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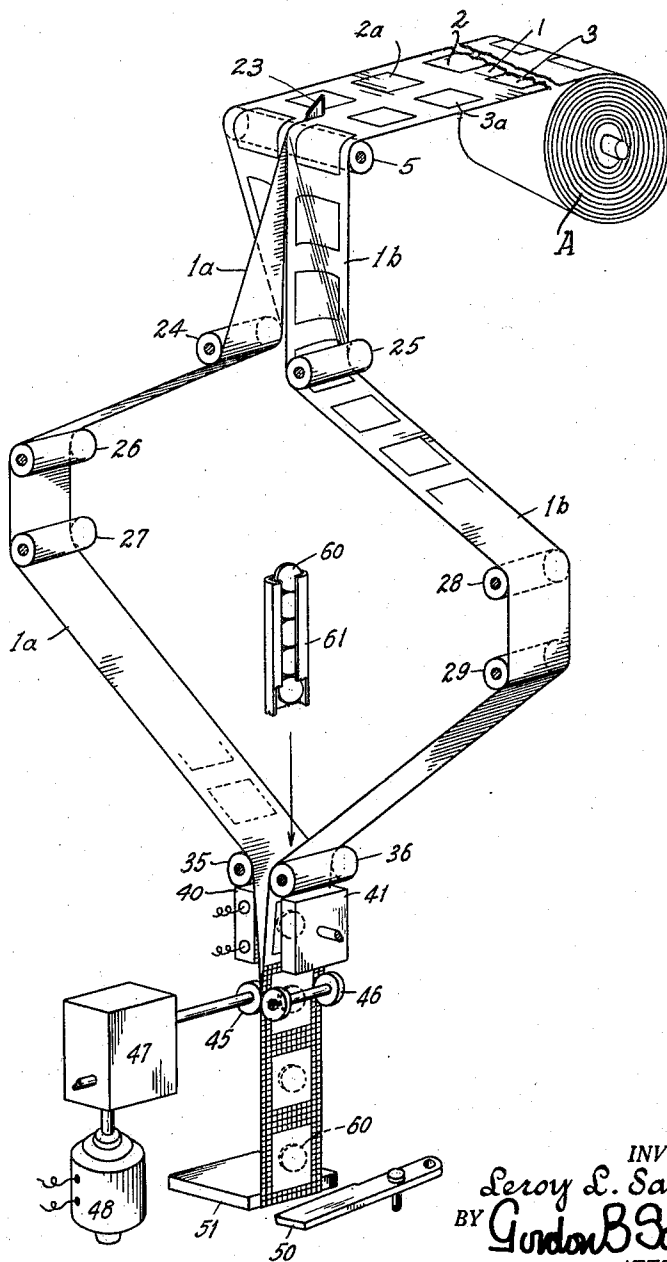
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ALIGNMENT CONTROLLED PACKAGING MACHINE

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2 Sheets-Sheet 1

Fig. 1



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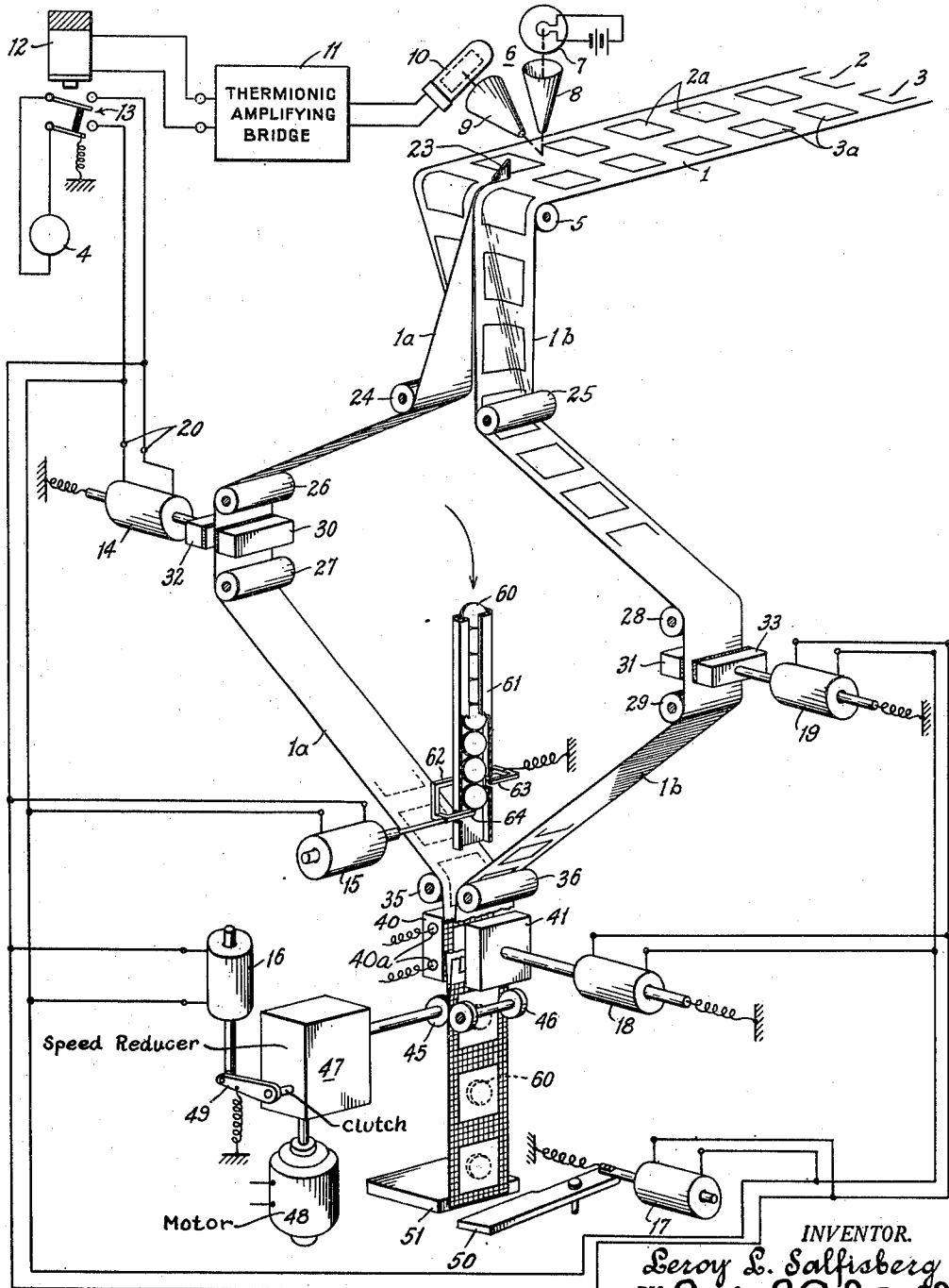
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FIG. 2



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ALIGNMENT CONTROLLED PACKAGING MACHINE

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9 Claims. (Cl. 93—3)

This invention pertains in general to packaging machinery and methods, and specifically relates to an arrangement for alignment control in the packaging of commodities.

5 The principal object of the invention consists in providing a system for producing plural webs in a packaging operation, so that a package can be formed of the adjacent webs with indicia thereon properly positioned.

10 A further object of the invention resides in the provision of means for producing a plurality of sub-webs from a primary web and utilizing such sub-webs in a controlled packaging operation.

15 Another object comprises providing a packaging system for feeding commodities in accordance with the position of packaging material fed to wrap the commodities.

20 These and other objects will be apparent from the following, reference being had to the accompanying drawings in which like reference characters designate corresponding parts, and in which:

Fig. 1 is a schematic representation of one embodiment of the invention; and

25 Fig. 2 is a representation of a further elaboration of the system depicted in Fig. 1.

In accordance with the invention, a primary web of packaging material is provided with desired forms of indicia and the primary web is divided into sub-webs which are fed upon opposite sides of the commodity feeding system. The feeding of the sub-webs and of the commodity may be controlled by a photo-electric system in accordance with the position of the indicia on the primary web so that packaging units can be formed from the sub-webs with the indicia properly aligned thereon.

30 Referring to the drawings in detail a primary web 1 of packaging material is fed from a supply source, such as a roll A. Web 1 may consist of various types of packaging material, such as heat sealable Cellophane and the like, foils, paper, etc., and is preferably provided with plural rows 2 and 3 of indicia. The indicia is in the form of printed labels 2a and 3a although other forms of indicia may be included. Again, in accordance with the invention, special indicia marks may be provided for effecting the controlling operations in accordance with the invention.

35 Fig. 1 illustrates the fundamental principle of the invention, which is the division of a primary web into sub-webs so that indicia on the sub-webs are properly positioned in a packaging operation. Both sub-webs originate from a common source which is the primary web, and, therefore, the positioning of these sub-webs with respect to each other in the packaging operation must be in a predetermined relationship controlled by the position of the primary web. Fig. 40 2 represents an embodiment of the invention in-

cluding an arrangement for automatically arresting movement of the web-material in accordance with the position of indicia on the material. The automatic arrangement of Fig. 2 includes the fundamental arrangement of Fig. 1, and, for that reason, the invention will be described in connection with Fig. 2, although it must be understood the arrangement of Fig. 1, alone, has wide use in the packaging art.

45 The web 1 is fed over idler roller 5. In so feeding, and as shown in Fig. 2, the web 1 passes under a photo-electric optical system 6 including a light source 7, a lens tube 8, a lens tube 9, and a photo-electric cell 10. The light source 7 directs a pencil of light to the surface of the web 1, the light being reflected to the photo-sensitive cathode of the tube 10. The tube 10 is connected with an electron tube amplifying bridge 11, including suitable sources of potential, adapted to energize a slow-to-release electromagnet 12, when the bridge 11 is unbalanced by a change of intensity in the reflected light falling upon the photo-sensitive cathode of the tube 10.

25 The electromagnet 12 controls a switch 13. The switch 13 provides an energizing circuit from an electrical source 4 to solenoids 14, 15, 16, 17, 18 and 19. All of these solenoids are connected in parallel to the terminals 20, the specific circuit connections being omitted to avoid confusion in the drawing.

30 A knife element 23 longitudinally severs the web 1 as it is fed to the roller 5. The severing takes place along a longitudinal line intermediate the rows of indicia 2 and 3 so as to divide the primary web into sub-webs 1a and 1b having corresponding rows of indicia. The webs 1a and 1b are fed through a 90° turn and pass under idler rollers 24 and 25 respectively. The webs 1a and 1b then are fed in opposite directions so that the web 1a passes over idler rollers 26 and 27, and the web 1b passes over idler rollers 28 and 29.

35 Stationary pad blocks 30 and 31 are provided intermediate the roller pairs 26—27 and 28—29 as shown. These blocks cooperate with movable pad blocks 32 and 33 attached to the plungers of solenoids 14 and 19 respectively.

40 After passing the rollers 27 and 29, the secondary webs 1a and 1b again converge and pass over idler rollers 35 and 36. A stationary crimping die 40 is provided behind the web 1a and a movable mechanically complementary crimping die 41 is mounted upon the plunger of solenoid 18. This plunger is normally maintained by a spring in a position such that the block 41 is out of engagement with the block 40. When the solenoid 18 is energized, the block 41 is moved toward engagement with the block 40, thereby crimping together the webs 1a and 1b in seal- 45 50 55 60

ing flanges to form package units of the type shown. The block 40 includes electrical heating elements 40a, as may also block 41, so as to heat-seal together the webs 1a and 1b when
 5 formed of heat sealable packaging material.

The sealed webs 1a and 1b, forming a composite structure are engaged by complementary edge pressing rollers 45 and 46. The roller 45 is driven through a reduction gear clutch box 47
 10 connected with a driving motor 48. A clutch lever 49 is connected to the plunger of solenoid 16 and with an associated spring. When the solenoid 16 is energized, the clutch in the box 47 is disconnected so that the rollers 45 and 46 are
 15 not driven by the motor 48.

A shearing element 50 is pivotally mounted and operated by energization of solenoid 17 to cooperate with shearing element 51 and sever the sealed webs 1a and 1b into individual package
 20 units along predetermined lines intermediate the contained commodities.

Various commodities may be packaged in accordance with the invention, but in the present instance articles such as pharmaceutical pellets
 25 60 are fed down a chute 61 in file formation. A bracket 62 having arms 63 and 64, slidably operates through openings in the chute 61 to release one pellet at a time. When the arm 64 is retracted to release the endmost pellet, the arm
 30 63 prevents the pellets above from being released. Such a release operation is effected when the solenoid 15 is energized. When the solenoid 15 is deenergized, an associated spring returns the bracket 62 to a normal position as shown whereby
 35 arm 63 allows the endmost pellet to descend into engagement with the arm 64. The released pellet falls between the opposed webs 1a and 1b intermediate the blocks 40 and 41, in a central position, so that the energization of the solenoid 18
 40 causes the encircling sealing flange to enclose the pellet in a formed package structure.

It will be seen that when the boundary of one of the indicia areas on web 1 crosses the pencil of light directed from the lamp 7, the energizing circuit will be closed at switch 13, whereupon
 45 the solenoids 14-19 are energized in properly adjusted time relation to interrupt movement of the rollers 45, 46, arrest movement of the webs 1a and 1b by movement of the pad blocks 32 and
 50 33, while a pellet is deposited between the webs 1a and 1b by the energization of the solenoid 15. The solenoid 18 is adjusted by suitable retarding device to be operable slightly behind the operation of the other solenoids, so that the blocks
 55 40 and 41 are brought into mutual engagement after the pellet has been properly deposited. Simultaneously, the severing element 50 cuts off the bottom-most package.

Although a preferred form of the invention has been disclosed, various changes and equivalent structures will readily occur to those skilled in the art. For example, instead of solenoids 14-19, various mechanical or pneumatic arrangements can be devised to effect the same operations. Therefore, no limitation is intended
 65 from the foregoing except as pointed out in the appended claims.

What is claimed as new and original to be secured by Letters Patent of the United States is:

70 1. In a packaging machine, a commodity feeding line, means for releasing a commodity therefrom, means for feeding a primary web of

packaging material, means for dividing said web to form sub-webs, means for feeding said sub-webs on opposite sides of said commodity feeding line, and means for joining said sub-webs around a released commodity to form a package therefrom.

2. A packaging system comprising, means for feeding web packaging material with indicia thereon, a control system sensitive to the passing of said indicia for producing an electrical energy
 10 change, commodity feeding means including release means for releasing the commodity to a wrapping position, means for feeding layers of material on opposite sides of the released commodity, sealing means for sealing together said
 15 layers around the released commodity, means for operating said release means in accordance with said electrical energy change, and means for actuating said sealing means in accordance with said energy change to produce a commodity package
 20 age having indicia aligned thereon in a predetermined manner.

3. The method of producing a commodity package with front and back indicia aligned which comprises, feeding a primary web of packaging
 25 material with rows of indicia, forming said primary web into sub-webs respectively bearing said rows of indicia, and joining said sub-webs together around a commodity to form a package with the indicia of said sub-webs aligned.

4. The method of producing a package with plural walls thereof having indicia thereof in predetermined relationship which method comprises, controllably feeding a primary web bearing the plural indicia to be controllably disposed
 35 in the package, and forming said primary web into sub-webs respectively bearing said indicia, and forming a package with said sub-webs with the indicia thereof spaced in predetermined relationship with respect to each other.

5. A packaging machine comprising means for supplying web packaging material, a control system for producing electric energy changes in accordance with the feeding position of said material, means for feeding layers of said material
 45 on opposite sides of a commodity, sealing means operable to seal together said layers around said commodity, and means controlled by said control system for starting and stopping said feeding means in accordance with said energy
 50 changes.

6. The packaging machine set forth in claim 5 with the addition of means controlled by said control system for feeding a commodity into wrapping position in accordance with said energy
 55 changes.

7. The packaging machine set forth in claim 5 with the addition of means controlled by said control system for operating said sealing means in accordance with said energy changes.

8. The packaging machine set forth in claim 5 with the addition of means controlled by said control system for feeding a commodity into wrapping position in accordance with said energy changes, and means controlled by said control
 65 system for operating said sealing means in accordance with said energy changes.

9. The packaging machine set forth in claim 5 wherein said control system comprises a photoelectric mechanism sensitive to light changes
 70 caused by movement of said packaging material.

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