

[54] MARKING METHOD	2,973,301	2/1961	Klotz.....	424/37
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	2,597,986	5/1952	Halstead.....	264/4 X

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[57] ABSTRACT

The invention relates to marking projectiles comprising a soft gelatine capsule, which is suitable plasticized with a mixture of glycerine and sorbitol, and which suitably contains from 0.25 to 1.25 ccs of marking fluid. The invention also relates to a method of marking objects which comprises projecting such a projectile so that the capsule ruptures on impact with the object to mark it with the marking fluid contained in the capsule.

16 Claims, No Drawings

## MARKING METHOD

This is a division of application Ser. No. 816,380, filed Apr. 15, 1969, now abandoned.

This invention is concerned with improvements in and relating to the marking of articles.

More particularly, the invention is concerned with the marking of articles by firing from a gun or like instrument a projectile adapted, on impact with the article, e.g. at a velocity of from 50 to 200 feet per second, to break and to deposit thereon a marking of paint or paint-like material contained in the projectile. This marking method may be used, for example, for the marking of trees prior to felling to indicate which trees should be felled. Previously, such marking has been achieved simply by cuts with an axe or by dusting powder onto the bark of the tree. Neither system gives a mark which can be easily seen after several months.

It is an object of this invention to provide an improved projectile to be projected by a gun or like instrument for marking articles.

According to the invention there is provided a marking projectile comprising a soft gelatine capsule containing a marking fluid.

The gelatine capsule should be a so-called "soft" gelatine capsule; that is a gelatine capsule formed of gelatine containing a plasticizer. However, the capsule should not be too soft otherwise it may tend to rupture or jam in the barrel of the gun or like projecting instrument and, accordingly, it is preferred that the gelatine should not contain more than 30% by weight of plasticizer based on the total dry weight of plasticizer and gelatine. Suitably, the gelatine will contain not more than 25% by weight of plasticizer. The plasticizer may be, for example, glycerin, propylene glycol, diethylene glycol or hexanetriol; glycerin being preferred.

According to a preferred feature of the invention the plasticizer will comprise one of those mentioned above in association with sorbitol in order to improve the properties of the capsule with respect to exposure to moisture-containing atmospheres. The amount of sorbitol is preferably about the same as the amount of glycerin or other plasticizer. Accordingly, a preferred capsule comprises gelatine plasticized with from 8 - 15% by weight of glycerin and from 12.5 - 15% by weight of sorbitol, preferably about 13.5% by weight of glycerin and about 13.5% by weight of sorbitol, the percentages being based on the total weight of gelatine, glycerin and sorbitol.

The gelatine capsule will also contain some water, the amount of which will depend to some extent upon the actual method of preparation of the capsule and any subsequent drying of the capsule. Thus, for example, the capsule may contain from 7 to 10% by weight of water.

Suitably, the capsule will have a wall thickness of from 0.02 - 0.03 inch, preferably about 0.025 inch. It will be appreciated that for the capsules of the softer gelatine the wall thickness should be less and vice versa. It has been found that in order to produce a readily visible marking upon the object the capsule should suitably contain from 0.25 - 1.25 cc of marking liquid, preferably about 0.75 cc.

The marking liquid will generally be a pigmented liquid such as a paint, lacquer or the like and, obviously, the marking liquid must be of a type compatible with the gelatine capsule, that is the liquid should not inter-

act with the walls of the gelatine capsule so as to cause rupture or seepage. The marking fluid should also be one which tends to adhere to the marked object. Suitably, for example, the marking liquid may be an oil based paint. The marking liquid is, as stated above, preferably pigmented so as to provide a readily distinguishable mark upon the object and, desirably, in order to facilitate recognition of the mark, the liquid will also contain a fluorescent material. Suitable marking liquids are available commercially.

The capsules of the present invention will suitably have a diameter of the order of about 0.25 - 0.75, preferably about 0.325 inches and may be of any suitable shape. It has been found that acceptable results may be obtained with both spherical and oblong capsules. In the case of the oblong capsules these suitably have a length of from 0.75 to 1.25 inches, preferably about 1 inch.

The gun or like projecting mechanism used for firing the capsules at the object to be marked is suitably of the compressed gas type, for example a so-called "air-gun." We have found it preferable to use this form of gun since the relatively slow build up of pressure in the barrel, as compared with a firearm using an explosive charge, very much reduces the chance of the capsule bursting in the barrel of the gun.

The invention also provides within its scope a method of marking objects which comprises firing a capsule of the invention from a suitable gun at the object to be marked.

The capsules of the invention may be manufactured by conventional techniques used in the manufacture of liquid-filled capsules. These methods generally involve the formation of a liquid gelatine mix which is then formed into a capsule on a suitable machine, the liquid being injected into the capsule immediately before it is sealed.

In order that the invention may be well understood the following example is given by way of illustration only.

## EXAMPLE

Gelatine capsules were prepared on a conventional capsule making machine from the following liquid gelatine mix:

Dry gelatine powder	44.76 parts by weight
Glycerin	8.74 parts by weight
70% sorbitol syrup	12.0 parts by weight
Water	34.4 parts by weight

During manufacture the capsules were filled with a pink-pigmented fluorescent oil-based paint. Spherical capsules of 0.5 cc capacity and oblong capsules of 0.5 cc, 0.75 cc and 1.0 cc capacity respectively were manufactured.

These capsules were fired from a suitably modified air-gun, at a distance of about 10 yards at a variety of solid objects including trees and planks of wood and in all cases a readily visible paint-marking having a diameter of the order of 2 inches was obtained; particularly good results being obtained in the case of the oblong capsules.

I claim:

1. A method of marking an object which comprises projecting a marking projectile comprising a soft gelatine capsule; said gelatine containing not more than 30% by weight of a plasticizer based on the total weight

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of plasticizer and gelatine; said capsule having a wall thickness of from 0.02 to 0.03 inch and a diameter of 0.25 to 0.75 inch; said capsule containing from 0.25 to 1.25 cc's of an adherent marking fluid of a type compatible with said gelatine capsule; from a gun of the compressed gas type, said projectile rupturing only on impact with the object to thereby mark it with the marking fluid contained in the capsule.

2. A method as claimed in claim 1 in which the gelatine contains not more than 25% by weight of plasticizer based on the total weight of gelatine and plasticizer.

3. A method as claimed in claim 1 in which the gelatine contains, as plasticizer, glycerine.

4. A method as claimed in claim 1 in which the gelatine contains, as plasticizer, propylene glycol, diethylene glycol or hexanetriol.

5. A method as claimed in claim 1 in which the gelatine contains a plasticizer and sorbitol.

6. A method as claimed in claim 5 in which the plasticizer and sorbitol are present in approximately equivalent amounts.

7. A method as claimed in claim 5 in which the gela-

tine is plasticized with from 8 to 15% by weight of glycerine and from 12.5 to 15% by weight of sorbitol.

8. A method as claimed in claim 7 in which the gelatine is plasticized with about 13.5% by weight of glycerine and about 13.5% by weight of sorbitol.

9. A method as claimed in claim 1 in which the capsule has a wall thickness of about 0.025 inches.

10. A method as claimed in claim 1 in which the capsule contains about 0.75 ccs of marking fluid.

11. A method as claimed in claim 1 in which the capsule has a diameter of about 0.325 inches.

12. A method as claimed in claim 1 in which the capsule is spherical.

13. A method as claimed in claim 1 in which the capsule is oblong.

14. A method as claimed in claim 13 in which the capsule has a length of from 0.75 to 1.25 inches.

15. A method as claimed in claim 14 in which the capsule has a length of about 1 inch.

16. A method as claimed in claim 1 in which the marking fluid is an oil-based paint.

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