June 15, 1965 H. S. ELDEN 3,188,779

UNIFORMLY HUMIDIFIED PAPER TAPE

Filed April 5, 1962

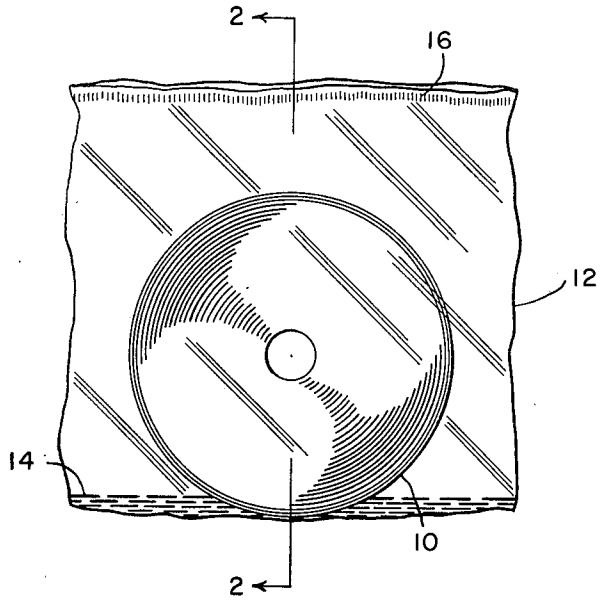


Fig. 1

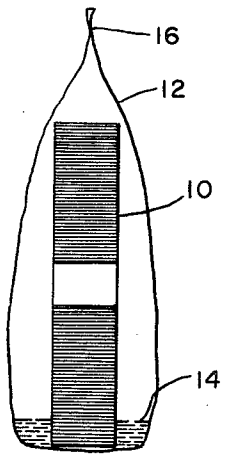


Fig. 2

INVENTOR.
Howard S. Elden

BY Robert F. Hause

ATTORNEY

United States Patent Office 3,188,779 Patented June 15, 1965

3,188,779

UNIFORMLY HUMIDIFIED PAPER TAPE

Howard S. Elden, Clarence Center, N.Y., assignor to National Gypsum Company, Buffalo, N.Y., a corporation of Delaware

Filed Apr. 5, 1962, Ser. No. 185,451
5 Claims. (Cl. 53—21)

This invention relates to the humidification of rolls of paper tape and, particularly to a humidifying package of rolls of paper joint tape intended for use in the adhesive application thereof over joints in wallboard for constructing monolithic walls.

The common method of concealing joints in walls of gypsum wallboard, to obtain an unbroken monolithic finished wall, consists of applying an elongate narrow tapered edge paper tape referred to as joint tape, over the joint, adhering it with an aqueous casein adhesive, known as joint compound, and subsequently applying from one to three additional coats of the joint compound over the tape in progressively wider areas, each coat being tapered to an infinitely thin edge.

One problem which occasionally arises in this joint concealing process is an uneven expansion of the joint tape subsequent to its being wetted by the joint compound, the thin tapered edges of the tape being inclined to expand more than the relatively thicker central portion, which thus produces undesirable wrinkling of the edges, the wrinkles extending perpendicularly to the tape edge, and being of progressively decreasing size progressively inwardly from the edge. This problem has been found to be the result of the tape having become excessively dry prior to its use, that is, less than the normal moisture content of about 5% to 7%.

Secondly, joint tape, even with a normal moisture content, is somewhat stiffer than what would be easiest to work with, and also, by its stiffness, it tends to cut the hands of an applicator.

Still further, the moisture content of a joint tape affects the rate and the amount of water absorbed from the joint compound during application, whereby with relatively moist tape water is taken out of the joint compound slower and the compound remains workable for a longer period.

It is an object of the invention to provide a novel method of humidifying a roll of paper and maintaining a relatively high moisture content in the roll of paper until it is to be used.

It is a further object to provide a novel method of packaging joint tape.

It is a still further object to provide an improved packaged joint tape.

These and other objects of the invention will be more readily apparent when considered in relation to the preferred embodiments as set forth in the specification and shown in the drawings in which:

FIG. 1 is a front view of the novel transparent plastic package of joint tape immediately after packaging and sealing in accordance with the invention.

FIG. 2 is a sectional view of the package of FIG. 1 taken on line 2—2 thereof.

There is shown in the drawings a roll 10 of paper joint tape of the type for use over joints in dry wall construction. These rolls are commonly manufactured and sold in lengths of tape of 60 feet, 75 feet, 250 feet and 500 feet, and on completion of their manufacture, the paper tape has a normal moisture content of about 5%. Accordingly, for a typical example, a roll 10 consists of 250 feet of joint tape, two inches wide, and .010 inch thick in a center portion tapering to a thickness of about .006 inch at the two edges. This 250 feet of tape weighs approximately one pound, or 454 grams, which at 5% moisture content includes 22.7 grams of water.

The tape is packaged, in accordance with the invention, by placing the roll 10 in a normal relatively tightly wound form, in a water-impermeable polyethylene film container 12, also placing in the container 22.7 grams of water 14 at from 120° to 160° F., and completely sealing closed the container 12 as shown at 16.

The sealed container of the roll of tape and water is then stored for one week at a temperature of about 70° F. By the end of the week of storage the water 14 will be completely and uniformly absorbed by the roll of tape, whereby the tape has a moisture content of 10%.

The sealed container with the humidified roll of tape may then be dealt with in any normal manner. The container may be opened and the tape used immediately, or the container with tape sealed within may be stored under any condition for any length of time and then opened and used immediately.

The invention contemplates certain variations in the preparation of the water impermeable package of tape and water. Tape rolls may be packaged with a single roll per sealed package or a small plurality of rolls, easily carried, and in a number that would normally be used immediately on a single job site. The amount of liquid water to be added to a package may be readily determined, as in the above example, by determining the moisture content, by weight, of the paper prior to packaging, and subtracting from what the moisture content, by weight, would be at the humidified condition desired in accordance with the invention.

The moisture content, by percentage, during the conversion of plain paper into joint tape, which would normally be conducted immediately prior to packaging, must be in the order of 5% to 7%. This conversion consists of a process wherein the paper is slit to approximately two inch widths, the surface on at least one side is roughened, by abrasion, for the improved adhesion of joint compound, and the edge portions are skived, as by grinding, to a thin tapered edge. It is essential that the roughening and skiving steps be done when the paper is at a moisture content no more than about 7%; in order to obtain the desired quality of results from these steps.

The high moisture content joint tape provided by the invention is of about 9% to 15% moisture. At a moisture content of about 9% and over, the joint tape is markedly different from prior available tape having 5% to 7% moisture content, having a definitely increased workability whereby it can be applied faster and easier by a joint tape applicator. The improved tape is softer and more flexible and thus does not tend to cut an applicator's hands as will normal tape. The uniform high moisture content throughout the tape avoids uneven expansion and wrinkling when wetted by the joint compound on a job. Further, the higher moisture content of the tape results in less moisture take-up from the compound whereby the compound remains plastic and workable for longer periods during the joint tape application process.

A moisture content in excess of about 15% provides a tape with substantially no greater degree of the advantages outlined above, while being disadvantageously too wet for the best handling properties and also subject to mildewing.

The water added into the water-impermeable container, in the preferred embodiment, is at a temperature of from 120° to 160° F. This, however, is not critical, but instead is an easily obtainable water temperature which provides a substantial acceleration of the absorption process in the sealed container, in comparison to the use of water at lower temperatures.

A polyethylene film container is a preferred, relatively inexpensive, easily handled, easily sealed, transparent con-

tainer, however any substantially water-impermeable sealable, and portable container may be employed.

The storage of the sealed container of the preferred embodiment for one week provides the required time for complete and uniform absorption of the water by the tape. Variations from the other elements of this embodiment may be expected to require variation in the necessary minimum time of storage for this complete and uniform absorption, as may be determined.

In a modified form of the invention, the liquid water and tape are, to a degree, combined subsequent to completion of fabrication of the paper into the finished tape form, immediately prior to placement into the sealed, water-impermeable container. For example, in the form of the invention, the buffed and skived tape, prior to being rolled, is passed over rotatable rolls partially submerged in water, or otherwise suitably continuously wet, whereby the tape is wetted with water of about 5% to 10% of the tape weight. The thus wetted tape is then rolled into normal commercial size rolls of tape, and sealed in the above described impermeable container. Complete and uniform absorption of the water by the thus wetted and packaged tape is very rapid whereby no care will normally be needed of the time of storage, normal shipping time to a job site being sufficient to provide uniform absorption in accordance with the invention.

Having completed a detailed disclosure of the preferred embodiment of my invention so that those skilled in the art may practice the same, I contemplate that variations may be made without departing from the essence of the invention or the scope of the appended claims.

I claim:

1. The method of packaging rolls of paper joint tape of the type for use in drywall construction, comprising the steps of disposing a tightly wound roll of surface abraded paper joint tape, having a moisture content of less than about 7%, in an unsealed impermeable container, also disposing in said container free water in sufficient quantity to increase said moisture content by the complete absorption of said water to about 9% to 15%, immediately thereafter sealing said impermeable container containing said roll and water, and retaining said container in a sealed impermeable form during a uniform absorption of said water by said paper.

2. The method of claim 1 wherein after disposing both said roll and said water in said container, said roll is disposed directly in said water.

3. The method of claim 1 wherein said sealed container is stored at least one week at a temperature of about 70° F.

4. The method of claim 1 wherein said water is placed in said container at a water temperature of from about 120° F. to about 160° F.

5. The method of claim 1 wherein said paper joint tape has a relatively thick center portion and tapers to substantially thinner edge portions.

References Cited by the Examiner

UNITED STATES PATENTS

1,472,230	10/23	Plum	117—60
2,331,610	10/43	Kemp	117—60
2,613,487	10/52	Vaughn	53—21
2,814,382	11/57	Lassiter	53—21 X

FRANK E. BAILEY, *Primary Examiner.*

ROBERT A. LEIGHEY, *Examiner.*