

March 17, 1925.

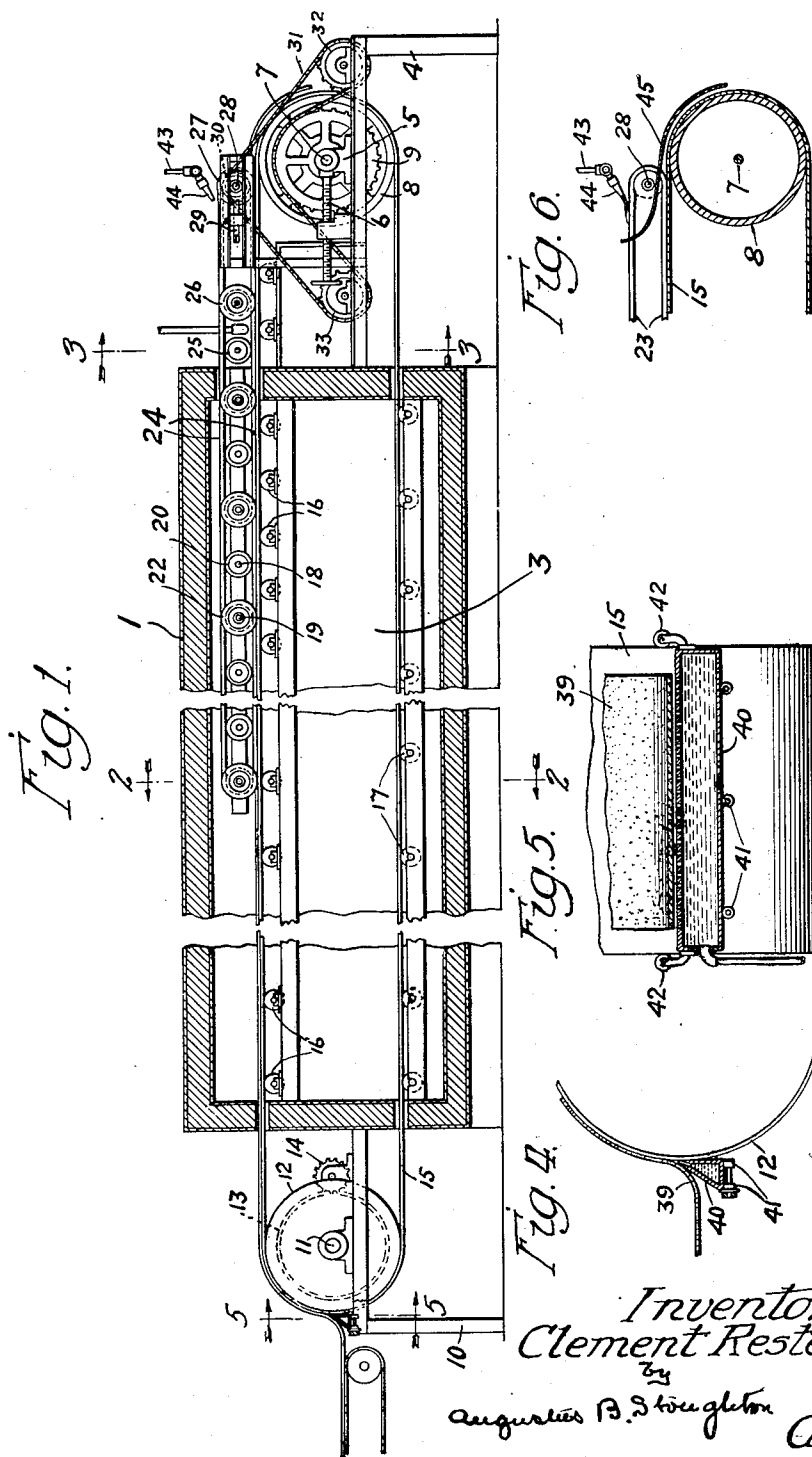
1,529,813

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METHOD OF AND APPARATUS FOR TREATING GLUE AND THE LIKE

Filed Jan. 25, 1925

2 Sheets-Sheet 1



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Fig. 2.

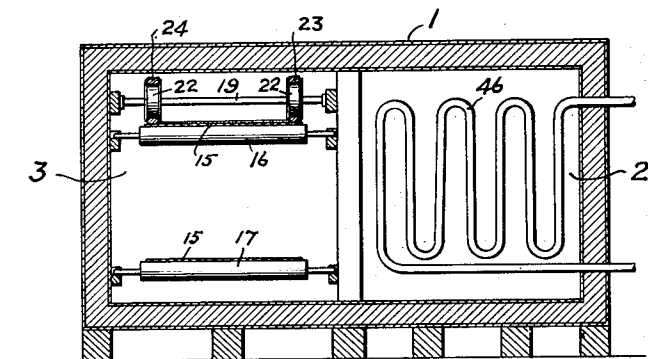


Fig. 3.

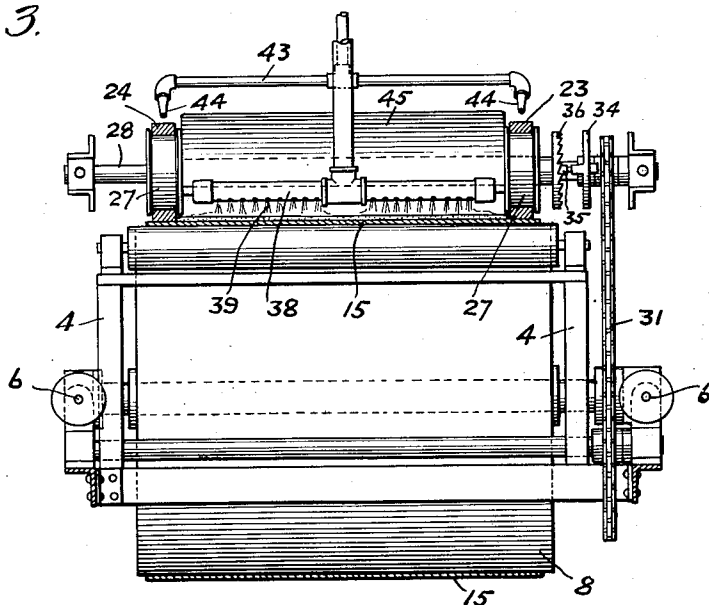


Fig. 7.

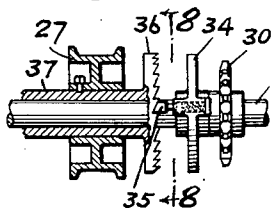
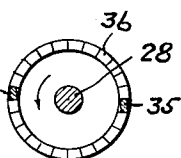


Fig. 8.



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UNITED STATES PATENT OFFICE.

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METHOD OF AND APPARATUS FOR TREATING GLUE AND THE LIKE.

Application filed January 25, 1923. Serial No. 614,727.

To all whom it may concern:

Be it known that I, CLEMENT RESTEIN, a citizen of the United States, residing at Hatboro, in the county of Montgomery and State of Pennsylvania, have invented a new and useful Improvement in Methods of and Apparatus for Treating Glue and the like, of which the following is a specification.

The present invention relates to a method of and apparatus for dealing with the marginal edges of glue and the like as the latter is cooled into sheet form and prior to its delivery. The method may be said to consist in subjecting glue to the hardening effect of a cooling atmosphere by depositing the glue in hot fluid form upon a belt travelling through such an atmosphere thereby solidifying the glue, marginally confining the fluid glue on the belt during solidification, and withdrawing the marginal support from the relatively solidified glue prior to delivery from the belt. The apparatus comprises the combination with the glue carrying belt of separate guide straps and pulley means common to both the belt and straps for holding the same in intimate contact to retain fluid glue.

The invention also comprises the improvements to be presently described and finally claimed.

For the sake of description reference will be hereinafter made to the glue machine or, perhaps more accurately, the parts of the glue machine described in Letters Patent No. 1,046,307, of December 3, 1912, in which use is made of a conveyer belt having side flanges or guides attached or vulcanized thereto for receiving hot liquid glue and permitting the same to be chilled to a gelatinous mass in sheet form, in which form the glue is delivered to screens for drying. The function of the flanges on the belt is to prevent the liquid glue from overflowing at the edges of the flat belt. However, dissatisfaction arose because belts with integral flanges were difficult to make, expensive to install, and of short life because they resisted and were subjected to strain at the guide pulleys and because the flanges were exposed to the cutting action of the stripping blade used for detaching the glue from the delivery end of the belt and for other reasons well understood by those skilled in the art.

The principal objects of the present in-

vention are to avoid the above mentioned defects and disadvantages and to provide an expeditious method and an inexpensive and durable apparatus for practicing the same whereby belt cost is minimized and the entire operation improved.

In describing the invention reference will be made to the accompanying drawings illustrative of the method of the invention and embodying one but not the only form of apparatus for practicing the same, and in the drawings—

Figure 1 is a fragmentary longitudinal vertical section through a machine embodying features of this invention.

Fig. 2 is a section on line 2—2 of Fig. 1.

Fig. 3 is a section on line 3—3 of Fig. 1.

Fig. 4 is a fragmentary sectional detail showing the detaching blade separating the sheet of glue from the belt.

Fig. 5 is a detail section on line 5—5 of Fig. 1.

Fig. 6 is a vertical sectional detail at the entrance end of the machine.

Fig. 7 is a sectional detail of an over-running clutch drive for the flange straps, and

Fig. 8 is a sectional detail on line 8—8 of Fig. 7.

There is an insulation casing 1, having a refrigeration compartment 2, and belt compartment 3. Mounted on the outside at the rear end of said casing is a framework 4, provided with slidable bearings 5, which are adjustable by screws 6. Journaled in said bearings 5, is a shaft 7 on which is secured a tail drum 8. Also secured on said shaft 7 is a large sprocket wheel 9 for transmitting a drive from the belt tail drum 8 to the flange straps hereinafter described. A suitable framework 10 is provided at the front or delivery end of the casing 1 on which are bearings for supporting a shaft 11. Secured to said shaft 11 is a head drum 12, driven by a gear 13 also secured to said shaft 11 and in turn driven by a pinion 14 from any suitable source. Trained around said head drum 12 and tail drum 8 is an endless flat conveyer belt 15. The upper run or reach of said conveyer belt 15 is supported on idler rollers 16 within the compartment 3, and the center to center spacing of the idler rollers is less or substantially one-half of the distance, at the entrance or rear end of the

machine, as compared with the spacing distance at the front or delivery end of the machine. In other words, there are twice as many idler rollers supporting the upper run of the conveyer belt where the flange straps lie on the belt than at that portion where the belt travels free from the flange straps. The lower run of the conveyer belt 15 is supported on idler rollers 17. Journaled in suitable bearings within the compartment 3 are a number of idler shafts 18, alternated with idler shafts 19, as shown in Fig. 1. Mounted on each shaft 18 are a pair of flat idler pulleys 20, and similarly mounted on each of the shafts 19 are a pair of flanged idler pulleys 22. Trained around one group of idler pulleys 20—22 at one margin of the belt 15 is an endless guide or flange strap 23, and similarly at the other margin of the belt and around another group of the idler pulleys 20—22 there is another endless guide or flange strap 24. The upper run of each of said straps 23—24 is supported upon the plain and flanged idler pulleys 20—22, while the lower run is merely guided and held flat by the idler pulleys 20—22 upon the top surface of the belt 15. As shown the guide straps are arranged flatwise on the belt and the straps and belt are held in contact because they both pass between the same rollers or pulleys. On the exterior at the rear end of the machine casing 1, said framework 4 also supports plain and flanged idler pulleys 25—26. A take-up mechanism for said straps is provided by flanged pulleys 27, the shaft 28 of which is slidable and adjustable by a screw 29. An overrunning clutch drive is provided between the tail drum 8 and the pulleys 27 and it will now be described. A sprocket 30, is secured on shaft 28, as shown in Fig. 7, and trained there-around is a chain 31 which is also trained around idler sprockets 32—33, and over the large sprocket wheel 9 of the tail drum 8. Secured to the sprocket wheel 30, as shown in Fig. 7, is a driving element 34, provided with a spring impelled detent 35, which is adapted to normally engage a ratchet wheel 36. Said ratchet wheel 36 is rigidly secured to a sleeve 37, which is freely rotatable on the shaft 28 and has tightly connected thereto said flanged pulleys 27. The purpose of the overrunning clutch drive mechanism described is to permit the straps 23—24 to be driven by the belt 15 by frictional contact therewith, but in the event of a tendency of the straps to slip or lag the clutch mechanism 34—35—36 will positively drive the pulleys 27 and the straps therewith. On the other hand if the belt 15 should slip forwardly around its idler tail drum 8 carrying the straps 23—24 at an equal speed therewith, the clutch mechanism would per-

mit this to take place because the ratchet wheel 36 would overrun the spring impelled detent 35.

The glue is introduced onto the belt 15 between the guide or flange straps 23—24 by a feed spray pipe 38, shown clearly in Fig. 3. The liquid sprayed onto the belt is indicated by numeral 39, and is progressively chilled in its passage through the compartment 3 into flexible gelatinous sheet form, easily removed from the belt by a detaching knife or blade 40, shown in Figs. 1 and 4. Said knife or blade 40 is hollow and is provided with a series of apertures along its edge permitting a spray of water to be forced upwardly beneath the sheet of glue to assist its separation from the belt 15. Said knife 40 is permitted endwise movement transversely of the belt as it is mounted on rollers 41. Guide rollers 42 are provided on the said knife 40 contacting the edge of the belt 15 to keep said knife 40 in alignment with the belt in the event of lateral creeping of the belt. On the exterior at the rear end of the machine is a water supply pipe 43 provided with spray nozzles 44, which are positioned, as shown in Fig. 1, to direct a jet of water against the approaching top run or reach of each of the straps 23—24 to wet and clean the surface and edge of any adhering glue. An S-shaped drain-board 45, as shown in Figs. 1 and 6, is provided between the straps 23—24 to prevent the water from the spray nozzles 44 from falling onto the belt 15. As shown clearly in Fig. 2, the compartment 2 is provided with refrigeration coils 46, said compartment 2 being in open communication with the belt compartment 3.

The operation may be described as follows: The glue is sprayed on the belt 15 in warm or hot liquid condition from pipe 38, and flows over the surface of the constantly forward moving belt 15 until it strikes the retaining guide or flange straps 23—24, and these moving at the same speed and with the belt 15, marginally confine and hold the glue from overflowing the edge of the belt until the chilling effect causes the glue to take a set. After this point is reached, the straps are guided upwardly and back, and in leaving the belt, pass around the flanged pulleys 22 which serve by means of their flanges to strip the sheet of glue from the edge of the straps if the glue tends to adhere thereto, thus as the glue takes a set and prior to the last stages of its solidification, the marginal support is removed and the glue in a more solidified state and freed from marginal interference is delivered from the belt.

It will be obvious to those skilled in the art to which the invention relates that modifications may be made in details of procedure and in mere matters of form, construction

and arrangement without departing from the spirit of the invention which is not limited in those respects or otherwise than as the prior art and the appended claims may require.

I claim:

1. In apparatus for treating glue the combination with the endless glue belt of endless guide straps arranged marginally of the glue belt, and horizontal parallel axes having pulley provisions around some of which the belt passes and around others of which the straps pass and between some of which the upper reach of the belt and the lower reaches of the straps pass in facial contact.

2. In apparatus for treating glue the combination with the endless glue belt of endless guide straps arranged marginally of the belt and terminating short of its delivery end, provisions around which said belt and straps pass and idler pulleys between which reaches of the belt and straps pass in facial contact.

3. In apparatus for treating glue the combination with an endless glue belt of endless guide straps arranged marginally of the belt, and rollers around which the straps pass and which are provided with flanges for stripping the glue.

4. In apparatus for treating glue the combination of an endless glue belt, endless guide straps, guide means for running the straps in contact with the face of the upper reach of the belt, means for delivering glue onto the upper reach of the belt between the straps, and cooling provisions through which the belt passes and into but not through which the straps extend.

5. In apparatus for treating glue the combination of a glue belt and guide straps, and means for running the straps and belt in facial contact and for separating the belt and straps to interrupt the facial contact thereby confining the glue while the belt and straps are in contact and permitting the belt to deliver the glue.

6. In apparatus for treating glue the combination of an endless glue belt, guide straps separate from the belt and arranged marginally thereof, and means for spraying liquid onto the straps.

7. In apparatus for treating glue the combination of a glue belt, separate flange straps for the belt, a blade for removing glue from the belt, and means for running the straps in contact with the belt and then out of contact with the belt where the latter approaches the blade.

8. In apparatus for treating glue the combination of an endless glue belt, guide straps, means for guiding the straps into contact with the face of the upper reach of the belt, and overrunning driving mechanism for permitting the belt to frictionally drive the straps and for preventing the straps from lagging in respect to the belt.

9. In apparatus for treating glue the combination of a glue belt, guide straps separate from the belt, and pulley means common to both the belt and straps and between which adjacent reaches of the belt and straps pass for holding the same in intimate contact to retain fluid glue.

10. In apparatus for treating glue the combination of co-operating pulleys, and an imperforate glue carrying belt and a guide strap adapted to run in superposed relation between the pulleys, substantially as described.

11. The method of treating glue which consists in subjecting it to the hardening effect of a cooling atmosphere by depositing the glue in hot fluid form upon a belt travelling through such atmosphere thereby solidifying the glue, marginally confining the fluid glue on the belt during the first stages of solidification, and withdrawing the marginal support from the glue prior to the final stages of solidification and prior to its delivery from the belt.

CLEMENT RESTEIN.