March 22, 1966 G. A. INGLESON ETAL 3,241,290

BAG TOP ALIGNING DEVICE

Filed May 2, 1963 4 Sheets-Sheet 1

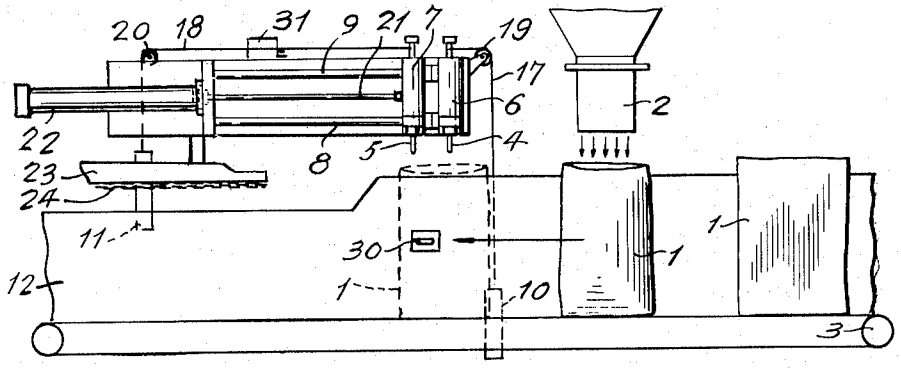


Fig. 1

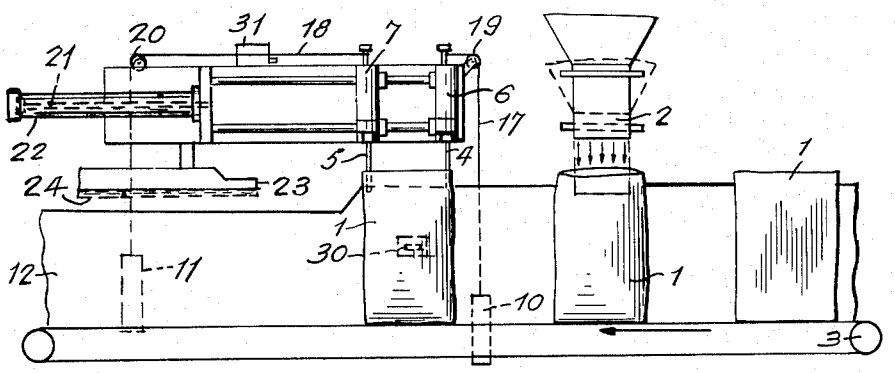


Fig. 2

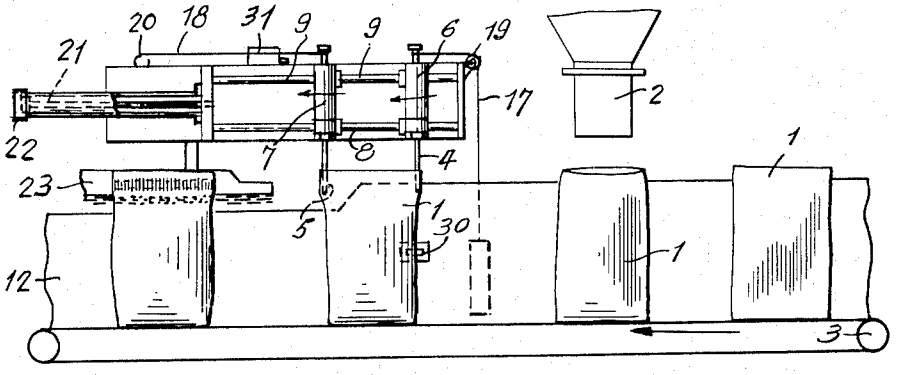


Fig. 3

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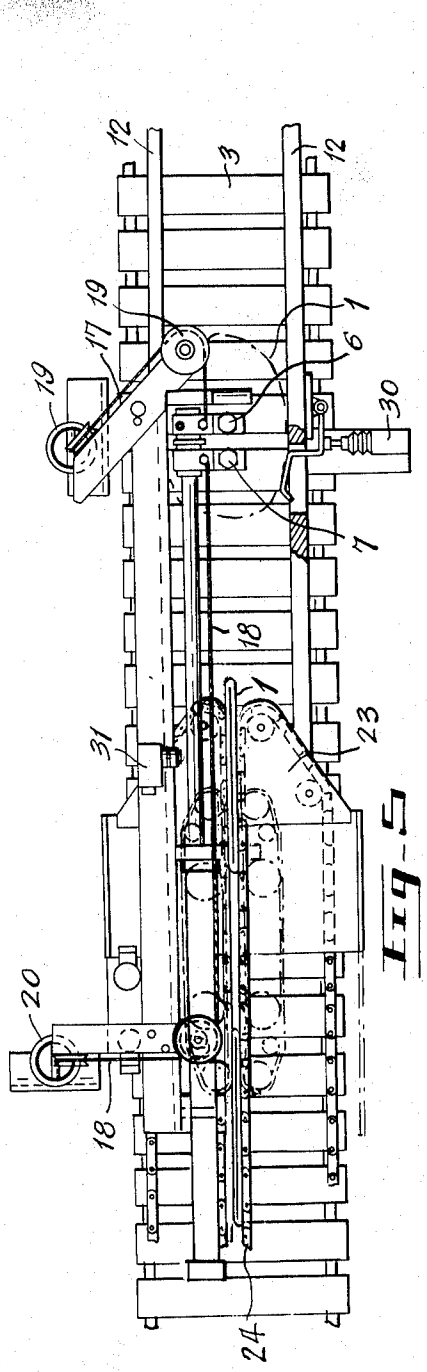


Fig-5

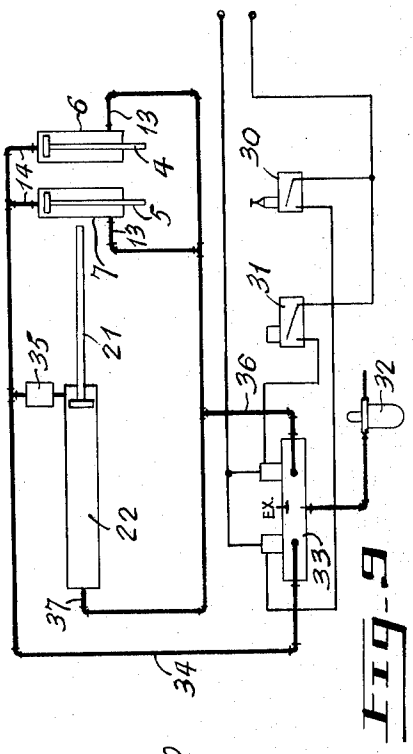


Fig-3

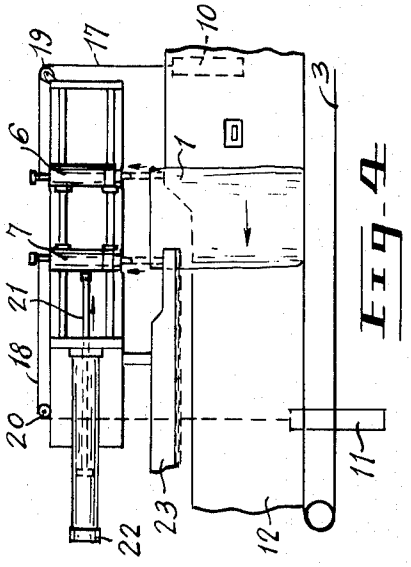


Fig-4

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BAG TOP ALIGNING DEVICE

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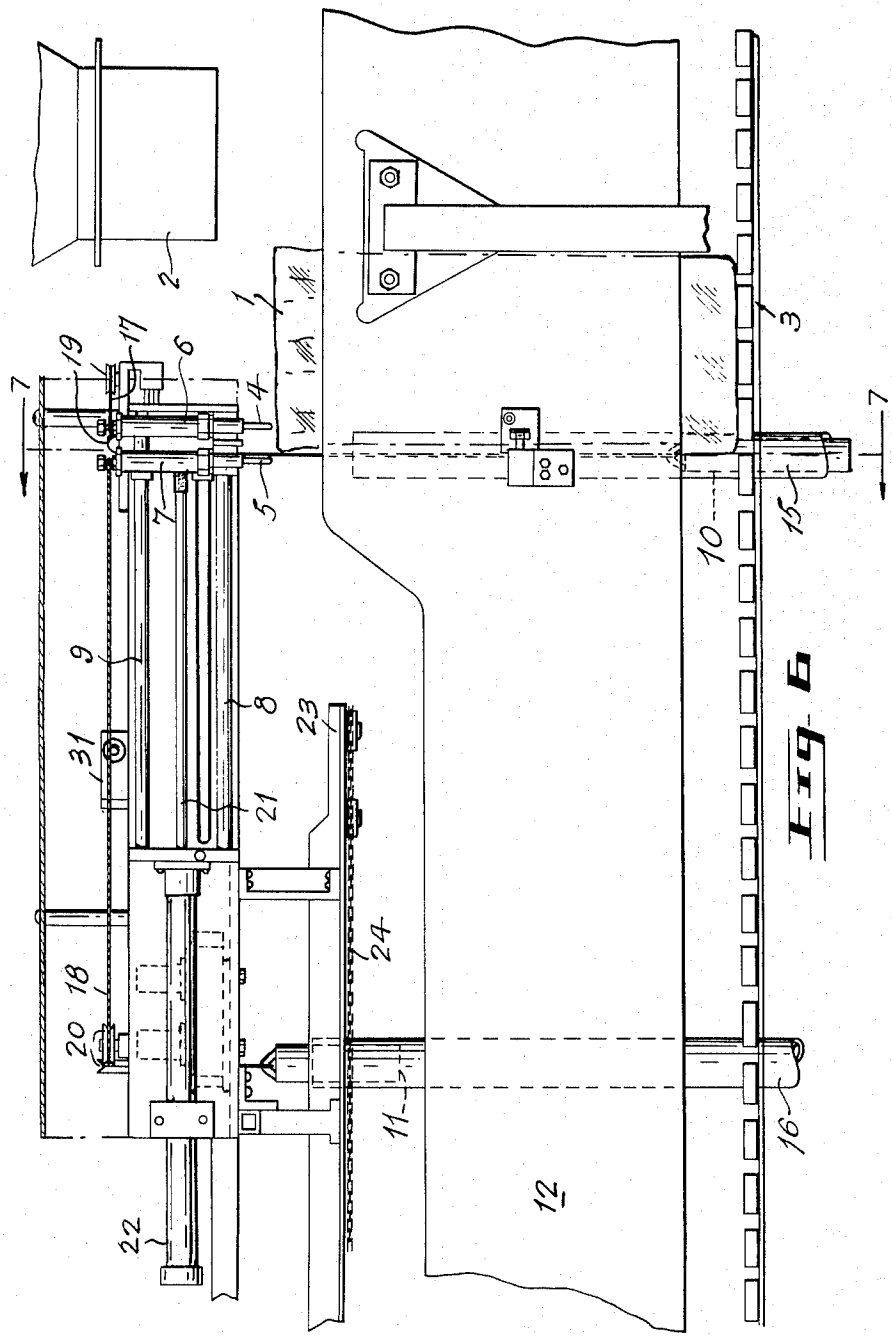


Fig. 6

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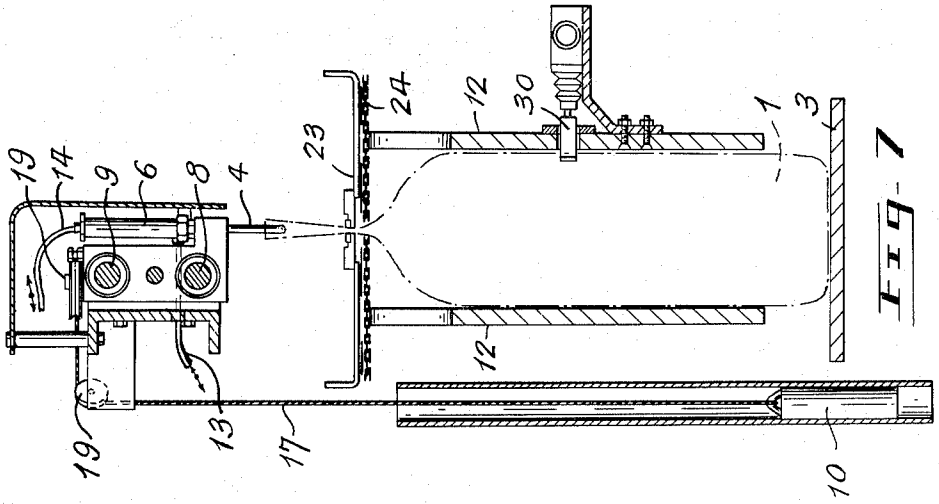


Fig. 7

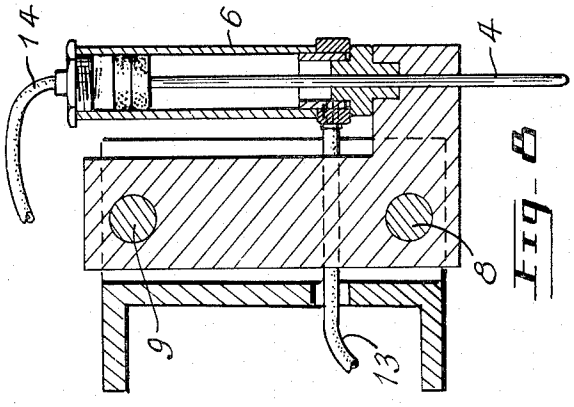


Fig. 8

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United States Patent Office 3,241,290
Patented Mar. 22, 1966

3,241,290

BAG TOP ALIGNING DEVICE

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Filed May 2, 1963, Ser. No. 277,531
Claims priority, application Canada, May 14, 1962, 849,135
3 Claims. (Cl. 53—371)

This invention relates to a device or apparatus for aligning the top edges of a partially filled open mouthed bag prior to its closure by well known means.

In the art of filling bags with granular or powdery materials, it is customary to ensure that the bags, after they have been filled, have their top edges aligned in order that they subsequently be adequately closed or sealed.

This aligning operation, if performed manually, is expensive from the standpoint of labour charges. In addition the aligning operation is limited by the speed of the operator thereby tending to create a production bottleneck. Furthermore, a certain proportion of manually aligned bag tops will become misaligned when fed into the bag closing machine causing wastage and lost time.

It is the primary object of this invention to provide an aligning device for bag tops whereby the aligning operation is performed automatically in a simple and economic manner. Additional objects of the invention will appear hereinafter.

The bag top aligning device of this invention can best be described by reference to the accompanying drawings wherein the same reference characters designate the same parts in the several views and wherein:

FIGS. 1, 2, 3 and 4 are schematic side elevation views of one embodiment of the device at different stages of its operations;

FIG. 5 is a top plan view showing one practical embodiment of the essential features of the device;

FIG. 6 is a side elevation view of the embodiment shown in FIG. 5;

FIG. 7 is a horizontal sectional view taken along line 7—7 of FIG. 6;

FIG. 8 is a detailed sectional view of the aligning pin and its retaining means as shown in FIG. 7; and

FIG. 9 is a diagrammatic view illustrating the electrical and pneumatic control circuits and switch means therein for the various parts of the device.

Referring now in detail to the drawings and more particularly to FIGS. 5, 6, 7 and 8 thereof, **1** designates a plastic bag which is carried on a conveyor **3**, provided with guide partitions **12**, from a filling device represented by hopper **2** to a closing device **23** provided with intake chain **24**. After the filling of the bag with granular or powdery materials is completed, the open mouthed bag is moved along on conveyor **3** beneath aligning pins **4** and **5** slidably extendable and retractable by air cylinders **6** and **7** provided with air inlets **13** and **14**. Cylinders **6** and **7** are slidably mounted on rods **8** and **9** running towards closing device **23** in a direction parallel to that of conveyor **3**. Attached to each of cylinders **6** and **7** through cables **17** and **18** moving over rolls **19** and **20** are differential counterweights **10** and **11** sliding inside tubes **15** and **16**, the heavier counterweight **11** being attached to cylinder **7**. Located between rods **8** and **9** is piston **21** slidably extendable and retractable by air cylinder **22** and adapted to free cylinders **6** and **7** to move along rods **8** and **9** when aligning pins **4** and **5** are extended into the open mouth of the bag and to move

cylinders **6** and **7** to their original positions when aligning pins **4** and **5** are retracted within said cylinders.

In operation, empty plastic bags **1** (FIGS. 1, 2, 3 and 4) are filled with granular or powdery materials from hopper **2**. The filled open mouthed bag is then moved along on conveyor **3** and contacts electrical switch **30**. The switch **30** (FIG. 9) actuates a double solenoid air control **33** which directs air under pressure from an air supply (not shown) into air line **34** and then simultaneously through trap valve **35** and air inlets **14** to cylinder **22** and cylinders **6** and **7** respectively causing piston **21** to be retracted by cylinder **22** and aligning pins **4** and **5** to extend into the open mounth of the bag underneath. Piston **21** being retracted by cylinder **22**, cylinder **7** is then free to move along rods **8** and **9** under the influence of heavier counterweight **11** attached thereto through cable **18** over rolls **20**, until extended aligning pin **5** contacts the inside forward edge of the bag being carried on conveyor **3**. Cylinder **6** is held back by lighter counterweight **10** attached thereto through cable **17** over rolls **19** until the inside rear edge of the bag moves forward and contacts extended pin **4**. Counterweights **10** and **11** acting in opposite directions, cause aligning pins **4** and **5** to tension the top edges of the bag into alignment, the difference between the counterweights being such that the top edges of the bag are maintained aligned during movement of the bag on conveyor **3** towards closing device **23** (FIGS. 3 and 4) until the top edges of the bag are engaged by chain **24** of closing device **23**. Retaining means **6** then contacts electrical switch **31** and air under pressure (FIG. 9) is directed through solenoid air control **33** from an air supply (not shown) into air line **36** and then simultaneously through inlet **37** and inlets **13** into cylinders **22** and cylinders **6** and **7** respectively thereby causing piston rod **21** to extend from cylinder **22** and to push back cylinders **6** and **7** to their original positions while aligning pins **4** and **5** are retracted within cylinders **6** and **7**. The following filled open mouthed bag on conveyor **3** then contacts switch **30** and the operative cycle is repeated.

The above description has been made with reference to one practical embodiment of the invention. It is to be understood that changes to any parts of equipment described, such as for instance, the use of mechanical means instead of pneumatic cylinders **22** and **6** and **7**, are comprised within the scope of the invention. Also comprised within the invention is the use of springs instead of the counterweights **10** and **11**.

What we claim is:

1. In a bag filling and closing apparatus comprising filling and closing means the improvement which comprises a bag top aligning device located between said filling and closing means and comprising in combination a means for conveying a filled bag; a pair of pin retaining means positioned above said bag conveying means, slidably mounted on rods said rods extending towards said closing means in a direction parallel to that of the movement of the bag from said filling means to said closing means; individual pins slidably extendable and retractable within said pin retaining means and adapted to enter the open mouth of the bag; differential counterweights individually attached to each of said pin retaining means, the heavier counterweight being adapted to effect movement of the pin retaining means to which it is attached in the direction of the movement of the bag and the difference between the counterweights being such that the top edges of the bag are extended and aligned when equibilibrium between the counterweight forces is attained; and holding means adapted to retain said pin retaining means in their original position near said filling

means when the aligning pins are retracted therein and to release said pin retaining means for movement along said rods under the influence of the differential counterweights and that of the movement of the bag towards said closing means when said aligning pins are extended into the open mouth of said bag.

2. The improvement claimed in claim 1, wherein the pin retaining means are pneumatic cylinders.

3. The improvement claimed in claim 1 wherein the holding means is a piston rod extendable and retractable within a pneumatic cylinder.

References Cited by the Examiner

UNITED STATES PATENTS

2,114,622	4/1938	Bergstein	53—373
2,840,964	7/1958	Kissling	53—373 X

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