No. 653,692. Patented July 17, 1900.

E. C. F. OTTO & E. C. F. OTTO, JR.

BRAKE.

(No Model.) (Application filed Feb. 24, 1900.)

Fig. 3.

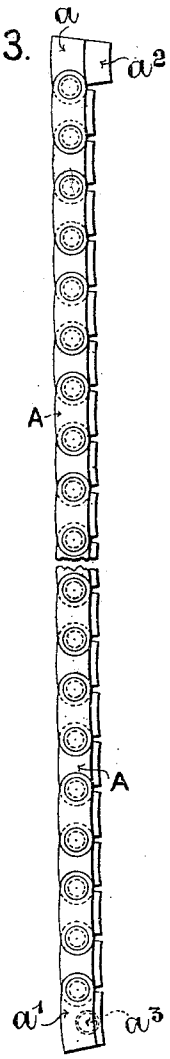


Fig. 1.

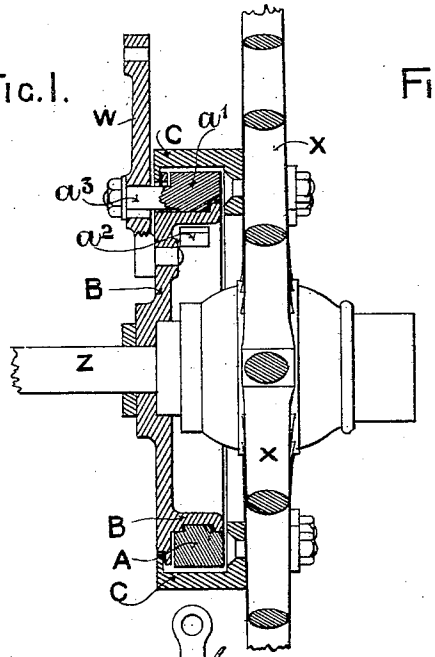


Fig. 2.

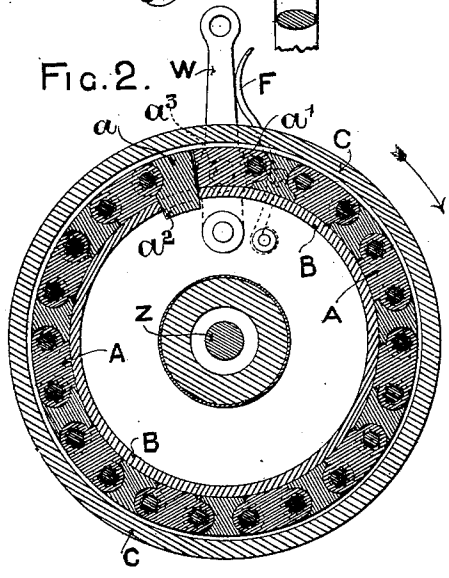
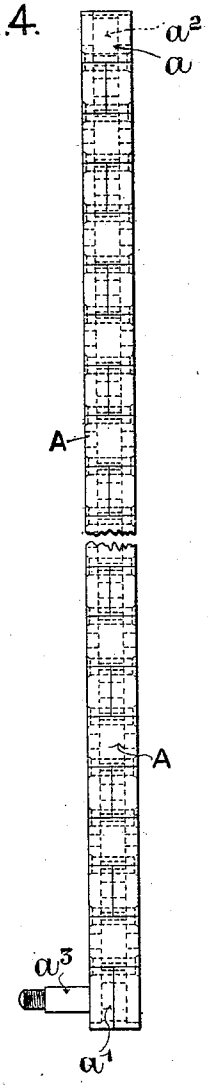


Fig. 4.



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UNITED STATES PATENT OFFICE.

EDWARD CHARLES FREDERICK OTTO AND EDWARD CHARLES FREDERICK OTTO, JR., OF HONOR OAK, ENGLAND.

BRAKE.

SPECIFICATION forming part of Letters Patent No. 653,692, dated July 17, 1900.

Application filed February 24, 1900. Serial No. 6,425. (No model.)

To all whom it may concern:

Be it known that we, EDWARD CHARLES FREDERICK OTTO and EDWARD CHARLES FREDERICK OTTO, Jr., subjects of the Queen of Great Britain, residing at Honor Oak, in the county of Surrey, England, have invented a new and useful Improvement in Brakes, (for which we have obtained Letters Patent in Great Britain No. 15,503, bearing date the 28th of July, 1899,) of which the following is a full and complete specification.

This invention relates to an improved brake or frictional mechanism for retarding motion applicable to vehicles and machinery of all kinds; and it consists, essentially, of a linked strap or band in the form of a chain adapted when quiescent—*i. e.*, when the brake is out of action—to lie in contact with and be circumferentially supported by a drum hereinafter called the "chain drum," which is mounted concentrically with respect to a drum hereinafter called the "brake drum," with which the chain engages when operative—*i. e.*, when the brake is in action—the object being to overcome the defects common to brakes of the strap and drum type.

Owing to the link formation of the strap or band, it has no tendency to become set or to lose its shape by use, and being supported it cannot come into accidental contact with the drum when the brake is "off." Neither does it, as in the type of brake having spring or elastic straps, absorb a large amount of power to overcome its elasticity when applying it. Moreover, by causing the end link of the chain, to which motion is imparted to apply the brake, to move in the same direction as the wheel or drum to which the braking or retarding effect is to be applied the brake acts more or less by inducement, as each link when it is brought into engagement with the brake-drum tends to drag the next link into frictional contact with the said drum and so on until the whole strap or band is engaged.

In the accompanying drawings, which illustrate, by way of example only, the application of this improved brake to the wheel of a road-vehicle, Figure 1 is a broken view, in front elevation, partly in section. Fig. 2 is a view in sectional side elevation; and Figs. 3 and 4 are broken views, in side elevation and plan, respectively, of the linked strap or band.

Referring to the drawings, the chain-drum B is fixed to the non-rotating axle Z or to any adjacent part of the frame of the vehicle concentric with the wheel to which the braking or retarding effect is to be applied, and the brake-drum C is fixed to the spokes X of the said wheel concentrically with the chain-drum B. The one end link a of the strap or band A is attached to the periphery of the chain-drum B by means of a radially-arranged projection a^2 engaging a hole or slot in the periphery of the said drum, and the other end link a' is connected, by means of a transversely-arranged stud a^3, with a lever W, pivoted either to the chain-drum B, as shown, or to any convenient adjacent part of the frame of the vehicle, the arrangement being such that the movement of the lever W in one direction expands the linked strap or band A against the internal surface of the brake-drum C, and the reverse movement contracts the chain band onto the chain-drum B. Any suitable form of spring, such as F, may be employed to return the lever W and keep the linked strap or band A in contact with the periphery of the chain-drum when the brake is out of operation. The necessary movement to apply the brake may be imparted to the lever W, either directly or indirectly, in any suitable manner. Where the leverage will permit, we prefer to pivot the lever W at or about the center of the wheel to which the braking or retarding effect is to be applied. As an alternative construction the braking effect may be caused by contracting the linked strap or band A onto the brake-drum, in which case the chain-drum would be exterior to the brake-drum.

The linked strap or band A consists of a series of links of metal or other suitable material connected together by transverse pins or rivets, as shown by Figs. 3 and 4, or so shaped that they engage one another by hooking. When the linked strap or band is intended to act by coming into contact with an internal drum—*i. e.*, when it would be in a state of compression—the ends of the links are preferably so shaped that they abut one against the other, as shown, so as to relieve

the pins or rivets connecting them of all strain. The links of the strap or band are made of the same width, and their operative engaging surfaces, whether it be the outer or inner one, are made of the same curvature as the surface of the drum with which they are intended to engage, so as to obtain the greatest possible amount of frictional surface. If increased frictional resistance is required, it may be obtained either by lining the brake-drum with leather or other suitable material or by using a chain band of such a length that it makes more than one complete turn around the drum.

The application of this brake to machinery will be apparent from the foregoing without any further description.

What we claim, and desire to secure by Letters Patent, is—

1. In a brake, the combination with a road-wheel, and a brake-drum revolving with it; of a non-revoluble supporting-drum mounted concentric with the brake-drum, an operating-lever pivoted to the supporting-drum, and a linked chain band arranged in the space between the said drums and having its ends connected to the said lever and supporting-drum respectively, substantially as set forth.

2. In a brake, the combination, with a brake-drum, of a second drum mounted concentrically with the brake-drum and adapted to support the strap or band when it is out of action with the brake-drum, and a linked chain band formed of a series of metallic links pivoted together and having their operative faces curved to the same radius as the operative face of the drum with which the strap or band engages, as set forth.

3. In a brake the combination with a brake-drum, of a second drum mounted concentrically with the brake-drum and adapted to support the band when it is out of action with the brake-drum, and a linked chain band formed of a series of metallic links pivoted together so that their ends abut against one another, each link being of the same width and having its operative face curved to the same radius as the operative face of the drum with which the strap or band engages, as set forth.

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