Jan. 23, 1951 R. H. GERKE ET AL 2,539,303

METHOD OF MARKING GOLF BALLS

Filed Oct. 24, 1947

Fig. 1

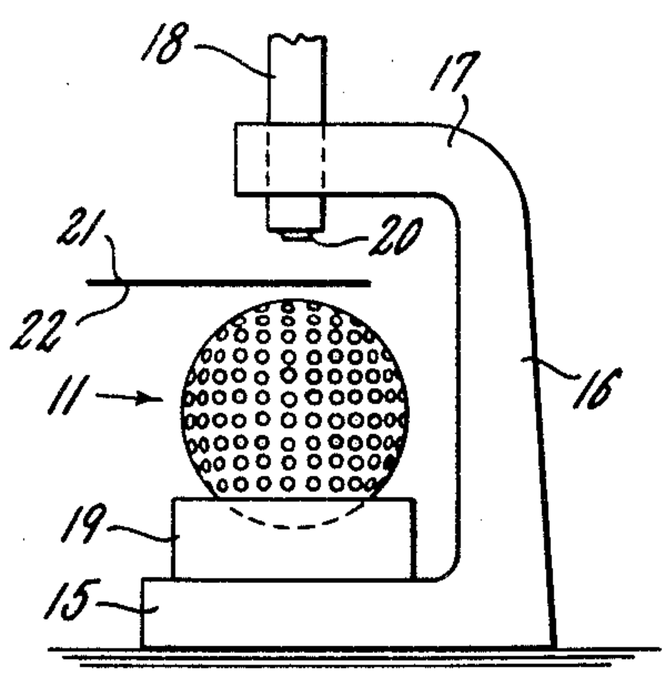


Fig. 2

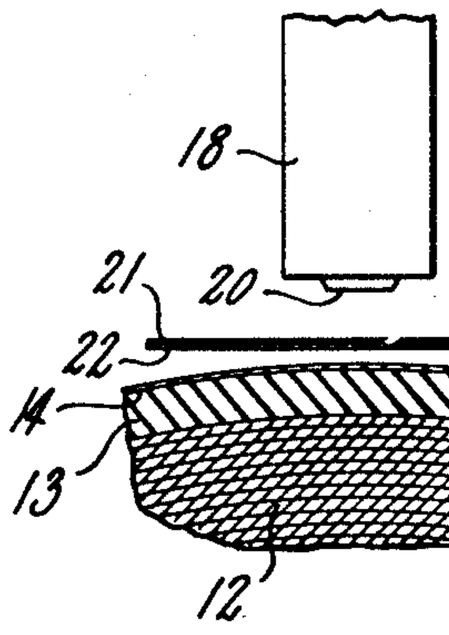


Fig. 3

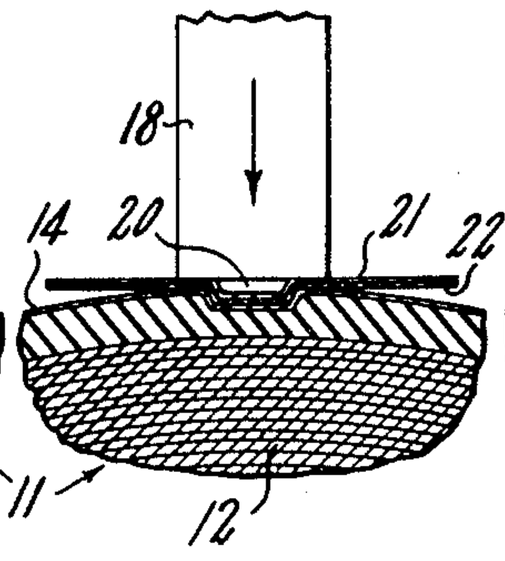


Fig. 4

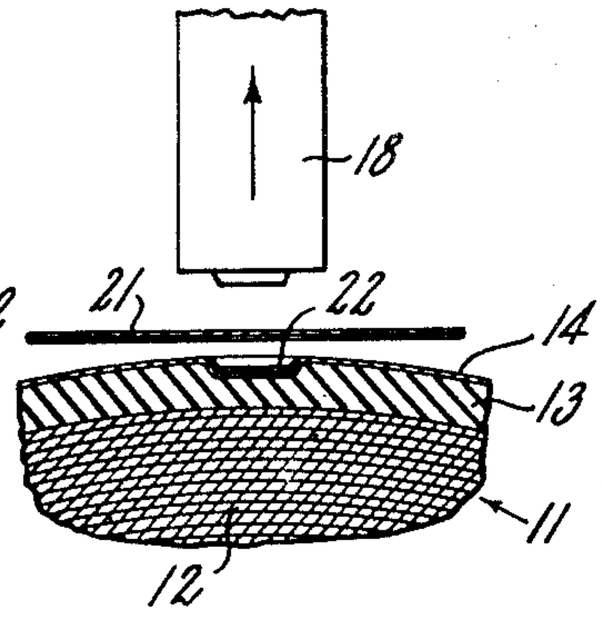


Fig. 5

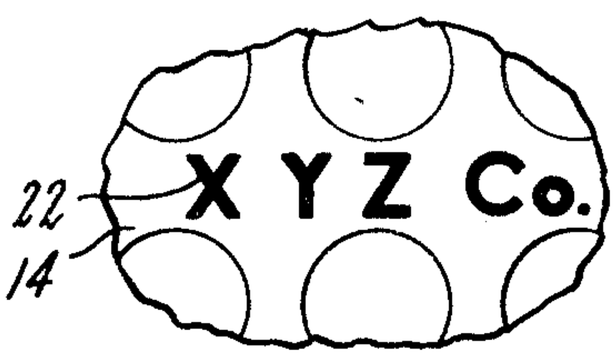
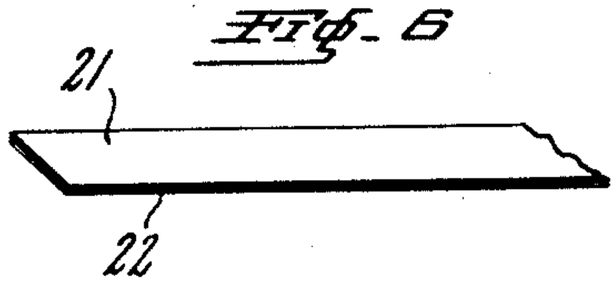


Fig. 6



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METHOD OF MARKING GOLF BALLS

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4 Claims. (Cl. 101—32)

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The present invention relates to a new method of applying trade names and other indicia to golf balls.

Golf balls as commonly constructed have a core of rubber or other yielding material, about which is wound under high tension a considerable amount of rubber thread that forms the ball body, and over this body is provided a cover of balata or a balata compound. This balata cover is usually about .04 of an inch thick, and its outer face is commonly provided with a coating of white or light colored, tough, durable paint.

It has been customary for years to mark golf balls by applying a trade name or other indicia of a contrasting color to the ball. This has been done in the past by first impressing or molding the trade name or indicia into the surface of the ball, and then applying a coloring ink or paint in the indentation of the marking. A procedure commonly used heretofore is to apply the ink or paint in the indentation by hand and in excess, allow it to partially dry, and then wipe off the excess with a cloth moistened with a solvent. This method is expensive because it requires considerable hand labor. Furthermore, it is difficult to obtain a good uniform lettering by this prior procedure.

The present invention contemplates a method whereby the two successive steps employed heretofore to indent indicia in the surface of a golf ball and then apply the coloring matter, can now be carried out by a single quick stamping operation by the use of a transfer tape interposed between the stamping die and golf ball.

The general method of applying indicia by means of a transfer tape is well known and has been used for years. It has been employed to mark pencils, plastic articles and other articles of use.

In our first attempts to mark golf balls by using a transfer tape, we employed a commercial type of transfer tape formed of a thin film of cellophane having a transferable layer of coloring matter deposited on one face thereof, but all attempts to secure a satisfactory marking of golf balls by using commercial transfer tapes were unsuccessful. This was due to the fact that we could not obtain a clean cut marking of the desired depth in the golf ball surface without causing the die to cut through the tape. This cutting fouled up the die as the small cut out pieces of the tape would adhere to the die face and made necessary the frequent removal of these particles from the die. These particles would also cling to the ball which was objectionable.

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In marking golf balls it is important that the finished lettering be positioned below the outer surface of the ball, because if such lettering is slightly raised or almost flush with the surface of the ball, it will come into direct contact with a golf club when the ball is played and will be smeared or removed entirely from the ball. As long as we attempted to use the commercial types of transfer tape to mark golf balls we were unable to secure the desired deeply impressed, clean-cut lettering without cutting the tape, which is objectionable as above pointed out.

When the old above described two-step method of marking golf balls is used no difficulty is experienced in impressing the indicia as deep as desired in the surface of the ball, since all that is necessary is to exert sufficient pressure on the die. When however a transfer tape is used the problem of marking the balls to the desired depth, without cutting the tape is more difficult. To accomplish this the following steps should be followed.

(1) It is extremely important to cool the golf balls to between approximately 30° F. and 50° F., so as to render the balata cover relatively rigid and non-elastic at the time it is indented by the stamping die.

(2) It is important to heat the embossed die to a temperature in the range of about 110° to 150° F., as this heat of the die helps to produce a good bond between the paint covering the golf ball and that carried by the transfer tape.

(3) It is important to use a special type of transfer tape. One essential requirement of such tape is that it be extremely thin and not appreciably over .002 of an inch thick. It is also essential that this tape be capable of stretching both longitudinally and transversely at least 30% in order to take the pressure of the die without being cut. A transfer tape of this type is described and claimed in the Martin application, Serial No. 66,950, filed December 23, 1948, for Transfer Tape.

By employing the method of the present invention and particularly the three steps just mentioned, golf balls can be quickly and inexpensively marked with a trade name or other indicia so that the lettering will lie the desired distance below the surface of the golf ball, and will give good wear and present a pleasing appearance.

The above and other features of the method of the present invention will be further understood from the following description when read

in connection with the accompanying drawing, wherein,

Fig. 1 is a side elevation of mechanism for marking a golf ball in accordance with the present method;

Fig. 2 on a much enlarged scale shows the stamping die, tape and ball before the stamping operation is performed;

Fig. 3 is a similar view showing the position of these parts during the stamping operation;

Fig. 4 is a similar view showing the position of these parts upon completion of the stamping operation;

Fig. 5 on an enlarged scale shows a face of the golf ball after it has been marked in accordance with the present invention; and

Fig. 6 is a perspective view of the elastic carrier tape used in marking the ball the thickness of the tape being exaggerated.

The golf ball shown in the drawing is designated in its entirety by the numeral 11. It may be of usual construction and have a core (not shown), a body 12 formed of wound rubber thread, and a balata cover 13. Upon this balata cover is provided a strong, tough, durable layer of white or light colored paint 14.

The apparatus employed to support the golf ball 11 and mark the same may be variously constructed. One simple form of apparatus to this end is shown in Fig. 1 and comprises a metal frame having the work supporting base 15, upright 16 that is provided at its upper end with the laterally extending portion 17 in which the die shaft 18 is supported for vertical sliding movement. The power means for raising and lowering the die shaft 18 is not shown but may be of usual construction. Upon the base plate 15 is mounted a block 19 which has a rounded depression in its upper face adapted to receive the golf ball 11 as shown. At the lower end of the die shaft 18 is provided the embossed steel die 20 having the desired lettering or other indicia. The die 20 does not come in direct contact with the ball 11 but engages a carrier tape of special construction.

The success of the present method depends very largely upon the ability of the transfer tape to undergo the pressure of the die as it deeply indents the ball, without being cut by the die.

In order to accomplish this and mark the ball satisfactorily several things are necessary. One is to cool the ball to a temperature below 50° F. and preferably between about 30° F. to 50° F. The reason for this is that balata is relatively elastic at room temperature and will not retain well the impression of the die unless the ball is cooled down to about 50° F. or lower.

It is also desirable to heat the die 20 to a temperature of between about 110° F. and 150° F., by any suitable means (not shown). The heat of the die will tend to soften momentarily the paint 14 upon the ball and also the paint upon the transfer tape to increase the bond between these different colored paints.

It is also important to employ a transfer tape having a very thin carrier film 21 which is not appreciably over .002 of an inch thick, and which is able to stretch at least 30% both longitudinally and transversely under the pressure of the die without cutting. If the film 21 is much thicker than this it will not produce clean-cut, sharply formed letters. This film 21 carries upon one face thereof, which is the face that contacts the ball, the transferable layer 22 of coloring matter, and this layer 22 should have about the same thickness as the film 21.

A number of plastic films have been found fairly satisfactory for use as the stretchable carrier film 21; such as vinyl chloride vinyl acetate copolymer, vinylidene chloride polymer, polyvinylchloride, polyethylene and thin high-grade rubber. The first of these however is the most satisfactory and gives good results.

The coloring matter 22 which is preferably of dark color such as blue or black may be formed of various pigment mixtures, one satisfactory mixture is as follows:

	Parts by weight
Blue Japan color	90
Spar varnish	10
	100

When the golf ball is cooled as above described and the die is heated, the transfer tape 21, 22 may be placed in the position in which it is shown in Figs. 1 and 2. The die is then quickly actuated to force this tape into the surface of the ball as shown in Fig. 3, and as the die is withdrawn, the film 21 which is still intact can be easily disengaged from the ball as shown in Fig. 4, but the coloring matter 22 that was forced into the indented portion of the ball by the quick stamping action of the die, remains deposited below the surface of the ball as indicated by 22 in Fig. 4. The relatively cold ball serves to dissipate rapidly the heat imparted to the paint 14 and 22 by the hot die, to thereby prevent the temperature of the balata adjacent the hot die from rising appreciably.

By employing the method of the present invention as above described golf balls can be quickly and inexpensively marked so that they present a pleasing appearance, and the marking wears well upon the ball.

Having thus described our invention, what we claim and desire to protect by Letters Patent is:

1. The method of marking a golf ball by forming indented indicia in the surface of the ball and simultaneously depositing coloring matter in the indentation; which includes the steps of providing an embossed die that is kept warm by heating it to a temperature above 110° F., cooling the ball below 50° F., introducing between the cooled ball and heated die a carrier tape formed of a thin plastic film capable of stretching 30% or more and carrying on one face thereof a transferable layer of coloring matter, and imparting a quick stamping motion to the die to thereby force the carrier tape deep enough into the ball's surface to deposit the coloring matter below the surface of the ball without rupturing the tape.

2. The method of marking a golf ball by forming indented indicia in the surface of the ball and simultaneously depositing coloring matter in the indentation; which includes the steps of providing an embossed die that is kept warm by heating it to a temperature above 110° F., cooling the ball to between 30° F. and 50° F., introducing between the cooled ball and the heated embossed die a carrier tape formed of a thin plastic film capable of stretching a substantial amount and carrying on one face thereof a transferable layer of coloring matter, and imparting a quick stamping motion to the die to thereby force the carrier tape deep enough into the ball's surface to deposite the coloring matter below the surface of the ball without rupturing the tape.

3. The method of marking a golf ball by forming indented indicia in the surface of the ball and simultaneously depositing coloring matter in the indentation; which includes the steps of providing an embossed die that is kept at a temperature between 110° and 150° F., cooling the ball below 50° F., introducing between the cooled ball and the heated die a carrier tape formed of a thin plastic film capable of stretching a substantial amount and carrying on one face thereof a transferable layer of coloring matter, and imparting a quick stamping motion to the die to thereby force the carrier tape deep enough into the ball's surface to deposit the coloring matter below the surface of the ball without rupturing the tape.

4. The method of marking a golf ball by forming indented indicia in the surface of the ball and simultaneously depositing coloring matter in the indentation; which includes the steps of providing an embossed die that is kept warm by heating it to a temperature above 110° F., cooling the ball below 50° F., introducing between the cooled ball and heated die a carrier tape formed of a thin plastic film of vinyl chloride vinyl acetate copolymer that has a high

stretch and which carries on one face thereof a transferable layer of coloring matter, and imparting a quick stamping motion to the die to thereby force the carrier tape deep enough into the ball's surface to deposit the coloring matter below the surface of the ball without cutting the tape.

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