June 13, 1933. J. W. J. ACKERMANS 1,913,466

CANING DEVICE

Filed July 13, 1929

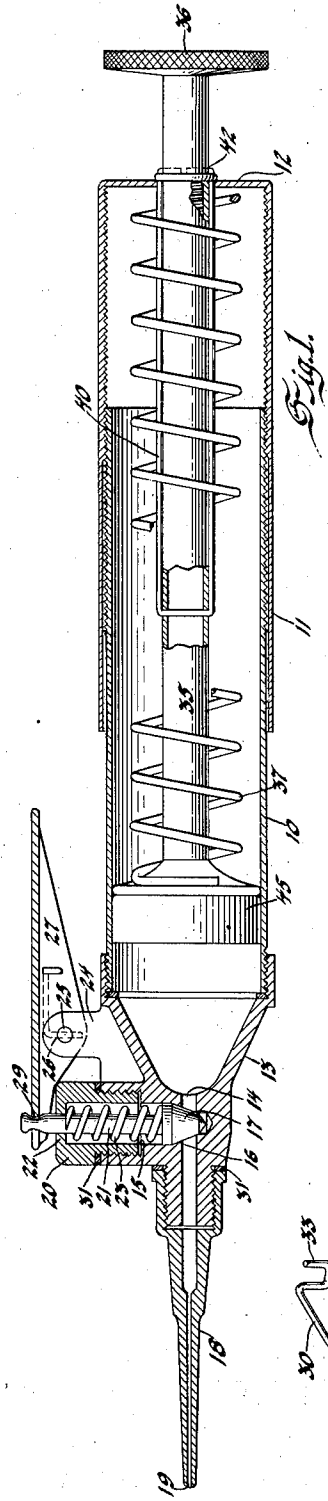


Fig. 1.

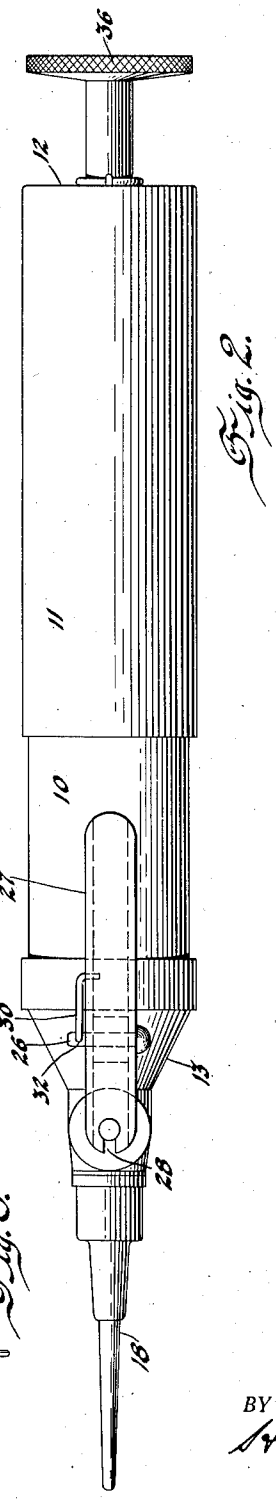


Fig. 2.

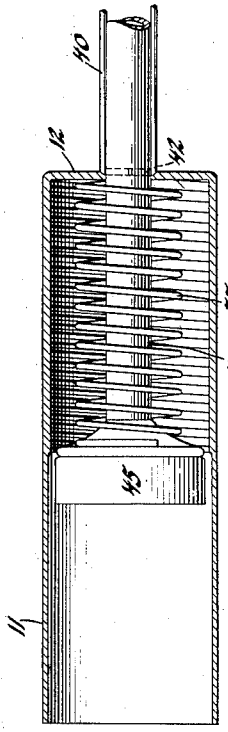


Fig. 3.

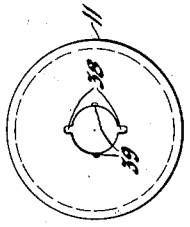


Fig. 4.



Fig. 5.

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UNITED STATES PATENT OFFICE

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CANING DEVICE

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This invention relates to improvements in caning devices such as are employed for the ejection of highly viscous materials in thread-like form for decorative purposes, the principal object being the provision of a device of this character that will be simple in construction and efficient in operation.

Another object is the provision of a valve of novel construction in connection with a device of this type, and which may be readily disassembled for cleaning.

Another object is to provide a means whereby the material employed may be automatically ejected from a receptacle at a constant pressure and with no clogging of passages due to intricate parts.

Another object is the provision of a novel form of splined shaft for use in connection with a device of this type.

The above being among the objects of the present invention, the same consists in certain novel features of construction and combinations of parts to be hereinafter described with reference to the accompanying drawing, and then claimed.

In the accompanying drawing,

Fig. 1 is a vertical sectional view taken through the axis of my device with certain parts broken away to better illustrate the construction of the same.

Fig. 2 is a plan view of my device.

Fig. 3 is a sectional view showing the relation of the cap, piston and spring when the spring is locked in compressed position for the purpose of filling the device.

Fig. 4 is an end view of the cap showing the slots and the notches provided therein for cooperating with the spline on the piston rod.

Fig. 5 is a perspective view of the wire which holds the thumb lever in position.

I have found that one of the greatest objections to ejecting devices of this type, particularly when used in connection with the highly viscous pastes used in making artificial cane, or other thread-like decorations, is that the devices have been designed for a liquid of lower viscosity and the result is a clogging up of the passages when used with viscous pastes. Another principal objection is that the spring upon releasing lengthens and therefore exerts a lesser pressure at the end of the operation than at the beginning.

The principal object of providing the device herein shown and claimed is to provide a means whereby a highly viscous paste may be ejected from a gun under a constant pressure and which provides a steady flow of paste. The valve provides a simple means whereby the supply may be completely checked at any time during the operation.

As shown in the drawing, the device embodying the present invention comprises a hollow cylindrical body 10 and an auxiliary cylindrical body 11 closed at the end 12 and threaded internally to threadably engage the externally threaded portion of the body 10. It will be noted that only about half of the auxiliary cylindrical body 11 is internally threaded, the internal diameter of the remainder, which is closest to the open end of the body 11, being greater than the internal diameter of the threaded portion so that it will completely enclose the threads on the main body 10 before the main and auxiliary cylinders may become threadably engaged. This unthreaded portion serves to protect the hands of the workman from the sharp threads on the main body 10 in using the device. A cone-shaped head 13 with a discharge passage 14 is threaded internally to threadably engage the body 10 opposite to the auxiliary body 11. An aperture 15 with a conical seat 16 through which the discharge passage 14 extends is provided in the head 13 to receive and seat the valve head 17. The head 13 also threadably engages a metering nozzle 18 with an aperture 19 which lines up with the discharge outlet 14 to contract the outcoming paste into the desired shape and size. The size and shape of the ejected thread of paste may be varied by replacing the nozzle 18 by other nozzles having apertures of the shape and size desired. The aperture 15 is enlarged at the top end to threadably receive an inverted cup-shaped member 20, whose internal diameter is equal to that of the aperture 15. The valve stem 21 passes through the closed end 22 of the cup-shaped member 20 and a spring 23 surrounds the valve stem 20 and is

compressed between the closed end 22 and the valve head 17, thereby constantly urging the valve head 17 to a seating position to close the aperture 14.

Means such as the gaskets 31 are provided to prevent leakage. A lug 24 is formed integral with the head 13 and is provided with an aperture 25 to receive the pin 26 which pivotally supports the channel sectioned thumb lever 27. The lever 27 is yoked at one end as at 28 to receive the grooved upper portion 29 of the valve stem 21. A wire spring 30, such as is shown in Fig. 5, is provided with a bent end 34 which fits into the aperture 32 in the pin 26 and a hooked end 33 which engages an opening in the lever 27 keeps the lever 27 in position and the pin from sliding out.

The portion of the device that exerts the pressure on the paste includes a piston head 45 connected to the piston rod 35 to the end of which is threadably secured a handle 36. A spring 37 surrounding the rod 35 is held under compression between the piston head 35 and the end 12 and constantly urges the piston away from the end 12. On the piston rod 35 is secured a pair of splines 40 which pass through the slots 38 in the end 12 to normally hold the rod 35 against rotation. The ends of the splines 40 are adapted to seat in the notches 39 in the end 12 when the rod has been retracted sufficiently to bring the splines out past the end 12 to hold the spring 37 in compression during the operation of refilling and preparatory to commencing the operation.

The novel method of forming the splines 40 on the piston rod 35 in accordance with the present invention comprises in extending a wire diametrically through an aperture 41 in the rod and then bending the opposite sides of the wire into contact with the sides of the rod 35 in diametrically opposed relation and in axially parallel relation to the rod 35, the ends of the wire being received in notches 39 in the shoulder 42 on the stem of the handle 36, and the free ends being bent radially inwardly and secured in apertures in the stem of the handle 36 provided for their reception. The wire is preferably soldered or otherwise secured to the rod 35 throughout the length of the wire. This method of forming the splines 40 is extremely economical and provides an entirely satisfactory construction.

In operation the handle 36 is drawn axially away from the end 12, pulling the spline 40 through the slots 38 until the end 42 of the wire is free of the end 12, and then the handle is given a quarter turn and the end 42 of the spline 40 is seated in the notches 39. At this point the spring 43 is compressed to its maximum operating limit. The auxiliary body 11 containing the spring 37 and piston 45 is then unscrewed from the main body 10 and the paste poured in the main body, and the auxiliary body 11 is then screwed back onto the main body. The handle is now given another quarter turn to bring the splines back in the slots 40, permitting the spring 37 to press the piston 45 against the paste and the paste will now be under pressure to flow through the aperture 14 at the slightest unseating of the valve head 17, this being done by exerting a slight pressure on the free end of the lever 27 which in turn lifts the valve stem 20 as previously described.

In all cases where forces are exerted on coil springs, the spring will not exert an equal force when nearly free and when fully compressed. To provide against this condition, I have made the auxiliary body 11 carrying the piston head 45 and the spring 37 threadably engageable with the main body 10 so that the end 12 may be moved toward or away from the piston 45 a relatively great amount, thereby causing the spring to exert a greater or less pressure during the operation simply by turning the auxiliary body in one direction or the other.

The valve head 17 acts as a gate valve in the discharge outlet 14, the seating of the valve causing a stop in the flow of paste. The valve is free to turn about its axis and is urged to its seat by a spring 23. This means tends to form a perfect seat and does not allow leakage. Since the passages of an apparatus of this type must be cleaned at frequent intervals, this device has been so simply constructed that after the removal of the lever 27 by pulling out the spring 30, the cup-shaped member 20 need merely be removed to free the seat and the passages for cleaning. The metering nozzle 18 may also be removed when a more thorough cleaning of the passages is desired.

It will be apparent from the above description that the device herein described is of simple construction and is especially suitable where a pasty material is to be ejected from a gun of this type.

What I claim is:

1. In a device of the type described, a cylinder containing a paste, a discharge nozzle having an outlet therefrom, a valvular means to control said outlet, an auxiliary cylinder closed at one end threadably engaging the external portion of said cylinder, means contained in said auxiliary cylinder to exert a pressure on the paste in said cylinder comprising a coil spring, a piston and an axially movable rod, said spring being positioned between the closed end of said auxiliary cylinder and said piston and surrounding said rod, said auxiliary cylinder being telescopically adjustable relative to said container cylinder whereby said coil spring may be adjusted to exert equal pressure at different portions of the piston stroke.

2. In a device of the type described, a

cylinder for containing a paste, a discharge nozzle having an outlet therefrom, a valvular means to control said outlet, an auxiliary cylinder closed at one end threadably engaging the external portion of said cylinder, means contained in said auxiliary cylinder to exert a pressure on the paste in said cylinder comprising a coil spring, a piston and rod, with said spring positioned between the end of said auxiliary cylinder and said piston and surrounding said rod, and means to manually control the position of said piston relative to the end of said auxiliary cylinder, and means to manually control the position of said auxiliary cylinder relative to said container cylinder.

3. In a device of the type described, a cylinder for containing a paste, a discharge nozzle having an outlet therefrom, valvular means to control said outlet, an auxiliary cylinder closed at one end threadably engaging the external portion of said cylinder, means contained in said auxiliary cylinder to exert a pressure on the paste in said cylinder comprising a coil spring, a piston and rod, with said spring positioned between the end of said auxiliary cylinder and said piston and surrounding said rod, means to manually control the position of said piston relative to the end of said auxiliary cylinder, a spline on said rod, a slot in the end of said auxiliary cylinder to receive said spline, and a notch in the end of said auxiliary cylinder engageable with the end of said spline to hold said spring in compression preparatory to operation of said device, and means to manually control the position of said auxiliary cylinder relative to said container cylinder.

4. In combination, a device of the type described comprising a main hollow cylinder closed at one end, a nozzle having a discharge outlet for said closed end, an auxiliary hollow cylinder closed at one end and engaging the open end of said main cylinder, means to control said outlet, a piston to said main cylinder, a spring compressed between said piston and the closed end of said auxiliary cylinder, a means for moving said closed end of said auxiliary cylinder relative to said main cylinder to permit a constant force to be exerted on said piston by said spring regardless of the position of said piston in said main cylinder.

5. In combination with a shaft, a spline therefor comprising a wire extending through said shaft diametrically thereof and bent into axially parallel relation thereto and in contact therewith on opposite sides thereof.

6. In combination with a shaft, a spline therefor comprising a wire extending through said shaft diametrically thereof and bent into axially parallel relation thereto and in contact therewith on opposite sides thereof and having its free ends secured against displacement.

7. In combination with a shaft, a spline therefor comprising a wire extending through said shaft diametrically thereof and bent into axially parallel relation thereto and secured along its length in contact therewith in opposite sides thereof.

8. In a device of the type described, a main cylinder having external screw threads, an auxiliary cylinder internally threaded for engagement with said threads, and means carried by said auxiliary cylinder for hooding same threads on said main cylinder without threaded engagement therewith.

9. In a striping machine, a striping nozzle, and means for supplying coating material to said nozzle, said means constituting a handle for said striping machine and including in combination a tubular member forming a coating material reservoir, a grip member telescopically engageable with said tubular member, a piston carried by said grip member and reciprocable in the tubular member, and means normally urging said piston in a direction to eject the coating material from said reservoir.

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