

Dec. 7, 1926.

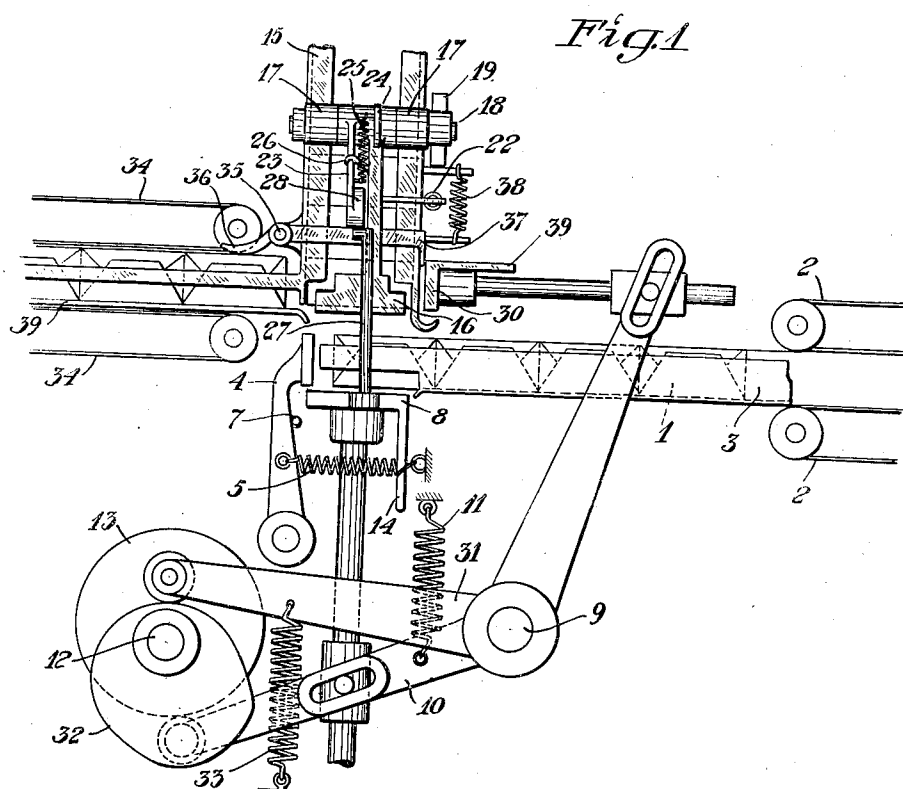
G. C. EKSTRÖM ET AL

1,609,802

FEEDING CONTROL SYSTEM

Filed Nov. 5, 1923

2 Sheets-Sheet 1



Inventors
G. C. Ekström
B. A. E. Johnson
By Markes & Clerk
Attys.

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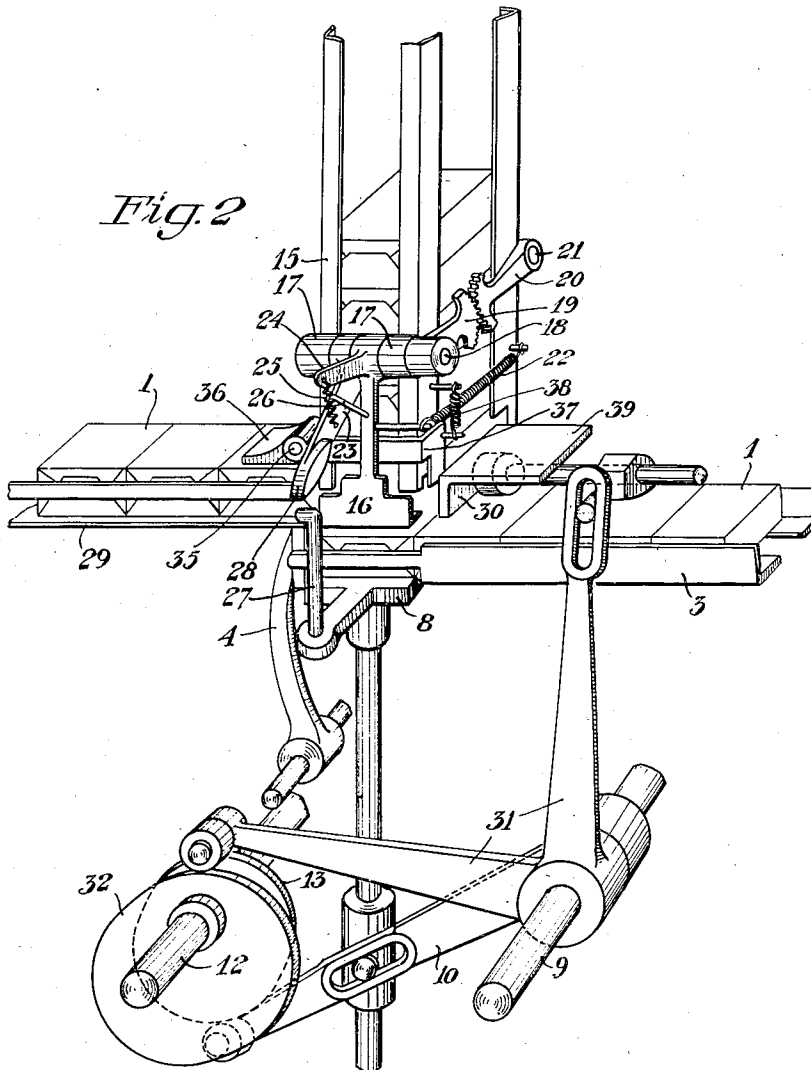
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G. C. Ekström
B. H. E. Johnson
By Marks & Clerk
Attys.

UNITED STATES PATENT OFFICE.

GUNNAR CHRISTIAN EKSTRÖM, OF STOCKHOLM, AND BROR ANDERS EMIL JOHNSON,
OF APPELVIKEN, NEAR STOCKHOLM, SWEDEN, ASSIGNORS TO AKTIEBOLAGET
GERH. AREHNS MEKANISKA VERKSTADS, OF STOCKHOLM, SWEDEN, A CORPORATION OF SWEDEN.

FEEDING-CONTROL SYSTEM.

Application filed November 5, 1923, Serial No. 673,037, and in Sweden November 11, 1922.

In the industrial manufacturing of articles in the shape of blocks or the like the article often is treated in a plurality of machines or at a plurality of stations in the same machine, the article being successively transported to the said machines or stations. If now one of the said stations gets out of order and must be brought to a standstill, it has been necessary hitherto to bring also the other stations to a standstill, so that the whole manufacturing is interrupted also at stations, in which there is no fault. This results in a considerable decreasing of the output and economical loss.

This invention relates to a feeding control system, through which the said drawback is removed. The said system is so arranged, that if the operation of a subsequent machine or station must be interrupted, the articles delivered by the preceding station, are mechanically introduced into a magazine. When the said station has been put in order and is again started, articles are transmitted from station to station in the ordinary manner. If, on the other hand, the preceding station must be brought to a standstill, articles are fed, during the interruption of the operation of the said station, from the said magazine to the subsequent station. In this manner the stations are rendered independent of each other and the manufacturing may continue without any interruption. The means or devices, used for the purpose, evidently, must be adapted to the nature of the articles to be treated and may be constructed in many different manners.

In the accompanying drawings a device is shown as an example for storing boxes or packets containing, for instance, soap. Fig. 1 shows the device in a side view and Fig. 2 is a perspective of same.

Boxes 1 are delivered for instance by a machine or a station, which has put the soap into the same. The said boxes are then transmitted to a station, which, for instance, provide the same with labels. Endless bands or belts 2 running on rollers transmit the boxes from the station first mentioned into a channel 3, at the end of which a swingable feeler 4 is provided, which by a spring 5 is held against an abutment 7 and in the position shown in the drawings extends into the

path of a vertically movable piston 8. The latter is acted upon by a lever arm 10, which is swingable on a shaft 9 and is swung upwards by a spring 11 and downwards by a cam disk 13 provided on a rotating shaft 12. While the feeler 4 is in the shown position, it prevents the piston 8 from being moved upwards by the spring 11. As soon as, however, the foremost box of the row, advanced by the belts 2, forces the feeler 4 toward the left, the piston 8 is moved upwards by the spring 11 and brings with itself the said box, while the remaining boxes of the row are retained by a tongue 14 extending downward from the piston 8.

Above the piston 8 a vertical magazine 15 is located. Two shelf-shaped catching arms 16 (one shown in the drawings) are provided at the bottom end of the said magazine and located at two opposite sides of the same. Arm 16 is fixed to a shaft 18, journaled in bearings 17, and to the said shaft a toothed segment 19 is fixed, meshing with a toothed segment 20 fixed to the shaft 21 of the second catching arm. A spring 22 is connected with the catching arms and tends to swing the same inwards toward the magazine 15. An arm 23 is swingably mounted on the shaft 18 and to the same and an arm 24 connected with the arm 16 a spring 25 is fixed. A hook-shaped arm 26 extends from the arm 16 and engages the top side of the arm 23, forced against the hook by the spring 25. From the piston 8 a pin 27 extends upwards, the top end of the said pin being bent to the side and co-operating with the arm 23, provided for the purpose with a lateral cam-shaped projection 28.

As the piston 8 is moved upwards by the spring 11, after the feeler 4 has been removed in the described manner, the pin 27 strikes the cam 28 and swings the arm 23 upwards. The said arm 23 then brings with itself the catching arm 16 by means of the hook-shaped arm 26, so that the arm 16 and the catching arm located at the opposite side of the magazine 15 are swung outwards from the magazine and the box, elevated by the piston 8, can pass through the space between the catching arms and be placed above the same. The hook-shaped top end of the pin 27 then arrives to a position above the cam 28, so that the arm 23 is released. Spring 22 now

swings the arms 16 inwards, so that they catch the elevated box and hold the same, while the piston 8 is lowered. During the downward motion of the piston 8 the top end of the pin 27 bears against the upper side of the cam 28 and the arm 23 yields, extending the spring 25. As the piston 8 together with the pin 27 arrives to its lower position, the arm 23 returns to the shown position, acted upon by the spring 25, so that the members again occupy the positions shown in the drawings.

A channel 29 extends forward from the magazine. The bottom of the said channel is located at the same level as the shelf-shaped end of the catching arms 16. A piston 30, movable in guides, is acted upon by a bell-crank lever 31, which is swingable on the shaft 9 and bears against a cam-disk 32 fixed on the shaft 12. A spring 33 tends to move the piston 30 forward (toward the left), when permitted by the cam-disk 32. When a box has been placed on the catching arms 16 in the described manner, the piston 30 is advanced and pushes the box into the channel 29, during which operation boxes, which, it may be, are contained in the magazine, are supported by a shelf 39, provided on the piston 30. The boxes are advanced in the channel 29 by endless belts 34 to the next station, in which the boxes are provided with a label.

A two-armed feeler 36, 37 is swingable on a pin 35 fixed to the magazine and actuated by a spring 38, which tends to swing the arm 36 downwards and to force the same against the last box of the row contained in the channel 29. The angular end of the arm 37 constitutes an abutment or a stopping member for the piston 30.

As long as the boxes 1 contained in the channel 29 are removed by the belts 34, and, consequently, the box last introduced into the channel, does not prevent the arm 36 from swinging downwards, the arm 37 is swung by the spring 38 into an upper position, in which it permits the piston 30 to move the next box, elevated by the piston 8, into the channel 29. If, for some reason, the operation at the station, in which the labels are fixed to the boxes, must be interrupted, the box last introduced into the channel 29, will remain under the arm 36 and keeps the arm 37 in its lower position, which thus prevents the piston 30 from operating. The box, placed by the piston 8 on the catching arms 16, is then moved by the subsequent box elevated by the piston 8 upwards into the magazine 15, so that the boxes one after

the other are introduced into the magazine. As the said labelling station is restarted and, consequently, the boxes, contained in the channel 29 are advanced, boxes are again transmitted from the channel 3 to the channel 29 by the pistons 8 and 30 in the manner stated above, while the boxes introduced into the magazine 15 remain in the same.

If, on the other hand, the station, in which the soap is packeted, gets out of order and is brought to a standstill, while the labelling station operates, no boxes are advanced in the channel 3. Consequently, the feeler 4 is not brought out of its arresting position but prevents the piston 8 from moving upwards, so that no boxes are elevated from the channel 3. The piston 30 then engages the lowermost box contained in the magazine 15, which box, after the shelf 39 has been withdrawn on the previous return stroke, rests upon the catching arms 16, and moves the said box into the channel 29. During its next stroke toward the left the piston 20 engages the next box contained in the magazine and so on, so that the boxes one after the other are transmitted from the magazine into the channel 29 and to the labelling station. As the packeting station is again started, boxes are transmitted by the pistons 8 and 30 in the normal manner.

The magazine 15 may be so great, that it is able, during a not too long interruption of the operation at the labelling station, to receive the boxes leaving the packeting station and, while the operation at the packeting station is interrupted, is able to supply the labelling station with boxes.

We claim:

In a machine or plant for manufacturing articles the combination of stations in which the articles are subjected to successive treatments, a conveyor between the stations, magazines located at the said conveyor and between the stations respectively, automatically operating means causing an interruption of the transporting of the articles between the stations at the interruption of the operation of a subsequent station and then introducing into the magazine the articles delivered by the preceding station, and automatically operating means for feeding articles from the magazine and to the subsequent station at the interruption of the operation of the said preceding station.

In testimony whereof, we have signed our names to this specification.

GUNNAR CHRISTIAN EKSTRÖM.
BROR ANDERS EMIL JOHNSON.