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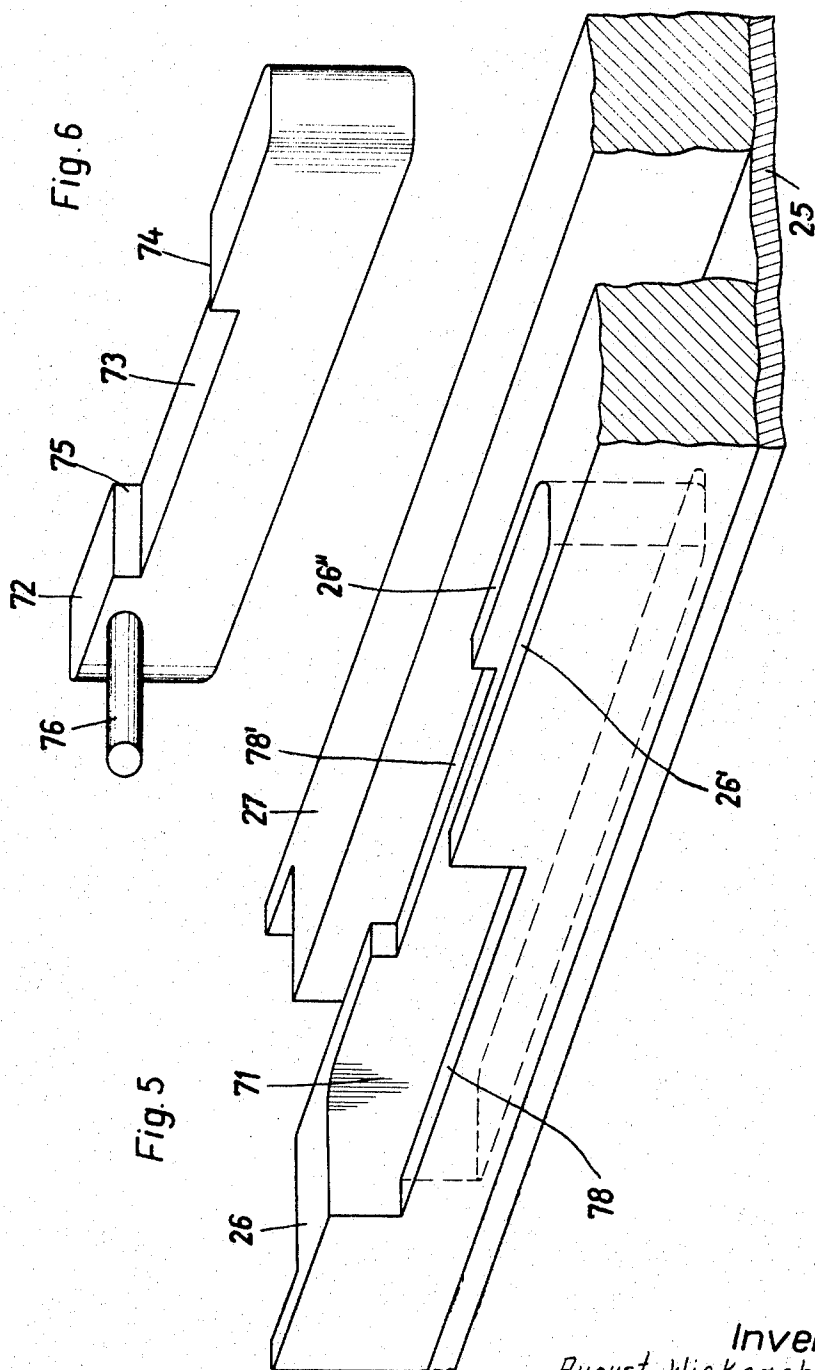
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A. WICKERSHEIM
PACKAGING MACHINES

3,415,035

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6 Sheets-Sheet 3



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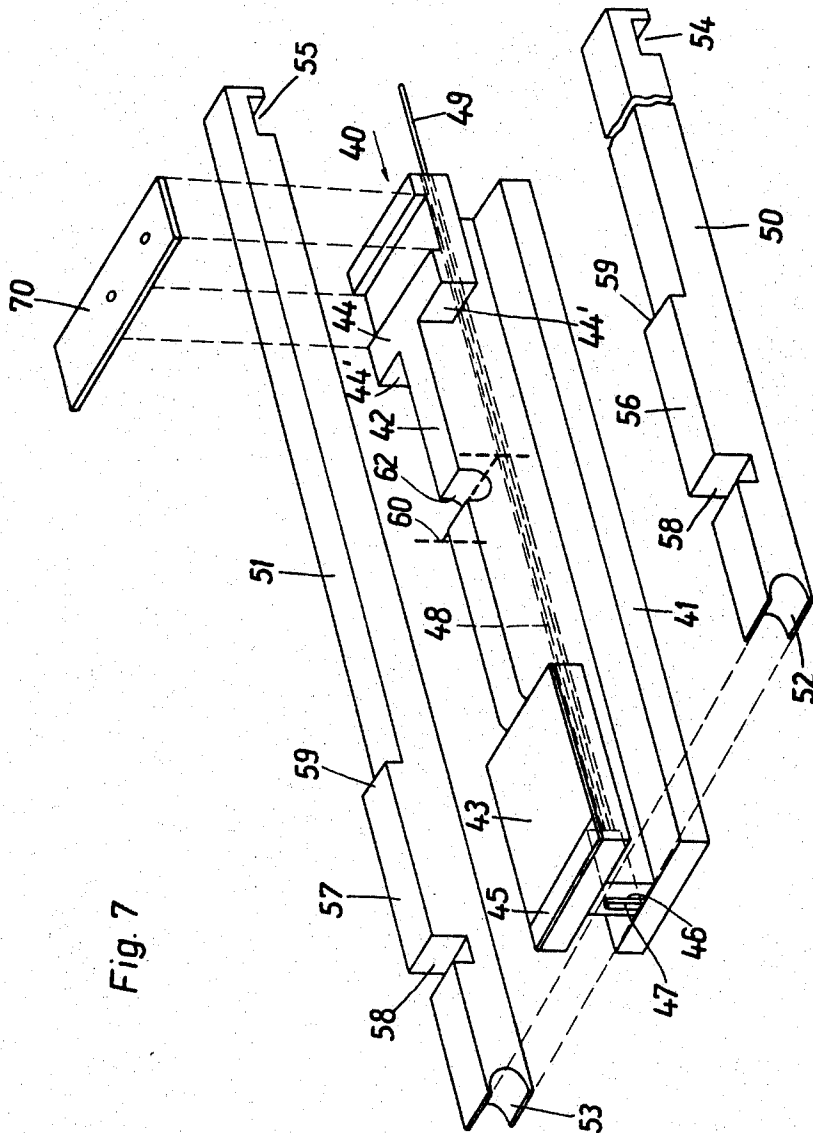


Fig. 7

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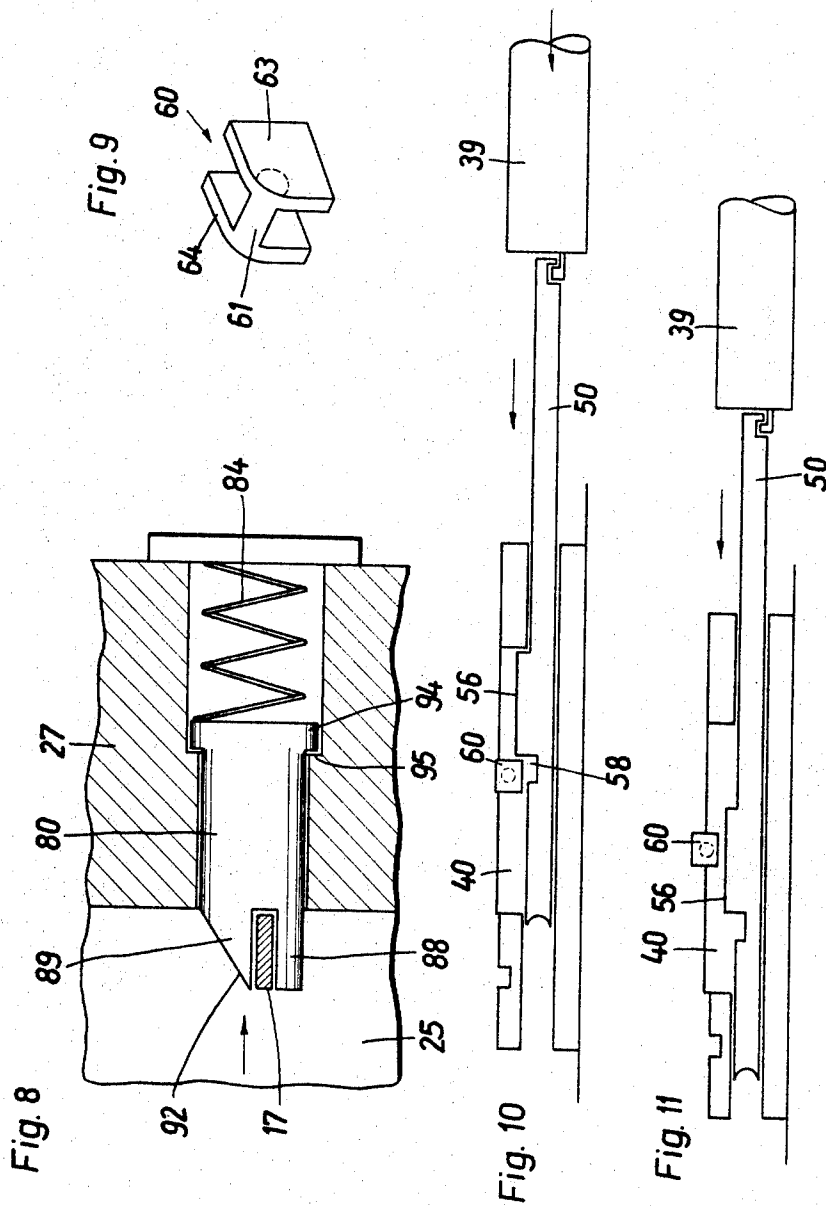
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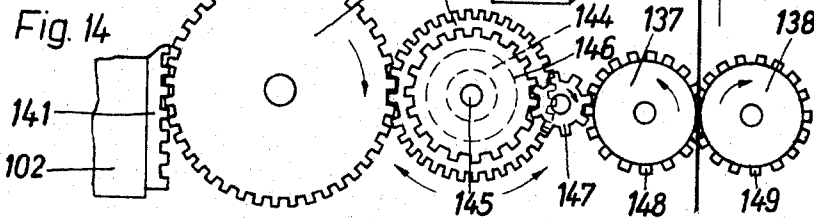
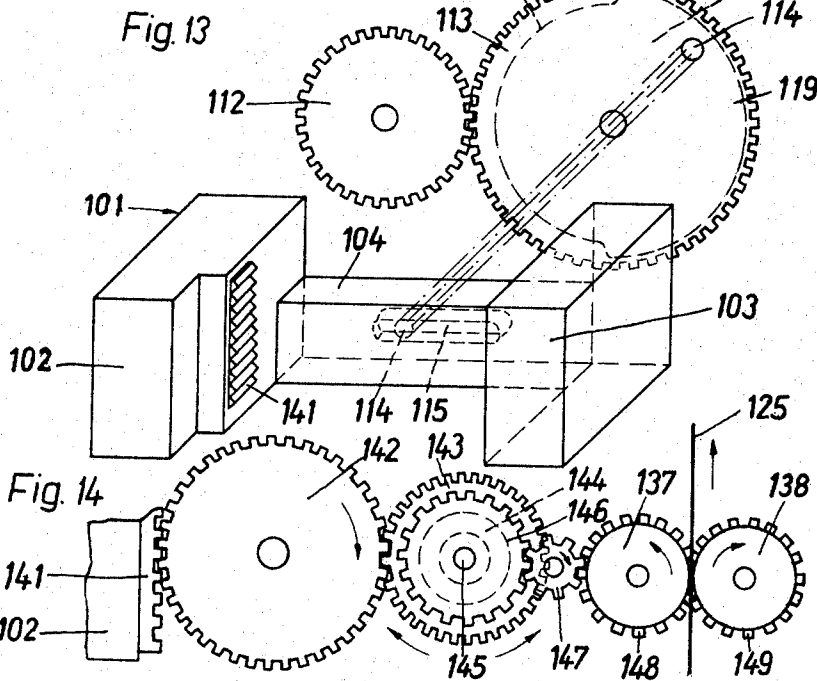
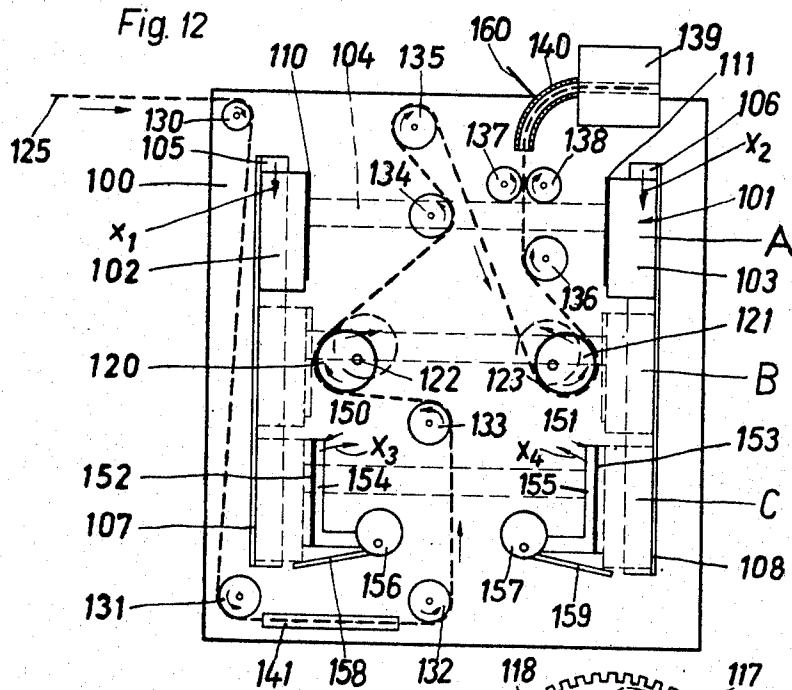
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PACKAGING MACHINES

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12 Claims. (Cl 53—131)

ABSTRACT OF THE DISCLOSURE

An apparatus for closing and separating a filled package from a length of tubular packaging material, including a closer head, a feed arrangement for feeding two metal strips to the closer head, means for severing from each metal strip a portion thereof, a member movable in the closer head and connected with the feed arrangement, a pair of stamping dies movable relative to the member and adapted to be intermittently coupled therewith, said dies being adapted to cooperate with stationary dies to bend the metal strip portions about the packaging material, pins projecting into the path of the stamping dies, each pin being adapted to hold the metal strip and to be withdrawn from the path of its respective stamping die on engagement with said die, and a separating knife operable to sever the packaging material between the two clamps so formed, the drive for the stamping dies including a drive disc with a spring-loaded drive rod eccentrically articulated thereto, whose free end is held in a link slide releasably connected with the stamping dies.

Bag or flexible tube packagings, particularly for piece type goods, are closed by intermittently fed metal wires or metal strips, the assembled package being inserted in a closer head and the clamp type closure or two adjacent closures made fast by means of dies.

The dies of known closer heads are driven mechanically, which means that necessarily only a very restricted capacity for adjustment must be taken into consideration as must likewise the frictional forces occurring in the articulated connections of the mechanical drive. By contrast, the object of the invention is to simplify the construction of the drive for the stamping dies and for the driver which can be coupled intermittently with these, and the control device for the intermittent feed of the strip material and for the bending pins for forming the U-shaped closure clamps, and to provide the closer apparatus with devices for printing on the strip material. According to the invention this object is attained by making the drive for the stamping of dies consist of a drive disc with a spring-loaded drive rod eccentrically articulated to this, whose free end is held in a link slide guided on the baseplate and releasably connected with the dies guided in the driver. The driver is connected with control devices for the feed of the closure material and the bending pins projecting into the path of travel of the driver are arranged movable in the axial direction in the lateral coverplates of the baseplate and are drawn back after the formation of the basic form of the closure means from the path of travel of the driver by impingement of the accelerating stamping dies. The device, connected with the closer device, for printing on strip material, is formed by a U-shaped slide controlling the intermittent feed of the strip and movable in the direction of travel of the material to be printed, being guided in a machine frame, the ends of the arms of the slide carrying printing blocks, in whose path of travel are arranged inking mechanisms controllable by the slide and printing cylinders for printing on the white and counter-printing, which can be transferred by control members into the

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printing position, are arranged, which come into position on both sides of the strip material.

To obtain a firmly seated closure even with different thicknesses of the packaging material, the free end of the drive rod nearest the drive disc, is slidingly guided in a guide sleeve articulated to the drive disc. The control rod is acted on by plate springs.

For the feed of the strip material by means of intermittently driven feed rollers, the driver, sliding between the lateral coverplates, has an entrainment plate, which is in engagement with a control slide with an entrainment pin, guided in a recess in the lateral coverplate and parallel to the path of travel of the driver, the entrainment pin being connected by a connecting rod with the drive shaft of the feed rollers for the strip material. The control slide is provided with a recess having two engagement edges for the engagement of the entrainment plate, while the outer wall of the recess for the control slide has a recess for the entrainment pin, whose length corresponds to the path of travel of the entrainment pin.

The bending pins guided in the lateral coverplates in correspondingly formed recesses or bores going right through, are spring-loaded. The free end of each bending pin projecting into the path of travel of the driver, is forked, forming a vertical slot for the insertion of the strip material. The fork arm of the bending pin nearest the drive disc has a control surface bevelled off in the direction of the stamping dies.

The printing blocks of the device for printing on strip material are arranged at opposite inner surfaces of the arms of the slide, whose lift movement is controlled by a drive disc, which carries an eccentrically arranged guide pin, which engages in a guide groove provided in the web connecting the arms of the slide. The drive disc carries on the rear side a control disc as a control member for the swivelling in and out of the printing cylinder.

For the intermittent feed of the strip material guided over the printing cylinder, the slide is provided with a toothed rod, in which a gearwheel engages, which meshes with the teeth of another gearwheel having an idle travel. This gearwheel carries on its shaft another gearwheel, which is connected through a correspondingly formed gearing with the feed rollers for the strip material.

For applying the inking composition on the printing blocks, each inking mechanism consists of the carrier plate carrying an ink pad, which plate is fixed to a spring-loaded eccentrically supported disc, which has a control arm arranged in the path of travel of the slide and impinged on by this, for the pressing of the ink pad against the printing block.

A device embodying the present invention will now be described, by way of example with reference to the accompanying drawings, in which:

FIGURE 1 shows the closure device in side elevation, FIGURE 2 shows the same device viewed in the direction of the arrow Z,

FIGURE 3 shows the drive for the stamping dies viewed from above,

FIGURE 4 shows in plan the closer head with the control devices for the strip material feed with the housing cover removed,

FIGURE 5 is the baseplate with the lateral coverplates and with a recess provided in a lateral coverplate, for the control slide, shown in perspective,

FIGURE 6 shows the control slide, in perspective,

FIGURE 7 shows the driver and the stamping dies, in perspective,

FIGURE 8 shows a bending pin projecting into the path of travel of the driver, partly in elevation and partly in section,

FIGURE 9 shows the coupling pin for the stamping dies in perspective,

FIGURE 10 is the coupling arrangement of the stamping dies with the driver, in side elevation while,

FIGURE 11 corresponds to FIGURE 10 but in the uncoupled position,

FIGURE 12 shows a device for printing strip material viewed from the front in different positions of the slide carrying the printing blocks,

FIGURE 13 shows the slide and its drive device in perspective, and

FIGURE 14 represents the drive device for the feed rollers for the strip material viewed from the front.

In a preferred example of embodiment in FIGURES 1 and 2, the closer device for the simultaneous application of two closures consists of a housing base 10 and a machine housing 11 connected with this, which accommodates a drive motor, for instance an electromotor 12. In the machine housing 11 are further accommodated the control devices.

On the housing 11 is supported a closer head 13 with a groove 14 for the insertion of the packaging material to be closed and with a lever 15 initiating the closure process. The closer head 13 carries a supply spool 16 for the strip closure material 17, but in the example of embodiment represented, this is fed to the closer head 13 by means of a conveying device 18 with feed rollers (not shown in the drawing) for the closure material. The closer head 13 simultaneously carries a baseplate 100 with the devices for printing the strip material.

On a column 20 provided on the machine housing 11 is arranged a workplate 21, which is adjustable in height, so that the workplate 21 can be arranged at a distance from the closer head 13 corresponding in each case to the size of the filled packagings. The workplate 21 is made sloping slightly downwards on side for leading off the filled and closed individual packagings.

The closer head 13 consists of a baseplate 25 with lateral vertical coverplates 26, 27. A matrix or die 28 is connected with the baseplate 25. The end of the baseplate 25 opposite the matrix 28 has a bearing (not shown in the drawing) for accommodating a drive shaft 30 connected with the drive motor 12, whose upper free end carries a drive disc 31. On the drive disc 31 is eccentrically fixed a guide sleeve 32 rotatable at 33. In the guide sleeve 32 is guided the free end of a drive rod 35 articulated to a slide, slidably guided in guides on the baseplate 25. The space 36 remaining inside the guide sleeve 32 is advantageously filled with compressed air as an elastic air cushion. The end of the drive rod 35 led into the guide sleeve 32 is secured inside the guide sleeve 32 against withdrawal.

On the drive rod 35 are arranged in front of the guide sleeve 32 plate springs 37, of which the foremost plate spring 37' lying opposite the link side 34 abuts against a reinforcing head 38 formed on the drive rod 35, while the plate spring 37'' adjacent to the guide sleeve 32 rests against the reinforced rim 38' of the guide sleeve 32. The arrangement of the plate springs 37 is here such that the drive rod 35 pressed into the guide sleeve 32 is moved back by the air cushion in the guide sleeve on the one hand and by the plate springs 37 on the other hand into the starting position (FIGURE 3).

On the baseplate 25 there is guided between the lateral coverplates 26, 27 a driver 40 which consists of a baseplate 41, which carries centrally a vertical plate shaped web 42, on both of whose ends in each case a plate 43 and 44 is formed corresponding to the width of the baseplate 25 between the two lateral coverplates 26, 27. The front upper edge of the driver plate 43 is formed as an interchangeable cutting edge 45. The housing coverplate (not shown in the drawing) has in the vicinity of the insertion slot for the closure material 17 an interchangeable counterknife. With the forward movement of the driver 40 the cutting edge 45 slides over the insertion slot provided in front of the counterknife and separates off the closure material in each case before the beginning

of the forming of the closure strips in the predetermined lengths.

The plate-shaped connecting web 42 of the driver 40 is provided with a guide slot 46 for receiving a separating knife 47 and with a horizontal bore going through to receive a knife control rod 49, whose free end is in engagement with a control rod 39 fixed to the link slide 34 (FIGURE 3).

Between the plates 41, 43, 44 of the driver 40 and on both sides of its connecting web 42 are led bar-shaped stamping dies 50, 51 with forming dies 52, 53 formed at their front ends. The stamping dies 50, 51 are of substantially square section. The rear ends of the stamping dies 50, 51 are made hook-shaped for the connection at 54, 55 with the control rod 39 connected with the link slide 34. The stamping dies 50, 51 may however also be connected direct to the link slide 34. For connection with the control rod 39 the stamping dies 50, 51 are merely suspended by the counter-hooks 39' of the control rod 39 (FIGURES 3 and 4). In order to obtain a restricted guidance of the stamping dies 50, 51 between the driver plates 43, 44, reinforcements 56, 57 are formed as control surfaces on the stamping dies 50, 51. The control edges of the control surfaces 56, 57 are designated as 58, 59 (FIGURE 7).

The intermittent coupling of the stamping dies 50, 51 with the driver 40 is effected by means of a coupling pin 60, which is shown in FIGURE 7 in dashed line. The coupling pin 60 has a cylindrical central portion 61 formed corresponding to the thickness of the connecting web 42 of the driver 40, which central portion is rotatably supported in a recess 62 provided in the connecting web 42 and has a bilateral control surfaces 63, 64 (FIGURE 9). The coupling of the stamping dies 50, 51 with the driver 40 is effected by the encounter of the control surfaces 63, 64 of the coupling pin 60 with the control surfaces 58 of the two stamping dies 50, 51. When the stamping dies 50, 51 return the control surfaces 59 of the stamping dies are applied against the end face surfaces 44' of the driver plate 44, in order to return the driver 40 into its starting position.

The locking of parts sliding on one another is retained until the driver 40 strikes the stop surface of the die 28 or the housing accommodating the die. Simultaneously with this impingement the decoupling is effected by the swivelling out of the control surfaces 63, 64 of the coupling pin 60 into a correspondingly formed recess of the closer head 13.

The control device for the intermittent feed of the closure material 17 consists of an entrainment plate 70 fixed on the driver plate 44, which entrainment plate is in engagement with a slide 72 guided in a recess 71 provided in the lateral coverplate 26 and parallel to the path of travel of the driver 40. The control slide 72 is provided with a hollow 73 formed as a control surface, in which the free extended end of the entrainment plate 70 is guided. The engagement edges of the control surface 73 are designated as 74, 75 (FIGURE 6). The length of the control surface 73 is given such dimensions that the control slide 72 is only entrained by the entrainment plate 70 of the driver 40 after a slight forward feed movement of the driver 40.

The end of the control slide 72 nearest the drive disc 31 carries at the outside of the slide an entrainment pin 76, which is connected by a connecting rod 77 with the drive shaft (not shown in the drawing), for the feed rolls or rollers for the strip closure material 17, so that the reciprocating motion of the slide 72 controlled by the driver 40 is transformed into a rotary motion of the drive shaft for the conveyor rollers. The outer side 25' of the lateral coverplate 26 formed by the recess 71 for the control slide 72, is provided with a hollow 78, whose length corresponds to the length of the path of travel of the entrainment pin 76. A further recess 78' is pro-

vided in the side wall 26" in the path of travel of the entrainment plate 70 (FIGURES 4 and 5).

In the sliding path of the stamping dies 50, 51 are arranged two horizontal bending pins 80, 81 movable in the axial direction, which are slidably guided in correspondingly formed recesses or bores 82, 83, in the lateral coverplates 26, 27. The free ends of the bending pins 80, 81 guided in the bores 82, 83 are loaded by springs 84, 85, so that in the starting position of the bending pins 80, 81 the free pin ends project into the path of travel of the stamping dies 50, 51. The free pin ends turned towards one another are forked, forming a slot 86, 87. The fork arms of the bending pin 80 are designated as 88, 89 and the fork arms of the bending pin 81 as 90, 91. The surfaces of the fork arms 89, 91 nearest the stamping dies 50, 51 have bevelled-off surfaces 92, 93. The bending pins 80, 81 are secured against rotation. An annular reinforcement 94 provided at the pin ends rests against a surface 95 provided inside the bore 82 or 83, so that the bending pins 80, 81 assume the position represented in FIGURE 8 and cannot be moved further into the path of travel of the stamping dies 50, 51.

The device fixed to the closer head 13 for printing strip material consists in a preferred example of embodiment shown in FIGURE 12, of the baseplate 100, which simultaneously forms the machine frame, and a U-shaped slide 101 guided on the baseplate 100. The arms of the slide 101 are designated as 102, 103 and the web connecting the arms together, as 104. The arrangement of the slide 101 in the baseplate 100 is such that the free ends of the arms 102, 103 of the slide 101 are guided in guide slots 105, 106 extending parallel to one another, while the web 104 connecting the arms 102, 103 is guided on the rear side of the baseplate 100. In the vicinity of the guide slots 105, 106 additional guide bars 107, 108 may also be provided for guiding the slide 101.

The ends of the arms 102, 103 projecting out of the guide slots 105, 106 carry at their arm inner surfaces turned towards one another in each case a printing block 110, 111, which consists, for lettering the strip material, of printing blocks produced from typeset material. The printing blocks may be made interchangeable.

The drive of the slide 101 is effected through a motor-driven gearwheel 112, which meshes with the teeth of a gearwheel 113. The gearwheel 113 carries on its disc surface an eccentrically arranged guide pin 114 which is guided in a guide slot 115 provided in the rear side surface of the web 104 of the slide 101. On the shaft 116 of the gearwheel 113 is provided a control disc 117 with control surfaces 118 and 119 (FIGURE 13).

In the vicinity of the path of travel of the slide arms 102, 103 are arranged printing cylinders 120, 121 on the baseplate 100, whose shafts 122, 123 are eccentrically supported, which carry at their free ends (not shown in the drawing) guide discs. These guide discs are so guided on the control surfaces 118, 119 of the control disc 117 that, when the guide discs of the printing cylinders 120, 121 roll on the control surface 119, the printing cylinders 120, 121 are passed into the printing position, i.e. into the swung-in position, while when the control surface 118 comes into action, the printing cylinders 120, 121 are located in the position shown in dashed line in FIGURE 12.

The strip material to be printed is designated as 125. It is taken from a supply spool and guided over deflecting rollers 130, 131, 132, 133 to the printing cylinder 120 for the printing on the white. The strip material guided round the printing cylinder 120 is next guided over deflecting rollers 134, 135, to be then guided round the printing cylinder 121 for the counterprinting and led over a further deflecting roller 136 between conveyor rollers 137, 138 to the closer head indicated in the drawing at 139, of the bag closer device (FIGURE 12). All

the deflecting rollers 130 to 136 are preferably supported freely overhanging on the baseplate 100.

Between the conveyor rollers 137, 138 for the feed of the strip material 125 is provided an arcuate guide component 140, which ensures a satisfactory insertion of the strip material into the closer head 139. There may be provided along the guide path of the strip material 125 guide rails between the individual deflecting rollers, as is shown at 141 in FIGURE 12.

The driver of the conveyor rollers 137, 138 is controlled by the slide 101. For this purpose the arm 102 has a toothed rod 141 in whose teeth a gearwheel 142 engages, which is connected further with a gearwheel 143. The gearwheel 143 is provided with an idle motion of known construction, which is indicated at 144. On the shaft 145 of the gearwheel 143 is fixed a gearwheel 146, which is connected with a gearing consisting of the gearwheels 147, 148, 149, the teeth of which 148, 149 support the conveyor rollers 137, 138 (FIGURE 14).

Below the printing cylinders 120, 121 are provided parallel and adjacent to the guide path of the printing blocks 110, 111 inking mechanisms 150, 151. Each inking mechanism 150, 151 consists of an angular support plate 154 or 155 (carrying an inking pad 152 or 153 respectively) whose free angle arm end is fixed to a spring-loaded control disc 156 or 157 respectively, eccentrically supported on the baseplate 100. The control discs 156, 157 each carry a control arm 158 or 159, which project into the path of travel of the free arm ends of the slide 101 and which are so arranged in relation to the support plates 154 and 155 that when the lower edges of the arms of the slide 101 impinge on the control arms 158, 159, the inking pads 152, 153 are brought to rest on the printing blocks 110, 111.

In front of the closer head 139 is arranged a separating knife 160 in the guide path of the strip material 125, which is so controlled by the slide 101 that the strip material is always separated between two printed sections, when the free end of the strip section adjacent to the closer head is led in between the packaging material and the closure clamp.

The closure and separating device formed in accordance with the invention, with the device for printing on strip material, works as follows:

After the drive motor 12 is switched on, the filled and assembled flexible tubular packaging material is brought forcibly into contact in the groove 14 of the closer head 13 of the release lever 15 and simultaneously the drive disc 31 set in motion, by which the link slide 34 is moved in the direction of the arrow X_1 . The drive motor 12 is preferably connected through a coupling of known type with the drive disc 31, whose direction of rotation is indicated by the arrow X (FIGURE 3).

Simultaneously with the feed of the link slide 34 the stamping dies 50, 51 connected with the control rod 39 also move rapidly forward and entrain under the action of the coupling pin 60, the driver 40 (FIGURE 10). The driver 40 is arranged rapidly advancing the stamping dies 50, 51 and grips the closure material 17 serving for the formation of the closures, rolled up on the supply spool 16 and fed in the interim by means of the conveyor device 18 to the bending pins 80, 81, the said closure material being sheared off by means of the separating knife 45. The closure material 17 is fed to the bending pins 80, 81 in such a way that the separated closure components are arranged in the insert slot 86, 87 and are so held between the fork arms 88, 89 and 90, 91 of the bending pins 80, 81. The separated closure components are placed by the forward-moving driver 40, forming a U-shaped profile, round the fork arms 88 and 90 of the bending pins 80, 81 projecting into the path of travel of the stamping dies 50, 51. In the following forward movement of the stamping dies 50, 51 these strike the control surfaces 92, 93 of the bending pins 80, 81 in such a way that the bending pins 80, 81 are pressed into the recesses

82, 83 in the lateral coverplates 26, 27: the path of travel for the driver 40 and the stamping dies 50, 51 is thus free.

The feed of the closure material is simultaneously effected by the forward movement of the stamping dies 50, 51 with the driver 40. The driver 40 is moved on to the dies 28. The entrainment plates 70 of the driver 40 entrains the slide 72 in the direction of the arrow X_2 , as soon as the entrainment plate 70 has struck the stop surface 74 of the hollow 73 in the slide 72. By the forward movement of the slide 72 positively controlled by the driver 40, the feed roller for the closure material is set in rotation through the connecting rod 77: the closure material 17 is impelled into the path of travel of the driver 70.

The driver 40 travels till the housing surrounding the die 28 is struck. Simultaneously the coupling pin 60 has reached the recess provided in the coverplate and swivels with a simultaneous decoupling of the stamping dies 50, 51 from the driver 40 in the recess in the coverplate. The stamping dies 50, 51 now moving rapidly forward under the action of the drive rod 35 or control rod 39 strike the dies 28, so that the preformed closure strips are beaten round the assembled packaging material by the momentum of the forward feed of the stamping dies 50, 51. Here the free ends of the U-shaped closure strips are laid round the packaging material under the guidance of the die 28 and are beaten into the die 28 (FIGURE 11).

With the stamping dies 50, 51 moving rapidly forwards there simultaneously moves rapidly forwards the separating knife 47 held in the connecting web 42 of the driver 40 by means of the guide rod 49 struck by the control rod 39 and connected with the separating knife 47, and separates during the closure process the packaging material between the two clamping closures.

The return of the driver 40 and the stamping dies 50, 51 is effected during the further movement of the drive disc 31, by which the drive rod 35 is moved back with the link slide 34 of the control rod 39. During the return movement of the drive rod 35 the stamping dies 50, 51 simultaneously slide back. The coupling pin 60 here swivels out of the recess in the coverplate into the locking position and couples the stamping dies 50, 51 with the driver 40. If the driver 40 is led past to the bending pins 80, 81 lying in the recesses 82, 83 in the lateral coverplates 26, 27, the spring-loaded bending pins rapidly return into their starting position (FIGURE 4).

Simultaneously with the return movement of the driver 40 the control slide 72 is also moved back. During the return of the control slide 72 the connecting rod 77 is actuated and thus sets in motion the feed roller for the forward feed of the closure material 17. The length of the path of travel of the control rod 72 during its reciprocating movement is here given such dimensions that the feed rollers feed the closure material 17 to the closer head 13 for the length required for the production of the closure components. If the drive rod 35 has reached the starting position represented in FIGURE 3, the closure process can begin anew.

The printing of the strip material is effected by moving the slide 101 with the printing blocks 110, 111 from the position A represented in FIGURE 12 in the direction of the arrow X_1 , X_2 into the position C after starting the drive motor and actuating a release lever, which may advantageously be coupled with the release lever 15 of the closer head 13. During the downward travel of the slide 101 the printing cylinders 120, 121 are drawn out of the path of travel of the printing block 101, 111 which is effected by means of the control disc 117. In the retracted position of the printing cylinders 120, 121, no printing of the strip material 125 can take place. During the downward travel of the slide 101 the idle motion 144 of the gearwheel 143 comes simultaneously into effect: the conveyor rollers 137, 138 for the forward feed of the strip material are not set in rotation.

Shortly before the reaching the bottom dead centre

of the slide 101 its arms 102, 103 strike the control arms 158, 159 in such a way that the inking mechanisms 150, 151 are swivelled against the printing blocks 110, 111 and are brought to rest on these. In this way at each downward stroke of the slide 101 ink is applied on the printing blocks. During the upward movement of the slide 101 the inking mechanisms 150, 151 under spring pressure are swivelled out of the moistening position into the starting position, i.e. in the direction of the arrow X_3 , X_4 (FIGURE 12).

During the downward movement of the slide 101 into the position B the printing cylinders 120, 121 are moved by the control disc 117 into the printing position. At the same time the strip material is intermittently moved forward by means of the conveyor rollers 137, 138 driven through the gearing 142, 143, 146, 147, 148, 149.

By the travel of the printing blocks 110, 111 past the printing cylinders 121, 120 and by the simultaneous drawing off of the strip material between the printing blocks 110, 111 and the printing cylinders 120, 121, a more uniform and sharper pressure is obtained. The strip material guided round the printing cylinder 120 is printed on one side by means of the printing block 110, while by means of the printing block 111 and the printing cylinder 121 the other side of the strip is printed. Thanks to the deflecting rollers 134, 135 over which the strip material 125 is guided between the two printing cylinders 120, 121, in the vicinity of the printing cylinder 121 the still unprinted strip side is available for the counter-printing. The distance between the printing cylinders 120, 121 is given such a dimension that the imprint on the strip material is already dry before the guiding round the printing cylinder 121. From the printing position (position B) the slide 101 is in each case guided back into the starting position in A. The downward travel of the slide 101 then begins anew.

The step-up or step-down ratio of the gearing for the drive of the conveyor rollers 137, 138 is so selected that the strip material 125 is conveyed intermittently. The forward feed of the strip material is always effected when the printing blocks 110, 111 are passed to the printing cylinders 120, 121 moved into the printing position. The guide path of the strip material 125 between the printing cylinders 120, 121 is here given such a dimension that the counter-printing is applied in the same strip section which already carries the first printing on white.

The already printed strip material is fed by means of the conveyor rollers 137, 138 to the closer head 13 or 139 respectively. The individual printed strip sections are separated from one another by means of the separating knife 160, which is likewise controlled by the closer head 13 or 139 respectively. The control of the slide 101 and the control of the conveyor rollers 137, 138 for the strip material 125 are preferably initiated from the drive of the closer device, that is to say in adaptation to the closer process, so that in each case a printed strip section is inserted shortly before the laying round of a prepared closure clamp in the closer head round the assembled bottle neck between the packaging material and the closure clamp.

By the construction in accordance with the invention of the closure and separating device with a crank drive for the stamping dies 50, 51 and for the driver 40 intermittently coupled with these, a secure drive of a simple nature is obtained, which ensures a large sequence of closure operations in a given unit of time. The use of plate springs and an air cushion in the drive sleeve 32 (for the drive rod 35) articulately connected with the drive disc 31 makes possible a more secure closure operation even with different thicknesses of packaging material. The drive control of the forward feed rollers for the closure material by means of the driver 40 brings the advantage that the closure material is fed in the accurate quantity required for the production of the closure components, to the closer head. The control device for the forward feed rollers is arranged in the closer head, by which a satis-

factory functioning of the conveyor device for the closure material is ensured.

The device for printing strip material in accordance with the invention makes possible the bilateral printing of a strip and an intermittent feed of the printed strip into the closer head of the closure device with adaptation to the particular closure process, so that even at a high operational speed of the closer device a clean printing of the strip material and a secure insertion of the printed strip section into the closer head is ensured. As the printing blocks of the slide during its downward travel actuate inking mechanisms, the printing blocks are renewedly moistened after each printing process, so that even when using strip material of different materials a uniformly good imprint is obtained. The strip to be printed may consist of synthetic plastic material, of paper, of paper inlaid with threads, or of cotton. The inking composition of the inking mechanism is then selected to suit the strip material used. As printing blocks rubber printing blocks may be used, which are provided on their reverse side with a bilaterally self-adhesive foil, so that a trouble-free and rapid exchange of the printing blocks is made possible. As the printing blocks and the strip material to be printed are moved parallel to one another into the printing position, a clean imprint on the strip material is obtained.

What I claim is:

1. An apparatus for closing and separating a filled package from a length of tubular packaging material, including a closer head, a feed arrangement for feeding two metal strips to the closer head, means for severing from each metal strip a portion thereof, a member movable in the closer head and connected with the feed arrangement, a pair of stamping dies movable relative to the member and adapted to be intermittently coupled therewith, said dies being adapted to cooperate with stationary dies to bend the metal strip portions about the packaging material, pins projecting into the path of the stamping dies, each pin being adapted to hold the metal strip and to be withdrawn from the path of its respective stamping die on engagement with said die, and a separating knife operable to sever the packaging material between the two clamps so formed, the drive for the stamping dies including a drive disc with a spring-loaded drive rod eccentrically articulated thereto, whose free end is held in a link slide releasably connected with the stamping dies.

2. An apparatus as claimed in claim 1, characterized in that the free end of the drive rod nearest the drive disc is slidably guided in a guide sleeve articulated to the drive disc and the drive rod is acted on by means of plate springs.

3. An apparatus as claimed in claim 1, characterized in that means including intermittently driven feed rollers are provided to feed the strip closure material, and further including lateral coverplates between which the member slides, and an entrainment plate which is in engagement with a control slide, with an entrainment pin guided in a recess provided in one of the lateral coverplates and moves parallel to the path of travel of the member, the entrainment pin being connected by a con-

necting rod with the drive of feed rollers for the strip material.

4. An apparatus as claimed in claim 3, characterized in that the control slide is provided with a hollow, having two engagement edges for the engagement of the entrainment plate, and the outer wall of the recess for the control slide has a recess for the entrainment pin, whose length corresponds to the length of the path of travel of the entrainment pin.

5. An apparatus as claimed in claim 3, characterized in that each of the pins is loaded by springs and is guided in a bore provided in the lateral coverplates and projects with its free end into the path of travel of the member, and is fork-shaped, forming a vertical slot for the insertion of the strip closure material, and the fork arm nearest the drive disc has a control surface bevelled off.

6. An apparatus as claimed in claim 5, characterized in that printing means are provided for the intermittent feed of the strip material.

7. An apparatus as claimed in claim 6, wherein the printing means includes a U-shaped slide mounted for reciprocating motion, printing cylinders for cooperating with the arms of the slide, and strip conveyor means for advancing the strip material through the printing means.

8. An apparatus as claimed in claim 7, wherein the strip conveyor includes a pair of cooperating rollers.

9. An apparatus as claimed in claim 8, wherein means are provided for guiding the strip material between the arms of the slide and the printing cylinders.

10. An apparatus as claimed in claim 9, in which drive means are provided for the strip conveyor correlated with the drive of the slide, said drive means for the strip conveyor including a guide rack mounted on the slide, a first gear wheel engaging the guide rack, a second gear wheel with a free wheel engaging said first gear wheel, and for driving the rollers of the strip conveyor.

11. An apparatus as claimed in claim 10, characterized in that each inking mechanism consists of a pad carrying the inking composition, which is fixed to a spring-loaded eccentrically supported cam, which has for the application of the ink pad on the printing block a control arm arranged in the path of movement of the slide and engageable by same.

12. An apparatus as claimed in claim 11, characterized in that a separating knife controlled by the closer head is provided in the path of movement of the printed strip material for separating the printed strip sections.

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