Aug. 15, 1961 L. A. KINGSLEY 2,996,000

AIR-OPERATED WIRE AND TUBE MARKING MACHINE

Filed Aug. 25, 1958 2 Sheets-Sheet 1

FIG. 2.

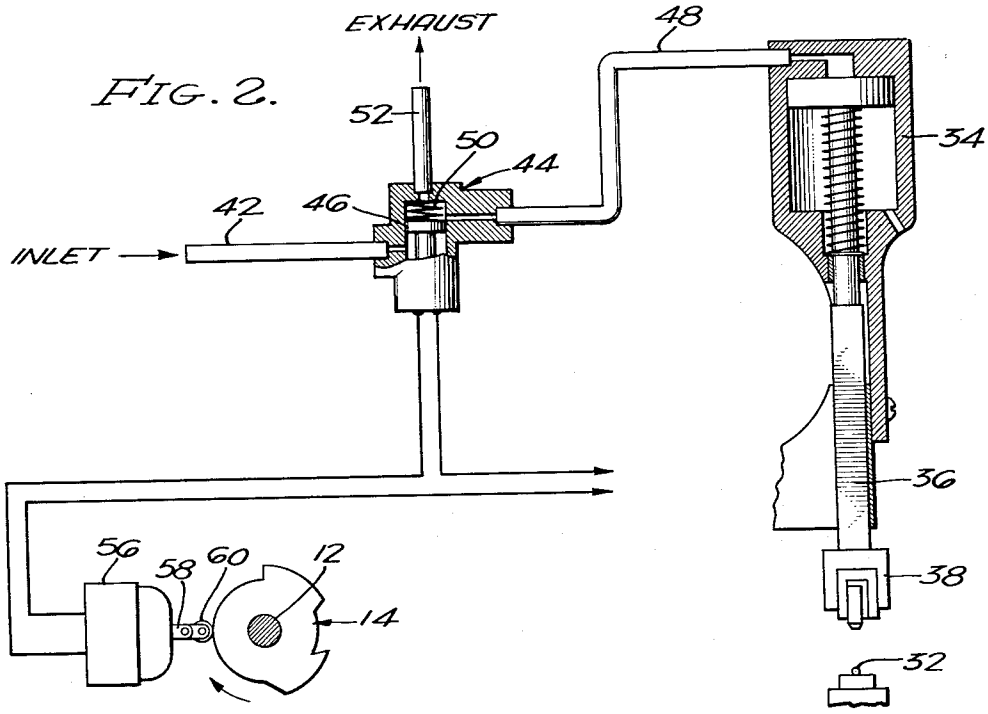
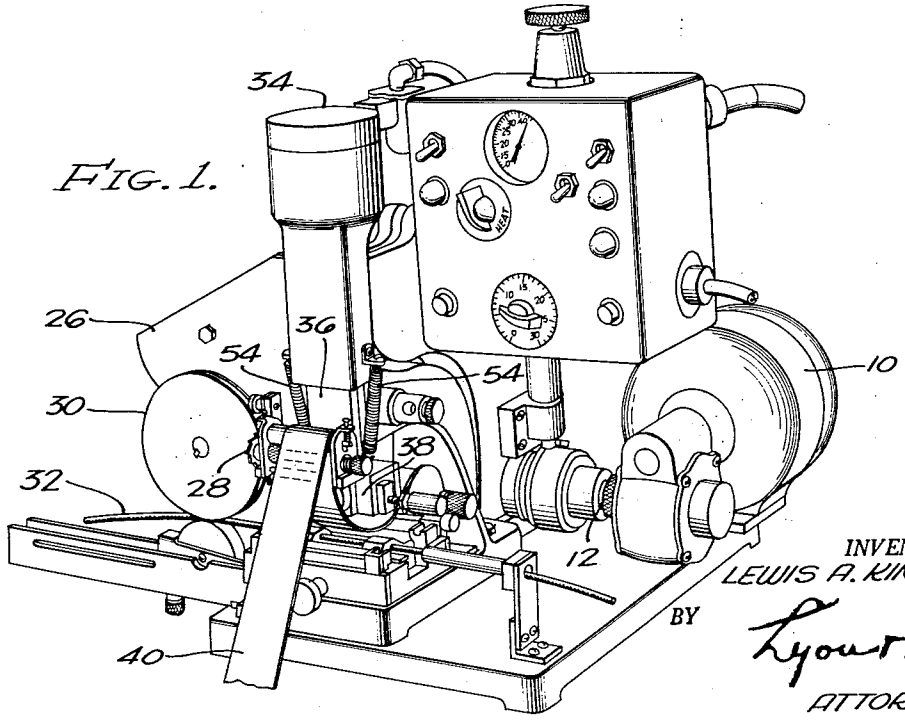


FIG. 1.



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FIG. 4.

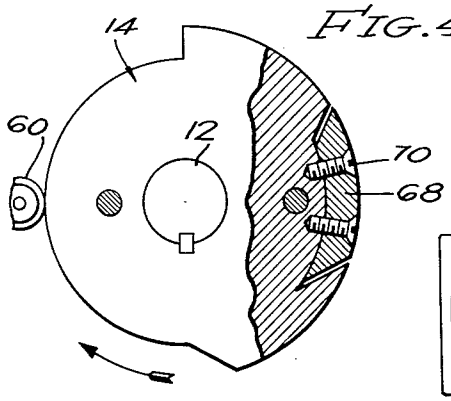


FIG. 3.

FIG. 5.

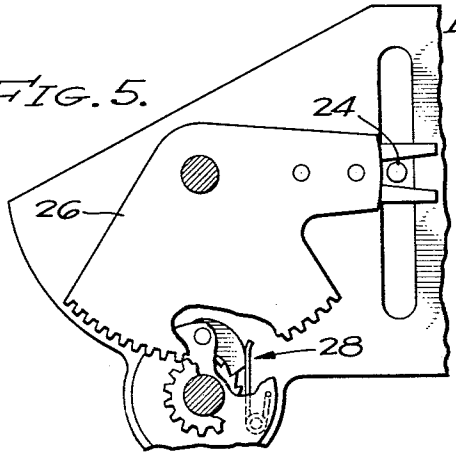
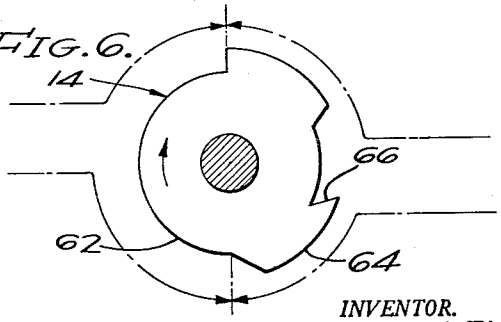


FIG. 6.



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AIR-OPERATED WIRE AND TUBE MARKING MACHINE

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Filed Aug. 25, 1958, Ser. No. 756,814
7 Claims. (Cl. 101—11)

This invention relates to an improved hot stamping machine of the air operated type for marking wire, tubing and the like.

Most materials require a single stamping to impress the desired indicia thereon, however certain difficulties to mark materials create a problem. In a hot stamping operation this cannot be solved by holding the type in contact for an increased period of time since the prolonged heating adversely affects the material. It therefore becomes desirable to over or double print the indicia.

It is therefore an object of this invention to provide a stamping machine which may stamp the same indicia more than once on a material.

It is a further object of this invention to accomplish this multiple marking without interrupting the feeding of the material through the machine.

It is a further object of this invention to provide such a machine with a minimum of alteration of existing stamping machines.

Other objects and advantages will be readily apparent from the following description:

In the drawings:

FIGURE 1 is a perspective view of a machine embodying the invention.

FIGURE 2 is a diagrammatic view of the air control system.

FIGURE 3 is a front elevation of the machine.

FIGURE 4 is a plan view of the air control cam.

FIGURE 5 is a view taken along line 5—5 of FIGURE 3.

FIGURE 6 is a cam sequence diagram.

This present machine is essentially an air operated stamping machine of the type illustrated and described in my co-pending application Serial No. 661,801 filed May 27, 1957, now Patent Number 2,960,024, and entitled Air Operated Stamping Machine, the disclosure of which is incorporated herein and made a part hereof. This machine is modified by adding thereto the spacing and feeding mechanism illustrated and described in Patent No. 2,517,493 issued August 1, 1950 to me, the disclosure of which is incorporated herein and made a part hereof.

The machine as illustrated embodies a work-holding fixture of the type described in Patent No. 2,725,817 issued December 6, 1955 to me, the disclosure of which is incorporated herein and made a part hereof.

Only so much of the machine will be described as is necessary for an understanding of the operation of the present invention and for other details of construction and operation the above identified patents and application may be consulted.

Referring first to FIGURES 1 and 3, a motor **10** drives a shaft **12** upon which control cam **14** is affixed. Cam **14** is substituted for crank wheel **37** of Patent No. 2,517,493 and upon rotation reciprocates crank arm **16** and push rod **18** in guide **20** which operates walking beam **21** about fulcrum **22**. The position of fulcrum **22** may be adjusted as described in said patent. Rocking of said walking beam through pin **24** pivots gear segments **26** which through a ratchet and pawl mechanism **28** drives feeder wheel **30** to feed wire **32** or the like through the machine. The rocking of walking beam **21** and one-way

drive mechanism **28** permits driving of wheel **30** during one-half the rotation of cam **14** while same is stationary during the remaining one-half rotation of the cam.

During the period when wheel **30** is stationary, air is supplied to cylinder **34** which, as more fully described in my co-pending application Serial No. 661,801, urges operating bar **36** downwardly. The bar **36** carries type head **38** into contact with foil **40** and then into contact with wire **32** stamping the desired indicia thereon. The stamping operation as well as the foil-feeding mechanism and air supply to cylinder **34** are more fully described in said co-pending application.

In this invention compressed air is supplied through tube **42** through solenoid valve **44** to cylinder **34**. When the solenoid is energized, the valve element **46** is raised communicating tube **42** through the solenoid valve and tube **48** to the cylinder **34**. When the solenoid is de-energized, spring **50** urges element **46** to block off inlet tube **42** and communicate tube **48** with discharge tube **52** to exhaust air from cylinder **34** during the upward stroke of operating bar **36** under urging of springs **54**.

The energizing of solenoid valve **44** is controlled by switch **56** through a suitable electric circuit. Switch **56** in turn is controlled by arm **58** which carries a cam follower **60** and which is urged into contact with cam **14** by a suitable spring within switch **56**.

FIGURE 6 illustrates the conformation of cam **14**. 180° of the cam indicated **62** is of such a diameter that switch **56** is not closed during contact of the cam follower therewith as seen in FIGURE 2. At the extremity of area **62** of cam **14** a raised area **64** is provided. When cam follower **60** engages area **64** the switch **56** closes and air is delivered to cylinder **34** lowering the stamping head and stamping on the wire. The stamping head remains lowered until follower **60** reaches the end of area **64** as at **66** and the cam radius returns to that of area **62** whereby switch **56** is opened. A plurality of raised areas **64** may be provided on cam **14** on the 180° arc opposite arc **62** to permit more than one stamping on the same spot on the wire. In some instances maintaining the hot stamping head in contact with the wire for a full 180° turn of cam **14** would adversely affect the insulation and in order to provide a legible stamping two or even more briefer stampings are required. A removable insert **68** may be inserted in the depression between raised areas by screws **70** to permit forming one continuous switch closing arc on the side of the cam opposite arc **62** to adapt this machine for various types of marking operations.

While what hereinbefore has been described as the preferred embodiment of this invention, it is readily apparent that alterations and modifications may be resorted to without departing from the scope of this invention and such alterations and modifications are intended to be included within the scope of the appended claims.

I claim:

1. A hot stamping machine for temperature sensitive material comprising an air-operated reciprocating hot stamping mechanism, an intermittently operated material feeding mechanism, means responsive to the position of said feeding mechanism controlling flow of air to said stamping mechanism to reciprocate said stamping mechanism, and control means for said reciprocating means to effect repeated contact with said material in the same area for intervals insufficient to detrimentally affect said material.

2. A hot stamping machine for temperature sensitive material comprising an air-operated reciprocating hot stamping mechanism, an intermittently driven material feeding mechanism, a rotating cam operating said feed mechanism, means actuated by said cam to control flow of air to said stamping mechanism, thereby to cause said

stamping mechanism to engage said workpiece, said rotating cam being constructed and arranged to effect at least two reciprocations of said stamping mechanism for repeated contact in the same area of said material, at intervals insufficient to cause heat-damage to said material.

3. A hot stamping machine for temperature sensitive material comprising an air-operated reciprocating hot stamping mechanism, an intermittently driven material feeding mechanism, a rotating cam operating said feed mechanism, means including an electrically-operated valve and a switch to supply air under pressure to said stamping mechanism, which on closing of said switch permits flow of air to said stamping mechanism, raised areas on said cam, means responsive to said raised areas closing said switch at least twice during the period in which said feeding mechanism is stationary, to cause repeated engagement of said material by said stamping mechanism for intervals insufficient to cause heat-damage to said material.

4. A hot stamping machine for temperature sensitive material comprising an air-operated reciprocating hot stamping mechanism, an intermittently driven material feeding mechanism, a rotating cam operating said feed mechanism, means including an electrically-operated valve and a switch to supply air under pressure to said stamping mechanism, which on closing of said switch permits flow of air to said stamping mechanism, a cam follower on said switch engaging said cam, said cam having an area contacting said follower during feeding of material by said feeding mechanism, at least two raised areas upon said cam which when contacted by said follower close said switch operating said stamping mechanism, to cause repeated engagement to said material by said stamping mechanism for intervals insufficient to cause heat-damage to said material.

5. A hot stamping machine for temperature sensitive material comprising an air-operated reciprocating hot stamping mechanism, an intermittently driven material feeding mechanism, a rotating cam operating said feed mechanism, means including an electrically-operated valve and a switch to supply air under pressure to said stamping mechanism, which on closing of said switch permits flow of air to said stamping mechanism, a cam follower on said switch engaging said cam, said cam having an area contacting said follower during feeding of material by said feeding mechanism, at least two raised areas upon said cam which when contacted by said follower close said switch operating said stamping mechanism, to cause repeated engagement of said material by said stamping mechanism for intervals insufficient to cause heat-damage to said material and at least one insert removably fixed between adjacent raised portions, to reduce the number of reciprocations of said stamping mechanism.

6. A machine for hot stamping a foil-coated impression on a temperature sensitive workpiece, comprising: a heated stamping head; means for positioning a workpiece for engagement by said stamping head; means for interposing a foil element between said stamping head and workpiece; means for moving said stamping head to and from said workpiece; and control means for said moving means to effect an initial reciprocation of said stamping head to effect a preliminary impression on said workpiece and a preliminary application of said foil element, said control means being subsequently operable to effect a final impression of said stamping head on said workpiece and bonding of said foil element to said impression.

7. A machine for hot stamping a series of impressions on a temperature sensitive workpiece, comprising: a heated stamping head; means for periodically advancing a workpiece past said stamping head for periodic engagement thereby; means for moving said stamping head to and from said workpiece; and control means for said moving means to effect an initial reciprocation of said stamping head to effect a preliminary impression on said workpiece and a preliminary application of said foil element, said control means being subsequently operable to effect a final impression of said stamping head on said workpiece and bonding of said foil element to said impression, said control means being operable between operations of said advancing means.

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