined positions with the upper jaw closer to the article. The arrangement is such that in response to operation of the actuator, the levers are actuated to effect the movement of the upper jaw into engagement with the article to press the article against the holder prior to the engagement of the lower jaw with the article and the impressing of the indicia thereinto.

Other objects, advantages and novel aspects of the invention will become apparent upon consideration of the following detailed description, in conjunction with the accompanying drawings, in which:

FIG. 1 is a side elevational view of the device for marking an article showing the device in an unoperative position;

FIG. 2 is a side view of the device in operative position;

FIG. 3 is a fragmentary plan view of the device as shown in FIG. 2;

FIG. 4 is an enlarged fragmentary vertical sectional view of the device taken on the line 4-4 of FIG. 3; and

FIG. 5 is a fragmentary perspective view of a part showing a mark impressed on the lower surface thereof.

Referring to the drawings, the present device is designed to mark an article 10 in the form of an angle iron (FIG. 5) by impressing a code mark or indicia 12 to the underneath side of the horizontal web 11 thereof.

The device includes a horizontal feed table 16 for supporting the parts 10 and advancing them successively to a plurality of work stations including a marking station

14 at which the mark 12 is impressed on the parts. The feed table is mounted on a shaft 18 for intermittent rotary movement about a vertical axis and has seats along the margin thereof for supporting the parts. The seats each include a pair of pins 20 engageable with one side of the part 10 and a locating pin 22 engageable in an aperture 23 in the web 11 of the part 10 to locate the part on the feed table with an intermediate portion of the web 11 disposed above a clearance notch 24 in the table 16 in a position to be marked.

Suitable drive mechanism (not shown) is provided to index the feed table and position successive piece parts 10 at the marking station 14 between upper and lower clamping jaws 28 and 30, respectively, of the marking device. The upper jaw 28 has an adjustable threaded rod 32 mounted thereon for engaging the upper surface of the web 11 of the piece part 10, and the lower jaw 30 has a die 34 thereon for impressing the mark 12 onto the lower side of the piece part.

The jaws 28 and 30 are formed on one end of upper and lower levers 36 and 38, respectively, which have intermediate portions thereof pivotally mounted on a pin 40 for oscillatable movement about a horizontal axis. The pin 40 is supported in a bracket 42 secured to a base plate 44. Connected to the other end of the levers 36 and 38 is a pair of toggle links 46, the inner ends of which are pivotally connected to the end of a piston rod 48. The piston rod is attached to a piston 50 that is slidable within a cylinder 51 of a fluid-operated actuator 52. Near the end of the actuator 52 closest to the feed table 16, the actuator is provided with a pair of trunnions 54 which are journalled in brackets 56 on the base plate 44 for supporting the actuator for pivotal movement about a horizontal axis parallel to the axis of the pin 40 and at a level in substantial horizontal alignment with the pin 40 and with the web 11 of the article 10 on the feed table 16.

The overhanging other end portion of the actuator 52 biases the actuator for pivotal movement about the axis of the trunnions 54 in a counterclockwise direction to a normal inclined position as shown in FIG. 1 to cause levers 36 and 38 to pivot slightly about the pin 40 in a clockwise direction so as to position the end of the rod 32 on the upper jaw 28 in closer proximity to the web 11 than is the marking die 34 on the lower jaw 30. A spring-pressed supporting element 60 on the base 44 engages the overhanging end of the actuator and supports it in a predetermined position.

Actuation of the piston 50 and the jaws 28 and 30 is effected by the flow of compressed air from a supply line 62 thereof alternately to opposite ends of the cylinder 51 under control of a valve 64. The valve 64 may be operated manually but preferably is of the type actuated by solenoids 66 which are connected in a control circuit (not shown) for automatic operation.

The arrangement of the components of the device is such that in response to the indexing of a piece part 10 to the marking station 26, the valve 64 is actuated to admit compressed air to one end of the actuator 52 and cause the piston 50 and the piston rod 48 to advance along an upwardly inclined path. This forward movement of the piston rod 48, through the toggle links 46, causes the levers 36 and 38 to pivot about the pin 40 in opposite directions and cause the jaws 28 and 30 to move toward each other to closed position in engagement with the article 10 (FIG. 2). However, because the actuator 52 and the levers 36 and 38 (FIG. 1) have been biased to oblique positions with the end of the jaw 28 closer to the upper surface of the article 10 than the marking die 34 on the jaw 30 is to the lower side of the article 10, as the piston rod advances along its upwardly inclined path, the upper jaw 28 engages the part 10 before the die 34

on the lower jaw does, and presses the part against the feed table 16 and is stopped thereby against further movement. Continued movement of the piston rod 48 causes the toggle links 46 and the lever 33 to move relative to the upper jaw 28 and lever 36 and bring the marking die 34 into engagement with the lower surface of the part 10 with sufficient force to clamp the part against the jaw 38 and impress the mark 12 into the piece part 10.

The movement of the jaws 28 and 30 toward each other to closed position is limited by a stationary stop plate 70 which is secured to a pair of supports 72 on the base plate 44 and which engages the end of the piston rod 48 and limits its forward movement. As indicated in FIG. 2, at the end of the forward stroke of the piston 50, the actuator 52 and the levers 36 and 33 are disposed substantially symmetrically about a horizontal plane passing through the trunnions 54 and the pivot pin 40.

After the part 10 has been marked, the valve 64 is actuated to cause compressed air to enter the opposite end of the actuator 52 and effect the retraction of the piston and the movement of the jaws 28 and 30 to open position (FIG. 1). As the piston 50 returns to its retracted position, the jaws open to release the part 10 and permit the feed table to be indexed, and the actuator 52 pivots about the trunnions in a counterclockwise direction to its oblique position and moves the levers 36 and 33 to the position indicated in FIG. 1.

From the foregoing disclosure, it will be seen that a simple and effective device is provided for marking articles by impressing a code mark on the underside thereof and for yieldably holding the part onto the feed table prior to and during the marking operation.

It is to be understood that the above-described arrangements are simply illustrative of the application of the principles of this invention. Numerous other arrangements may be readily devised by those skilled in the art which will embody the principles of the invention and fall within the spirit and scope thereof.

What is claimed is:

1. An article marking device comprising:
 - mounting means;
 - a pair of levers supported intermediate their ends on said mounting means for pivotal movement about a horizontal first axis and having a pair of jaws on one end of the levers for clamping the article therebetween;
 - means on the lower one of said jaws for marking the article;
 - means for supporting the article in a predetermined position between said jaws;
 - a pair of toggle links interconnecting the other ends of said levers;
 - a fluid-operated actuator supported at one end thereof on said mounting means for pivotal movement about a second axis parallel to said first axis and having a reciprocatory piston rod connected at one end to said toggle links for actuating said levers, said actuator in its unoperated condition being biased by its weight for movement about the second axis to an oblique position to effect the movement of the jaws to predetermined positions with the upper one of said jaws closer to said article, so that in response to the operation of the actuator the levers are actuated to effect the sequential engagement of the jaws with the article; and

means for supporting said actuator in said oblique position.

2. A device as defined in claim 1 including means on said mounting means for stopping the movement of said piston rod in a predetermined position to limit the clamping movement of said jaws.

3. A device for marking an article comprising:

- a lever having a first jaw at one end thereof;
- a lever having a second jaw at one end thereof for marking the article;

means for supporting the levers intermediate their ends for pivotal movement about a first horizontal axis and with the jaws in opposing relation to each other; a holder for supporting an article between said jaws; a fluid-operated actuator including a reciprocatory piston rod for actuating said levers;

a pair of toggle links interconnecting said piston rod and the other ends of said levers; and

means for supporting said actuator for pivotal movement about a second axis in parallel and horizontally spaced relation to said first axis and in a position to be biased obliquely when in a normal non-actuated condition with said piston rod at the end of its movement in one direction, so that in response to operation of said actuator and the movement of said piston rod in the opposite direction said levers are actuated so as to effect the sequential engagement of said first and said second jaws with the article.

4. A device for marking an article comprising:

- a lever having an upper jaw at one end thereof;
- a lever having a lower jaw at one end thereof for marking the article;

means for supporting the levers intermediate their ends for pivotal movement about a first horizontal axis and with the jaws in opposing relation to each other; a holder for supporting an article between said jaws; a fluid-operated actuator including a reciprocatory piston rod for actuating said lever;

a pair of toggle links interconnecting the other ends of said levers and said piston rod; and

means for supporting said actuator for pivotal movement about a second axis adjacent one end of said actuator and in parallel and horizontally spaced relation to said first axis so as to effect the biasing of said actuator to an oblique position when in a normal non-actuated condition with the piston rod at the end of its return movement, so that in response to operation of said actuator the forward movement of said piston rod will actuate said levers so as to effect the sequential engagement of said upper and said lower jaws with the article.

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