

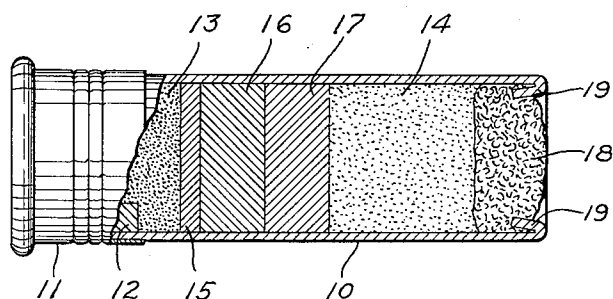
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POLLINATING CARTRIDGE

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POLLINATING CARTRIDGE

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7 Claims. (Cl. 47-1)

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This invention relates to a cartridge for the distribution of pollen for the fertilization of fruit trees.

The drawing illustrates, enlarged and partly in section, a typical cartridge or shell embodying the invention.

In my prior co-pending application, Serial No. 787,388, filed November 21, 1947, there is described a method for the pollination of fruit trees, involving the use of a shell containing the pollinating load and adapted to be fired from an ordinary shotgun. One form of shell or cartridge suitable for the purpose is illustrated in said application. The present application is directed to the cartridge, and contemplates certain improvements in the cartridge previously disclosed.

Pollen as collected for the purpose of artificial fertilization has a life period under atmospheric conditions which varies with temperature and humidity, but rarely or never exceeds thirty (30) days. To retain its viability for this period, it must be kept substantially dry and must be exposed to atmospheric oxygen, if sealed away from exposure to the air, its viability is very quickly lost. Neither can it be subjected to too great pressure or shock, or exposed to high heat or flame.

The present invention contemplates a shell which holds a pollen distributing load under such conditions that the pollen retains its viability under normal storage conditions for a period of time at least equal to its natural life period. Moreover, under proper low temperature storage conditions, the life of the pollen may be greatly extended. The shell is further constructed in such a manner that the pollen is projected and dispersed over the desired area without being subjected to excessive pressure, heat or flame.

The shell comprises the usual body 10, of any desired material, ordinarily rolled paper, the usual metallic head 11, and the usual base wad 12. Within the head and base wad is the usual primer (not shown). The propellant 13 is a light charge of a powder adapted for rapid combustion without the necessity for the confinement which in an ordinary shot shell is supplied by the heavy shot charge. Such powder will burn satisfactorily for the intended purposes when lightly confined. The quantity of propellant is of the order of one-half that used in a medium load shot shell, and the propellant is separated from the pollinating load 14 by a wad column which is so designed as to substantially preclude the passage of flame and hot gas from the propellant into the pollinating load. The wad column illustrated comprises an

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over-powder wad 15 and two filler wads 16 and 17 which may be of punched felt or other suitable material. The products of combustion of the light powder charge, adequately confined behind the wad column, effect an optimum dispersion of undamaged and living pollen at the desired range of relatively few feet, whereas the violent action of a full charge of shot propellant results in much loss of pollen by over heating shock and over projection.

The essential ingredient of the load 14 is viable pollen with which may be associated varying numbers of the pollen-carrying anthers, the presence of which is incidental to the method of collecting and handling the pollen. To both avoid waste of the pollen and to obviate such a dense distribution thereof as would result in fertilization of an excessive number of blossoms, the pollen is admixed with a suitable dry pulverulent distributing medium. The preferred load comprises about 9% to 13% of pollen and 87% to 91% of the distributing medium. A typical composition is one part of pollen and nine parts of distributor. As a distributing medium, there may be used any dry powdered substance which does not adversely affect the viability of the pollen and is of such density and fineness that its projection by the propellant charge is comparable with the projection of the pollen. Among substances which have been found suitable may be mentioned lycopodium clavatum and powdered skim milk, and admixtures thereof.

To retain the pollinating load in place in the shell and at the same time afford access of atmospheric oxygen thereto, the loaded shell is provided with a closure 18 of a material which while effective to retain the load in place is nevertheless sufficiently pervious to gases, particularly atmospheric oxygen, to admit to the load the oxygen necessary to maintain the pollen in a viable condition. Raw or unspun cotton has been found highly desirable for this purpose, but any other porous material which substantially obstructs the escape of the pulverulent load and at the same time is pervious to atmospheric oxygen will suffice. The closure or "top wad" 18 is retained in place by any suitable means, such as the conventional inward and downward folding of the end of the paper body 10, after the closure has been inserted, to form the roll crimp 19. The engagement of some cotton fibers in the fold of the crimp assists in holding the closure in place.

Since the present invention is the first to contemplate an effective distribution of viable pollen

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by the use of a gas-generating propellant, the appended claims should be broadly construed.

What is claimed is:

1. A cartridge comprising a cylindrical body containing a propellant charge, a propellant igniting means, filler wads confining said propellant charge, and a load containing viable pollen mixed with a dry pulverulent medium.

2. A cartridge according to claim 1 comprising a permeable end closure retaining said load in place while admitting air thereto.

3. A cartridge according to claim 1 comprising an oxygen-pervious end closure of a fibrous material.

4. A cartridge comprising a cylindrical body containing a propellant charge in one end thereof, a propellant igniting means adjacent said charge, filler wads confining said propellant charge in separating it from the other end of said body, a load containing viable pollen positioned in said body, an oxygen-pervious closure positioned at said other end and maintaining said pollen within the body, and means for holding said end closure in place.

5. A cartridge comprising a cylindrical body, a propellant mounted in said body adjacent one end thereof, comprising a light charge of powder adapted to rapid combustion, a load of viable pollen admixed with a suitable dry pulverulent distributing medium, a wad column intermediate said propellant and said load comprising an over powder wad and two filler wads, a top wad for the other end of said cartridge of a material effective to retain the load in place but sufficiently pervious to gases to admit oxygen to the load so as to maintain the pollen in a viable condition.

6. A cartridge of the general shape of a shot gun cartridge comprising a body, a propellant contained in said body, comprising a light charge of powder adapted for rapid combustion, the quantity of powder being of the order of one-half of that used in a medium shot gun shell, a load of viable pollen admixed with a suitable dry pulverulent distributing medium, a wad column intermediate said load and said propellant de-

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signed to substantially preclude the passage of flame and hot gases from the propellant into the pollinating load during burning of said propellant, a top wad for confining said load in said cartridge comprising a material effective to confine said load, but sufficiently pervious to admit oxygen to the load so as to maintain the pollen in a viable condition.

7. A cartridge of the general shape of a shot gun cartridge, comprising a body, a propellant contained in said body comprising a charge of powder, the quantity of powder being of the order of one-half of that used in a medium load shot gun shell, a load of viable pollen admixed with a suitable dry pulverulent distributing medium, a wad column intermediate said load and said propellant designed to substantially preclude the passage of flame and hot gases from the propellant into the pollinating load during burning of said propellant, a top wad for confining said load in said cartridge, comprising a material effective to confine said load, but sufficiently pervious to gases to admit oxygen to the load so as to maintain the pollen in a viable condition.

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References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
Re. 17,365	Bradner	July 9, 1929
1,773,260	Cutts	Aug. 19, 1930
1,914,364	Eggert	June 20, 1933
2,028,217	Huffman	Jan. 21, 1936
2,430,659	Antles	Nov. 11, 1947
2,570,511	Blair	Oct. 9, 1951

FOREIGN PATENTS

Number	Country	Date
501,686	France	Feb. 2, 1920
283,476	Germany	Apr. 19, 1915

OTHER REFERENCES

Intern. Sugar J., vol. 22, p. 310 (1920).

Proc. Am. Soc. Hort. Sci., vol. 49, pp. 166, 167 (June 1947).