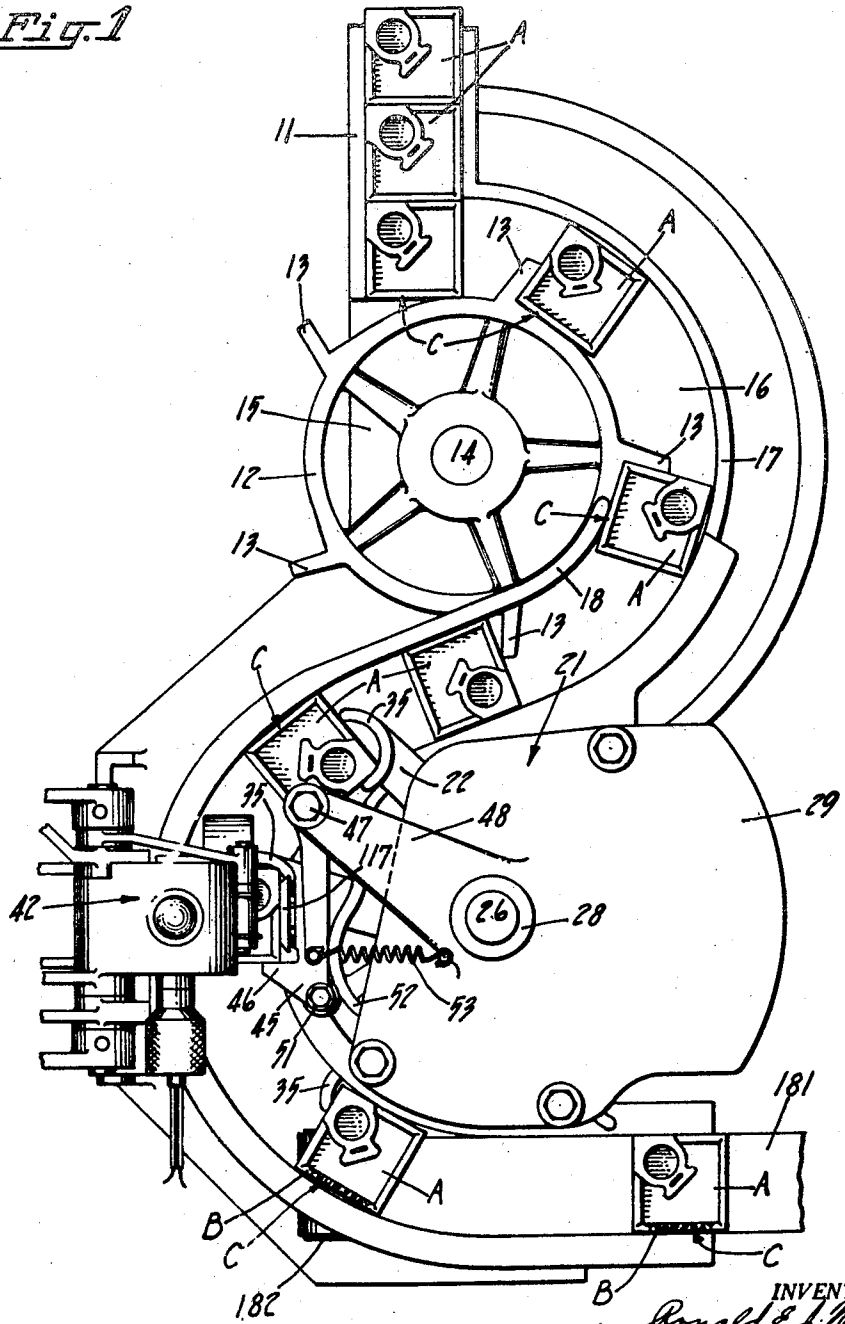
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MEANS FOR FEEDING ARTICLES TO BE MARKED

Original Filed June 29, 1940 3 Sheets-Sheet 1

Fig. 1



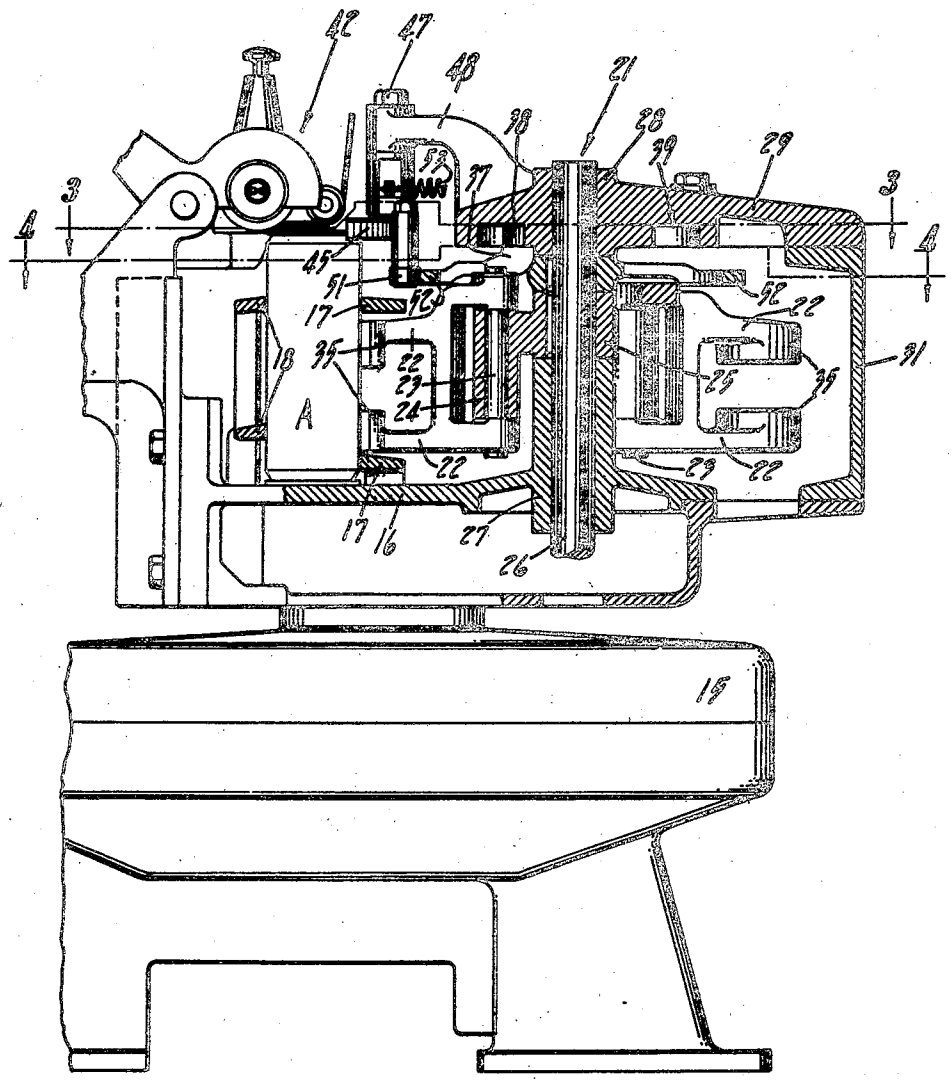
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Fig. 2



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Fig. 3

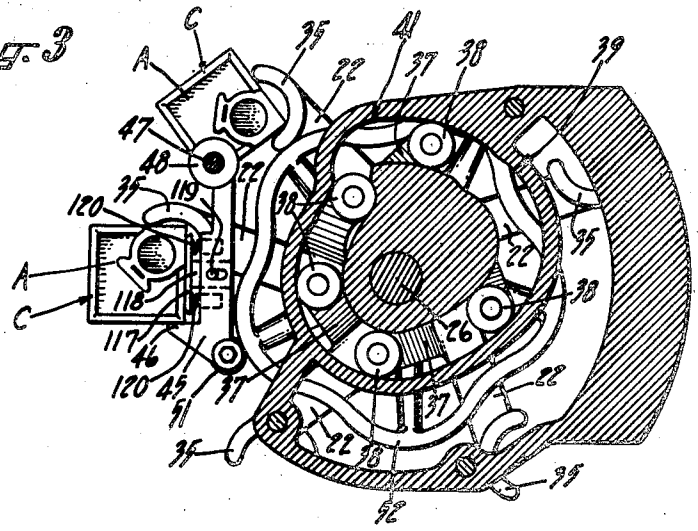
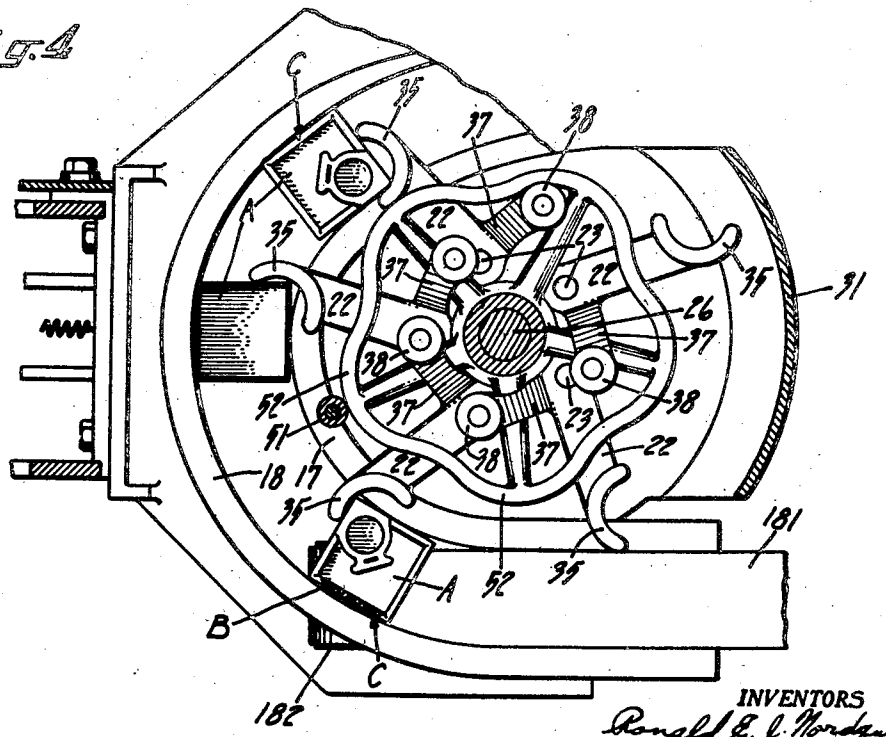


Fig. 4



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Patented Mar. 2, 1948

2,436,820

UNITED STATES PATENT OFFICE

2,436,820

MEANS FOR FEEDING ARTICLES TO BE MARKED

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Original application June 29, 1940, Serial No. 343,296. Divided and this application September 13, 1944, Serial No. 553,936

5 Claims. (Cl. 101—44)

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The present invention relates to a machine for marking articles with an identifying legend, symbol or mark and has particular reference to a mechanism for feeding or conveying articles into marking position at a marking station and for holding the articles in such a position during a marking operation. This is a division of our pending United States application Serial Number 343,296, filed June 29, 1940, now Patent No. 2,369,172, issued February 13, 1945.

An object of the invention is the provision in a machine for marking articles of a feeding mechanism for advancing the articles wherein the articles to be marked travel through the machine in a continuously moving procession, each article as it arrives at a marking station stopping momentarily in its travel to receive an identifying legend, symbol or mark.

Another object is the provision of such a feeding mechanism wherein the speed of travel of the articles into the marking station is accelerated as the articles approach this station for the marking operation so that the article while momentarily stopped for the marking operation will not obstruct or interfere with the travel of subsequent moving articles in the procession.

Numerous other objects and advantages of the invention will be apparent as it is better understood from the following description, which, taken in connection with the accompanying drawings, discloses a preferred embodiment thereof.

Referring to the drawings:

Figure 1 is a top plan view of a marking machine embodying the instant invention, with parts broken away;

Fig. 2 is a part vertical sectional and part elevational view of the machine shown in Fig. 1, with parts broken away; and

Figs. 3 and 4 are horizontal sections taken substantially along the broken lines 3—3 and 4—4 in Fig. 2.

As a preferred embodiment of the invention the drawings illustrate a marking machine adapted to print a permanent, legible identifying mark on fibre milk containers of the character disclosed in United States Patent No. 2,085,979, issued July 6, 1937, to John M. Hothersall. Such containers, indicated by the letter A are preferably coated with paraffin and an identifying mark B, preferably the name of the day on which the milk is filled into the container, is embedded into the top surface of an overhanging ledge or end seam C of the container.

The containers A are preferably fed into the

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machine in an upright position along a horizontal runway 11 (Fig. 1). At the inner end of the runway the containers are individually picked off in timed order and are advanced in spaced relation. This timing and spacing of the containers are preferably effected by a constantly rotating star wheel 12 having a plurality of outwardly extending container engaging and propelling fingers 13 formed at spaced intervals around its outer periphery. The star wheel is secured to a vertical shaft 14 which is carried in suitable bearings formed in a frame 15 which constitutes the main frame of the machine. The shaft may be rotated in any suitable manner in time with the other moving parts of the machine.

A can A picked up by a finger 13 of the star wheel 12 is pushed laterally onto and over a table 16 being propelled along a sinuous path of travel between a pair of spaced and parallel guide rails 17, 18 which are secured to the table. These guide rails are curved first extending around the star wheel and thence outwardly at an angle away from the star wheel and around a positioning device 21. Passage along this sinuous path brings the moving container into position for marking.

The container positioning device 21 includes a plurality of container propelling arms 22 (Figs. 1 and 2) which are mounted on pivot pins 23 carried in vertical bearing lugs 24 formed on a hub 25. The hub is keyed to a vertically disposed shaft 26 which is journaled in a lower bearing 27 formed in the table 16 and in an upper bearing 28 formed in a stationary cam 29 secured to a housing 31 carried on the table 16. The shaft extends down into the machine frame 15 and is continuously rotated in any suitable manner in time with the other moving parts of the machine.

The outer ends of the container propelling arms 22 are formed with curved cup-shaped claws 35 which engage behind a container A on the two sides of an adjacent corner. These claws continue the advancement of the container between the guide rails 17, 18 as the arms 22 are carried around by the hub 25 and the shaft 26.

The inner end of the arms 22 (Figs. 3 and 4) are formed with laterally extending lever arms 37 which carry cam rollers 38. These rollers operate in a cam groove 39 which is formed in the stationary cam 29 hereinbefore mentioned. Hence as the hub 25 and shaft 26 carry the arms 22 in a circular path of travel around the shaft, the cam rollers 38 traverse the stationary cam groove 39 in such manner as to alternately accelerate and retard the swinging movement of

the arms relative to the rotative movement of the hub 25 on which the arms are mounted.

One section of the cam groove is indicated by the numeral 41 and is so shaped with a preformed curvature that a roller 38 traversing this portion of the cam suddenly accelerates the claw 35 of the arm 22 which has just picked up a container A. This sudden acceleration of the arm claw shifts the container into a predetermined position under a marking mechanism generally indicated by the numeral 42, and the arm claw then falls back for a moment as a result of engagement of its cam roller 38 with a succeeding portion of different preformed curvature in the cam groove 39, to permit the container to temporarily remain stationary for the marking operation.

To properly locate the container at the marking station, also indicated by the numeral 42, the claw 35 moves it into engagement with a locating or stop lever 45 (Fig. 3) having a hook end 46 against which the corner of the container engages. This lever is carried on a pivot stud 47 secured in a bracket lug 48 (Figs. 1 and 2) formed on the cam 29. The free hook end of the lever carries a cam roller 51 (see also Fig. 4) which operates against a rotating edge cam 52 carried on the shaft 26. A tension spring 53 having one end connected to the lever 45 and the opposite end secured too the cam 29 keeps the cam roller 51 in engagement with the cam 52.

The normal position of the hook end 46 of the lever 45 is out of the path of travel of the containers A passing between the guide rails 17, 18. However, when a container approaches the marking mechanism as above described, the rotating cam 52 pushes the lever outwardly thus placing the hook end of the lever into the path of travel of the container. The container engaging against this barrier pauses and is then in proper position for marking. During this rest period in the travel of the container its upper edge is marked with the identifying mark B.

In order to retain the upper edge of the container in proper position during the marking operation it is yieldably backed up by a plate 117 which is carried in the container locating or stop lever 45 (see Fig. 3). This plate is formed on a stem 118 which slides in a bore in the lever. A pin 119 in the stem operates in a slot in the lever and prevents the plate from turning, while a pair of compression springs 120 disposed in recesses in the lever, press the plate outwardly toward the container and thus provide the yieldable feature.

Hence when the lever 45 is shifted into the path of travel of the moving container to stop the latter at its proper location relative to the marking mechanism, the lever also brings the plate 117 into engagement with the edge C of the container A which is opposite to the edge to be marked. This action thus yieldably holds the container in place at the marking station for the marking operation.

After such a marking operation the container is moved away from the marking mechanism 42 and is discharged from the machine. The container locating stop lever 45 (Fig. 4) is first shifted out of the way by cooperation between the rotating undulatory cam 52 and tension spring 53. The claw 35 (Figs. 1 and 4) of the propelling arm 22 for such marked container next moves under the influence of the cam 29 and is advanced thereby further along the table 16 between the guide rails 17, 28, the container being finally discharged onto a conveyor belt 181.

The machine end of the belt 181 takes over a pulley 182 mounted on a suitable shaft journaled in bearings formed in the main frame 15. This pulley and belt may be actuated in any suitable manner in time with the other moving parts of the machine. The container thus placed on the belt is carried away to a desired place of deposit. This completes the cycle of marking operations on a container A passing through the machine.

It is thought that the invention and many of its attendant advantages will be understood from the foregoing description, and it will be apparent that various changes may be made in the form, construction and arrangement of the parts without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the form hereinbefore described being merely a preferred embodiment thereof.

We claim:

1. In a mechanism for feeding containers through a machine wherein the containers are successively treated at a fixed station, the combination of means for continuously advancing the containers in processional order along a path of travel, a plurality of rotatable container propelling arms for successively engaging the containers during their advancement, means for periodically moving said arms relative to said advancing means to accelerate the movement of a said container into position at said station sufficiently in advance of a succeeding container to establish a time interval for the treating operation, and means at said station operating in timed relation to said advancing and accelerating means for temporarily holding said container stationary for the treating operation.

2. In a mechanism for feeding containers at varying speeds through a machine wherein the containers are successively marked at a marking station, the combination of means for continuously advancing the containers in processional order along a predetermined path of travel, a plurality of rotatable container propelling arms carried by said container advancing means, accelerating means for periodically moving said arms relative to said advancing means to rapidly move a said container into position at said marking station sufficiently in advance of a succeeding container to establish a time interval for the marking operation, and means at said station operating in timed relation to said advancing and accelerating means for temporarily holding said container stationary for the marking operation.

3. In a mechanism for feeding containers at varying speeds through a machine wherein the containers are successively treated at a fixed station, the combination of rotatable means for continuously advancing the containers in processional order along a predetermined path of travel, a plurality of container propelling arms pivotally mounted on said advancing means for respectively engaging said containers, accelerating means for periodically swinging said arms on their pivots relative to said advancing means to rapidly move a said container engaged by one of said arms into position at said station sufficiently in advance of a succeeding container to establish a time interval for the treating operation, and means at said station operating in timed relation to said advancing and accelerating means for temporarily holding said container stationary for the treating operation.

4. Mechanism for feeding containers through a machine wherein the containers are successively treated at a fixed station, comprising rotatable means for continuously advancing the containers in processional order along a predetermined path of travel through said station, a plurality of container propelling arms pivotally mounted on said advancing means for respectively engaging said containers, means for periodically successively swinging said arms on their pivots relative to said advancing means to accelerate the movement of a said container engaged by one of said arms into position at said station sufficiently in advance of a succeeding container to establish a time interval for the treating operation, said container accelerating means including a stationary cam member engageable with each of said arms, a movable lever member at said station normally disposed out of the path of travel of the containers, and means operating in timed relation to said advancing and accelerating means for periodically moving said lever into the path of the containers for temporarily holding a said container stationary at said station for the treating operation.

5. Mechanism for feeding containers at varying speeds through a marking machine wherein the containers are successively marked at a fixed station, comprising rotatable means for continuously advancing the containers in processional order along a predetermined path of travel into and out of said station, a plurality of container propelling arms pivotally mounted on said advancing means for respectively engaging said containers, accelerating means for periodically swinging said arms on their pivots relative to said advancing means to rapidly move a said container engaged by a said arm into position at said station sufficiently in advance of a succeeding

container to establish a time interval for the marking operation, said accelerating means including a stationary cam member having a cam groove engageable with a cam roller on each of said arms, a movable stop lever at said station normally disposed out of the path of travel of the containers, and a rotatable cam operating in timed relation to said advancing and accelerating means for periodically projecting said lever into the path of the containers for temporarily holding a said container stationary at said station for the marking operation, said container propelling arms being further operable to successively discharge the marked containers from said station.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,077,647	Stokes	Apr. 20, 1937
1,023,343	Tremaine	Apr. 16, 1912
1,647,646	May	Nov. 1, 1927
2,369,172	Nordquist	Feb. 13, 1945
2,284,628	Almgren	June 2, 1942
2,176,121	Burnett	Oct. 17, 1939
2,333,232	Bleam	Nov. 2, 1943
2,353,523	Stewart	July 11, 1944
2,341,498	Bell	Feb. 8, 1944
1,851,167	Fink	Mar. 29, 1932
2,362,132	Haub	Nov. 7, 1944
2,155,088	Hopkins	Apr. 18, 1939
1,581,201	Guenther	Apr. 20, 1926
1,116,406	Fleischer	Nov. 10, 1914
1,810,327	Phelps	June 16, 1931