

No. 664,089.

Patented Dec. 18, 1900.

J. KRONE.
FLUID BRAKE FOR GUNS.

(Application filed Apr. 16, 1900.)

(No Model.)

Fig. 1.

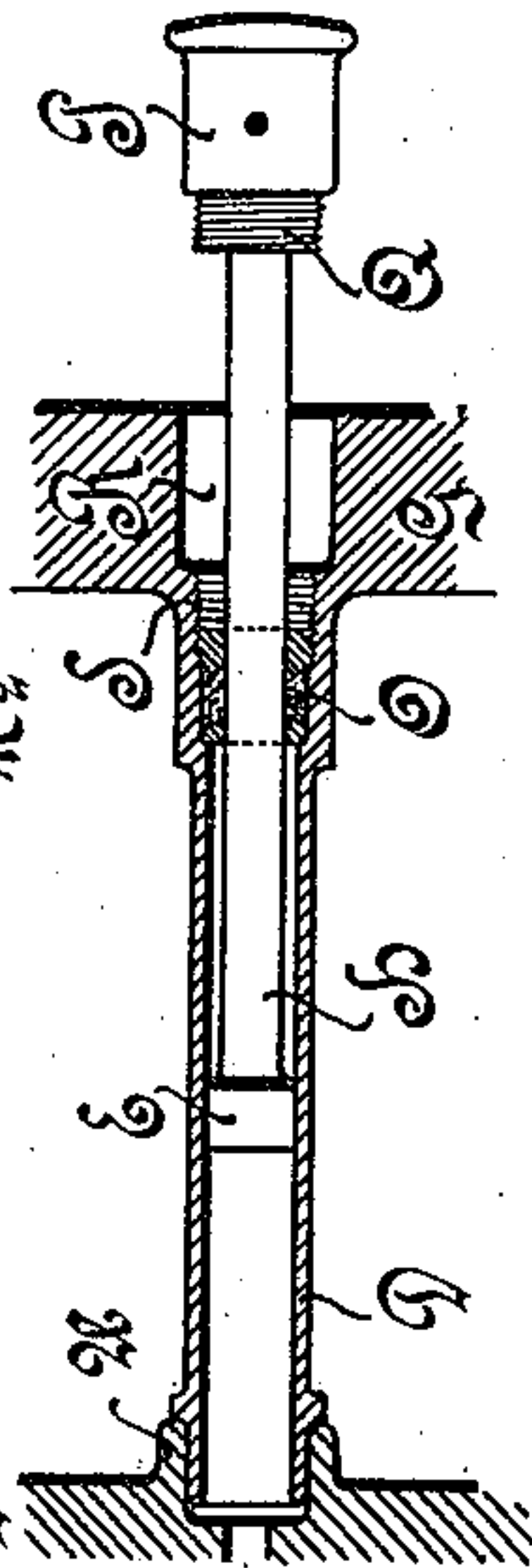
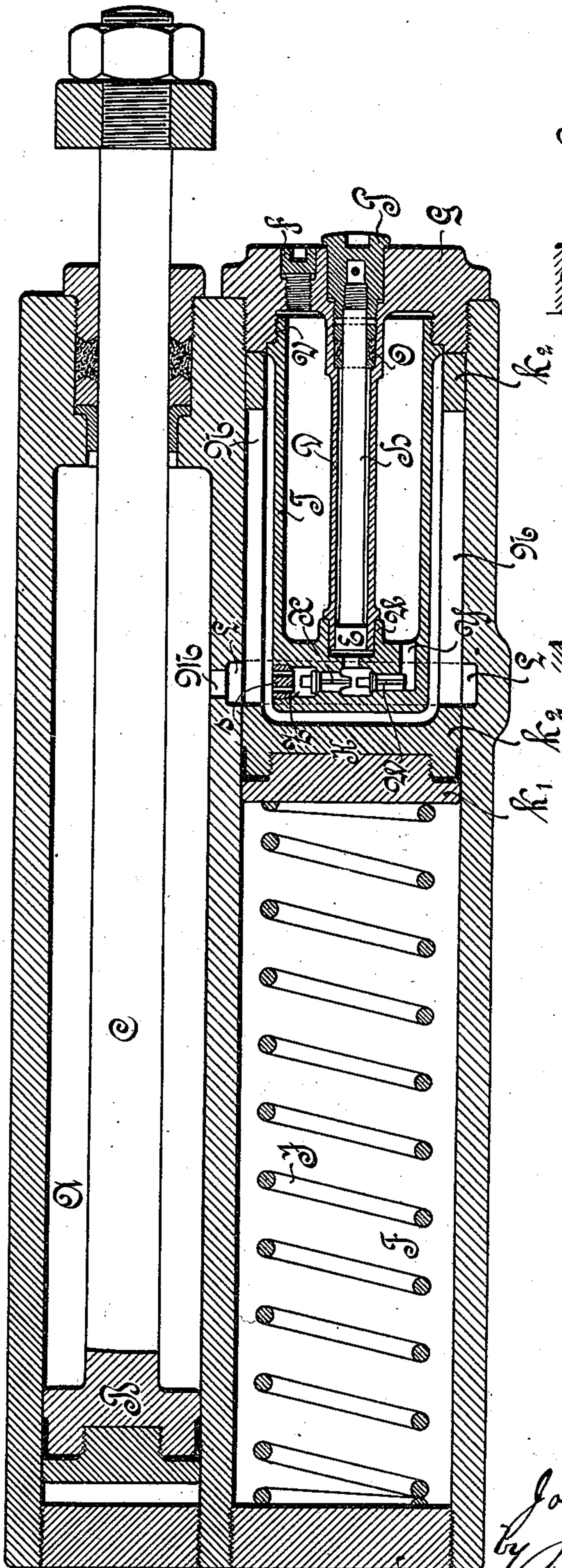


Fig. 2.

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FLUID-BRAKE FOR GUNS

SPECIFICATION forming part of Letters Patent No. 664,089, dated December 18, 1900.

Application filed April 16, 1900. Serial No. 12,979. (No model.)

To all whom it may concern:

Be it known that I, JOHANNES KRONE, engineer, a citizen of the German Empire, residing at 56 Bismarckstrasse, Essen-on-the-
5 Ruhr, Germany, have invented certain new and useful Improvements in Fluid-Brakes for Guns, of which the following is a specification.

My invention refers to improvements in
10 fluid-brakes for guns of the class described in my application for Letters Patent, Serial No. 6,790, filed February 28, 1900. In such brakes the volume of liquid contained between the recoil-piston and the running-out piston or
15 pistons is apt to be reduced by leakage, and the loss must from time to time be made up by pumping in liquid.

The object of my present invention is to arrange a liquid-supply pump taking but little
20 space and protected against pieces of bursting shells, but accessible, simple, and always ready for use.

For this purpose my invention consists, essentially, in forming the head of one of the
25 cylinders as a storage vessel for the brake liquid and arranging the supply-pump within this vessel.

My invention will be best understood by reference to the annexed drawings, showing
30 one form of apparatus, in which—

Figure 1 is a longitudinal section of a fluid-brake embodying my invention; and Fig. 2, a longitudinal section of the pump, showing the plunger at about half-stroke.

35 Similar letters of reference designate corresponding parts throughout both views of the drawings.

In the drawings the letter A designates the recoil-cylinder, B its piston, and C the piston-
40 rod.

F is the running-out cylinder, made in one piece with the recoil-cylinder and containing the piston K, which bears against a spiral spring J, which at the other end abuts against the bottom I of the cylinder F. G is the head
45 of the running-out cylinder.

The piston K consists of a hollow cylinder k^2 , provided with one or more tapering or curved slits N, parallel to the axis or spirally
50 arranged, and with a packing-nut k' . The connection between the recoil-cylinder A and

the running-out cylinder F is made through an opening M and an annular channel L in the running-out cylinder.

The space within the recoil-cylinder A between the piston B and the stuffing-box of the piston-rod C, the passage M, the annular channel L, the slits N, and the spaces between the closed end of the piston K, the running-out-cylinder head G, and the vessel
55 T, described below, are filled with liquid, while the spaces between the piston B and the head opposite the stuffing-box of the piston-rod C and between the piston K and the cylinder bottom I are by preference connected
60 to the outer air. The wedge-shaped slits N gradually check the passage of the liquid from the brake-cylinder to the running-out cylinder.

To the head G of the running-out cylinder
70 F is secured a tubular storage vessel T for liquid. It is of smaller outside diameter than the inside of the hollow piston K, the connection, as shown, being made by a threaded part V. The cylinder-head G has a central
75 tubular projection D, which serves as a pump-cylinder and extends into a socket U, projecting from the bottom of the storage vessel.

E is the piston of the pump, and H the piston-rod, which passes through a stuffing-box
80 O. A button P is attached to the outer end of the piston-rod H and is provided with a threaded part Q, Fig. 2. The cylinder-head G has a central bore with a threaded part S, into which the threaded part Q of the button
85 P screws, as shown in Fig. 1, whereby the pump is well secured within the storage vessel. The strong bottom of this storage vessel T forms the valve-chamber containing the suction-valve W and the discharge-valve X.
90 The valve-chamber is directly connected to the socket U; also, by the suction-port Y to the interior of the storage vessel T and by the discharge-port Z to the interior of the running-out cylinder F. The valves are inserted
95 through the discharge-port Z, which is partly closed by a perforated screw-plug s. For filling the storage vessel T a screw-plug f is provided in the cylinder-head G. When liquid is to be pumped into the running-out cylinder, the knob P is screwed out by means
100 of a key, when the pump is operated by hand.

For the purpose of examining the valves the head G is unscrewed and removed from the running-out cylinder, together with the storage vessel T, when after removing the screw-plugs the valves can be taken out.

Instead of inserting the pump and storage vessel into the running-out cylinder they might without essential changes be inserted into the recoil-cylinder. Two running-out cylinders may be used, one on each side of the recoil-cylinder, or one running-out cylinder between two recoil-cylinders.

I do not in this application claim the relative arrangement of the recoil-cylinder and of the running-out cylinder.

What I claim as new is—

1. In a fluid-brake for guns of the character specified, the combination with the recoil and running-out cylinders, of a storage vessel attached to the head of one of the cylinders and projecting into said cylinder, and a pump placed within the storage vessel and adapted to be operated from the exterior, so as to draw liquid from the storage vessel and discharge it into the liquid-space of the brake, substantially as described.

2. In a fluid-brake for guns of the character specified, the combination with the communicating recoil and running-out cylinders, of a storage vessel attached to the head of one

of the cylinders and projecting into the piston of said cylinder, and a pump placed within the storage vessel and adapted to be operated from the exterior, so as to draw liquid from the storage vessel and discharge it into the liquid-space of the brake, substantially as described.

3. In a fluid-brake for guns of the character specified, the combination with the head G of the running-out cylinder, of a liquid-storage vessel T screwed into or otherwise secured to the head, said vessel being of smaller diameter than the inside of the tubular part of the piston K of the running-out cylinder and projecting into the same; a valve-chamber and ports Y and Z within the closed end of the vessel T, with valves W and X seated therein, and a pump centrally inserted into the cylinder-head G, extending into a socket at the bottom of the storage vessel connected to the valve-chamber, substantially as shown and described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOHANNES KRONE.

Witnesses:

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