TUBULAR MAGAZINE REPEATING FIREARM

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This invention relates to improvement in tubular-magazines repeating firearms and relates in particular to the tubular magazines thereof, and means for altering or regulating the cartridge-containing capacity of the latter.

One of the objects of the present invention is to provide a tubular-magazine repeating firearm having superior means for altering or regulating the capacity of the tubular magazine thereof.

Another object is to provide convenient and effective means for altering or regulating the cartridge-containing capacity of the tubular magazine of a repeating firearm.

Another object is to provide simple, reliable and effective means for the purpose referred to, which will require the use of a tool in order to be shifted or removed, to thus minimize the chance of the firearm having its magazine capacity changed in the field, in efforts to thwart hunting laws.

With the above and other objects in view, as will appear to those skilled in the art from the following, considered in conjunction with the accompanying drawing and appended claims, the present invention includes all features disclosed therein which are novel over the prior art.

In the accompanying drawing:

Fig. 1 is a view in side elevation of a tubular-magazine repeating firearm in which the present invention may be embodied;

Fig. 2 is a central longitudinal sectional view of the tubular magazine of such a firearm, showing the capacity-adjuster therein installed;

Fig. 3 is a front-end view thereof;

Fig. 4 is a broken view in central longitudinal section of the portion of the tubular magazine adjacent the capacity-adjuster but shown on a larger scale than Fig. 2;

Fig. 5 is a similar view but showing the capacity-adjuster in section;

Fig. 6 is a transverse sectional view taken on the line 6—6 of Fig. 4;

Fig. 7 is a transverse sectional view taken on the line 7—7 of Fig. 4;

Fig. 8 is a perspective view of the locking-roller; and

Fig. 9 is a broken view in side elevation of a rod-like tool suitable for installing, adjusting and removing the capacity-adjuster from a tubular magazine.

For the purpose of illustrating the present invention, a tubular-magazine repeating firearm is shown in the accompanying drawing, which firearm includes in brief a receiver 10, a buttstock 11, and a barrel 12, beneath which latter is mounted a tubular magazine 13, partly embraced by a forestock 14.

The tubular magazine, which is shown detached in Fig. 2, has projecting from its rear end a sleeve-like extension 15, which latter at its forward end extends part way within the rear end of the magazine 13 proper, to which it may be secured by brazing or the like, and provides a forwardly-facing annular stop-shoulder 16, against which a complementary annular stop-shoulder 17 on a cup-shaped follower 18 abuts when the magazine is empty.

The follower 18, above referred to, is urged rearwardly by a helical spring 19 located within the magazine 13 and also extending within the said follower. The said spring 19 abuts at its forward end against the body-member 20 of a device which, for convenience of description, may be referred to as a "capacity-adjuster," inasmuch as its position within the tubular magazine 13 will determine how many cartridges may be inserted into the said magazine from the rear end thereof in the usual manner of firearms of the type illustrated.

The body-member 20, just above referred to, may be made of any suitable material, though aluminum or other available light material is preferred. The said body-member is formed with a diametrically-arranged slot 21 extending from one side of its periphery to a point adjacent the other side of the said periphery, thus virtually dividing the body-member into two halves, which are attached together only by a relatively-thin and flexible web-portion 22 (Figs. 6 and 7). At right angles to the deep slot 21, the body-member is provided on its respective opposite sides with relatively-shallow notches 23—23. As thus slotted, the body-member 20 may be characterized as expandable, and its normal expanded size is such that it may be inserted into the interior of the magazine 13 with a convenient sliding fit.

Intermediate the web 22 and one of the adjacent shallow slots 23, the body-member 20 is provided in its periphery with an arcuate groove 24, the bottom wall 25 of which provides a cam-surface coating with a locking-roller 26. The depth of the groove 24 and the diameter of the locking-roller 26 are such that when the said roller is in the central portion of the said groove, it will not project beyond the periphery of the body-member to a degree sufficient to interfere with the axial sliding of the body-member in the interior of the magazine 13.

The central portion of the locking-roller 26
is formed with an annular groove 27 to clear a retaining-spring or clip 26, which is slightly more than semi-circular in form and fits within an annular groove 28 formed in the periphery of the body-member 20. The retaining-spring or clip 26 serves to prevent the locking-roller 26 from separating from the body-member when the entire device is outside of the magazine, and does not interfere with the lateral movement of the said locking-roller, as may be required to discharge its locking function and as will be more fully hereinafter described.

The body-member 20 is formed with an axially-arranged conical bore 30 terminating at its rear end in a threaded portion 32 of cylindrical form. The threaded portion 34 of the body is engaged by the externally-threaded cylindrical portion 32 of a tubular expander 33 having an axial passage 34 extending therethrough, and having the forward portion of its exterior surface 35 of conical form for coaction with the conical bore 30 of the body-member 20. To limit the forward movement of the expander 33, the said expander is provided with a transverse stop-pin 36 at its rear end.

At diametrically-opposite points in its forward end, the tubular expander 33 is preferably provided with L-shaped or bayonet slots 37—37 for the reception of the respective opposite ends of a coupling-pin 38 mounted diametrically adjacent one end of the rod-like tool 39 (Fig. 9) having an offsetting handle 40 by means of which it may be turned.

With the tubular expander 33 retired into the position in which it is indicated by broken lines in Fig. 5, the capacity-adjusted, comprising in the main the parts 29, 28, 26 and 25, may be inserted into the interior of the magazine 13, from the forward end thereof, after the magazine-head 41 has been removed therefrom. Once inserted, as just described, the coupling-pin 38 of the rod-like tool 39 may be engaged with the bayonet slots 37—37 at the forward end of the tubular expander 33 and the entire device pushed forward to the desired position by means of such tool. When the capacity-adjuster is positioned as described, a right-hand turning of the tool 39 will serve to thread the tubular expander 33 rearwardly into the body-member 20 to expand the same so as to tightly engage its periphery with the interior surface of the magazine 13. During this operation of threading the tubular expander 33 into the body-member 20, the latter will be prevented from rotating by the locking-roller 26, which, upon the initial turning movement of the body-member, will become wedged between the adjacent wall of the magazine 13 and the cam-surface 39 of the said body-member.

Thus, the magazine 13 may have its cartridge-containing capacity conveniently changed, inasmuch as the position of the capacity-adjuster within the said magazine will determine how many cartridges of a given length can be inserted into the rear end of the said magazine before the forward movement of the follower 48 is checked by the body-member 20.

Should it be desired to remove the capacity-adjusted from the tubular magazine, the coupling-pin 38 of the rod-like tool 39 may be engaged with the bayonet slots 37—37 of the tubular expander 33 and the said expander turned to the left to thus thread the same forwardly with respect to the body-member 20 and permit the latter to diametrically contract to permit axial movement. During the operation just described, the locking-roller 26 will function with a wedge-like action to effectively prevent any appreciable turning of the body-member 20 within the magazine, to thus insure that the expander 33 will turn with respect to the body-member 20.

When the body-member 20 has been collapsed, by the operation above described, sufficiently to free its grip upon the interior of the tubular magazine 13, the entire device may be withdrawn from the said magazine by means of the tool 39, the pin 38 of which latter will be at this time located in the transverse reaches of the respective bayonet slots 37—37.

Should it be desired to shift the capacity-adjusting device within the tubular magazine 13 after it has once been installed therein, the tool 39 may be inserted, for this purpose, through an opening 42 extending through the magazine-head 41 (Fig. 3). For convenience in setting the capacity-adjusting device, the said opening may be marked as at 43 (Fig. 9). Thus, in the particular instance shown, when the capacity-adjusting device is shifted by means of the tool 39, and the mark 45 nearest the pin 38 of the latter is aligned with the front face of the magazine-head 41, and the device then locked, the normal cartridge-containing capacity of the magazine 13 will be reduced by one cartridge and so on.

Thus, in a simple and effective manner, the present invention provides for the altering or regulating of the cartridge-containing capacity of a tubular magazine.

The invention may be carried out in other specific ways than that herein set forth without departing from the spirit and essential characteristics of the invention; and the present embodiment is, therefore, to be considered in all respects as illustrative and not restrictive, and all changes coming within the meaning and equivalency range of the appended claims are intended to be embraced therein.

I claim:

1. A capacity-adjusting device for tubular magazine repeating firearms, the combination with an expandable member adapted to fit within and grip the interior surface of a tubular magazine; of an expandable member and constructed and arranged to expand the same into gripping engagement with the interior surface of a tubular magazine when moved relative to the said expandable member; and locking-means engageable with the magazine and engaging the said expandable member with respect thereto when the said expanding means is moved relative to the said expandable-member.

2. In a capacity-adjusting device for tubular magazine repeating firearms, the combination with an expandable member adapted to fit within and grip the interior surface of a tubular magazine; of expanding means rotatable relative to the said expandable member and constructed and arranged to expand the same into gripping engagement with the interior surface of a tubular magazine when rotated relative to the said expandable member; and locking-means operable upon an initial turning movement of the said expandable member to hold the same against further turning movement.

3. In a capacity-adjusting device for tubular magazine repeating firearms, the combination with an expandable member adapted to fit within and grip the interior surface of a tubular magazine; of expanding means rotatable relative to the said expandable member and constructed and arranged to expand the same into gripping engagement with the interior surface of a tubular magazine when rotated relative to the said expandable member; and locking-means operable upon an initial turning movement of the said expandable member to hold the same against further turning movement.
zine, and having a tapered bore; of an expanding member having a portion engaging the tapered bore of the said expansible member and movable relative thereto, engaged in a gripping engagement with the interior surface of a tubular magazine when moved relative to the said expansible member; and locking-means engageable with the magazine and serving to hold the said expansible member with respect thereto when the said expanding means is moved relative to the said expansible member.

4. In a capacity-adjusting device for tubular-magazine repeating firearms, the combination with an expansible member adapted to fit within and grip the interior surface of a tubular magazine, and provided with a bore having a tapered portion and a threaded portion; of a rotary expanding member having a threaded portion engageable with the threaded portion of the bore in the said expansible member and having a portion coating with the tapered portion thereof to expand the same into gripping engagement with the interior surface of a tubular magazine when rotated relative to the said expansible member; and locking-means engageable with the magazine and serving to hold the said expansible member with respect thereto when the said expanding means is moved relative to the said expansible member.

5. In a capacity-adjusting device for tubular-magazine repeating firearms, the combination with an expansible member adapted to fit within and grip the interior surface of a tubular magazine, and provided with a bore having a tapered portion and a threaded portion; of a rotary expanding member having a threaded portion engageable with the threaded portion of the bore in the said expansible member and having a portion coating with the tapered portion thereof to expand the same into gripping engagement with the interior surface of a tubular magazine when rotated relative to the said expansible member; and locking-means operable upon a relatively-slight turning movement of the said expansible member to hold the same against further turning movement.

6. In a capacity-adjusting device for tubular-magazine repeating firearms, the combination with an expansible member provided in its outer periphery with an inclined cam-surface and adapted to fit within and grip the interior surface of a tubular magazine; of a cylinderical locking-roller engaged by the cam-surface of the said expansible member and adapted to be moved outwardly thereby into engagement with the interior surface of a tubular magazine when effort is made to turn the said expansible member within the latter; and expanding means rotatable relative to the said expansible member and constructed and arranged to expand the same into gripping engagement with the interior surface of a tubular magazine when rotated relative to the said expansible member.

7. In a capacity-adjusting device for tubular-magazine repeating firearms, the combination with an expansible member provided in its outer periphery with an inclined cam-surface and adapted to fit within and grip the interior surface of a tubular magazine; of a rolling locking-member engaged by the cam-surface of the said expansible member and adapted to be moved outwardly thereby into engagement with the interior surface of a tubular magazine when effort is made to turn the said expansible member within the latter; and expanding means rotatable relative to the said expansible member and constructed and arranged to expand the same into gripping engagement with the interior surface of a tubular magazine when rotated relative to the said expansible member.

8. In a capacity-adjusting device for tubular-magazine repeating firearms, the combination with an expansible member provided in its outer periphery with an inclined cam-surface and adapted to fit within and grip the interior surface of a tubular magazine; of a locking-roller engaged by the cam-surface of the said expansible member and adapted to be moved outwardly thereby into engagement with the interior surface of a tubular magazine when effort is made to turn the said expansible member within the latter; and expanding means rotatable relative to the said expansible member and constructed and arranged to expand the same into gripping engagement with the interior surface of a tubular magazine when rotated relative to the said expansible member.

9. In a capacity-adjusting device for tubular-magazine repeating firearms, the combination with an expansible member provided in its outer periphery with an inclined cam-surface and adapted to fit within and grip the interior surface of a tubular magazine; of a locking-roller engaged by the cam-surface of the said expansible member and adapted to be moved outwardly thereby into engagement with the interior surface of a tubular magazine when effort is made to turn the said expansible member within the latter; expanding means rotatable relative to the said expansible member and constructed and arranged to expand the same into gripping engagement with the interior surface of a tubular magazine when rotated relative to the said expansible member; and means serving to hold the said locking-roller in assembled relationship with respect to the said expansible member.

10. In a capacity-adjusting device for tubular-magazine repeating firearms, the combination with an expansible member provided in its outer periphery with an inclined cam-surface and adapted to fit within and grip the interior surface of a tubular magazine; of a cylindrical locking-roller engaged by the cam-surface of the said expansible member and adapted to be moved outwardly thereby into engagement with the interior surface of a tubular magazine when effort is made to turn the said expansible member within the latter; expanding means rotatable relative to the said expansible member and constructed and arranged to expand the same into gripping engagement with the interior surface of a tubular magazine when rotated relative to the said expansible member; and a resilient clip embracing a portion of the said expansible member and holding the said locking-roller against accidental separation from the said expansible member.

11. In a capacity-adjusting device for tubular-magazine repeating firearms, the combination with an expansible member provided in its outer periphery with a reversely-sloping cam-surface and with a clip-receiving groove, and adapted to fit within and grip the interior surface of a tubular magazine; of a locking-roller having an annular groove and engaged by the reversely-sloping cam-surface of the said expansible member and adapted to be moved outwardly thereby into engagement with the interior surface of the tubular magazine when effort is made to turn the said expansible member and constructed and arranged to expand the same into gripping engagement with the interior surface of the said expansible member; and means holding the said locking-member against accidental separation from the said expansible member.
expansible member within the latter; expanding means rotatable relative to the said expandable member and constructed and arranged to expand the same into gripping engagement with the interior surface of a tubular magazine when rotated relative to the said expandable member; and a resilient clip fitting within the clip-receiving groove of the said expandable member and extending through the annular groove in the said locking-roller and serving to hold the latter in assembled relationship with respect to the said expandable member.

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