Jan. 23, 1951

B. SAHLIN ET AL
FORWARD DAMPER DEVICE FOR FIREARMS
WITH A RECOIL MANTLE

2,539,275

Filed May 6, 1948

2 Sheets-Sheet 1

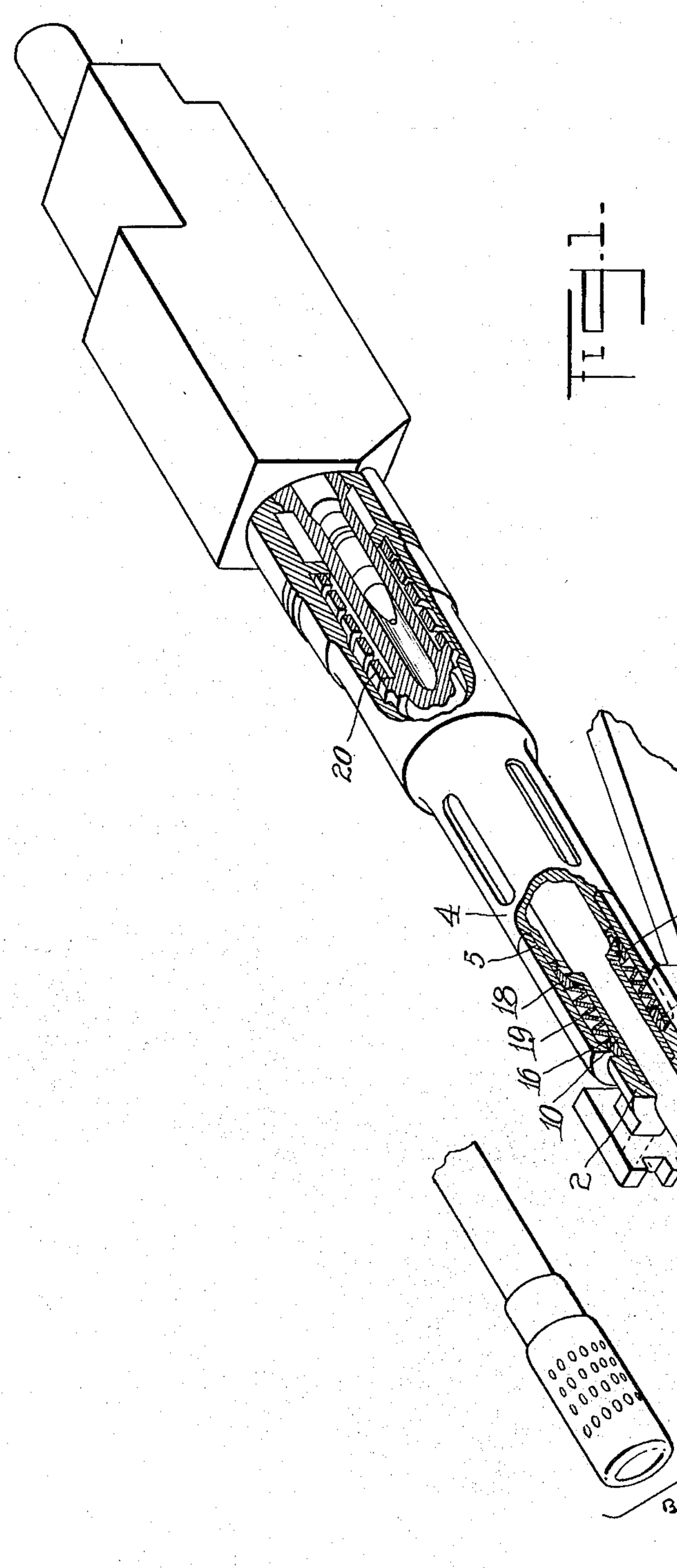

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Fig. 2.

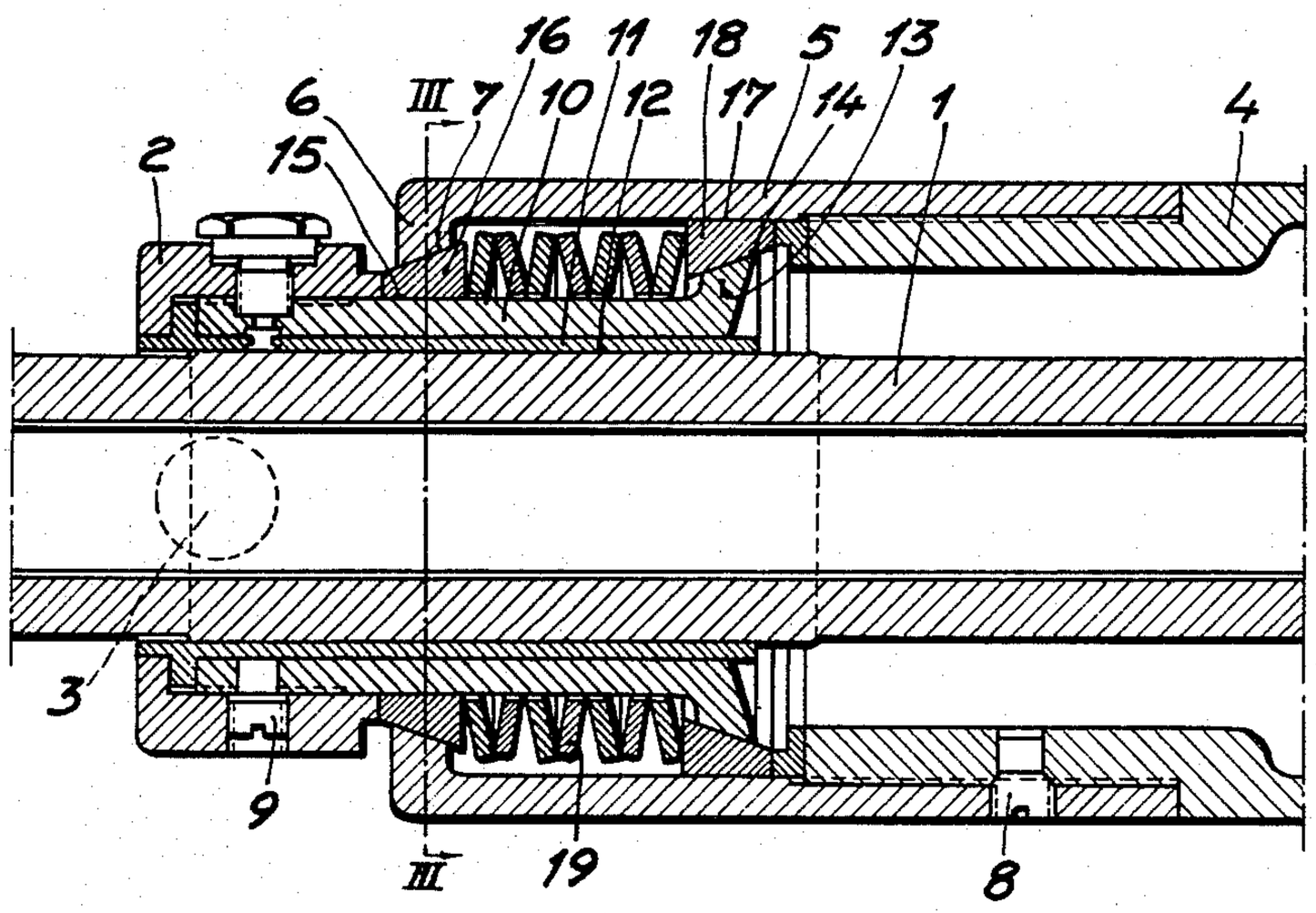
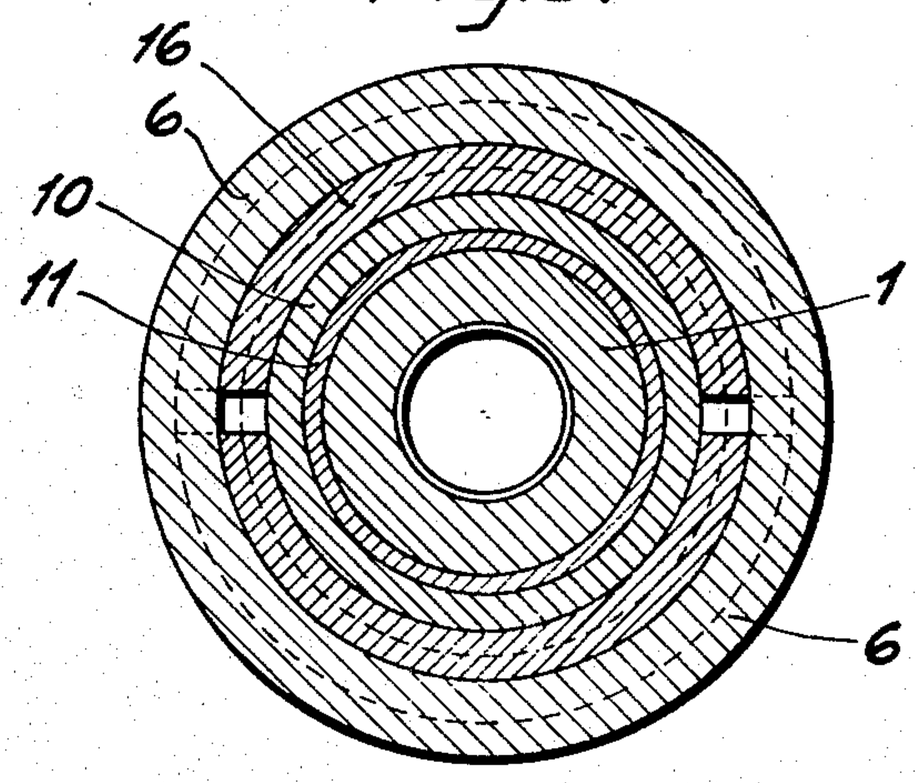


Fig. 3.



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UNITED STATES PATENT OFFICE

2,539,275

FORWARD DAMPER DEVICE FOR FIREARMS WITH A RECOIL MANTLE

Börje Sahlin, Stockholm, Ivan Åslund, Karlskoga, Sweden, and Edvin Emanuel Jansson, deceased, late of Bofors, by Halvar Nyqvist, executor, Bofors, Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden, a joint-stock company of Sweden

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2 Claims. (Cl. 89—44)

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The present invention refers to a device for elimination of shocks of short duration which occur with firearms mounted on trunnions or the like, having a recoil mantle, and especially with such ones having back throwing or accelerating means for the breech lock, which shocks appear between the trunnions and the recoil mantle, when the release member begins to function in order to prevent such shocks to transfer to the gun carriage.

According to the invention a spring device which may be provided with a damper arrangement, is arranged between the trunnions and the recoil mantle.

The invention is illustrated with an embodiment in the attached drawing, where Fig. 1 is a perspective view, some parts being partially cut away to show some of the parts in elevation and some in section of a firearm with a device according to the invention. Fig. 2 is a detail section on a big scale. Fig. 3 is a section along the line III—III in Fig. 2.

In the drawings 1 indicates the barrel, displacably mounted on an elevation trunnion ring 2, which, by means of the trunnions 3 is swingably mounted on a gun carriage (not shown). The barrel is partially enclosed in a recoil mantle 4. Between the barrel and the recoil mantle, a recoil spring 20 is tensioned. On the front of the recoil mantle 4, an outer muff 5 is screwed, the fore end of which is provided with an inwardly directed annular flange 6 with slanty or conical annular surfaces. The muff 5 is at the bottom secured by means of a set screw 8. Screwed to the elevation trunnion ring 2, and secured by a stop screw 9, is the fore end of an inner muff 10, having a ground bushing 11, which encloses a guide surface 12 on the barrel 1. The inner muff 10 is at its rear end provided with an outwardly directed, annular flange 13, with slanty or conical surfaces 14. Between the conical surface 7 of the outer muff 5 and the cylindrical outside surface 15 of the inner muff 10 buffeting members are placed, having slanty or conical surfaces, in this case a pair of conical brake-ring halves 16, and between the inner cylindrical surface 17 of the outer muff 5, and the conical surface 14 of the inner muff 10, buffeting members are also placed, in this case a pair of conical brake-ring halves 18. Between the brake-ring halves 16 and the brake-ring halves 18 a staple of seven Belleville springs 19 are tensioned.

The modus operandi of the device is as follows:

At the moment of firing the barrel 1 recoils in comparison to the elevation trunnion ring 2,

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compresses the recoil spring 20, which is pressing back the recoil mantle 4 somewhat in comparison with the elevation trunnion ring 2. Said movement of the recoil mantle 4 is allowed against the strain of the Belleville springs 19 and the brake-ring halves 16 and 18 respectively, of which the first named are compressed and the last named are pressed apart on account of the wedge-like action of the conical surfaces. Through this is eliminated the effect of the shocks of short duration that otherwise would jar the trunnion rings, and thereby the gun carriage.

Having now described our invention, what we claim as new and desire to secure by Letters Patent is:

1. A gun provided with recoil damper mechanism positioned so as to prevent the transmission of recoil shocks to the supporting gun carriage, which comprises, in combination: a barrel; a trunnion ring surrounding said barrel and secured thereto; a plurality of trunnions extending from said trunnion ring and serving to support said gun from a gun carriage; a recoil mantle, spaced from, and surrounding said barrel, said recoil mantle terminating at a point along said barrel which is spaced from said trunnion ring; and recoil absorbing means positioned between said recoil mantle and said trunnion ring, said recoil absorbing means including a staple of Belleville springs between said recoil mantle and said trunnion ring, surrounding said barrel, and secondary shock absorbing means against which the ends of said Belleville springs abut.

2. A gun provided with recoil damper mechanism positioned so as to prevent the transmission of recoil shocks to the supporting gun carriage, which comprises, in combination: a barrel; a trunnion ring surrounding said barrel and secured thereto; a plurality of trunnions extending from said trunnion ring and serving to support said gun from a gun carriage; a recoil mantle, spaced from, and surrounding said barrel, said recoil mantle terminating at a point along said barrel which is spaced from said trunnion ring; and recoil absorbing means positioned between said recoil mantle and said trunnion ring, said recoil absorbing means including a staple of Belleville springs positioned between said recoil mantle and said trunnion ring, said staple of Belleville springs surrounding said barrel, and a pair of split rings against which the ends of said Belleville springs abut, said split rings being positioned between said recoil mantle and an extended portion of said trunnion ring, and being wedge-shaped in radial cross-section whereby, under the influence of re-

coil shocks of short duration, one of said split rings has the split sections thereof compressed, while the other of said split rings has the split sections thereof pressed apart, the recoil shock between said two split rings being transmitted by said Belleville springs.

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