Sept. 27, 1927. F. C. HOWES ET AL 1,643,605

APPARATUS FOR PRINTING CYLINDRICAL OBJECTS

Filed July 27, 1925 2 Sheets-Sheet 1

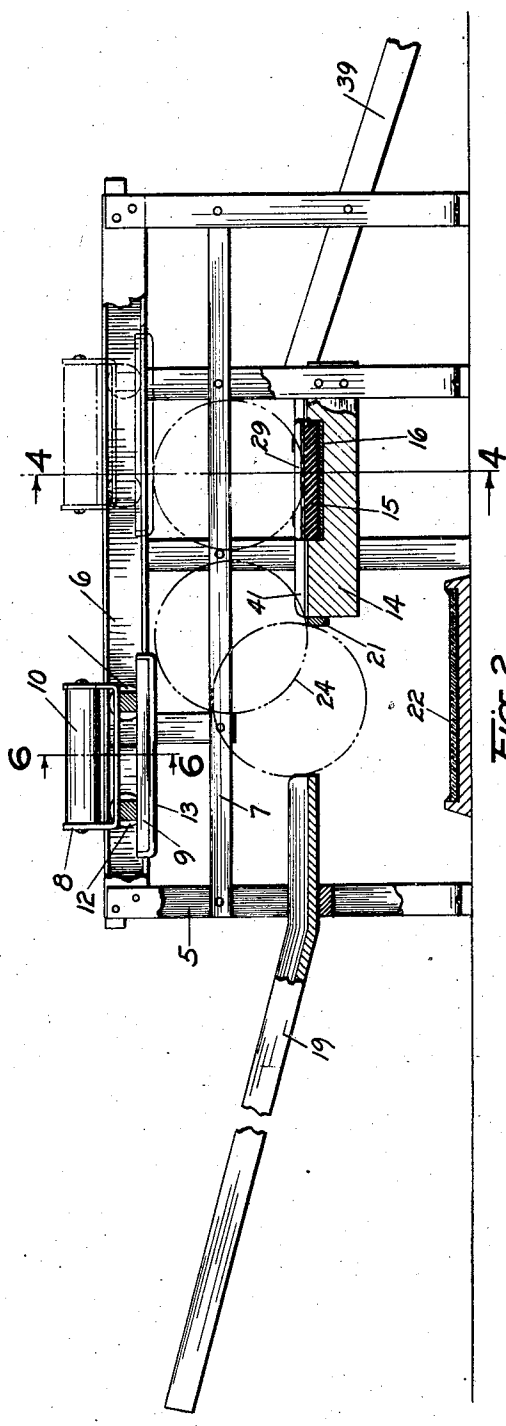


Fig. 2.

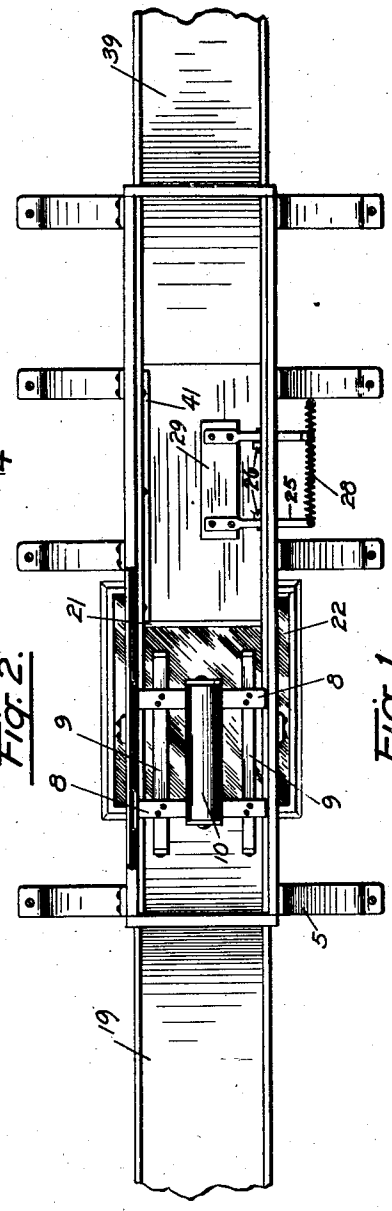


Fig. 1.

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APPARATUS FOR PRINTING CYLINDRICAL OBJECTS

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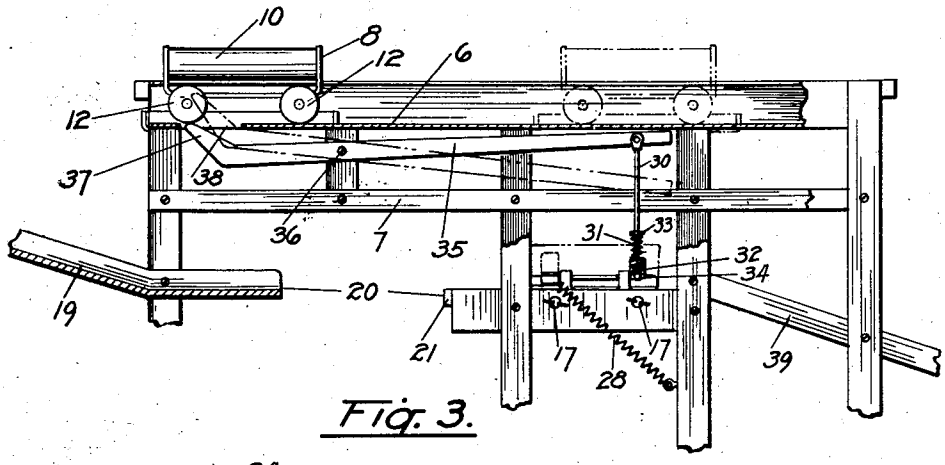


Fig. 3.

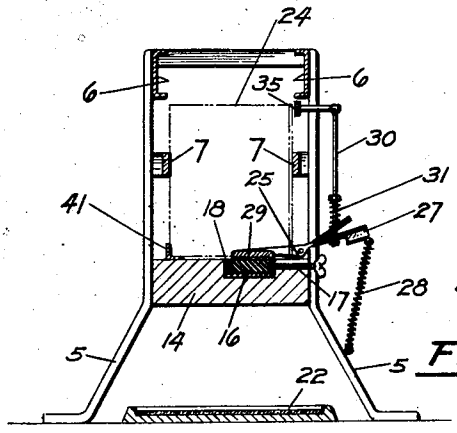


Fig. 4.

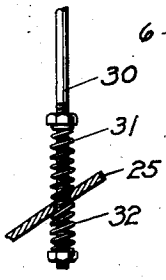


Fig. 7.

Fig. 5.

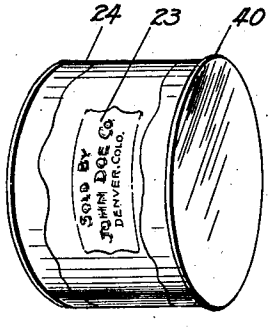


Fig. 8.

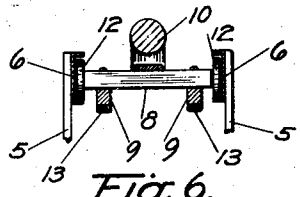


Fig. 6.

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UNITED STATES PATENT OFFICE.

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APPARATUS FOR PRINTING CYLINDRICAL OBJECTS.

Application filed July 27, 1925. Serial No. 46,356.

Our invention relates to apparatus for printing cylindrical objects and its primary object resides in providing a simple mechanism to impress in a designated space of the circumferential surface of a can or other cylindrical container the name and address of a retailer, the grade or character of the contents of the container or other suitable legend. Another object of the invention is to perform the operation by medium of a manual reciprocating platen mounted to engage the container in a determinate adjusted position thereof, a further object is to provide means to designate a position to which the container must be adjusted in order to receive the impression of a relatively stationary die in a predetermined space of the cylindrical surface thereof, and still another object of the invention resides in providing a novel appliance for inking the die, the operation of which is controlled by movement of the platen.

Several other novel features of the invention will be disclosed in detail in the course of the following description made with reference to the accompanying drawings which illustrate a preferred embodiment of the invention for printing cylindrical cans of the character used for the preservation of perishable foods and food ingredients. It is to be understood in this connection, that while my invention is adapted for printing other cylindrical objects, it is more especially designed to operate upon hermetically sealed containers of the above stated type and it is in this particular relation that the apparatus has been shown in the drawings and will hereinafter be described.

In the drawings in the several views of which like parts are similarly designated,

Figure 1 represents a plan view of my improved printing apparatus,

Figure 2 a sectional side-elevation of the same,

Figure 3, a fragmentary sectional side-elevation, differing from Figure 2 in the plane or planes in which the sections are taken,

Figure 4, a transverse section taken along the line 4—4, Figure 1 showing the operative position of the inking appliance,

Figure 5, a similar section with the inking appliance in its normal or inoperative position,

Figure 6, a fragmentary section taken on the line 6—6 in Fig. 1,

Figure 7, an enlarged sectional view of the printing appliance, and

Figure 8, a perspective view of a can printed by the machine.

Referring further to the drawings, 5 designates a frame-structure of suitable form and proportions, including an elevated track preferably composed of channel shaped parallel rails 6, and at a lower point, a pair of opposed parallel guide-rails 7 which direct the cans across the printing table of the machine as will hereinafter be more fully described.

Movably supported on the track, is the reciprocating platen 8 of the machine, which in its simplest and preferred form consists of a four-wheel truck provided with two parallel runners 9 to engage with the cylindrical surface of the can, and with a handle 10 to facilitate its manipulation. The wheels 12 of the platen fit loosely in the channels of the track, as best shown in Figure 6, so that the platen while being guided in its movement lengthwise of the track, is also held against vertical or lateral displacement.

The runners are covered at their underside with tires 13 made of fabric, rubber or other resilient material to promote their frictional contact with the can in the operation of the machine. Fixed between uprights of the supporting structure is the printing table 14 over which the can is moved by the platen, between the two guide rails 7 which by engagement with the ends thereof, as designated in Figure 4, hold the can against lateral displacement.

The printing type preferably provided by a rubber die 15, is set upon a cushion 16 in a recess in the upper surface of the table, with its printing face in a plane slightly above the same. The die is held in place by two set-screws 17 and a limited lateral adjustment of the die is allowed by a resilient shim 18 placed between the edge of the die opposite to that engaged by the set screws and the corresponding side of the recess.

The cans to be printed are moved to a position for their engagement by the runners of the platen, along an inclined runway 19 which terminates at a distance from the forward edge of the printing table. The

space 20 between the runway and the table is sufficiently wide to permit of the can partially entering the same for its rotary support before it is brought into contact with the platen. The forward end of the table has an index, preferably in the form of a straight-edge 21, and a mirror 22 fastened upon the base of the machine or upon a surface upon which the structure 5 is supported, reflects the index so that an operator looking into the mirror past the can supported in the space above the same, can see with what part of the cylindrical surface of the can the index is in register. The machine is especially adapted to print the name and address of a retailer in a blank space 23 of the lithographed cylindrical surface of a can 24 as shown in Fig. 8, and since said space is obviously in the same relation to other printed or illustrative matter on the surface of the can, in all cans of the same character, the operator after having determined which point of the surface of the can must register with the index in order to bring the blank space of the surface in register with the die when the can is rolled across the printing-table, can readily adjust each can to its proper position before it is brought into contact with the runners of the platen. The inking appliance of the machine hereinbefore repeatedly referred to, consists of a lever-frame 25 pivoted in bearings 26 at an edge of the printing-table and held in its normal upright position illustrated in Fig. 5, by means of a counterbalancing weight 27 and a coiled spring 28. An arm of the lever normally extending vertically above the surface of the table carries at its upper end an inkpad 29 adapted to engage with the die when the arm is moved downwardly to a substantially horizontal position as illustrated in Figures 1 and 4. The other arm of the lever normally projecting downwardly away from the table is at its extremity connected with a rod 30 through the medium of two cushion springs, 31 and 32 above and below the same, which engage with nuts 33 and 34 on the rod 30. The upper end of the rod is pivotally connected with a trip-lever 35 fulcrumed as at 36 on the frame-structure immediately below one of the rails of the track 6. The free arm of the lever 35 has an upwardly bent toe 37 that normally projects through a slot 38 of the rail in the path of one of the truck-wheels 12 of the platen, the slot and the toe of the lever being positioned so that the lever is engaged by a wheel of the platen when the latter is in a position at the end of the track forward with relation to the printing table. A chute 39 inclined downwardly from the rear edge of the printing table, provides a path for the cans to a suitable receptacle after they have been printed.

The cans to which the machine is particularly adapted are usually hermetically sealed by crimping the marginal portion of its cylindrical wall around the corresponding edge of a flat cover-plate. The result is that the can after it is closed has a rim 40 projecting beyond its circumferential surface and in order to compensate for the greater diameter of this rim, the printing table has a ridge 41 upon which the can engages during its movement across the table. The height of the ridge equals the width of the rim beyond the surface of the can so that the can will move in a substantially horizontal plane across the printing die as has been indicated in broken lines in Figure 4 of the drawings.

In the operation of the machine, the cans are rolled along the runway 19 to a position in the space 20 between the end of the runway and the forward end of the printing table as is shown in Figure 2.

The operator now turns the can until a determinate mark on the lithographed cylindrical surface thereof is in register with the straight-edge 21, after which the can is moved about the straight edge to engage with the runners of the platen, also illustrated in Figure 2. The platen is now moved along the track and by the frictional contact of its runners causes the can to roll across the printing table with the result that an impression of the die 15 is made in the space 23 of the can as shown in Figure 8. The printed can is removed through the chute 39 and after the platen is returned to its original position, another can is moved down the runway into the space 20. When the platen is in its position of rest at the end of the track, the toe-end of the lever 35 of the printing appliance is depressed as shown in Figure 3 and the inkpad 29 at the end of the pivoted frame 25, is in consequence held in contact with the die, and as soon as the platen is moved forwardly to engage the can after it has been lifted from its seat in the space 20, the lever 35 is released and the inkpad is separated from the die and moved to the position illustrated in Fig. 5 by the combined actions of the weight 27 and the spring 28.

The springs 31 and 32, cushion the movement of the frame 25 to its normal upright position and maintain a resilient contact between the inkpad and the die in the operative position of the inking appliance, respectively.

What we claim and desire to secure by Letters Patent is:

1. A can-printing machine of the character described comprising a table, a printing die thereon, a relatively elevated track, means for guiding a can across the table by engagement with the ends thereof, a ridge on the table to compensate for different diameters of the can, and a platen on the track for rolling propulsion of the can.

2. A can-printing machine comprising a table having a recess, a printing-die in the recess, a set-screw for adjustment of the die, a resilient cushion yieldingly opposing movement of the die by the set-screw, an elevated track, and a platen on the track for propulsion of the can across the table.

3. A can-printing machine comprising a table, a printing die thereon, a can support forward of the table, a straight edge forming part of the support and indicative of a determinate position of the can on its support, an elevated track, and a platen on the track for propulsion of the can across the table.

4. A can-printing machine comprising a table, a printing die thereon, a can-seat forward of the table, an index indicative of a determinate position of the can on its seat, a mirror reflecting the position of the can relative to the index, an elevated track and a platen on the track for propulsion of the can across the table.

5. A can-printing machine of the character described comprising a runway, a printing table spaced therefrom, said space providing a seat for a can, an index indicative of a determinate position of the can in its seat, an elevated track, and a platen on the track for propulsion of the can across the table.

6. A can-printing machine of the character described comprising a runway, a printing table spaced therefrom, said space providing a seat for a can, a straight-edge at an end of the table, providing an index indicative of a determinate position of the can in its seat, an elevated track, and a platen on the track for propulsion of the can across the table.

7. A can-printing machine of the character described comprising a runway, a printing table spaced therefrom, said space providing a seat for a can, an index indicative of a determinate position of the can in its seat, and a mirror below the space to reflect the position of the can relative to the index.

8. A can-printing machine of the character described comprising a fixed printing-die, an inking-pad normally engaging the die, an elevated track, a platen movable on the track to propel a can across the die, and means apart from the platen to remove the pad from the die.

9. A can-printing machine of the character described, comprising a fixed die, an elevated track, a platen movable on the track to propel a can across the die, and an inking-appliance controlled by movement of the platen to engage the die just as the platen is ready to move toward the die.

10. A can-printing machine of the character described, comprising a fixed die, an elevated track, a platen movable on the track to propel a can across the die, an inking-pad normally engaging the die, and means to remove the pad from the die by movement of the platen.

11. A can-printing machine of the character described, comprising a fixed die, an elevated track, a platen movable on the track to propel a can across the die, and an inking-appliance comprising a pivoted ink-pad, means to yieldingly hold the pad in an inoperative position, and means for moving the pad to a position in which it is in contact with the die, by movement of the platen.

12. A can-printing machine of the character described comprising a fixed die, an elevated track, a platen movable on the track to propel a can across the die, and an inking-appliance comprising a pivoted ink-pad, means for moving the pad to a position in which it is removed from the die, and a trip-lever in the path of the platen, for moving the pad to a position in which it is in contact with the die.

13. A can-printing machine of the character described comprising a fixed die, an elevated track, a platen movable on the track to propel a can across the die, an inking-appliance, and means in the path of the platen for moving the appliance into contact with the die.

14. A can-printing machine of the character described comprising a fixed die, an elevated track, a platen movable on the track to propel a can across the die, an inking-appliance adapted to be moved into contact with the die by movement of the platen, and means including a spring means to return the appliance to its normal position.

15. A can-printing machine of the character described comprising a fixed die, an elevated track, a platen movable on the track to propel a can across the die, an inking-appliance adapted to be moved into contact with the die by movement of the platen, and means including a weight to return the appliance to its normal position.

16. A can-printing machine of the character described comprising a fixed die, an elevated track, a platen movable on the track to propel a can across the die, an inking-appliance adapted to be moved into contact with the die by movement of the platen, and means including a lever to return the appliance to its normal position.

17. A can printing machine of the character described comprising a fixed die, a runway for the movement of a can to the die, a seat between the runway and the die, the seat having an opening at the bottom thereof to permit of an underneath view of a can upon said seat, a track, and a platen on the track to roll the can across the die.

In testimony whereof we have affixed our signatures.

FREDERICK C. HOWES.
FREDERIC L. SAVAGEAU.