July 1, 1930. W. F. HENDRY 1,769,135

PACKAGE WRAPPING AND SEALING MACHINE

Filed Aug. 25, 1927

Fig. 1.

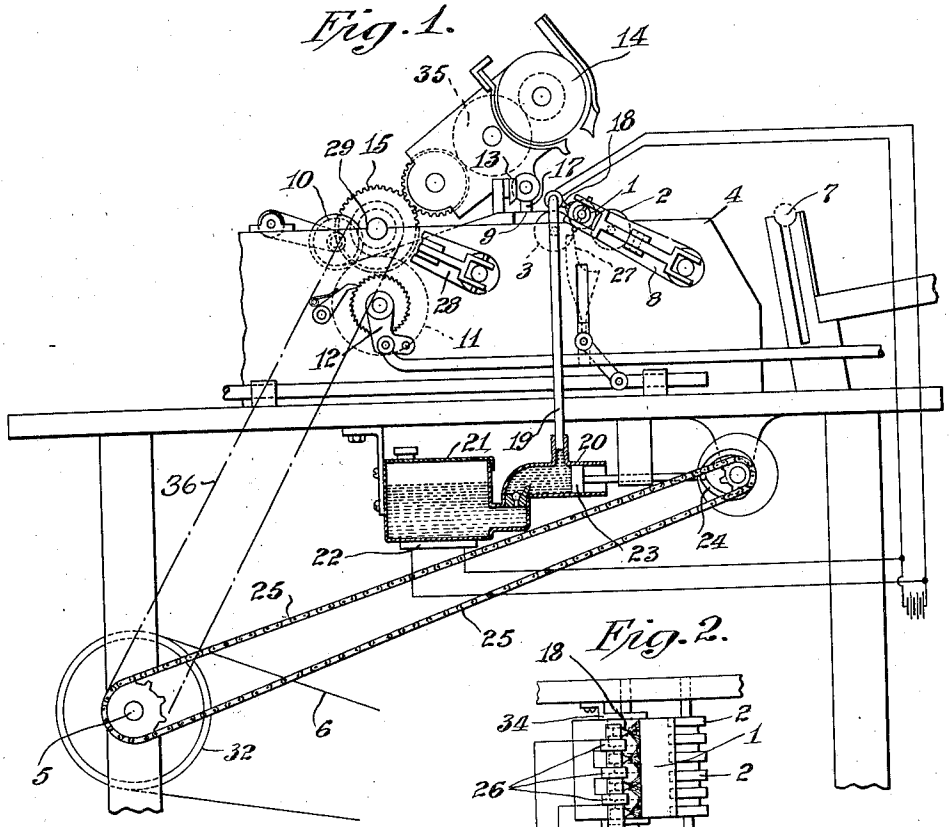


Fig. 2.

Fig. 3.

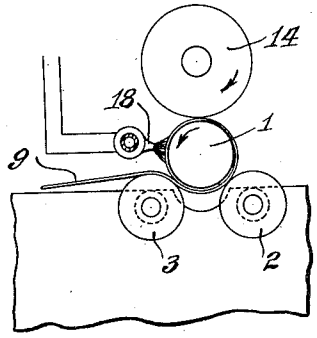
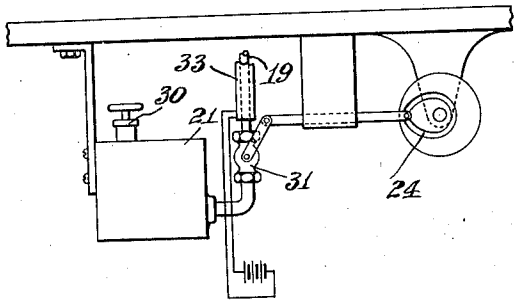


Fig. 4.



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UNITED STATES PATENT OFFICE

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PACKAGE WRAPPING AND SEALING MACHINE

Application filed August 25, 1927. Serial No. 215,350.

This invention relates to wrapping machines and relates more particularly to a machine for simultaneously wrapping packages or articles and sealing the wrapper with wax.

The objects of my invention are the provision of an improved process for wrapping and sealing packages of articles, and the provision of a machine for carrying out the process.

Certain types of articles, such as malted milk tablets and other hygroscopic articles must be wrapped and sealed in moisture proof packages in order to protect them from the atmosphere. I have found that a very satisfactory package may be made by wrapping the articles in a piece of paper or similar material, and at the same time that the wrapping is being performed, spraying on the paper a fine mist of hot wax.

In sealing a package in this manner a double turn wrapper should be used so that the articles may be covered by a complete turn of wrapper before any wax is sprayed, whereby a finished package would be encased by two complete thicknesses of wrapper, one thickness unwaxed on the inside and the second thickness sealed to the first by wax.

The wax may be applied to the wrapper very conveniently through a spray nozzle heated by electricity and supplied with wax by means of a force pump properly synchronized to act at the proper moment, or the wax might be kept in a reservoir in a liquid condition under pressure and be applied to the wrapper through a spray nozzle by operating a valve in the wax supply pipe.

The invention will be more clearly understood by reference to the following description and accompanying drawings. While the invention is applicable to various kinds of wrapping machines, I have chosen in the following description to illustrate it as it might be applied to a packaging machine of the type disclosed in Patent #1,516,902 issued to E. D. Anderson et al.

Referring to the drawings, Fig. 1 illustrates in elevation the parts of a wrapping machine, such as is disclosed in Patent #1,516,902, necessary to an understanding of my invention. Fig. 2 is a plan view of the wrapper applying mechanism of the machine illustrated in Fig. 1. Fig. 3 shows an enlarged view of a wrapper being applied to a package of articles. Fig. 4 illustrates a modification of the wax applying mechanism shown in Fig. 1.

In the drawings, reference numeral 1 indicates a package of articles about to receive a wrapper, positioned on a pair of spaced rolls 2, 3 and partially surrounded by a wrapper 9. Packages are positioned successively on rolls 2, 3 by means of a pair of oscillating fingers 8 which seize and transfer the packages from a stand 7 to which they are fed by a device not illustrated. Just as the fingers 8 are about to deposit a package on the rolls 2, 3 a length of wrapping material, such as paper, is fed off a roll 10 by means of a feed drum 11 which is actuated by a pawl arrangement 12, onto the two rolls 2, 3 directly under the package. This paper is cut off by means of a properly synchronized knife 13 and is wrapped around the package by a rotating drum 14 which is revolved through a gear train 35 driven by a chain 36 and is pressed against the package 1 by a push rod 17 actuated at the proper moment by a cam. (Not shown).

After the package has been rotated sufficiently to supply a single turn of the wrapper thereto, a spray of hot wax or similar sealing material is applied to the paper through a series of nozzles 18 positioned adjacent to the package. In order to prevent the sealing material from being deposited on the working parts of the machine, it may be found desirable to position a pair of guards 34 at the edges of the wrapper. The wax is supplied to the nozzles 18 through a pipe 19 which interconnects through a pump 20

with a reservoir 21. The wax in the reservoir is maintained in a heated condition by any suitable means, such as an electric heating coil 22 placed under the reservoir and is forced through the pipe 19 to the nozzles 18 by means of reciprocating pump 20. This pump has a plunger 23 which is operated at the proper time through the action of a cam 24 which is rotated by a chain 25 driven from a shaft 5. Shaft 5 may constitute the drive shaft for operating the entire machine and may derive its power from a prime mover through a belt 6 and pulley 32. The rotation of cam 24 is so synchronized with the wrapping movement of the package due to the action of roll 14 that the wax is sprayed onto the paper only after the paper has been wrapped once completely around the package whereby the articles in the package are protected from the wax. The spraying of the wax is continued until the wrapper is rolled entirely around the package, when the spraying is stopped. In order that the wax shall be hot when it is applied to the paper, a heating arrangement for the nozzles 18, such as a series of electric heating coils 26, is provided. After the wrapper has been entirely rolled around the package and covered with the heated wax, the ends of the wrapper are closed by means of a member 27 which is thrust against the ends of the rotating package so as to flatten the ends of the wrapper against the package in the manner more completely disclosed in the above mentioned patent. This closure of the ends of the wrapper will be accompanied by sealing thereof as the outer portion of the wrapper at this time will be entirely impregnated with hot wax. As soon as the entire package has been wrapped and sealed, fingers 8 and 28 are oscillated and upon such oscillation the fingers 28 remove the package 1 from the rollers 2 and 3 and transport it to a stand 29 while the fingers 8 place a fresh package on the rollers 2 and 3 in the manner above described, after which the whole operation is repeated on the fresh package.

Instead of having a pump such as 20 for forcing the wax out of the nozzles 18, the reservoir 21 might be made airtight and provided with means, such as a pump 30, for producing an air pressure inside of the reservoir sufficient to force wax out of the nozzles 18 at the desired pressure. With this arrangement the flow of the wax could be controlled by a valve 31 placed in the supply line 19. This valve 31 would be actuated by a cam 24 in a similar manner to the pump 20. Likewise, if desirable, a heating coil 33 might be placed around the pipe 19 to keep the wax therein fluid at all times as illustrated in Fig. 4.

The entire working mechanism of the wrapping machine has not been shown in detail as the machine illustrated may be identical with that disclosed in the above mentioned patent except for the addition of the wax supplying mechanism. The details of the specific wrapping machine mechanism are not important as it is evident that the invention is applicable to other types of machine than that illustrated.

The wax which I have mentioned as a sealing material may be paraffine or any other suitable sealing material and it need not necessarily be applied hot as a material which would seal and solidify when applied cold would do as well. In some cases a wrapper might be applied to the package before the application of the sealed wrapper in which case it would not be necessary to apply a single turn of the second wrapper before spraying on the sealing wax, as the package would be protected by the first wrapper.

While I have described a particular embodiment of my invention for the purpose of illustration, it will be understood by those skilled in the art that the invention is capable of a wide variety of modifications and adaptations without a departure from the spirit of the invention as set forth in the appended claims.

What I claim is:

1. In a machine for wrapping a package, means for applying a wrapper around said package, a spraying device controlled by said means for spraying sealing material on said wrapper during the wrapping process and means for sealing the ends of the package.

2. A package making machine, comprising means for applying a double turn wrapper to a package, means operated responsive to the application of a single turn of said wrapper, for applying sealing material to the rest of said wrapper and means for sealing the ends of the wrapper.

3. In a machine for wrapping articles, means for applying a wrapper to an article, a drive shaft for operating said means, and means for spraying sealing material on said wrapper during the wrapping operation, said last mentioned means comprising a reciprocating force pump operated by a cam driven by said drive shaft and directly connected to a spray nozzle, the size of the pump being such that at a single stroke it supplies only the amount of sealing material required.

4. The method of wrapping and sealing a package of hygroscopic material which comprises applying a wrapper to said package while at the same time depositing hot wax on said wrapper.

5. The method of wrapping and sealing a package which comprises winding a wrapper tightly around the said package and simultaneously spraying a quantity of sealing material onto the said wrapper.

6. The method of wrapping and sealing a package of hygroscopic material which comprises applying a single turn of wrapper to

said package, then applying another turn of wrapper to said package while at the same time coating said wrapper with wax.

7. The method of wrapping and sealing a package which comprises winding a single layer of wrapper around said package, then winding more wrapper over said first layer while at the same time coating said more wrapper with hot wax, and finally pressing the free ends of the wrapper against the package while the wax is still hot.

In testimony whereof, I have signed my name to this specification, this 24th day of August 1927.

WILLIAM F. HENDRY.