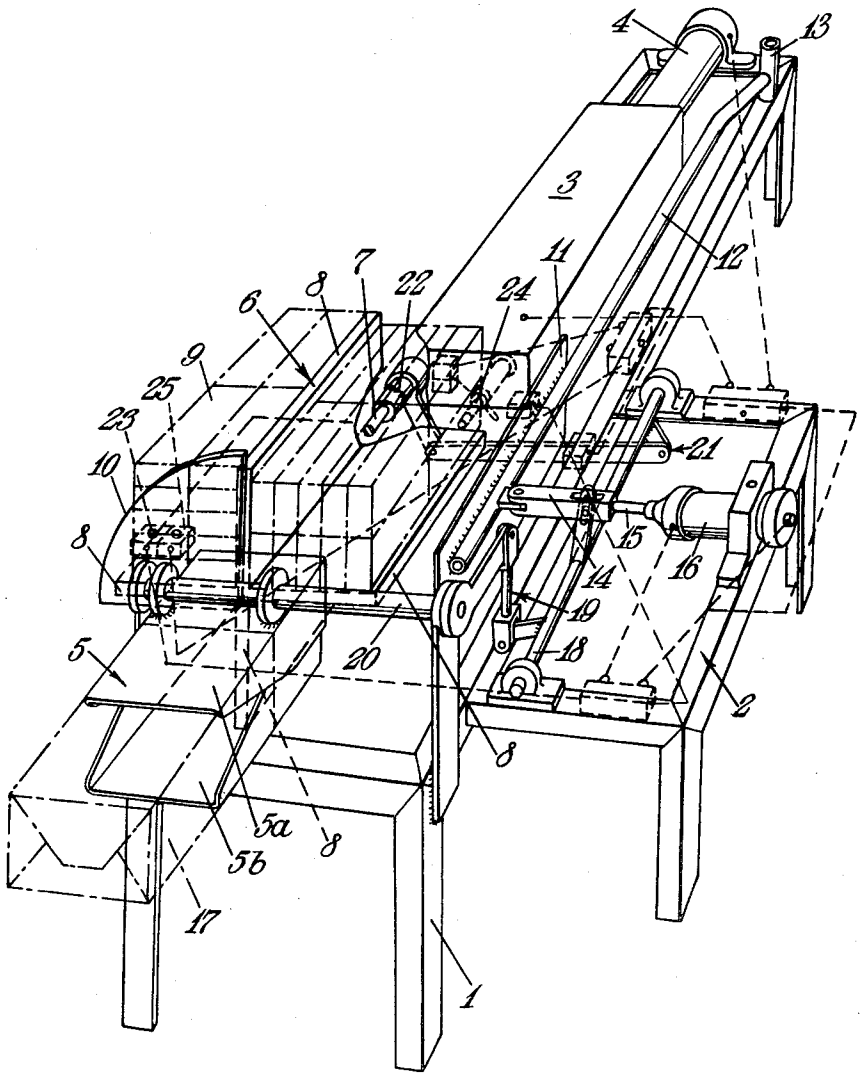
July 24, 1962 G. A. STEVENS 3,045,407

BALING OR PACKING MACHINES

Filed May 16, 1960



Inventor
G. A. Stevens
By Glascock Downing & Seebold
Attys.

United States Patent Office 3,045,407 Patented July 24, 1962

3,045,407

BALING OR PACKING MACHINES

George Alfred Stevens, Northfleet, England, assignor to Paper Sacks Limited, Northfleet, England

Filed May 16, 1960, Ser. No. 29,438
Claims priority, application Great Britain May 22, 1959
4 Claims. (Cl. 53—258)

This invention relates to baling or packing machines of the type in which individual groups of assembled articles such as bags, cartons or other containers, hereinafter called articles, are pushed by a loading ram into a bag or carton, hereinafter called a bag, temporarily supported in open-mouthed condition on a "duck bill" or like bag holder.

The aim of the present invention is to provide a simple form of mechanical aid whereby while a bag is being charged with a group of articles, another group may be assembled in the desired formation ready for the next bag charging operation.

The present invention consists in a baling or packing machine of the type indicated which includes a rotary assembly wheel having partitions located at right angles to one another adapted to constitute in one position (assembly position) a group assembly platform and backing for a group of articles in waiting and turntable into a second position (loading position) wherein the backing and platform partitions are turned through 90° to present the group of articles in readiness for charging into a bag.

The invention further consists in a baling or packing machine as set forth in the preceding paragraph, wherein means are provided for ensuring final alignment of the group when located in the loading position.

The invention still further consists in a baling or packing machine as set forth in either of the two preceding paragraphs wherein guide means are provided at the assembly position for end alignment of the articles in the group.

In carrying the invention into effect according to one convenient mode by way of example as shown in the accompanying drawing, a baling or packing machine includes a main frame **1** and a side frame **2** both constructed of angle iron.

A loading ram **3**, operated by a main ram air cylinder **4**, is mounted on the main frame **1** for longitudinal movement to and from a "duck bill" bag holder **5** located at one end of the main frame **1**.

Also provided upon the main frame **1** on the opposite side to the side frame **2** is a rotary assembly wheel, shown generally at **6**, mounted upon a shaft **7** for rotation about a horizontal longitudinal axis, the wheel **6** having four partitions **8** located at 90° intervals around the shaft **7**.

The partition **8** which, at any particular time, is horizontal and located on the side remote from the side frame **2** constitutes a group assembly platform upon which a group **9** of articles in the form of containers awaiting baling or packing can be assembled by hand, the adjacent vertical partition **8** and fixed shield **10** serving as backing and end guides for the assembly of the group **9** at the assembly station thus defined.

As the wheel is rotated, as will be explained more fully hereinafter, each partition **8** serves in turn as an assembly platform and a backing guide for the group being assembled.

A plate **11** constituting a side lay is secured to an arm **12** which extends generally longtudinally of the main frame **1** to a pivot **13** on the main frame at its end (rear) remote from the bag holder **5**.

The arm **12** is pivotally connected to a link **14** which is secured to the piston rod **15** of a side air cylinder **16** mounted on the side frame **2** so that the side lay **11** may

be caused to perform limited movements generally transversely of the main frame **1**.

The vertical partition **8** which constitutes the backing guide for the assembly of the group **9** of containers also constitutes the fixed side of a loading station or hopper defined also by the movable side lay **11** on the other side and by the horizontal portion **8** nearest the side frame **2**, forming the bottom of the hopper.

The loading ram **3** is positioned such that, when actuated, a group of containers located in the hopper are pushed through the bag holder **5** into a bag **17** located thereon.

The link **14** connected to the piston rod **15** of the side air cylinder **16** is also connected to a side shaft **18** from which suitable linkage systems are taken to the bag holder **5** and to the assembly wheel **6**.

A bag holder linkage shown generally as **19** is arranged such that on actuation of the side air cylinder **16** to move the side lay **11** outwardly the upper portion **5***a* of the bag holder **5** is pivoted on a shaft **20** towards the lower portion **5***b* of the bag holder **5** to permit application of a bag thereto.

An assembly wheel linkage shown generally as **21** is arranged such that upon actuation of the side air cylinder **16** to move the side lay **11** outwardly the rotary assembly wheel is rotated through 90° thereby transporting a group **9** of containers at the assembly position to the loading station hopper in readiness for charging into a bag.

A ratchet device **22** is provided such that on the return inward movement of the side lay **11** no rotation of the wheel **6** takes place.

The sequence of operations of this apparatus is as follows:

(*i*) An appropriate number of containers in the appropriate formation are loaded onto the group assembly platform and manually aligned with the aid of the backing and end guides.

(*ii*) A feed button **25** controlling a valve in the air system is operated which first causes the withdrawal of a bolt **24**, preventing inadvertent rotation of the wheel **6**, and then actuation of the side cylinder **16** to move the side lay **11** outwardly.

(*iii*) as the side lay is moved, the wheel **6** is rotated through 90° transporting the group **9** of containers to the hopper, the bag holder is collapsed, and the bolt **24** is returned to its original position.

(*iv*) A bag is placed upon the collapsed bag holder **5** and the charging button **23** controlling a further valve in the air system is operated to cause: inward movement of the side lay **11** and consequent final alignment of the group of containers in the hopper; erection of the bag holder **5** and support of the bag **17** located thereon in open-mouthed condition; and actuation of the main air cylinder **4** to move the loading ram **3** to push the group of containers located in the hopper through the bag holder **5** into the bag **17** located thereon.

(*v*) On completion of its stroke the ram **3** trips another valve and returns to its original position.

(*vi*) Whilst one bag is being charged with a group of containers, a further group of containers is being assembled against the next pair of partitions **8** of the rotary assembly wheel **6** such that the above cycle of operations may then be repeated.

If desired, mechanical means may be provided at the assembly position for assembling each group of articles in the desired formation.

Various modifications may be made to the baling or packing machine as hereinbefore described.

For example, it will be apparent that mechanical, electrical or other suitable means may be substituted for the pneumatic control arrangement previously described.

What I claim is:

1. Apparatus for packing a plurality of articles into a bag, which includes a frame, a rotary assembly wheel on the frame having at least four partitions extending radially at right angles to one another from central shaft means, an end shield fixed on the frame adjacent one end of said wheel perpendicularly to said shaft means, a pair of said partitions, when extending from the shaft means respectively vertically and horizontally, cooperating with said shield to define an assembly station for the arrangement of a plurality of articles in an orderly group, means to rotate the assembly wheel through 90° about said shaft means to a loading position, a side lay for urging said group of articles into contact with the said horizontal partition now extending upwards from said shaft means, a bag holder for supporting a bag in open-mouthed condition adjacent the loading position, a loading ram acting in the axial direction of the said shaft means for displacing the group of articles at the loading position into the bag supported on the bag holder, and means for locking the assembly wheel against rotation relative to the frame during operation of said side lay and loading ram.

2. Apparatus for packing a plurality of articles into a bag, which includes a frame, a rotary assembly wheel on the frame having at least four partitions extending radially at right angles to one another from central shaft means, a pair of said partitions, when extending from the shaft means respectively vertically and horizontally defining an assembly station at which a plurality of articles may be arranged in an orderly group, means to rotate the assembly wheel through 90° about said shaft means to a loading position, a side lay for urging said group of articles into contact with the said horizontal partition now extending upwards from said shaft means, a bag holder for supporting a bag in open-mouthed condition adjacent the loading position, and a loading ram acting in the axial direction of the said shaft means for displacing the group of articles at the loading position into the bag supported on the bag holder.

3. Apparatus for packing a plurality of articles into a bag, which includes a frame, a rotary assembly wheel on the frame having at least four partitions extending radially at right angles to one another from central shaft means, an end shield fixed on the frame adjacent one end of said wheel perpendicularly to said shaft means, a pair of said partitions, when extending from the shaft means respectively vertically and horizontally, cooperating with said shield to define an assembly station at which a plurality of articles may be arranged in an orderly group, means to rotate the assembly wheel through 90° about said shaft means to a loading position, a bag holder for supporting a bag in open-mouthed condition adjacent the loading position, and a loading ram acting in the axial direction of the said shaft means for displacing the group of articles at the loading position into the bag supported on the bag holder.

4. Apparatus for packing a plurality of articles into a bag, which includes a frame, a rotary assembly wheel on the frame having at least four partitions extending radially at right angles to one another from central shaft means, a pair of said partitions, when extending from the shaft means respectively vertically and horizontally defining an assembly station at which a plurality of articles may be arranged in an orderly group, means to rotate the assembly wheel through 90° about said shaft means to a loading position, a bag holder for supporting a bag in open-mouthed condition adjacent the loading position, a loading ram acting in the axial direction of the said shaft means for displacing the group of articles at the loading position into the bag supported on the bag holder, and means for locking the assembly wheel against rotation relative to the frame during operation of said loading ram.

References Cited in the file of this patent

UNITED STATES PATENTS

1,462,468	Schaller	July 17, 1923
1,803,123	Mudd	Apr. 28, 1931
1,931,440	Jahne	Oct. 17, 1933
2,092,786	Tayor	Sept. 14, 1937
2,633,280	Davies	Mar. 31, 1953
2,887,837	Toby	May 26, 1959