No. 819,186. PATENTED MAY 1, 1906.

J. VOLLMER & H. HERBACZOWSKI.

PLASTIC GAS CHECK FOR SCREW BREECH MECHANISMS.

APPLICATION FILED SEPT. 12, 1905.

Fig. 1

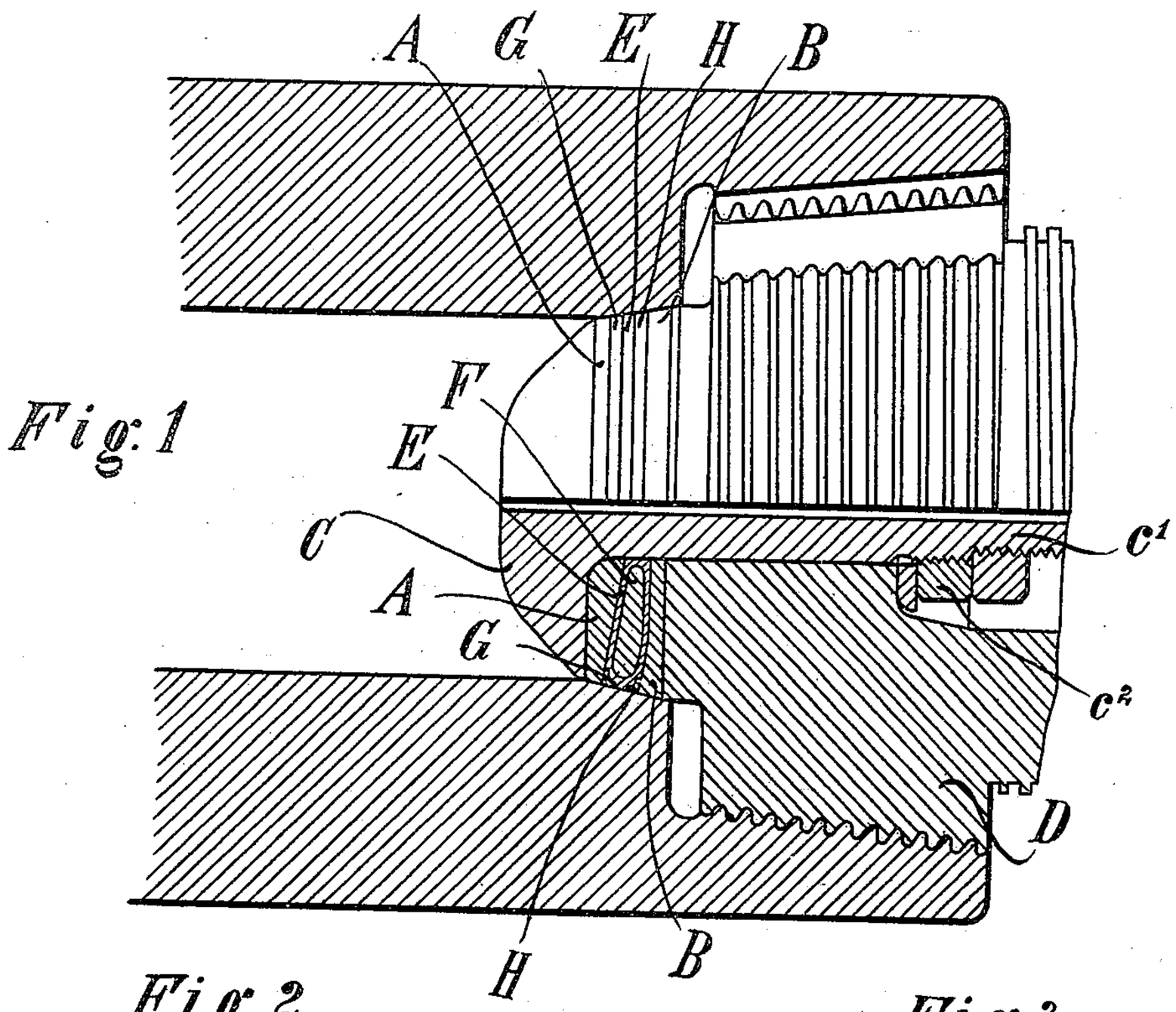


Fig. 2.

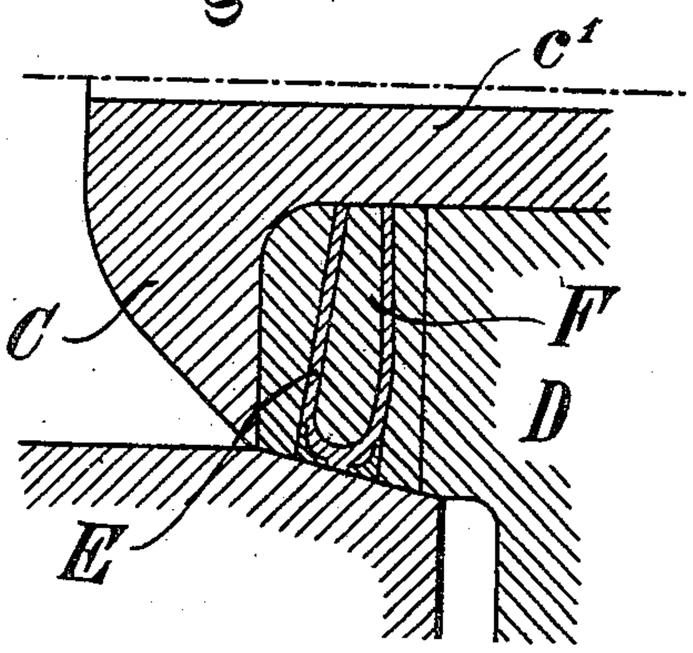


Fig. 3.

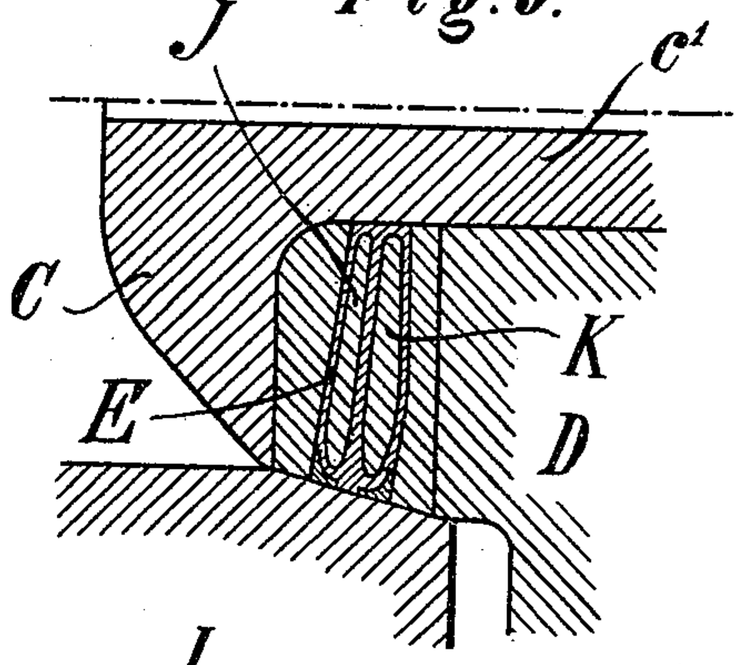
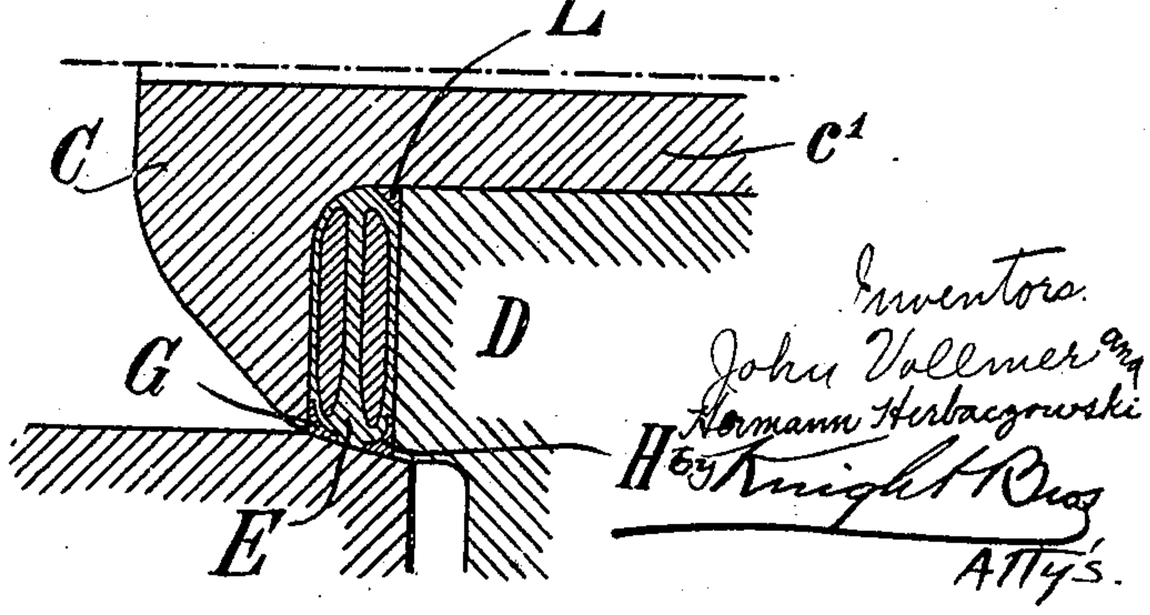


Fig. 4.



Witnesses
J. M. Strubbe
Jas. R. Adams

Inventors.
John Vollmer and
Hermann Herbaczowski
By Knight Bros
Atty's.

UNITED STATES PATENT OFFICE.

JOHN VOLLMER, OF RELLINGHAUSEN, NEAR ESSEN-ON-THE-RUHR, AND HERMANN HERBACZOWSKI, OF ESSEN-ON-THE-RUHR, GERMANY, ASSIGNORS TO FRIED. KRUPP AKTIENGESELLSCHAFT, OF ESSEN-ON-THE-RUHR, GERMANY.

PLASTIC GAS-CHECK FOR SCREW BREECH MECHANISMS.

No. 819,186. Specification of Letters Patent. Patented May 1, 1906.

Application filed September 12, 1905. Serial No. 278,185.

To all whom it may concern:

Be it known that we, JOHN VOLLMER, residing at 23 Oberstrasse, Rellinghausen, near Essen-on-the-Ruhr, and HERMANN HERBACZOWSKI, residing at 49 Kettwigerchaussee, Essen-on-the-Ruhr, Germany, subjects of the German Emperor, have invented a certain new and useful Improvement in Plastic Gas-Checks for Screw Breech Mechanisms, of which the following is a specification.

Plastic gas-checks of recent construction for screw breech mechanisms for guns are, as a rule, provided with an annular obturating-pad of plastic material, (such as a mixture of asbestos and tallow,) which pad is provided on its exterior with two steel protecting-rings. The periphery of the pad and its seat in the gun-barrel are highly conical in order that, in addition to the turning necessary for locking and unlocking the breech-screw, merely a swinging movement need be imparted to the screw for opening and closing the breech. The foremost protecting-ring of the obturating-pad—that is to say, the ring that is nearest to the head of the mushroom—is either closed or split. In the known gas-checks of this kind the plastic ring is of comparatively great thickness, and when the gun is discharged the ring is compressed to a considerable extent in the direction of the longitudinal axis of the gun-barrel. This causes the foremost protecting-ring to pass far rearwardly of the conical seat of the obturating-pad, and the pressure imposed upon the protecting-ring by the plastic material causes said ring to become highly expanded. When a split ring is used, the expansion effects a wide opening of the split and the flame of the powder-gases reaches the seat of the pad and tends to burn out the part which is so essential to a tight obturation. When a closed front protecting-ring is made use of, the expansion subjects the material of the ring to a strain beyond its limit of elasticity, imparting a permanent set, and consequently the protecting-ring does not regain its original shape after the discharge and binds when the breech is opened or closed. These drawbacks, as encountered in the known plastic gas-checks are of course particularly prevalent when the gas-checks are employed in guns in which the pressure of the gas is very high.

The object of the present invention is to provide a plastic gas-check for screw breech mechanisms for guns which does not possess the drawbacks above set forth and which nevertheless works reliably under very high gas-pressure, (*e. g.*, above three thousand atmospheres.)

The accompanying drawings show four embodiments of the invention by the way of example.

Figure 1 is a side view, partly in longitudinal section, of one embodiment of the gas-checks and the adjoining parts of a screw breech mechanism. Figs. 2 to 4 are sectional views of the other embodiments.

Reference will first be had to the embodiment shown in Fig. 1. The construction of the breech screw mechanism here shown is of the ordinary type, and no explanation thereof is thought necessary. The obturating-pad E, of plastic material, is arranged between two rings A and B made from steel or the like. The foremost ring A lies against the head C of the mushroom, and the rearmost ring B lies against the breech-screw D. The rings A and B and the obturating-pad surround the shank c' of the mushroom, which is slidably arranged in the breech-screw, the parts being held together by means of a nut c^2 on the shank c'. The obturating-pad is provided with two peripheral edge-protecting rings G and H, of steel or the like, and with an annular core F, made from pressure-resisting material, such as steel. The protecting-rings G and H are of approximately L shape in cross-section and the space between the said protecting-rings is filled with the plastic material of the obturating-pad. In the form here shown the core F is entirely embedded in the plastic material of the pad, so that its inner and outer peripheries and front and rear faces are all covered. The dimensions of the core are so selected that in the direction of the pressure created by the discharge there are two comparatively thin layers of plastic material almost throughout the entire width of the obturating-pad. Consequently only a slight compression in the direction of the longitudinal axis of the barrel is imparted to the obturating-pad by the discharge, and the protecting-ring G therefore expands only slightly during the discharge and regains its

original shape after the discharge, so as not to bind, even after long use. The shape and arrangement of the core F, as shown in the drawings, further result in the plastic material between the core F and the rings A and B being pressed with much force outwardly when the discharge takes place, thereby providing a tight closure.

The embodiment shown in Fig. 2 differs from the above-described merely in the core F extending to the shank *c'* of the mushroom.

In the embodiment shown in Fig. 3 the obturating-pad E is provided with two cores of pressure-resisting material. These cores J and K are separated from one another by a layer of plastic material, and they are outwardly tapering. When the discharge takes place, there being still more plastic material—namely, that between the cores J and K—to be displaced outwardly under the great force it follows that the plastic material produces a still more effective obturation.

In the embodiment shown in Fig. 4 the rings A and B are not made use of, and the obturating-pad lies directly against the head C of the mushroom and the breech-screw D. In addition to the protecting-rings G and H the pad is provided with a third interior protecting-ring L, of steel or the like.

Having described the invention, what is claimed is—

1. A plastic gas-check for screw breech mechanisms comprising an annular core of pressure-resisting material, and a layer of plastic material covering the outer periphery and face of said core.

2. A plastic gas-check for screw breech mechanisms comprising a core of pressure-resisting material and a layer of plastic material by which the core is entirely surrounded.

3. A plastic gas-check for screw breech mechanisms comprising an annular core of pressure-resisting material, and a layer of plastic material covering its outer periphery and its front and rear faces.

4. A plastic gas-check for screw breech mechanisms comprising an annular core of pressure-resisting material, a layer of plastic material covering its outer periphery and its front and rear faces, and a pair of protecting-rings of pressure-resisting material covering the edges of the outer periphery of said plastic layer.

5. A plastic gas-check for screw breech mechanisms comprising a plurality of cores of pressure-resisting material, and plastic material arranged between and on the outer peripheries of the cores.

6. A plastic gas-check for screw breech mechanisms comprising a plurality of cores of pressure-resisting material, and intervening plastic material covering the outer periphery and the front and rear faces of the cores of pressure-resisting material.

7. In a gas-check for screw breech mechanisms, the combination of a plurality of outwardly-tapering cores, and a plastic material arranged between the outwardly-tapering portions of the cores.

8. In a gas-check for screw breech mechanisms, the combination with the protecting-rings, of the plastic material filling the space between the rings, and a core for the plastic material, of less diameter than the rings.

The foregoing specification signed at Düsseldorf this 28th day of August, 1905.

JOHN VOLLMER.
HERMANN HERBACZOWSKI.

In presence of—
WILLIAM ESSENWEIN,
ERNEST ANDRÉ.