

April 21, 1925.

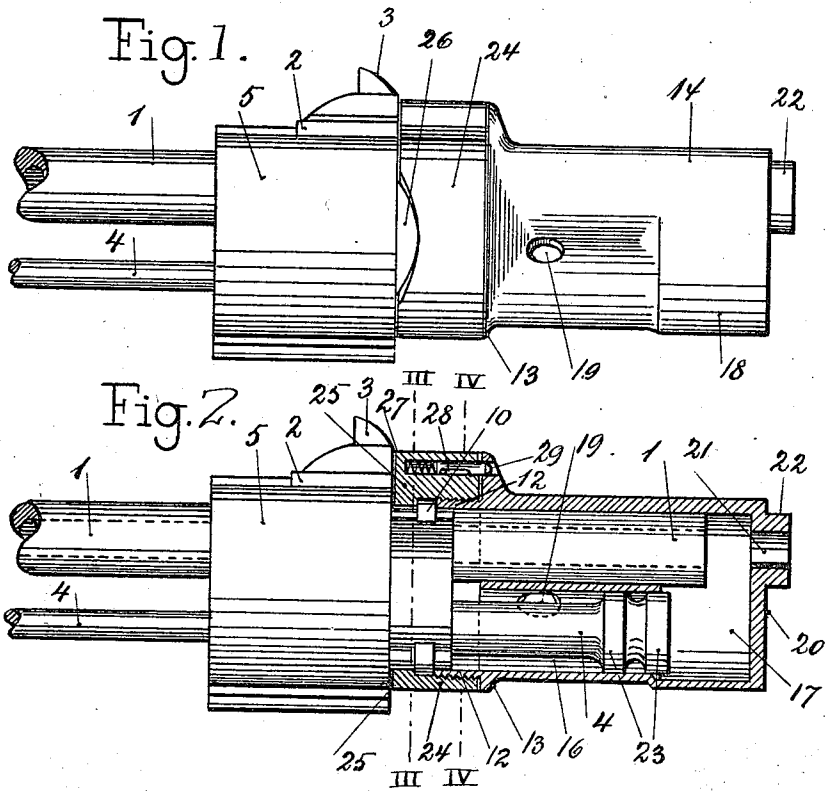
S. H. BANG

1,534,486

SELF LOADING FIREARM

Filed Dec. 13, 1922

2 Sheets-Sheet 1.



INVENTOR

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2 Sheets-Sheet 2

Fig. 3.

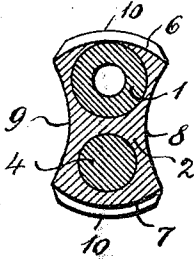


Fig. 4.

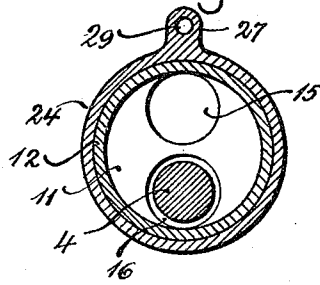
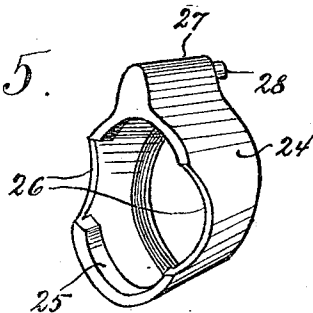


Fig. 5.



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UNITED STATES PATENT OFFICE.

SÖREN HANSEN BANG, OF COPENHAGEN, DENMARK.

SELF-LOADING FIREARM.

Application filed December 13, 1922. Serial No. 606,573.

To all whom it may concern:

Be it known that I, SÖREN HANSEN BANG (master mechanic), a subject of the King of Denmark, residing at Copenhagen, in the Kingdom of Denmark, have invented new and useful Improvements in Self-Loading Firearms, of which the following is a specification.

Gas-pressure loaders for fire-arms are already known which are fitted with a detachable hood provided on the front end of the barrel, the front wall of the said hood having an opening for the passage of a projectile, and the hood proper forming a powder-gas chamber and a guiding cylinder for a piston, which latter, when the gun is being fired, is forced rearward by the pressure of the powder-gas escaping into the mantle and, by means of a rod, transmits the motion to the gun-lock, which is thereby opened.

The known arrangements of this kind are subject to the disadvantage that the powder slush is deposited and accumulated at points where gradually it will prevent the piston from moving all the way forward to the front end position, in such a manner that the lock, after delivery of a shorter or longer series of shots, cannot be closed entirely. It is therefore necessary, when such deposits of powder slush have taken place, after even a shorter series of shots, to remove the hood and clean the powder slush therefrom.

By the present invention this disadvantage is avoided by reason of the fact that the piston, in its front end position, without tapering, projects somewhat into the powder gas chamber, which is of larger cross-section than the piston, in such a manner that there is produced, about the free front end of the piston in the chamber, a space for deposition of the powder gas slush carried along by the piston, whereby the path of the piston in its extreme front position is maintained unobstructed, openings being provided at the rear in a ring serving to attach the hood to the barrel, the said openings communicating with the outer air, in such a manner that partly the guiding cylinder of the piston and partly the piston, when the latter occupies its rear end position, will be cleaned of powder slush by the blast produced in the cylinder by the pressure of the powder gas.

Ordinarily it is not necessary, for cleaning purposes, to remove the hood, when the self-loading device is constructed in accordance with the present invention, but in order

to be able to replace the hood by a shell-firing tube or with a hood for loose firing it is desirable that the hood should be readily detachable. Even in that respect the present invention marks an essential progress, the connection between barrel and hood according to the present invention being arranged in such a manner that the hood, although being solidly attached, may be removed without the use of tools and by one single and simple manipulation.

One construction of the invention is illustrated in the drawing,

Fig. 1 showing, in side elevation, the front portion of the gun barrel and of the piston rod with the hood attached thereto.

Fig. 2 a vertical longitudinal section of the hood shown in Fig. 1, with the corresponding locking mechanism.

Fig. 3 a cross-section taken along the line III—III of Fig. 2.

Fig. 4 a cross-section taken along the line IV—IV of Fig. 2, the gun barrel being omitted in the section, and

Fig. 5 a detail perspective view of the means for securing the hood to the gun barrel.

1 is the gun barrel, onto which there is screwed, or otherwise attached, near its front end, a member 2, Fig. 2, encircled by a ring 5 supporting at top a sight 3. Below the pipe the member 2 forms a guide for a piston rod 4 traversing the same. In front of the ring 5 the member 2 is of the special shape shown in Fig. 3, that is to say the outline of the cross-section is a four-sided figure, the top and bottom sides 6 and 7 of which are relatively short circular arcs of the same circle with centre at the centre of the cross-section, while the two other relatively long sides 8 and 9 are each a concave curve. The importance of the correspondingly concave side faces of the member 2, which are practically symmetric in respect of the vertical plane through the axis of the bore of the gun will be explained later on. On each of the circular cylindrical faces of the member 2 corresponding to the circular arcs 6 and 7 in Fig. 3 there is provided a circumferential rib 10.

Onto the portion of the gun barrel 1 which is in front of the member 2 a cap is pushed see Fig. 1. This cap forming an integral unit consists of a short rear portion, a relatively long central portion, and a somewhat shorter front portion. The rear portion

forms a cap with practically plane bottom 11, Fig. 4, and with a circular cylindrical outwardly threaded wall 12, Figs. 2 and 4, limited in front by a shoulder 13. The central portion 14 of the cap, Fig. 1, is fitted with two channels 15, Fig. 4, and 16, Figs. 2 and 4, which are open at both ends, and traverse first the said bottom 11, and communicate directly with the cavity 17 in the front portion 18 of the cap. The central portion 14 is of 8-shaped cross-sectional outline, and near the rear end thereof there is provided, on either side, in its wall a powder gas discharge opening 19, Figs. 1 and 2. The front portion 18 of the cap is of practically oval rounded cross-section, it is closed at front by the bottom (front end wall) 20 of the entire cap, an opening 21, Fig. 2, being provided as passage for the projectiles. On the portion of the cap bottom 20 encircling the opening 21 there is provided, on the outside, a reinforcement (boss) 22. The cavity 17 of the front portion 18 of the cap forms one single chamber into which the gun barrel 1, which passes through the channel 15, projects somewhat, see Fig. 2, but the end face of the barrel is still some distance from the cap bottom 20. Into the channel 16 fits a head 23 acting as piston and being formed on or attached to the front end of the above mentioned piston rod 4, the front portion of which is somewhat enlarged, and the arrangement is such that the front face of the head (piston) 23, in its foremost normal position stands slightly in front of the front end of the channel 16, and that the cavity 17 wholly encircles this projecting end of the piston. This feature is of importance, because powder sludge will then be prevented from being deposited on the inside of the channel wall, but only on the circumference of the portion of the piston which projects out from the channel, and the powder sludge deposited here is securely removed from the piston, whenever the latter is forcibly pressed backward. In this manner the drawback is avoided that powder gas may be deposited and, in course of time, prevent the piston from going all the way forward into normal position.

Onto the outwardly threaded cylindrical wall 12, formed on the rear portion of the cap, and the annular end face of which rests against the rear face of the ribs 10 on the extension 5 of the member 2, when the cap is in position, there is screwed an outwardly grooved ring 24 by means of which the cap is locked. The ring projects so far beyond the end face of the cap wall 12 that it practically reaches forward to the plane front edge of the ring 5. The portion of the ring 24 which thus projects further backward than the cap wall 12 is smooth on the inside with so large a diameter that it may pass

over the ribs 10, with the exception that there are provided, on the inside of the ring and near its rear edge, two diametrically opposed ribs 25, Fig. 5 (see also Fig. 2), of the same length as the ribs 10. The diameter between the inside faces of the ribs 25 corresponds to the diameter of the circular cylindrical surfaces provided on the member 2 immediately behind the ribs 10. At two diametrically opposite points between the ribs 25 there is provided, at the rear end of the ring 24, a recess 26, the said recesses being located at opposite sides of the gun, when the cap and the ring are in position, and as the concave faces of the member 2, corresponding to the sides 8 and 9 of the section in Fig. 3, are similarly located at opposite sides of the gun, cavities are thereby formed within the ring 24 which communicate with the atmosphere by way of the openings formed by the recesses 26 of the ring. When the cap is to be placed in position, then the ring 24, owing to the pressure of the rib 25, must first be turned about a quarter of a revolution to the left (its threads are right-hand) away from its closing position, the said ribs passing then through the spaces between the ribs 10, when the cap is being placed in position. The ring is then turned backward whereby its ribs 25 will come behind and closely up against the ribs 10. The cap will then have become fixed, and cannot be turned, because the barrel 1 fills the channel 15, and the piston 23 fits into the channel 16, and it cannot be moved forward nor backward. The attachment of the cap, however, depends on the ring 24 not being turned. In order to prevent any such accidental rotation of the ring, the latter is fitted at top (when the ring is in the closing position) a reinforcement 27 into which a spring lock is inserted engaging, by means of a pin 28, a hole 29 in an enlargement of the shoulder 13 on the top side of the cap. As the cap, as mentioned above, cannot turn, a rotation of the ring 24 will thus be prevented by the spring-lock pin 28 engaging the hole 29. It should be noted that there is provided, in the shoulder 13 a small notch not shown into which the spring-lock engages, when the ring 24 is turned into the position which it has to occupy while the cap is being attached or detached. When the ring is to be turned into this position from the closing position, it will only be necessary to insert, from the front, the point of the projectile of a cartridge into the hole 29, and press the pin 28 to the rear, until the ring may be turned.

Having thus described my invention, what I claim is:—

1. A gas pressure self-loading gun, comprising, in combination, a gun barrel and a piston for moving the gun lock, a detach-

able hood disposed at the front end of said barrel and provided with an opening for the passage of a projectile, said hood having a guiding cylinder for said piston and a chamber in communication therewith, said piston, when in its extreme front position, projecting beyond said cylinder and into said chamber, said chamber being of larger cross-sectional area than said piston thereby to form a space about the free front end of the piston for the reception of powder slush ejected by said piston, a ring for detachably securing said hood to the barrel, said ring being provided in the rear edge thereof with openings communicating with the atmosphere thereby to provide a blast of air for cleansing the cylinder and piston.

2. A gas pressure self-loading gun, comprising, in combination, a gun barrel and a piston for moving the gun lock, a detachable hood disposed at the front end of said barrel and provided with an opening for the passage of a projectile, said hood having a guiding cylinder for said piston, and a chamber in communication therewith, said piston, when in its extreme front position, projecting beyond said cylinder and into said chamber, said chamber being of larger cross-sectional area than said piston thereby to form a space about the free front end of the piston for the reception of powder slush ejected by said piston, a member attached to said barrel and having at diametrically opposite points a pair of exterior short circumferential ribs, and a ring secured to the rear portion of the hood and provided at its rear end at two diametrically opposite points with a pair of interior short circumferential ribs adapted to pass behind and tightly engage the ribs of said barrel member whereby the hood is securely retained in engagement with the barrel.

3. A gas pressure self-loading gun, comprising, in combination, a gun barrel and a piston for moving the gun lock, a detach-

able hood disposed at the front end of said barrel and provided with an opening for the passage of a projectile, said hood having a guiding cylinder for said piston, and a chamber in communication therewith, said piston, when in its extreme front position, projecting beyond said cylinder and into said chamber, said chamber being of larger cross-sectional area than said piston thereby to form a space about the free front end of the piston for the reception of powder slush ejected by said piston, a member attached to said barrel and having at diametrically opposite points a pair of exterior short circumferential ribs, a ring secured to the rear portion of the hood and provided at its rear end at two diametrically opposite points with a pair of interior short circumferential ribs adapted to pass behind and tightly engage the ribs of said barrel member whereby the hood is securely retained in engagement with the barrel and a spring lock carried by said ring and adapted to engage the hood thereby to prevent accidental displacement of the ring.

4. A gas pressure self-loading gun, comprising, in combination, a gun barrel and a piston for moving the gun lock, a detachable hood provided with an opening for the passage of a projectile, said hood having a guiding cylinder for said piston and a chamber in communication therewith, said chamber being of larger cross-sectional area than said piston, the piston being adapted to project beyond said cylinder and into said chamber once during each operation thereof thereby to eject powder slush from said cylinder into said chamber.

In testimony whereof I have signed my name to this specification.

SÖREN HANSEN BANG.

Witnesses:

V. BELSCHNER,
BENT CARLSON.