

Aug. 9, 1960

K. Z. HUSZAR

2,948,534

BODIES OF REVOLUTION

Filed April 24, 1956

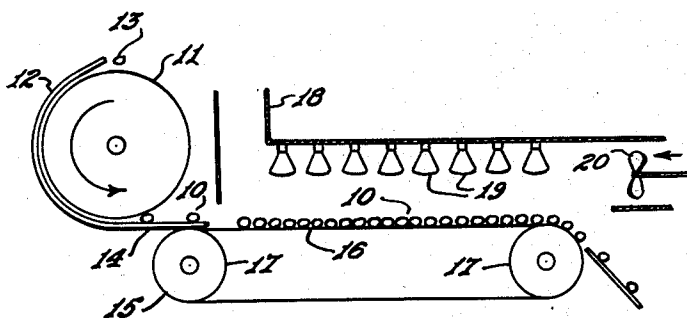
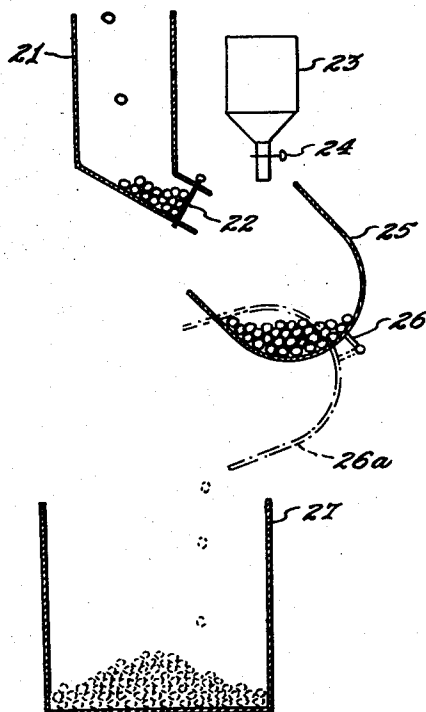


FIG. 2.



INVENTOR.
KALMAN Z. HUSZAR,

BY

Allen & Allen

ATTORNEYS.

1

2,948,534

BODIES OF REVOLUTION

Kalman Z. Huszar, Foster, Ohio

Filed Apr. 24, 1956, Ser. No. 580,359

1 Claim. (Cl. 273-106)

My invention resides in the provision of bodies of revolution having certain characteristics.

This invention is closely related to that of my copending application Serial No. 580,358, filed of even date herewith and entitled Mechanisms and Methods for Forming Various Articles From Moldable Materials, now Patent No. 2,867,000. Certain of the features herein mentioned are shown, described and claimed in my said copending application.

It is a specific object of the instant invention to form pellets which are unusually satisfactory as ammunition for toy sling shots.

It is a very important object of my invention to provide a sling shot pellet which will disintegrate immediately upon coming into propelled contact with a wall or window glass.

It is a further object of my invention to provide a sling shot pellet which is safe to use and which is extremely economical to manufacture.

These and other objects of my invention will become apparent from the following description and with reference to the accompanying drawing, in which drawing like numerals are employed to designate like parts throughout and in which:

Figure 1 is a perspective view of a sling shot pellet manufactured according to the mechanism and methods of this invention, and

Figure 2 is a diagrammatic sketch showing the arrangement of the apparatus for producing these pellets in the preferred manner.

The spherical pellet which it is desired to produce for use as sling shot ammunition is indicated at 10 in Figure 1. The basic substance of these pellets may be got into spherical form by the mechanism and method of my said copending application wherein the mechanism is shown, described and claimed in considerable detail. For the purpose of the instant invention suffice it to say that this forming apparatus comprises a grooved wheel 11 and an arcuate spring member 12 which is faced with a resilient pad. Suitable means are provided by which a slug 13 of moldable material is placed on the grooved wheel 11 so that it might be rolled and squeezed between this wheel and the padded spring 12 by rotation of the wheel 11 in the direction indicated by any suitable means not shown. The slug 13 should be of a sufficient size to be squeezed by the action of the grooved wheel 11 rolling it along the padded spring member 12. Excess material is trimmed from the slug by the sharp edges of the grooves as such slug is so rolled.

The result of the method and mechanism just described is to produce a body of revolution 10 which may be collected on a receiving member 14. My said copending application explains in detail the means and methods for producing a body 10 in this state. The instant invention is directed to the makeup of the body and to the means and method for bringing it to its finished form as well now be described.

2

It is contemplated that the material of which the slug 13 is formed comprises a moist clay. The preferred moisture content is such that the slug is 18 to 20% moisture. By the word "clay" I include the various common moldable clays; suitable additives may be employed as needed or desired depending on the kind of finished product it is intended to produce.

After the slug has been shaped into a sphere, or perhaps given some other shape if desired, the bodies 10 are collected on a conveyor 15 which may comprise a belt 16 stretched around a pair of rollers 17 which may be driven by any suitable means not shown.

A drying chamber is positioned immediately above the belt conveyor 16. This chamber comprises a housing 18 and a series of heating elements 19 which are preferably infra-red lamps. A blower 20 is provided in the far end of the housing 18 for forcing air through the housing 18 over the bodies 10 as they are moved by the belt conveyor 16. After the bodies have been thus heated and air dried they are collected in a hopper 21.

The hopper 21 is provided with a gate 22 so that a correct quantity of the bodies 10 may be collected within the hopper. At 23 I have indicated a container of liquid coating material which will be described shortly. This container is provided with a valve 24. Beneath the hopper 21 and container 23 is a coating mill 25. This mill is mounted on an axis 26 and there are means (not shown) for rotating the mill about this axis. The mill 25 may be tilted so as to discharge its contents into a storage chamber 27 as shown by the dotted line position 26a. The finished bodies are stored in this chamber 27. The coating mill is positioned to receive the contents discharged from the hopper 21 and container 23.

When it is desired to make sling shot pellets, there is placed within the container 23 a liquid which comprises one ounce by weight of aluminum bronze, five liquid ounces of carnauba wax emulsion and six liquid ounces of sodium silicate.

The coating liquid having the above formula is discharged into the coating mill 25 after a number of the pellets 10 have been placed therein from the hopper 21 and rotation of the mill has commenced. It is contemplated that there be three liquid ounces of the coating liquid for every five square feet of pellet surface. After the coating mill has been thus loaded, rotation about its axis is continued until the coating liquid has covered all the pellet surface after which the coated pellets are dumped into the storage chamber 27. A coating material of this composition applied to the pellets treated in the manner described is just sufficient to form the desired coating on the pellet surface so that the pellets leaving the coating mill 25 are in condition for immediate use if desired. These pellets will thus be observed to comprise a clay body covered with the aluminum coating as indicated.

In making sling shot pellets it is contemplated that a substantial amount of the moisture will be removed from the bodies of revolution by the lamps 19 and by the air forced by the blower 20 through the housing 18. This air is moved in a direction contra to that in which the bodies of revolution 10 are moved by the conveyor 16. When these bodies leave the housing 18 they will be substantially dry but not particularly hot. Ordinarily the temperature of the bodies will not be a whole lot greater than room temperature; certainly in most cases it is preferred that the bodies be heated at a temperature less than the boiling point of water in order to prevent their exploding or disintegrating by the formation of steam within the formed material.

In treating the formed bodies in order to make them into good sling shot pellets it is contemplated that a de-

sired quantity of the pellets first be placed within the mill 25. This mill is then rotated rather slowly so that the formed pellets will roll gently over one another with there perhaps being some cascading effect. After the mill has commenced rotation a quantity of the coating liquid is gradually metered into the mill. I have found that when the coating liquid is applied in the ratio above specified all of the liquid will be distributed about the surfaces of the individual pellets. The gentle rolling action imparted to these pellets by rotation of the mill 25 seems to result in the surfaces of the coated pellets being buffed or polished. If much greater quantities of the coating liquid are employed there will be simply a thicker coat on the individual pellets. This is undesirable not only from the standpoint of increased cost but also because too thick a coat will not permit the pellet to disintegrate upon its contact with a hard surface when propelled by a sling shot. Too little of the liquid coating will result in an ununiform and insufficient coating.

In handling a typical batch of pellets it is contemplated that by the time the mill is charged with these pellets they will have come down to about room temperature. The coating liquid is also at about room temperature. The pellets are subjected to the gentle action of the mill 25 for about thirty seconds prior to the addition of the coating liquid. The coating liquid is then added gradually while the mill 25 continues to rotate, the total mixing time of the pellets and coating liquid being about another four and one-half minutes. This period of time is sufficient to coat the pellets properly and to subject such coating to the buffing action apparently obtained because of the balls rolling over one another and because of the wax content of the coating liquid.

From the above arrangement it will be observed that these pellets may be continuously manufactured. While one batch of pellets and required liquid coating composition are being mixed together in the coating chamber additional pellets are being collected in the hopper 21 from the belt conveyor 16. Meanwhile additional liquid coating composition may be placed in the container 23 if necessary. Upon the finished pellets being dumped from the coating chamber 25 another batch of pellets and coating liquid may be obtained simply by actuating the gates 22 and valve 24. With this system the belt conveyor will

not have to be stopped once the operation has commenced.

The arrangement of the heating elements 19 and blower 20 is such as to withdraw a substantial portion of the moisture from the pellets 10 introduced within the housing 18 from the pellet forming mechanism 11—12. The amount of time needed for mixing the coating material and pellets in the coating mill 25 may vary depending on the number of pellets and corresponding quantity of coating material needed but will be very much as above indicated. The relationship of substantially three ounces of coating liquid per five square feet of pellet surface will remain pretty constant. Such proportions will insure the provision of a good surface on the individual pellets.

It will be understood that various modifications may be made in my invention without departing from its scope and spirit. It will also be understood that while I have shown my invention as embodied in certain particular arrangements, structures and compositions I do not intend to be limited by these except insofar as they are specifically set forth in the subjoined claim.

Having thus described my invention, what I claim is new and what I desire to protect by United States Letters Patent is:

A sling shot pellet comprising a body of dehydrated clay material and a coating on said body, said coating being comprised of a solution of one ounce of aluminum bronze, five liquid ounces of carnauba wax emulsion and six liquid ounces of sodium silicate, said coating having a thickness resulting from an application of solution at the rate of three ounces per five square feet of pellet surface.

References Cited in the file of this patent

UNITED STATES PATENTS

222,301	Newbold	Dec. 2, 1879
338,633	Curran	Mar. 23, 1886
2,086,938	Hess	July 13, 1937
2,329,839	Kalowski	Sept. 21, 1943
2,683,603	Gackebach	July 13, 1954
2,705,148	Waller	Mar. 29, 1955
2,713,697	Willcox	July 26, 1955

FOREIGN PATENTS

France	Oct. 19, 1931
--------	---------------