E. SCHNEIDER.

GUN MOUNTED ON WHEELED CARRIAGES.

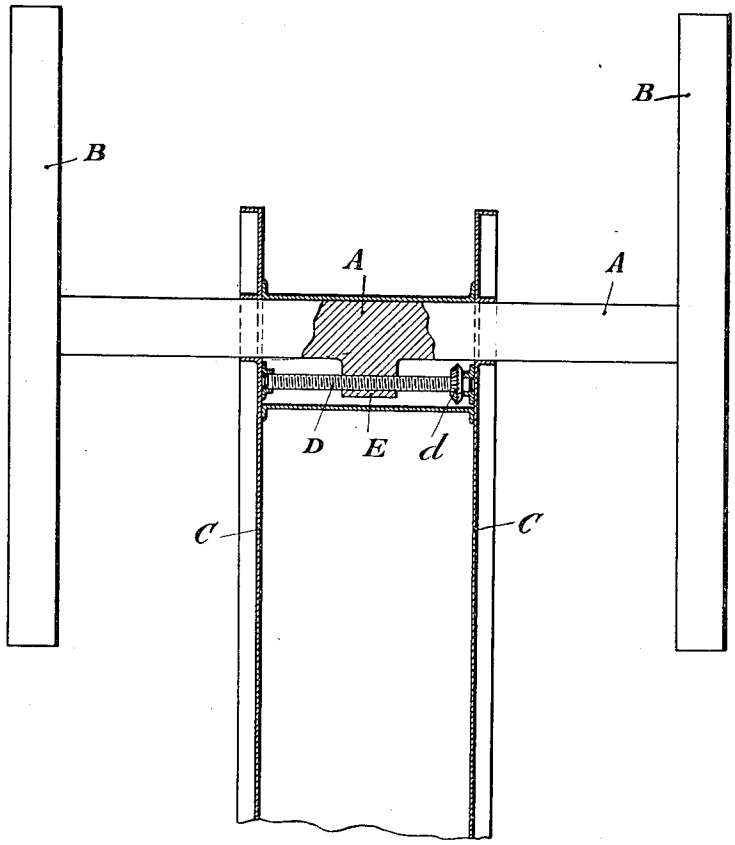
APPLICATION FILED OCT. 24, 1919.

1,358,656.

Patented Nov. 9, 1920.

9 SHEETS—SHEET 1.

Fig. 1.



Inventor -
Eugene Schneider,
By Mauro, Cameron, Lewis & Parkam
Attorneys.

E. SCHNEIDER.

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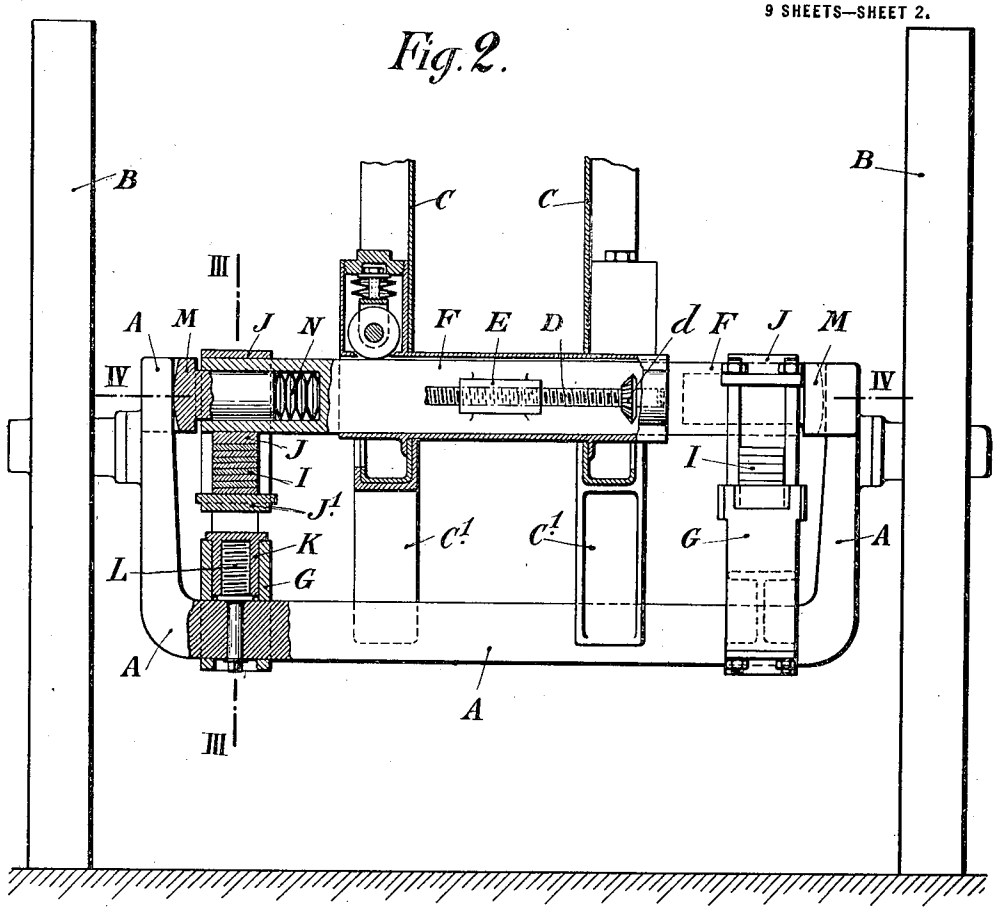
9 SHEETS—SHEET 2.

Fig. 2.



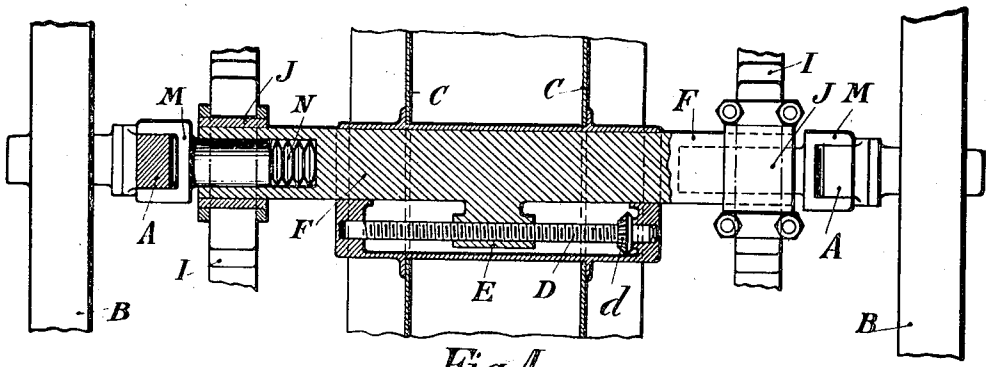


Fig. 4.

Inventor:-
Eugene Schneider,
By Mann, Conway, Lewis & Perkins
Attorneys.

E. SCHNEIDER.

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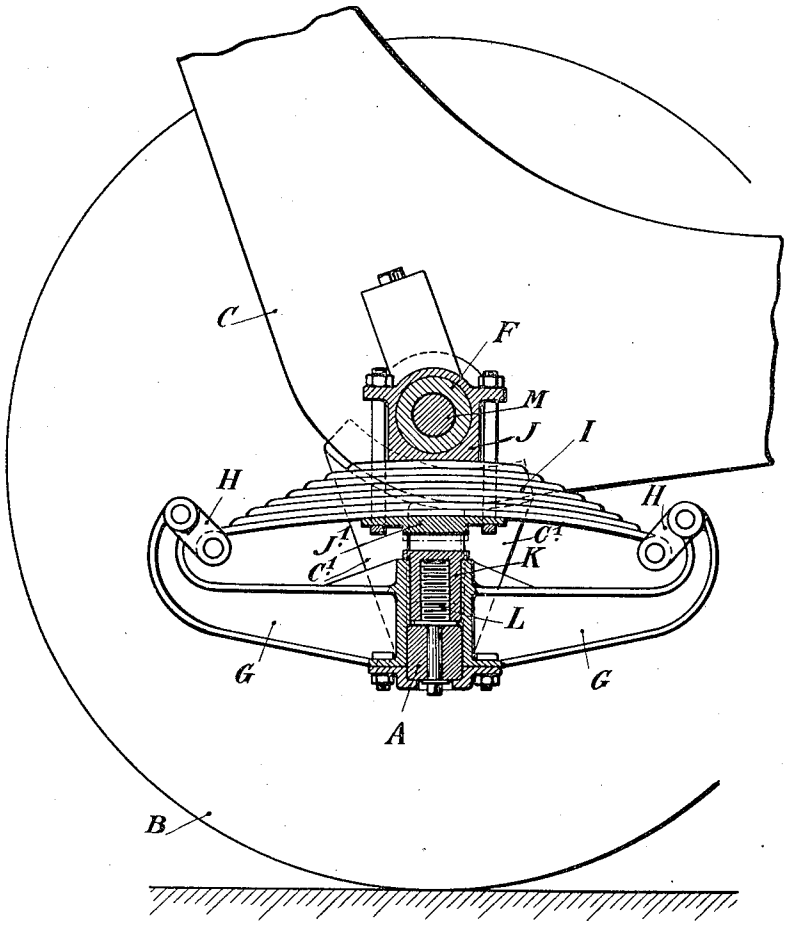
9 SHEETS—SHEET 3.

Fig. 3.



Inventor:-
Eugene Schneider,
By Mann, Cameron, Lewis & Perkins
Attorneys

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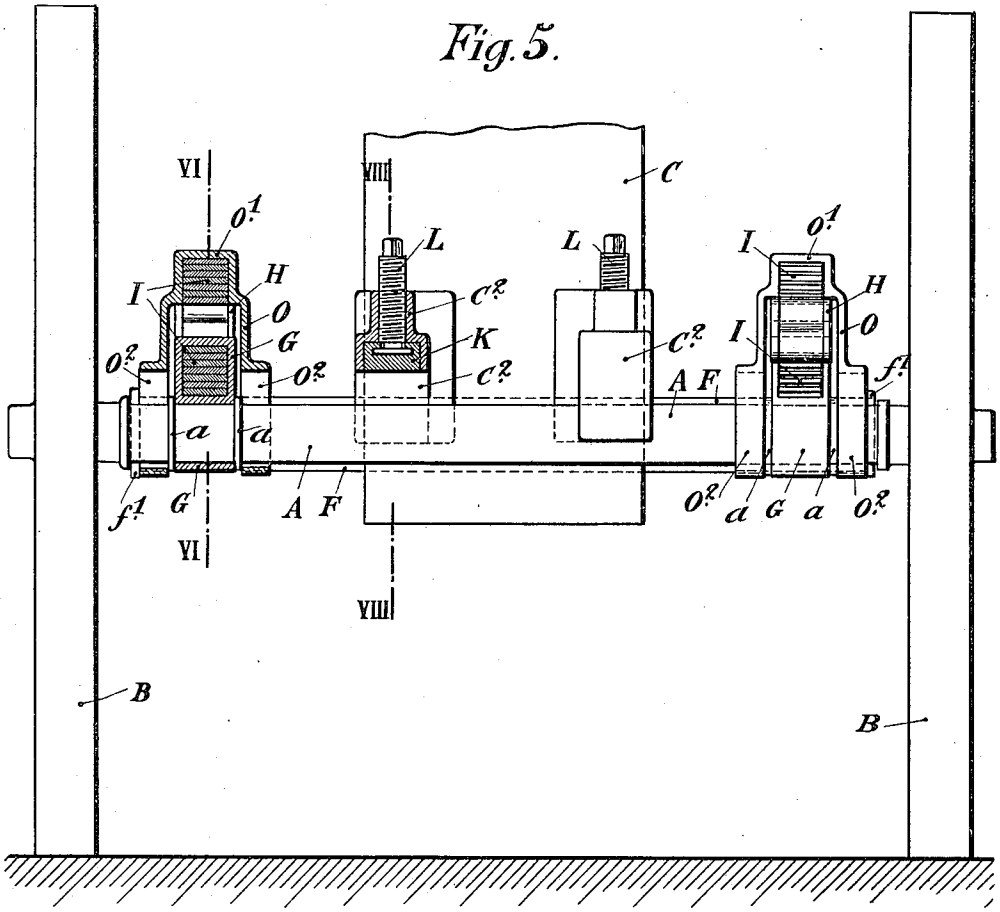
9 SHEETS—SHEET 4.

Fig. 5.



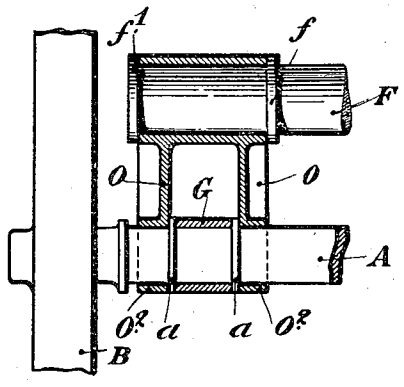


Fig. 7.

Inventor:-
Eugene Schneider
By Mains, Cameron & Lewis Clerks
Attorneys.

E. SCHNEIDER.

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9 SHEETS—SHEET 5.

Fig. 6.

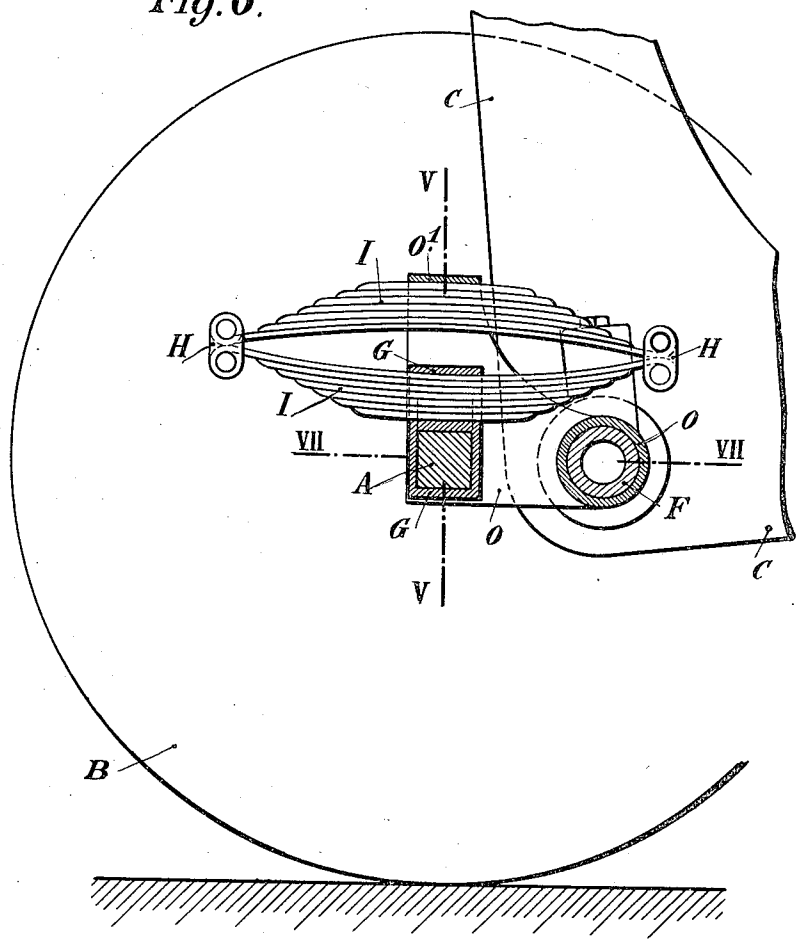
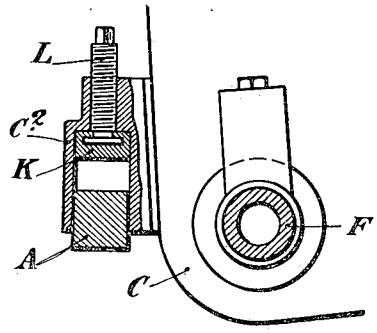


Fig. 8



Inventor:-
Eugene Schneider
By Mann, Cameron, Lewis & Perkins
Attorneys

E. SCHNEIDER.

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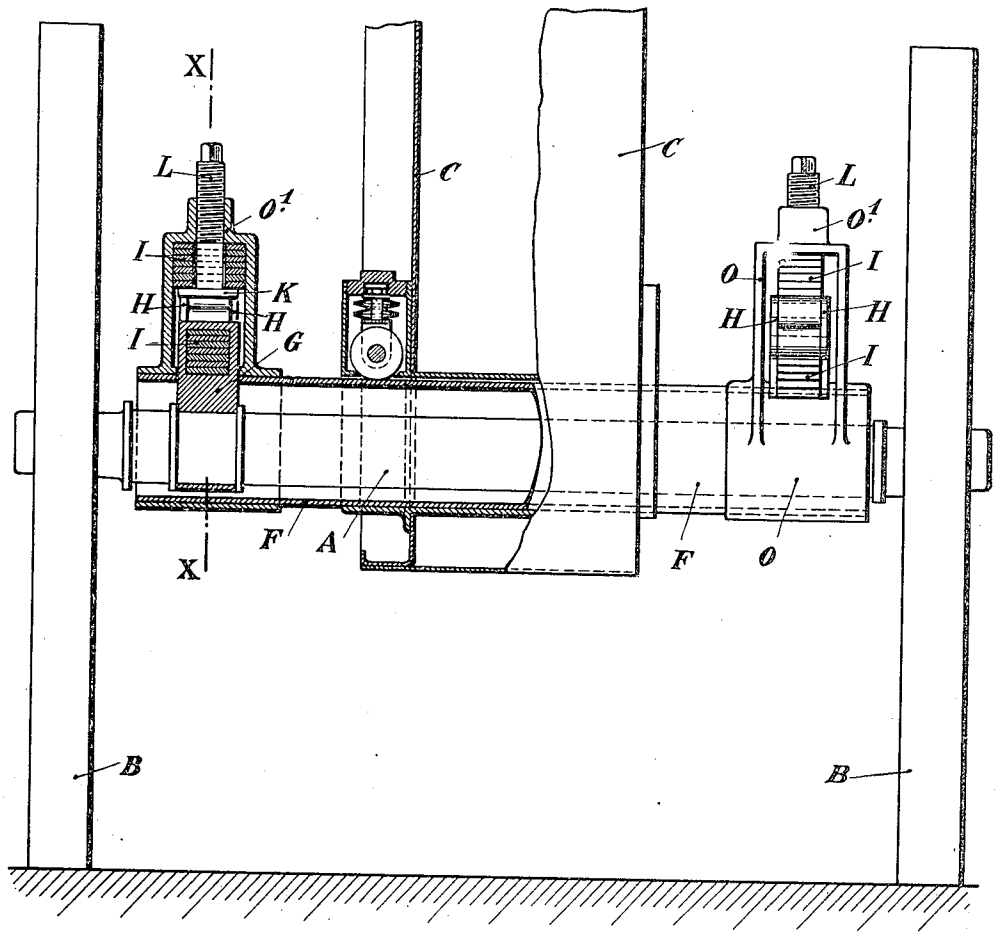
9 SHEETS—SHEET 6.

Fig. 9.



Inventor:
Eugene Schneider
By Mann, Cameron, Lewis & Perkins
Attorneys.

E. SCHNEIDER.

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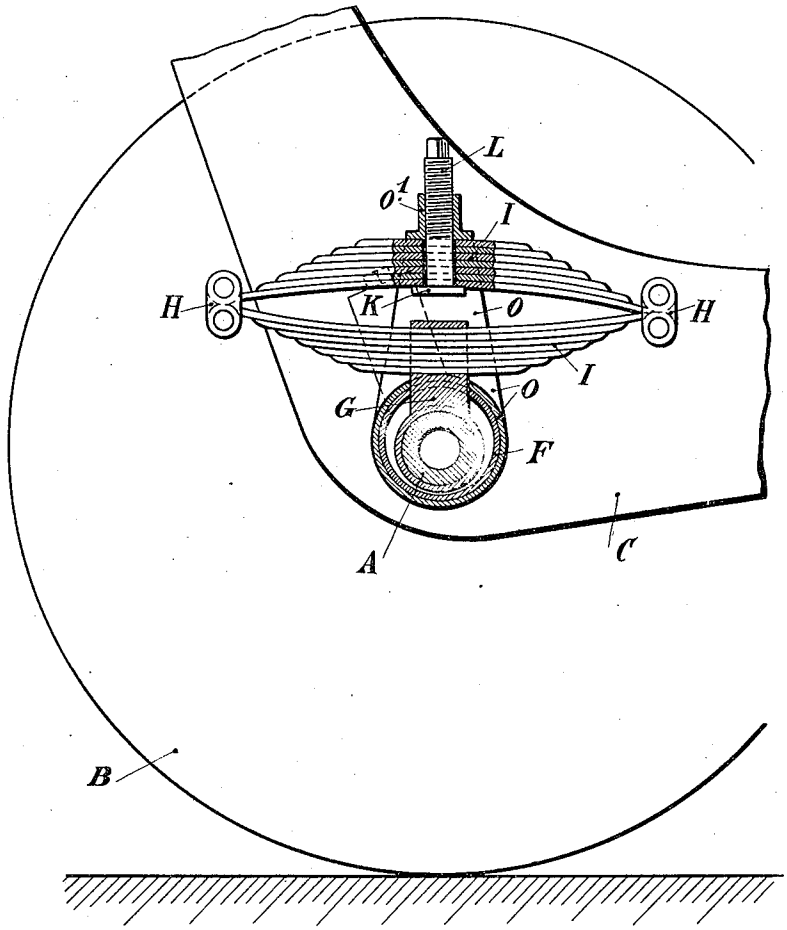
9 SHEETS—SHEET 7.

Fig. 10.



Inventor:-
Eugene Schneider
By Mann, Cameron, Lewis & Perkam
Attorneys

E. SCHNEIDER.

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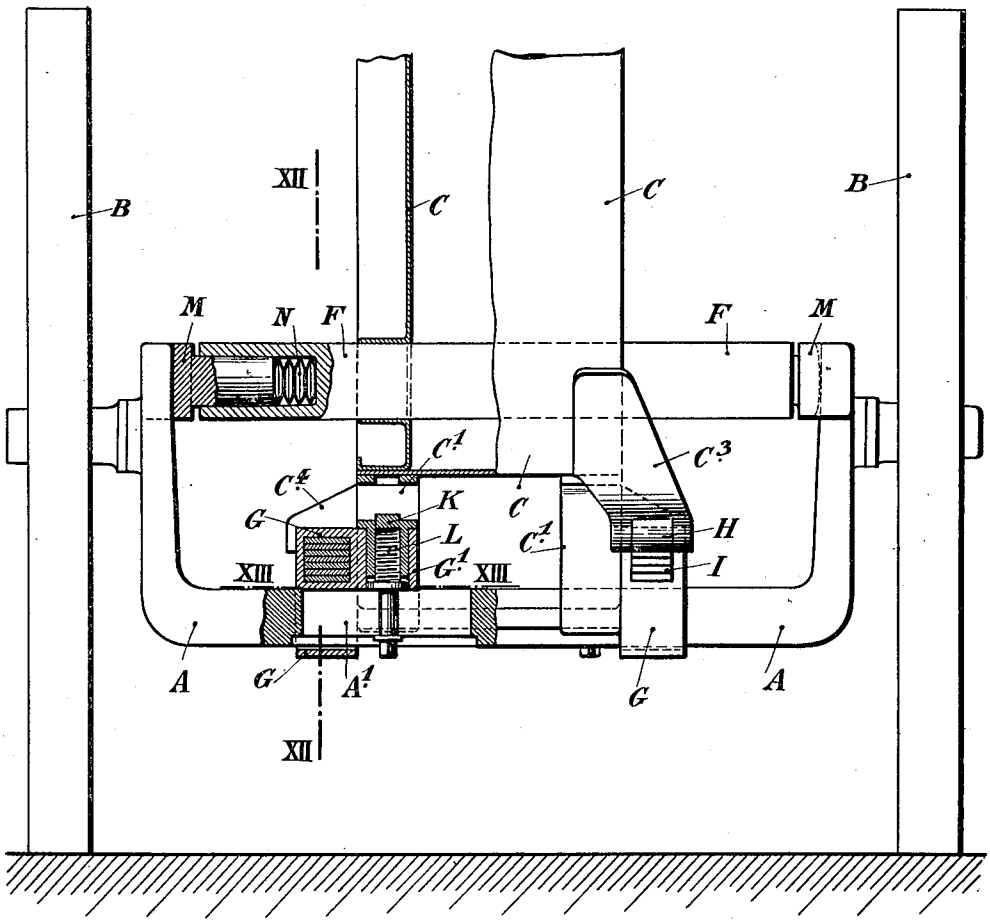
9 SHEETS—SHEET 8.

Fig. 11.



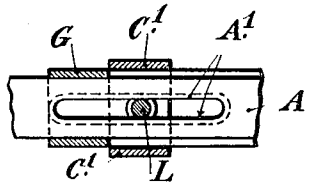


Fig. 13.

Inventor:-
Eugene Schneider
By Munn Cameron, Lewis & Parker
Attorneys.

E. SCHNEIDER.

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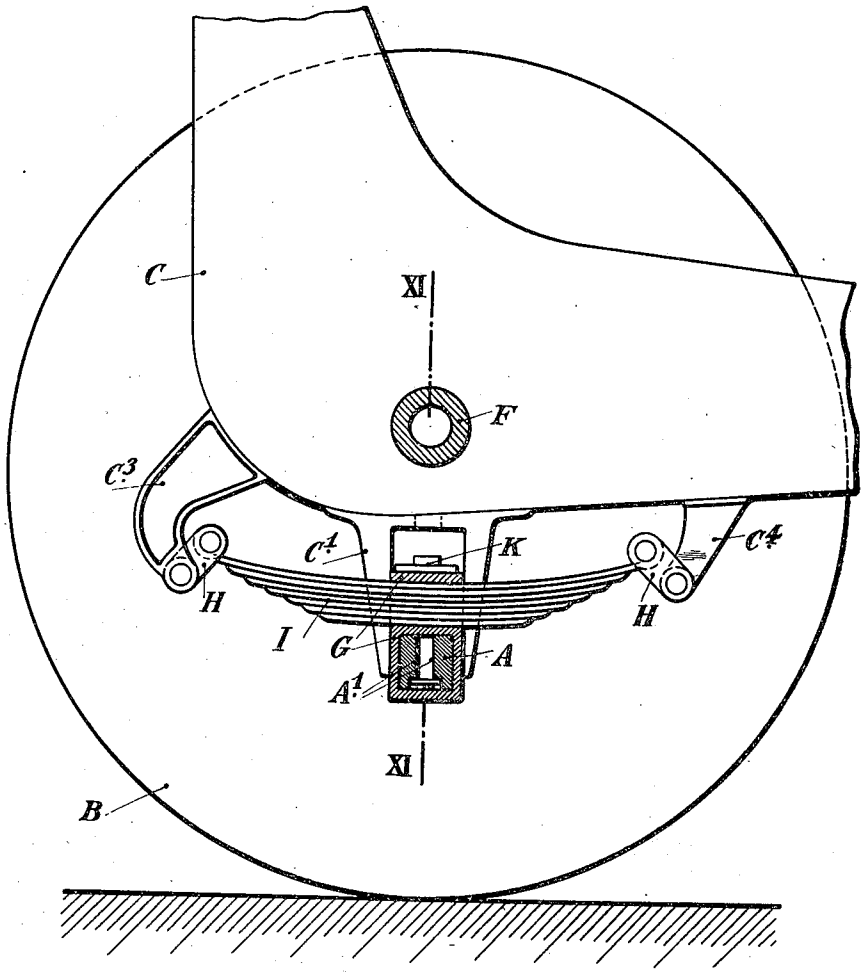
Patented Nov. 9, 1920.

9 SHEETS—SHEET 9.

Fig. 12.



Inventor:-
Eugene Schneider
By Mann, Cameron, Lewis & Kirkham,
Attorneys.

UNITED STATES PATENT OFFICE.

EUGENE SCHNEIDER, OF PARIS, FRANCE, ASSIGNOR TO SCHNEIDER & CIE., OF PARIS, FRANCE, A LIMITED JOINT-STOCK COMPANY OF FRANCE.

GUN MOUNTED ON WHEELED CARRIAGES.

1,358,656. Specification of Letters Patent. Patented Nov. 9, 1920.

Application filed October 24, 1919. Serial No. 333,101.

To all whom it may concern:

Be it known that I, EUGENE SCHNEIDER, a citizen of the Republic of France, a resident of Paris, in the Republic of France, have invented new and useful Improvements in or Relating to Guns Mounted on Wheeled Carriages, which invention is fully set forth in the following specification.

Wheeled gun carriages are known which are so constructed as to allow of the carriage body having a limited range of lateral movement between the wheels for the purpose of varying the training of the gun.

In those known gun carriages the said lateral movement is produced generally by the operation of a screw journaled in the head of the gun carriage, and working in a nut fixed to the carriage axle.

According to the present invention, the head of the carriage, instead of sliding directly along the axle, is constructed to slide along a cross-piece or auxiliary axle, for instance as a result of the operation of a screw working in a nut carried by the said cross-piece. Springs for supporting elastically the combined gun carriage and cross-piece or auxiliary axle during transport, are arranged between the said cross-piece and the axle or between the gun carriage body and the axle. Movable locking pieces permit in one case the cross-piece or auxiliary axle, and in the other case the carriage body, to bear directly upon the axle in firing.

Shortly described, the present invention consists in providing means for sliding the gun carriage along the axle for the purpose of altering the training, while at the same time providing means for suspending elastically the gun carriage during transport.

Various constructional forms of this invention are illustrated by way of example in the accompanying drawings.

Figure 1 is a plan partly in horizontal section of the usual ordinary wheeled gun carriage constructed to allow of the carriage sliding along the axle for the purpose of altering the training.

Figs. 2, 3 and 4 illustrate a first constructional form of the invention.

Fig. 2 is a view partly in vertical section and partly in elevation showing one constructional form of the invention.

Fig. 3 is a view partly in elevation and partly in vertical cross-section on the line III—III of Fig. 2.

Fig. 4 is a view partly in plan and partly in horizontal cross-section on the line IV—IV of Fig. 2.

Figs. 5, 6, 7 and 8 illustrate a second constructional form of the invention.

Fig. 5 is a view partly in elevation and partly in vertical section on the line V—V of Fig. 6, that is along the axis of the main or wheeled axle.

Fig. 6 is a view partly in elevation and partly in vertical cross-section on the line VI—VI of Fig. 5.

Fig. 7 is a horizontal section on the line VII—VII of Fig. 6.

Fig. 8 is a section on the line VIII—VIII of Fig. 5.

Figs. 9 and 10 show a third constructional form of the invention.

Fig. 9 is a view partly in elevation and partly in vertical cross-section along the main wheeled axle.

Fig. 10 is a section on the line X—X of Fig. 9.

Figs. 11, 12 and 13 show a fourth constructional form of the invention.

Fig. 11 is a view partly in elevation and partly in vertical cross-section on the line XI—XI of Fig. 12.

Fig. 12 is a vertical cross-section on the line XII—XII of Fig. 11.

Fig. 13 is a horizontal section on the line XIII—XIII of Fig. 11.

In the known wheeled gun carriage constructed to permit the sliding of the carriage along the wheeled axle for training purposes, as shown in Fig. 1, A is the gun carriage axle carrying the wheels B, B. C, C are the side frame plates of the gun carriage, in which is journaled a screw D working in a nut E that is fixed to the axle A.

The lateral motion of the carriage C for the purpose of altering the training, is produced by actuating the screw D by means of a suitable gear terminating for instance at a bevel pinion *d*.

According to the constructional form shown in Figs. 2–4 of this invention, the sliding motion of the carriage C—C, instead of taking place directly along the axle A of the carriage wheels, takes place along a false or auxiliary axle F which carries for this purpose a nut E in which works a screw D journaled in the side frame plates C.

The false axle F rests on the wheeled axle

A through the medium of elastic suspensory devices, so that in transport, the arrangement provides an elastic suspension of a combined gun carriage and false axle F upon the axle A.

In the example shown, the axle A carries two cross-pieces G to the ends of which are pivotally jointed the links H. To the other end of these links are pivotally connected the ends of the longest leaf of a pile of leaf-springs I the buckle J of which is carried by the false axle F.

The springs I are adapted to be rendered inoperative during firing. For this purpose locking pieces K working in the cross-pieces G, are adapted to be brought into contact with blocks J^1 by the screwing of their internal screw-threads along a screw L which is journaled in the axle A and which is operated by means of a key.

The transverse movements of the false axle F during transport, can be limited by means of spring buffers M, N, lodged in recesses formed in the ends of the said false axle F. These spring buffers also serve to absorb the jar occasioned by the transverse movement of the carriage on the auxiliary axle.

A connection between the false axle and the carriage wheel axle for the purpose of drawing the latter along during transport, may be produced as shown, by holding the false axle between two pairs of jaws C^1 fixed to the carriage side frame plate C. Further, the outer ends of the buffers M are constructed as forks embracing between their prongs projections formed on the axle A.

In the example just described, the axle A combined with the false axle F, is made as shown of a dropped frame formation having a straight horizontal cross-piece and vertical arms, so as to enable the false axle to be situated on a level with the axle body.

In the constructional form shown in Figs. 5–8, the false axle F is arranged substantially in the horizontal plane of the straight axle A. On each end of the false axle F, between two collars *f*, f^1, there is provided a bracket O serving as a support by means of a stirrup piece O^1, for a leaf-spring I, the lower bundle of springs of which is attached by means of a block G to the axle A. The bracket $O—O^1$ is guided on the axle A by two slides O^2. The arrangement comprises, as in the previous example, locking pieces K which allow of relieving the springs in firing, by causing the carriage C to rest directly upon the axle A. These locking pieces K are guided in this construction in boxes C^2 which are fixed to the carriage side plates C and are carried by operating screws L working in tapped screw-threads in the said boxes.

To slide the carriage for the purpose of altering the training of the gun, the false axle F comprises, as in the preceding example, a nut E, not shown, in which a screw D is adapted to work that is journaled in the carriage side plates C.

The blocks G are preferably held between two collars *a* of the axle A.

Figs. 9 and 10 show another constructional example wherein the false axle F has the form of a sleeve surrounding the carriage axle A.

The elastic suspension between the axle A and the false axle F comprises leaf springs I connected by links H. The lower bundle of springs is attached by means of a block G to the axle A, while the upper bundle of springs bears against the bottom of a stirrup $O^1—O$ slipped on the end of the tubular false axle F. In this arrangement, the blocks G are guided in the stirrups O. The locking pieces K are formed on the ends of screw spindles L working in a tapped screw-thread formed on the stirrup $O^1—O$.

Figs. 11, 12 and 13 show a constructional form wherein the combined carriage C and false or auxiliary axle F on which the latter slides for altering the training, are suspended elastically by springs I interposed between the carriage body C and the main wheeled axle A.

With this object, the carriage body is provided with brackets C^3, C^4 to which are pivoted links H that are pivoted at their other ends to the top leaf of the bundle of springs I that are connected in their middle by blocks G mounted on the square axle A in such a manner as to be capable of sliding along the latter. This axle is formed with two slots A^1 through which pass rods having their screw-threaded upper portions L engaged in a tapped locking piece K which can be brought into contact with the carriage body in such a manner as to relieve the springs I during the firing. The locking pieces K are guided in lodgments G^1 projecting from the blocks G.

In this example the carriage wheel axle A is dropped or U-shaped, as in the example shown in Figs. 2 to 4, and the false or auxiliary axle F is constructed in all respects similarly to the false axle of the said example. The false axle carries a nut E, as in Figs. 2 and 4 in which works a screw D for producing the lateral sliding movement of the gun carriage. In this sliding movement the blocks G as well as the rods L carrying the locking pieces K, are moved to slide along the carriage wheel axle A. The axle A is taken along for transport by the same means as shown in the example illustrated in Figs. 2 to 4.

In placing the gun for firing, the tail of the carriage trail (not shown) is pivoted to the ground in the usual manner. Preliminarily to firing, the bolts L are turned to

move the members K to form a direct bearing between the two axles, or between the carriage and the main axle, to relieve the springs of the load of the carriage. In training the gun, the head of the carriage is moved along the auxiliary axle F to the desired position. During this adjustment of the carriage head, the carriage, as a whole, pivots on the anchored tail of the trail. As the gun is trained, the movement of the carriage head along the auxiliary axle will cause a slight shifting in the position of the main axle relatively to the trail pivot and the supporting wheels B will turn slightly to accommodate this shifting of the main axle. Preliminarily to transport, the carriage is moved to midway position on the auxiliary axle and the bolts L are turned to move the plates K to eliminate the direct bearing between the main axle and the auxiliary, or between the main axle and the carriage, thereby interposing the springs I to carry the load of the carriage.

What I claim is:

1. In a gun mounting, a wheeled main axle, an auxiliary axle movable to and from the main axle in parallel relation thereto, a carriage transversely slidable on the auxiliary axle for training the gun, springs supporting the carriage on the main axle during transport, and adjustable means for relieving the springs of the carriage load during firing.

2. In a gun mounting, a wheeled main axle, an auxiliary axle movable to and from the main axle in parallel relation thereto, a carriage transversely slidable on the auxiliary axle for training the gun, springs supporting the carriage on the main axle during transport, and adjustable means for relieving the springs of the carriage load during firing and also operative to provide a direct bearing for the carriage on the main axle to transmit the shock of discharge from the carriage to the main axle without the interposition of the springs.

3. In a gun mounting, a wheeled main axle, an auxiliary axle movable to and from the main axle in parallel relation thereto, a carriage transversely slidable on the auxiliary axle for training the gun, springs interposed between the main and auxiliary axles to support the carriage on the main axle during transport, and adjustable means operative to provide a direct bearing for the auxiliary axle on the main axle to relieve the springs of the carriage load during firing.

4. In a gun mounting, a wheeled main axle, an auxiliary axle movable to and from the main axle in parallel relation thereto, a carriage transversely slidable on the auxiliary axle for training the gun, spring buffers at the ends of the auxiliary axle to restrict the longitudinal movement of said auxiliary axle and also operating to absorb the jar from the transverse movement of the carriage, springs supporting the carriage on the main axle during transport, and adjustable means for receiving the supporting springs of the carriage load during firing and also operative to provide a direct bearing for the carriage on the main axle to transmit the shock of discharge from the carriage to the main axle without the interposition of the supporting springs.

5. In a gun mounting, a wheeled main axle, an auxiliary axle movable to and from the main axle in parallel relation thereto, a carriage transversely slidable on the auxiliary axle for training the gun, spring buffers at the ends of the auxiliary axle to restrict longitudinal movement of said auxiliary axle and also operating to absorb the jar from the transverse movement of the carriage, springs interposed between the main and auxiliary axles to support the carriage on the main axle during transport, and adjustable means operative to relieve the supporting springs of the carriage load during firing.

6. In a gun mounting, a wheeled main axle, an auxiliary axle movable to and from the main axle in parallel relation thereto, a carriage transversely slidable on the auxiliary axle for training the gun, spring buffers at the ends of the auxiliary axle to restrict longitudinal movement of said auxiliary axle and also operating to absorb the jar from the transverse movement of the carriage, springs interposed between the two axles to support the carriage on the main axle during transport, and adjustable means interposed between the two axles operative to form a direct bearing between said axles to relieve the supporting springs of the carriage load during firing and also to transmit the shock of discharge from the auxiliary axle carrying the carriage to the main axle.

7. In a gun mounting, a wheeled main axle, an auxiliary axle movable to and from the main axle in parallel relation thereto, a carriage transversely slidable on the auxiliary axle for training the gun, springs interposed between the two axles to support the carriage on the main axle during transport, and adjustable means interposed between the two axles operative to form a direct bearing between said axles to relieve the supporting springs of the carriage load during firing and also to transmit the shock of discharge from the auxiliary axle carrying the carriage to the main axle.

8. In a gun mounting, a wheeled main axle having a dropped frame formation comprising a straight horizontal cross-piece with upright ends, an auxiliary axle movable between the upright ends of the main axle and in parallel relation to the horizon-

tal cross-piece thereof, guides on the ends of the auxiliary axle engaging the upright ends of the main axle to guide the auxiliary axle in its movements to and from the horizontal cross-piece, a carriage transversely slidable on the auxiliary axle for training the gun, springs to support the carriage on the main axle during transport, and adjustable means for relieving the springs of the carriage load during firing and also operative to provide a direct bearing for the carriage on the main axle to transmit the shock of discharge from the carriage to the main axle without the interposition of the supporting springs.

9. In a gun mounting, a wheeled main axle having a dropped frame formation comprising a straight horizontal cross-piece with upright ends, an auxiliary axle movable between the upright ends of the main axle and in parallel relation to the horizontal cross-piece thereof, a carriage transversely slidable on the auxiliary axle for training the gun, spring buffers at the ends of the auxiliary axle and engaging the upright ends of the main axle to guide the auxiliary axle in its movements to and from the horizontal cross-piece of the main axle and also operating to absorb the jar from the transverse movement of the carriage, springs interposed between the two axles to support the carriage on the main axle during transport, and adjustable means for relieving the supporting springs of the carriage load during firing and also operative to provide a direct bearing for the carriage on the main axle to transmit the shock of discharge from the carriage to the main axle without the interposition of the supporting springs.

10. In a gun mounting, a wheeled main axle having a dropped frame formation comprising a straight horizontal cross-piece with upright ends, an auxiliary axle movable between the upright ends of the main axle and in parallel relation to the horizontal cross-piece thereof, guides on the ends of the auxiliary axle engaging the upright ends of the main axle for guiding the auxiliary axle in its movement to and from the horizontal cross-piece, a carriage transversely slidable on the auxiliary axle for training the gun, springs interposed between the two axles to support the carriage on the main axle during transport, and adjustable means interposed between the two axles for relieving the springs of the carriage load during firing and also operative to provide a direct bearing between the two axles to transmit the shock of discharge from the carriage through the auxiliary axle to the main axle without the interposition of the springs.

11. In a gun mounting, a wheeled main axle having a dropped frame formation comprising a straight horizontal cross-piece with upright ends, an auxiliary axle movable between the upright ends of the main axle and in parallel relation to the horizontal cross-piece thereof, a carriage transversely slidable on the auxiliary axle for training the gun, spring buffers at the ends of the auxiliary axle and engaging the upright ends of the main axle to guide the auxiliary axle in its movements to and from the horizontal cross-piece of the main axle and also operating to absorb the jar from the transverse movement of the carriage, springs interposed between the two axles to support the carriage on the main axle during transport, and adjustable means interposed between the two axles for relieving the supporting springs of the carriage load during firing and also operative to provide a direct bearing between the two axles to transmit the shock of discharge from the auxiliary axle carrying the carriage to the main axle without the interposition of the supporting springs.

12. In a gun mounting, a wheeled main axle, an auxiliary axle movable to and from the main axle in parallel relation thereto, a carriage transversely slidable on the auxiliary axle for training the gun, springs to support the carriage on the main axle during transport, adjustable means for relieving the springs of the carriage load during firing and also operative to provide a direct bearing for the carriage on the main axle to transmit the shock of discharge from the carriage to the main axle without the interposition of the springs, and means for forming a traction connection between the carriage and the main axle so that a propelling force applied to one will be imparted to the other and at the same time permit the relative movement between the two axles.

13. In a gun mounting, a wheeled main axle, an auxiliary axle movable to and from the main axle in parallel relation thereto, a carriage transversely slidable on the auxiliary axle for training the gun, springs to support the carriage on the main axle during transport, adjustable means for relieving the springs of the carriage load during firing and also operative to provide a direct bearing for the carriage on the main axle to transmit the shock of discharge from the carriage to the main axle without the interposition of the springs, and jaws on the carriage having a sliding engagement with the main axle to form a traction connection between the carriage and the main axle so that a propelling force applied to one will be imparted to the other and at the same time permit the relative movement between the two axles and sliding movement of the carriage on the auxiliary axle.

14. In a gun mounting, a wheeled main

axle having a dropped frame formation comprising a straight horizontal cross-piece with upright ends, an auxiliary axle movable between the upright ends of the main axle and in parallel relation to the horizontal cross-piece thereof, guides on the ends of the auxiliary axle engaging the upright ends of the main axle to guide the auxiliary axle in its movements to and from the horizontal cross-piece, a carriage transversely slidable on the auxiliary axle for training the gun, springs to support the carriage on the main axle during transport, adjustable means for relieving the springs of the carriage load during firing and also operative to provide a direct bearing for the carriage on the main axle to transmit the shock of discharge from the carriage to the main axle without the interposition of the supporting springs, and jaws on the carriage having a sliding engagement with the horizontal cross-piece of the main axle to form a traction connection between the carriage and the main axle so that a propelling force applied to one will be imparted to the other and at the same time permitting the sliding of the carriage on the auxiliary axle and the relative movement between the two axles.

15. In a gun mounting, a wheeled main axle having a dropped frame formation comprising a straight horizontal cross-piece with upright ends, an auxiliary axle movable between the upright ends of the main axle and in parallel relation to the horizontal cross-piece thereof, guides on the ends of the auxiliary axle engaging the upright ends of the main axle to guide the auxiliary axle in its movements to and from the horizontal cross-piece, a carriage transversely slidable on the auxiliary axle for training the gun, springs interposed between the auxiliary axle and the horizontal cross-piece of the main axle to support the carriage on the main axle during transport, adjustable means interposed between the auxiliary axle and the horizontal cross-piece of the main axle for relieving the springs of the carriage load during firing and also operative to provide a direct bearing between the two axles to transmit the shock of discharge from the auxiliary axle carrying the carriage to the main axle without the interposition of the springs, and jaws on the carriage having a sliding engagement with the horizontal cross-piece of the main axle to form a traction connection between the carriage and the main axle so that a propelling force applied to one will be imparted to the other and at the same time permitting the sliding of the carriage on the auxiliary axle and the relative movement between the two axles.

In testimony whereof I have signed this specification.

EUGENE SCHNEIDER.

Witnesses:

ANDRÉ MOSTICKER,

CHAS. P. PRESSLY.