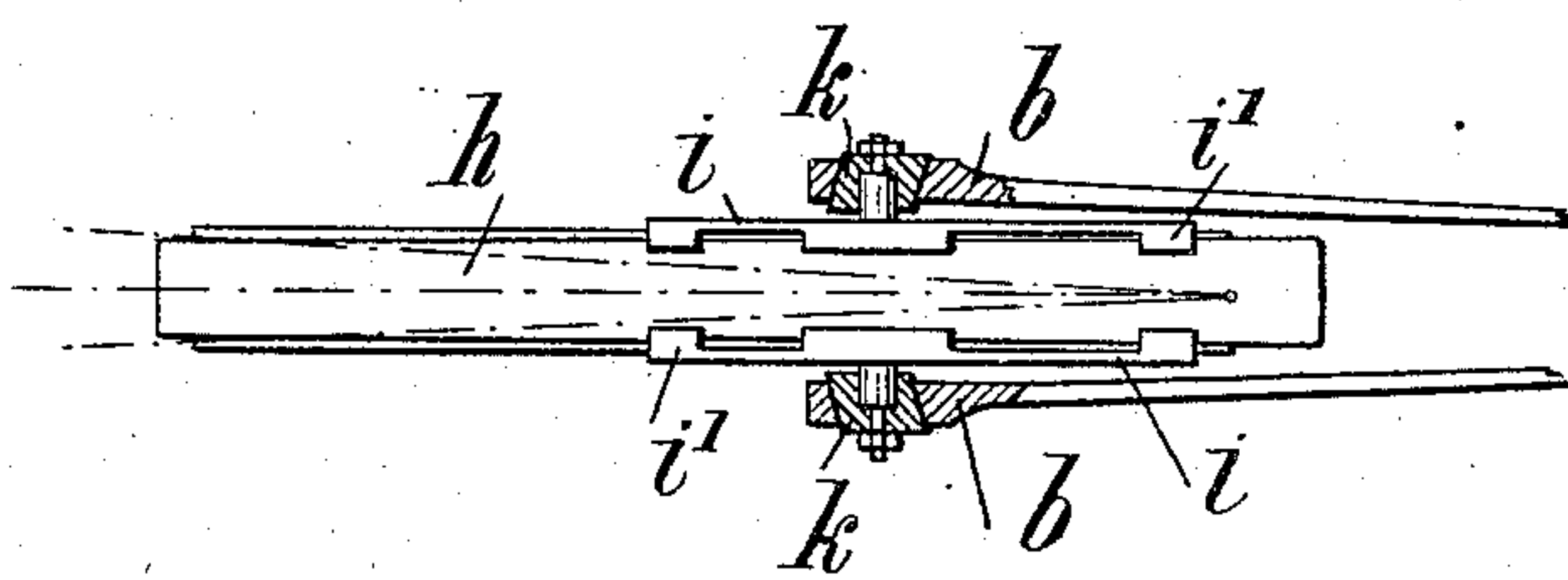
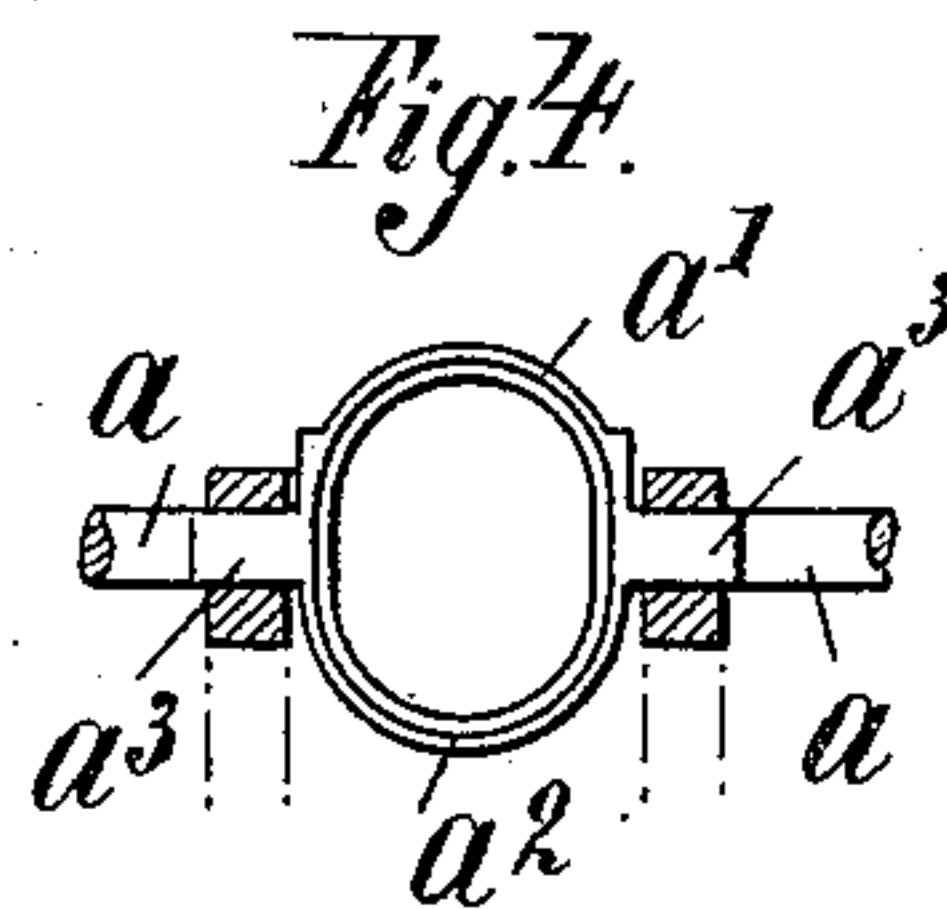
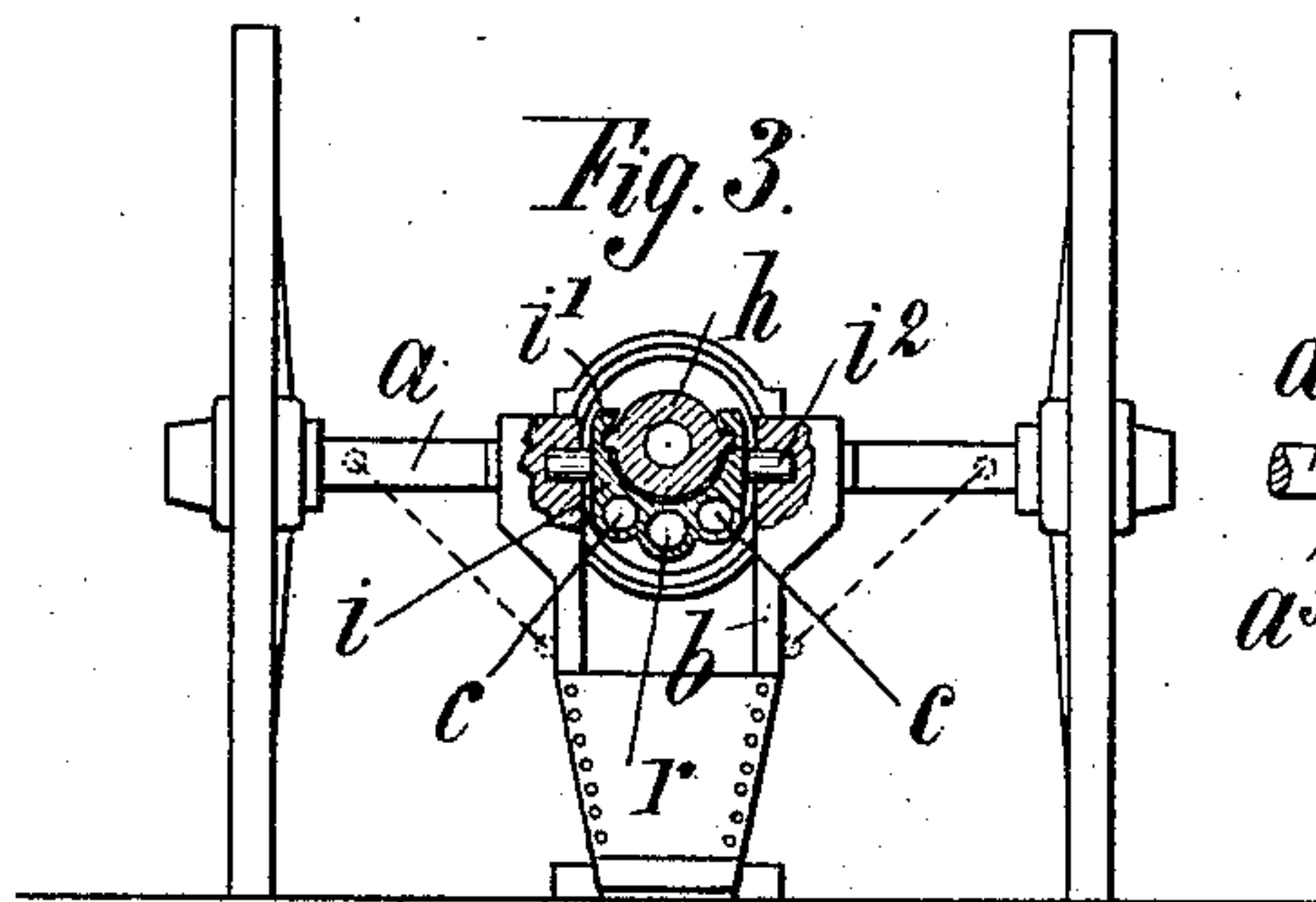
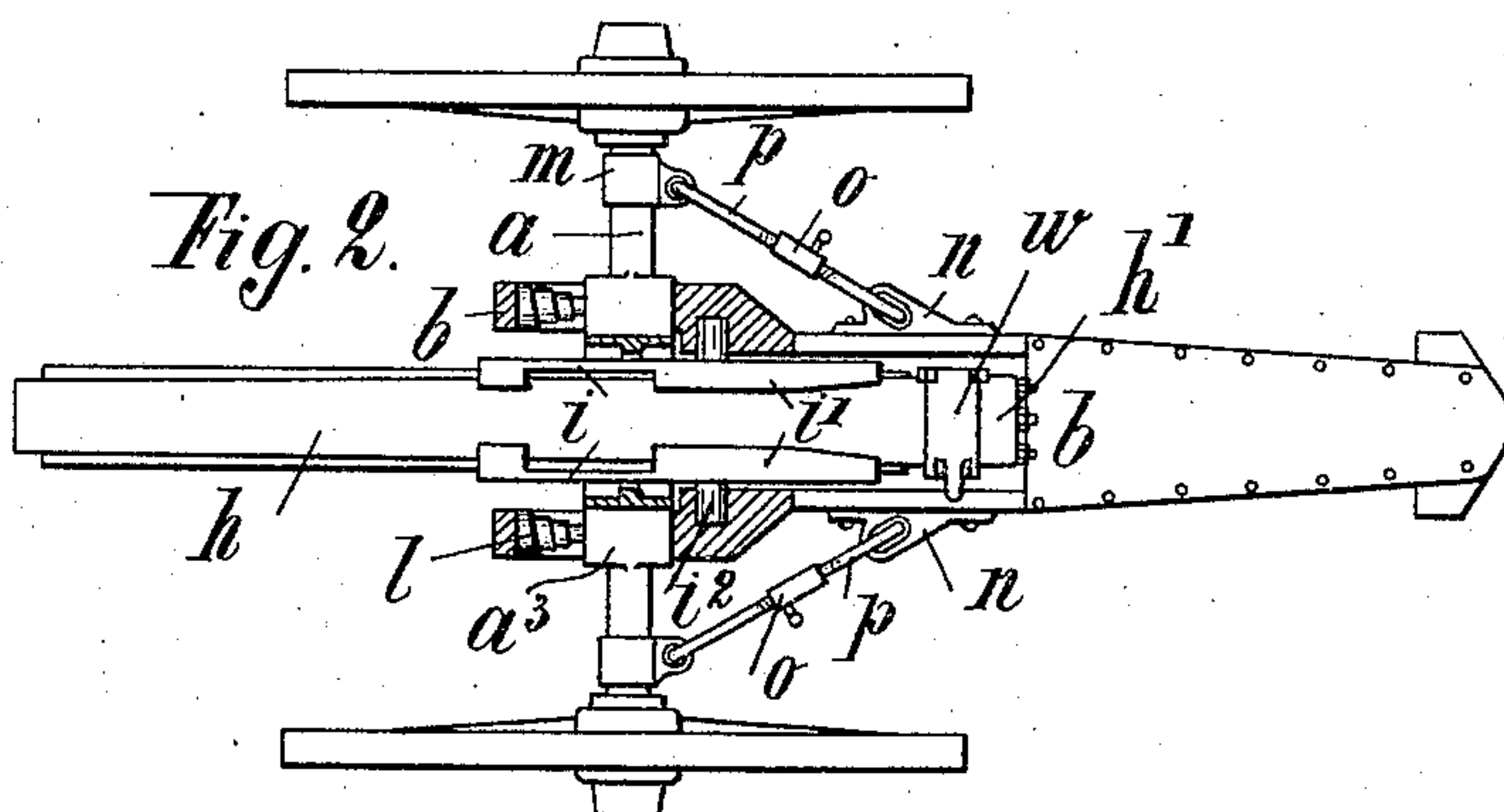
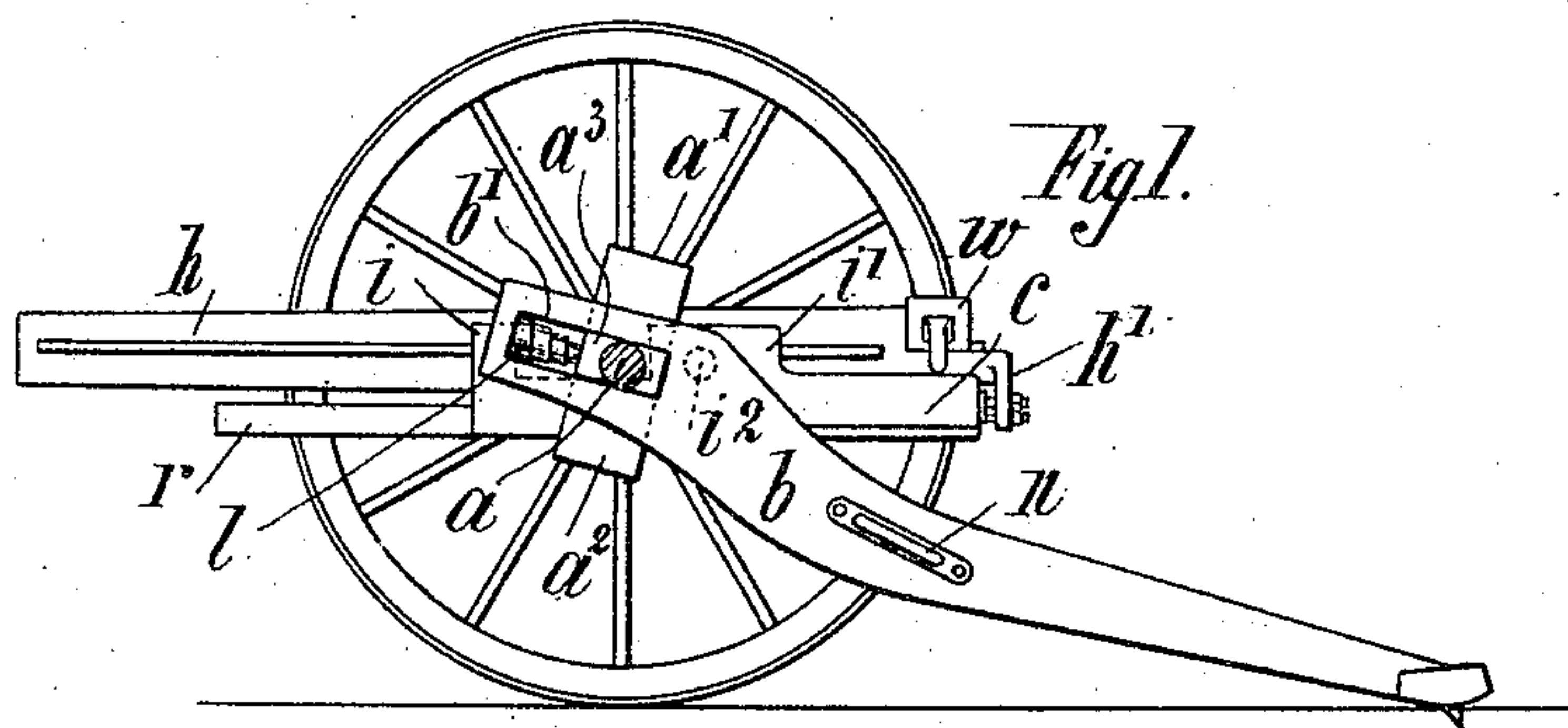


No. 789,833.

PATENTED MAY 16, 1905.

B. BEHR.
ORDNANCE.

APPLICATION FILED APR. 16, 1904.



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ORDNANCE.

SPECIFICATION forming part of Letters Patent No. 789,833, dated May 16, 1905.

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To all whom it may concern:

Be it known that I, BURKARD BEHR, a subject of the German Emperor, and a resident of Hamburg, in the German Empire, have invented certain new and useful Improvements in Ordnance, of which the following is a specification.

This invention relates to a field-gun with recoil-barrel, and more especially to a gun-carriage wheel-axle which is cranked both upwardly and downwardly, and to the special manner of suspending the gun-carriage on such axle.

In some known kinds of ordnances or field-guns the axle for the wheels of the gun-carriage is only bent or cranked upward, whereas in accordance with the present invention it is also cranked in the downward direction for the purpose of insuring greater rigidity to the axle. In the said known field-guns the gun-carriage, which is loosely mounted upon the axle, may be raised or lowered in a vertical direction. In accordance with this known arrangement, therefore, the recoil after firing or the tractive effort exerted by the horses when the gun is being moved is transmitted directly through the gun-carriage mountings—that is to say, through the cheeks of the gun-carriage—as a hard non-elastic shock upon the wheel-axle, whereby the parts of the gun, and more especially the wheel-axle and the gun-carriage cheeks, are prejudicially affected.

The object of this invention is to obviate this defect, and this end is attained by suspending the gun-carriage cheeks upon the wheel-axle, not by means of vertical but of obliquely-directed slots, and arranging in these slots—that is to say, between their front ends and the wheel-axle—suitable springs, either spiral or flat, which absorb or diminish the shocks produced by the recoil after firing or by traction of the carriage, rendering the transmission of the shocks between carriage and wheel-axle elastic. The oblique slots in the gun-carriage cheeks are so arranged that during the firing the gun-carriage is, so to speak, independent of the axle and does not affect the latter prejudicially. After firing, the gun-carriage, together with the cradle or upper

carriage carrying the barrel, and the latter move back as far as the spur or pike at the rear end of the gun-carriage allows it, whereupon the barrel recoils, the shock of this recoil motion being received or absorbed by the gun-carriage. The springs inserted in the oblique slots serve to diminish or soften the shock exerted upon the axle by the gun-carriage when the latter immediately after firing is moving back onto its pike. By this arrangement the axle is prevented from being strained in too great a manner. In order that, especially when the gun is being moved, the axle may not be strained exclusively at its bearing-points in the gun-carriage, connecting-rods are provided which connect the extremities inside the wheels with the two carriage-cheeks. These connecting-rods are preferably attached to the gun-carriage cheeks in such a manner that sufficient play is left for an effective yielding between the gun-carriage and axle. The connecting-rods can be lengthened or taken up as desired by means of screw-nuts. By sufficiently shortening the connecting-rods the gun-carriage may be brought close against the axle and the yielding connection between gun-carriage and axle made entirely rigid, if desired. The connecting-rods are therefore adapted to adjust the action of the buffer-springs.

The present invention also relates to a device for carrying the trunnions of the cradle for the barrel, which device consists of slide-blocks mounted in the gun-carriage cheeks. The form and arrangement of these blocks is such that they are able to rock around a point lying behind the axis of the trunnions.

The invention is illustrated by way of example in the accompanying drawings, the representation being mainly diagrammatic.

Figure 1 is a side elevation of the gun. The gun-carriage axle is sectioned inside the left-hand wheel, and this latter is omitted. Fig. 2 is an upper plan view of the gun and a horizontal section through the trunnions. Fig. 3 is a rear elevation of the gun, partly in section, through the trunnions. The connecting-rods are indicated by dotted lines. Fig. 4 is a detail view of the upwardly and downwardly

cranked middle portion of the gun-carriage axle. Fig. 5 shows the mounting of the trunnions in the gun-carriage cheeks.

Similar letters of reference refer to like parts throughout the several figures.

The gun-carriage axle a is upwardly and downwardly cranked at its middle portion. Upon either side of this cranked portion a' a^2 square portions a^3 are formed, upon which the gun-carriage cheeks b are mounted by means of slots b' , of suitable form and running in the longitudinal direction of the said cheeks. The cradle i , which carries the recoil-barrel h in suitable guides i' , is mounted with trunnions i^2 in the gun-carriage cheeks in such a manner that the cradle and the recoil-barrel are situated inside the longitudinal annular part formed by the double cranking a' a^2 . By forward or rearward displacement of the carriage upon the square portions a^3 of the axle the trunnions i^2 come higher or lower, so that the height of the recoil-barrel can be altered.

In the bearing-slots b' —that is to say, between their front extremities and the bearing parts a^3 —are interposed buffer-springs l , which insure a yielding mounting of the gun-carriage on the axle, so that shocks on the carriage (recoils, tractive efforts of the draft-horses, and the like) are yieldingly transmitted to the axle.

Upon the axle a between the wheels are mounted sleeves m , provided with eyes or lugs, and lugs n , presenting eyes, are fixed upon the cheeks of the carriage. The sleeves m and lugs n are connected by means of rods p . By appropriately screwing up or lengthening the connecting-rods by means of threaded nuts o the spring-mounting of the carriage on the axle may be so adjusted that not only the middle but also the ends of the axle receive the strain, and this is of great importance, especially when the gun is being moved from place to place. The eyes in the lugs n should be made of such a size as to permit the axle to yield sufficiently in its bearings. When desired, the connecting-rods may be tightened up to such an extent as to render the gun-carriage quite rigid with the axle.

The suspension of the trunnions in the gun-carriage may be effected in one of the usual ways; but the arrangement shown in Fig. 5 is advantageous. In this case the trunnions are mounted in special slide-blocks k , inserted in the gun-carriage cheeks. These slide-blocks permit of a certain horizontal rocking of the barrel around a point situated behind the trunnions, so that some amount of lateral aiming may be effected without altering the position of the gun-carriage.

For braking the recoil of the barrel two hydraulic brakes c of well-known construction may be provided. Between the two hydraulic brakes is a cylinder r , containing a rod surrounded by a spring, the said rod be-

ing connected to a lug h' of the barrel. When the barrel recoils, this spring is compressed in order to push forward the barrel into the firing position as soon as the recoil has been finished. Such spring devices are well known and need, therefore, no further representation and description.

The breech mechanism consists of a semi-cylindrical swinging block w , hinged to the barrel.

Having thus described my invention, what I claim as new therein, and desire to secure by Letters Patent, is—

1. In a field-gun mount, the combination of the cheeks each having a longitudinally-arranged slot formed therein, and an axle seated in said slots having an upwardly and downwardly cranked central portion.

2. In a field-gun mount, the combination of the cheeks each having a longitudinally-arranged slot formed therein, an axle seated in said slots, and a buffer member seated in the latter, for the purpose specified.

3. In a field-gun mount, the combination of the cheeks each having a longitudinally-arranged slot formed therein near the forward end, an axle seated in said slots, a brace-rod connecting each cheek with the axle, and means for adjusting said brace-rods, for the purpose specified.

4. In a field-gun mount, the combination of the cheeks each having a longitudinally-arranged slot therein near the forward end, an axle mounted in said slots, bearings formed on the axle for said slots, a buffer-spring interposed between the bearing and one end of the slot, and an adjustable brace-rod connecting each cheek with the axle, for the purpose specified.

5. In a field-gun mount, the combination of the cheeks each having a longitudinally-arranged slot formed therein near the forward end, an axle, bearings formed on the latter for said slots, a buffer-spring in each slot interposed between the bearing and forward end of the slot, a brace-rod loosely connecting each cheek with the axle, and means for adjusting said rods.

6. In a field-gun mount, the combination of two cheeks each provided with a longitudinally-arranged slot near its forward end, an axle having a squared bearing portion resting in said slots, a lug, having an elongated eye, mounted on each cheek, lugs on the outer extremities of the axle, rods connecting said lugs, and means for adjusting the rods, for the purpose specified.

7. In a field-gun mount, the combination with two cheeks each provided with a longitudinally-arranged slot near its forward end, an axle having an upwardly and downwardly cranked central portion, and a bearing-surface on each side of said central portion for said slots, of a bearing-block mounted in each

cheek in rear of the slot, a cradle, a recoil-barrel therein and trunnions on the cradle mounted in said blocks.

5 8. A field-gun comprising a wheeled axle having an upwardly and downwardly cranked central portion, a square bearing formed on each side of the central portion, a cheek-piece mounted on each of said bearings by means of a slot running in the longitudinal direction
10 of said cheeks, a buffer-spring interposed between the bearing and the forward end of the slot, a slide-block mounted in each cheek in rear of the slot, a recoil-barrel, a cradle for the latter, and trunnions on the cradle having
15 bearing in said blocks.

9. A field-gun comprising a wheeled axle having a yoke central portion, a square bearing formed on each side of the yoke, a cheek-

piece mounted on each bearing by means of a slot running in the longitudinal direction 20 of said cheeks, a buffer-spring interposed in the slot between the forward end thereof and the bearing, a slide-block mounted in each cheek in rear of the slot, a recoil-barrel within the yoke, a cradle for said barrel, trunnions 25 on the cradle having bearing in said blocks, a lug having an elongated eye mounted on each cheek, lugs on the outer extremities of the axle, a rod connecting each cheek with one of the extremities, and means for adjusting 30 the length of the rods, substantially as and for the purpose specified.

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