Patented Apr. 7, 1953 2,634,220

UNITED STATES PATENT OFFICE

2,634,220

COATED PAPER

Benjamin J. Oriel, New York, N. Y.

No Drawing. Application December 29, 1949, Serial No. 135,851

1 Claim. (Cl. 117—154)

1

This invention relates generally to paper-toys, and more particularly to toy-typewriter paper with whitewashable paper surface. My object is to provide simple, inexpensive, repeatedly usable toy-typewriter equipment. The use of this paper, in which the whitewashable coating is disposed uniformly, provides greater amusement in operation and manipulation.

According to the methods hitherto known there are already available special typewriter ribbons prepared with a special chemical ink, such that typewriter face produced with it will disappear from the paper surface after application and treatment with two different eradicator fluids. However, despite the prescribed use of a blotting paper, the eradicated surface dries slowly, and the corrosive effect of the eradicator fluids changes the eradicated part of the paper face from white to yellowish color; consequently the paper wrinkles if special parchment or fine paper is not used. Therefore, the use of such eradicator fluids with special new typewriter ribbons could not replace the use of a rubber eraser until now.

However, hitherto there was no known method which would allow the possibility of erasing the typewriter face by simple water instead of by rubber eraser or chemical eradication fluids. Nevertheless, any typewriter face produced by typing through any usual typewriter ribbon upon the surface of a paper coated with whitewashable coating, which I apply for carrying out my invention, can be erased simply by the use of water.

As described above, it is the object of this invention to provide a disposable paper having its surface impregnated with a coating "whitewashable with water" which may be legibly typewritten upon with any usual typewriter ribbon and after that, as desired, eradicated in part or whole "with simple water"; that is, by rubbing it slightly with a small piece of wet cotton or a small wet rag. Then the eradicated part of the paper surface will dry up quickly, and the words desired can soon be retyped, or after whitewashing the whole surface of the paper with water, as soon as it dries can be used again instead of another sheet of paper.

The foregoing and other objects and advantages of the invention will be more apparent from reading the detailed description in the following part of the specification.

The invention comprises generally a combination of usual writing paper or typewriter paper, provided with a "whitewashable surface coating."

2

This coating is formed with such a coating composition that its consistency is receptive to a typewriter face obtained with any usual typewriter ribbon, which face will remain legible under diverse climatic conditions.

Furthermore, any backing sheet of writing paper of light weight is suitable for provision with layer of the coating composition described hereinafter.

This relatively light weight paper, when it is coated with a layer of said coating composition, after drying of the solvent contained therein is perfected with a protective surface coating formed in situ. This coating comprises a laminated structure of a skin like film residue of a dried layer of a hydrous poly-alco-gel base coating compound upon the paper surface. Such coated paper surface is non tacky but is whitewashable and emulsifiable with water. It will retain ink of typewriter face produced with typing through any kind of typewriter ribbon, in legible condition in hot, cold and moist environment.

It has been found that the preferred whitewashable coated paper surface structure, which can be made so that it will reversibly swell and shrink and imbibe water that is applied for rubbing and washing off a portion of the coated paper surface, can be obtained by forming a coherent, superficial, thin film resulting from drying a hydrous poly-alco-gel coating compound. The coating compound is comprised of a hydrous colloidal suspension of finely dispersed particles of "tri-acetyl-arabino-galacto-dimethoxy-tetra-galacturonic acid" (whose formula is $C_{46}H_{62}O_{57}$ according to the chemical analysis of pectin reported in the Bulletins 120–150 of 1916–1918 of the Experimental Station of the Department of Agriculture of Washington State), which is a pectic substance possessing high viscosity and colloidal properties in solution, in aqueous solution containing an isotonic solution of three chlorides, glycerin, and benzoic acid.

It is advisable to incorporate the said pectic substance in its white form—which is commercially available—in order to prepare the hydrous poly-alco-gel base compound required for obtaining the preferred coating composition. An adequate softening of the prepared mass will be obtained by its dilution with water.

In order to provide a better writing film surface, it is necessary to use a recently prepared coating composition, either of pasty jelly consistency, or creamy consistency, obtainable after agitating the mass of the used compound and

softening, viz. by adequately diluting, with water. The specific materials used and their relative proportions may be varied according to the properties desired in the final product obtainable after removing excess coating composition, i. e. after final striking off of the superfluent part of the layer of the mass pasted or rolled upon the paper surface and then completely dried.

A product having all the above described properties is obtainable when at least the surface of one side of a sheet of preferred paper is coated with said coating composition, either of creamy consistency—prepared with all ingredients, under "not less" first specified quantities—or pasty jelly consistency—prepared with all ingredients, under "not more" last specified quantities—obtained after admixing gradually all other ingredients, subsequently described.

The coating composition comprises not less than three and a half per cent by weight, or not more than seven and a half per cent by weight of above specified pectic substance beside not less than seven and a half per cent by weight, or not more than eighteen per cent by weight of glycerin, and 0.02 per cent by weight of benzoic acid, and the remainder "isotonic solution of three chlorides" prepared according to the formula prescribed by U. S. P. XII, so that the solution contains in each 1000 ccm. from 820 milligrams to 900 milligrams of sodium chloride: "NaCl," from 25 milligrams to 35 milligrams of potassium chloride: "KCl," from 30 milligrams to 35 milligrams of calcium chloride: "$CaCl_2 \cdot 2H_2O$."

After complete dissolution of said chlorides in sufficient quantity of distilled water, boiled recently, the solution is filtered until clear after dissolution therein of the above specified quantity of benzoic acid.

For obtaining the aforementioned coating composition, of creamy consistency, comprising the mixture of three and a half per cent by weight of above specified pectic substance and seven and a half per cent by weight of glycerin to which should be added 89 per cent by weight of above specified "isotonic solution of three chlorides" and 0.02 per cent by weight of benzoic acid.

For obtaining the aforementioned coating composition of pasty jelly consistency, comprising seven and a half per cent by weight of above specified pectic substance and eighteen per cent by weight of glycerin may be added 75 per cent by weight of above specified "isotonic solution of three chlorides" and 0.02 per cent by weight of benzoic acid.

Mix in a large container the preferred quantities of the above specified pectic substance and glycerin gradually added until all particles of said substance are covered with glycerin. Then while stirring, add the previously prepared hot solution of the above specified "isotonic solution of three chlorides" and of benzoic acid, and continue stirring until a homogenous paste is formed and a pasteable emulsion is obtained.

The emulsified coating composition must be adequately softened with recently boiled distilled water to proper coating consistency, before it can be applied to the paper surface base slightly wetted with the same water shortly before the application.

The coating composition diluted and softened to a coating consistency is placed in a vat, and either after rolling or floating it upon the paper base will be stricken off with a spatula. The paper after being floated therein, is then passed over a doctor roll and dried in a low temperature drying oven according to the standard practice in the paper coating industry. Sheets have to be stacked and placed under pressure.

After drying, the sheets single folded and stacked, are flexible and could be rolled and smoothed down without sticking, cracking or breaking.

The paper surface provided with the coating has the property that typewriter face produced on it readily becomes deleted when washed off by rubbing with a small piece of wet rag or wet cotton.

The object of the invention is to provide an interesting reusable part of regular typewriter equipment for use with a toy-typewriter too. It will also be of educational value, may be manufactured at low cost, and may be used repeatedly on account of the fact that its use keeps the typewriter clean.

The above objects are accomplished and other ends are attained by the novel composition of coating applied upon the surface of the part therein described. It is understood that the invention is capable of various adaptations and that changes or variations and modifications may be made or substitutions resorted to, which come within the scope of claim hereunto appended.

Having thus described my invention, what I claim as new, and wish to secure by Letters Patent is:

A new article of manufacture, a paper sheet having a coating on the surface thereof comprising a laminated structure of a dry film residue resulting from drying a paper sheet after having its surface coated by applying thereupon a layer of a hydrous poly-alco-gel base coating composition comprised of not less than three and a half per centum and not more than seven and a half per centum by weight of tri-acetyl-arabino - galacto - dimethoxy-tetra-galacturonic acid, and not less than seven and a half per centum and not more than eighteen per centum by weight of glycerin, and 0.02 per centum by weight of benzoic acid, and not less than seventy-five per centum and not more than eighty-nine per centum by weight of isotonic solution of three chlorides.

BENJAMIN JOSEPH ORIEL.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,961,866	Rooker	June 5, 1934
2,287,849	Wilson	June 30, 1942

OTHER REFERENCES

"Pectin in Nature and Industry," by G. L. Baker; Scientific Monthly, Jan. 1935, pages 48–54.

Pectin, "Its Manufacture, Properties & Uses," compiled by W. D. Elwell, Jan. 1939, page 34.