

March 2, 1937.

J. H. GRADY ET AL

2,072,330

METHOD OF INCLOSING OBJECTS IN REGENERATED CELLULOSE

Original Filed March 23, 1934 6 Sheets-Sheet 1

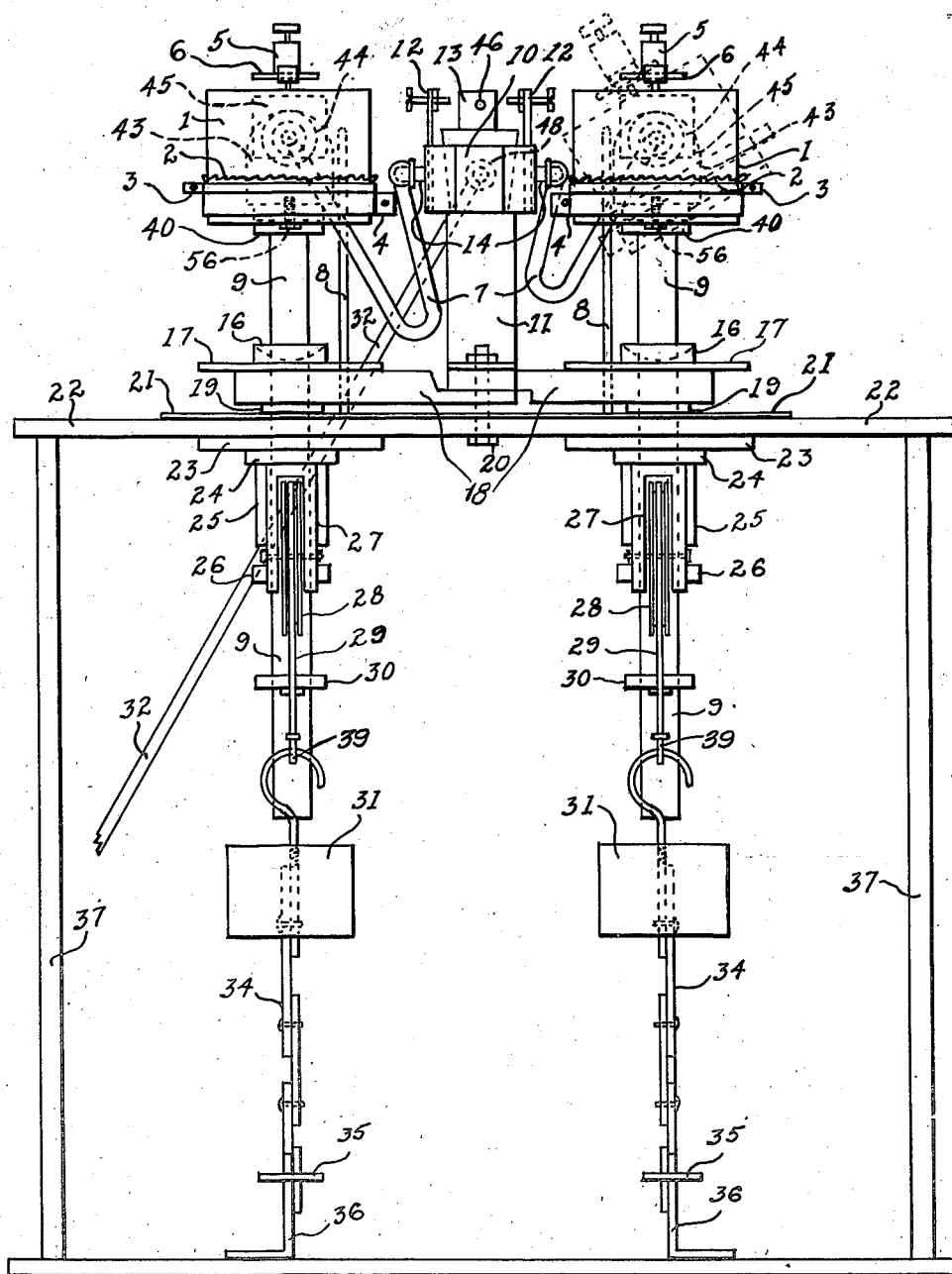


Fig. 1.

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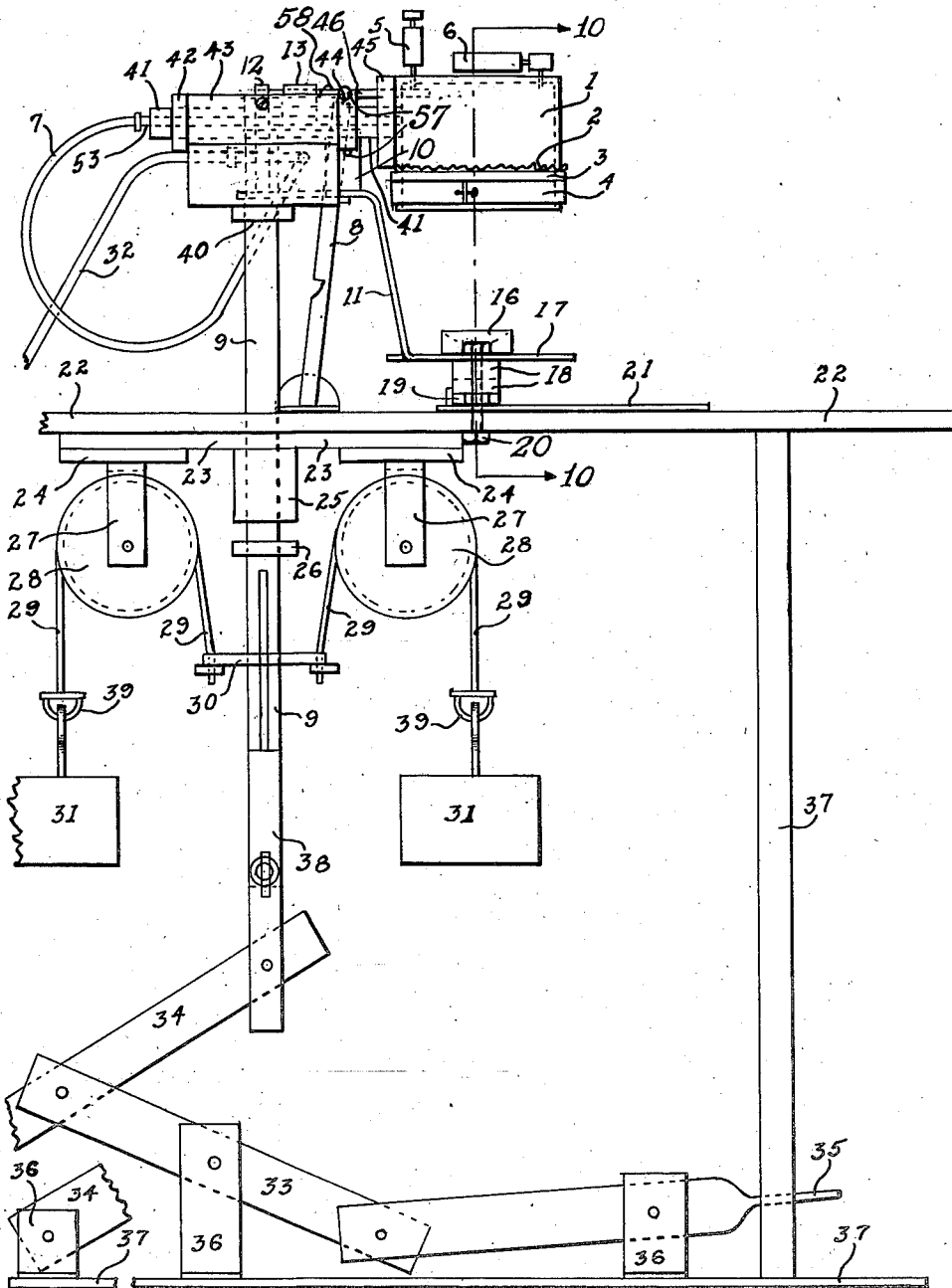


Fig. 2.

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Original Filed March 23, 1934 6 Sheets-Sheet 3

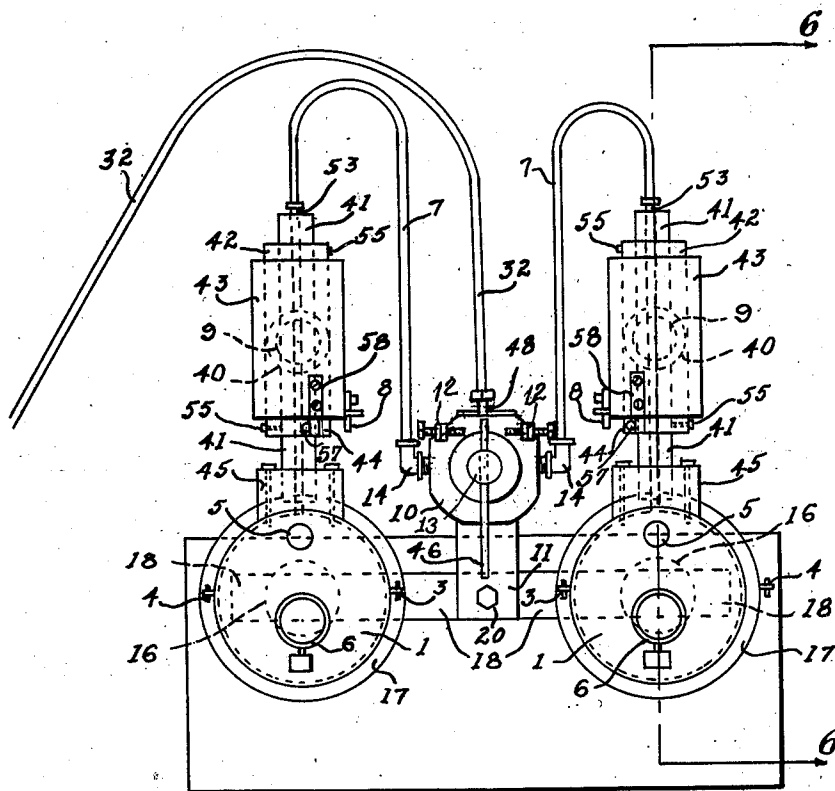


Fig. 3.

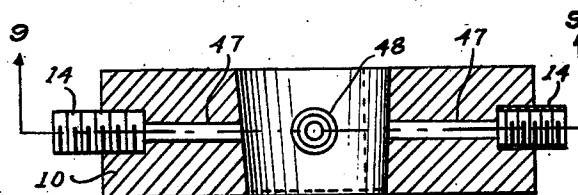


Fig. 4.

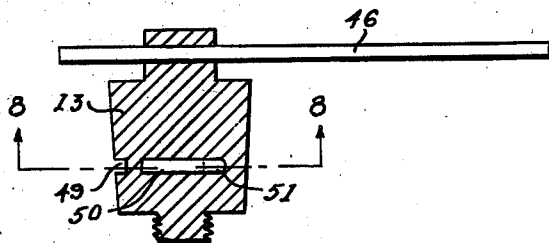


Fig. 5.

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METHOD OF INCLOSING OBJECTS IN REGENERATED CELLULOSE

Original Filed March 23, 1934 6 Sheets-Sheet 4

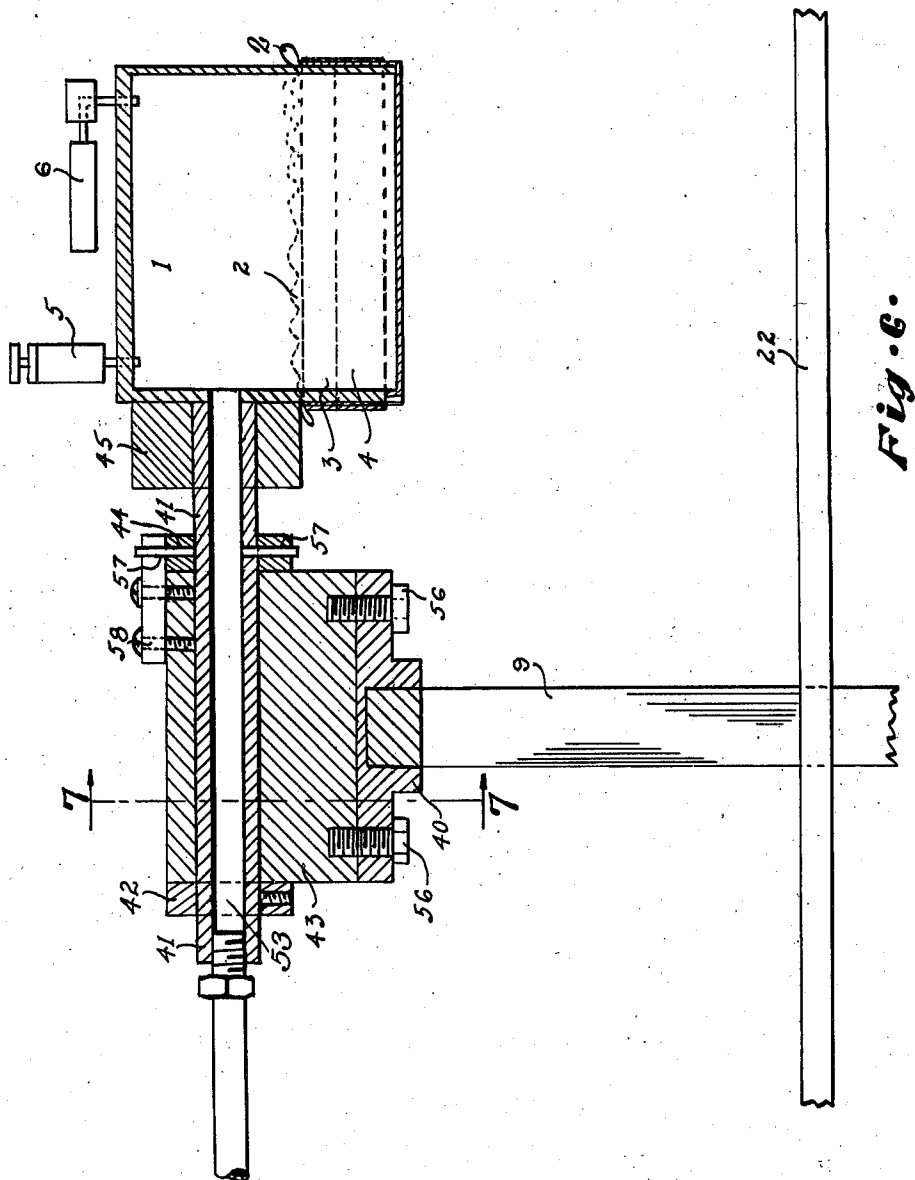


Fig. 6.

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METHOD OF INCLOSING OBJECTS IN REGENERATED CELLULOSE

Original Filed March 23, 1934 6 Sheets-Sheet 5

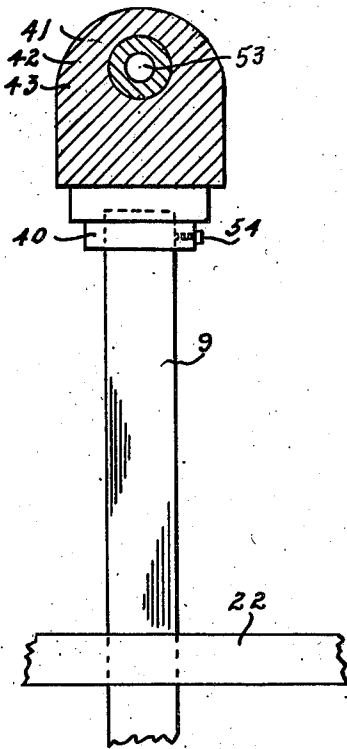


Fig. 7.

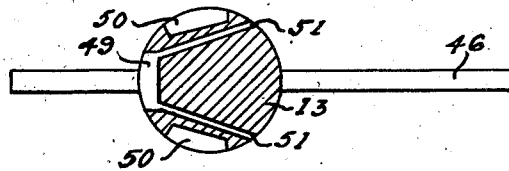


Fig. 8.

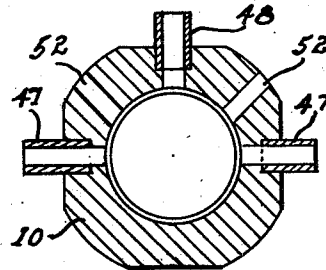


Fig. 9.

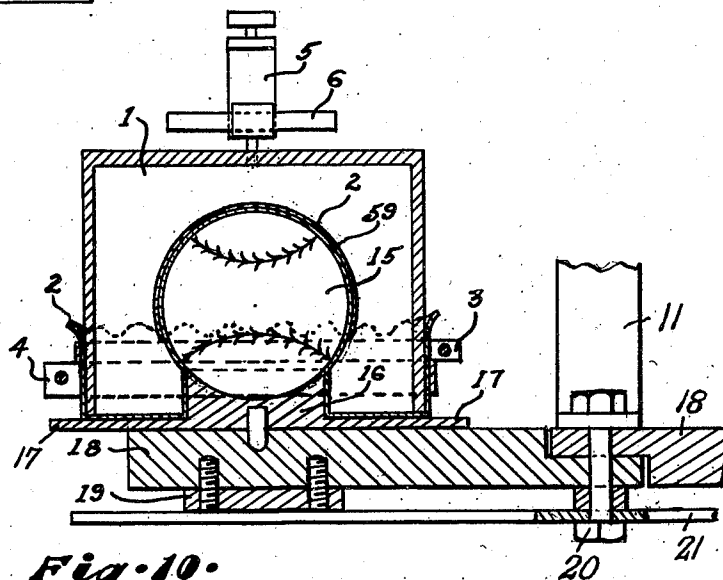


Fig. 10.

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METHOD OF INCLOSING OBJECTS IN REGENERATED CELLULOSE

Original Filed March 23, 1934 6 Sheets-Sheet 6

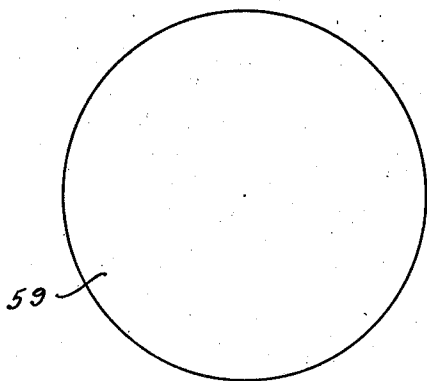


Fig. 11.



Fig. 12.

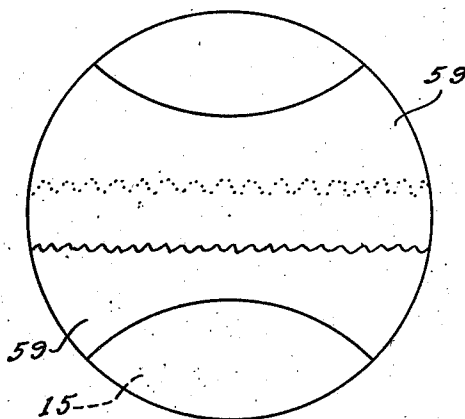


Fig. 13.

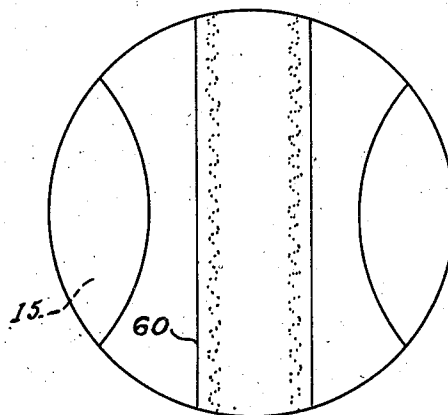


Fig. 14.

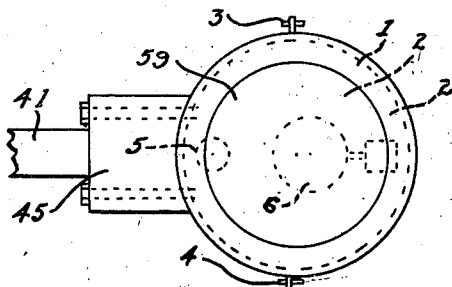


Fig. 15.

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UNITED STATES PATENT OFFICE

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METHOD OF INCLOSING OBJECTS IN RE-GENERATED CELLULOSE

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Original application March 23, 1934, Serial No. 717,004. Divided and this application June 5, 1935, Serial No. 25,082

3 Claims. (Cl. 93—2)

This application is a division of our copending application, Serial 717,004, for a patent for apparatus for and method of inclosing objects in regenerated cellulose and the article of manufacture described therein.

This invention consists of a method of wrapping or inclosing objects in sheet regenerated cellulose, or similar material. This process may be performed by the apparatus for carrying out or practicing the said method shown in the accompanying drawings. Among the articles that may be thus inclosed are baseballs, other play balls, fruits, eggs, and rectangular articles, and numerous other things, such, for instance, as a plurality of golf balls thus wrapped as an oblong package or a plurality of match packets wrapped in one package.

It has been found in actual practice that covering articles by hand with the material mentioned is slow and tedious and does not result in as neat and good-looking a package as is produced by this invention.

The problem and difficulty in inclosing objects with the said material arises partly from their shape, but chiefly from the nature of the material, as that material cannot be shaped and retained in shape unless moist, but it dries so speedily as to be hard to handle, especially so to manipulate it as to form a close-fitting sheath or wrapper, and this is particularly true in regard to a sphere or a spheroid or an ovoid or anything else having a curvilinear surface or contour. After a shape or form has been imparted to the said material in a moist condition by the present invention, it retains it and, in addition, remains a snug-fitting envelop for the article to which it has been applied.

At the meeting-place of the opposite edges of the piece or blank of such material after its application to the ball or the like, a strip thereof may be pasted on by moisture or otherwise, forming a permanent or durable joint, and, if the said strip is of a different color from the envelop, its addition to the ball or the like may be either the distinguishing mark of the manufacturer or dealer or a decoration that makes a dressy package. The wrapper herein described is not applied for the purpose of deflating or compressing the ball or its internal contents, but for the purposes for which a wrapper is ordinarily used i. e., to keep what is inclosed clean and new-looking and to give it an attractive and distinctive commercial appearance and, also, in this case, to exclude the air.

Other points of invention will hereinafter appear.

In the drawings, wherein like numbers of reference refer to like parts wherever they appear,

Fig. 1 is a front elevation.

Fig. 2 is a side elevation.

Fig. 3 is a plan view.

Fig. 4 is a sectional view on an enlarged scale of a part of the apparatus that regulates the flow of air into the air-chambers.

Fig. 5 is a sectional view on an enlarged scale of another part that regulates the flow of air into the air-chambers.

Fig. 6 is an enlarged sectional view on the line 6—6 in Fig. 3.

Fig. 7 is a sectional view on the line 7—7 in Fig. 6.

Fig. 8 is a sectional view on the line 8—8 in Fig. 5.

Fig. 9 is a sectional view on the line 9—9 in Fig. 4.

Fig. 10 is a sectional view on an enlarged scale, taken on the line 10—10 in Figure 2, showing the object to be covered.

Fig. 11 is a plan view of the blank to be used in covering the object.

Fig. 12 is a side elevation thereof.

Fig. 13 is an elevational or plan view of the covered object.

Fig. 14 is a similar view of the object covered and trimmed, and

Fig. 15 is a plan view, showing the diaphragm turned upward to receive a piece of the wrapping material for moistening.

Each air-chamber 1 is provided with a cover or diaphragm 2 of rubber or other elastic material, held in place by bands 3 and 4. This may be thin or thicker, depending upon the nature or shape of the object to be covered. Preferably, a well-known type of rubber, such as used by dentists in making dental dams and characterized by being, for its thickness, relatively tough, strong, and elastic, is used, because of its characteristics. Safety-valves 5 and air-gauges 6 and rubber tubes 7 control and conduct the air to the air-chambers 1.

Two levers 8 hold the air-chambers while the object is being covered. Rods 9 cause vertical movement of air-chambers 1.

The valve 10 is held in place by a brace 11, and a stop 12 prevents the center part 13 of valve 10 from turning completely around. Fittings 14 connect the valve 10 and tubes 7.

The object to be covered 15 is placed in a partially-hollowed receptacle or cup 16, which is

fastened to plate 17, which is securely attached to bars 18, which bars 18 rest on a metal plate 19 while the object 15 is being covered.

Bolt 20 passes through a metal plate 21 and the table 22 on which the upper part of the apparatus rests. Bolt 20 holds brace 11 securely in place and, also, acts as an axis allowing bars 18 to swing forward.

Wooden blocks 23 and 24 are fastened to the under side of table 22 and support the bottom part of the machine.

Sleeves 25 allow rods 9 to slide freely, and collars 26 prevent rods 9 from rising too high.

Brackets 27 support pulleys 28. One end of each cable 29 is fastened to a wooden block 30, which is secured to a rod 9 and passes over the top of a pulley 28, the other end of cable 29 being attached to a weight 31, which thereby holds its rod 9 to the proper height.

One end of rubber tube 32 connects with valve 14, and its other end connects with a tank of compressed air (not shown in the drawings) or any other suitable source of air-pressure.

Lever 33 connects levers 34 with treadles 35, pivoted to supports 36, attached to frame 37, and actuate bars 38 to cause rods 9 to be moved vertically downward when pressure is applied to the said treadles 35. Weights 31, adjustably connected at 39 to the cables 29, cause the return of rods 9 to initial position when the treadles 35 are released. Plates 40 secure rods 9 to the upper part of the apparatus.

Tube 7 communicates with tube 41, which passes through a collar 42 and part 43 and collar 44, and is fastened securely to part 45, which is fixed to air-chamber 1.

The handle 46 on part 13 is used to turn part 13 to the right or left, thereby causing ports 47 and 48 in part 11 to be in direct alignment with passages 49, 50, and 51 in part 13. Escape port 52 allows the air remaining in the air-chamber 1 after the object 15 has been covered to exit. Thus a three-way cock is provided. The passage 53 through tube 41 leads from the air-chamber 1 to tube 7.

A set-screw 54 holds tube 41 securely in place, and set-screw 55 binds collars 42 and 44 securely to rod 9, so as to prevent part 43 from sliding forward or backward. Bolts 56 secure plate 40 to part 43. The stops 57 strike against stops 58 and prevent tube 41 from making a complete rotation.

In covering or inclosing objects 15 with the above-mentioned material in the use and practice of this invention, a quantity of prepared blanks or the like 59 of the said material in dry sheet form or the like is located adjacent to the hand of the operator, who first puts an object 15 in the cup 16 and then places a blank 59 on the diaphragm 2 in one of the machines, while the said diaphragm is turned upward, and while in that position moisture is applied to the surface of the wrapping material away from diaphragm 2. The air-chamber 1, carrying diaphragm 2, and moistened wrapper 59, is then rotated on its axis 41 from the position shown in Figure 15 and as shown in transit in dotted lines in Figure 1 until diaphragm 2 is above the object 15, and presses the moistened wrapper 59 on the object 15 with its moistened side next to the object 15. Blank 59 is preferably laid concentrically on diaphragm 2. Moisture on the contacting face of the wrapper causes the same to adhere to other objects, particularly to other similar wrapping material, when pressed there-

against so as to exclude air. The blanks 59 are of such a size that when spread over the upper part of the object 15 in cup 16 the blank will pass slightly beyond the middle of the object 15. The wrapper is thin, notwithstanding the reference to it herein as a blank, and, under pressure, when moist readily conforms to the shape of the article 15 on which it is placed and impressed.

The operator next depresses the treadle 35, which by intermediate parts draws rod 9 downward, carrying with it air-chamber 1, so as to cause diaphragm 2 to contact with the object 15 and thereby pressing the same against the object 15 with the blank 59 of moistened wrapper between them, whereby the wrapper is forced into close contact with the upper part of the surface of the object 15 and is thereby caused to take its shape and to adhere thereto. The object 15 is, of course, convex or otherwise protuberant, and the shape of the pressed wrapper is concave or otherwise cup-like.

Compressed air is admitted into the air-chamber 1 by moving handle 46 when the object 15 is thus pressed against diaphragm 2, and the air-pressure causes diaphragm 2 to fit snugly against the object 15, thus forcing out any air bubbles or the like between the wrapper and the object 15. The wrapper being moist adheres and clings to the object 15 upon such forcing out of air bubbles and likewise assumes its shape. Quickly drying, it retains that shape, as well as remaining in close contact approximating adherence to the object 15. As shown in Figure 13, the blank 59 is preferably of such a size as to cover a little more than one-half of the surface of object 15, this being from the top, as shown in Figure 10, when the object 15 is in cup 16. After the blank 59 has thus been applied to the object 15, handle 46 is turned in the opposite direction, and by means of the three-way cock the compressed air exhausts from air-chamber 1.

When the object 15 has been thus half covered, the treadle 35 is released, the weight 31 returns air-chamber 1 to its initial position, which removes diaphragm 2 from contact with object 15, and this allows removal of it from cup 16. The shape of the cup 16 may be varied to suit the contour of the object to be covered.

The object 15 is then turned over (placed upside down) and put in cup 16 in the adjoining mechanism, where a blank 59 of moistened wrapper is similarly applied to the other half of object 15 in overlapping relation to the first applied blank, by the same kind of operations of the second diaphragm 2, the second air-chamber 1, the second treadle 35, its rod 9, air-pressure, etc. The said second blank 59 of wrapper preferably slightly overlaps the one first applied. The article emerges in the form shown in Figure 13, covered with two hollow hemispheres of the said wrapping material. The said operations on the adjoining mechanism can be performed on the first, but for larger production are preferably performed on a second machine.

The joint between the two pieces of wrapper 59 thus applied is preferably bound or covered by a strip 60 of the same or similar material, which is preferably of a different color for its decorative and distinguishing effect. If desired, the two disks may be of different colors from each other. The finished product, with the strip 60 attached, is shown in Figure 14. The strip 60 of material is first moistened and then pressed in any desired manner upon the wrapper already

in place inclosing or covering the object 15. The strip 50 completely encircles the covered object 15, and encloses the overlapping portions and their adjacent edges of the covering blanks.

5 The pair of machines herein shown and described may be increased to any multiple of either, with the object of augmenting production. The foot-treadles may be substituted by power or other means of actuation, and the particular construction of the means for forcing the object to be covered into contact with the elastic diaphragm may be altered, and many minor changes may be made in the construction, form, order, and arrangement of parts of the machine and steps of the process without departing from the spirit of this invention or the scope of the following claims.

The blank 59 as shown in the drawings is of a shape that enables it to fit over a curvilinear object, but will be adapted to different shapes. In the case of a sphere, such, for instance, as a baseball, it will be circular, as shown in Figures 11 and 12. An oblong package, as, for instance, of a plurality of golf balls, match packets, or other articles, will require a different shape of blank 59. In the case where a plurality of articles is to be inclosed in the material described above, it is to be understood that such group constitutes the object 15. In such packages, the upper and lower parts of the inclosure will not be exactly hemispherical, but will be concave forms.

When the air-chamber 1 is advanced, as hereinabove described, it preferably travels to contact or near contact with the table above which the work-holder or cup 16 projects, which results in the object 15 being forced into close contact with the diaphragm 2, so much so that it bulges upward, while also being in close contact with the sides as well as the top of the object to be covered.

Steam or other fluid pressure may be substituted for air-pressure.

Having thus described this invention, what we claim and desire to secure by Letters-Patent is:

1. The herein-described method of covering objects with sheet regenerated cellulose or the like, consisting of selecting a blank of suitable shape and size of the said material to enclose more than half of the object to be covered, moistening the blank, laying its moist side upon the object to be covered, applying elastic pressure thereto throughout its entire area to press any existing air from between the blank and object, applying a similar moistened blank to the opposite side of the object in overlapping relation to the first blank, and applying pressure to the second blank in the same manner as to the first blank.

2. The herein-described method of covering objects with sheet regenerated cellulose or the like, consisting of selecting complementary blanks of suitable size and shape to overlap each other when applied to opposite sides of an object to be covered, moistening said blanks on one side thereof, positioning the blanks successively on opposite sides of the object with their moist sides in contact with the object, and applying pressure to the entire area of each blank coincidentally with the positioning thereof to remove any existing air from beneath the same.

3. The herein-described method of covering objects with sheet regenerated cellulose or the like, consisting of selecting complementary blanks of suitable size and shape to overlap each other when applied to opposite sides of an object to be covered, moistening said blanks on one side thereof, positioning the blanks successively on opposite sides of the object with their moist sides in contact with the object, applying pressure to the entire area of each blank coincidentally with the positioning thereof to remove any existing air from beneath the same, and applying a binder-strip in encircling relation to the object and in enclosing relation to the overlapping portions and adjacent edges of said blanks.

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