S. R. AYDUKOVICH.

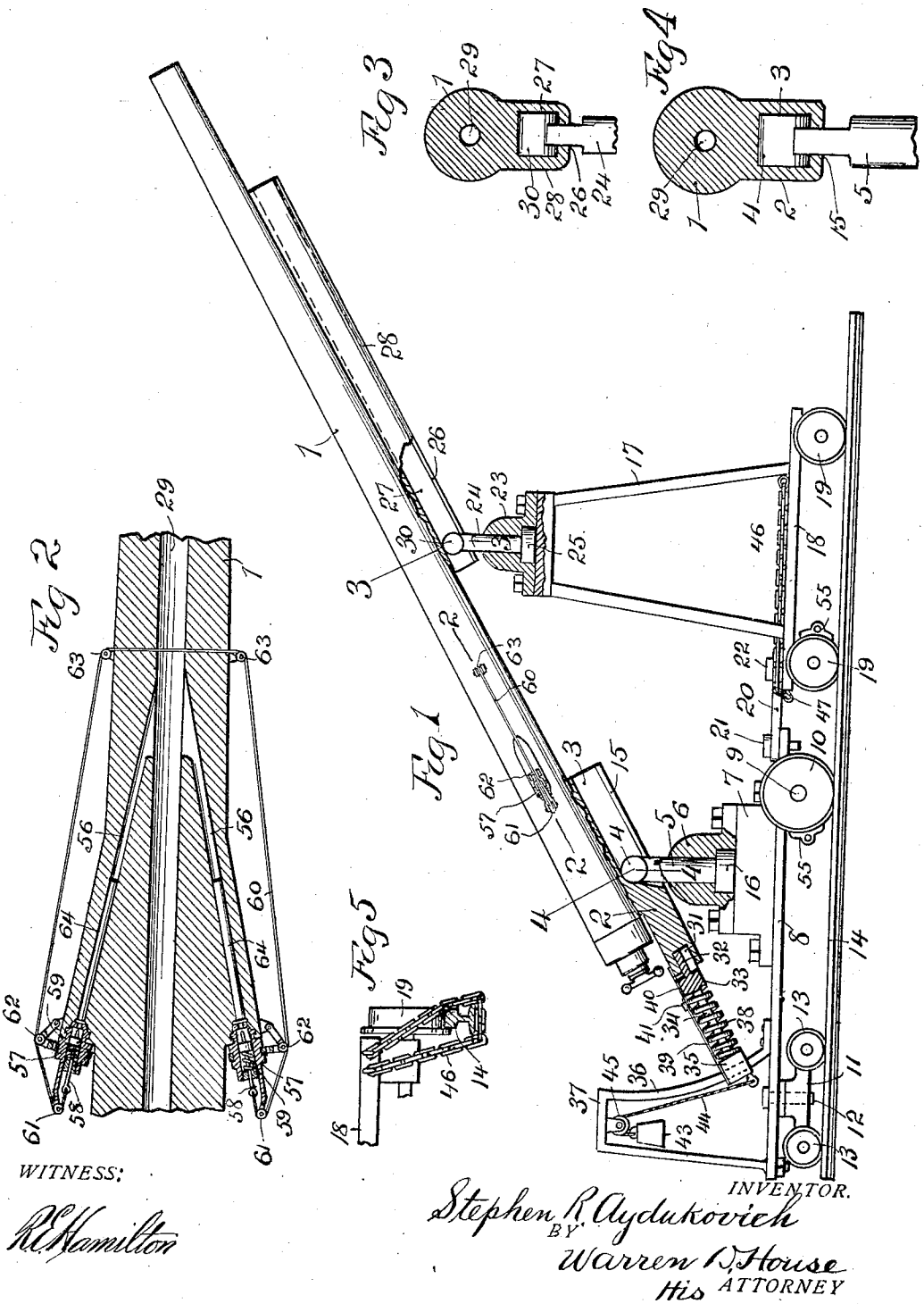
CANNON.

APPLICATION FILED JUNE 17, 1918.

1,320,111.

Patented Oct. 28, 1919.

2 SHEETS—SHEET 1.



WITNESS:

R. C. Hamilton

INVENTOR.

Stephen R. Aydukovich

BY

Warren D. House

His ATTORNEY

S. R. AYDUKOVICH.

CANNON.

APPLICATION FILED JUNE 17, 1918.

1,320,111.

Patented Oct. 28, 1919.

2 SHEETS—SHEET 2.

Fig 7

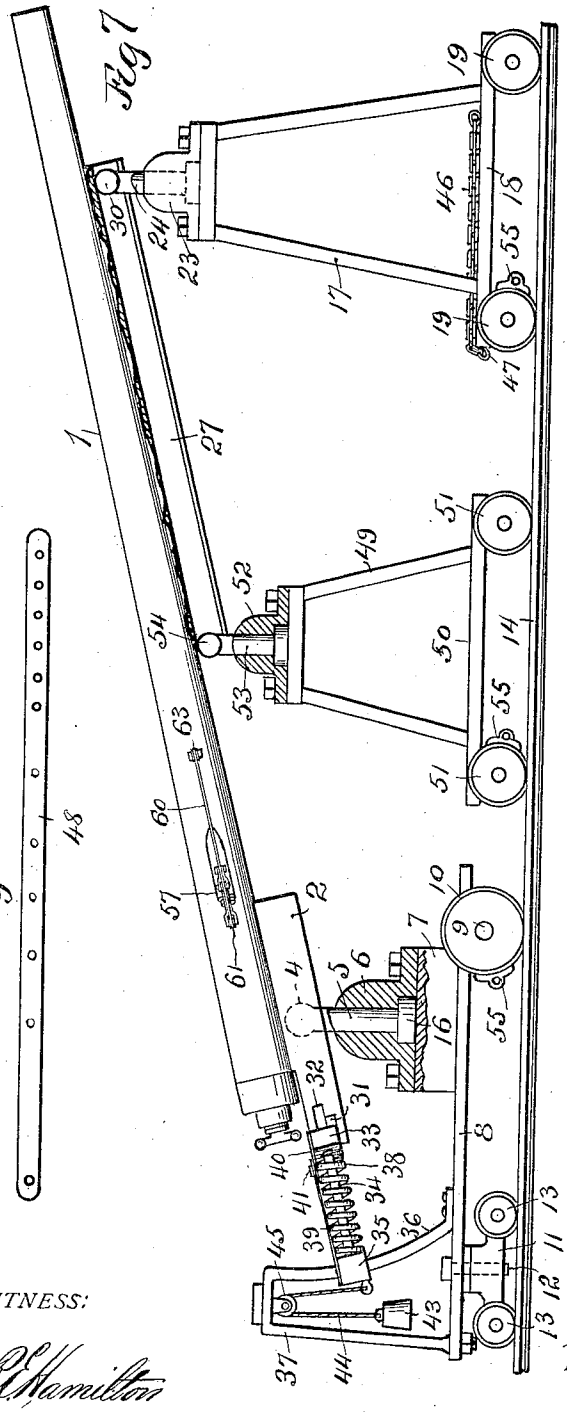
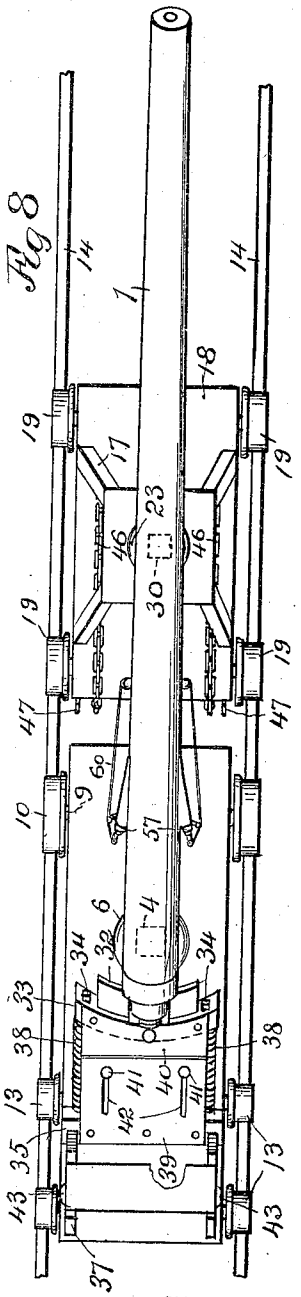


Fig 6

Fig 8



WITNESS:

R. C. Hamilton

INVENTOR.

Stephen R. Aydukovich

BY

Warren D. House

His ATTORNEY

UNITED STATES PATENT OFFICE.

STEPHEN R. AYDUKOVICH, OF KANSAS CITY, KANSAS.

CANNON.

1,320,111. Specification of Letters Patent. Patented Oct. 28, 1919.

Application filed June 17, 1918. Serial No. 240,458.

To all whom it may concern:

Be it known that I, STEPHEN R. AYDUKOVICH, a citizen of the United States, residing at Kansas City, in the county of Wyandotte and State of Kansas, have invented a certain new and useful Improvement in Cannon, of which the following is a specification.

My invention relates to improvements in cannon.

One of the objects of my invention is to provide a novel cannon which will be capable of throwing a heavy projectile a great distance.

A further object of my invention is to provide a cannon which, although made very large and heavy, can be easily transported over a track with sharp curves, and which may be readily raised and lowered, regardless of the position of the trucks which carry it.

Still another object of my invention is the provision of a novel support for the cannon, which permits the latter to recoil without injury and to be swung vertically and laterally.

My invention provides further novel means for taking up the recoil of the cannon.

Other novel features of my invention are hereinafter fully described and claimed.

In the accompanying drawing, which illustrates the preferred embodiment of my invention,

Figure 1 is a view partly in side elevation and partly in vertical section of my improved cannon, shown elevated to the firing position, and supported by one of the elevating trucks.

Fig. 2 is an enlarged longitudinal sectional view on the line 2—2 of Fig. 1.

Fig. 3 is a cross section, enlarged on the line 3—3 of Fig. 1.

Fig. 4 is a cross section, enlarged, on the line 4—4 of Fig. 1.

Fig. 5 is an enlarged detail in elevation of a portion of one of the elevating trucks shown chained to a rail which is shown in cross section.

Fig. 6 is a plan view of one of the coupling bars.

Fig. 7 is a view, partly in side elevation and partly in vertical section of my improved cannon shown mounted on both of the elevating trucks.

Fig. 8 is a plan view of the parts shown in Fig. 1.

Similar reference characters designate similar parts in the different views.

1 designates the barrel of the cannon, which is provided at its under side and rear end with a longitudinal extension 2, which at its forward end is provided with a longitudinal groove 3, in which is slidably mounted the transverse cylindrical head 4 of a vertical supporting member having a stem 5 which is rotatable on a vertical axis in a vertical hole of a block 6, which is bolted to the upper side of another block 7, which in turn is fastened to the upper side of a platform 8 of a supporting truck, which at its forward end is supported by an axle 9, to which are secured two car wheels 10. The rear end of the platform 8 is supported by a truck 11, which is centrally pivoted to the platform by a vertical king bolt 12, and which is provided with two pairs of car wheels 13, adapted to run upon the rails 14 of a suitable track, which also supports the wheels 10. The wheels 10 and 13 are provided with the usual flanges.

The groove 3 is provided at its lower side with a contracted portion 15 which forms a narrow slot through which the stem 5 extends and in which said stem is slidable lengthwise of the slot.

The lower end of the stem 5 is preferably provided with an enlarged cylindrical head 16, which holds the stem from any vertical movement.

For elevating the barrel 1, and for supporting it in different firing positions, and also to support it during its transportation from one place to another, I provide a truck frame 17, which is supported upon a platform 18 of another truck, the platform being supported upon two pairs of flanged car wheels 19 adapted to run on the track 14. The platform 18 is adapted to be coupled, when the cannon is in the firing position shown in Fig. 1 by a coupling bar 20 through the intermediacy of coupling pins 21 and 22 respectively engaging the platforms 8 and 18.

Mounted on the top of the frame 17 is a block 23 similar to the block 6 and having rotatably mounted in it on a vertical axis the stem 24 of a supporting member, which

at its lower end is provided with an enlarged cylindrical head 25 rotatably fitted in the block 23. The upper end of the stem 24 is slidably mounted in and extends through a longitudinal slot 26, which communicates with a longitudinal groove 27 which extends clear through a longitudinal extension 28, which is provided on the under side of the barrel 1 forward of and spaced apart from the extension 2.

The groove 27 is disposed, preferably, parallel with the bore 29 of the barrel and parallel with the groove 3.

The upper end of the stem 24 is provided with a horizontal transverse cylindrical head 30 which is fitted in and slidable longitudinally of the groove 27.

The manner of supporting the barrel 1 upon the cylindrical heads 4 and 30 of the supporting members 5 and 24 permits the barrel 1 to be vertically adjusted within its limit of movement, and also permits the trucks to follow the rails 14 regardless of sharp curves in the track. As the barrel is longitudinally slidable on the supporting heads 4 and 30, it is permitted to have an initial recoil when the cannon is fired and prior to the rearward movement of the supporting trucks due to the recoil of the barrel. By independently supporting the barrel at two points upon the two trucks, the barrel further serves the function afforded by the usual car body or frame work which ordinarily connects the trucks, and which applicant's construction eliminates, thus affording simplicity of construction and cheapness in manufacture.

For supporting the initial recoil of the barrel, irrespective of the position of the latter when fired, the following described mechanism may be employed.

The rear end of the extension 2 is provided with a transverse groove 31 in which is transversely slidable an arcuate flange 32 which is provided on the forward side of a transverse curved bar 33 which is slidably mounted on two longitudinal parallel bars 34 the rear ends of which are rigidly secured to a transverse bar 35 which is slidable on two curved upwardly extending bars 36, which form part of a suitable frame 37, which is rigidly fastened with the upper side and adjacent to the rear end of the platform 8.

Two coil springs 38 respectively encircle the bars 34 and bear at their rear ends against the bar 35. The forward ends of said coil springs bear against the rear side of the bar 33.

For supporting shells as they are being placed in the breech of the barrel 1, a flat plate 39 is secured at its rear end to the upper side of the bar 35 and rests at its forward end and is slidably mounted upon a flat plate 40, which is secured to the upper side of the bar 33 and which is provided with two upwardly extending headed pins 41, which extend through and are respectively slidable in two longitudinal slots 42 in the plate 39.

For counter-balancing the weight of the bar 35 and parts carried thereby, I provide two weights 43, which are respectively supported by one set of ends of two cables 44, which are respectively supported by two pulleys 45, which are attached to the frame 37.

The other ends of the cables 44 are attached to the bar 35. To elevate the gun barrel 1 from the position shown in Fig. 7, to that shown in Fig. 1, the truck frame 17 is held stationary, and the truck frame 8 is forced forwardly, by an engine, or any other suitable means, not shown, thus causing the head 30 to slide rearwardly in the groove 27 until the barrel has reached the desired inclination, see that shown in Fig. 1, at which time the truck platforms 8 and 18 are coupled together by the coupling bar 20.

To prevent the frame 17 from being tipped forwardly, the platform 18 may have secured to it one set of ends of two chains 46, which may be passed respectively around rails 14 and their free ends then engaged with two hooks 47 respectively, which are secured to the platform 18, as shown in Fig. 5.

If the cannon is now fired, the barrel 1 will in its recoil slide rearwardly on the heads 4 and 30, thereby forcing rearwardly the bar 33 and compressing the springs 38. The initial force of the recoil is spent upon the springs 38, the pressure being transmitted through the bar 35 and frame 37 to the platform 8, which is forced rearwardly and draws with it the platform 18.

The sliding connection of the extension 2 with the flange 32 and the sliding connection of the bar 35 with the bars 36 permits the barrel 1 to be swung vertically upon the heads 4 and 30 and also permits it to swing laterally on the stems 5 and 24 with respect to the truck platforms 8 and 18.

In order to permit free movement of the parts, the grooves 3 and 27, supporting members 5 and 24, flange 32 and bars 35 and 36 should be well lubricated.

When it is desired to lower the barrel 1, for transportation, or for other reasons, to the position shown in Fig. 7, the coupling 20 is removed and the truck frame 8 is withdrawn rearwardly, thus causing the head 30 to slide forwardly in the groove 27. The platforms 8 and 18 may then be coupled together by means of the coupling bar 48, shown in Fig. 6.

If it is desired to still further lower the barrel 1, so that it can pass under low bridges and through tunnels, there may be provided, as shown in Fig. 7, another truck

frame 49, similar to the truck frame 17, but lower, which is mounted on a platform 50, which is supported upon car wheels 51, which may be inserted between the platforms 8 and 18 and mounted upon the rails 14.

Mounted on the upper end of the frame 49 is a block 52 in which is rotatably mounted the vertical stem 53 of a supporting member, the upper end of which is provided with a transverse cylindrical head 54, which is adapted to be slipped into the rear end of the groove 27.

The frames 17 and 49 are then simultaneously moved forwardly, or the platform 8 is drawn rearwardly, while the frames 17 and 49 are held stationary. The head 30 will then pass out of the groove 27, after which the truck frame 17 may be moved forwardly. The truck frame 49 may then be held stationary and the platform 8 moved rearwardly to the desired position, thus lowering the forward end of the barrel, after which the platforms 8 and 50 are coupled together with the bar 48.

The cannon may then be transported to any other place, if desired. The universal joint connection between the barrel 1 and the frame 49 and platform 8 permits the trucks to follow the curves of the track. By moving the trucks to the proper position on a curve, the barrel may be swung to any desired angle laterally for the purpose of firing in a given direction.

If it is now desired to elevate the barrel to the position shown in Fig. 1, the truck frame 49 is moved toward the platform 8 until the barrel has reached an angle at which the head 30 can enter the forward end of the groove 27, at which time the truck frames 17 and 49 are simultaneously moved rearwardly or the platform 8 moved forwardly. The head 54 will pass out of the rear end of the groove 27, following which the truck frame 49 may be removed, and the frame 17 coupled to the platform 8 by means of the bar 20, as described hereinbefore.

Brake shoes 55 may be supplied to the wheels 10, 19 and 51 and operated by the usual brake mechanism, not shown, if desired.

The barrel 1 may be provided with two diametrically opposite accelerating chambers 56 disposed obliquely to and communicating at their forward ends with the bore 29, as shown in Fig. 2.

The rear ends of the chambers 56 are respectively closed by suitable breech blocks 57 of any ordinary type, and provided each with a central firing pin 58 normally forced forwardly by a coil spring 59. The pins 58 have attached to them the ends of a wire 60, which extends rearwardly around two pulleys 61 respectively carried by the breech block 57, and passing from thence forwardly over pulleys 62 carried respectively by the breech blocks 57, and thence forwardly and around two pulleys 63 mounted on opposite sides respectively of the barrel 1, and thence passing transversely through a transverse hole which passes through the barrel 1 and which intersects the bore 29.

When a charge is fired in the barrel 1, the shell passing through the barrel severs the wire 60, thus releasing the firing pins 58 which are forced forwardly by the springs 59, thereby effecting in the usual manner the discharge of charges 64 contained respectively in the chambers 56. The force of the exploded charges 64 is imparted to the rear end of the projectile after it passes the forward ends of the chambers 56. This force added to the force of the initial charge in the rear end of the barrel 1 will cause the projectile to pass from the barrel at such high velocity that it will be carried to a relatively great distance, depending upon the size of the gun and the amount of explosive forming the charges in the barrel and in the accelerating chambers.

Fresh charges are then inserted in the chambers 56, as well as in the barrel 1 through the breech thereof. A fresh wire is passed through the hole between the pulleys 63 and the firing pins 58 retracted to the position shown in Fig. 2 and held in the retracted position by attaching thereto the ends of the wire.

I do not limit my invention to the structure shown and described, as modifications, within the scope of the appended claims, may be made without departing from the spirit of my invention.

What I claim is:—

1. In a cannon, two trucks adapted for travel one in advance of the other on a track and to turn to the right or left independently of each other, a barrel, means for supporting the barrel on the rear truck so that the barrel may be swung vertically and laterally, and means for supporting the barrel on the front truck so that the barrel will be swung vertically when the trucks are moved toward or from each other.

2. In a cannon, two trucks movable toward and from each other, means for releasably connecting the trucks with each other so that they may move simultaneously in the same direction, a barrel pivotally mounted on one of the trucks, and means for engaging the other truck with the barrel so that the barrel will be swung vertically when the trucks are moved toward or from each other.

3. In a cannon, a pair of trucks, one movable toward or from the other, a barrel pivotally mounted on one of the trucks so as to swing vertically, and means by which the other truck may engage the barrel so as to swing the latter vertically when the trucks are moved toward or from each other.

4. In a cannon, two trucks, a barrel, and two supporting members respectively rotatably mounted on a vertical axes on said trucks and longitudinally slidably connected with the barrel.

5. In a cannon, two trucks, a barrel, and two supporting members respectively rotatably mounted on vertical axes on said trucks and longitudinally slidably connected with the barrel and pivoted to the barrel on horizontal axes.

6. In a cannon, two trucks, a barrel, and two supporting members of different height longitudinally slidably supporting the barrel and pivoted thereto on horizontal axes and supported respectively by said trucks.

7. In a cannon, two trucks, a barrel, and two supporting members of different height longitudinally slidably supporting the barrel and pivoted thereto on horizontal axes, and respectively pivoted on vertical axes on said trucks.

8. In a cannon, three trucks, a barrel, and three supporting means of different height longitudinally slidably connected with the barrel and pivoted thereto on horizontal axes and respectively pivoted to the trucks on vertical axes, two of the trucks being detachable from the barrel.

9. In a cannon, two trucks, a barrel, two supporting members respectively pivoted to the trucks on vertical axes and having different heights and slidable longitudinally with respect to and pivoted to the barrel on horizontal axes, and resilient means carried by one of the trucks for taking up recoil of the barrel.

10. In a cannon, two trucks adapted for travel on a track and to turn to the right or left independently of each other, a gun barrel, and two independent means respectively supported by said trucks for pivotally supporting said barrel at two points respectively.

11. In a cannon, two trucks adapted for travel on a track and to turn to the right or left independently of each other, a gun barrel, and two independent means respectively supported by said trucks and slidably engaging and pivotally supporting said barrel at two points respectively.

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

STEPHEN R. AYDUKOVICH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."