

(No Model.)

L. V. BENÉT.  
GAS OPERATED GUN.

No. 606,115.

Patented June 21, 1898.

Fig: 2

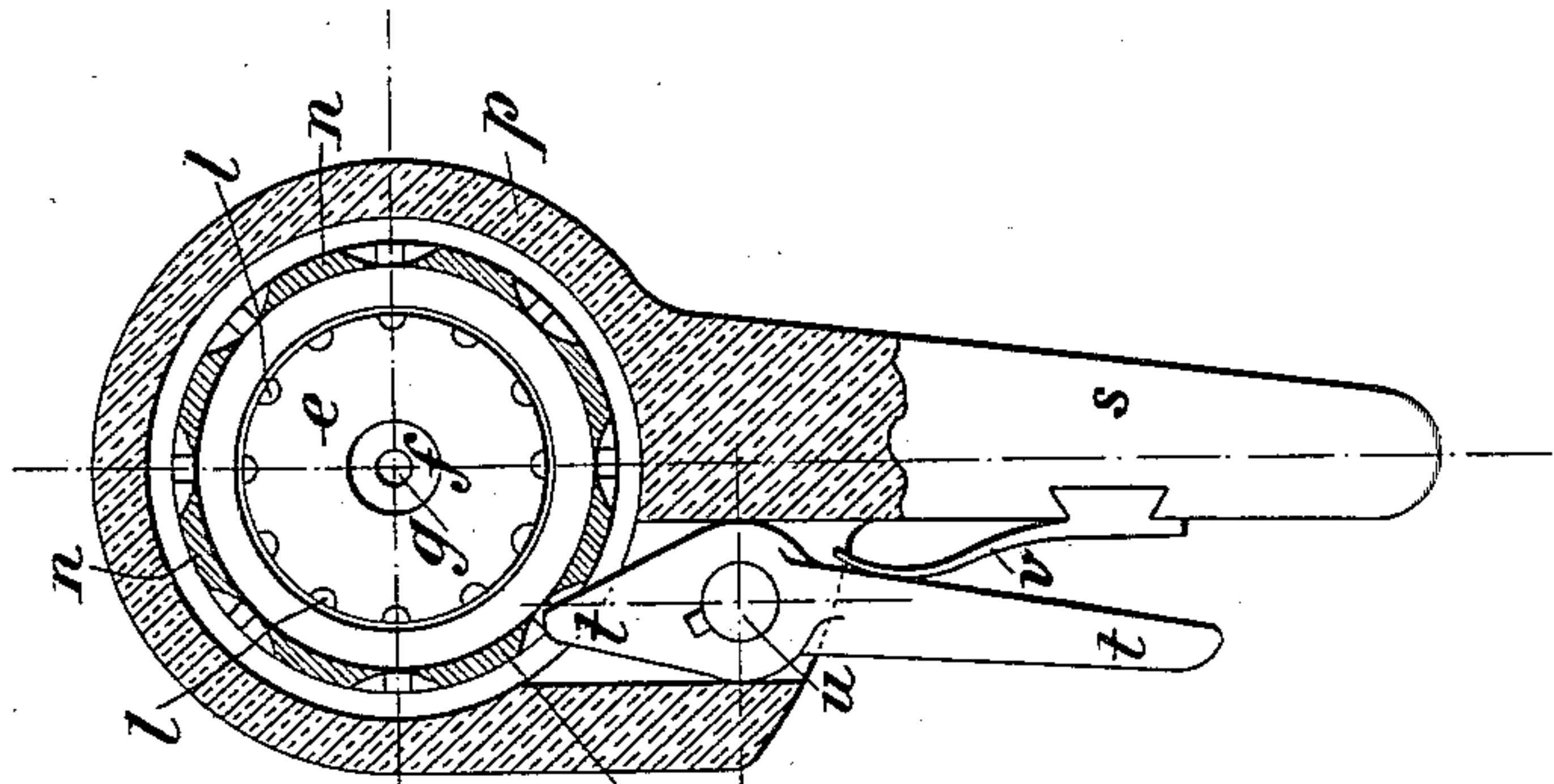


Fig: 1

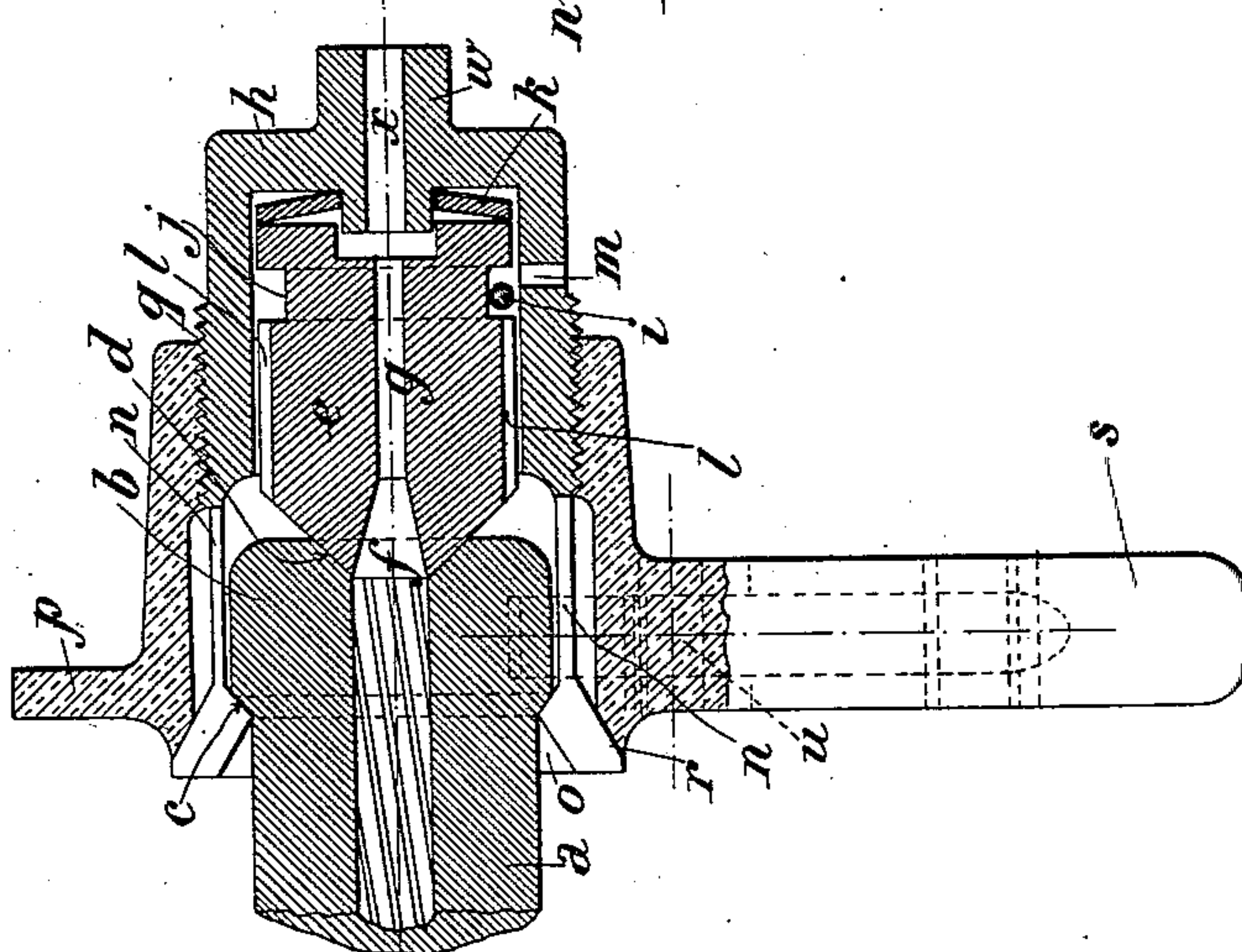
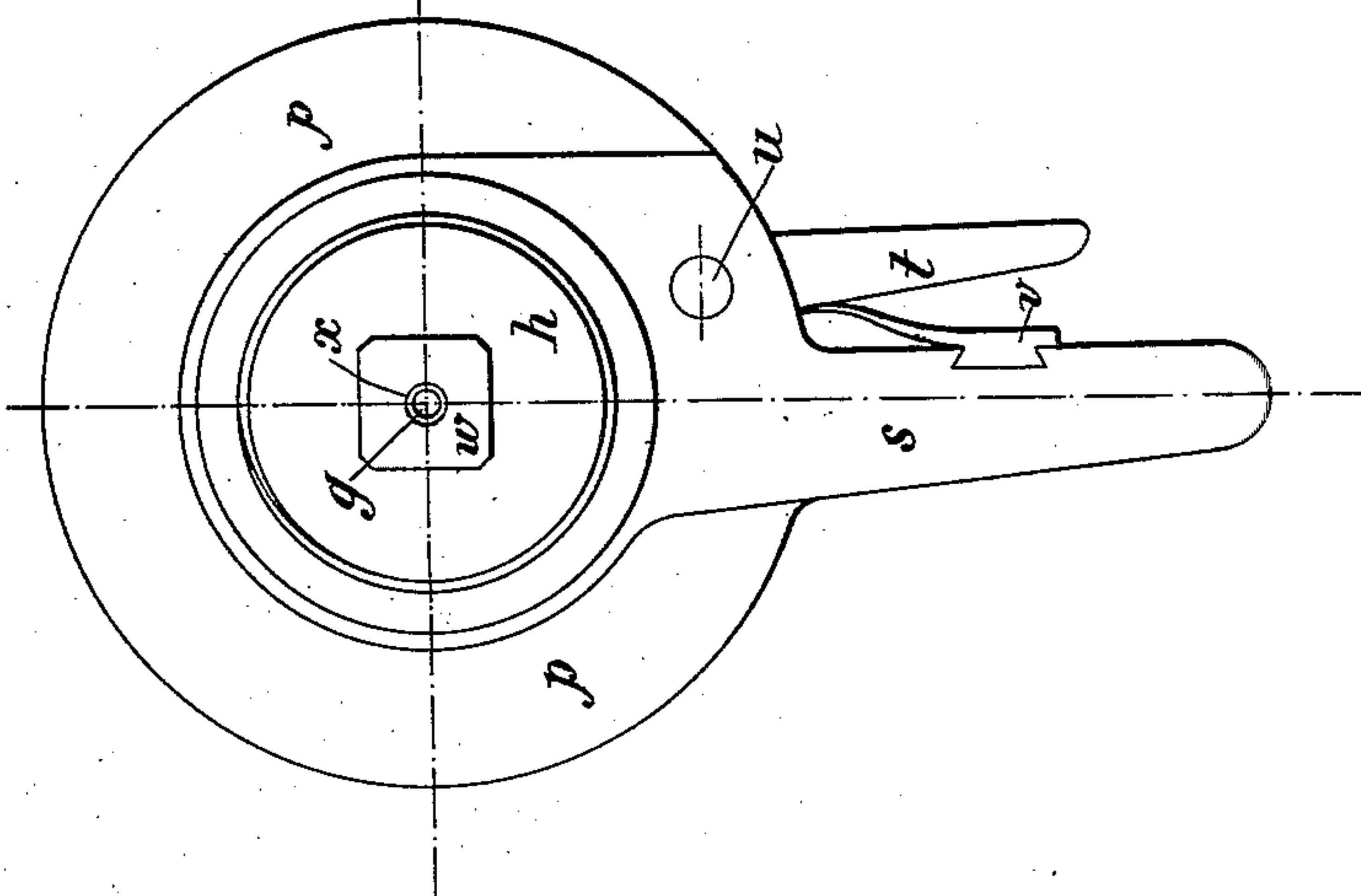


Fig: 3



Witnesses-

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# UNITED STATES PATENT OFFICE.

LAURENCE V. BENÉT, OF PARIS, FRANCE.

## GAS-OPERATED GUN.

SPECIFICATION forming part of Letters Patent No. 606,115, dated June 21, 1898.

Application filed January 11, 1898. Serial No. 666,354. (No model.)

*To all whom it may concern:*

Be it known that I, LAURENCE V. BENÉT, a citizen of the United States, residing at Paris, France, have invented a certain new and useful Improvement in Gas-Operated Guns, of which the following is a specification.

These improvements relate to that class of guns in which a portion of the powder-gas is utilized for operating the breech mechanism of the firearm, and more particularly to that class of automatic machine-gun described in Letters Patent of the United States under date of July 14, 1896, bearing No. 564,043, granted to the Hotchkiss Ordnance Company, Limited, of London, England.

The object of this invention is to provide means whereby the gun will operate automatically when firing "blank" ammunition—that is, ammunition wherein the metallic bullet has been replaced by a wad, wooden or paper bullet, or other relatively light projectile. This class of guns is operated by allowing a portion of the powder-gas to escape through a port or channel drilled in the barrel and to impinge against one of the moving parts of the mechanism. When using ordinary "ball" ammunition, the gas escapes under pressure sufficient to operate the mechanism; but with blank ammunition the pressure is not nearly sufficient to produce the desired result.

My invention consists, broadly speaking, in applying a pierced plug to the muzzle of the gun for reducing the area of exit of the frangible blank bullet or wad and gas, and thereby forcing a sufficient quantity of gas to pass through the port or channel and operate the mechanism.

In the accompanying drawings, which illustrate my invention, Figure 1 is a vertical longitudinal section of the muzzle end of the barrel, showing the device applied thereto. Fig. 2 is a cross-section of the device, the plug being shown in end view, not in section. Fig. 3 is a front elevation of the device.

At the muzzle end of the barrel *a* is formed the annular projection *b*, which is finished to the rear by a conical surface *c*, and the muzzle is counterbored to form a conical bearing *d*. This form of muzzle has no effect upon the ballistical qualities of the gun.

The essential portion of the device is a plug *e*, which is coned to the rear to register with the counterbore *d*, and in which is formed a channel *g* of experimentally-determined area, so as to cause the required amount of gas to pass through the port or channel (not shown) formed in the barrel and to impinge against the moving or motor element of the mechanism of a gas-operated gun. The channel *g* is bell-mouthed at *f* in order that the fragments of the blank bullet or wad may be guided into the channel *g*.

The plug *e* is mounted in a casing *h* and is held therein by a pin *i*, which passes through the casing and engages in an annular groove *j*, cut on the plug. The groove *j* being wider than the diameter of the pin, the plug has a slight longitudinal play in the casing. Between the casing *h* and the plug *e* is interposed a "Belleville" or other suitable spring *k*, and on the cylindrical surface of the plug are cut longitudinal grooves *l*. A series of lateral vents *m* are drilled through the casing in line with the groove *j*. The object of this combination of spring *k*, grooves *l*, and vents *m* is to provide means whereby in the event of excessive pressure the spring would permit the plug *e* to move slightly to the front and the surplus gas to pass between the surfaces in contact at *d* and thence through the grooves *l* and vents *m* to the open air.

To the rear the casing *h* is formed into a number of flexible arms *n n*, which may be readily sprung over the annular projection *b* of the muzzle and engage with the conical surface *c*. In order to facilitate springing these arms into place, they are coned to the rear at *o*. In order to prevent the arms springing out of place when firing, I provide a lock *p*, which engages with the screw-thread *q* on the exterior of the casing *h*. The lock is provided with a conical bearing-surface *r*, which on screwing the lock home will bear on corresponding surfaces on the arms *n*, forcing and holding them in engagement with the conical surface *c*. To facilitate screwing up and unscrewing the lock *p*, I form upon it a handle *s*. To prevent the lock *p* from unscrewing, I provide a pawl *t*, which is mounted on a pivot *u* in the lock and actuated by a spring *v*. The toe of the pawl *t* engages be-



tween the arms *n n* of the casing *h*. In the casing is formed a central hole *x* in a line with the channel *g*.

The device is mounted on the gun as follows: The lock *p* being unscrewed and the arms *n n* freed, the device is centered on the muzzle and pushed into place. The casing *h* being held with a spanner by means of the squared projection *w*, the lock is screwed home by means of the handle *s*. When fully home, the pawl *t*, engaging between two of the arms *n n*, prevents any unlocking during firing. The diameter of the lock *p* is such as to mask the fore-sight of the gun in order that the gunner may be warned not to fire with ball ammunition.

While the device is shown in combination with a complete and convenient mechanical arrangement for attaching it to the muzzle of the gun, it is evident that the area-reducing plug *e*, which is the essential part of the device, may be attached by many other very obvious mechanical means, such as simply screwing to the muzzle, engaging with a bayonet-joint, or otherwise.

I claim—

1. In a gas-operated gun, the combination, with the barrel, of a muzzle-plug having an axial channel of smaller caliber than the bore of the gun, substantially as described and shown, and for the purpose set forth, whereby the pressure of the powder-gases may be utilized to operate the gun.

2. In a gas-operated gun, the combination, with the barrel, of a muzzle-plug having an axial channel of smaller caliber than the bore of the gun, and held in elastic contact with the muzzle, substantially as described and shown and for the purpose set forth.

3. In a gas-operated gun, the combination, with the barrel, of a muzzle-plug, substan-

tially as described, means for holding it in elastic contact with the muzzle of the barrel, and means for allowing any surplus gas to escape in the open air, substantially as described and shown.

4. In a gas-operated gun, the combination, with the barrel, of a muzzle-plug, substantially as described, a casing for the muzzle-plug, means for holding the latter in the casing, means for holding the muzzle-plug in elastic contact with the muzzle of the barrel, and means for allowing any surplus gas to escape in the open air, substantially as described and shown.

5. In a gas-operated gun, the combination, with the barrel, of a muzzle-plug, substantially as described, a casing for the muzzle-plug, means for holding the latter in the casing, means for holding the casing to the muzzle, means for holding the muzzle-plug in elastic contact with the muzzle of the barrel, substantially as described and shown, and for the purpose set forth.

6. In a gas-operated gun, the combination, with the barrel, of a muzzle-plug, substantially as described, a casing for the muzzle-plug, means for holding the latter in the casing, means for holding the casing to the muzzle, means for holding the muzzle-plug in elastic contact with the muzzle of the gun, and means for preventing unlocking during firing, substantially as described and shown, and for the purpose set forth.

In witness whereof I have hereunto set my hand, this 23d day of December, 1897, in presence of two subscribing witnesses.

LAURENCE V. BENÉT.

Witnesses:

R. H. BRANDOE,  
CHARLES KURER.