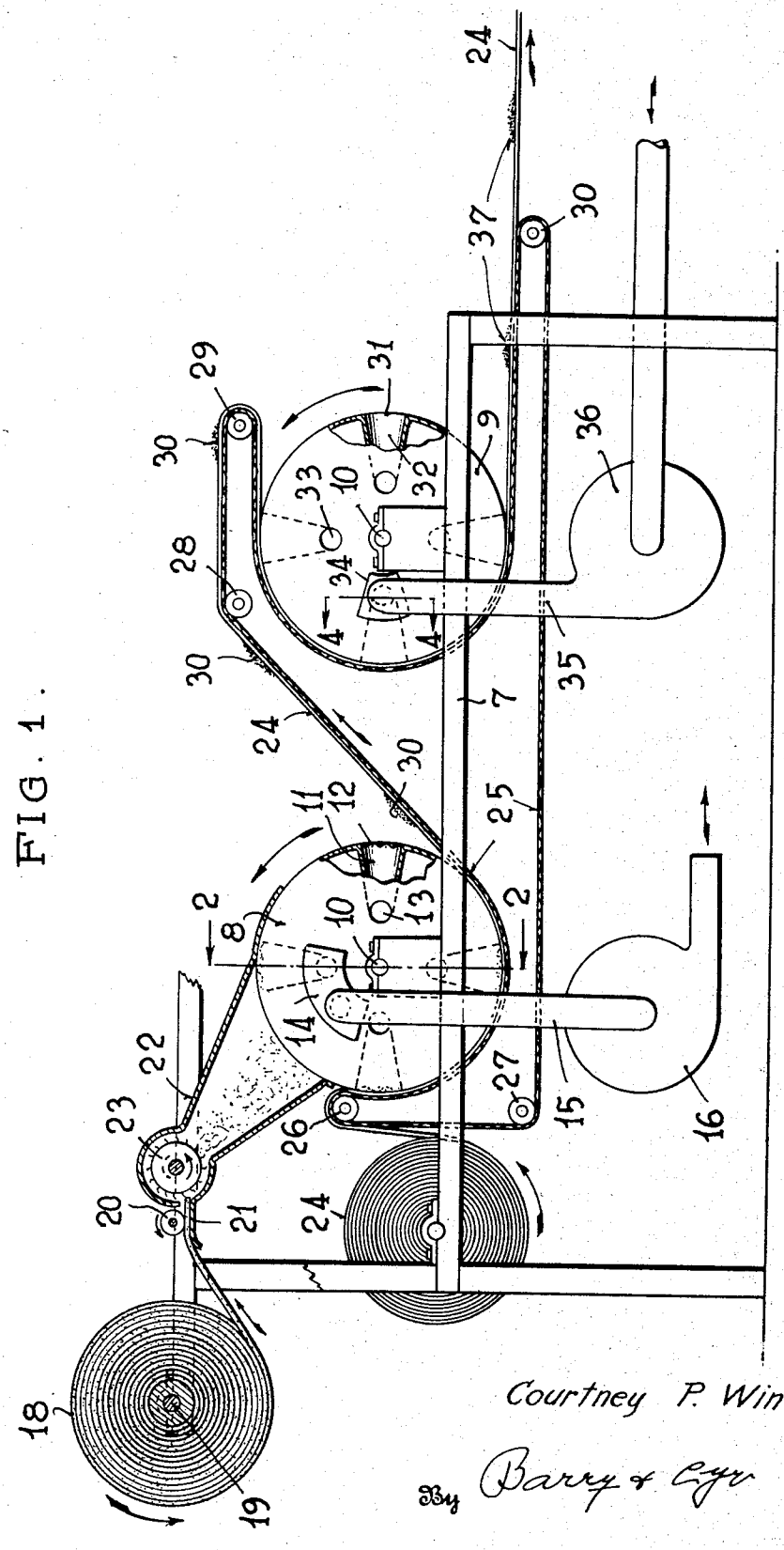
March 9, 1937. C. P. WINTER 2,073,329

METHOD AND APPARATUS FOR MAKING SANITARY NAPKINS OR THE LIKE

Filed Dec. 29, 1934 2 Sheets-Sheet 1

FIG. 1.



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FIG. 2.

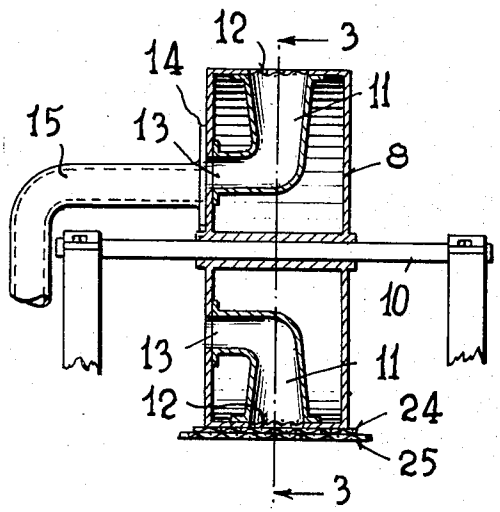


FIG. 3.

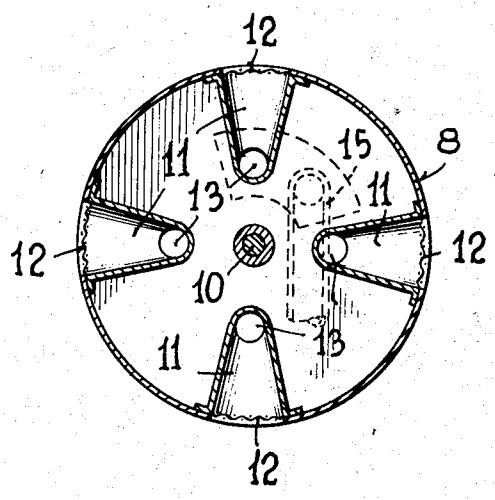


FIG. 4.

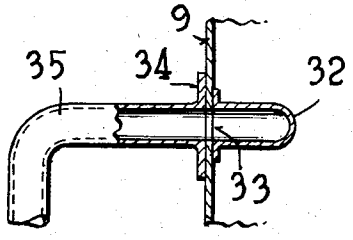


FIG. 5.

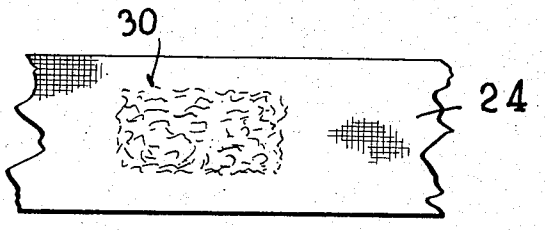
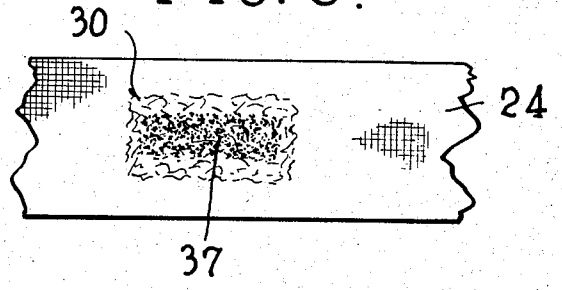


FIG. 6.



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METHOD AND APPARATUS FOR MAKING SANITARY NAPKINS OR THE LIKE

Courtney P. Winter, Chambersburg, Pa., assignor to International Cellucotton Products Company, Chicago, Ill., a corporation of Delaware

Application December 29, 1934, Serial No. 759,795

7 Claims. (Cl. 154—33)

This invention relates to improvements in methods and mechanism for making sanitary napkins or the like, and the primary purpose of the invention is to improve the method and apparatus disclosed in my U. S. Patent No. 1,950,765, dated March 13, 1934.

In that patent, I have disclosed a method and means for making sanitary napkins by passing a web of gauze or other suitable textile material over a surface and applying to the web at regular intervals, patches of loose cotton or the like, before pads of absorbent material are deposited on the patches and the web is folded and cut at regular intervals to make the napkins. In such apparatus, the patches of fibrous or facing material are placed upon the web by blowing loose fibrous material on the web, and another object of the present invention is to deposit the patch material on the web by a novel method and means. By the improvements, the free fibrous material or loose cotton forming the facing or lining patches is placed on the web by suction means, and consequently, is more evenly and uniformly applied, so that the patches are of more uniform thickness.

A further object is to furnish a method of lining sanitary napkins or the like, in which cotton fibers or similar substances suspended in air are drawn by sub-atmospheric pressure to the surface of a movable wheel member having spaced screened suction inlets on which the fibers are deposited in uniform layers, before such layers are deposited at spaced intervals on a web of gauze or the like by substantially atmospheric pressure. Subsequently, filler pads may be placed on said layers and the web and layers are enfolded within the web to make up sanitary napkins.

With the foregoing objects outlined and with other objects in view which will appear as the description proceeds, the invention consists in the novel features hereinafter described in detail, illustrated in the accompanying drawings, and more particularly pointed out in the appended claims.

In the drawings,

Fig. 1 is a side elevation, with parts in section, of a machine constructed in accordance with my invention.

Fig. 2 is a transverse vertical sectional view of a detail, taken on the line 2—2 of Fig. 1.

Fig. 3 is a vertical sectional view of the suction member or wheel, taken on the line 3—3 of Fig. 2.

Fig. 4 is a sectional view of another detail, taken on the line 4—4 of Fig. 1.

Fig. 5 is a fragmentary plan view of a web forming the covering of the napkin, having a film or thin layer of cotton fiber deposited thereon.

Fig. 6 is a similar view after the deposit of the pad material on the layer of cotton fiber.

Referring to the drawings, 7 designates an elongated frame upon which are supported in spaced relation to one another, the movable members or rotatable wheels 8 and 9 respectively. These wheels are mounted upon axles 10, and they are rotated in timed relation by any suitable means, not shown.

The wheel 8 is provided with radially disposed internal ducts 11 having at their peripheral ends screened inlets 12 upon which the loose or free cotton is deposited by means hereinafter described. The outlet end 13 of the ducts open through one side of the wheel, and they are arranged in a circular series so that they successively register with a stationary valve member 14 during the rotation of the wheel. The valve member communicates with a pipe 15 leading to the suction port of a blower 16 having a peripheral discharge pipe 17.

While the blower is in operation and the wheel is rotating, it will be understood that each time a port 13 comes into register with the valve member 14, suction will be exerted in the duct 11. Then, as the port moves out of register with the member 14, atmospheric air will enter at 13 and permit the loose cotton to be deposited on the web in a manner hereinafter described.

For the purpose of depositing the cotton on the screened inlets 12, a roll of cotton batting or the like 18 is mounted on a shaft 19 which may be rotated by any suitable means (not shown), so as to unroll the cotton and permit it to pass through a space between a feed roll 20 and a shelf 21, into a hood 22. Any suitable means for disintegrating the cotton, such as a carding wheel 23, is mounted in the inlet end of the hood, and if a carding wheel is used, it can be rotated by any suitable means, not shown. Such wheel disintegrates the cotton batting, and the hood feeds the resulting free fibers toward the wheel 8, and as the latter rotates, suction in the ducts 11 will, of course, cause the loose cotton to adhere to the screened inlets 12. In this way, lining patches of loose cotton or the like are built up in the form of films, of uniform thickness, at intervals on the surface of the wheel 8 before such lining patches are deposited on the gauze strip.

The gauze strip or web may be in the form of a roll 24 suitably mounted on the frame and fed by means of an endless belt or conveyor 25. The

belt is guided by rollers 26, 27, 28, 29 and 30, and movement may be imparted to one or more of these rollers for the purpose of advancing the belt in timed relation with the movement of the wheels 8 and 9.

The belt guiding rollers are so positioned as to cause the web of gauze to be fed along the surfaces of both drums 8 and 9, and as the roller 26 is positioned in close proximity to the outlet end of the hood 22, each patch of lining material will be deposited upon the web, due to atmospheric pressure entering the ports 13.

As shown at 30, the patches of lining material are peeled from the wheel 8 as the web is moved away from the wheel 8 and advanced toward the wheel 9; and such patches are brought into register with the open outlet ends 31 of the ducts 32 of the wheel 9. The wheel 9 forms one means for placing pads of absorbent material on the lining patches, and such wheel may be of the kind disclosed in my above mentioned patent. For example, each duct may have an inlet end 33 to cooperate with a stationary valve member 34 forming the outlet of a pipe 35 through which loose absorbent material is forced by a blower 36.

It will be understood that the lining patches 30 are placed on the gauze web in such relation that they successively come into register with the ducts 32, and as soon as each duct comes into register with the valve member 34, loose fibrous material will be forced by the blower 36 on to a patch to build up a wad or pad 37 on the web.

As will be evident from the difference in width between the patch 30 and pad 37 in Fig. 6, the ducts of the wheel 9 are narrower than those of the wheel 8, and consequently, the pads placed on the lining patches will be of less width than such lining patches. Therefore, when the side edges of the web 24 are folded toward one another by means (not shown), the side edge portions of the lining patches, as well as the side edge portions of the web will be folded over on to the pads in the same general way as that disclosed in my above mentioned patent. Any suitable means may be employed, such as the mechanism shown in my Patent 1,950,765 for compressing the side edges of the pads and for folding the web and lining patches, as well as for severing the web at spaced intervals in forming the complete napkins.

While I have described the invention for use in making sanitary napkins in a precise way, it will be obvious that my improvements may be employed also for placing patches of loose material at intervals on any foraminous web, as the latter is advanced through a machine.

From the foregoing it is believed that the construction and operation of my device, as well as the various steps of my method, and the advantages thereof may be readily understood by those skilled in the art, and it is apparent that changes may be made in the steps of the method and details of construction of the apparatus without departing from the spirit of the invention as expressed in the claims.

What is claimed and desired to be secured by Letters Patent is:

1. The method of lining a wrapper for a sanitary napkin or the like, which consists in drawing loose fibrous material by sub-atmospheric pressure to a screen-like surface to form thereon a film of said fibrous material, bringing said film, while on said member, into contact with a web of gauze, and then subjecting the film to substantially atmospheric pressure to detach it from said screen-like member and attach it to said web.

2. The method of producing sanitary napkins, which consists in sucking loose fibrous material by sub-atmospheric pressure to a screen-like surface to form thereon a film of said material, bringing a gauze web into contact with said film while on said screen-like surface, subjecting said film to increased air pressure to release the film from said screen-like surface and attach it to said web, pneumatically depositing a layer of absorbent material on said web, and then folding marginal side portions of said web over the exposed surface of the absorbent layer.

3. In a machine of the class described, the combination of a movable member provided with spaced ducts having screened inlets arranged adjacent the surface of said member, a hood leading to said surface and adapted to successively communicate with said ducts for guiding loose fibrous material to the inlet screens of the respective ducts, means for establishing sub-atmospheric pressure in the ducts when communicating with said hood for causing a film of said fibrous material to be sucked against the respective inlet screens, means for positioning a web of gauze against the surface of said movable member and over the films formed on said inlet screens, and means for relieving said sub-atmospheric pressure in each duct when said gauze web is positioned over the film-covered inlet screen thereof, thereby to release the film from said screen and cause its attachment to said gauze web.

4. In a machine of the class described, the combination of a movable member provided with spaced ducts having screened inlets arranged adjacent the surface of said member, a hood leading to said surface and adapted to successively communicate with said ducts for guiding loose fibrous material to the inlet screens of the respective ducts, means in said hood for disintegrating a web of fibrous material to supply said loose fibrous material, means for establishing sub-atmospheric pressure in the ducts when communicating with said hood for causing a film of said fibrous material to be sucked against the respective inlet screens, means for positioning a web of gauze against the surface of said movable member and over the films formed on said inlet screens, and means for relieving said sub-atmospheric pressure in each duct when said gauze web is positioned over the film-covered inlet screen thereof, thereby to release the film from said screen and cause its attachment to said gauze web.

5. In a machine of the class described, the combination of a rotatable member having spaced suction ducts provided with screened inlets arranged adjacent the periphery of said member, each of said ducts having an outlet port, a stationary valve member so arranged in relation to said revolving member as to successively register with the ports of the member, air exhausting means connected to the valve member, a hood for guiding loose fibrous material to the inlet screens of the ducts when in communication with said exhausting means, thereby to cause the formation of a film of said fibrous material in the respective inlet screens, means for positioning a web of gauze against the periphery of said rotatable member for successively overlying the films of fibrous material formed on said inlet screens, said valve member being arranged to disconnect said ducts successively from said exhausting

means and to permit the entrance of air through said ports into said ducts successively as said gauze web is positioned over the respective films, thereby to cause said films to be released from said inlet screens and attached to said gauze web.

6. The method of lining a wrapper for a sanitary napkin or the like, which consists in drawing loose fibrous material by sub-atmospheric pressure to a screen-like surface to form thereon a film of said fibrous material, bringing said film, while on said member, into contact with a web of gauze, and then relieving said subatmospheric pressure so as to release the film from said screen-like member thereby to cause said film to become attached to said gauze web as an incident to the inherent tendencies of said material to cling together upon contact with each other.

7. The method of producing sanitary napkins, which consists in sucking loose fibrous material by sub-atmospheric pressure to a screen-like surface to form thereon a film of such material, bringing a gauze web into contact with said film while on said screen-like surface, subjecting said film to increased air pressure to release the film from said screen-like surface and attach it to said web, depositing a layer of absorbent material on said web, and then folding marginal side portions of said web over the exposed surface of the absorbent layer.

COURTNEY P. WINTER.