The invention relates to a device for the production of tubular bags filled with bulk goods and similar items, particularly from continuously running foil tubes using sealing tools, particularly tool pairs that seal and/or weld the foil tubes in bag-length intervals, as well as pairs of closing bars provided for the tools which press the foil tubes flat with a spring or something similar before sealing. A device in which a pair of strippers which can contact the foil tube is provided as a supplement to the closing bars through which the residue of the bulk goods can be removed from the area of the seal by a wiping motion in the run direction before the application of the sealing tools.
ABSTRACT

The invention relates to a device for the production of tubular bags filled with bulk goods and similar items, particularly from continuously running foil tubes using sealing tools, particularly tool pairs that seal and/or weld the foil tubes in bag-length intervals, as well as pairs of closing bars provided for the tools which press the foil tubes flat with a spring or something similar before sealing. A device in which a pair of strippers which can contact the foil tube is provided as a supplement to the closing bars through which the residue of the bulk goods can be removed from the area of the seal by a wiping motion in the run direction before the application of the sealing tools.
Device for the Production of Tubular Bags filled with Bulk Goods

Background to the Invention

In packing pourable, but somewhat bulky, products in foil tubular bags, bridging, and thereby clogging, occurs frequently as the bags are being filled. Care has to be taken as the bags are being sealed, therefore, that pieces of the bulk goods do not remain hanging in the region of the seam of the sealer jaws and that, for crumbly products, pieces do not remain hanging in the area of the sealed seam due to uncontrolled fall-in. Potato chips are typical for this type of product with a low specific weight.

Even with very precise metering, due to the varying character of the product, stragglers can float or remain hanging in the area of the seal at the moment that the sealing tools close. If these pieces of bulk goods are sealed in the region of the seam, then this type of bag remains open, or is at least unattractive and therefore unsalable.

Field of the Invention

The invention relates to a device for the production of tubular bags filled with bulk goods and similar items, particularly from continuously running foil tubes using sealing tools, particularly tool pairs that seal and/or weld the foil tubes in bag-length intervals, as well as pairs of closing bars provided for the tools which press the foil tubes flat with a spring or something similar before sealing.

Furthermore, the invention relates to a device in which a pair of strippers which can contact the foil tube is provided as a supplement to the closing bars through which the residue of the bulk goods can be removed from the area of the seal by a wiping motion in the run direction before
the application of the sealing tools.

Description of the Prior Art

In a known embodiment, the welding or sealing tools are mounted in pairs on rotating axles. The axles positioned on both sides of the tubular foil turn the tools synchronously in such a way and at a rotational speed such that the tools are opposite and meet each other after the pass of the length of a bag, travel straight a short distance with the foil, and then effect the subsequent sealing with the second tool attached to the opposite side of the axle, i.e. the tool offset 180°.

One of the closing bars that presses the tubular foil together and one of the strippers is mounted with each of the sealing tools on the turning axles, ensuring that the foil is pressed together and stripped before the sealing tools meet each other.

The foil is thus prepared for the sealing process and at the same time, fall-in of the bulk goods into the area of the seal is prevented. With the stripper, the residue of the bulk goods on the inside of the tubular foil is removed from the region of the seam.

European Patent specification 0 666 215 shows and describes a device of the type described, in which the closing bars and the bar-shaped strippers are mounted on a support plate next to the support for the sealing tools at a right angle to the foil passing through in such a way that, depending on other distances to the axis of rotation and offsets with respect to the axis, they come into effect before the sealing tool. The closing bars and the bar-shaped stripper swivel on their supports and are spring-loaded in such a way that they can press the foil together as well as stripping the residue of the bulk goods from the area of the seal with a wiping motion.

To protect the welded tubular bags from the hot sealing tools, in this known embodiment, wing-
like shields, active against the sealed bags, positioned between the just-sealed bag and the sealing tools, are attached to the bars which serve as strippers, and are moved by the driveshafts.

In order that the sealing tools press the tubular foil together and heat it for the time necessary for sealing, the tools are attached so that they are axially movable and are loaded with compression springs. It is thereby possible to make the circular movement of the sealing tools into a straight line during the sealing segment.

During one full rotation of the axles that support the sealing tools, this known device produces two sealing processes. The attachment and bearing of the necessary components makes installation difficult, requires space, and makes the device sluggish in its movements, thereby also reducing the clock rate of the packing device. Restricted by the rotating movement cycles and movement axes which can only be positioned opposite to one another in a limited way, only very limited effective zones of the closing bars and the strippers are achieved.

Statement of the Invention

The task of the invention is to improve a device of the type described in such a way that through the positioning of the closing bars and also, supplementarily, the strippers directly on the sealing tool or the tool mount, respectively, a sufficiently large movement of these elements and a secure operating cycle is guaranteed even at high clock frequency.

According to the invention, this is achieved by clamping the closing bars, which can be laid against the foil, directly to the sealing tools or their supports, respectively, in such a way that they are pressed against the foil by the closing movement of the sealing tools prior to same while tensioning a return spring.
It is particularly advantageous to connect the closing bars with the strippers, which are positioned downstream in the run direction, in such a way that, by means of the tension movement produced against the return spring or something similar, with the movement of the sealing tools, the strippers are pulled along in the run direction while touching the foil before the sealing tools close.

It is advantageous to attach the bearings of the closing bars with spring loading to the supports of the sealing tools. With the closing movement of the sealing jaws, the closing bars are positioned against the foil and press it flat. The support bars are thereby moved against the power of a spring after the application of the closing bars. This movement is transmitted to the bars serving as strippers in an elaboration of the invention. The strippers are moved with the closing movement of the sealing tools in the fill direction, while touching the foil, thereby removing the residue of the bulk goods positioned inside the foil tube from the area of the seal.

An exemplary embodiment will be described and its mode of operation will be explained with reference to the drawings, in which

Figure 1 shows, in schematic representation, the layout in principle of a device according to the invention,

Figure 2 shows a device according to the invention with open sealing jaws, with a filled tubular bag running between them, and

Figure 3 shows a device according to Figure 2, in which the sealing jaws are about to close.

Identical or similar components have the same reference number in all figures.
Figure 1 shows both tool mounts 1 and 2, moved by a drive which is not depicted, in which the sealing jaws 3 and 4 are attached. Clamps 5 are attached in pairs on each of the tool mounts 1, 2, which clamp and guide the support bars 6. The support bars 6 clamp and connect the closing bars 7 with their free ends. In the clamp 5, the support bars 6 are loaded with the return spring 8.

If the tool mounts are moved against each other to seal the tubular bag, the closing bars 7 meet each other, including the tubular foil which is not shown, and push the support bars 6 through the clamp 5 against the return power of the spring 8 to the rear.

The rear ends of the support bars 6, or additional components attached to them, form slanted surfaces 9. The tracer pins 10 put into the tool mount (1, 2) touch the slanted surfaces 9. The tracer pins 10 press on a portion of the linkage 11 with their lower end.

The linkage 11 is connected to the bar 12 acting as a stripper. For reasons of clarity, the linkage 11 in Figure 1 is only depicted once and only schematically. Naturally, each of the tracer pins 10 has a corresponding linkage 11. The linkage 11 is clamped to the tool mounts 1, 2 in the bearings 13 in such a way that the movement of the tracer pin 10 produced by the slanted surface 9 is mechanically translated in such a way that the bars 12 touching the foil are removed downward from the region between the sealing jaws 3, 4 before closing.

Any possible residue of the bulk goods remaining on the internal wall of the foil is wiped off by this movement. The sealing surfaces are thus free from the residue of the bulk goods.

The mechanical translation shown can also be chosen to be larger than three or, if necessary,
can be aided by means of supplementary devices with compressed air.

Figure 2 shows a sealing tool in an open position, in which the tubular bag 14 can be filled with bulk goods 15. The tool mounts 1, 2 with the sealing jaws 3, 4 are positioned on cranks 16 equipped with return elements in such a way that when the cranks are turned the position of the sealing jaws 3, 4 is always directed toward each other and thereby also against the tubular foil 14.

If the closing bars 7 meet each other during a closing movement of the sealing jaws 3, 4, the support bars 6 will thus be moved to the rear against the return power of spring 8. The tracer pins 10 are pressed downwards by the slanted surfaces 9 and thereby, as shown in Figure 3, the stripper bars 12 are pulled away downwards by the linkage 11 before the sealing jaws 3, 4 meet each other. Any residue of the bulk goods 15 that may remain in the area of the seal is thereby wiped off. A spring 17 is drawn in as the return force. This can also be replaced by a drive or a counterweight on the lever arm 11.

The design form shown with the exemplary embodiment has the advantage not only that the tool mounts 1, 2 with the sealing tools 3, 4 are only required to perform a small circular parallel movement, but also that the necessary energy supply and control equipment operate without a winding effect and without rotary joints. By mounting the closing bars 7 and stripper 12 on the tool mounts 1, 2, these components can operate without expensive, heavy, and therefore sluggish components, which makes operation of the packing machine at a high clock frequency considerably easier.

Through having the design form of the closing bars in direct contact to the sealing tool and
detached from a rotating tool mount, the device described according to the invention is also
suitable for packing devices in which intermittent operation with individually supplied packaging
units is performed instead of a continuously running foil tube.
Claims

1. Device for the production of tubular bags filled with bulk goods and similar items, for example from continuous foil tubes using sealing tools, particularly tool pairs that seal and/or weld the foil tubes in bag-length intervals, as well as pairs of closing bars provided for the tools which press the foil tubes flat with a spring or something similar before sealing, characterized in that the closing bars (7) which touch the foil (14) are clamped directly to the sealing tools (3, 4) or their supports (1, 2), respectively, in such a way that they are pressed against the foil (14) by the closing movement of the sealing tools (3, 4) prior to this movement while tensioning a return spring (8).

2) Device according to claim 1, employing strippers (12) that can touch the foil (14) which remove the residue of the bulk goods from the area of the seal with a wiping movement acting in the run direction before the application of the sealing tools, characterized in that the closing bars (7) are connected with the strippers (12), which are positioned subsequently in the run direction, in such a way that the strippers (12), while touching the foil (14), are pulled along in the run direction, before the sealing tools (3, 4) close, by the tension movement of the closing bars (7) produced by the movement of the sealing tools (3, 4) against the return spring (8) or something similar.

3) Device according to claims 1 and 2, characterized in that the closing bars (7) are put into clamps (5) by support bars 7 [sic] which are longitudinally moveable and are loaded against the closing movement by a return spring (8), before the sealing tools (3, 4) are positioned on them or their supports (1, 2), respectively.
4) Device according to claims 1 to 3, characterized in that the strippers (12) are clamped to the sealing tools (3, 4) in the run direction in such a way that in the area of the sealing tools (3, 4) touching the foil (14), they are pulled by the movement of the support bars (6) against the force of the springs (8), preferably in a swinging movement while touching the foil (14), out of the area of the sealing tools (3, 4).

5) Device according to claims 1 to 4, characterized in that the swinging movement of the stripper (12) is mechanically translated by a factor of at least three by appropriate bearings (13) with respect to the movement caused by the movement of the closing bars (7).

6) Device according to claims 1 to 5, characterized in that the movement of the support rods (6) is mechanically transmitted to components of the stripper (12) or its control lever (11), respectively, via a positioner (10) attached to the tool mounts (3, 4).

7) Device according to claims 1 to 6, characterized in that the stripper (12) touching the foil (14) is actuated in the sense of a stripping movement through the movement of the support bar (6) via the slanted surface 9 [sic], the positioner realized as a tracer pin (10), and the linkage (11).