Nov. 14, 1944. H. D. AYARS 2,362,791

ATTACHMENT FOR STRIPPING FOAM FROM CANS

Filed Dec. 18, 1942 4 Sheets-Sheet 1

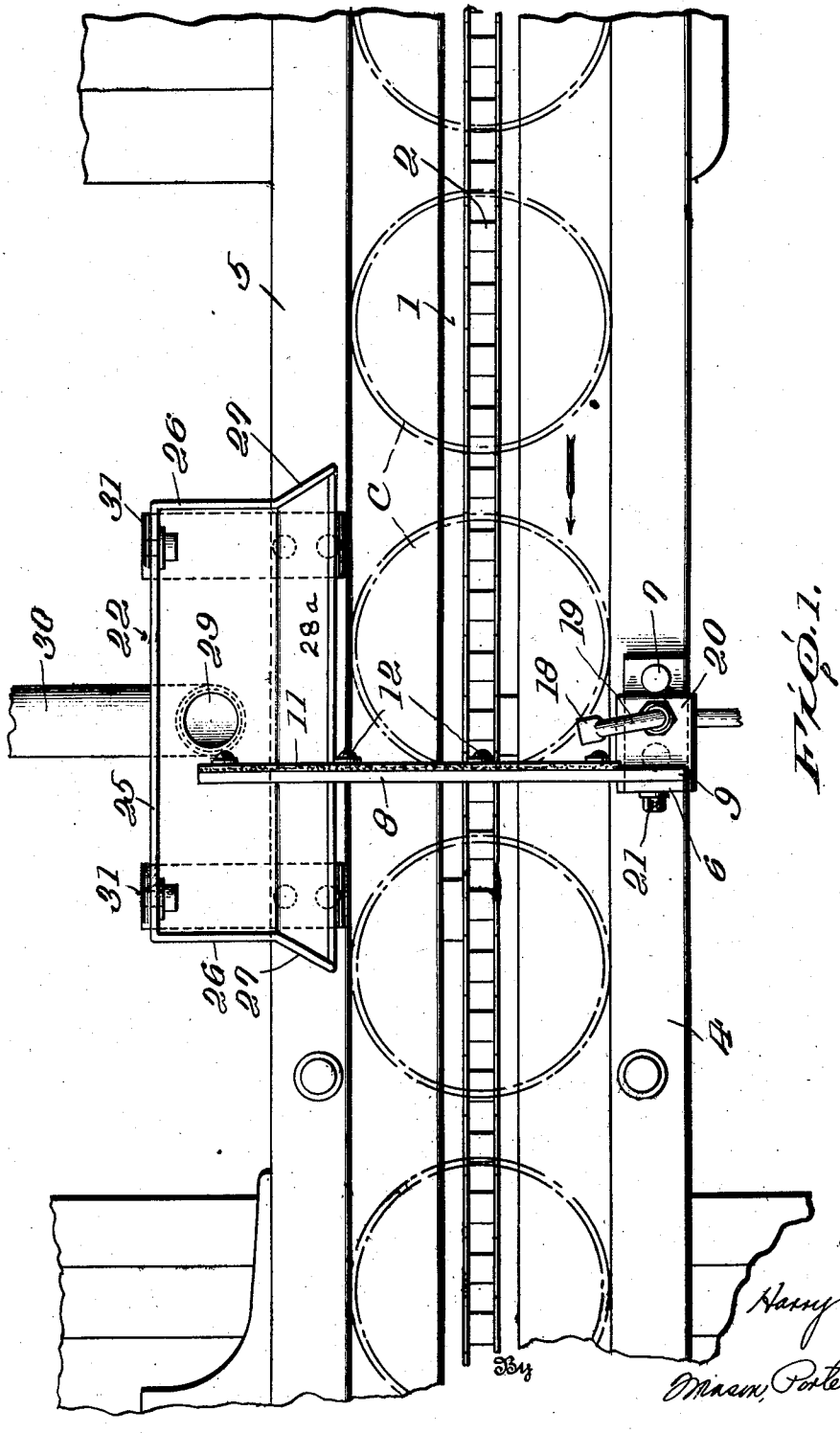


Fig. 1.

Inventor
Harry D. Ayars
By
Mason, Porter & Diller
Attorneys

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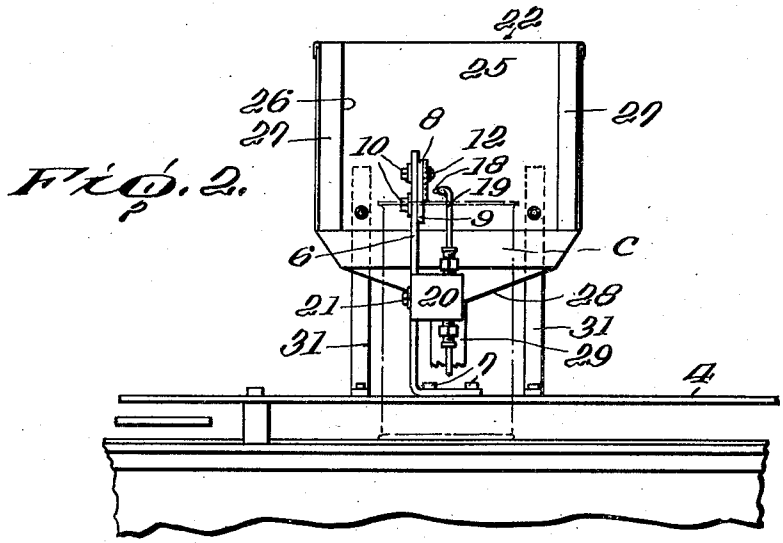
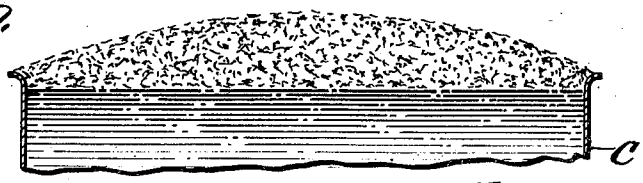


Fig. 2.

Fig. 7.



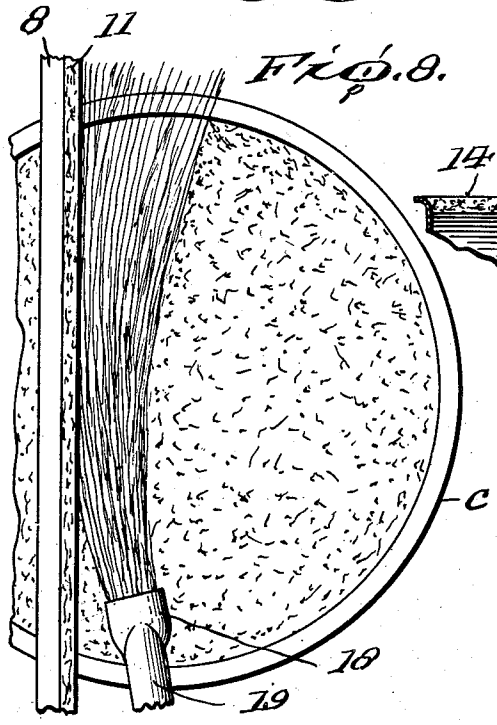


Fig. 8.

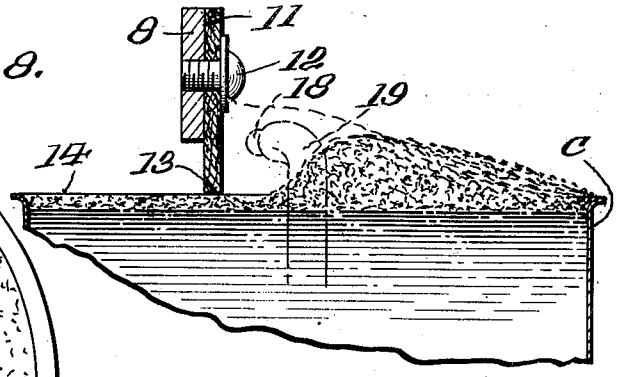


Fig. 9.

Inventor

Harry D. Ayars

By Mason, Foster & Miller

Attorneys

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Fig. 6.

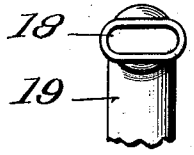
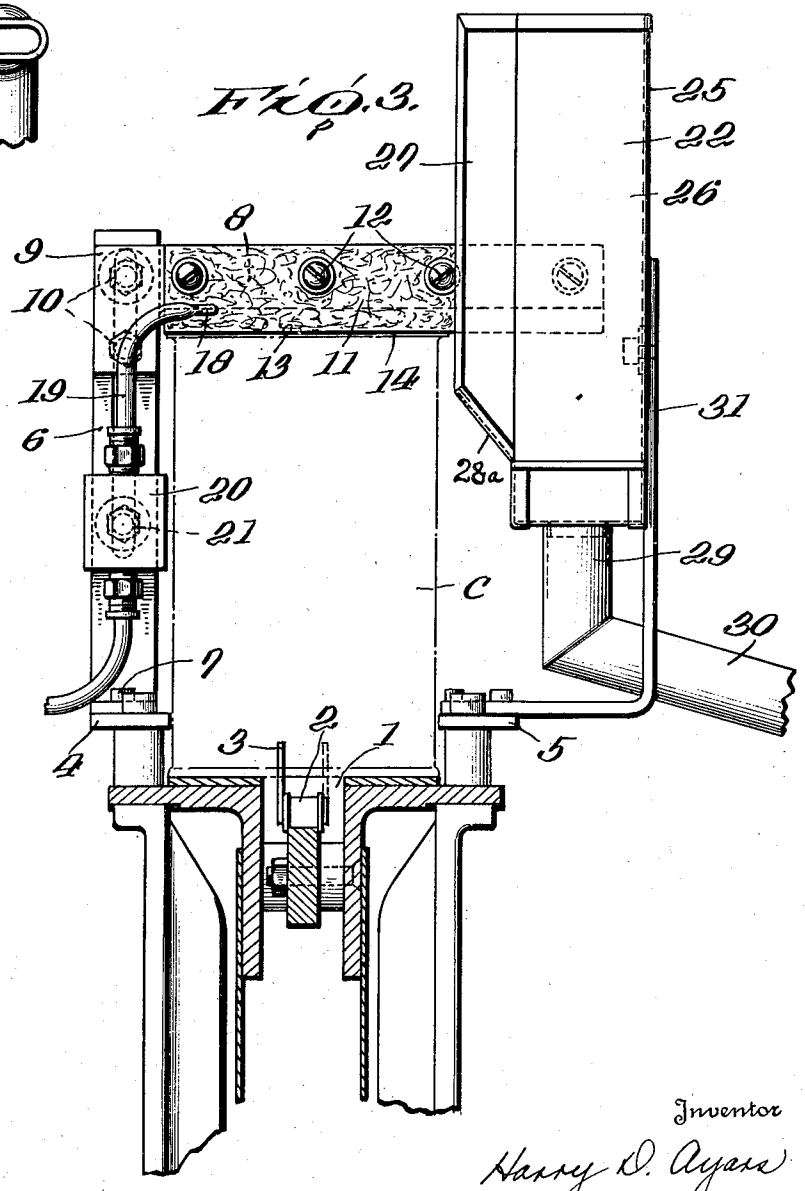


Fig. 3.



Inventor
Harry D. Ayars

By Mason, Porter & Miller
Attorneys

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FIG. 4.

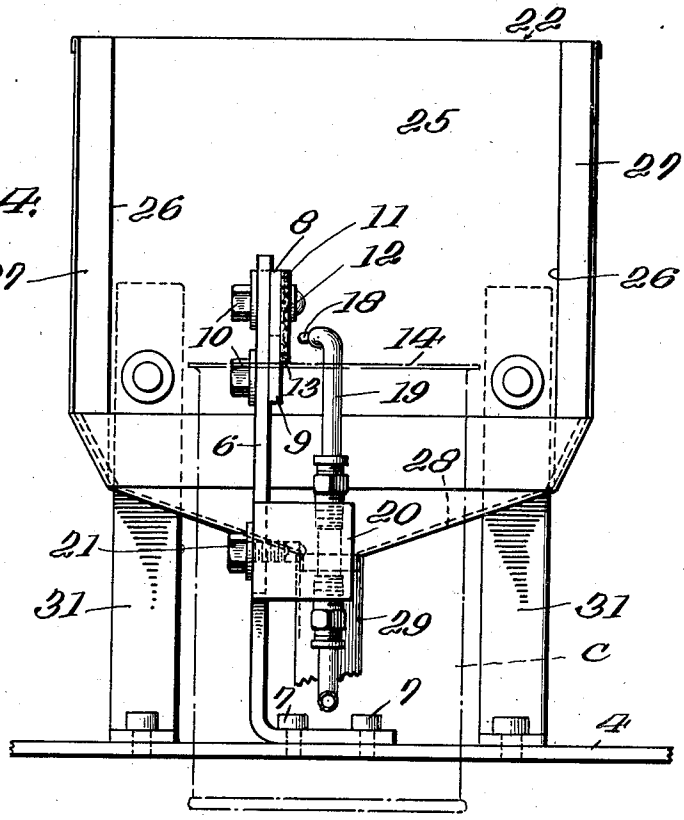
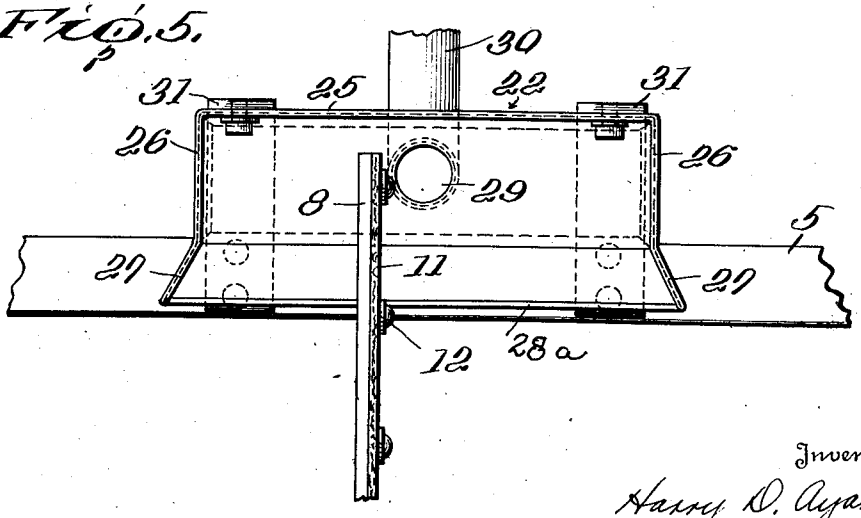


FIG. 5.



Inventor
Harry D. Ayars

By Mason, Porter & Deller
Attorneys

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UNITED STATES PATENT OFFICE

2,362,791

ATTACHMENT FOR STRIPPING FOAM FROM CANS

Harry D. Ayars, Philadelphia, Pa., assignor to Continental Can Company, Inc., New York, N. Y., a corporation of New York

Application December 18, 1942, Serial No. 469,451

7 Claims. (Cl. 226—69)

The invention relates to a new and useful improvement in an attachment for a combined filling and closing machine which is especially designed for filling and closing cans with liquid products which foam during handling.

An object of the invention is to provide an attachment disposed between the filling machine and the closing machine which will strip the foam rising above the top of the can therefrom and reclaim the same.

A still further object of the invention is to provide an attachment of the above type wherein the foam is stripped from the top of the can by the combined action of a stripper blade and an air stream.

In the drawings:

Figure 1 is a plan view of a portion of the conveyor mechanism which receives the filled cans from the filling machine and delivers the same to the closing machine.

Figure 2 is a side view of the same.

Figure 3 is an enlarged view transverse of the feeding mechanism and showing the side elevation of the foam removing devices and the receiver into which the foam is discharged.

Figure 4 is an enlarged view of the attachment as viewed from the side of the conveyor opposite the receiver for the foam.

Figure 5 is a plan view of the receiver which collects the foam.

Figure 6 is a detail view showing the preferred shape of the nozzle which discharges the air blast against the stripper.

Figure 7 is a diagrammatic view showing a can filled with a liquid product to a given level and the foam projecting above the top of the can.

Figure 8 is a view showing diagrammatically and in plane the stripper and the air stream cooperating therewith removing the foam.

Figure 9 is a vertical view at right angles to the stripper and centrally through the can and showing in full lines the foam remaining to be stripped and in dotted lines the position of the nozzle and the channel formed in the foam by the air stream as the foam is stripped from the can.

In the filling of liquid products into containers, it is difficult to fill the container to the proper extent when the liquid product is of a nature that excessive foaming takes place during the filling of the product into the container. One example of a liquid product of this nature is tomato juice, which is heated for sterilizing the product, and when this heated product is filled into a container, excessive foaming takes place. The same is true in the filling of a carbonated product, such as beer, into a container. The handling of the beer releases the carbonated gas from the product and this produces the excessive foaming.

In order that an open top container may be filled to the proper extent, it is necessary that the foam projecting above the top of the can as it passes from the filling machine. When the cover is applied while the foam is still projecting above the top of the can, then the foam is forced out over the edge of the can and runs down the sides of the same.

Applicant's invention has to do with an attachment which is located on the conveying mechanism between the filling machine and the closing machine, which attachment functions to remove the excessive foam projecting above the top of the can. This is accomplished by the combined action of a stripper blade and an air stream. The stripper blade extends all the way across the path of travel of the filled cans and its lower edge is a very slight distance above the top of the can so that the cans will pass freely beneath the same. The foam extending above the top of the can, if not stripped from in front of the blade by the air stream would contact with the blade. The air stream issues from a nozzle disposed above and adjacent the path of movement of the can top and the nozzle is arranged so that the air stream flows along the blade contacting therewith. Through the force of the air stream contacting the foam and the suction on the foam, it is carried from in front of the stripper blade to one side of the path of travel of the can into a receiver therefor.

Referring more in detail to the drawings, there is shown more or less diagrammatically a very short section of the conveyor which conveys the filled cans from the filling machine to the closing machine. This conveyor mechanism includes a supporting bed 1 on which the cans rest and along which they are fed in an upright position from the filling machine to the closing machine. This bed is in two sections, and a conveyor chain 2 is disposed between said sections and is provided with upstanding lugs 3 which engage and move the cans along the conveyor bed. There is a guide rail 4 at one side of the bed which is secured thereby by suitable bolts and is spaced above the bed by a spacing collar of the usual type. At the other side there is a guide rail 5 likewise secured to the bed and spaced a slight distance above. These guide rails are so connected to the bed that they may be adjusted toward and from each other to accommodate and

guide cans of different diameters. All of these features are of the usual type employed in the conveying of cans from one operating mechanism to another, and it is not thought necessary to describe the conveyor or the filling machine or the closing machine associated therewith more in detail.

Mounted on one of the guide rails is an upstanding bracket **6** bolted to the guide rail by suitable bolts **7, 7**. Attached to the upper end of this bracket is a bar **8** which extends across the conveyor bed transversely thereof from one side to the other. This bar is mounted on the bracket **6** by means of a slot and bolt connection so that the bar may be adjusted up and down on the bracket **6**. The slot in the bracket is indicated at **9** and the bolts for clamping the bar **8** to the bracket is indicated at **10, 10**.

Attached to this bar **8** is a blade **11** preferably made of rubberized fabric. This blade is secured to the bar by means of screws **12, 12**. The blade projects below the lower edge of the bar. This bar **8** is positioned relative to the cans being conveyed beneath the same so that the lower edge **13** of the blade is just above the top **14** of a filled can C passing beneath the same.

Associated with the stripper blade is an air nozzle **18**. This air nozzle is carried at the upper end of a tube **19** and is preferably formed integral therewith. The tube **19** is mounted in a header **20** and said tube may be readily adjusted vertical and it may be adjusted angularly and so positioned as to direct a stream of air along the stripper blade and contacting therewith. This air nozzle is disposed a slight distance above the path of travel of the cans and preferably so as to overhang the can wall at the point of maximum diameter. The header is connected to a suitable source of air supply. This air stream contacting with the foam will carry it along in suspension and thus remove the foam which is contacted thereby from in front of the stripper blade. The stripper blade serves as a baffle or deflector for the air stream and at the same time cooperates with the air stream in the carrying of the foam projecting above the can top to one side of the path of travel of the can into a receiver therefor. This air stream will suck foam in the region of the nozzle so that a channel is formed directly in front of this stripper blade which causes the foam which moves into the channel to be lifted and conveyed from the top of the can.

In Figure 8 of the drawings, the position of the nozzle, relative to the blade and to the air stream sweeping across the top of the can and along the blade, is illustrated diagrammatically.

In Figure 9 the channel formed through the cooperation of the air stream and stripper blade is indicated in full lines, while the position of the nozzle and the foam which is being removed is indicated by the broken lines. Some of the foam is sucked from the can slightly beneath the level of the top so that sufficient foam is removed as the can passes across this air stream and beneath the stripper blade to leave the can level full of the foam.

Sufficient foam is removed through the device described above so that when the end is placed on the can there will be no forcing of the foam over the can flange and down the sides thereof.

As clearly shown in the drawings, the nozzle at the discharge end is oblong with its major axis horizontal. This causes the air stream to spread laterally in its sweep of the foam along the stripper blade and with little spread vertically. This insures that the foam carried by the air stream will be carried over the front wall of the receiver into the same.

The receiver for the foam is indicated at **22** in the drawings. This receiver is mounted on a bracket **31** which is bolted at guide bar **5**. The receiver includes a back portion **25** and side members **26, 26** having wings **27, 27** which form a wide open side facing the conveyor. The bottom of the receiver **28** converges toward the center thereof, as shown in Figure 4, and a pipe **29** is attached to the bottom of the receiver. This pipe is provided with an elbow **30** which overhangs a receptacle so that the foam collected in the receiver will drain down into the bottom and through this pipe **30** into said receiver.

There is a front wall **28***a* which joins the sides and the bottom wall. This front wall is extended toward the conveyor to a point close to the path of travel of the can bodies. This insures that the foam suspended in the air stream will be released therefrom so that it passes down into the bottom of the receiver

The cans are spaced on the conveyor as they come from the filling machine. While the air stream is continuous the cans pass intermittently and in succession into the air stream. The foam, collecting in the receiver, which has been stripped from a can will collect to some extent in the bottom of the receiver due to the sluggish flow of foam. The foam stripped from the following can will be discharged into the receiver in more or less of an independent mass and this, contacting with the foam in the bottom of the receiver, helps to force it down through the pipe into the collecting receptacle.

The machine is readily adjusted for different size cans both as to diameter and height. The stripper blade is so mounted that it may be raised or lowered on the supporting bracket. The same is true of the nozzle. The guide rails may be shifted toward or from each other so as to accommodate cans of different diameter. The nozzle is mounted on guide rail **4** and the receiver on guide rail **5** so that when adjustments are made for different size cans this will automatically shift the position of the nozzle and the receiver; the receiver is always close to the path of travel of the can and the nozzle position relative to the passing can so as to properly direct a stream of air along the stripper blade for removing the foam projecting above the top of the can.

It is obvious that minor changes in the details of construction and the arrangement of the parts may be made without departing from the spirit of the invention as set forth in the appended claims.

I claim:

1. The combination of a conveying means for conveying filled cans to a closing machine, a stationary stripper blade associated with the conveying means and disposed so as to contact the foam projecting above the can passing beneath the same, and means for discharging a stream of air across said stripper blade for removing the foam in front thereof and discharging the same to a receiver at one side of the path of travel of the can.

2. The combination of a conveying means for conveying cans to a closing machine, a receiver located at one side of the path of travel of the can, an air nozzle disposed at the opposite side of the path of travel of the can for discharging an air stream across the top of the can, a stripper blade disposed above the path of travel of the can

and so disposed relative to the air stream as to cooperate therewith in removing the foam projecting above the top of the can and discharging the same into the receiver.

3. The combination of a conveying means for conveying filled cans to a closing machine, guide rails at opposite sides of said conveying means for guiding the filled cans, a bracket mounted on one of said guide rails, a stripper blade adjustably mounted on said bracket and extending across the path of travel of the cans and arranged so as to contact with any foam projecting above the top of the can, an air nozzle mounted on said bracket and positioned so as to direct a stream of air along the front side of said stripper blade and in contact therewith, a receiver mounted on the other guide rail and disposed so as to receive foam removed from the can through the cooperative action of the air stream and stripper blade.

4. The combination of a conveying means for conveying filled cans to a closing machine, guide rails at opposite sides of the conveying means for guiding the filled cans, a receiver mounted on one of said guide rails, said receiver having rear and side walls projecting above the top of passing cans, and a front wall terminating beneath and close to the path of travel of top portion of can, and an air nozzle mounted on the other guide rail and positioned so as to direct a stream of air across the top of the can passing between said guide rails for removing foam projecting above the top of the can and discharging the same into said receiver.

5. In combination of a conveying means for conveying filled cans to a closing machine, guide rails at opposite sides of the conveying means for guiding the filled cans, a receiver mounted on one of said guide rails, said receiver having rear and side walls projecting above the top of passing cans, and a front wall terminating beneath and close to the path of travel of top portion of can, and devices mounted on the other guide rail for removing the foam projecting above the top of the can and discharging the same into said receiver, said device for removing the foam including a stripper blade positioned above the path of travel of the can so as to contact with the foam projecting above said can top, and a nozzle disposed so as to direct an air stream along the front of said stripper blade and in contact therewith.

6. The combination of a conveying means for conveying filled cans to a closing machine, a stripper blade associated with the conveying means and disposed so as to contact with the foam projecting above the can passing beneath the same, and an air nozzle disposed in front of said stripper blade and positioned so as to direct an air stream along said blade and in contact therewith for removing said projecting foam, and means for mounting said nozzle whereby it may be raised or lowered and shifted angularly relative to said stripper blade.

7. The combination of a conveying means for conveying filled cans to a closing machine, a stripper blade associated with the conveying means and disposed so as to contact with the foam projecting above the can passing beneath the same, and an air nozzle disposed in front of said stripper blade and positioned so as to direct an air stream along said blade and in contact therewith for removing said projecting foam, and means for mounting said nozzle whereby it may be raised or lowered and shifted angularly relative to said stripper blade, said nozzle at the discharge end thereof being oblong in cross section so as to spread the air stream horizontally with very little spread vertically.

HARRY D. AYARS.