Jan. 15, 1924. 1,480,790

I. STANLEY

PARAFFINING APPARATUS

Filed July 14, 1921 2 Sheets-Sheet 1

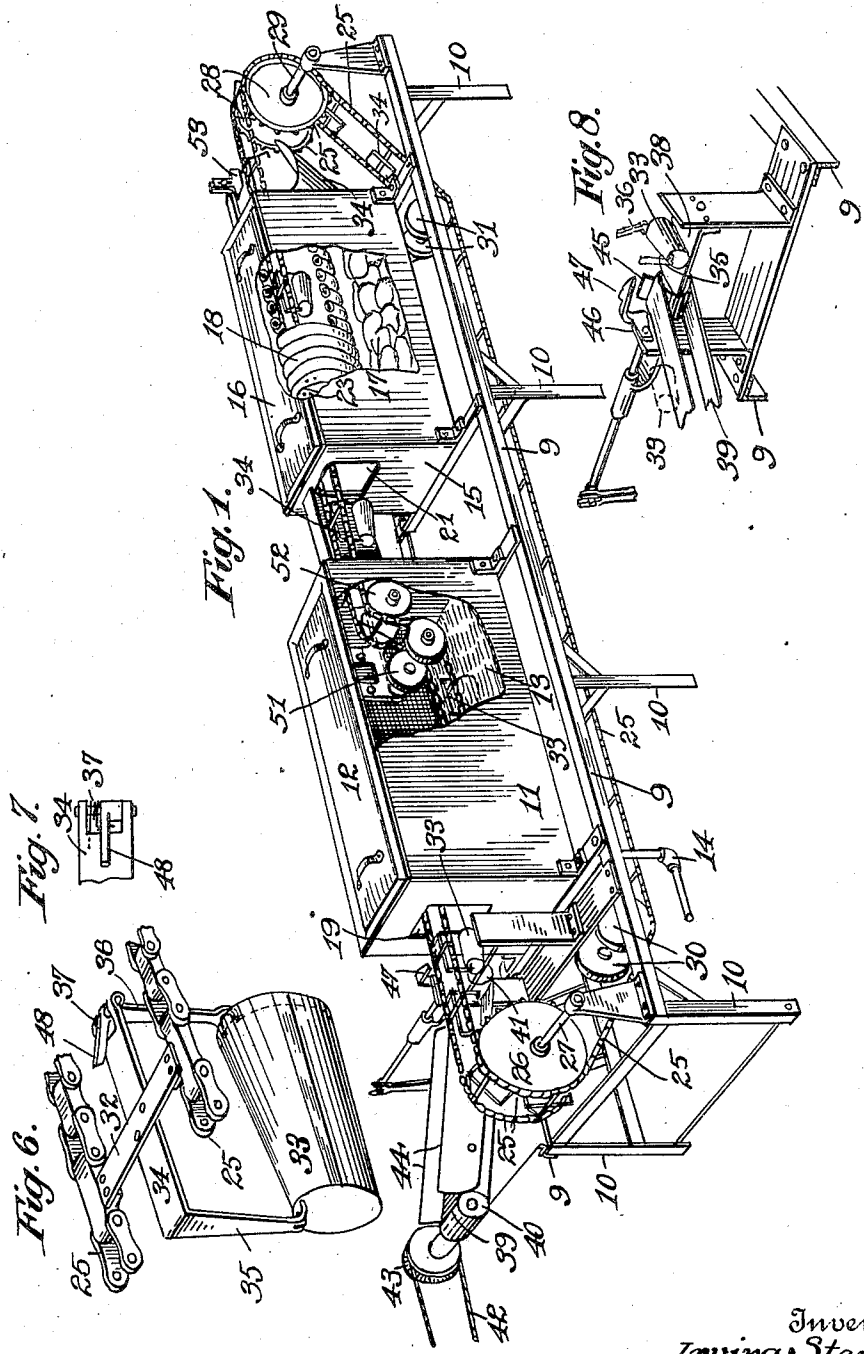


Fig. 1.

Fig. 8.

Fig. 7.

Fig. 6.

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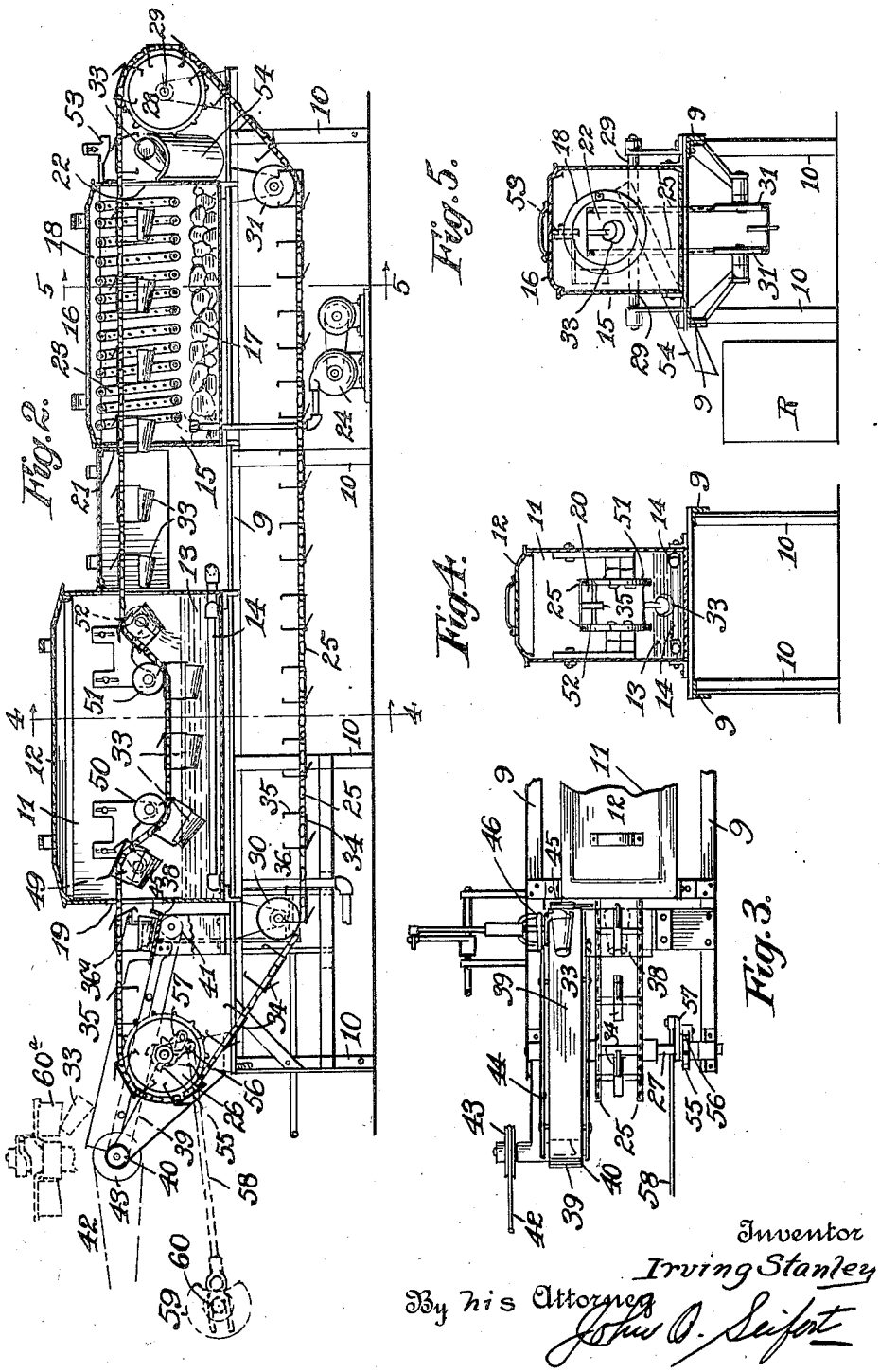


Fig. 2.

Fig. 5.

Fig. 4.

Fig. 3.

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Patented Jan. 15, 1924 1,480,790

UNITED STATES PATENT OFFICE.

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PARAFFINING APPARATUS.

Application filed July 14, 1921. Serial No. 484,604.

To all whom it may concern:

Be it known that I, IRVING STANLEY, a citizen of the United States, and a resident of the borough of Manhattan, in the city, county, and State of New York, have invented certain new and useful Improvements in Paraffining Apparatus, of which the following is a specification.

This invention relates to apparatus for impregnating articles made of paper with paraffine to make the same impervious to moisture and liquids, and relates particularly to paraffining of receptacles or containers made of paper, and it is the primary object of the invention to provide apparatus of this character for treating articles successively in a continuous manner and provide apparatus for this purpose which is simple in structure, and efficient in use.

In the treatment of paper articles to be paraffined it is essential for the efficient impregnating of the material by the paraffine that the paraffine be in a highly liquid state, and after the article has been subjected to the paraffine bath that the article be quickly chilled in order to cause the paraffine to evenly coat the article, and it is a further object of the invention to provide improved means for subjecting the article to the paraffine while in a heated and dissolved state and to provide a refrigerator through which the article is passed as it is delivered through the paraffine bath.

In apparatus of this character it is essential for the efficient operation of the same that the articles be treated in a continuous manner and for this purpose conveyer means is provided for transporting the articles to the paraffine bath and refrigerator, the paraffining means being constructed and arranged with means to cause the articles carried by the conveyer to be immersed in the paraffine without immersing the conveyer with the consequent interference in the efficient operation of the apparatus and necessitating the constant cleaning of the same.

It is a further object of the invention to provide the conveyer with improved article carrying means arranged to automatically pick up an article from a support and transport the same through the paraffining chamber or receptacle and refrigerator, and to release the article from the conveyer as it is delivered from the refrigerator.

It is a further object of the invention to provide apparatus of this character to be used in connection with apparatus for making paper receptacles or containers, and to provide means to deliver articles from said apparatus to the article carriers of the conveyer.

Other objects and advantages will hereinafter appear.

In the drawings accompanying and forming a part of this specification Figure 1 is a perspective view of an apparatus illustrating an embodiment of my invention; the paraffining receptacle or chamber and the refrigerator being partly broken away to show the interior thereof, and the apparatus being shown in relation to the delivery means of apparatus for making paper receptacles or containers.

Figure 2 is a longitudinal side elevation.

Figure 3 is a plan view of the means to deliver articles to the conveyer to be treated.

Figure 4 is a cross sectional view taken on the line 4—4 of Figure 2.

Figure 5 is a cross sectional view taken on the line 5—5 of Figure 2.

Figure 6 is an enlarged view in perspective of an article carrier of the conveyer and showing an article supported thereby.

Figure 7 is a detail view in plan of a portion of the conveyer article carrier shown in Figure 6; and

Figure 8 is a detail view in perspective of a support for an article to be picked up by article carrier of the conveyer and showing the same in relation to the delivery means to apparatus for making paper receptacles or containers, and the means for feeding the articles from said delivery means to the support.

Similar characters of reference designate like parts throughout the different views of the drawings.

In the embodiment of my invention shown in the drawings the operative mechanism is mounted upon a framework consisting of a

pair of parallel angle irons 9 rigidly connected by cross bars and supported by legs or standards 10.

A tank or receptacle 11 having an opening in the top with a removable cover 12 and to contain paraffine, as shown at 13, is mounted upon the connecting cross bars of the framework the paraffine being dissolved and maintained in a dissolved and liquid state by the application of heat, shown as a coil or pipe 14 in the receptacle connected to a series of heat supply such as steam.

A refrigerator is mounted upon the cross bars of the framework in juxtaposed relation to the paraffine chamber and comprises a chamber or tank 15, having an opening in the top with a removable cover 16, said chamber containing a refrigerant such as ice 17, and a cooling coil 18 extending longitudinally thereof above the refrigerant. The paraffine chamber has alined openings 19, 20 in the opposite end walls, and the refrigerant chamber also has alined openings 21, 22 in the opposite end walls in line with the openings in the paraffine chamber and the opening through the coil 18. In the structure of the coil shown in Figure 2 the wall of the coil is perforated, as shown at 23, the coil being connected to a blower, indicated in a general way at 24, to discharge a plurality of sprays of jets of air from the coil in a direction toward the interior thereof.

The article or articles to be paraffined are transported to the paraffine chamber and the refrigerator by a conveyer comprising a pair of sprocket chains 25 passing around a pair of sprocket wheels 26 fixed in spaced relation on a shaft 27 and sprocket wheels 28 fixed in spaced relation on a shaft 29 and guided below the paraffining chamber and refrigerator by sprocket wheels 30 and 31. The chains are connected by transverse bars 32, and by means of which bars and the arrangement of the sprocket wheels the chains are maintained in parallel and spaced relation. The mounting of the sprocket wheel shafts 27 and 29 are so arranged that the upper stretch of the conveyer will pass through the openings 19, 20 of the paraffining chamber and the openings 21, 22 of the refrigerator.

The apparatus is adapted to paraffine articles of different shape and character and in the present instance is arranged to treat receptacles of truncated conical form having a closure in the end of greatest diameter as shown at 33. To support and transport articles by the conveyer the conveyer is arranged with a series of successive article carriers, each of said carriers consisting of a member 34 fixed to the transverse bars 32 substantially midway between the ends thereof and the conveyer chains with the end 35 bent at right angles to extend inwardly from the conveyer and arranged with fingers at the extremity as clearly shown in Figure 6. An arm 36 is pivotally connected to the end of the member 34 opposite to the end 35 and normally urged in a direction to extend inwardly from the conveyer in parallel relation to the end 35 by a spring 37, said arm being also arranged with fingers at the extremity thereof.

The articles to be treated are automatically picked up from a support or shelf 38 mounted upon the framework below the upper stretch of the conveyer and at the entering end of the paraffine chamber 11.

As stated the apparatus is to be used in connection with apparatus for making the article 33 and is delivered from such apparatus to the shelf 38. For this purpose a second conveyer 39 is provided consisting of a belt passing over rollers 40, 41, and actuated by rotating the roller 40 from a suitable source of power connected to the roller by a belt 42 passing around a pulley 43 rotatable with the conveyer roller 40. Guides 44 are arranged at opposite sides of said conveyer and the articles are arrested on the conveyer by abutting a stop 45. The articles are delivered from the conveyer 39 to the shelf 38 by a member 46 reciprocable transversely of the conveyer and normally positioned at the outer side thereof.

The conveyer 25 is intermittently actuated and during the periods of rest the article is delivered by the plunger or ram 46 from the conveyer 39 to the article support 38 and to permit of the positioning of the article on the support the arm 36 of the article carrier is moved to the position shown at 36^a in Figure 2 by a finger 47 carried by the ram engaging a projection 48 (Figures 6 and 7) on the arm, rocking said arm against the tension of the spring 37. As the ram is returned to initial position the finger 47 is released from the arm projection 48 when said arm will be moved by the tension of the spring 37 to engage the end of the receptacle on the support 38 and position said receptacle with relation to the supporting fingers of the arm 35 of the carrier.

The travel of the conveyer through the paraffine chamber 11 is guided in its movement to cause the articles being transported by the conveyer carriers to be entirely immersed in the paraffine without immersing the conveyer chains therein. For this purpose a pair of guide rollers 49 are mounted within the paraffine chamber over which the conveyer chains pass, a second pair of guide rollers 50 being rotatably supported in juxtaposed relation to the rollers 49 and under which the conveyer chains pass, the conveyer chains passing from said latter rollers under a pair of guide rollers 51 supported in spaced relation to the rollers 50 and to rotate on axes parallel therewith, the

chains passing from said latter rollers over guide rollers 52. As will be clearly observed from Figure 2 by this arrangement of the guide rollers 49, 50, 51 and 52 the articles carried by the conveyer in its travel through the paraffine chamber will cause the articles to be immersed in the paraffine. As the conveyer passes from the rollers 52 the receptacles will be in an inclined position thereby permitting any of paraffine contained therein to drain from the receptacle. It will be noted that in the passage of the conveyer through the paraffine chamber that the conveyer will not be immersed in the paraffine, with the consequent result of coating the conveyer and requiring the frequent cleaning of the same. The articles after they are delivered from the paraffine chamber by the conveyer are passed through the refrigerator chamber 15 causing the paraffine to quickly congeal and providing an even coating upon the articles. As the articles are delivered from the refrigerator chamber the arm projection 48 passes under a guide 53 rocking the arm 36 and releasing the article therefrom, such article dropping onto a chute 54 and being delivered to a suitable receiver R Figure 5.

The conveyer is operated intermittently from a suitable source of power and is shown as being actuated by pawl and ratchet mechanism consisting of a ratchet wheel 55 fixed to shaft 27 of the sprocket wheels 26 and actuated by a pawl 56 pivotally carried by an arm 57 hung on the shaft 27. The arm is oscillated or actuated by a rod 58 operatively connected to a cam 59 on a drive shaft 60 and constituting a part of the apparatus for making the receptacles.

In the operation of the apparatus the articles are delivered from the receptacle making apparatus to the conveyer 39 as shown in dotted lines at 60 in Figure 2. The articles are carried by the conveyer until they are arrested by the stop 45. During a period of rest of the article conveyer 25 the articles are delivered from the conveyer 39 to the support 38 by the plunger or ram 46, the plunger in its delivery movement causing the finger 47 to engage the projection 48 of the arm 36 moving the same to the position shown at 36^a in Figure 2, such movement of said arm being previous to the delivery of the article to the support 38. The plunger immediately recedes from its feeding position thereby withdrawing the finger 47 from the arm projection 48 causing said arm to move to position with the fingers thereof to engage the end of the receptacle and causing said arm to position the receptacle relative to the supporting fingers of the arm 35. An intermittent movement is then imparted to the conveyer positioning a successive carrier with relation to the support 38 when the operation of delivering a further article from the conveyer 39 is repeated.

Having thus described my invention I claim:

1. In apparatus for impregnating paper articles with paraffine, a receptacle for liquid paraffine, a refrigerator chamber, and an article transporting conveyer arranged to travel through the paraffine receptacle and refrigerator chamber and immerse articles carried thereby in the paraffine while travelling through the former.

2. In apparatus of the class specified, a paraffine receptacle; a support for an article to be paraffined; and a conveyer having article carriers successively arranged thereon operative to pick up the articles from the support and transport them through the paraffine receptacle, said article carriers comprising a rigid member and a pivotally supported member to releasably engage an article and co-operate with the rigid member to support the article by said members.

3. In apparatus for the purpose specified, a conveyer comprising a pair of sprocket chains, sprocket wheels over which the chains pass in parallel and spaced relation, and means connected to the chains to releasably support articles; and a receptacle to carry liquid paraffine constructed and arranged for the travel of the conveyer therethrough and the immersing of articles transported by the conveyer in the paraffine in the receptacle during the travel of the conveyer therethrough; a refrigerator through which the articles are passed as they are delivered from the paraffined receptacle; means to deliver articles to the conveyer; and means to release the articles from the conveyer after passing through the refrigerator.

4. In apparatus for the purpose specified, a receptacle for liquid paraffine; a conveyer for transporting articles through said receptacle and dipping articles carried thereby in the paraffine in the receptacle; and a refrigerator in juxtaposed relation to the paraffine receptacle and arranged for the travel of the conveyer therethrough and through which articles are transported as they are delivered from the paraffine receptacle.

5. In apparatus for the purpose specified, a receptacle for liquid paraffine; a conveyer for transporting articles through said receptacle and dipping articles carried thereby in the paraffine in the receptacle; and a refrigerator in juxtaposed relation to the paraffine receptacle and arranged for the travel of the conveyer therethrough and through which articles are transported as they are delivered from the paraffine receptacle; said refrigerator comprising a receptacle having an opening at opposite ends for the passage of the conveyer and adapted to carry a refrigerant and a cooling coil.

6. In apparatus for the purpose specified, a receptacle for liquid paraffine; a conveyer for transporting articles through said receptacle and dipping articles carried thereby in the paraffine in the receptacle; and a refrigerator in juxtaposed relation to the paraffine receptacle and arranged for the travel of the conveyer therethrough and through which articles are transported as they are delivered from the paraffine receptacle; said refrigerator comprising a receptacle having an opening at opposite ends for the passage of the conveyer, a refrigerant in the receptacle to reduce the temperature therein, a perforated coiled pipe through which the articles carried by the conveyer are transported, and means to deliver a blast of air through said pipe.

7. In apparatus for the purpose specified, a receptacle for liquid paraffine; a conveyer for transporting articles through said receptacle and dipping articles carried thereby in the paraffine in the receptacle; and a refrigerator through which the articles are transported as they are delivered from the paraffined receptacle including a series of air sprays to which the articles carried by the conveyer are subjected in their passage through the refrigerator.

8. In apparatus of the class specified, an endless chain conveyer arranged with article carriers; a paraffine receptacle arranged for the travel of the conveyer therethrough; a heating core in the paraffine receptacle to maintain the paraffine in a liquid state in the receptacle; and means constructed and arranged in the receptacle to guide the conveyer in its travel through the receptacle to cause articles carried thereby to be completely immersed in the paraffine without immersing the conveyer therein.

9. In apparatus of the class specified, an endless conveyor; a liquid paraffine carrying receptacle; a refrigerator; said paraffine receptacle and refrigerator being arranged in juxtaposed relation and constructed for the passage of the conveyer therethrough; article carriers successively arranged on the conveyer, each carrier comprising a rigid finger and a pivotally supported finger to support and releasably retain an article in relation to the rigid finger.

10. In apparatus of the class specified, an endless conveyer; a receptacle for liquid paraffine; a refrigerator in juxtaposed relation to the paraffine receptacle; said paraffine receptacle and refrigerator arranged and constructed for the passage of the upper stretch of the conveyer therethrough; an article support arranged at the end of the paraffine receptacle for the entrance of the conveyer; and article carriers arranged on the conveyer to pick up articles from the support and support the same during the travel of the conveyer through the paraffine receptacle and refrigerator and release the article as it is delivered from the refrigerator.

11. In apparatus of the class specified, an endless conveyer; a receptacle for liquid paraffine; a refrigerator in juxtaposed relation to the paraffine receptacle; said paraffine receptacle and refrigerator arranged and constructed for the passage of the upper stretch of the conveyer therethrough; means to intermittently advance the conveyer; an article support arranged at the end of the paraffine receptacle for the entrance of the conveyer; article carriers arranged on the conveyer to pick up articles from the support and releasably support and transport the same by the conveyer, each of said carriers comprising a fixed finger extending inwardly from the conveyer, a pivotally supported finger yieldingly urged to position to extend in parallel relation to the fixed finger; means to releasably engage the pivoted finger to move the same to position to clear an article on the support and cause said finger to engage said article and co-operate with the fixed finger to support the article; and means to actuate said pivoted finger to release the article as the articles are delivered from the refrigerator.

12. In apparatus of the class specified, an intermittently movable conveyer; a receptacle for liquid paraffine; a juxtaposed refrigerator; said receptacle and refrigerator being arranged for the passage of a stetch of the conveyer therethrough; an article support arranged at the entrance end of the paraffine receptacle; article carriers successively arranged on the conveyor, each carrier comprising a fixed finger and a pivotally supported finger normally positioned in parallel relation with the fixed finger; a second conveyor; means to feed an article from said second conveyer to the article support, said means being arranged to move the pivoted finger to position to permit feeding of the article onto the support between the fingers, and release said finger during the receding movement of said feeding means to engage and position the article relative to the fixed finger and support the same; and means to engage said finger to release the article from the conveyer as the articles are delivered from the refrigerator.

Signed at the city of New York, in the county of New York and State of New York, this 18th day of May, 1921.

IRVING STANLEY.