

No. 817,358.

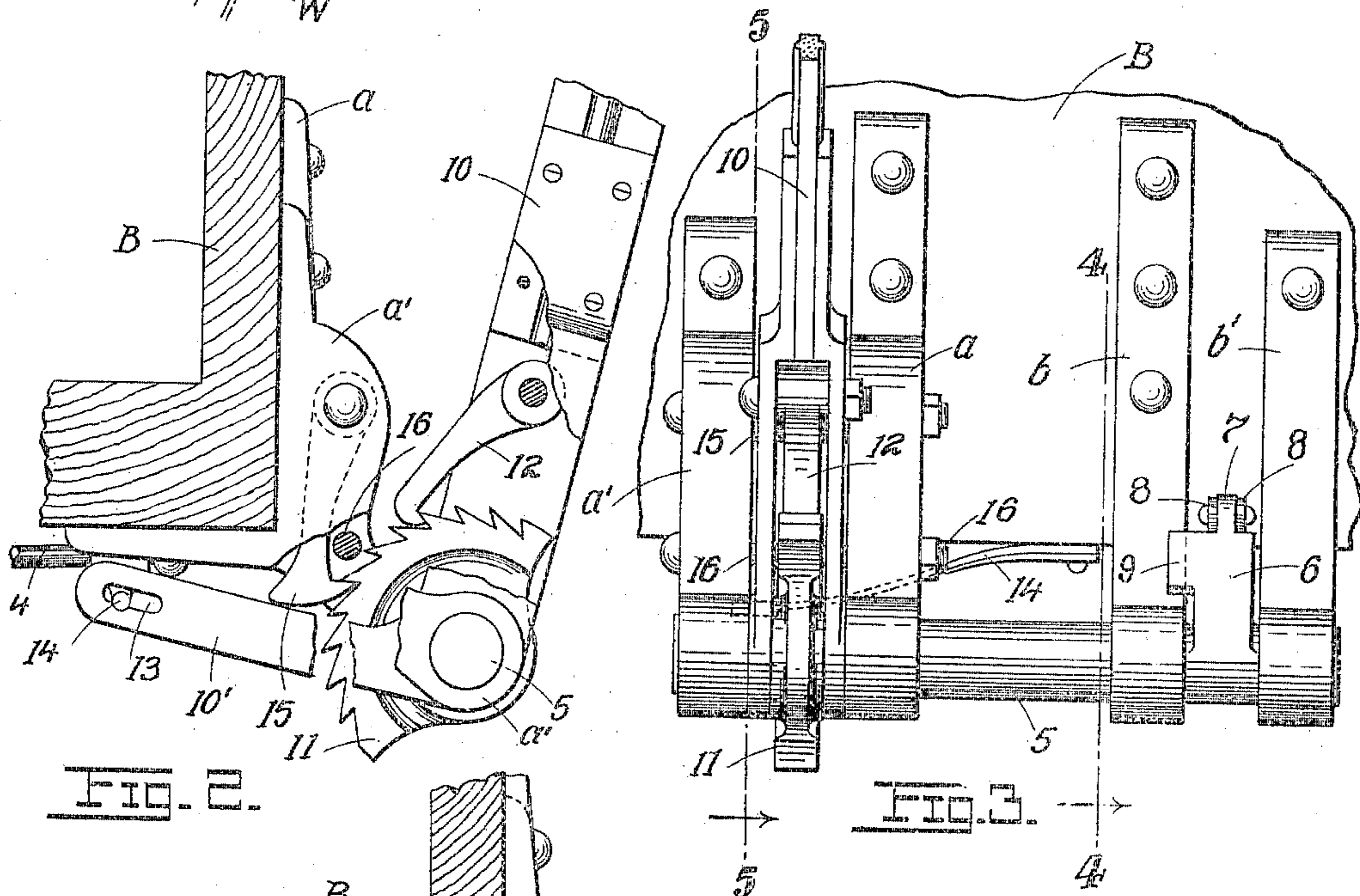
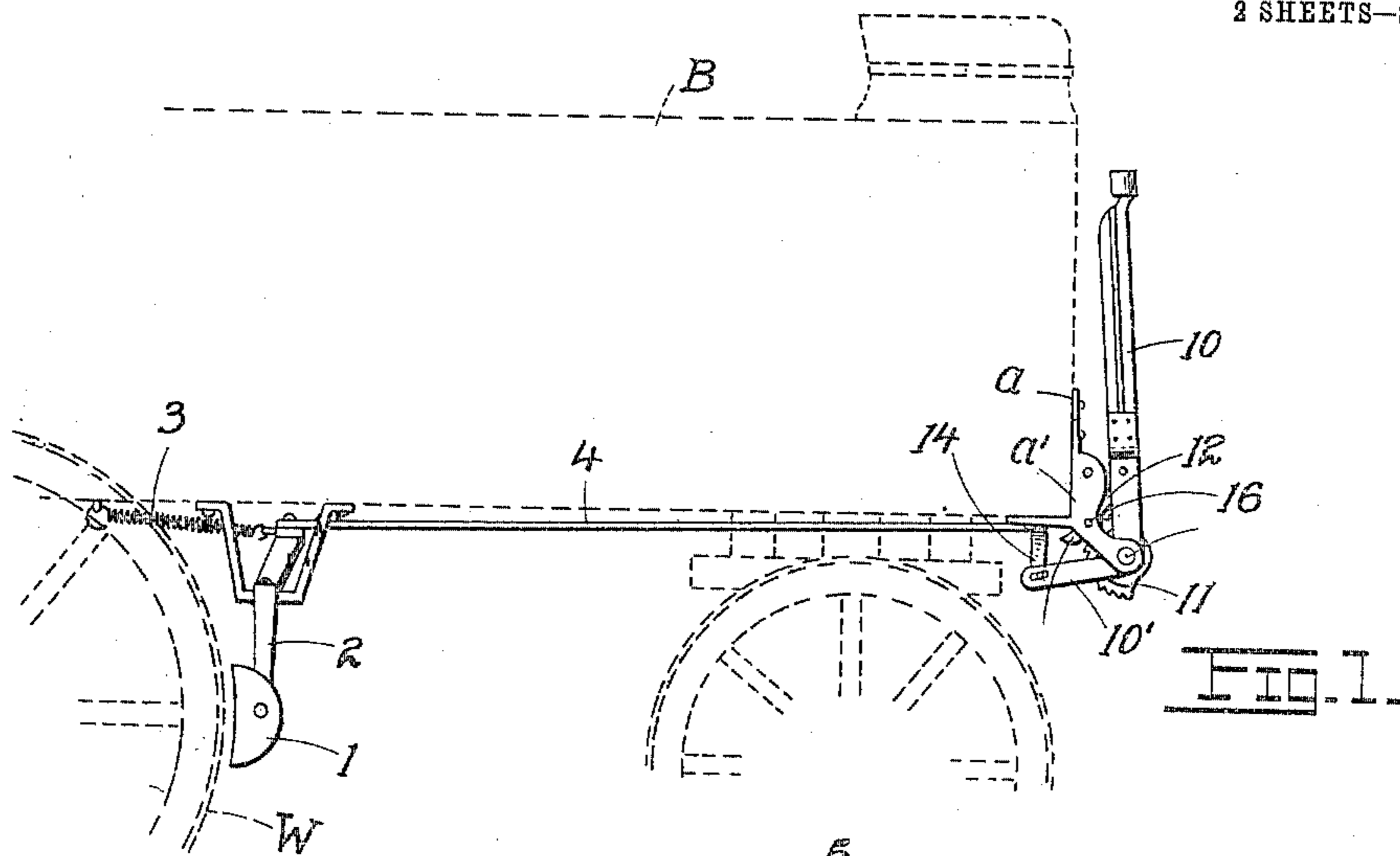
PATENTED APR. 10, 1906.

H. ZWILLING & J. T. DROSTE.

WAGON BRAKE.

APPLICATION FILED JUNE 24, 1905.

2 SHEETS—SHEET 1.



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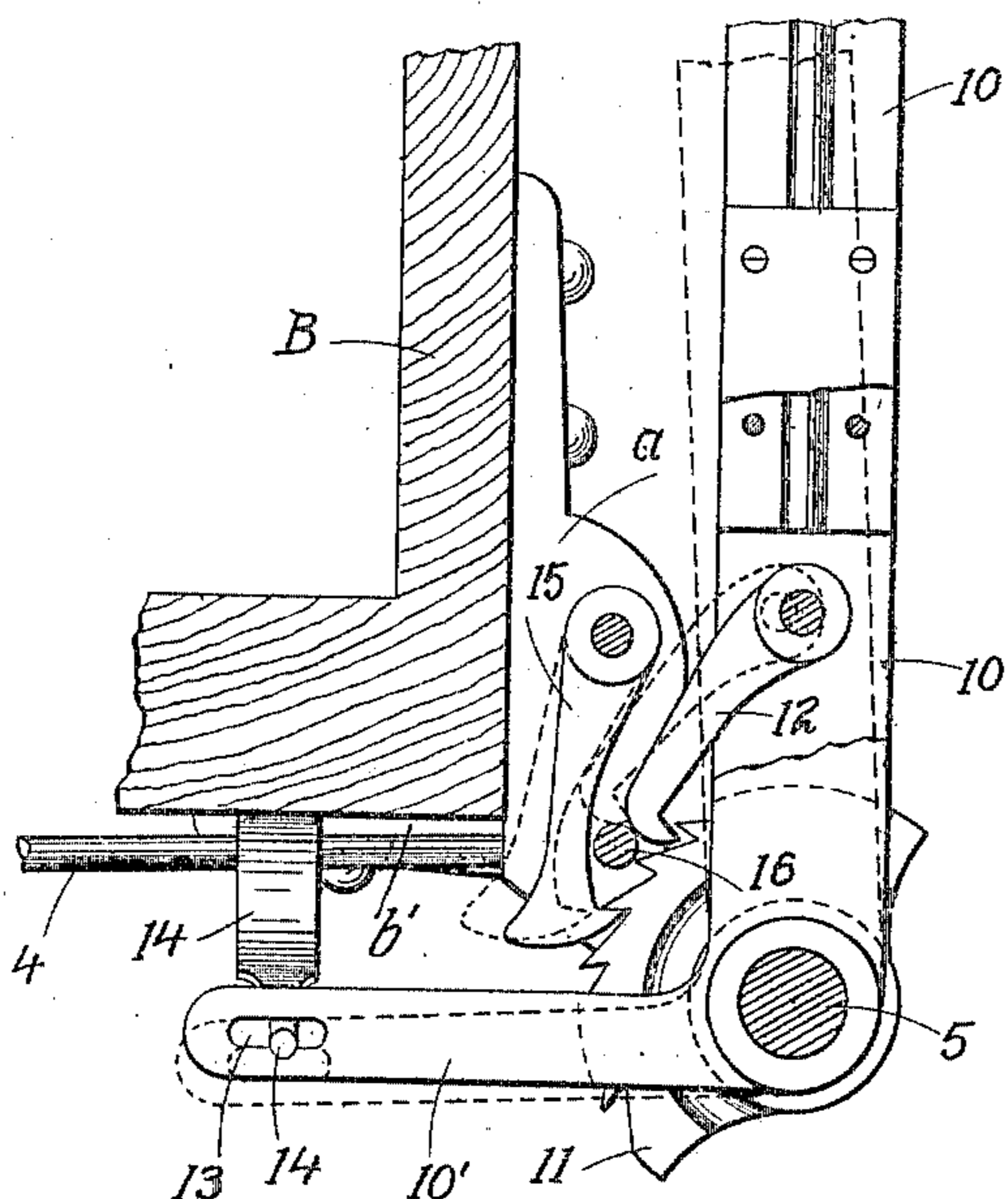


FIG. 5.

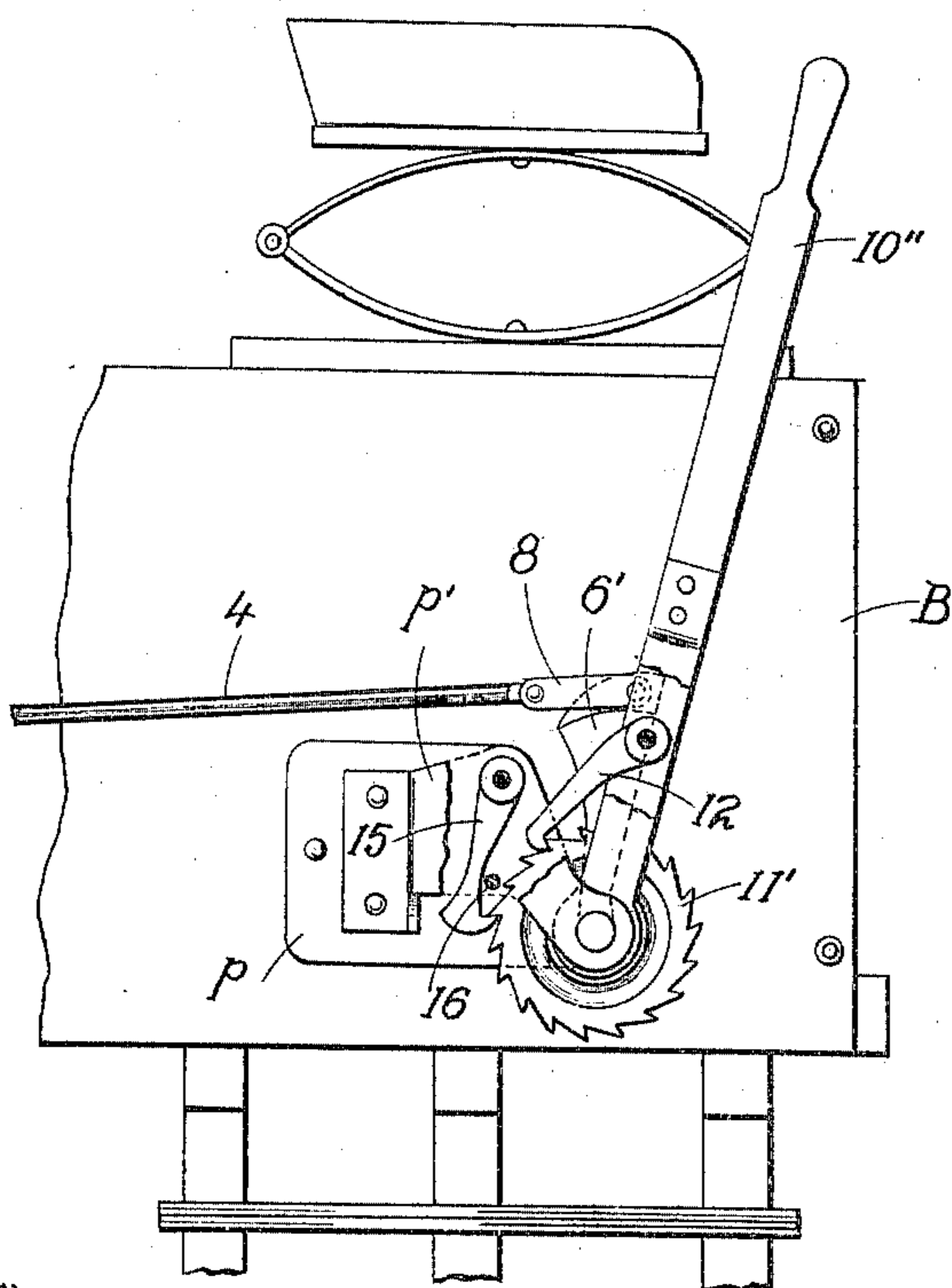


FIG. 6.

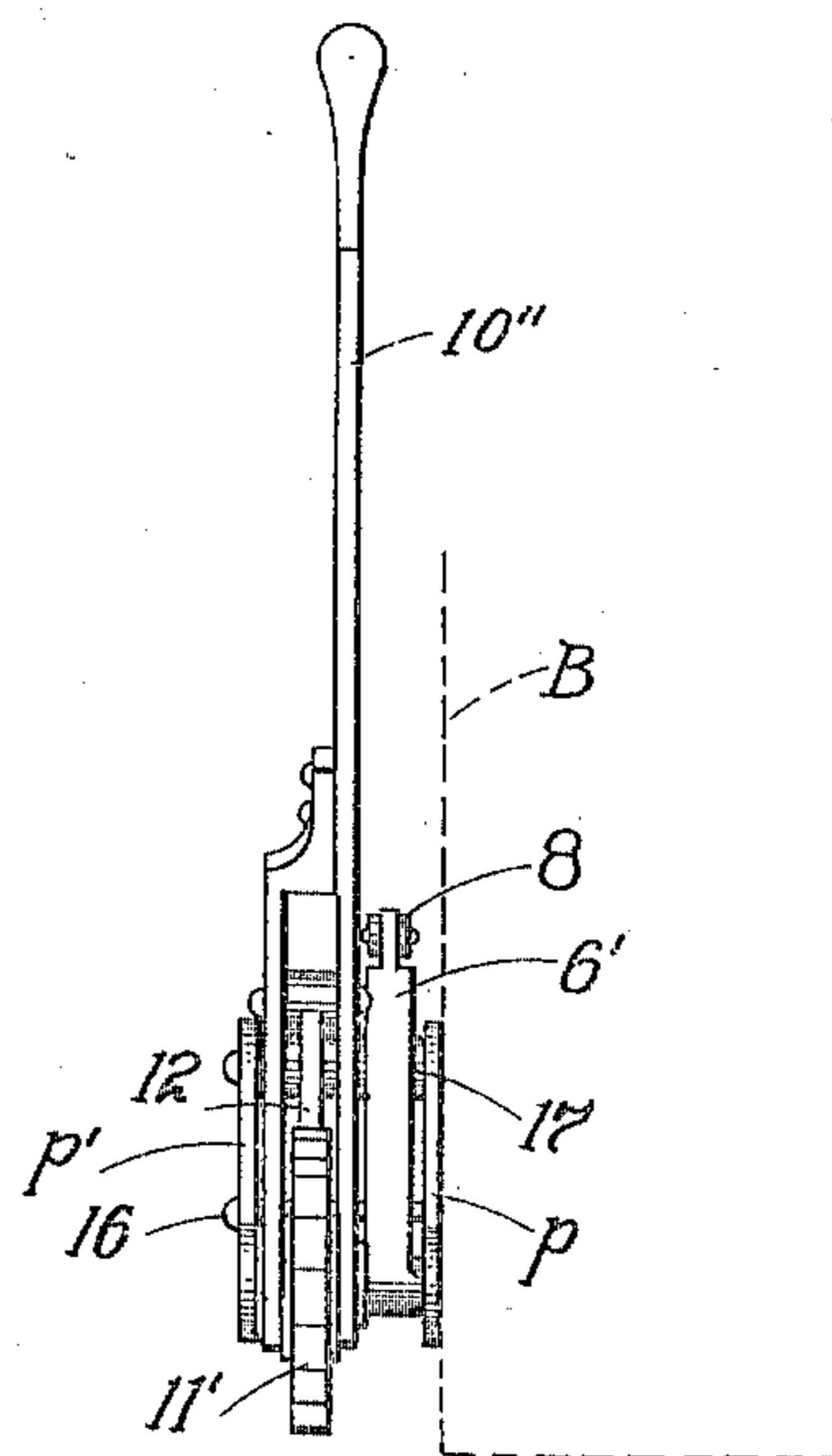


FIG. 7.

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# UNITED STATES PATENT OFFICE.

HENRY ZWILLING AND JOSEPH T. DROSTE, OF ST. LOUIS, MISSOURI.

## WAGON-BRAKE.

No. 817,358.

Specification of Letters Patent.

Patented April 10, 1906.

Application filed June 24, 1905. Serial No. 266,788.

*To all whom it may concern:*

Be it known that we, HENRY ZWILLING and JOSEPH T. DROSTE, citizens of the United States, residing at St. Louis, State of Missouri, have invented certain new and useful Improvements in Wagon-Brakes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

Our invention has relation to improvements in wagon-brakes; and it consists in the novel arrangement and combination of parts more fully set forth in the specification and pointed out in the claims.

In the drawings, Figure 1 is a side elevation of our invention mounted in the front of a wagon (shown in outline) with parts in normal position. Fig. 2 is an enlarged side elevation of the device with operating-lever tilted forward in the act of applying the brakes. Fig. 3 is a front elevation of Fig. 2, the wagon-body being broken. Fig. 4 is a vertical section on line 4 4 of Fig. 3. Fig. 5 is a vertical section on line 5 5 of Fig. 3, showing the operating-lever, however, in normal position and in dotted lines the releasing position. Fig. 6 is a side elevation of a modification mounted at the side of the wagon-body, and Fig. 7 is a front elevation of Fig. 6.

The present invention is an improvement on the construction of brake shown and described in our pending application for Letters Patent, filed November 5, 1904, Serial No. 231,555, and has for its object to qualify the latter in certain details, notably in the omission of the spool on the shaft from which leads the chain to the brake-lever and in the substitution therefor of suitable link connections which will minimize the time necessary to apply the brake-shoe to the wheel.

A further object is to introduce devices, preferably in the shape of springs, which will restore the operating-lever to its normal position or the position for effecting an advance of the ratchet-disk controlling the aforesaid shaft.

A further object is to provide other details whose advantages will be better apparent from a detailed description of the invention, which is as follows:

Referring to the drawings, and particularly to Figs. 1 to 5, inclusive, B represents a wagon-body, and W (in outline) the rear wheels thereof. Adapted to engage the tires of the rear wheels are the brake-shoes 1 1, carried at the ends of the depending arms of the

brake-levers 2, pivoted below the wagon-body, the meeting ends of the inner arms of the levers being coupled on one side to a retracting-spring 3, which draws the shoes away from the tires, and being coupled on the opposite side to the rear end of a brake member or rod 4, leading forward, as shown. To the parts thus far described we make no claim, as these are well known in the art and form no part of the present invention. In fact, the present attachment may be coupled by the skilled mechanic to any form or design of brake-shoe. The immediate improvement may be described as follows: Mounted rotatably in the looped ends of the pairs of hangers *a a'* and *b b'*, secured to the wagon-body at the front thereof, is a shaft 5, at one end of which (between the hangers *b b'*) and in line both with the longitudinal center of the wagon-body and with the member 4 is carried a crank-arm 6, the free end of which is provided with a rib or lug 7, to which are coupled the adjacent ends of the links 8, (or a single link forked at its ends,) whose opposite ends are pivotally coupled to the adjacent end of the member 4. The side of the arm 6 is provided with a projection or shoulder 9, which in any rearward oscillation of the arm is arrested by the edge of the adjacent hanger *b*, which said projection or lateral formation overlaps. The rearward oscillation of the arm 6 is caused, of course, by the draft of the spring 3 in the act of retracting the brake-shoes 1 from the wheels upon disengagement of said shoes from their braking position, as subsequently to be explained, and by arresting the arm 6 in the manner indicated the slack between the shoes and the brake mechanism proper is reduced to a minimum, so that very little time is consumed in applying the brakes. In the pending application aforesaid, where a winding-spool and chain were used, the unwinding of the spool would produce such abnormal slack in the chain which had to be taken up every time the brake was applied that this feature made the device objectionable, considerable time being consumed in taking up this slack. This objection is eliminated from the present improvement. As in the pending application aforesaid, so in the present improvement the shaft 5 is loosely embraced between the hangers *a a'* by the forked lower end of an operating-lever 10, and rigidly secured to the shaft between the fork members of the lever is a section of a ratchet-disk 11, (a section be-

ing sufficient in this form, since being mounted in front of the wagon in the event of the horse backing up against a full ratchet the teeth thereof might injure the animal,) with  
 5 which is normally engaged the swinging actuating or advancing pawl 12, pivoted at the base of the fork, so that when the lever 10 is pushed or oscillated forward by the foot of the driver, Fig. 2, the pawl will rotate the  
 10 ratchet, the latter turning the shaft 5 and oscillating the arm 6 forward. The latter draws on the links 8 and member 4 and the brakes are applied. With a return of the lever to its original position, Fig. 5, the pawl  
 15 12 is ready to engage a new tooth and impart an additional turn to the shaft, the links 8 tightening the member 4 and the shoes with each oscillation. In practice one or two oscillations will suffice to set the brakes rigidly.  
 20 In the present improvement the lever 10 is returned to its normal position for engagement of its pawl with the next tooth of the ratchet by the following means: The base of the lever 10 has a rearwardly-bent portion  
 25 or arm 10' projecting under the wagon-body, the free end of the arm being provided with an elongated slot 13, through which loosely passes the free tapering end of the spring-arm 14, disposed in a plane parallel to  
 30 the shaft 5 and having its fixed end secured beneath the wagon-body. The resilience of this spring at once restores the lever to its normal position, Fig. 5, the moment the latter is released to begin a new operation. The  
 35 slot 13 is elongated to allow for the necessary play therein, as is obvious. Once the ratchet-disk is advanced with any forward swing of the lever 10 it is prevented from rotating  
 40 backward (under the tension of the spring 3) by the locking-pawl 15, which is pivotally swung from a point between the hangers  $a a'$ , its axis of suspension being located above the  
 45 arc described by the free end of the pawl 12, as in our pending application, Fig. 2. When the lever 10 is restored to its normal position, the space separating the pawls along the  
 50 ratchet is one tooth, Fig. 5, and in this space is located a guide-pin 16, (secured between the hangers  $a a'$ ), over which the free end of the pawl 12 is free to ride when the driver  
 55 wishes to disengage the locking-pawl by a sudden impact of the pawl 12 against it. This is accomplished by the driver giving the lever 10 a forcible kick rearwardly, which action releases the pawl 12 from the ratchet,  
 60 the free end of said pawl riding over the guide-pin 16 and tripping the locking-pawl 15 also out of engagement with the ratchet. The ratchet being now free to revolve in the  
 65 opposite direction under the tension of the spring 3, the brakes are released. (Dotted position in Fig. 5.) The pawl 15 then drops back into engagement and the parts 10 and 12 are again restored to normal position by the spring-arm 14 in readiness for another

application of the brakes. (Full position of parts in Fig. 5.)

In Figs. 6 and 7 we show a modification in which the ratchet 11' is mounted on the side, the remaining parts being substantially the  
 70 same as or identical with those shown in the main form. In the last modification the ratchet 11' is provided with a full periphery of teeth, as it is located out of the way of the  
 75 draft-animals and the latter cannot be injured by the teeth of the ratchet in the event the animal should back up too close to the wagon-body. In this modification the operating-lever 10'' is preferably worked by  
 80 hand, in which event the restoring-spring 14 is omitted, as the driver can always pull the lever back to normal position by hand. In this modification, too, we substitute an arm 6', corresponding to the arm 6 in the first  
 85 form of the invention, the arm 6' being arrested or limited in its rearward oscillation by coming in contact with the boss 17, from which the pawl 15 is swung, the boss 17 being formed on the face of the plate  $p$ , between which and the plate  $p'$  the several  
 90 parts are mounted.

Having described our invention, what we claim is—

1. In a brake mechanism, a rotatable shaft, an operating-lever swinging loosely  
 95 about the axis of the shaft, a pawl pivoted at the base of the lever, a ratchet-disk carried by the shaft adjacent to the lever and adapted to be advanced by the pawl aforesaid, a locking-pawl normally engaging the ratchet-disk and having an axis of suspension above the arc described by the free end of the advancing pawl, the latter being adapted to trip the locking-pawl upon oscillation of the operating-lever in proper direction, substantially as set forth. 105

2. In a brake mechanism, a rotatable shaft, an arm on the same, a link connecting the arm to a suitable brake member, means for limiting or arresting the sweep of the arm  
 110 for the released position of the brake, an operating-lever swinging loosely about the axis of the shaft, a pawl pivoted at the base of the lever, a ratchet-disk on the shaft adjacent to the lever adapted to be advanced by the  
 115 pawl upon the tilting of the lever in one direction, means for automatically returning the operating-lever to its original position after any particular advance of the ratchet-disk, a locking-pawl normally engaging the  
 120 ratchet-disk and having an axis of suspension above the arc described by the free end of the advancing pawl, the latter being adapted to trip the locking-pawl upon the oscillation of the lever from its normal position, in  
 125 the opposite direction, substantially as set forth.

3. In a brake mechanism, a rotatable shaft, an arm on the same, a link connecting the arm to a suitable brake member, means 130

for limiting the sweep of the arm for the released position of the brake, a bent operating-lever swinging loosely about the axis of the shaft, a pawl pivoted to the lever above its axis of oscillation, a ratchet-disk on the shaft in position to be engaged by the pawl and advanced thereby upon oscillation of the lever in one direction, a spring having one end fixed, and a free end passing loosely through the bent arm of the operating-lever for restoring the latter and its pawl to engaging position after any particular advance of the ratchet by the lever, substantially as set forth.

4. In a brake mechanism, a rotatable shaft, an operating-lever swinging loosely about the axis of the same, a pawl pivoted at the base of the lever, a ratchet on the shaft

adapted to be engaged by the pawl, a locking-pawl normally engaging the ratchet and having an axis of suspension above the arc described by the free end of the advancing pawl, and means for guiding the free end of the advancing pawl into engagement with the locking-pawl for tripping the latter out of engagement with the ratchet upon oscillation of the operating-lever in proper direction, substantially as set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

HENRY ZWILLING.  
JOSEPH T. DROSTE.

Witnesses:

EMIL STAREK,  
JOS. A. MICHEL.