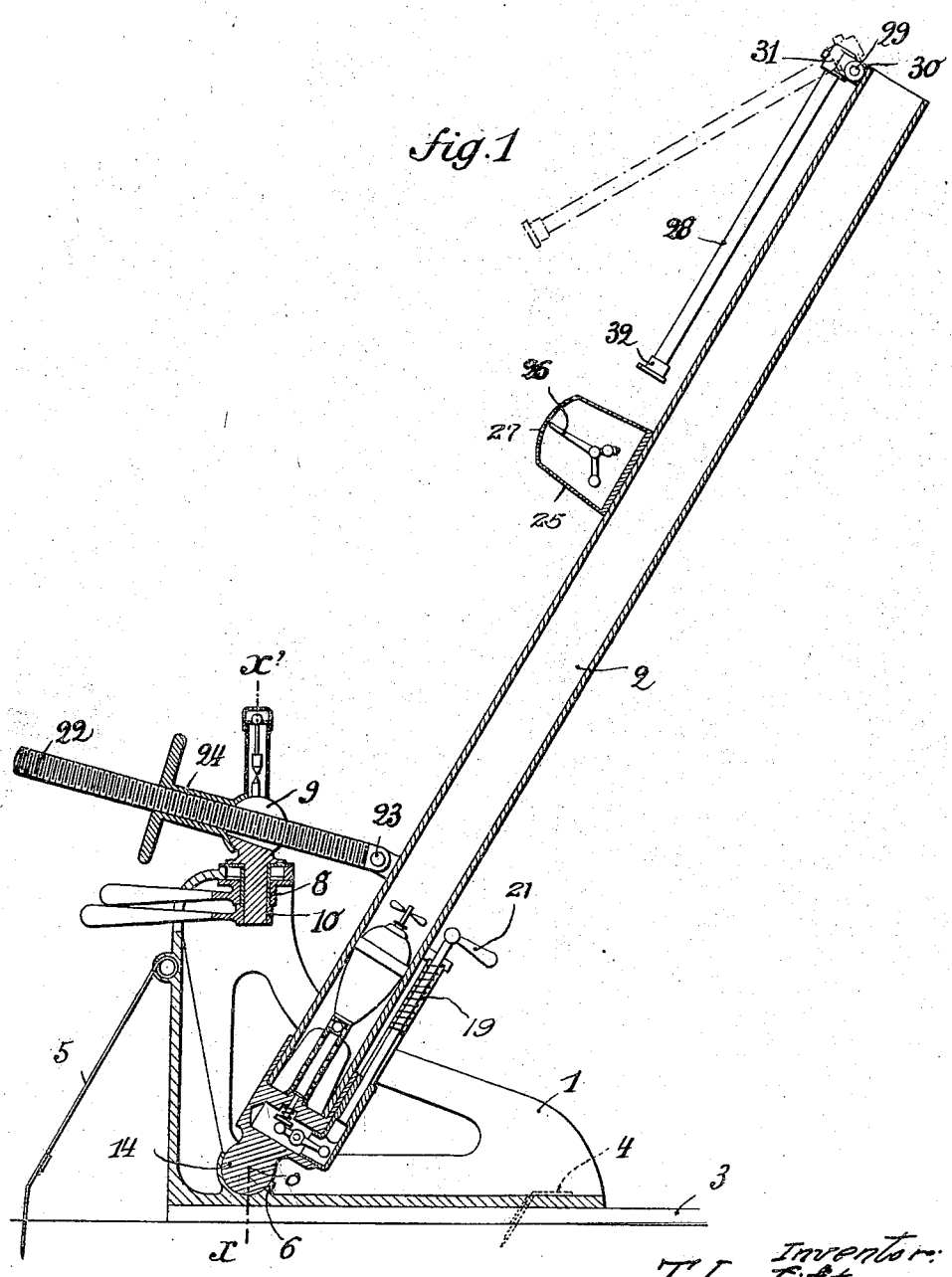
July 8, 1924. 1,500,711

T. LAFITTE

INFANTRY CANNON

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Fig. 1



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Fig. 2

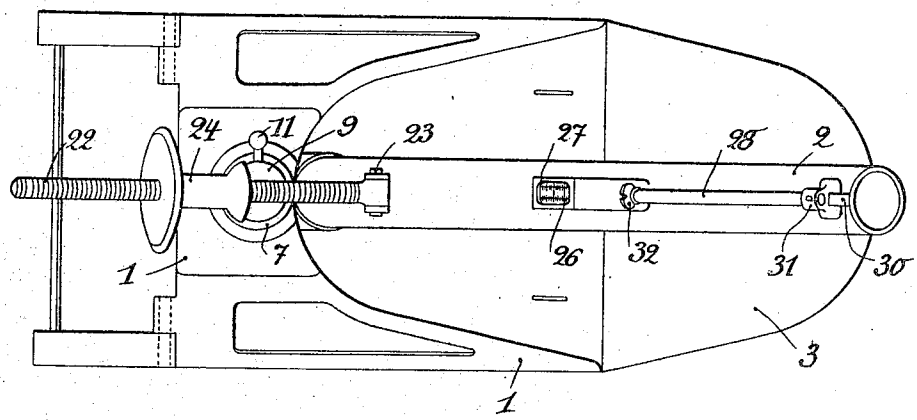


Fig. 4

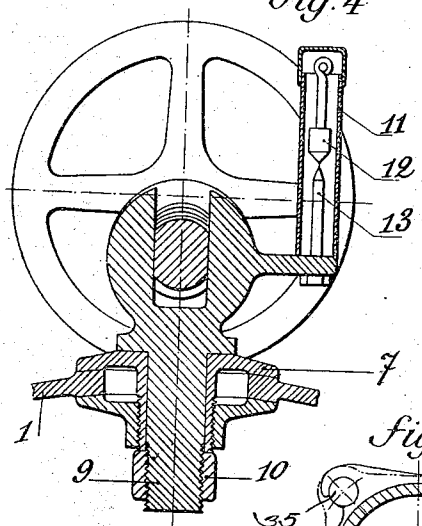


Fig. 6

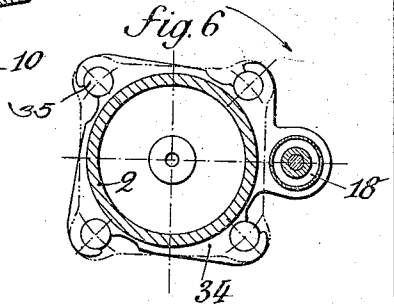
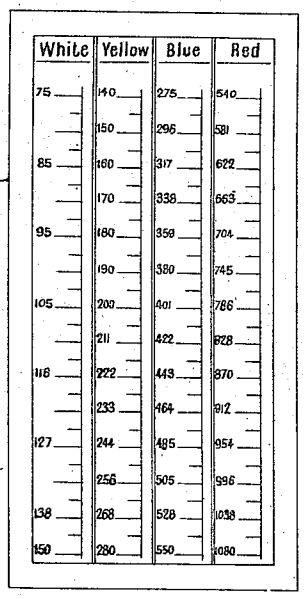


Fig. 7



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fig. 3

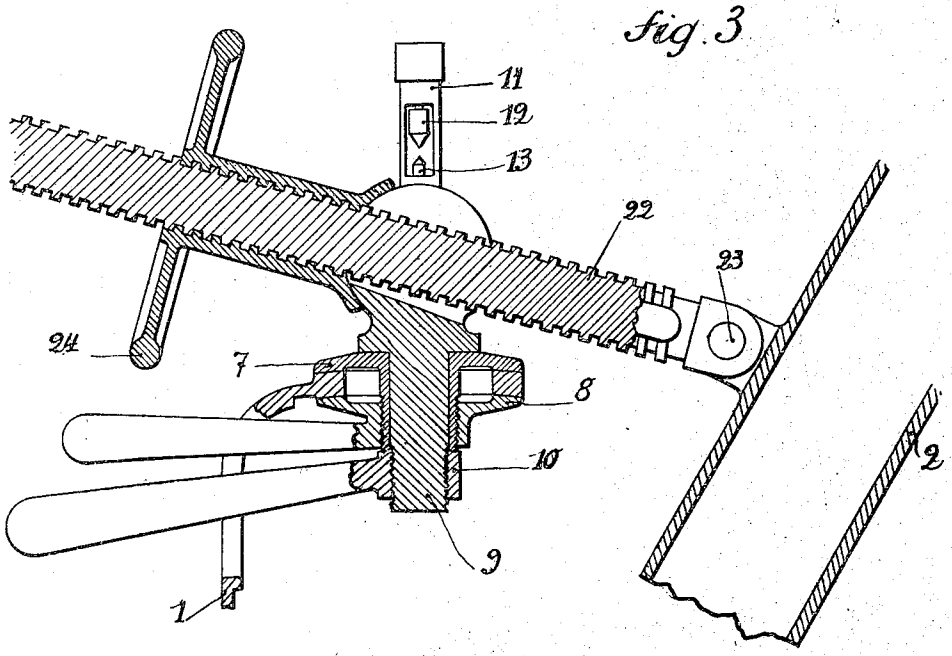
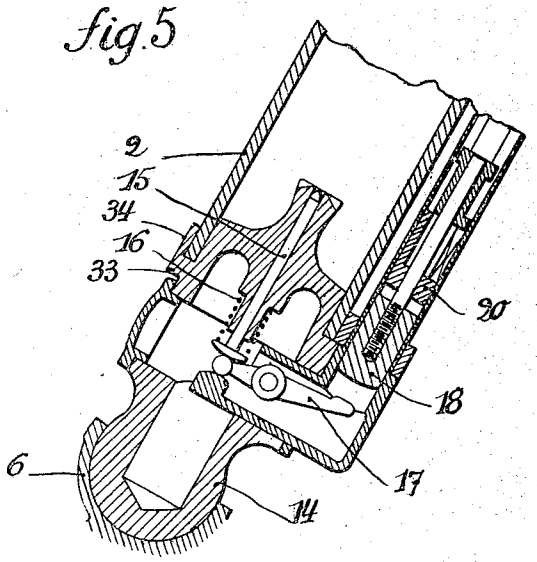


fig. 5



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Patented July 8, 1924. 1,500,711

UNITED STATES PATENT OFFICE.

THÉODORE LAFITTE, OF PARIS, FRANCE.

INFANTRY CANNON.

Application filed January 8, 1923. Serial No. 611,517.

To all whom it may concern:

Be it known that I, THÉODORE LAFITTE, a citizen of the Republic of France, and residing at Paris, Seine Department, No. 15 avenue Pasteur, in the Republic of France, have invented certain new and useful Improvements in Infantry Cannon, of which the following is a specification.

This invention relates to improvements in cannon of the type known as infantry cannon, and it possesses the following advantages; facility of transportation, lightness, rapid placing in position, rapid firing, steadiness when discharged, exact operation, and rapid cleaning and dismounting.

A form of construction of the said cannon or gun is shewn by way of example in the appended drawings.

Figure 1 is a vertical section of the whole device in the firing position.

Figure 2 is a plan view of the same.

Figure 3 is a vertical section on a larger scale of the head of the frame and of the means for attaching the tube.

Figure 4 is a section on the vertical axis of the head.

Figure 5 is a vertical section of the removable breech.

Figure 6 is a plan view of the flanged part of the breech, and

Figure 7 is a view of the dial shewing the distances.

The gun consists of two parts which can be separated; the carriage 1 and the tube 2 with its outfit. The carriage, which has the form indicated in Figures 1 and 2, is secured to a platform 3 by means of a flat base having a large surface. The device as a whole can be well anchored in the ground by the two small spades 4 and a larger spade 5. The lower part of the frame has mounted on the centre line a spherical bearing 6 cast with, or separately secured to the said frame. The upper part, which forms the head plate of the carriage, is machined to a portion of a spherical surface both inside and outside, and the centre of this spherical part coincides exactly with the centre of the lower bearing 6. A socket 7, termed the verticality socket, is movable in all directions in an aperture in the head of the frame, the spherical base of said socket bearing upon the upper face of the frame. The socket is bored axially and has an internal screw-thread co-operating with a nut 8 provided with a handle, the latter extending outwardly from the frame through a suitable aperture. The top of the said spherical nut is adapted to clamp the head of the frame and to immobilize the verticality socket at the proper point, as will be further set forth. The bore of the said socket is fitted with a revolving spherical head 9, the shank of which is screw-threaded and co-operates with a nut 10; the handle of the latter extending outwardly over the frame through the above-mentioned aperture. The said nut serves to lock the spherical head 9 upon the verticality socket 7 according to the direction which is to be given to a mortise formed in the spherical part of the head; at the side of the head 9 is disposed a device forming the verticality pendulum, comprising an apertured main body 11 wherein is hung a pendulum 12 free to swing in all directions, the lower pivoted end of the pendulum moving over a fixed point 13. From the method of construction of the apparatus, the line determined by the suspension point of the pendulum and the point 13 is parallel with the axis of the spherical head 9.

The barrel 2 comprises four main parts, the breech, the barrel proper, the distance pendulum, and the sighting telescope. The breech 14 ends in a spherical part which fits into the bearing 6 and is secured to the tube by a fixed or movable connection as will be further set forth; the axis of the tube does not coincide with the axis of the sphere in the direction of firing, as shewn in Figure 6. The breech carries entire percussion device which consists of a striker 15 urged to the rear by a weak spring 16. The striker is struck by a rocker 17 whose impact is obtained by the weight 18; the latter is set in movement by a spring 19 released by a cam 20 when the operator turns the lever 21. The tube proper 2, whose bore is smooth and accurately calibrated, is secured to the frame by the breech 14 which is fitted into the bearing 6 and by a screw 22 pivoted thereto at 23, the same being also secured to the spherical head 9 by the wing nut 24. The screw 22 has two flat parts, Figure 4, enabling it to

engage the mortise in the spherical head 9 and to slide along the same. In this manner the gun barrel, its screw 22 and the spherical head thus form a device which is journalled in the spherical bearing 6 and also in the socket 7; this rotation can be stopped by using the nut 10 to secure the head 9 to the socket 7.

The screw 22 when operated by the nut 24 will move in the plane of the said device, and this motion of the screw will increase or diminish the angle made by the gun barrel with the vertical.

The tube is also provided with a boss 25 from which is suspended a swinging frame 26 movable before a graduated dial 27 for indicating at all times the angle between the tube and the vertical. The dial comprises four columns of different colours having a separate graduation Figure 7. A sighting tube 28, formed of a small tube whose bore is carefully polished, is pivoted on an axle 29 secured in the boss 30 disposed at the top of the gun barrel; the sighting device has two ferrules 31, 32, one of which is provided with a sighting notch and the other with a handle.

The operation of the gun for firing is as follows. The carriage is firmly fixed upon a substantially level surface by means of the spades 4 and 5; the axis x, x^1 comprising the verticality socket 7 and the spherical bearing 6 is then made vertical; since this axis is a radius of the sphere having O as a centre, it is simply necessary to move the socket in the spherical part of the frame and to lock it in place by actuating the handle 8 at the spot where the axis is vertical, this being found by means of the pendulum 12.

The handle 10 is then released, the breech 14 is placed in the bearing 6, and the screw 22 is engaged in the mortise in the head 9. In these conditions, the tube 2, screw 22 and sphere 7 will rotate freely about the axis x, x^1; since the latter is vertical, the plane of the screw and the tube will also be vertical, whatever may be the direction of the latter. This vertical plane is made to coincide with the target by sighting the latter by means of the sights on the ferrules 31, 32 and also by the use of the sight tube 28, the position being shewn in the dotted lines in Figure 1; the operation is finished by clamping the whole device formed by the screw and the tube by using the handle 10, and this will point the gun in such manner that its tube is in the vertical plane, or the firing plane passing through the target. For distance aiming the hand-wheel 24 is turned so as to vary the angle which the barrel makes with the vertical, this being done until the needle of the direction pendulum 20 coincides on the dial with the division representing the desired firing distance.

For the column having the same colour as the cartridge in the shell, this needle will in fact measure the angles between the tube and the vertical, but as the range depends upon these angles, the gun is graduated in metres. The gun is now ready for firing. For this purpose, the breech is set by drawing upon the lever 21, and the striker disappears by the action of the spring; the gunner lets fall through the muzzle of the tube the grenade which has a cartridge located in the lower portion, Figure 5. By releasing the lever 21, the weight 18 is caused to strike the rocker 17 which in turn strikes the striker 15 whose end strikes the priming of the cartridge; the latter now explodes and the gases which are given off will pass through the holes in the tail piece of the grenade and will drive the latter rapidly out of the cannon. When the shot is fired, the recoil is transmitted directly from the breech to the spherical bearing and from the latter to the ground through the platform 3. In this manner all the metals engaged in the recoil are subjected only to compression stress, and the only operative part is the portion of the frame between the spherical bearing and the platform, so that a very light construction can be employed for the latter. When the shot is fired, the pressure which tends to produce the recoil is directed on the axis of the tube and will thus be eccentric with reference to the centre of reaction O, thereby producing a couple which tends to rotate the tube in the direction of the arrow; this couple has two effects; firstly, it presses the hand-wheel 24 upon the spherical head 7 and holds the tube in its initial position, thus preserving a very accurate aim; secondly, it tends to press the base upon the carriage and the latter upon the ground and hence to preserve the position of the carriage.

Since variations in the angle of the tube are not sufficient to produce any very great differences in the range, use is made of grenades whose cartridges receive various charges, a certain colour corresponding to a stated charge as well as to the colour shewn upon the dial of the distance pendulum, and by means of this colour indication, a very rapid firing can be carried out; the firing officer simply gives the order "450 metres blue", and the gunner will at once make use of the required cartridge.

At the end of the firing, the cannon is separated into two parts, tube and carriage, each being carried on the back of a man (about 15 kilogrammes for a 60 mm. cannon of 1500 metres range). These parts can be at once separated, the screw being readily removed from the mortise and the breech being disengaged from the spherical part.

For cleaning the inside of the tube 2, use can be made of a removable tube shewn by way of example in Figures 5 and 6. The

flanges 33, 34 are mounted respectively upon the tube and the breech, the flange 34 of the breech containing four screws 35 for attaching the flange 33 of the cannon. In order that the gun can be rapidly dismantled the holes in the flange of the cannon are so formed that after the screws are unscrewed, a simple rotation suffices to allow the screw heads to pass through, so that the cannon tube can be separated from the breech.

It must be understood that the invention is in no way limited to the details of carrying out which are represented and that the different improvements thereby involved can be used separately without departing from the principle of the invention.

I claim:

1. A cannon comprising a carriage, a cannon tube movable in all directions upon this carriage about its lower end in the form of a universal joint and an adjustable connecting member connecting the cannon with the upper part of the carriage, a pivot through the medium of which the connecting member is connected with the carriage and adjustable means for locating the axis of this pivot and maintaining the same according to a vertical line which is exactly above the centre of the lower universal joint with the purpose of allowing the cannon to revolve about a vertical axis whatever the inclination of the base of the carriage may be.

2. An infantry cannon comprising a stationary carriage and a cannon mounted upon this carriage, a spherical bearing placed at the base of the carriage for supporting the breech of the cannon and allowing the same to move in all directions, an adjustable support disposed at the upper part of the carriage above the said spherical bearing and adapted to revolve and to move transversely in all directions with reference to the vertical axis passing through the centre of said spherical bearing, said support having a mortise provided in its upper part, the breech of the cannon having a spherical head adapted to engage and to pivot in the spherical bearing of the carriage, a regulating rod pivoted to the cannon, said rod being adapted to enter and to slide in the mortise of the said support movable upon the carriage without however being able to revolve in this mortise, and controlling means for adjusting the position of this rod in the said mortise so as to determine in this way the inclination of the cannon.

3. An infantry cannon comprising a carriage and a cannon mounted upon this carriage, a spherical bearing placed at the base of the carriage for supporting the breech of the cannon and allowing the latter to move in all directions, an adjustable support placed at the upper part of the carriage above said spherical bearing and adapted to revolve and to be moved transversely in all directions with reference to the vertical axis passing through the centre of said spherical bearing, the said support having a mortise provided in its upper part, the breech of the cannon having a spherical head adapted to engage and pivot in the spherical bearing of the carriage, regulating rod pivoted to the cannon, this rod being adapted to engage and to slide in the mortise of said support movable upon the carriage but without being able to revolve in this mortise, a socket in which is mounted the said support and which is adapted to be moved in all directions so as to be brought upon the vertical axis passing through the centre of said spherical bearing, this socket being provided with a base-part having the shape of a spherical cap adapted to bear against the also spherical upper part of the carriage and a nut combined with a handle for steadying the said socket upon the said upper part of the carriage in every required position.

4. An infantry cannon comprising a stationary carriage and a cannon mounted upon this carriage, a spherical bearing placed at the base of the carriage for supporting the breech of the cannon and allowing the latter to swing in all directions, an adjustable support placed at the upper part of the carriage above the said spherical bearing and adapted to revolve and to be moved transversely in all directions with reference to the vertical axis passing through the centre of said spherical bearing, the said support having a mortise provided in its upper part, the breech of the cannon having a spherical head adapted to engage and to pivot in the spherical bearing of the carriage, a regulating rod pivoted to the cannon, this rod being adapted to enter and to slide in the mortise of said support movable upon the carriage but without being able to revolve in this mortise, a sighting tube mounted upon the cannon tube, this sighting tube being pivoted and adapted to swing in the plane determined by the axis of the cannon and the axis of said rod.

5. An infantry cannon comprising a stationary carriage and a cannon mounted upon this carriage, a spherical bearing placed at the base of the carriage for supporting the breech of the cannon and allowing the latter to swing in all directions, an adjustable support mounted upon the upper part of the carriage above the said spherical bearing and adapted to revolve and to be moved transversely in all directions with reference to the vertical axis passing through the centre of said spherical bearing, the said support having a mortise in its upper part the breech of the cannon having a spherical

head adapted to engage and to pivot in the spherical bearing of the carriage, a regulating rod pivoted to the cannon, this rod being adapted to enter and to slide in the mortise of said movable support upon the carriage without being able to revolve in this mortise, the spherical head formed on the breech being placed a little at the rear of extension of the axis of the cannon tube with the purpose of preventing the coming out of order when firing.

In testimony that I claim the foregoing as my invention I have signed my name.

THÉODORE LAFITTE.