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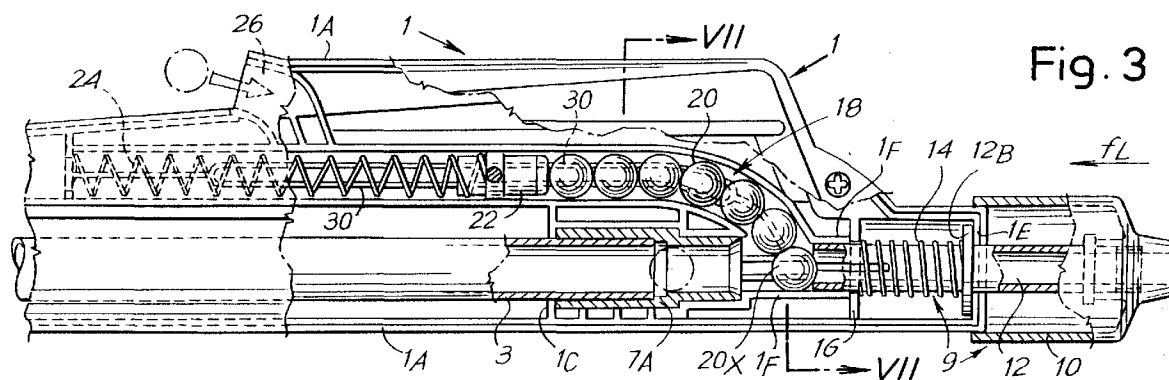
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(54) Peashooter with magazine for projectiles

(57) The projectiles (20) are passed along inside a holding tube (18) and fed one at a time into the firing barrel (3); a movable mouthpiece (10) is caused by spring-action means (14) to move away from the initial

end (7A) of the firing barrel (3) and, when said mouthpiece (10) is pressed against the mouth, its blow pipe (12) is brought toward the firing barrel (3) and pushes the first (20X) of the projectiles (20) toward it.



Description

The invention relates to a toy functioning like the traditional peashooter, but improved to enable a rapid succession of projectiles to be fired without the usual preparatory operations, in particular without having to insert a projectile each time before blowing it out with a puff of air.

These and other objects and advantages will become clear on reading the following text.

The toy in question, which forms a peashooter, comprises a firing barrel and according to the invention also comprises: at least one holding tube for projectiles, along which the projectiles are passed in order to be fed one at a time to the firing barrel; a movable member with a mouthpiece and a blow pipe; and spring-action means for moving said movable member back from the initial end of said firing barrel. Said blow pipe of the movable member can be pushed up to the initial end of the firing barrel when the mouthpiece is pressed against the mouth. The projectile holding tube feeds in the projectiles between said initial end of the firing barrel and said blow pipe when moved back by the spring-action means, so that the first of the projectiles of the line contained inside said holding tube is positioned in line with the firing barrel and pushed into it from the blow pipe when placed against said initial end of the firing barrel.

In practice said movable member is guided in a straight line parallel to the firing barrel; but there is no reason why its movement should not be angular having a path that ends tangential to the axis of the firing barrel.

The spring-action means acting on the movable member may comprise a helical spring fitted around the blow pipe and reacting between a bearing surface formed by the housing and the movable member.

In one possible embodiment the inner initial end of the firing barrel may be formed by a tubular part fitted around the firing barrel and designed to engage with the end of the blow pipe which comes toward it. This tubular part may form at least one small flexible inner tongue able to transmit the projectile in the barrel, but bending when the air pressure acts on the projectile to fire it.

The present peashooter may also comprise two or more projectile holding tubes with a selector for selecting which holder is to be used.

The or each of said holding tubes may extend approximately parallel to the firing barrel and be curved toward the firing barrel at the projectile outlet end, or it may extend approximately radially from the axis of the firing barrel.

In all cases, the or each projectile magazine tube contains a spring-action pusher acting on the projectiles and having a handgrip means for overcoming its force and keeping a passage uncovered for the introduction of projectiles into said holding tube. Said passage may be curved to prevent a child from getting its finger far enough in to interfere with the path of the pusher while loading the projectiles through said passage.

The housing may be made up of two shells shaped to form - when joined together - at least one holding tube and two opposing slots extending along said holding tube, from which slots the handgrip means of said pusher project.

In order to limit the air pressure on the fired projectile, air vents, possibly also with means for adjusting them if desired, may be provided. Projectiles of smaller cross section may also be provided for the same reason.

The invention will be understood more clearly from the description and accompanying drawing, which latter shows a practical, non-restrictive embodiment of the invention. In the drawing:

Fig. 1 shows an external view of the toy functioning as a peashooter;

Fig. 2 shows a longitudinal section through the toy in the rest condition ready for firing;

Fig. 3 shows an enlarged detail of Fig. 2 with the rounds partly used up;

Fig. 4 is similar to Fig. 3 but shows the firing condition;

Fig. 5 shows the detail indicated by arrow V in Fig. 4, greatly enlarged;

Fig. 6 shows a cross section on VI-VI as marked in Fig. 5;

Figs. 7 and 8 show cross sections on VII-VII from Fig. 3 and VIII-VIII from Fig. 4;

Fig. 9 shows a local section on IX-IX from Figs. 4 and 8;

Fig. 10 shows an alternative embodiment in a partially sectioned local view;

Figs. 11 and 12 show other alternative embodiments;

Figs. 13, 14 and 15 show a version with two diametrically opposed containers, in a cross section in two functional conditions, and in the section marked XV-XV in Fig. 14;

Figs. 16 and 17 show two variants of Figs. 13 - 15; and

Figs. 18 and 19 show another solution in partial longitudinal section and in cross section on XIX-XIX from Fig. 18, enlarged.

As illustrated in the accompanying drawing, referring initially to Figs. 1 - 9, the numeral 1 denotes a housing shaped symmetrically with respect to the drawing plane of Figs. 1 - 4, which can be made in practice out of two half shells 1A and 1B, these being essentially symmetrical except for certain differences for joining purposes. Within the housing 1, suitable walls such as 1C provide a seat for a tubular firing barrel 3 of appropriate length, which may project from the housing 1 to provide a free section on the end of which an end piece 5 may be fitted for esthetic reasons; this firing barrel 3 may be held in position by the joining together of the two half shells 1A and 1B and/or by the engagement of suitable screw-type means or by adhesive bonding or other

means. Fitted on the inner end of the firing barrel 3 is a tubular part 7 which is extended by a section 7A whose internal diameter corresponds approximately with the internal diameter of the firing barrel 3; the section 7A ends in an orifice 7B with a lead-in chamfer which forms a seat for purposes indicated below. The two half shells 1A and 1B include special internal projections so as to form in the housing 1 a sliding seat coaxial with the firing barrel 3 and tubular part 7 and on the extension at the opposite end of the barrel from the external end piece 5. This axial sliding seat contains a movable member having the general label 9, which is partly internal to the housing and partly projects from the housing in the form of an external mouthpiece 10 which is shaped so that the user can place it against his or her lips and blow into a blow pipe 12 which also belongs to said member 9; said blow pipe 12 is coaxial with the barrel 3 and its internal diameter is slightly smaller than that of the barrel 3 for reasons indicated later. The shape of the inner end 12A of the blow pipe 12 enables it to engage with the chamfered orifice 7B which can form a seat for said inner end 12A of said blow pipe 12 or enables the inner end 12A of the blow pipe 12 to be partially inserted into the section 7A of the tubular part 7. The movable member 9 (of which the mouthpiece 10 and the blow pipe 12 are part) is loaded by a spring 14 reacting between a stop 12B on the member 9 and a stop 1G formed by the two half shells 1A and 1B; the spring 14 tends to push the movable member 9 away from the tubular part 7 and push the mouthpiece 10 out to a rest position (Figs. 2, 3) in which the collar 12B of the blow pipe 12 presses against the inner end 1E of the housing 1, out of which the blow pipe 12 extends and is engaged on the mouthpiece 10; the movable member 9 is thus pushed by the spring 14 into the rest position shown in Figs. 2 and 3. When pressed in in the direction of arrow fL, the member 9 is pushed until its end 12A engages with the chamfered orifice 7B as shown in Fig. 4, in the position in which a projectile can be fired from the barrel 3.

In the vicinity of the tubular part 7, the sliding seat for the movable member 9 is defined by projections 1F completing a seat for the projectile that is to reach the firing position; feeding into this seat is a holding tube 18 containing the rounds, which have the general reference 20 and consist of projectiles in the form of balls capable of being fired by a puff of air. The holding tube 18 extends parallel to the axis of the barrel 3 for the greater part of its length, and is curved only at its end in order to reach the seat defined by the projections 1F. A spring-action pusher 22 is pushed along inside the holding tube 18 by a spring 24 so as to push the line of projectiles 20 toward the seat defined by the projections 1F. A passage 26 serves for the loading of the projectiles 20 into the holding tube 18; this passage 26 is curved so that a child cannot get his finger into the holding tube 18 and risk hurting himself if the spring-action pusher 22 is suddenly released.

The spring-action pusher 22 can be operated from

the outside in order to draw it back and compress the spring 24 so that projectiles can be inserted through the passage 26, and is then released; the action of the spring 24 then pushes the column of projectiles 20 toward the curved end section of the holding tube 18. In this way, when the movable member 9 is in the rest position (Figs. 2 and 3), the spring-action pusher 22 pushes the first projectile, marked 20X, into alignment with the axis of the firing barrel 3 and of the blow pipe 12.

In order to enable the spring-action pusher 22 to be drawn back, two longitudinal slots 30 are provided along the sides of the holding tube 18 and two pegs 22A (Figs. 8 and 9), one on either side of the spring-action pusher 22, pass through these slots; these two pegs 22A engage, on the outside of the two half shells, with two handgrip means 22B which enable the pusher to be drawn back against the action of the spring 24 so that the projectiles 20 can be loaded into the holding tube 18; once the projectiles are loaded, the handgrip means 22B are released and the action of the spring-action pusher 22 pushes the column of projectiles toward the sliding seat of the movable member 9, i.e. of the blow pipe 12 and mouthpiece 10.

Where it joins section 7A, the tubular part 7 has a slender inward tongue 7C (see also Fig. 5) which is flexible and is molded in such a way that at rest it projects a short distance into the passage formed by the tubular part 7. This flexible tongue 7C holds back the projectile 20X in the firing position coaxial with the barrel 3 to prevent it from rolling spontaneously down the barrel 3 and out of it; this projectile 20X is held in position in the other direction by the inner end of the blow pipe 12, whose internal diameter is smaller than the diameter of the projectile or may include a similar retaining projection which need not necessarily be flexible.

The blow pipe 12 may include apertures at some intermediate position or toward the inner end of the pipe, as indicated by the incisions 12E (Fig. 5), which constitute air vents - possibly with means of adjusting them - so as to limit the force of the air blown in to fire the projectile; this may be useful to ensure that the projectile cannot be fired with so much velocity that bystanders might be injured, should this concern arise; a corresponding arrangement of apertures may be provided around these air vents in one or in both of the half shells 1A and 1B. Projectiles with a smaller cross section than the cross section of the barrel 3 may be adopted for this reason.

In the rest condition (Figs. 2 and 3) and condition of at least partial loading of the holding tube 18 with projectiles 20, the first of the projectiles nearest to the outlet end of the holding tube 18 is pushed into position 20X inside the seat defined by the projections 1F of the two half shells and is now approximately coaxial with the barrel 3 and blow pipe 12.

When the projectile is to be fired by the expulsion of air from the mouth, the mouthpiece 10 is positioned on the mouth and pushed against the lips, causing a

force to act on the mouthpiece 10 in the direction of arrows fL in Figs. 3 and 4; the movable member 9 is thereby pushed in from the position of Fig. 3 to that of Fig. 4, with compression of the relatively light spring 14. In the position shown in Fig. 4 the blow pipe 12 connects with section 7A of the tubular part 7 and this prevents the next projectile 20Y from moving into line with the barrel 3; the projectile in position 20X is held between the end 12A and the flexible tongue 7C. In this situation, blowing into the blow pipe 12 by exhalation from the lungs generates air pressure on the projectile 20X, propelling it down the firing barrel 3 - with the slender elastic tongue 7C bending in the process - and with a pressure which depends on the vigor with which the air is blown out, and additionally on whatever leaks are created by the air vents such as those illustrated at 12E, and/or by air escaping around the projectile during firing.

When the mouthpiece 10 is withdrawn from the lips, the spring 14 returns the movable member 9 back from the position of Fig. 4 to that of Fig. 3, allowing another projectile to move from position 20Y inside the holding tube 18 to position 20X under the force of the spring-action pusher 22 driven by its spring 24.

In order to load projectiles into the holding tube 18, the spring-action pusher 22 is drawn back along the slots 30 and against the action of the spring 24 until the passage 26 is no longer obstructed and individual spherical projectiles 20 can be inserted into said holding tube 18.

For the purposes of the loading operation, either the spring-action pusher 22 can be held back, with the spring 24 compressed, or the ends of the slots 30 can be formed as shown in Fig. 10 with a cutout 30A enabling the pegs 22A to be moved into a retaining position in which the pusher is held against the compressed spring 24, obviating the need for continuous retention of the pusher 22 via the handgrip means 22B; after the rounds have been inserted, the pegs 22A are moved out of the cutouts 30A and into alignment with the slots 30 so that the pusher 22 is released and made active.

Fig. 10 also shows a possible alternative embodiment of the passage 126 through which the rounds are loaded. This passage is straight rather than curved like the passage 26.

Fig. 11 shows an alternative embodiment in which the form and dimensions of the blow pipe 112 are such that it rests against a seat formed at the end 107B of part 7; in this case air venting slots 112E can be shaped differently than the slots 12E.

In the further alternative shown in Fig. 12, a modified form is shown of the projectile holder, which in this version is radial with respect to the axis of the firing barrel and is also designed for projectiles 120 of a different shape to the spherical form. The holder is shaped like a magazine 118, which may be detachable from the body 101 of the peashooter and fits into a seat 101A formed by the joining together of the two half shells from which the body 101 is formed. The magazine 118 com-

prises a pusher 122 equivalent to the pusher 22 and driven by a spring 124 equivalent to the spring 24. Loading the projectiles 120 can be done by extracting the magazine 118 (which is held in place by a small spring 126) and pushing back the pusher 122 against the spring 124. This embodiment again has a sliding member 109, equivalent to the member 9 and combined with a mouthpiece, for advancing the projectile toward the barrel.

In an alternative to Fig. 12 it is possible to provide a holding tube or magazine equivalent to 118, but for projectiles of spherical shape like the rounds 20 in the first example.

Figs. 13ff give indications for other embodiments, in which more than one projectile holding tube is provided so that the firing barrel can be fed from one or other of said holding tubes. In Figs. 13 - 15 there are two diametrically opposite magazines 418A and 418B and either of these can be used alternately for loading while the other is prevented from loading, for which purpose a selector 450 is provided that can be moved, e.g. angularly, so as to uncover an aperture for projectiles to pass through from only one of the two magazines into the firing position, in a selective manner. In Fig. 16 a similar arrangement is provided for two magazines 518A, 518B positioned angularly but not diametrically opposite each other; a selector 550 is once again provided.

Fig. 17 indicates an arrangement in which two holding tubes -618A and 618B are provided in an arrangement parallel to the axis of the barrel as in the first embodiment; once again a selector similar to the selector 450 of Fig. 13 can be provided.

Figs. 18 and 19 give indications for a version in which a tubular part 707 (equivalent to tubular part 7) having a window 707B for the projectile to pass through into the firing position, is fitted onto the barrel 703. The part 707 is extended at 707C to form a guide for the sliding of a movable member 709 (equivalent to member 9) pushed by a spring 714 (equivalent to spring 14) and carrying a mouthpiece 710; the movable member 709 forms a firing pipe 712 (equivalent to pipe 12). The tubular part 707 forms on its exterior a seat 707K for the rotation of a multiple magazine 718 (a quadruple magazine in the drawing) which it is possible to revolve around the seat 707K; this multiple magazine can be set in multiple angular positions by means of a spring-action peg 770 and of indentations on a sleeve 772 mounted on the barrel 703; in this way, angular movements of the multiple magazine will allow the projectiles from the various holders to be fed in through the window 707B.

It will be understood that the drawing shows only an example purely by way of practical demonstration of the invention, which latter can be varied as regards shapes and arrangements without thereby departing from the scope of the concept underlying said invention. The presence of any reference numerals in the appended claims is for the purpose of facilitating the reading of the

claims with reference to the description and drawing, and does not limit the scope of protection represented by the claims.

Claims

1. A toy functioning as a peashooter, comprising a housing (1) and a firing barrel (3), characterizing by including: at least one holding tube (10) for projectiles, along which the projectiles (20) are passed in order to be fed one at a time to the firing barrel (3); a movable member (9) with mouthpiece (10) and with blow pipe (12); spring-action means (14) for moving said movable member (9) back from the initial end (7A) of said firing barrel (3), which blow pipe (12) can be pushed up to said initial end (7A) of the firing barrel (3) when said mouthpiece (10) is pressed against the mouth; which holding tube (18) feeds in the projectiles between said initial end (7A) of the firing barrel and the end (12A) of said blow pipe (12) when moved back, so that the first of the projectiles of the line contained inside said holding tube (18) is positioned in line with the firing barrel and pushed into it from the blow pipe (12) when placed against said initial end (7A) of the firing barrel (3).
2. The toy as claimed in claim 1, characterized in that said movable member (9) is guided in a straight line parallel to the firing barrel (3).
3. The toy as claimed in claim 1 or 2, characterized in that said spring means comprise a helical spring (14) fitted around said blow pipe (12) and reacting between said housing (1) and said movable member (9).
4. The toy as claimed in claim 1 or 2 or 3, characterized in that said inner initial end (7A) of the firing barrel is formed by a tubular part (7) fitted around the firing barrel (3) and designed to engage with the end (12A) of the blow pipe (12).
5. The toy as claimed in claim 4, characterized in that said tubular part (7) forms at least one flexible inner tongue (7C) able to retain the projectile (20X) until air pressure fires it.
6. The toy as claimed in at least claim 1 or 2, characterized in that it includes at least two holding tubes.
7. The toy as claimed in claim 1 or 2 or 6, characterized in that the or each of said holding tubes (18) extends approximately parallel to the firing barrel (3) and is curved toward the firing barrel at the projectile outlet end.
8. The toy as claimed in at least claim 1 or 2 or 6, characterized in that the or each holding tube (18, 318) extends approximately radially from the axis of the firing barrel (3).
9. The toy as claimed in at least claim 7 or 8, characterized in that it includes, in the or each holding tube (18), a spring-action pusher (22) acting on the projectiles and having a handgrip means (22B) for overcoming its force and drawing it back, and a passage (26, 126, 707B) for the introduction of projectiles into said holding tube (18).
10. The toy as claimed in claim 9, characterized in that said passage (26) is curved.
11. The toy as claimed in claim 9, characterized in that the housing (1) is made up of two shells (1A, 1B) shaped to form - when joined together - at least one holding tube (18) and two opposing slots (30) extending along said holding tube (18), from which slots the handgrip means (22B) of said pusher (22) project.
12. The toy as claimed in claim 1, characterized in that it includes air vents - possibly with means of adjustment - for reducing the air pressure on the projectile when fired.
13. The toy as claimed in at least claim 6, characterized in that it includes two projectile holders set at an angle, not excluding 180°, to each other and a selector that can be moved to permit the passage of a projectile from only one of the holders.
14. The toy as claimed in at least claim 6, characterized in that it includes a plurality of holders in a body that can be moved angularly around the axis of the barrel, in which barrel a passage is formed for the projectile that is to be fed into the firing position; means being provided to define different angular positions of said movable body.
15. The toy as claimed in any of the previous claims, characterized in that a projectile holder is made in the form of an extractable magazine.
16. A toy functioning as a peashooter; the whole as described above and as illustrated by way of example in the accompanying drawing.

Fig. 1

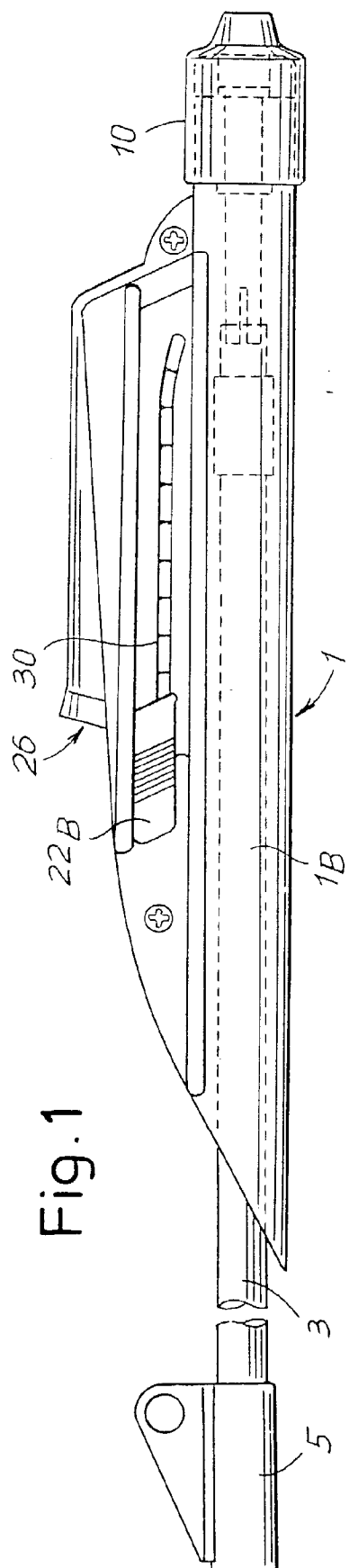
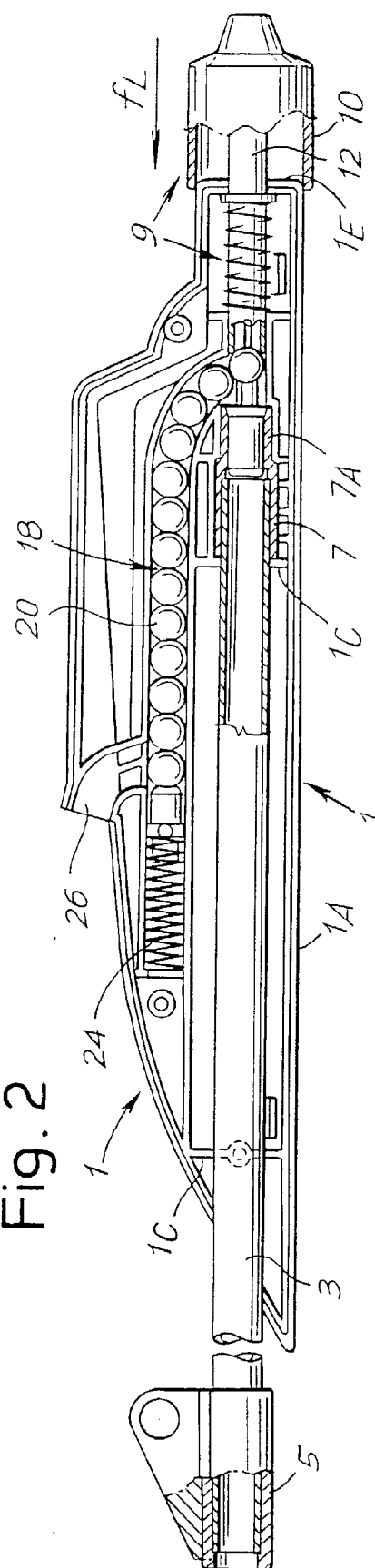


Fig. 2



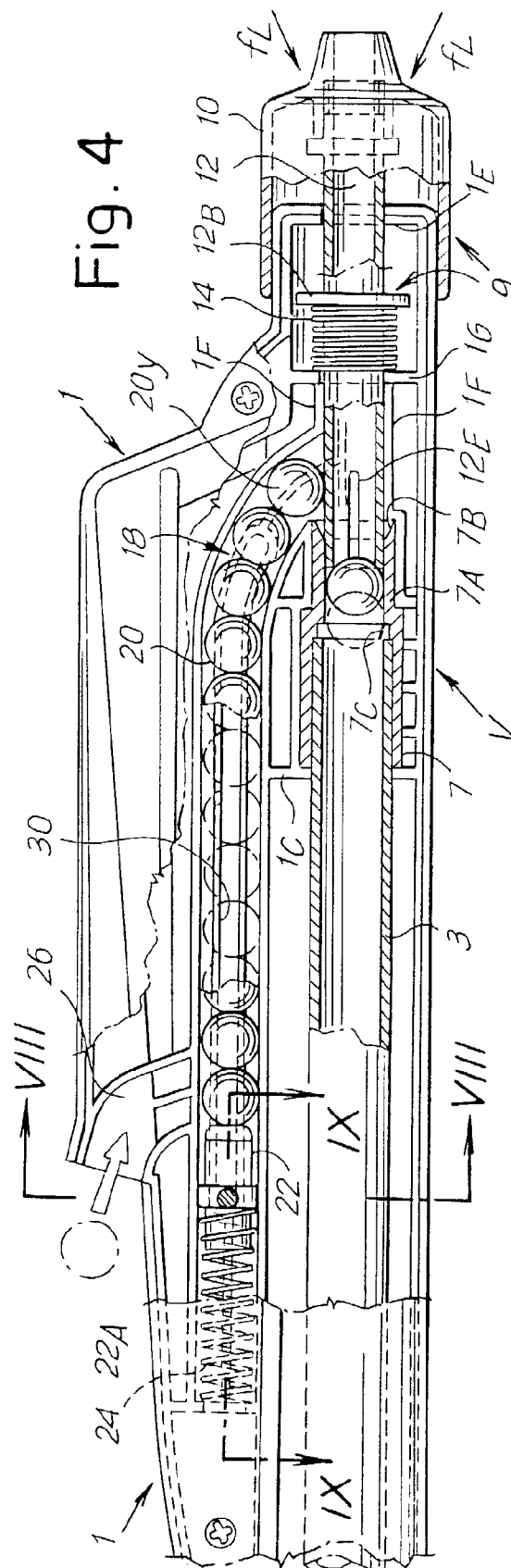
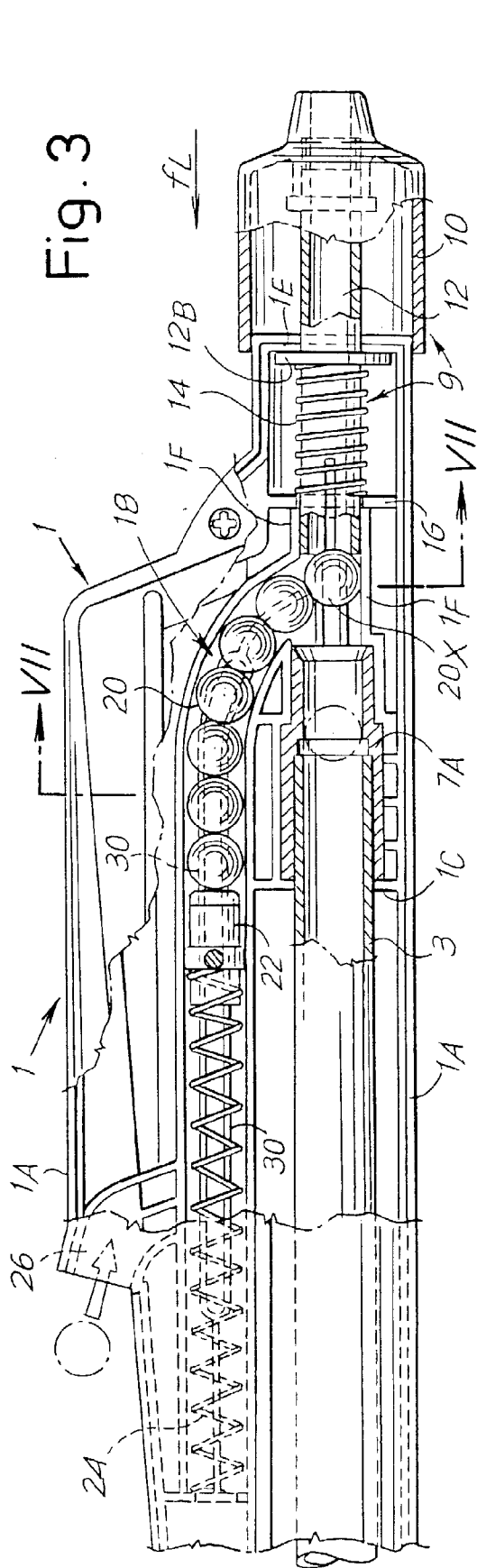


Fig. 5

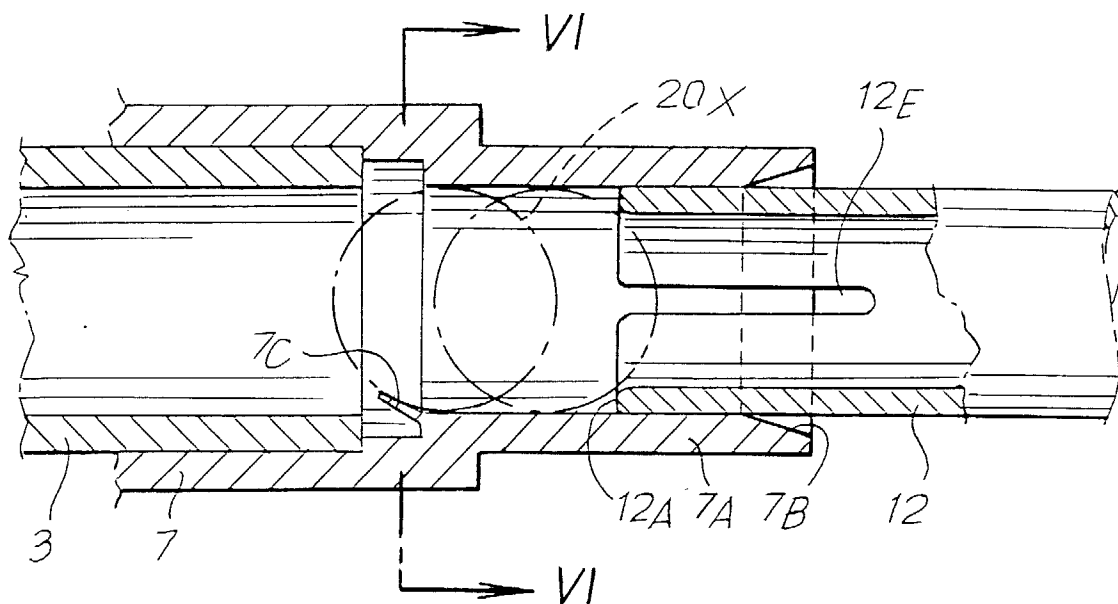


Fig. 6

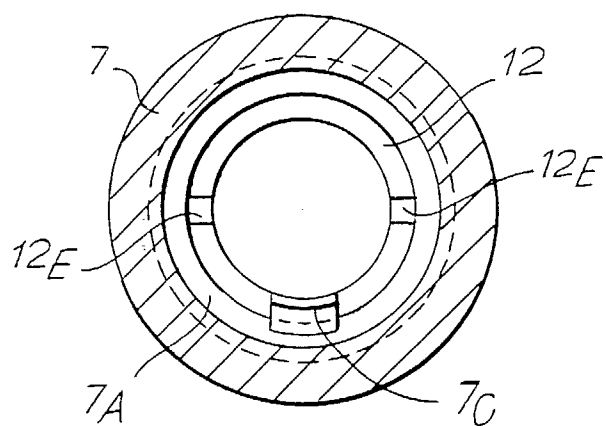


Fig.8

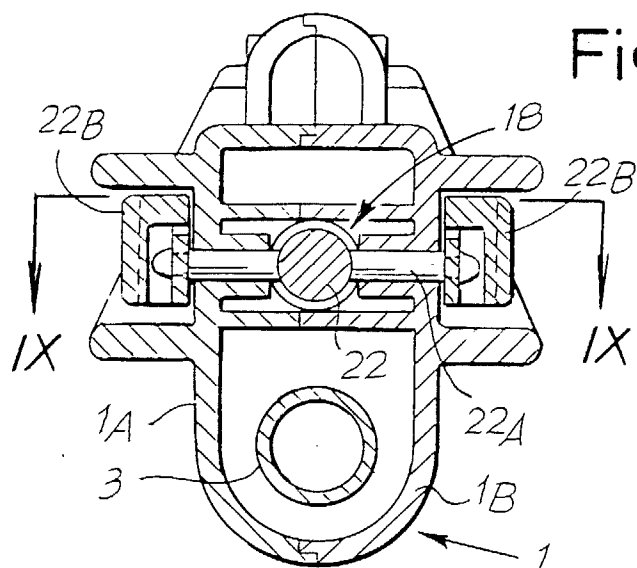


Fig. 7

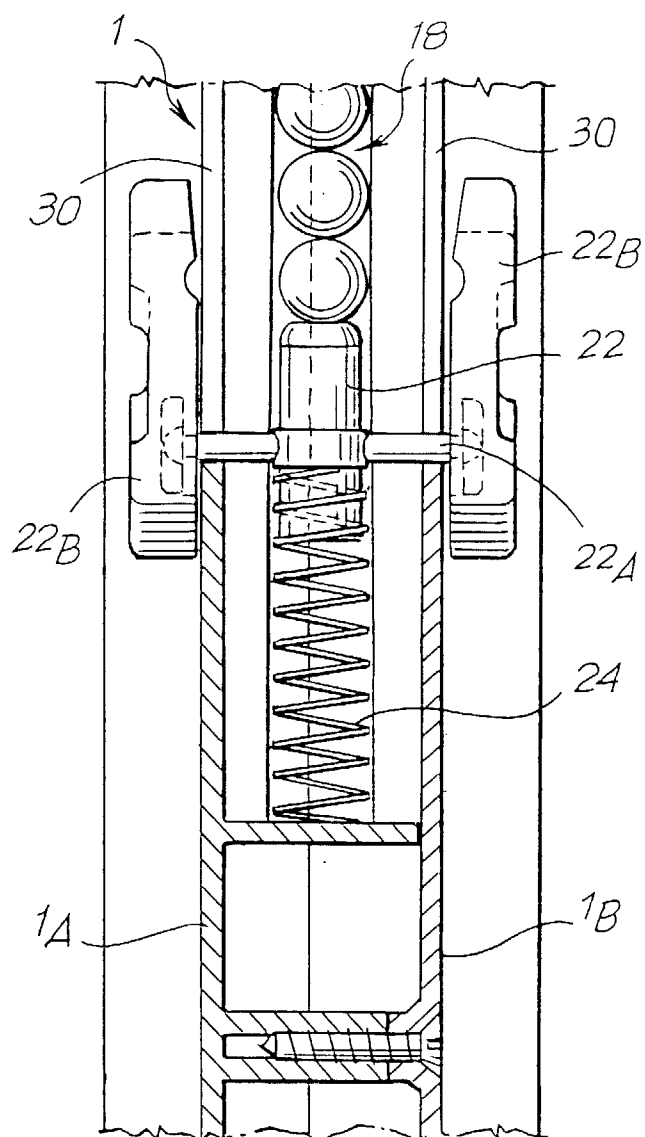
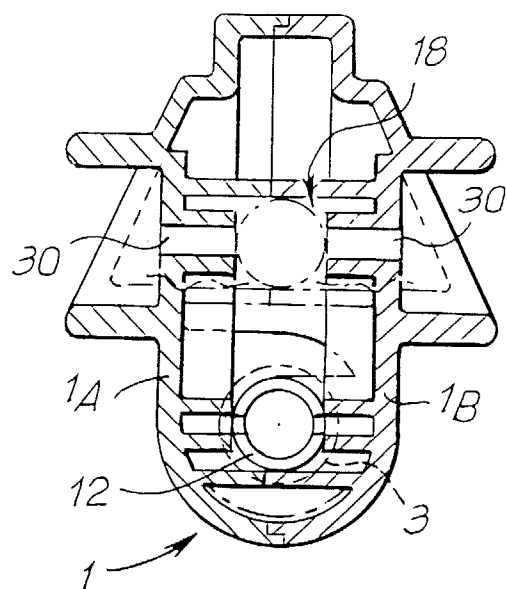


Fig.9

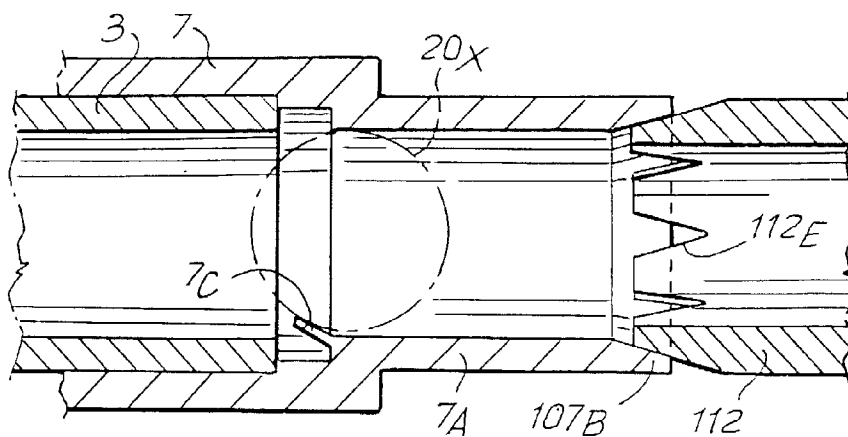
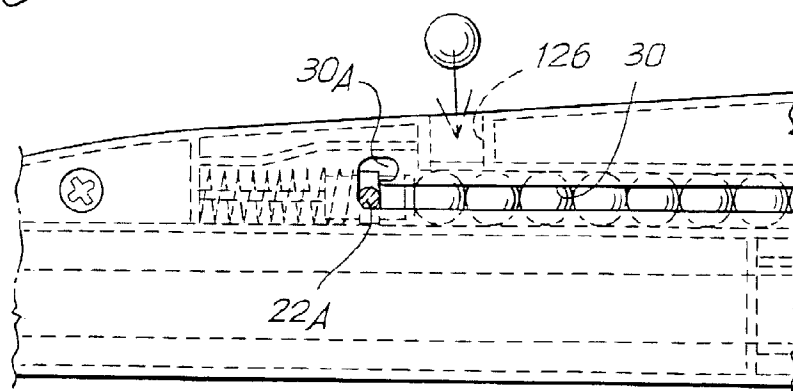
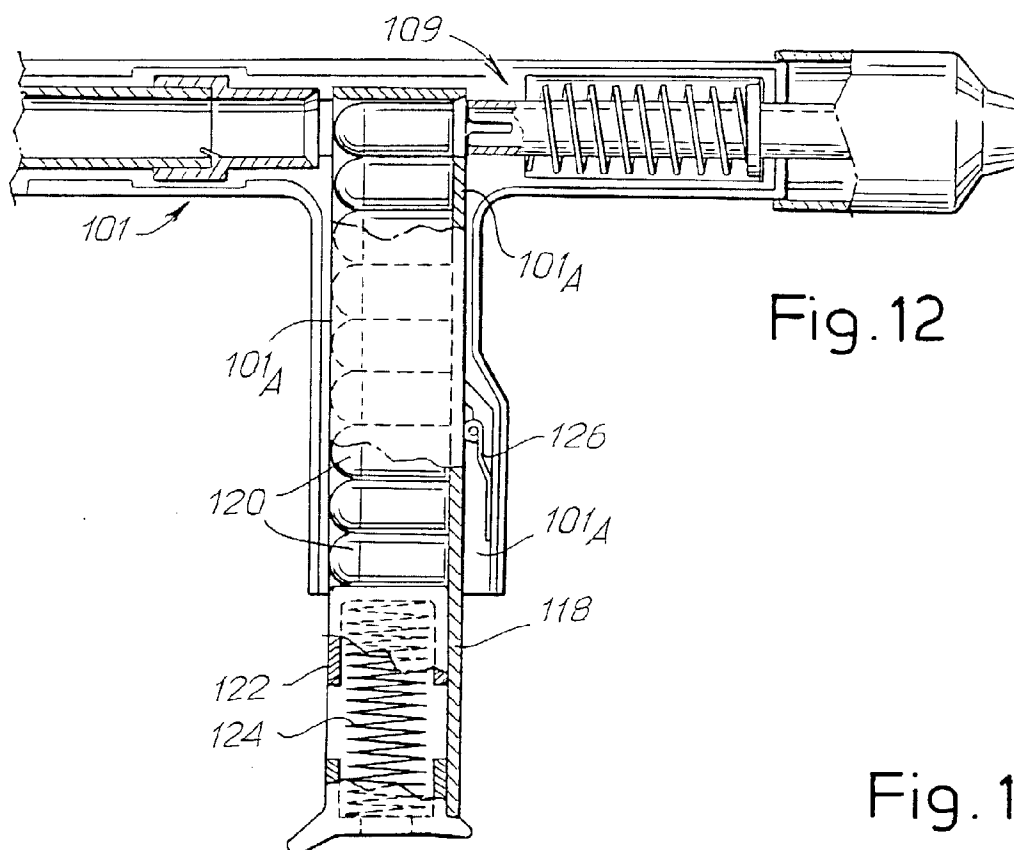


Fig.13

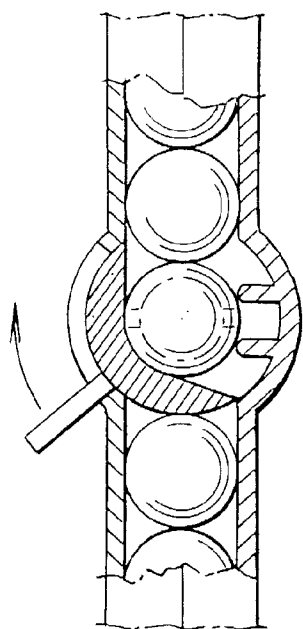


Fig.14

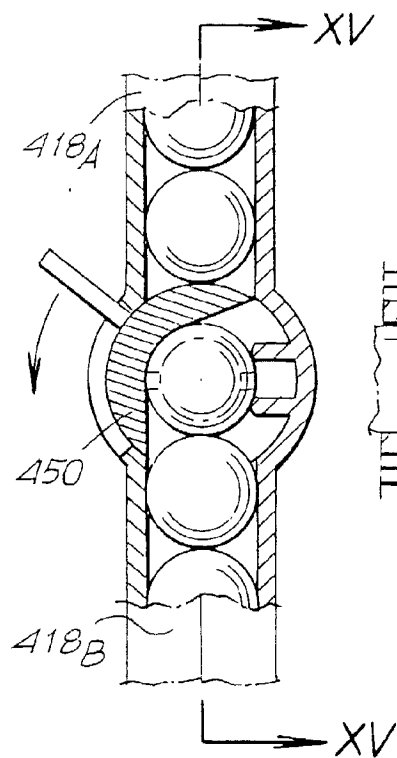


Fig.15

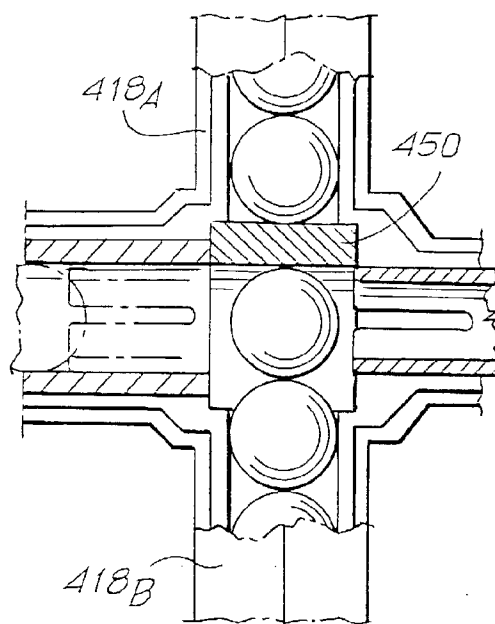


Fig.16

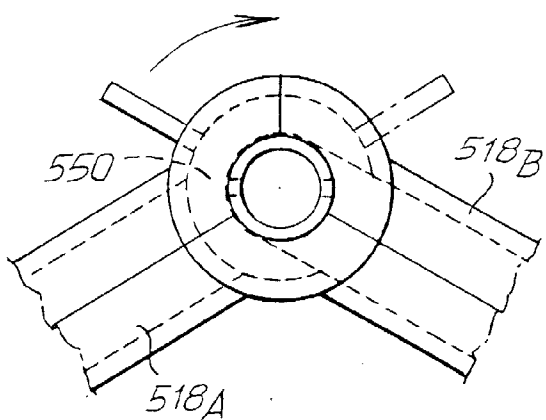
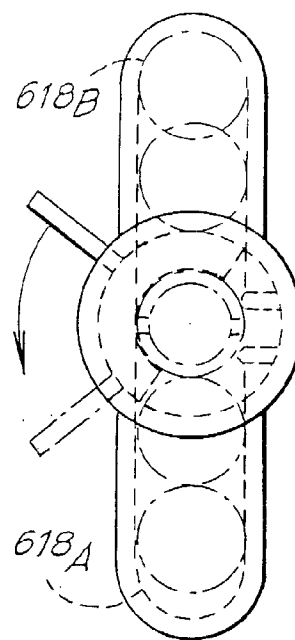


Fig.17



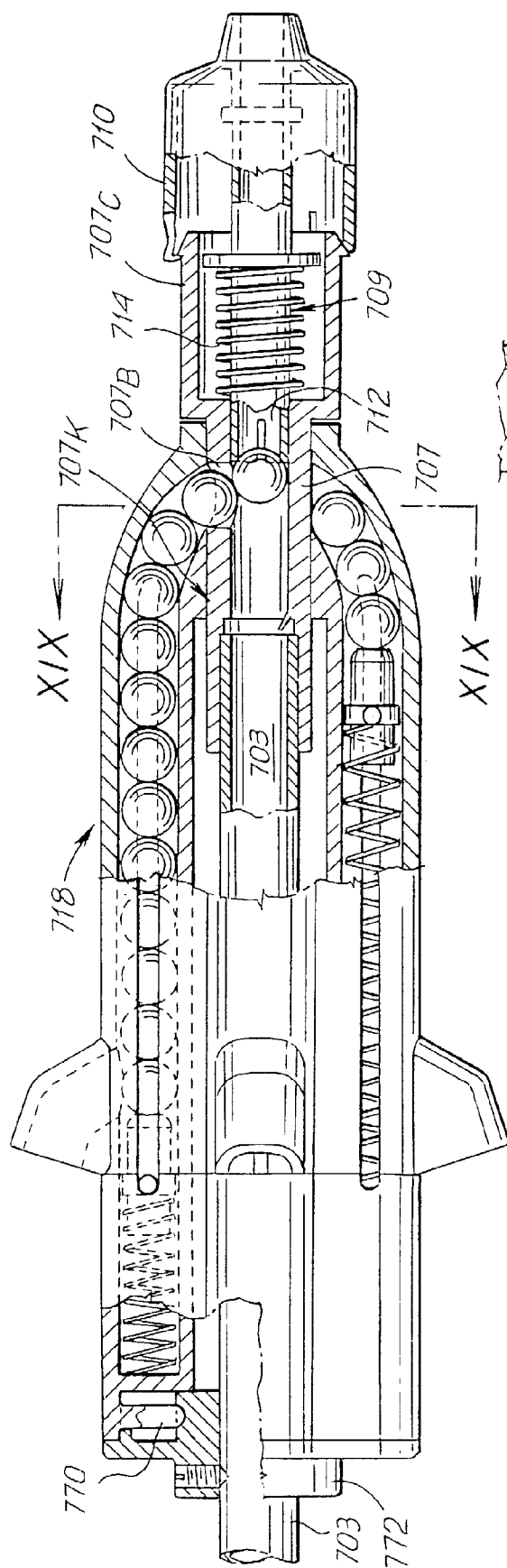


Fig. 18

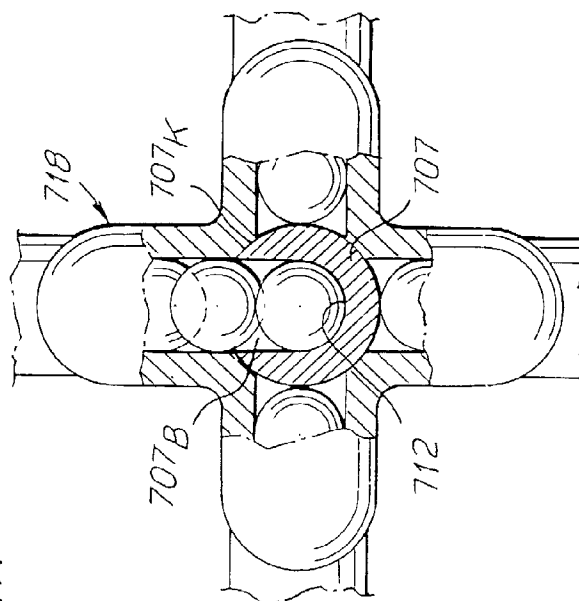


Fig. 19



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 98 83 0003

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	US 3 124 119 A (C. AYALA) 10 March 1964 * column 3, line 4-44 * * column 4, line 19-50 * * column 4, line 70 - column 5, line 8; figures *	1-4,6,8, 15,16	F41B1/00
Y	---	5,7,14	
Y	BE 897 656 A (STROEYKENS ROGER) 2 January 1984 * page 4, line 10 - page 5, line 10; figures 1,2,8 * * page 6, line 23-32 *	5,7	
Y	CH 376 806 A (A. ELLENBERGER) * the whole document *	14	
A	DE 28 09 488 A (KLEIS GUSTAV) 20 September 1979 -----		
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			F41B
The present search report has been drawn up for all claims			
Place of search: THE HAGUE		Date of completion of the search 4 May 1998	Examiner Van der Plas, J
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03/82 (P/4C01)