

(No Model.)

2 Sheets—Sheet 1.

J. F. MURPHY.  
VEHICLE BRAKE.

No. 587,596.

Patented Aug. 3, 1897.

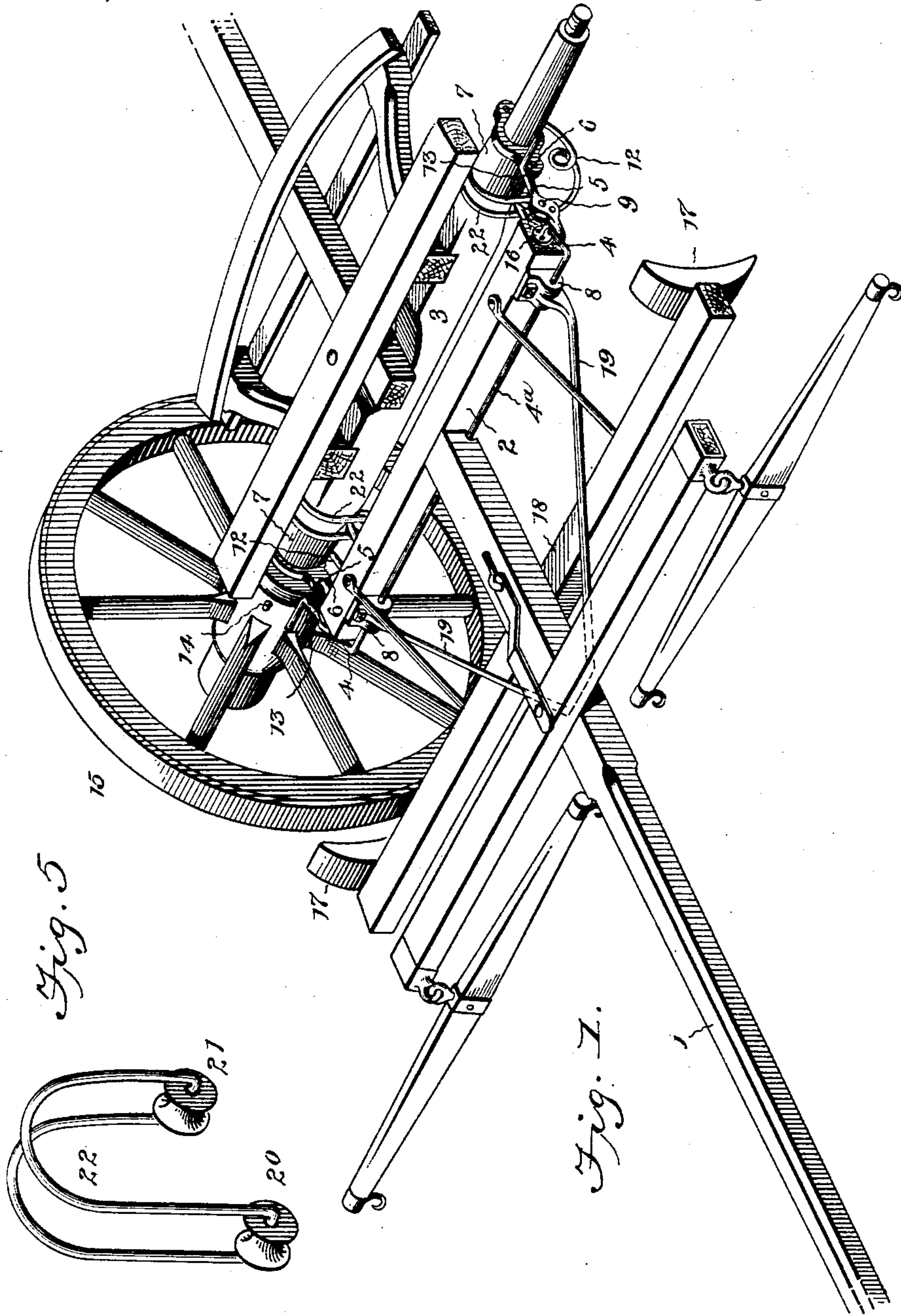


Fig. 5

Fig. 1.

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Witnesses

*E. N. Mowbray*  
*J. F. Riley*

By *his* Attorneys.

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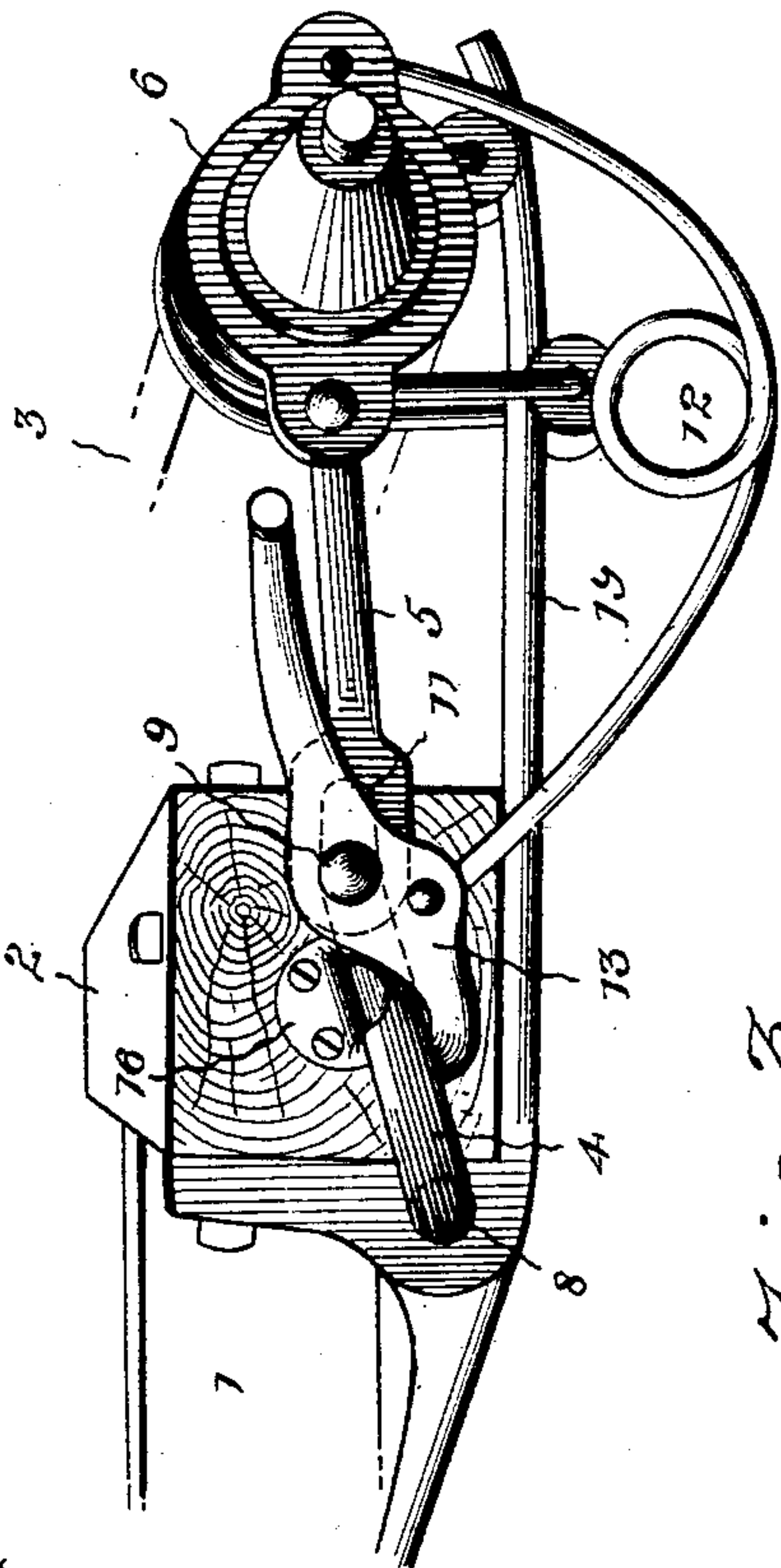
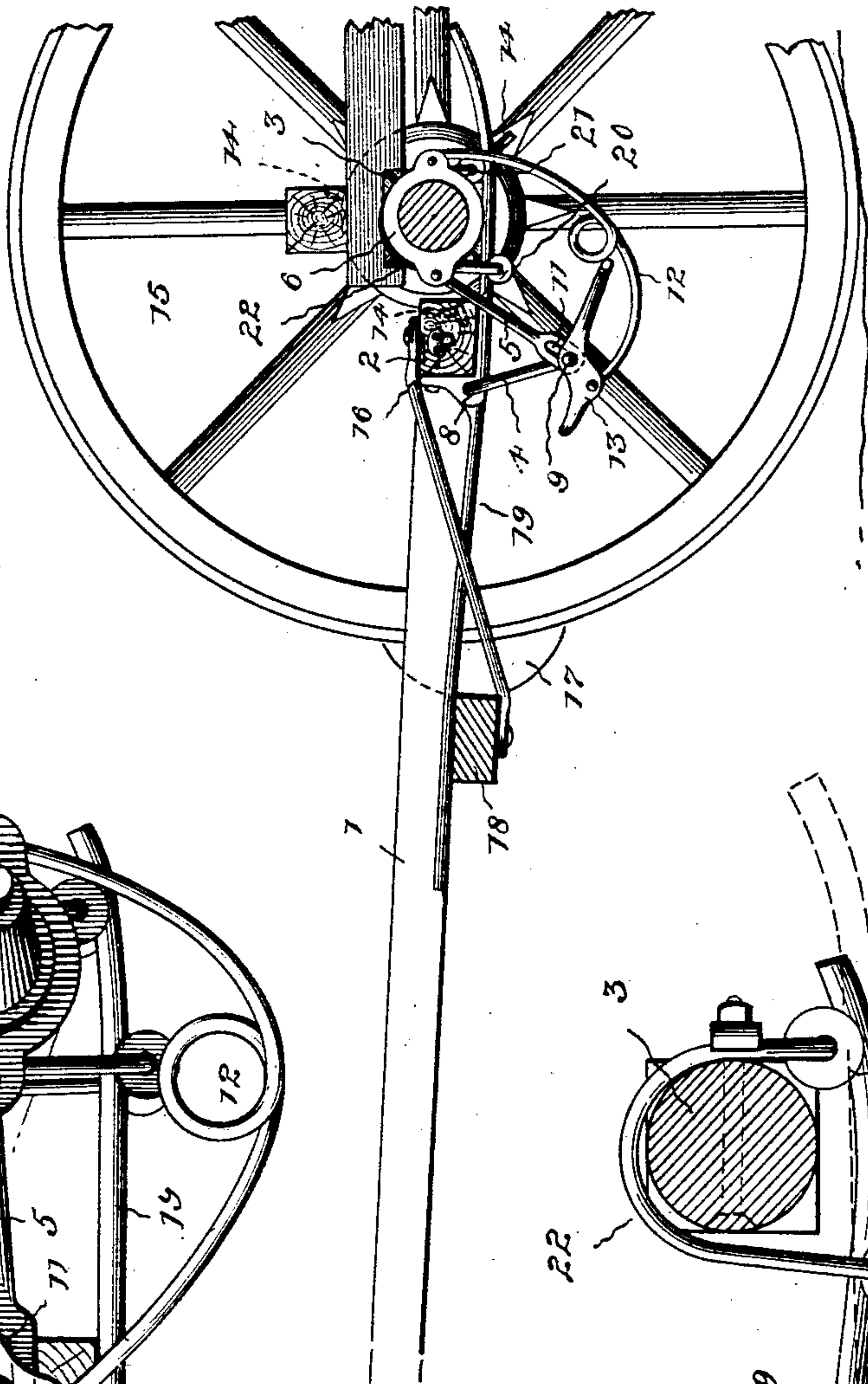
2 Sheets—Sheet 2.

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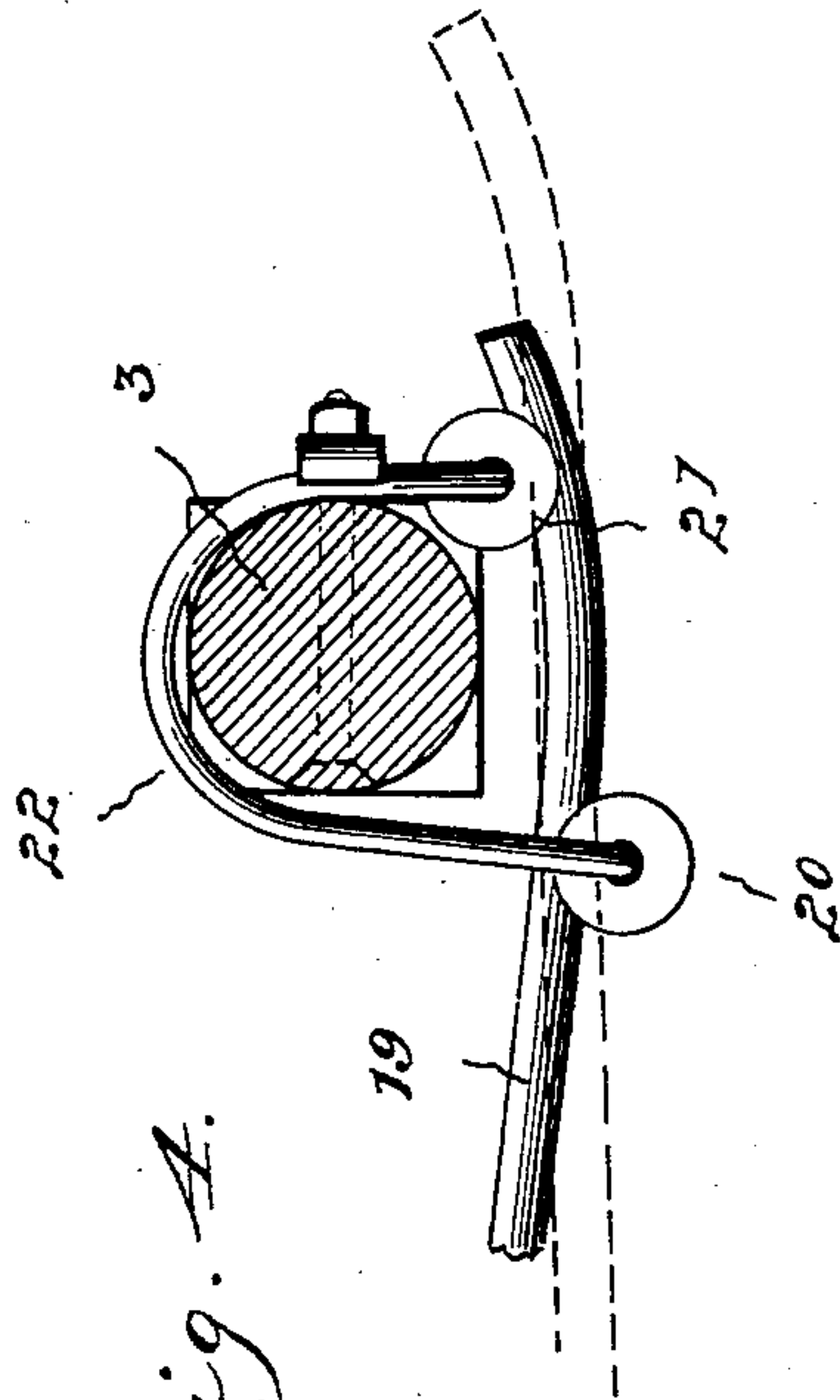
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*Fig. 2.*



*Fig. 3.*



*Fig. 4.*

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# UNITED STATES PATENT OFFICE.

JOHN F. MURPHY, OF ADRIAN, MICHIGAN, ASSIGNOR OF TWO-THIRDS TO  
OTIS A. CLAPP AND JAMES MURPHY, OF SAME PLACE.

## VEHICLE-BRAKE.

SPECIFICATION forming part of Letters Patent No. 587,596, dated August 3, 1897.

Application filed May 11, 1897. Serial No. 636,074. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN F. MURPHY, a citizen of the United States, residing at Adrian, in the county of Lenawee and State of Michigan, have invented a new and useful Vehicle-Brake, of which the following is a specification.

The invention relates to improvements in vehicle-brakes.

10 The object of the present invention is to improve the construction of automatic vehicle-brakes and to provide a simple, inexpensive, and efficient one adapted to be readily applied to the front axle and the pole of any ordinary vehicle and capable of automatic operation when the vehicle moves forward on the draft-animals in descending an incline.

15 A further object of the invention is to enable a vehicle to be readily backed without applying the brake, to provide a spring connection for normally holding the brake-shoes off the wheels under ordinary pressure, and to enable the brake, when applied, to be entirely relieved of such spring-pressure, so that  
20 the full force of the horses may be exerted on the wheels.

The invention consists in the construction and novel combination and arrangement of parts, as hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended.

30 In the drawings, Figure 1 is a perspective view of a portion of a running-gear provided with an automatic brake constructed in accordance with this invention, the near wheel being removed to illustrate the construction of the brake-operating mechanism more clearly and the brake-shoes being off the wheels. Fig. 2 is a longitudinal sectional  
35 view of the same, illustrating the position of the parts when the brake-shoes are applied. Fig. 3 is an enlarged detail perspective view illustrating the construction of the toggle connection, the trip-lever, and the spring. Fig.  
40 4 is a detail sectional view illustrating the manner of supporting the pole. Fig. 5 is a detail perspective view of the yoke of the same.

45 Like numerals of reference designate corresponding parts in the several figures of the drawings.

1 designates a pole provided at its rear end with a transverse bar 2, which is connected with the front axle 3 of a running-gear by toggle connections consisting of front and rear links 4 and 5, normally forming a substantially rigid draft connection between the pole and the axle when there is a forward strain on the former. The rear link 5 at each side of the running-gear is hinged at its rear end to a flange 6 of the cuff 7 of the front axle, but any other suitable hinge-joint and connection may be provided. The front link 4 has its terminals bent at right angles in opposite directions to form front and rear pivots 8 and 9, the latter being arranged in a longitudinal slot or opening 11 of the rear link 5 and permitting the pole to have a limited longitudinal movement. The front pivots, which are journaled in suitable bearings, are preferably extended across the running-gear, as clearly illustrated in Fig. 1 of the drawings, to form a transverse shaft 4<sup>a</sup>, which connects the links and causes both toggle connections to operate in unison.

75 The pole is normally held extended by springs 12, located at each side of the running-gear and connected at their rear ends to the front axle and at their front terminals to a trip-lever 13 at each end of the transverse bar 2. Each trip-lever is fulcrumed between its ends on the pivot 9 and has its front arm bent inward and engaging under the front link 4 of the toggle connection, and the front end of the spring 12 is pivoted to the trip-lever 13 at a point slightly below and in advance of the pivot 9, whereby the spring is adapted to hold the trip-lever in position to be engaged by ratchet-teeth 14 of the front wheel 15, and is also adapted to maintain the toggle connection in engagement with a stop 16 of the transverse bar 2 and press the tongue forward. The spring 12, which is provided with a central coil, has its rear end secured in a perforation of the flange of the said cuff.

95 The ratchet-teeth 14, which are mounted on the hub of the wheel 15, are adapted to engage the rear arm of the trip-lever 13 when the transverse bar and the pole are forced backward against the action of the springs 12 by reason of the vehicle moving forward on the draft-animals in descending a hill, and  
100



the forward or downward movement of the ratchet-teeth carries the rear arm of the trip-lever downward, breaking the joint of the toggle connection and swinging the same forward to the position illustrated in Fig. 2 of the accompanying drawings and permitting the brake-shoes to engage the front wheels. When the toggle connection is broken, the pole is relieved of the pressure of the springs, and the brake-shoes 17, which are carried by the pole, engage the front wheels with the full force exerted by the draft-animals, thereby providing an effective brake. The brake-shoes 17 are mounted on a brake-beam 18, which is secured on the pole in rear of the whiffletree and in advance of the front wheels.

When a vehicle is backed, the direction of rotation of the front wheels is changed, and the upward movement of the ratchet-teeth does not affect the trip-levers, which are permitted to swing upward and pass over the teeth by the relaxation of the spring.

The pole is supported and prevented from dropping to the ground by rearwardly-extending arms or rods 19, disposed beneath the front axle and engaging rollers 20 and 21 of a support consisting of a yoke 22, which arches the front axle. Each yoke is constructed of a single piece of rod metal, bent to form two U-shaped sides, as clearly illustrated in Fig. 5 of the accompanying drawings. The roller 20 is mounted in the bend at the bottom of the front arm of the yoke and supports the rod 19, which bears against the bottom of the roller 21, as illustrated in Fig. 4 of the accompanying drawings. The front portions of the yokes are resilient and extend below the rear portions, and the rear ends of the arms or rods 19 are inclined upward, whereby when the pole moves rearward it will be dropped slightly and will be correspondingly lifted when it is moved outward, such tilting movement of the pole being effected by the inclined portions of the rods or arms engaging the rear rollers 21. The front portions of the rods 19 converge and extend to the pole to form braces, and they are provided adjacent to the transverse bar 2 with enlargements forming bearings for the transverse shaft 4<sup>a</sup> and secured to the said bar 2, as clearly shown in Fig. 1.

It will be seen that the automatic brake is simple and comparatively inexpensive in construction, that it is not applied in backing a vehicle, and that it is relieved of the force of the springs when applied, so that the full power of the horses or other draft-animals is brought against the wheels.

It will also be apparent that when the pole is drawn outward the springs will swing the toggle connections upward and cause them to resume their initial position against the stops 16, and as the latter are located above the front pivots of the arms 4 the links will provide a rigid connection in backing a vehicle.

Changes in the form, proportion, and minor details of construction may be resorted to

without departing from the spirit or sacrificing any of the advantages of this invention.

What I claim is—

1. In an automatic vehicle-brake, the combination with a front axle, and front wheels, of a longitudinally-movable pole carrying brake-shoes arranged to engage the said wheels, springs for holding the pole normally extended forward, and means for automatically relieving the pole of the pressure of the springs when the brake is applied, substantially as described.

2. In an automatic vehicle-brake, the combination with a front axle, and wheels, of a longitudinally-movable pole carrying brake-shoes for engaging said wheels, a toggle connection between the pole and the axle consisting of a pair of links pivotally connected together, a trip-lever mounted on the toggle connection and engaging the same, a spring for holding the toggle connection elevated, and teeth carried by the adjacent wheel and adapted to engage the trip-lever and force the same downward, substantially as and for the purpose described.

3. In an automatic vehicle-brake, the combination with a front axle, and a wheel, of a longitudinally-movable pole, a toggle connection between the pole and the axle consisting of a pair of links pivoted together and having a limited longitudinal movement on each other, a trip-lever fulcrumed on the pivot of the links and engaging the front link, a spring connected with the trip-lever and holding the same and the toggle connection in position, and means for throwing the rear arm of the trip-lever downward, substantially as and for the purpose described.

4. In an automatic vehicle-brake, the combination with a front axle, and wheels, of a pole provided with a transverse bar, a brake-beam mounted on the pole and provided with brake-shoes for engaging said wheels, toggle connections consisting of front and rear links connected at their outer terminals to the transverse bar and to the axle, the rear links being provided at their front terminals with slots, and the front links having pivots arranged in said slots, trip-levers fulcrumed on said pivots and having their front arms engaging under the front links, springs connected with the trip-levers and supporting the toggle connections, and ratchet-teeth mounted on the hubs of the wheels and arranged to engage the trip-levers, substantially as described.

5. In an automatic vehicle-brake, the combination with a front axle, of a longitudinally-movable pole, a spring-actuated toggle connection, and a supporting-arm extending rearward from the pole and connected with the said axle and having its rear portion bent upward at an inclination, whereby the pole is given a tilting movement when it is reciprocated, substantially as described.

6. In an automatic vehicle-brake, the combination with a front axle, and a pole, of a



5 yoke arching the axle and composed of two sides, the front of the yoke or support being extended downward, rollers mounted on the yoke or support at the front and back thereof, and an arm extending rearward from the pole, supported upon the front roller and engaging under the rear roller, said arm being inclined upward at its rear end, substantially as described.

10 7. In an automatic vehicle-brake, the combination with a front axle, and a pole, of a support, rollers mounted on the support, and

an arm connected with the pole and having its rear end bent upward at an inclination, said arm being supported by one of the rollers and engaging under the other, substantially as described. 15

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOHN F. MURPHY.

Witnesses:

JOHN H. SIGGERS,  
E. G. BRASHEARS.