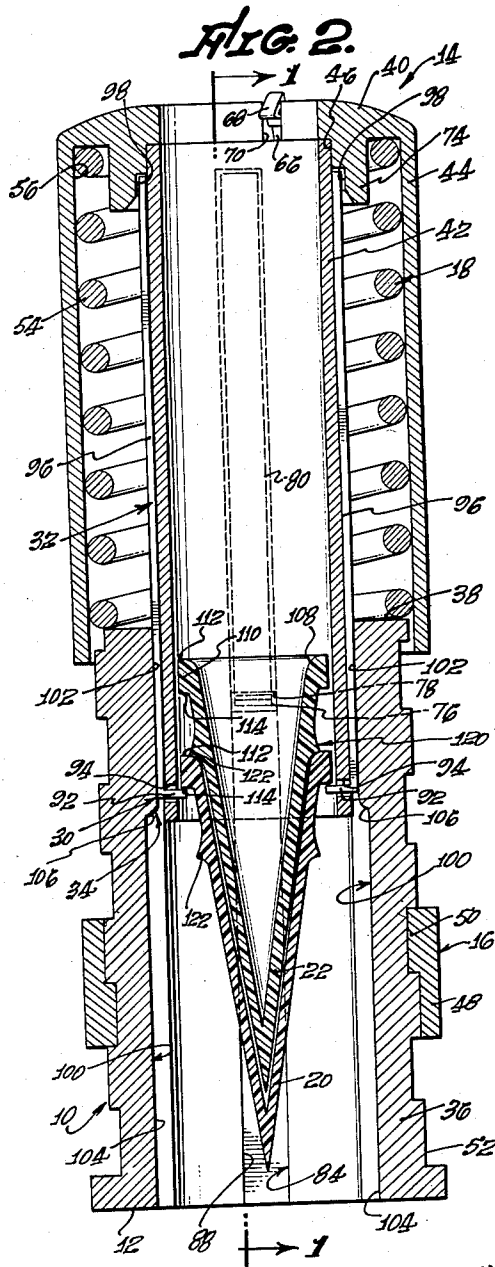
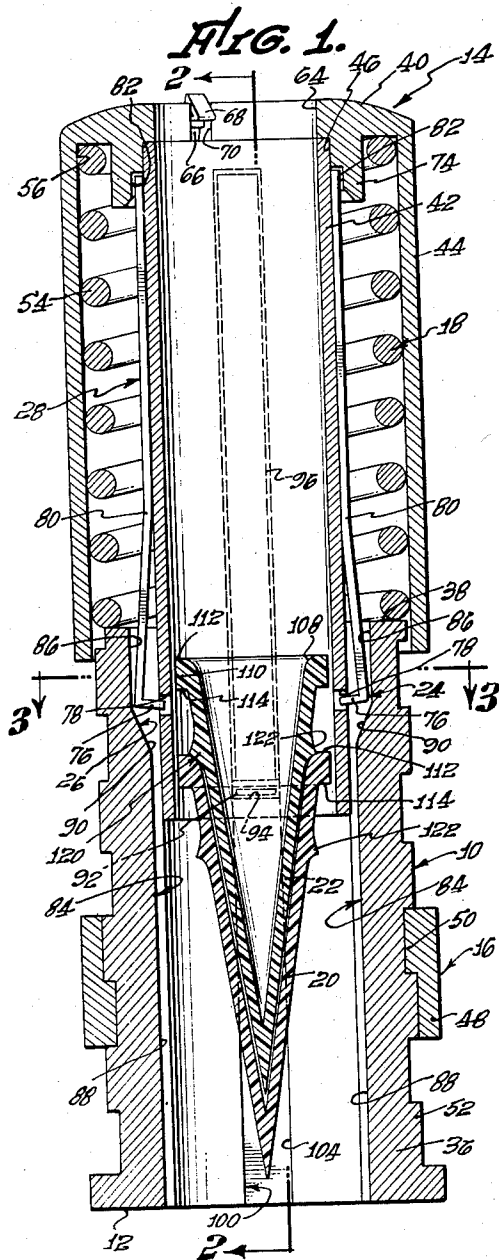


2,901,146

GOLF TEE DISPENSER

Filed Oct. 13, 1955

2 Sheets-Sheet 1



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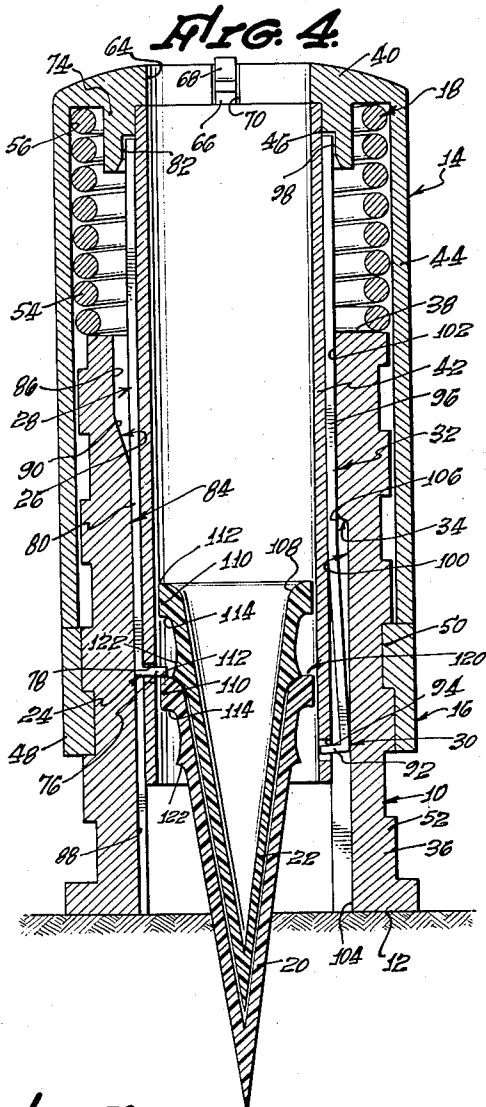
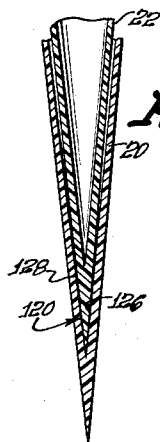
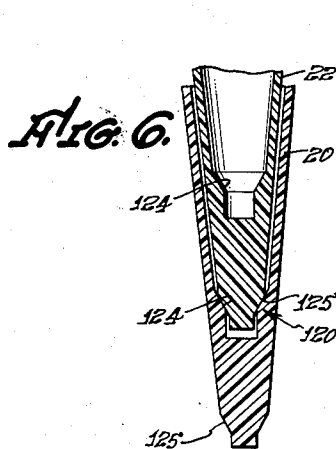
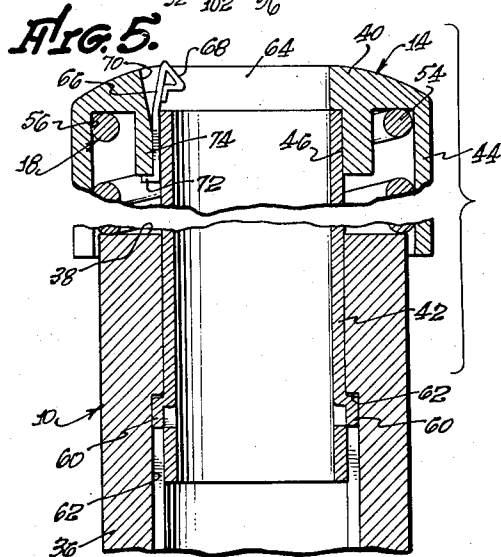
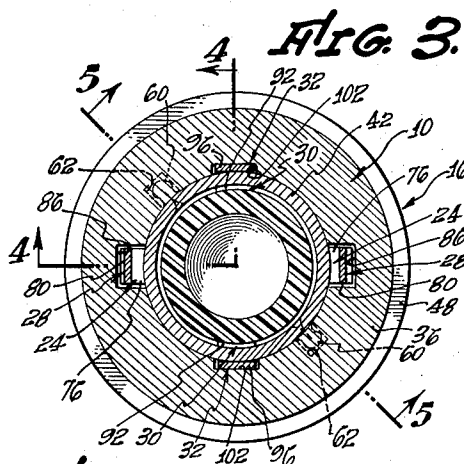
J. S. POWELL, JR., ET AL

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GOLF TEE DISPENSER

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2 Sheets-Sheet 2



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2,901,146

GOLF TEE DISPENSER

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2 Claims. (Cl. 221—190)

The present invention relates in general to dispensers and, more particularly, to a device for dispensing articles one at a time from one end of a series of such articles. Since the invention has been embodied in and is particularly applicable to a dispenser for golf tees, it will be considered in such connection herein.

A general object of the invention is to provide a dispenser capable of housing completely a substantial number of golf tees in series or tandem and capable of ejecting the tees and pressing or driving them into the ground one at a time.

Another object is to provide golf tees for use with the dispenser of the invention which nest together so that a substantial number of tees may be housed in a relatively short dispenser.

Still another object of the invention is to provide a dispenser having extensible and retractable ejecting means engageable with the bottom golf tee in the series and movable in the direction of golf-tee ejection for ejecting the end golf tee and driving it into the ground, the dispenser having extensible and retractable retaining means engageable with the next golf tee in the series for retaining the remaining golf tees in the dispenser after each tee has been driven into the ground.

A further object is to provide a dispenser which includes a magazine adapted to receive therein a series of nested golf tees and comprising relatively reciprocable ground-engaging and actuating members, which includes extensible and retractable ejecting means and retaining means spaced apart in the direction of relative reciprocation of the members and carried by the actuating member, which includes means for extending the ejecting means into ejecting engagement with the end golf tee in the series during groundward movement of the actuating member relative to the ground-engaging member, and which includes means for extending the retaining means into retaining engagement with the next golf tee in the series during upward movement of the actuating member relative to the ground-engaging member. With this construction, as the actuating member is moved downwardly, the ejecting means is extended into ejecting engagement with the end golf tee to eject and drive same into the ground, the ejecting means being retracted during upward movement of the actuating member. Similarly, the retaining means is retracted during downward movement of the actuating member to permit ejection of the end golf tee in the series, the retaining means being extended during upward movement of the actuating member to retain the next and subsequent golf tees within the dispenser, leaving the ejected golf tee in the ground in condition for use.

Another object is to provide a dispenser including cam means on the ground-engaging member for extending the ejecting means and the retaining means, and including resilient means for retracting the ejecting means and the retaining means. A related object is to provide a dispenser wherein the ejecting means and the retaining means comprise cam-actuated prongs extensible

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inwardly into ejecting and retaining engagement, respectively, with golf tees housed within a sleeve or barrel of the dispenser, these prongs being carried by leaf springs which urge same outwardly toward their respective retracted positions.

Another important object of the invention is to provide means for limiting the distance that each golf tee is driven into the ground. More particularly, an object is to provide stop means on the ground-engaging member for limiting downward movement of the actuating member. Still another object in this connection is to provide an adjustable stop means for varying the distance each tee is driven into the ground, the adjustable stop means preferably comprising a collar threaded on the exterior of the ground-engaging member and engageable by the actuating member to limit downward movement thereof.

Another object is to provide a dispenser capable of being loaded with golf tees by inserting the tees, either singly or in nested relation, into the dispenser in the direction of ejection thereof so that the tees move through the dispenser unidirectionally.

Another object of the invention is to provide hollow, uniform golf tees capable of being nested together, such golf tees, when nested, occupying a minimum of space.

An important object of the invention is to provide means limiting insertion of each golf tee into the next so as to keep the golf tees from wedging together to such an extent as to withdraw from the ground a golf tee driven thereinto by the dispenser. In this connection, an object is to provide interengageable means on the tees contacting over areas which are small as compared to the total surface areas of the tees so as to prevent large-area surface contact between the tees, thereby preventing wedging together thereof.

Another object is to prevent tee wdging by providing each tee with external stop means engageable with the larger end of the tee into which it is inserted so as to limit insertion thereinto.

Another object is to prevent wedging by making the depth of the conical cavity in each tee slightly less than that required for a tight fit, whereby insertion of each tee into the next is limited by engagement of the smaller end thereof with the bottom of the cavity in the next tee.

Another object is to prevent wedging by making the included angle of the conical outer surface of each tee different from the included angle of the conical inner surface thereof, whereby only a small annular area of each tee engages the tee into which it is inserted.

The foregoing objects, advantages, features and results of the present invention, together with various other objects, advantages, features and results thereof which will be apparent to those skilled in the art in the light of this specification, may be attained with the exemplary embodiments of the invention which are illustrated in the accompanying drawings and which are described in detail hereinafter. Referring to the drawings:

Fig. 1 is a longitudinal sectional view of a golf tee dispenser of the invention, and is taken along the arrowed line 1—1 of Fig. 2;

Fig. 2 is a longitudinal sectional view taken along the arrowed line 2—2 of Fig. 1, the sectional views of Figs. 1 and 2 being taken in planes angularly spaced by 90°;

Fig. 3 is a transverse sectional view taken along the arrowed line 3—3 of Fig. 1;

Fig. 4 is a longitudinal sectional view taken along the arrowed line 4—4 of Fig. 3 and showing the parts of the dispenser in tee-ejecting positions;

Fig. 5 is a fragmentary longitudinal sectional view taken along the arrowed line 5—5 of Fig. 3;

Fig. 6 is a fragmentary longitudinal sectional view illustrating an alternative and preferred means of pre-

venting tee wedging, one such means being shown in Figs. 1, 2 and 4; and

Fig. 7 is a fragmentary longitudinal sectional view illustrating another alternative means of preventing tee wedging.

Referring to Figs. 1 and 2 of the drawings, the dispenser of the invention comprises a golf-tee magazine which includes two tubular, telescopically related, relatively reciprocable members, one being a ground-engaging member or base 10 having a flanged ground-engaging end 12, and the other being an actuating member 14. The actuating member 14 is movable downwardly relative to the ground-engaging member 10, the downward movement of the actuating member being limited by an adjustable stop means 16 on the ground-engaging member. Resilient means 18 biases the actuating member 14 upwardly relative to the ground-engaging member 10.

Continuing to consider the dispenser of the invention in a general way, the ground-engaging and actuating members 10 and 14 house completely a series of hollow, uniform golf tees nested together in tandem relation for compactness. Only two golf tees 20 and 22 are shown for the sake of clarity, it being understood that the dispenser is capable of confining therein a larger number of tees, such as a dozen or more. The golf tees 20 and 22 are ejected from the dispenser and driven into the ground one at a time by an extensible and retractable ejecting means 24 carried by the actuating member 14, the ejecting means being extended by cam means 26 on the ground-engaging member 10 during groundward movement of the actuating member, and being retracted by resilient means 28 during upward movement of the actuating member. Similarly, as shown in Fig. 2, the dispenser includes extensible and retractable retaining means 30 for retaining the golf tee 22 after the tee 20 has been ejected and driven into the ground, the retaining means 30 being retracted during groundward movement of the actuating member 14 relative to the ground-engaging member 10 by resilient means 32, and being extended during upward movement of the actuating member by cam means 34 on the ground-engaging member.

Considering the dispenser of the invention more specifically now, the ground-engaging member 10 comprises a barrel or tube 36 provided with the flanged ground-engaging end 12 and with an upper end 38. The actuating member 14 includes an outer cap 40 and an inner tubular member or sleeve 42 spaced inwardly from a skirt 44 of the cap in concentric relation therewith. In the particular construction illustrated, the cap 40 and the sleeve 42 are separate parts secured together in any suitable manner, as by pressing the upper end of the sleeve 42 into a counterbore 46 in the cap 40. As will be apparent, the tube 36 of the ground-engaging member 10 and the sleeve 42 and the skirt 44 of the actuating member 14 are telescopically related, the tube 36 being inserted between the sleeve 42 and the skirt 44 and the exterior of the sleeve 42 making a sliding fit with the interior of the tube 36.

Downward or groundward movement of the actuating member 14 relative to the ground-engaging member 10 is limited by engagement of the lower end of the skirt 44 with the adjustable stop means 16, the latter having the form of a collar 48 threaded on the exterior of the tube 36 by means of internal and external threads 50 and 52 on the collar 48 and the tube 36, respectively. As will be apparent, by rotating the collar 48 to displace it axially of the dispenser, the distance which the actuating member 14 may move groundwardly relative to the ground-engaging member 10 may be varied. As discussed hereinafter, this varies the depth of penetration of a golf tee ejected by the ejecting means 24.

The actuating member 14 is biased upwardly away from the ground-engaging end 12 of the ground-engaging

member 10 by the resilient means 18, which is shown as taking the form of a helical compression spring 54 seated at its lower end against the upper end 38 of the tube 36 and seated at its upper end in an annular cavity 56 in the cap 40 of the actuating member. Referring to Figs. 3 and 5, upward movement of the actuating member 14 relative to the ground-engaging member 10 under the influence of the spring 54 is limited by engagement of outwardly-extending projections 60 on the sleeve 42 with the upper ends of longitudinal grooves 62 in the internal surface of the tube 36. The projections 60 slide in the grooves 62 to key the actuating member 14 against rotation relative to the ground-engaging member 10 also.

Golf tees such as the tees 20 and 22 may be inserted into the dispenser through a hole 64 in the cap 40 and registering with the bore of the sleeve 42, such tees being retained within the dispenser by the retaining means 30 as hereinafter described. A retainer 66 carried by the actuating member 14 keeps the golf tees from falling out of the dispenser in the event that it is inverted. As best shown in Fig. 5 of the drawings, the retainer 66 consists of a leaf spring having at its upper end a loop 68 which extends inwardly into the hole 64 from a notch 70 in the wall of such hole. This notch extends downwardly in the wall of the counterbore 46 to receive the body of the retainer 66, which is clamped between the sleeve 42 and the cap 40. In order to prevent withdrawal of the retainer, it is provided at its lower end with a prong 72 which hooks over an annular rib 74 on the cap 40 between the counterbore 46 and the annular cavity 56.

Considering the ejecting means 24, it includes two ejecting members or prongs 76, Fig. 1, which are insertable into the interior of the sleeve 42 through apertures 78 therein. The prongs 76 are shown as integral with the lower ends of leaf springs 80 which bias the prongs 76 outwardly toward retracted positions and which lie against the exterior of the sleeve 42, the upper ends of the springs 80 being confined in notches 82 in the wall of the counterbore.

The springs 80 are inserted at their lower ends into longitudinal grooves 84 in the bore of the tube 36. The grooves 84 have upper portions 86 of major depth and lower portions 88 of minor depth, these portions having at their junctions inclined shoulders 90 which form the aforementioned cam means 26 for extending the ejecting means 24 in response to groundward movement of the actuating member 14. As will be apparent, when the lower ends of the leaf springs 80 engage the shoulders 90, the ejecting prongs 76 are extended inwardly into the sleeve 42 as the lower ends of the springs move from the upper portions 86 of the grooves 84 into the lower portions 88 thereof. Upon upward movement of the actuating member 14, the resilience of the leaf springs 80 retracts the ejecting prongs 76.

The retaining means 30 is similar to the ejecting means 24, the retaining means, as best shown in Fig. 2, including retaining prongs 92 which are movable inwardly into extended positions within the sleeve 42 through apertures 94 therein. The retaining prongs 92 are shown as formed integrally with the lower ends of leaf springs 96 which bias the retaining prongs 92 outwardly into retracted positions, the springs 96 lying against the exterior of the sleeve 42 and being confined at their upper ends in notches 98 in the wall of the counterbore 46.

The lower ends of the springs 96 are inserted into longitudinal grooves 100 in the wall of the bore of the tube 36. These grooves have upper portions 102 of minor depth and lower portions 104 of major depth joined by inclined shoulders 106 forming the cam means 34 for extending the retaining prongs 92 in response to upward movement of the actuating member 14. As will be apparent, as the actuating member 14 moves up-

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wardly, the shoulders 106 force the retaining prongs 92 inwardly into extended positions within the sleeve 42. Conversely, in response to downward movement of the actuating member 14, the resilience of the springs 96 causes the lower ends thereof to move outwardly as they are inserted into the lower, deeper portions 104 of the grooves 100, whereby the retaining prongs 92 are moved outwardly into retracted positions.

As hereinbefore indicated, the golf tees 20 and 22 are hollow, cuniform members adapted to be driven into the ground and providing at their larger ends seats 108 for the golf balls, these seats preferably being rounded or beveled as shown. The tees 20 and 22 are provided at their larger ends with continuous external annular flanges 110 providing upper, upwardly facing shoulders 112 and lower, downwardly facing shoulders 114. In operation of the dispenser of the invention, the ejecting and retaining prongs 76 and 92 engage these shoulders to perform their respective functions, as will now be described.

Considering the operation of the dispenser of the invention, golf tees are inserted into the sleeve 42 through the hole 64 in the cap 40, the retainer 66 flexing outwardly to permit this and the loop 68 on the retainer then holding the tees in the dispenser. It will be understood that the tees may be inserted either singly, or in groups of nested tees, until the desired number of tees is in the dispenser. For convenience only the two tees 20 and 22 are shown in the dispenser.

As will be apparent from Figs. 1 and 2 of the drawings, the resilient means 18 normally maintains the actuating member 14 in its uppermost position relative to the ground-engaging member 10. Under such conditions the ejecting prongs 76 are retracted and the retaining prongs 92 are extended inwardly to engage the lower shoulder 114 of the first or lowermost tee 20 in the series, thereby retaining all of the tees within the dispenser. It should be noted that, under these conditions, the sleeve 42 and the tube 36 cooperate to provide a magazine which completely houses or confines the tees therein. Consequently, the dispenser may conveniently be carried in the user's pocket without the annoyance of a projecting tee point.

Assuming that it is now desired to eject the tee 20 and to drive it into the ground, the flanged ground-engaging end 12 of the tube 36 is placed on the ground, as shown in Fig. 4 of the drawings. The user then presses downwardly on the cap 40, as with the palm of his hand, to displace the actuating member 14 downwardly. As the actuating member 14 is moved groundwardly, the lower ends of the springs 80 engage the cam shoulders 90 to extend the ejecting prongs 76 inwardly between the upper shoulder 112 on the first or bottom tee 20 and the lower shoulder 114 on the second tee 22. Also, as the actuating member 14 is moved downwardly, the lower ends of the springs 96 enter the deeper portions 104 of the grooves 100 and retract the retaining prongs 92 out from under the lower shoulder 114 of the bottom tee 20. By this time, the point of the bottom tee 20 is in engagement with the surface of the ground, and continued downward movement of the actuating member 14 results in movement thereof relative to the tees 20 and 22 until the ejecting prongs 76 seat on the upper shoulder 112 of the bottom tee 20. Further downward movement of the actuating member 14 then drives the bottom tee 20 into the ground, the driving force being transmitted to the bottom tee by the ejecting prongs 76, which engage the upper shoulder 112 of the bottom tee, as shown in Fig. 4 of the drawings. The driving force is transmitted to the prongs 76 from the sleeve 42 by engagement of the prongs with the upper edges of the apertures 78. The distance which the bottom tee 20 is driven into the ground is determined by the position of the adjustable stop collar 48, which may be set to pro-

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vide any desired depth of penetration, depending on soil conditions, grass height, and the like.

The foregoing accomplished, the downward force on the actuating member 14 is released, whereupon the resilient means 18 returns the actuating member to its upper position. As this occurs, the ejecting prongs 76 move upwardly into engagement with the lower shoulder of the tee 22, and pull this tee upwardly out of the tee 20, friction between the latter and the ground holding it firmly in the ground. As the actuating member 14 continues to move upwardly, the retaining prongs 92 move inwardly and the ejecting prongs 76 then retract outwardly to permit the tee 22, and any tees thereabove, to drop downwardly into a position such that the lower shoulder 114 of the tee 22 seats on the retaining prongs 92, which then retain the tee 22, and any tees thereabove, in the same manner as the tee 20 was held previously. The upward movement of the actuating member 14 is terminated by engagement of the projections 60 with the upper ends of the grooves 62, the dispenser now being in condition for a repeat performance for the purpose of ejecting and driving the tee 22 in the same manner.

Thus, it will be apparent that the dispenser of the invention is utilized in a very straightforward manner to dispense and drive a tee automatically. In other words, all that it is necessary for the user to do is to place the dispenser on the ground, press downwardly on the actuating member 14, and then release the actuating member, this series of simple operations resulting in dispensing and setting of a tee.

In order to prevent excessive friction between the tees, so as to avoid withdrawing or loosening of the lowermost tee, after it has been driven into the ground, upon upward movement of the next tee 22 during the upward movement of the actuating member 14, means are provided for preventing wedging of the tees together. Fundamentally, such anti-wedging means comprise interengageable means 120 on the tees 20 and 22 which contact over areas that are small as compared to the external and internal areas of the tees so as to prevent surface contact of the outer surface of the tee 22 with the inner surface of the tee 20, thereby preventing wedging. In the tee embodiment illustrated in Figs. 1, 2 and 4 of the drawings, the interengageable means 120 comprises outwardly projecting means 122 on each tee, the means 122 being adapted to seat on the larger end of a tee into which it is inserted. As shown in Figs. 1, 2 and 4, the outwardly projecting means 122 on the tee 22 seats on the upper end of the tee 20 to limit insertion of the tee 22 into the tee 20, thereby preventing surface contact between the outer surface of the tee 22 and the inner surface of the tee 20, and preventing the two tees from wedging together. The outwardly projecting means 122 may take various forms. For example, it may take the form of an annular flange, or it may take the form of one or more individual projections.

Referring to Fig. 6, the preferred tee embodiment illustrated therein includes an interengageable means 120 for preventing wedging which prevents insertion of another tee thereinto a sufficient distance to attain a tight fit. More particularly, the cavity in each tee is provided with a transverse bottom wall 124, instead of coming to a sharp point, and each tee is provided with an external transverse wall 125 engageable with the wall 124. The tee 22 thus bottoms within the tee 20 before surface contact between the outer surface of the tee 22 and the inner surface of the tee 20 occurs, thereby preventing wedging.

In the tee embodiment of Fig. 7, the interengageable means 120 comprises interengaging annular areas 126 and 128 on the outer and inner tees 20 and 22, these areas being narrow and being adjacent the smaller ends of the tees. This effect is attained by making the included angle of the external surface of each tee smaller than the included angle of the internal surface thereof. In other words, each tee is more acute externally than it is inter-

nally, whereby only the areas 126 and 128 come into contact, thereby preventing large-area contact between the two tees and preventing wedging.

Although we have disclosed exemplary embodiments of our invention herein for purposes of illustration, it will be understood that various changes, modifications and substitutions may be incorporated therein without departing from the spirit of the invention as defined by the claims hereinafter appearing.

We claim as our invention:

1. In a dispenser, the combination of: a tubular base; a tubular member telescoped into said tubular base and movable downwardly therein from an upper position to a lower, dispensing position; spring means engaging said base and said member and biasing said member upwardly toward said upper position; ejecting means carried by said member so as to be movable upwardly and downwardly therewith, said ejecting means being movable inwardly and outwardly relative to said member; retaining means carried by said member so as to be movable upwardly and downwardly therewith, said retaining means being located below said ejecting means and being movable inwardly and outwardly relative to said member; ejecting spring means connected to said ejecting means and mounted on said member and biasing said ejecting means outwardly; retaining spring means connected to said retaining means and mounted on said member and biasing said retaining means outwardly; ejecting cam means on said base and engageable with said ejecting means in an intermediate position of said member and during downward movement thereof for moving said ejecting means inwardly into the interior of said member; and retaining cam means on said base and engageable with said retaining means in an intermediate position of said member and during upward movement thereof for moving said retaining means inwardly into the interior of said member.

2. In a dispenser, the combination of: a tubular base; a tubular member telescoped into said tubular base and movable downwardly therein from an upper position to a lower, dispensing position; spring means engaging said base and said member and biasing said member upwardly toward said upper position; ejecting means carried by said member so as to be movable upwardly and down-

wardly therewith, said ejecting means being movable inwardly and outwardly relative to said member; retaining means carried by said member so as to be movable upwardly and downwardly therewith, said retaining means being located below said ejecting means and being movable inwardly and outwardly relative to said member; ejecting spring means connected to said ejecting means and mounted on said member and biasing said ejecting means outwardly; retaining spring means connected to said retaining means and mounted on said member and biasing said retaining means outwardly; ejecting cam means on said base and engageable with said ejecting means in an intermediate position of said member and during downward movement thereof for moving said ejecting means inwardly into the interior of said member; retaining cam means on said base and engageable with said retaining means in an intermediate position of said member and during upward movement thereof for moving said retaining means inwardly into the interior of said member; a skirt connected to and spaced outwardly from said member and telescoped over said base, the spring means first mentioned encircling said member and being disposed between said member and said skirt; and an adjustable stop ring threaded on the exterior of said base and engageable by said skirt to limit downward movement of said member.

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