

No. 774,084.

PATENTED NOV. 1, 1904.

E. E. KRENGEL.  
AUTOMATIC BRAKE FOR VEHICLES.

APPLICATION FILED APR. 20, 1904.

NO MODEL.

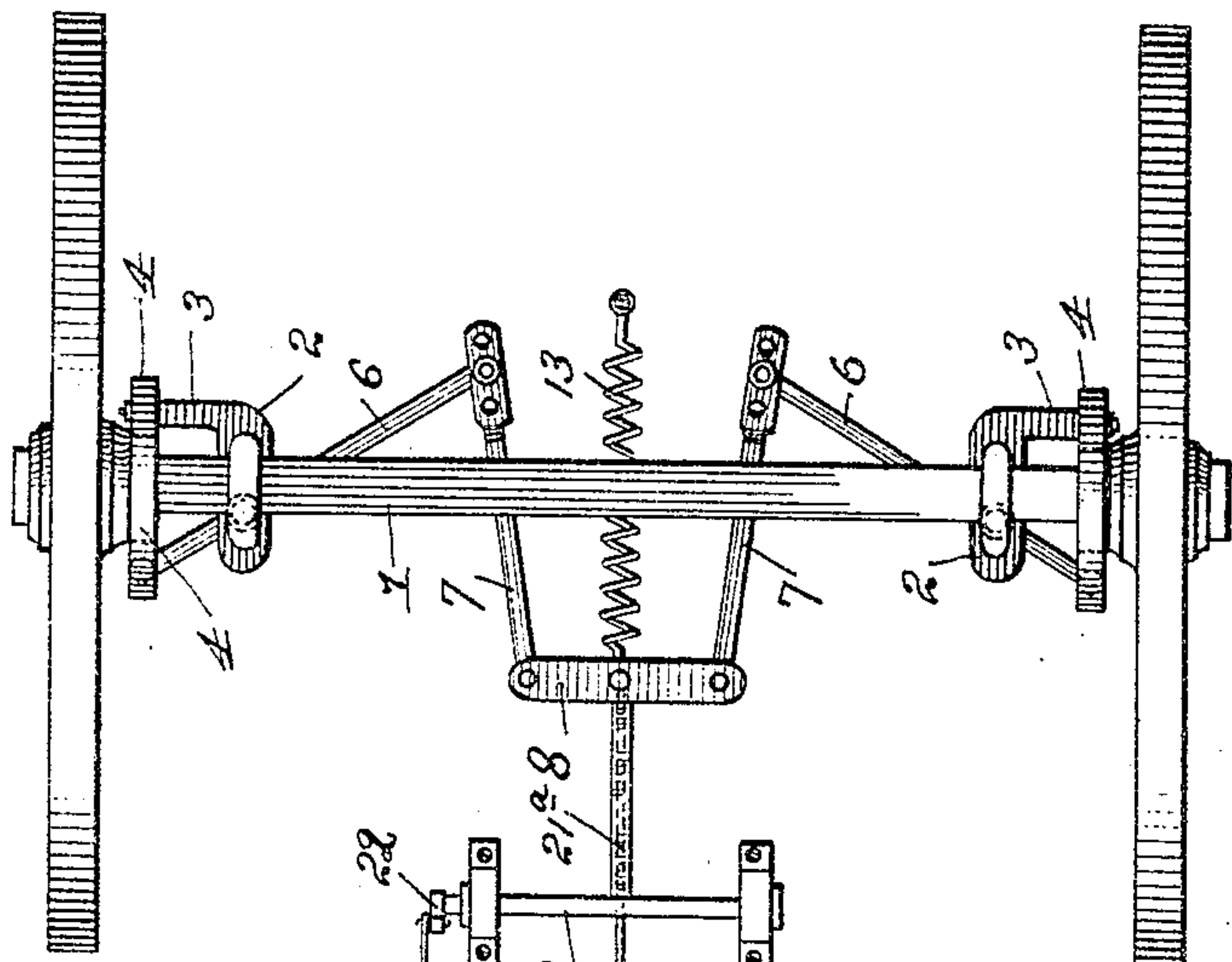


Fig. 1.

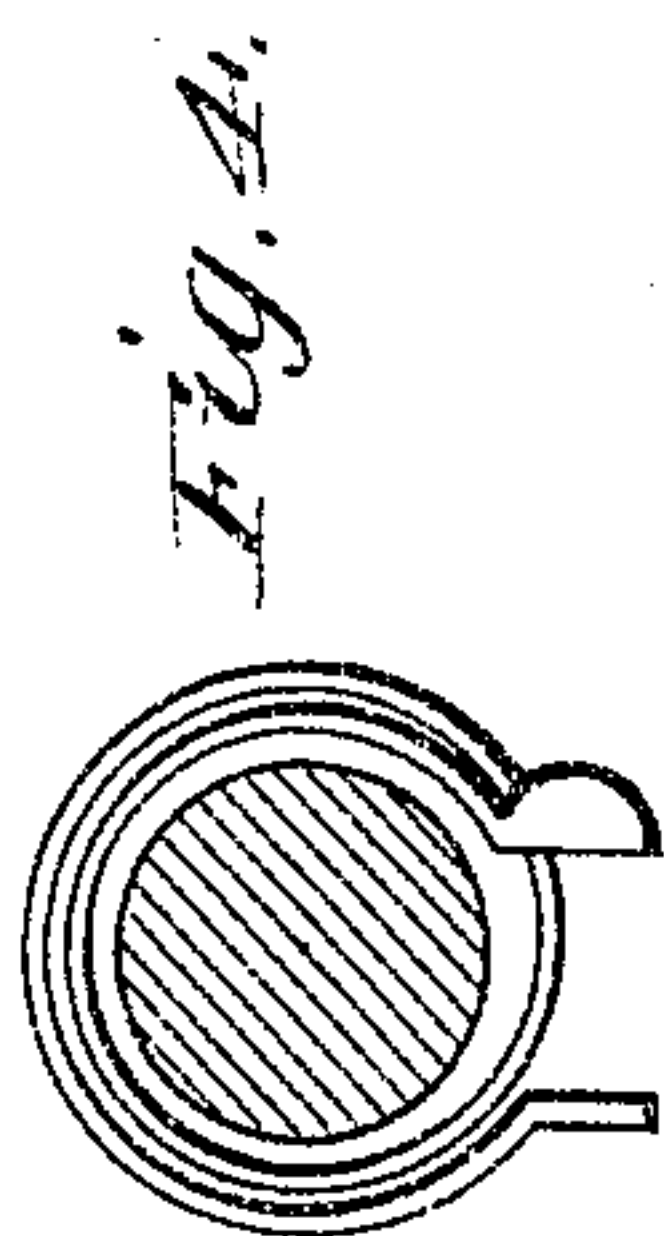


Fig. 4.

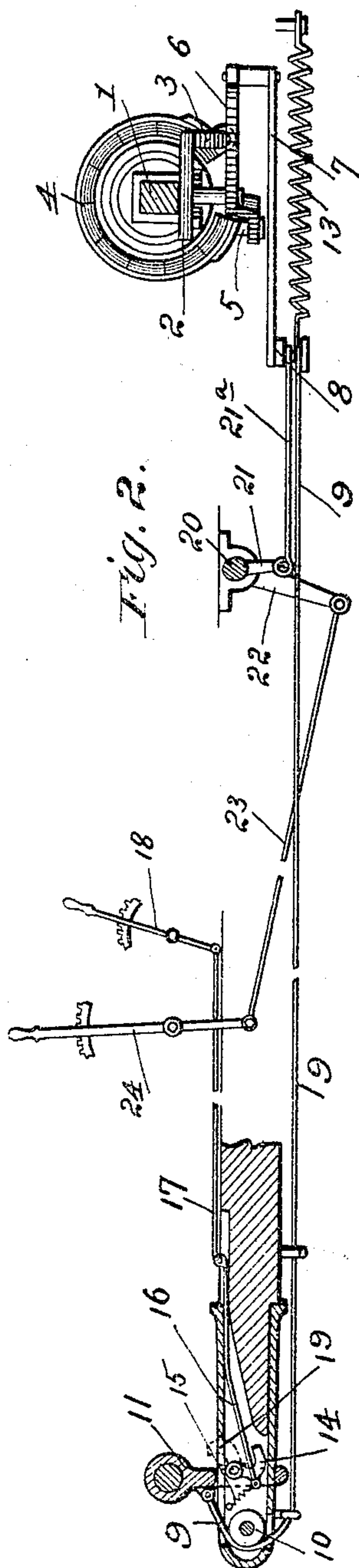
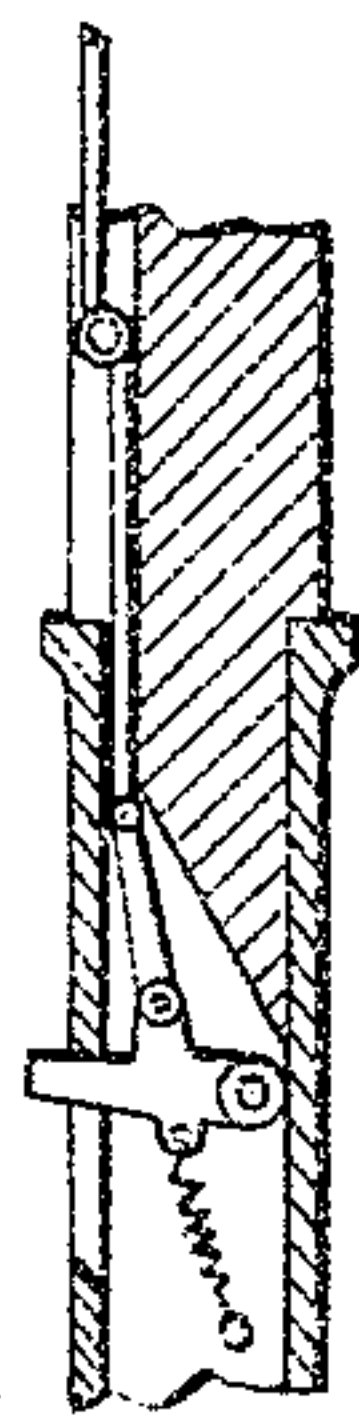


Fig. 2.

Witnesses: James Brady  
Emma Kaufmann

Ernest C. Kreugel Inventor  
By his Attorneys *Lewis Davis*



# UNITED STATES PATENT OFFICE.

ERNEST EMIL KRENGEL, OF NEZPERCE, IDAHO.

## AUTOMATIC BRAKE FOR VEHICLES.

SPECIFICATION forming part of Letters Patent No. 774,084, dated November 1, 1904.

Application filed April 20, 1904. Serial No. 203,975. (No model.)

*To all whom it may concern:*

Be it known that I, ERNEST EMIL KRENGEL, a citizen of the United States, residing at Nezperce, county of Nez Perces, State of Idaho, have invented certain new and useful Improvements in Automatic Brakes for Vehicles, of which the following is a specification, reference being had therein to the accompanying drawings, in which—

Figure 1 is a plan view; Fig. 2, a vertical sectional view; Fig. 3, a detail view showing a slightly-different form of device for preventing the automatic operation of the brakes; Fig. 4, a detail view of a different form of brake-band.

The main object of this invention is to provide a brake for wagons and similar vehicles which will be automatically applied by the draft-animals in going downgrade, suitable devices being provided so that the holding-back action of the animals will apply the brakes in a degree proportionate to the grade of the road.

A further object of the invention is to provide means whereby the brake may be operated by hand; and a further object is to provide means whereby the automatic operation may be prevented when desired.

Referring to the various parts by numerals, 1 designates the rear axle of the vehicle, to which near each wheel is bolted a supporting-bar 2, said bar being secured to the under side of the axle. Each of said bars is provided at its rear end with an outward-extending arm 3, to which is secured the rear lower end of a substantially circular brake-band 4, which is adapted to encircle the hub at the inner end thereof, the inner surface of said band being adapted to bear on the hub, as will appear more fully hereinafter. The other end of said brake-band is provided with a downward-extending lug 5, which is engaged by the outer end of a horizontal inward and rearward extending lever 6, this lever being pivoted on a depending post carried by the supporting-bar 2.

The brake-band may be of any desired and suitable construction; but I prefer to form it with an outer band of spring-steel and an inner bearing band or circle of wood blocks.

To the inner ends of the levers 6 are pivotally secured forward-extending horizontal links or bars 7, said bars being adjustably connected to the levers 6 by means of a bolt and a series of perforations in the links 7. The forward ends of the links 7 are pivotally connected to the ends of the transverse draft-evenner 8. Connected to the center of this evenner-bar is a cable or other flexible connecting means 9, said connection extending through suitable guiding devices below the tongue to the forward end of said tongue and passing up over a pulley 10 mounted therein. The end of the cable 9 is connected to the neck-yoke center 11, which carries the neck-yoke 12. This neck-yoke center is so constructed as to be capable of a sliding movement on the tongue-tip.

The operation of the devices just described is obvious, it being clear that in holding back when going downgrade a rearward pull will be brought on the neck-yoke center, thereby drawing forward the evenner-bar and causing the brake-bands to grip the hubs of the rear wheels. The brakes will be applied in a degree proportionate to the grade.

To release the brakes and return them to their normal position when the rearward pull on the neck-yoke center is removed, a strong coil-spring 13 is connected at its forward end to the evenner-bar and at its rear end to a suitable fixed point.

In order that the vehicle may be backed by the draft-animals without applying brakes, a stop device is provided in the tongue-tip to prevent the rearward movement of the neck-yoke center. Said stop device consists of a strong hook 14, pivoted in the tongue-tip and provided with a coil-spring 15 to normally maintain it within said tip. Connected to said hook is a rearward-extending bar 16, which lies in a suitable groove in the tongue, its rear end extending just beyond the rear end of the tip. Connected to this bar is a cord or wire 17, whose rear end is connected to an operating-lever 18, mounted in a suitable position to be manipulated by the driver. By a rearward pull on the cord 17 the end of the hook 14 will be projected through the opening 19 in the tongue-tip just in the rear



of the neck-yoke center to prevent a rearward movement of the said center. It is obvious that this hook may be of any desired construction; but I prefer to construct it in such a manner that when projected the rearward strain brought thereon through the neck-yoke center will be taken up by the pole-tip. In Fig. 3 this hook is shown in the form of a bar which is projected through the pole-tip, its rear edge being adapted to bear directly on the pole-tip.

In order that the brakes may be operated by hand, transverse rock-shaft 20 is mounted in a suitable position beneath the vehicle-body and is formed with a depending arm 21, which is connected by a flexible strap 21<sup>a</sup> to the evener-bar 8. One end of this rock-shaft is formed with a crank-arm 22, said arm being connected by a rod 23 to an operating-lever 24, mounted in a suitable position for manipulation by the driver. It will be readily seen that by this means the brakes may be applied at will by the driver without interfering in the least with the automatic operation thereof by the draft-animals when the vehicle is descending a grade.

It will of course be understood that the brake-band may be constructed to encircle the hub with more than one turn, if desired, as shown in detail in Fig. 4.

Having thus described my invention, what I claim is—

1. A vehicle-brake comprising, a pair of brake devices adapted to bear on the hubs of the rear wheels, horizontal levers connected to said devices, forward-extending links connected to the inner ends of said levers, a draft-evener bar connected to the forward ends of said links, a vehicle-tongue, a neck-yoke movably mounted thereon, a flexible connection between the evener-bar and the neck-yoke whereby a backward pull on the neck-yoke will apply the brakes, means for normally holding the brake devices in their released position, a stop device carried by the tongue and normally out of operative position and means

for projecting said stop device into the path of the neck-yoke.

2. A vehicle-brake comprising, a pair of brake devices adapted to bear on the hubs of the rear wheels, horizontal levers connected to said devices, forward-extending links connected to the inner ends of said levers, a draft-evener bar connected to the forward ends of said links, a vehicle-tongue, a neck-yoke movably mounted thereon, a flexible connection between the evener-bar and the neck-yoke whereby a backward pull on the neck-yoke will apply the brakes, means for normally holding the brake devices in their released position, and a hand operative device connected to the evener-bar whereby the brakes may be applied.

3. A vehicle-brake comprising, a pair of substantially circular brake-bands adapted to bear on the hubs of the rear wheels, plates carried by the rear axle and adapted to rigidly support one end of each of said brake-bands, levers connected to the other ends of said bands, means for pivotally supporting said levers, forward-extending links secured to the inner ends of said levers, an evener-bar connected to the forward ends of said links, a rearward-extending spring connected to said evener-bar and normally holding the brake-bands in their released position, a vehicle-tongue, a movable neck-yoke mounted thereon, means connecting the evener-bar to the neck-yoke whereby a backward pull on the neck-yoke will apply the brakes, a stop device in the tongue and normally out of operative position, means connected to said stop device for projecting it into the path of the neck-yoke and a hand operative device connected to the evener-bar and by which the brakes may be applied.

In witness whereof I hereunto affix my signature, in the presence of two witnesses, this 11th day of April, 1904.

ERNEST EMIL KRENGEL.

Witnesses:

CLAY M. STEARNS,

CHARLES D. THOMAS.