



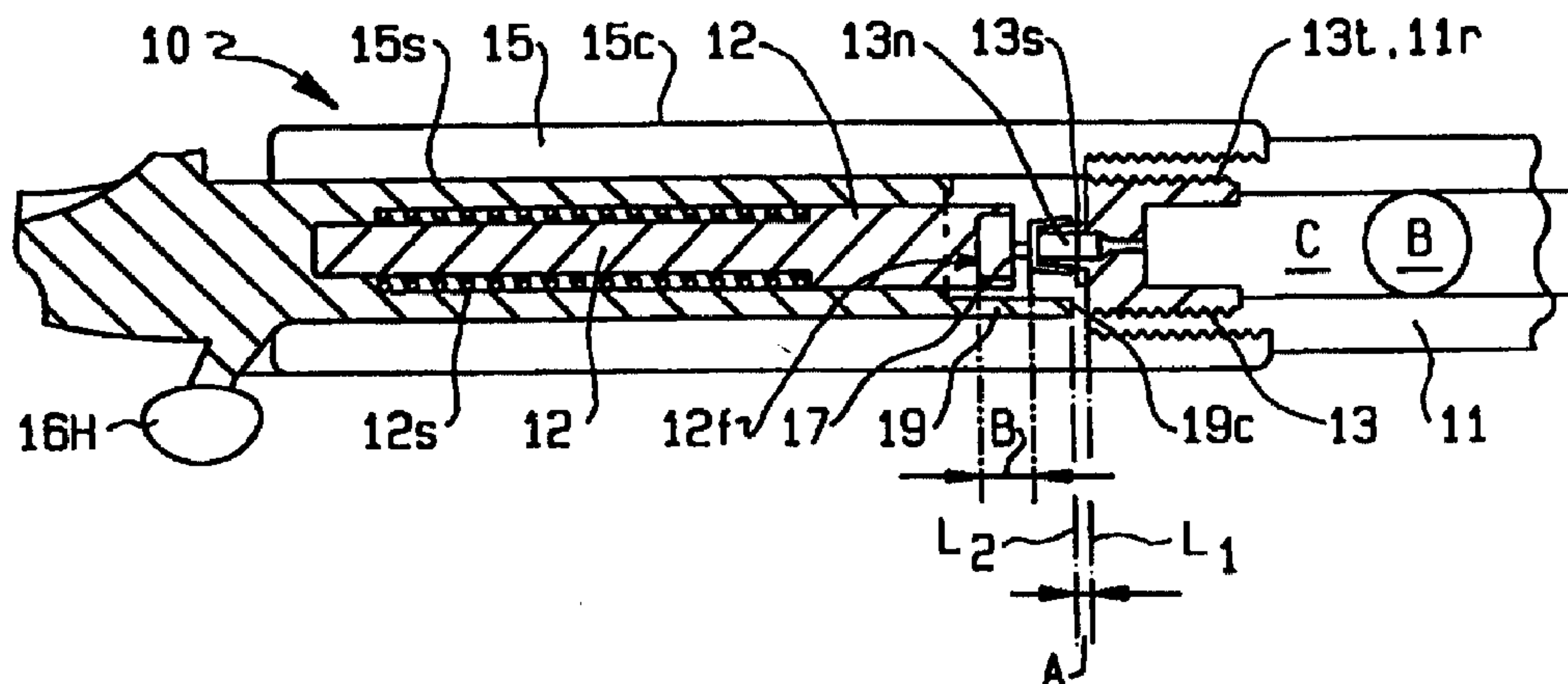
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(54) **ARME A FEU CHARGÉE PAR LA BOUCHE AVEC LIMITATION  
DE DEPLACEMENT DU BLOC-CULASSE**

(54) **MUZZLE-LOADED FIREARM WITH BOLT TRAVEL  
LIMITATION**



(57) Cette arme à feu chargée par la bouche comprend un bloc-culasse (16), une boîte de culasse (15), un percuteur (12) monté dans le bloc-culasse (16) et un bouchon de culasse (13) ou une autre pièce de la boîte de culasse (15) portant une capsule à percussion (17). Dans cette arme à feu, le bloc-culasse (16) comporte un prolongement (19) venant en prise avec le bouchon de culasse (13) de façon à empêcher que le percuteur (12) et la capsule à percussion n'entrent en contact l'un avec l'autre par inadvertance, lorsque le bouchon de culasse (13) n'est pas correctement logé. Le prolongement (19) du bloc-culasse peut en outre empêcher le blocage du bloc-culasse, lorsque le bouchon de culasse (13) n'est pas correctement logé.

(57) A muzzle-loading firearm having a bolt (16), a receiver (15), a striker (12) mounted in the bolt (16) and a breech plug (13) or other part of the receiver (15) carrying a percussion cap (17) in which the bolt (16) has an extension (19) engageable with the breech plug (13), to prevent inadvertent engagement of the striker (12) and percussion cap (17) when the plug (13) is not properly seated. Further, the bolt extension (19) may prevent bolt locking when the plug (13) is not properly seated.



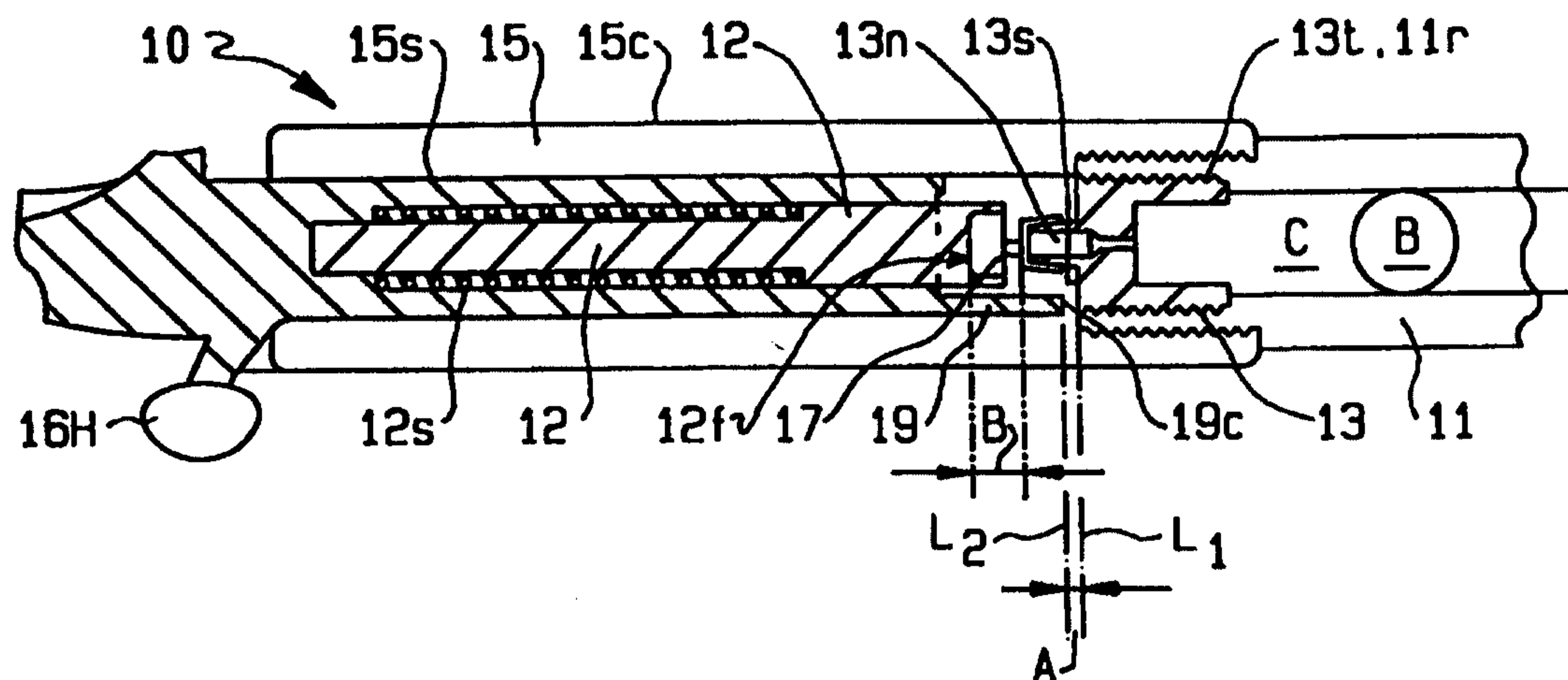
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(54) Title: MUZZLE-LOADED FIREARM WITH BOLT TRAVEL LIMITATION



## (57) Abstract

A muzzle-loading firearm having a bolt (16), a receiver (15), a striker (12) mounted in the bolt (16) and a breech plug (13) or other part of the receiver (15) carrying a percussion cap (17) in which the bolt (16) has an extension (19) engageable with the breech plug (13), to prevent inadvertent engagement of the striker (12) and percussion cap (17) when the plug (13) is not properly seated. Further, the bolt extension (19) may prevent bolt locking when the plug (13) is not properly seated.

## MUZZLE-LOADED FIREARM WITH BOLT TRAVEL LIMITATION

### Background of the Invention

Bolt operated muzzle-loading firearms have included  
5 receivers configured to engage the bolt after the bolt handle  
is moved forward and turned down. While bolts and their  
firing units have been placed selected distances from the  
percussion cap in the breech by so locking the bolt, prior  
bolt operated muzzle-loading firearms have permitted the bolt  
10 to be moved forward against the percussion cap, particularly  
if the nipple or breech plug biasing the percussion cap is  
not completely tightened fully into the barrel or receiver of  
the firearm.

### 15 Summary of the Invention

Broadly, the present invention comprises a bolt travel  
restriction arrangement for a muzzle-loading firearm to limit  
bolt movement in the receiver to prevent the cocked striker  
from engaging the percussion cap when the striker is cocked,  
20 regardless of the position of the nipple or breech plug with  
the receiver.

A bolt extension which engages a breech plug located in  
the receiver provides a preferred bolt restriction  
25 arrangement.

### Brief Description of the Drawings

Fig. 1 is a partial sectional view showing the muzzle-  
loading firearm of the present invention;  
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Fig. 2 is a perspective view of the bolt receiver in  
phantom and the breech plug without threading; and

Fig. 3 is an enlarged perspective view of the bolt and  
35 breech plug.

Brief Description of the Preferred Embodiments

In Figs. 1-3, muzzle-loading firearm 10 includes barrel 11, receiver 15, bolt 16 and striker 12 within bolt 16 being urged forward by striker spring 12s. Bolt 16 has bolt handle 5 16h for reciprocating and turning in the interior space 15s of receiver 15 and striker 12 has striker face 12f. Also shown is percussion cap or other percussion cap 17 located in interior receiver space 15s on nipple 13n of breech plug 13. Plug 13 has threads 13t for threading engagement with 10 threaded barrel recess 11r. Breech plug 13 includes rear surface 13s and nipple 13n to receive percussion cap 17.

Bolt 16 has a curved narrow extension 19 which functions to limit the forward travel of bolt 16 and its internal 15 striker 12 when the bolt 16 is manipulated. Bolt extension has a curved surface 19b and face 19c. Distance B is the space between striker face 12f and percussion cap 17. Absent bolt extension 19, and if breech plug 13 was not screwed in place striker face 12f could be engaged with percussion cap 20 17 causing it to unintentionally or prematurely fire. Even if breech plug 13 becomes partially unscrewed moving percussion cap 17 rearward and closer to striker face 12f by distance A or other distance, percussion cap 17 remains spaced apart from striker face 12f. Distance A is the 25 distance from line  $L_1$ , which indicates rear plug face 13s is properly seated, and Line  $L_2$ , which indicates the position of curved bolt extension face 19c, when bolt 16 is locked in this firing position. Distance A is approximately .010.

30 In operation muzzle-loader 10 is loaded by causing charge (C) and ball (B) to be moved down barrel 11 to their loaded locations as shown in Fig. 1. Next, bolt 16 is unlocked causing the striker 12 to be cocked by a mechanism not shown and drawn back permitting percussion cap 17 to be 35 placed on breech plug nipple 13n. Bolt 16 is then moved forward. Once bolt 16 has been moved forward a sufficient distance it is turned and locked. At this time, striker 12

is held back in its cocked position by a mechanism not shown. As it is turned to lock, bolt 16 is cammed slightly forward by mechanism not shown. If breech plug 13 is not fully screwed in place, rotating and forward moving bolt extension  
5 face 19c will bind against breech plug face 13s, preventing bolt 16 from fully locking, thereby signalling the operator the breech plug is not fully tightened.

In addition, since extension 19 functions to maintain  
10 this distance between bolt 16's internally mounted and locked striker 12, and percussion cap 17, via front bolt extension surface 19c being in contact with breech plug rear surface 13s, vigorous forward motion of bolt 16 by the operator upon a partially, or even fully, unscrewed and percussion capped  
15 breech plug 13 cannot cause an unintentioned ignition of percussion cap 17.

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## WE CLAIM:

1. A muzzle-loading firearm fired by releasing a striker against a percussion cap comprising

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a) a removable percussion cap located on a nipple or breech plug in the receiver or barrel;

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b) a bolt located in the receiver for reciprocation rearward and forward therein and having in the bolt a striker with a striker face; and

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c) means on bolt for controlling the spacing between the cocked striker face and the percussion cap,

thereby preventing unintentioned ignition caused by vigorous forward bolt movement against a partially or fully unscrewed  
20 breech plug.

2. The muzzle-loading firearm of claim 1 having a breech plug with a face in the receiver and in which the percussion cap is mounted on a breech plug and the limit  
25 means on the bolt is abutable with the breech plug face as the bolt moves forward and before the striker face strikes the percussion cap.

3. The muzzle-loading firearm of claim 1 in which the  
30 limit means for limiting bolt movement is a portion of the bolt.

4. The muzzle-loading firearm of claim 1 having in addition means on bolt for controlling the spacing between  
35 this bolt and the breech plug, thereby preventing the bolt from locking in place if this breech plug is not fully tightened.

5. The muzzle-loading firearm of claim 4 in which the additional means on the bolt does not engage the breech plug when the bolt is locked and the breech plug is properly seated.

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6. The muzzle-loading firearm of claim 4 in which the two means on the bolt for controlling the spacing are the same means.

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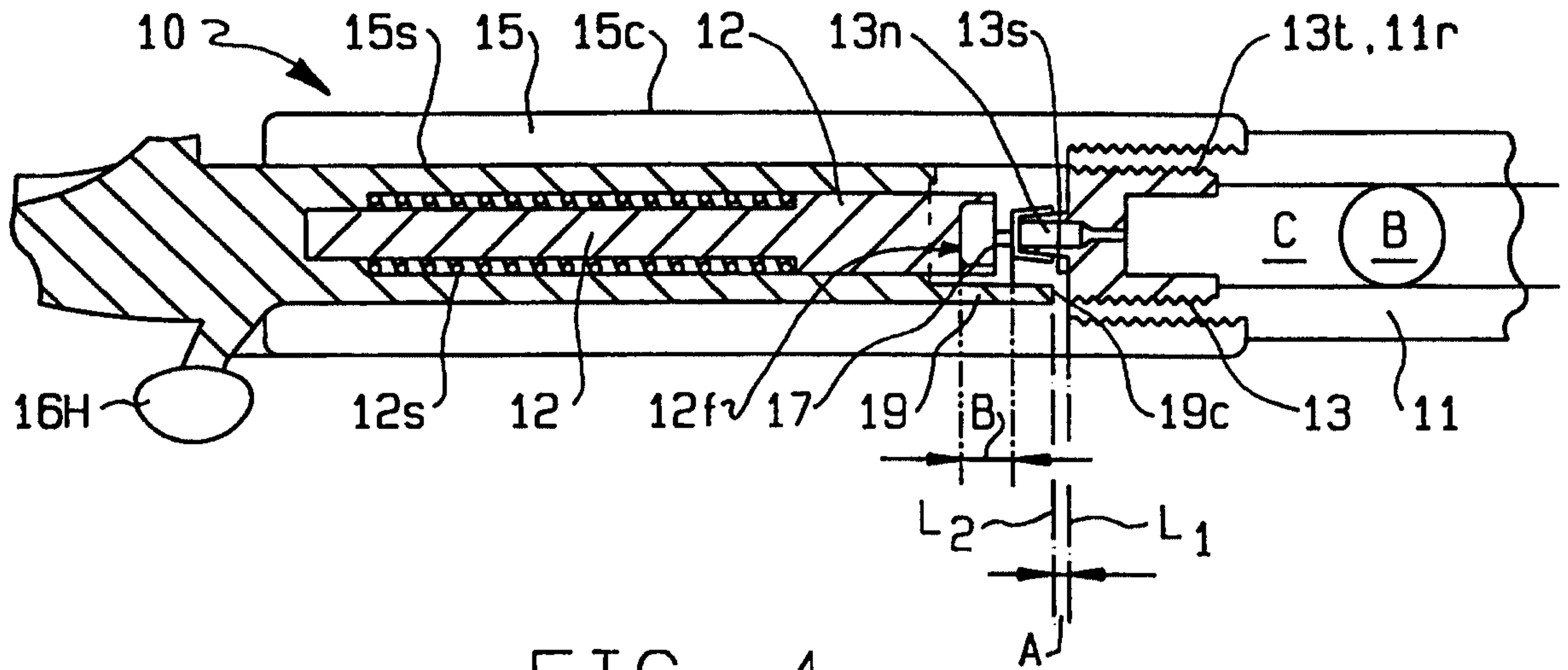


FIG. 1

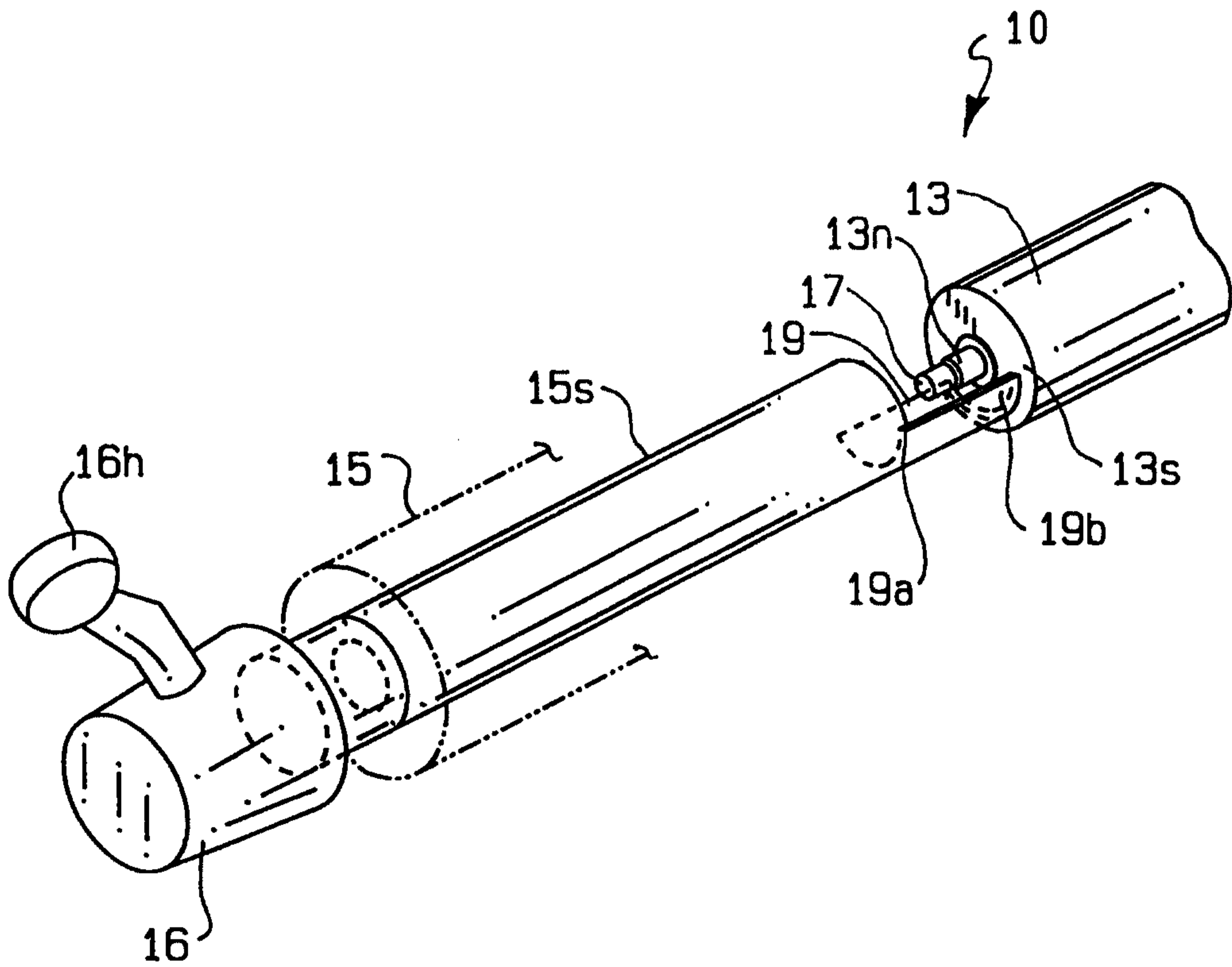


FIG. 2

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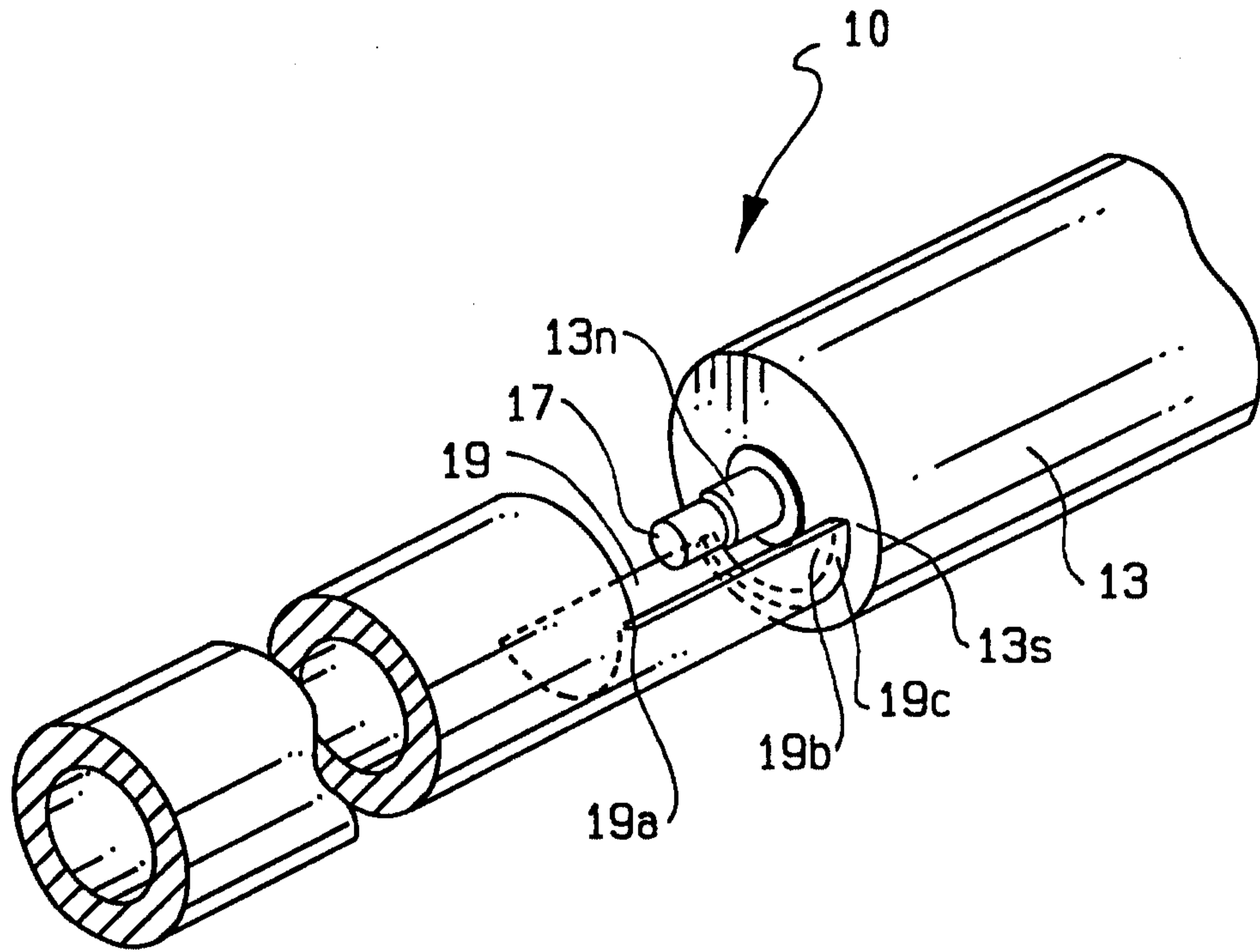


FIG. 3