May 29, 1962 H. S. AYRES ET AL 3,036,415

OVERSLIPPING DEVICE

Filed April 10, 1959

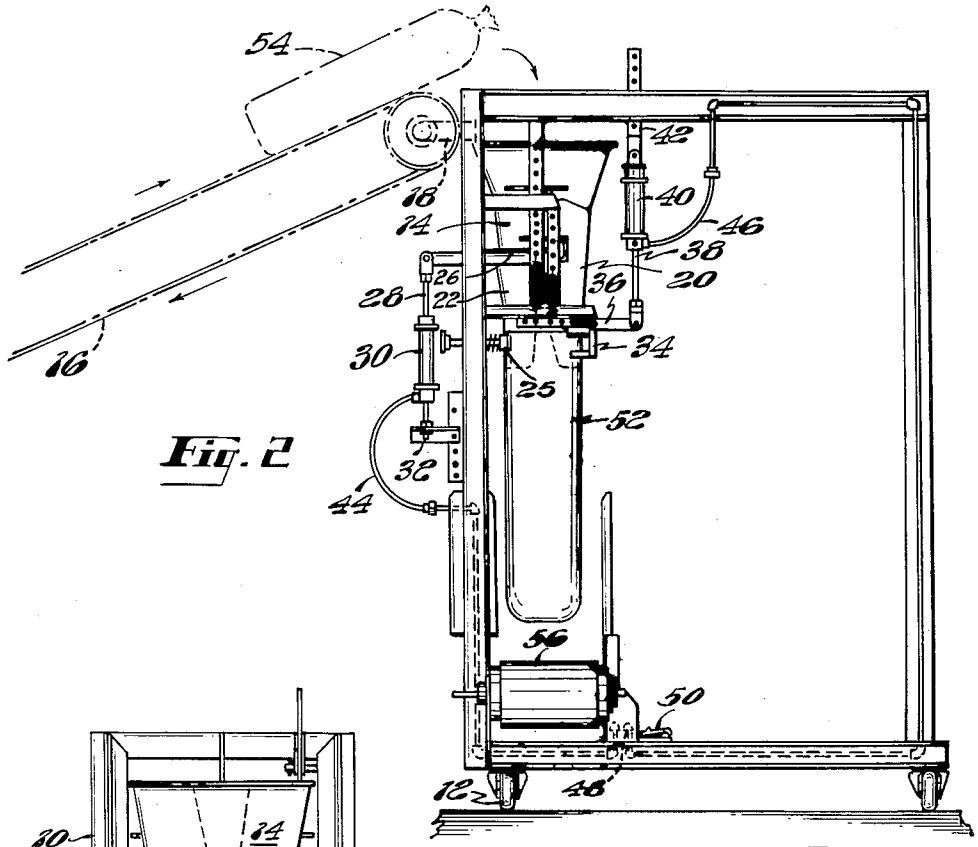


Fig. 2

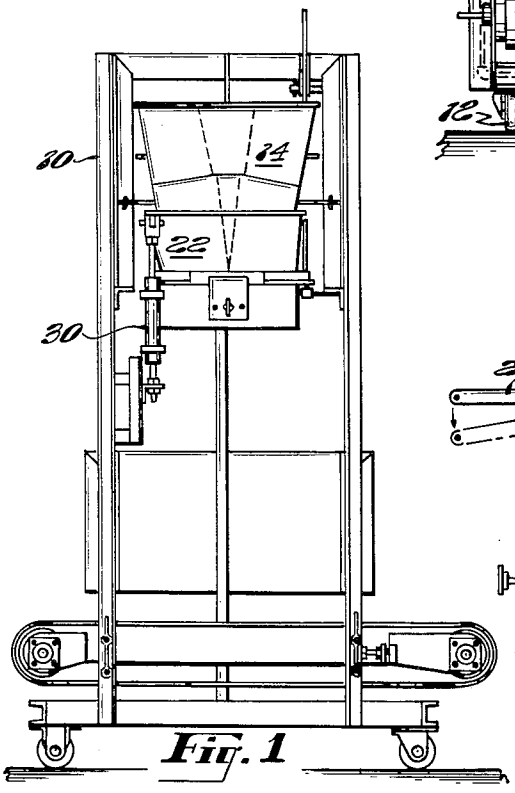


Fig. 1

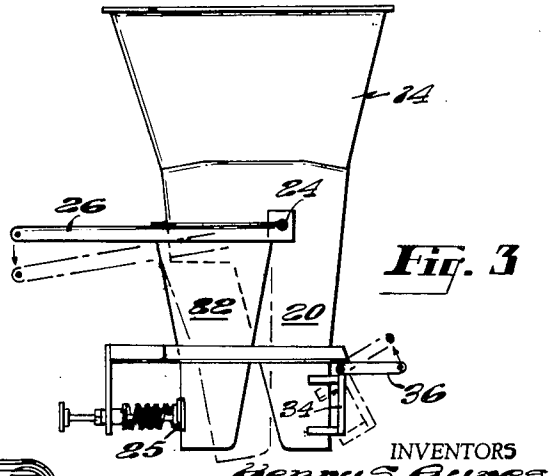


Fig. 3

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United States Patent Office 3,036,415 Patented May 29, 1962

3,036,415

OVERSLIPPING DEVICE

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Filed Apr. 10, 1959, Ser. No. 805,601
2 Claims. (Cl. 53—170)

This invention relates to an apparatus for inserting articles in bags and is particularly adapted to the slipping of a second bag over a bag full of powdery material without risk of tearing, a procedure which will be referred to hereinafter as overslipping. The bag into which the article or full bag is to be inserted will be referred to hereinafter as an overslip.

It is customary in packaging pigments to slip a second bag over a first to insure watertightness or moisture-proofing and to prevent the escape of any appreciable amounts of fine dust-like particles. However, the conventional overslipping machine depends upon the manual horizontal pushing or shoving of the bag to be capped into the overslip, an action which is not only extremely hazardous, difficult, and slow, but one which all too often tears or breaks the bag, thus creating a considerable waste of time and money by loss of product and necessity of repackaging. Existing packaging machinery, particularly in the realm of carbon black production, also permits large amounts of dust to escape and cover the packager during overslipping, making the operation very uncomfortable and wasteful. Other inherent defects of existing machinery are its high cost, lack of ready mobility, and lack of utility for more than one size of bag.

It is accordingly an object of this invention to provide a semi-automatic bag overslipping machine.

It is another object of this invention to provide an apparatus for inserting articles in bags which eliminates the possibility of injury to either the article or the bag.

It is still another object of this invention to provide an overslipping apparatus which can be readily moved from place to place and adapted to fit articles of various sizes.

It is a further object of this invention to provide an overslipping device which functions without the friction encountered in horizontal ram-type mechanisms.

It is a still further object of this invention to provide an apparatus for moisture-proofing and dust-proofing pigment-filled containers.

These and other objects and advantages of this invention are accomplished in general by providing an overslipping device consisting of an expandable chute vertically disposed within a movably mounted skeleton framework, said chute having semi-circular jaw-like members extending downward therefrom, means for attaching an overslip around said jaw-like members, and means for conducting the article requiring overslipping thereinto and the overslipped article therefrom. There is thus provided apparatus in which an article is inserted in the overslip by falling vertically under its own weight into the overslip.

The article to be inserted into the overslip is carried by a conveyor to the feed chute of the apparatus. The vertical expandable chute to which the overslip is temporarily attached is located in a position such that the article or filled bag will fall therein. The filled bag then falls into said expandable chute, which guides it into the waiting overslip. The force of the falling bag jerks the overslip off of the chute to which it has been tightly held, and causes the filled overslip to fall upon a conveyor. After each operation another overslip is secured to the chute, and the cycle is continued.

Our invention will be better understood and appreciated

from the following description of one embodiment thereof particularly adapted to the overslipping of filled bags illustrated in the accompanying diagrammatic drawing, wherein:

FIGURE 1 is an end view of the overslipping device of this invention.

FIGURE 2 is a side view of the overslipping device shown in FIGURE 1.

FIGURE 3 is an enlarged end view of the adjustable chute portion of the apparatus, showing in more detail the mechanism for attaching an overslip to the jaws thereof.

The apparatus of this invention comprises a supporting frame structure **10** mounted on wheels **12**, skids, or similar means of locomotion with a chute **14** of somewhat larger internal size than that of the bags to be supplied thereto affixed to the upper part of said frame structure **10**. A belt conveyor **16** directed to the top of said chute **14** is secured to the upper portion of the vertical part of said framework by bracket **18**. At the discharge end of chute **14** and integral therewith is a fixed semicircular jaw member **20** aligned more or less opposite a second semicircular jaw member **22** pivotally mounted at fulcrum point **24** and resting in its open position against a spring-loaded stop **25**. Secured to jaw **22** is an actuating lever arm **26** pivotally attached to a piston **28** of air or hydraulic cylinder **30** which is affixed at the lower or opposite end thereof to the vertical portion of framework **10** by bracket **32**. Bearing against the peripheral surface of fixed jaw **20** is overslip clamp **34** of semicircular shape adapted to pivot outwardly from said surface. Said clamp **34** is provided with a lever arm **36** hinged to a piston **38** of air or hydraulic cylinder **40** which is affixed to the upper horizontal portion of framework **10** by bracket **42**. Hydraulic fluid or air hoses **44** and **46** connected into cylinders **30** and **40**, respectively, are also connected through a valve **48** with a source of air or hydraulic fluid under pressure. A foot pedal **50** actuates valve **48**.

The operation of the apparatus is as follows. An overslip **52** is manually placed about jaws **20** and **22** and clamped in place by spreading jaw **22** to hold one side of the lip of said overslip against spring-loaded stop **25** and by applying clamp **34** to the outer surface of the other side of the lip of said overslip. Both actions are accomplished simultaneously by actuating cylinders **30** and **40** in response to the opening of valve **48**. Immediately thereafter a pigment-filled bag **54**, which has been moving up conveyor belt **16** while overslip **52** was being placed in a receiving position, moves off of said conveyor belt **16** and falls through chute **14** and open jaws **20** and **22** into said overslip **52**, which is thereupon pulled from its position of attachment by the force of the bag falling downward upon conveyor **56** upon which the overslipped bag is carried away to be tied and shipped. By the closing of valve **48**, jaw **22** and clamp **34** are caused simultaneously to assume their original positions in response to deactuation of cylinders **30** and **40**. Another overslip is then attached to jaws **20** and **22**, and the cycle continued.

Instead of the movable jaw and clamp for holding the overslip indicated in the preferred embodiment of this invention, two opposing claw-like fasteners may be provided or more than two jaws may be employed. A circular fastener which may be opened at one or more points is one of several other possibilities.

It can be readily seen that the semi-automatic device of this invention may be made more fully automatic by substituting mechanical means for operating the chute jaw and clamp control valve at the appropriate times.

Further features of the apparatus of this invention include its mobility and the adjustability of the size of its

chute and jaws to fit containers of many different sizes.

Having thus described our invention, we claim:

1. Apparatus for inserting relatively large objects into closely-fitting bags which comprises a mobile platform, a vertical chute mounted thereon, the lower end of said chute being divided into at least two jaw-like portions including a fixed portion and a movable portion pivotally mounted opposite the inside of said fixed portion so as to swing to and from said fixed portion, a spring-loaded stop located outside of said movable portion and in the path of said movable portion as it swings away from said fixed portion, a clamp member pivotally mounted outside of said fixed portion and adapted to bear against the outer surface of said fixed portion and control means operative to synchronously actuate said movable jaw portion and said clamp member so as to cause an open bag previously slipped over said jaw-like portions to be held in place around same until pulled off by the weight of the large object falling into said bag under the influence of gravity.

2. An overslipping apparatus which comprises a mobile platform, a vertical chute mounted thereupon, two overslip-retaining jaw members at the mouth of said chute, one fixed and the other hinged, a spring-loaded stop for the hinged jaw member, a hinged clamp adapted to lie against the outer surface of the fixed jaw member, pressure-operated actuation means for the hinged jaw member and the clamp, means for guiding an article to be overslipped into said chute, and means for moving an overslipped article away therefrom.

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