No. 693,659. Patented Feb. 18, 1902.

A. LA FRANCE.

DOUBLE ACTING BAND BRAKE.

(Application filed Apr. 26, 1901.)

(No Model.)

Fig. 1.

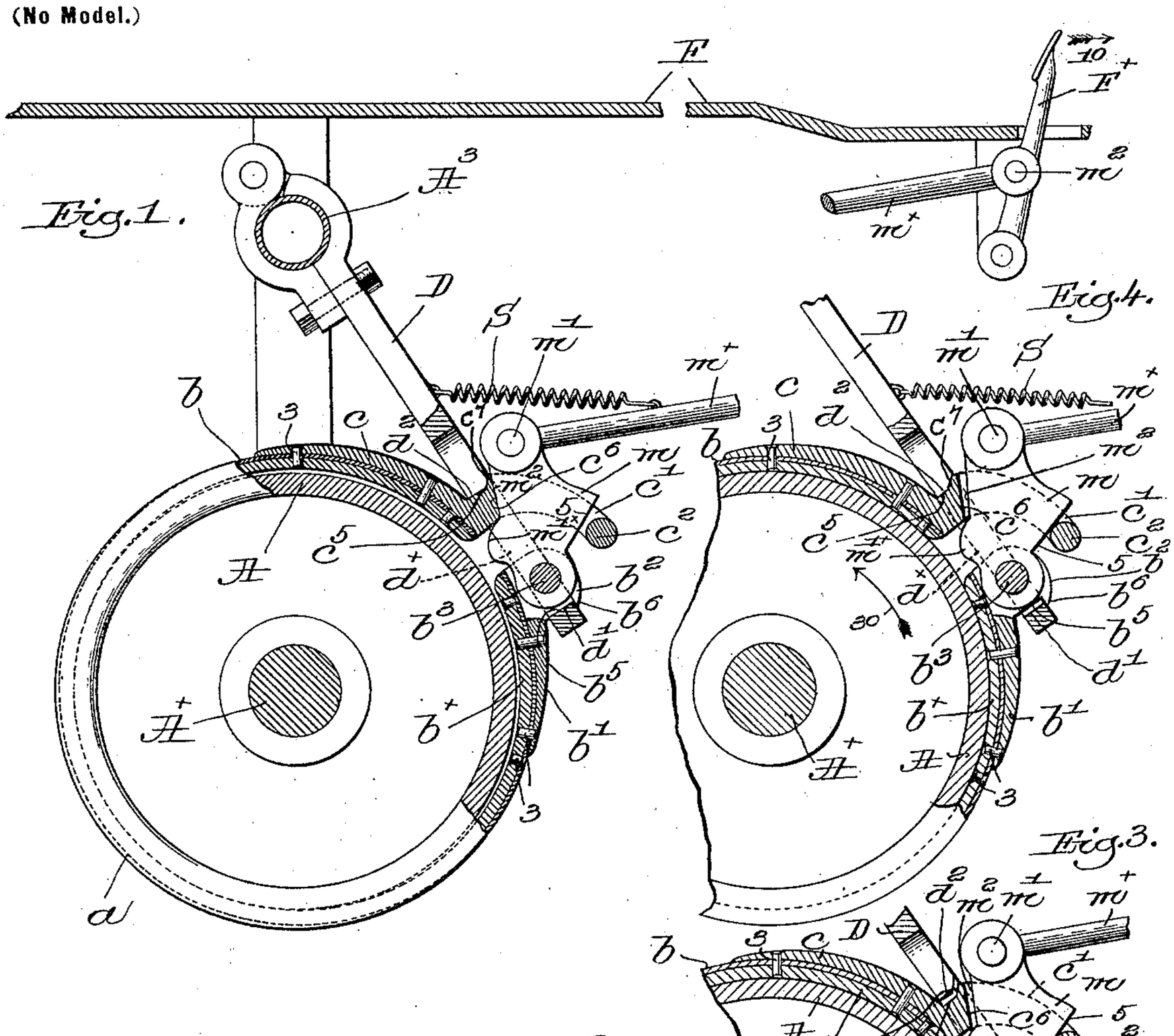


Fig. 4.

Fig. 3.

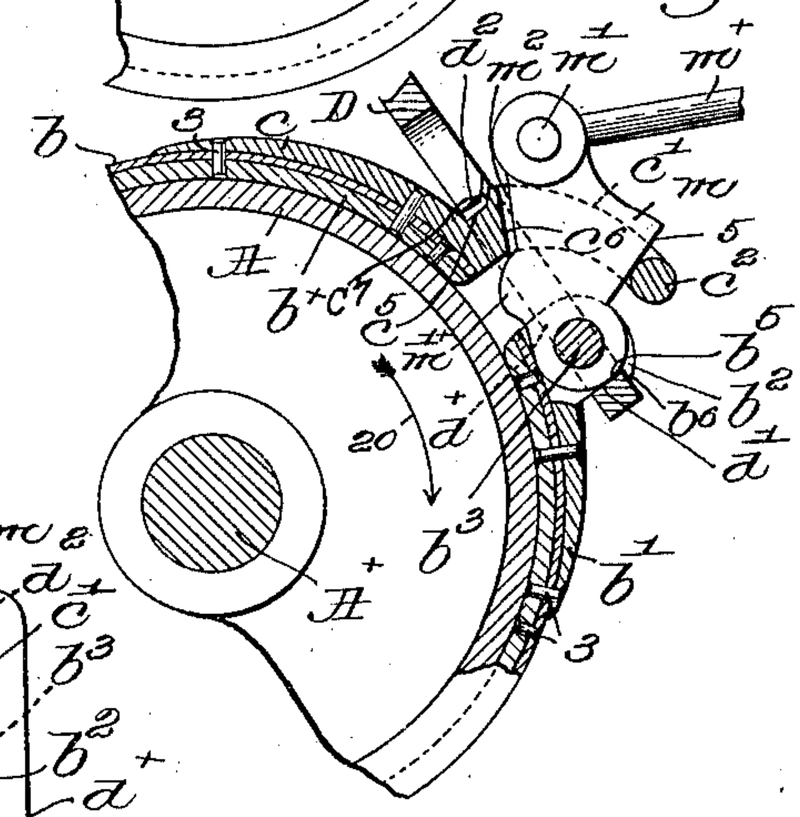
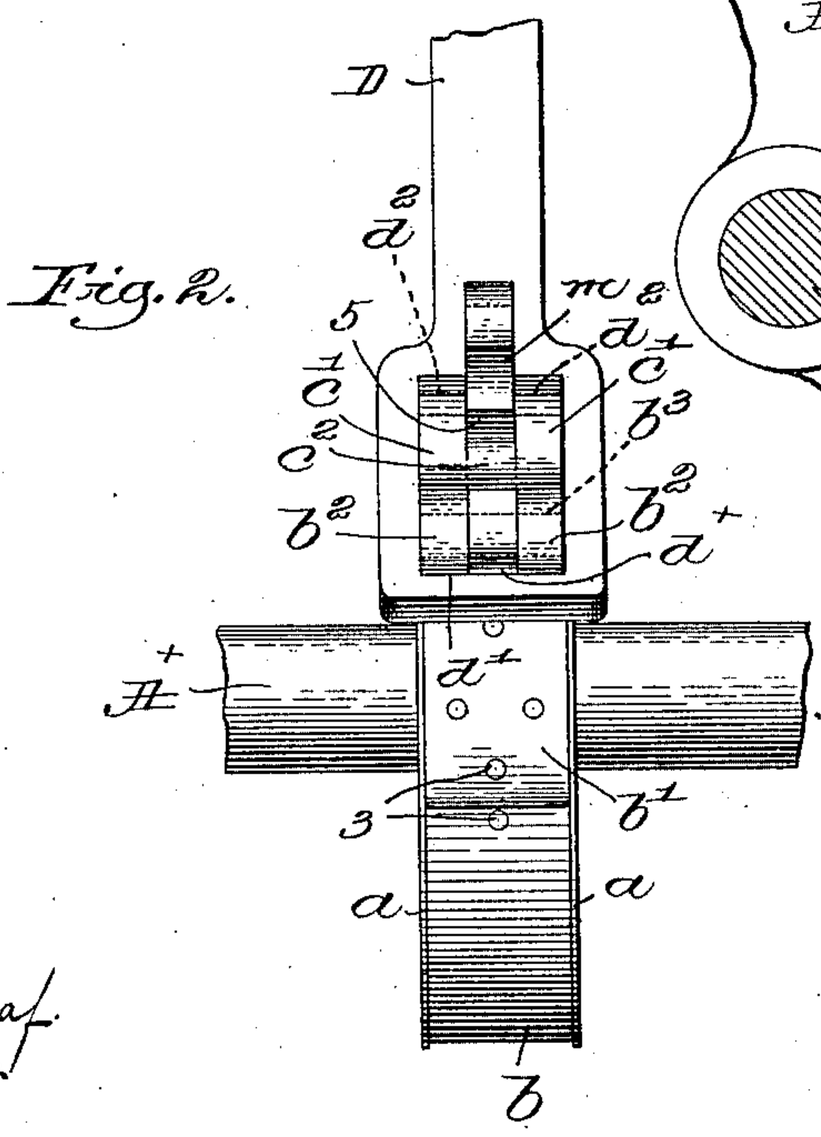


Fig. 2.



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UNITED STATES PATENT OFFICE.

ALFRED LA FRANCE, OF MARLBORO, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO S. E. SIMONDS, OF MARLBORO, MASSACHUSETTS.

DOUBLE-ACTING BAND-BRAKE.

SPECIFICATION forming part of Letters Patent No. 693,659, dated February 18, 1902.

Application filed April 26, 1901. Serial No. 57,587. (No model.)

To all whom it may concern:

Be it known that I, ALFRED LA FRANCE, a citizen of the United States, and a resident of Marlboro, county of Middlesex, State of Massachusetts, have invented an Improvement in Double-Acting Band-Brakes, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention has for its object the production of a novel and effective double-acting band-brake which will operate equally well whether the rotatable member or drum is moving in a forward or backward direction when the brake is set.

While not restricted thereto, my invention is particularly adapted for use on automobile vehicles, where it is of the utmost importance that braking means be provided which shall be equally effective whether the vehicle be running forward or back.

Various features of my invention will be hereinafter described, and particularly pointed out in the following claims.

Figure 1 is a side elevation and part vertical section of a double-acting brake embodying one form of my invention, the drum or rotatable member being shown as released. Fig. 2 is a right-hand side elevation of a portion of the mechanism shown in Fig. 1. Fig. 3 is a sectional detail similar to Fig. 1, showing the brake set when the drum has been rotating forward; and Fig. 4 is alike view showing the brake set when the drum has been rotated backwardly.

Referring to Fig. 1, the rotatable brake member or drum A, having flanges *a*, is rigidly secured to a shaft $A^{\times}$, which may be the driving-shaft of an automobile vehicle—for instance, a portion of the flooring of the vehicle-body being shown at F, Fig. 1. The flexible and expansible brake-band or split flexible ring *b* may be a strap of metal having a non-metallic or other suitable lining $b^{\times}$, secured to the strap, as by rivets 3. I have shown one end of the shoe or ring as having secured thereto on its outer face a tongue b', provided with ears b^2, which support a pin b^3, on which is pivotally mounted the actuating-lever *m*. The other end of the shoe has rigidly secured to it a metallic tongue *c*, shaped at its inner end to form a stirrup or loop c', through which the actuator *m* is extended, the base of the stirrup being formed by a lateral stud c^2, the actuator having a slight play in the stirrup. A link $m^{\times}$ is pivotally connected at m' with the upper end of the actuator, the other end of the link being joined at m^2 to a foot-lever $F^{\times}$, extended up through a hole in the floor of the vehicle-body, as shown in Fig. 1. It will be manifest that when the lever $F^{\times}$ is swung in the direction of the arrow 10, Fig. 1, the actuator will be rocked on its pivot b^3 and its face 5 will be brought into engagement with the end c^2 of the stirrup, so that a pull will be exerted upon the stud b^3 opposite to a similar pull on the stirrup to draw toward each other the ends of the brake-shoe to thereby contract or cramp the shoe upon the drum.

In order that the brake may be double-acting and equally effective, no matter what may be the direction of rotation of the drum, I have provided means to coöperate with one or the other end of the shoe according to the direction of rotation of the drum when the brake is set. A strong metal bar D is herein shown as rigidly secured to a suitable part of the framing—such, for instance, as one of the cross-braces A^3, Fig. 1—said bar having a longitudinal slot $d^{\times}$ therein, through which the stirrup on one end of the shoe and the ears b^2 on the other end are extended, a shoulder c^5 being formed at the base of the stirrup and an oppositely-facing shoulder b^5 at the base of the ears b^2.

Referring now to Fig. 3, the parts are shown in the position they occupy when the brake is set, the drum having been rotating in the direction of the arrow 20. Such rotative movement of the drum operates when the ring or shoe is tightened to force the shoulder b^5 firmly against the adjacent or lower end d' of the slot $d^{\times}$, so that a rigid back-stop or support is provided for that end of the shoe, and the actuator turns on the pin or stud b^3 as its fixed fulcrum, forcing the other

end of the shoe downward toward the fixedly-held end, the full power utilized to set the brake being employed to rock the actuator. Now if the drum should be rotating in the direction of the arrow 30, Fig. 4, at the time the brake is set the tightening of the shoe will act, through the friction between the drum and the upper end of the shoe, to press the shoulder c^5 against the upper end d^2 of the slot $d^\times$, so that the upper end of the shoe is then held rigidly, and the rocking of the actuator will take place about the part c^2 of the stirrup as its fixed fulcrum, and the lower end of the brake-shoe will be moved upward toward its fellow as the ring is cramped upon the drum.

It will be plain from the foregoing and from an inspection of Figs. 3 and 4 that none of the power necessary to set the brake must be utilized to position one or the other end of the shoe, as such positioning is positively and powerfully effected by one or the other of the back-stops d' d^2, coöperating with its adjacent shoulder on one end of the shoe.

The releasing of the brake will be effected, as usual, by the expansibility of the ring or shoe; but in order to positively insure the separation of the ends of the shoe I have herein provided the actuator m with a cam portion $m'^\times$, adapted to enter between the two ends of the shoe when the actuator is released, a spring S, fastened at one end to the link $m^\times$ and at its other end to the bar D, serving to insure the return of the brake to normal position. The back face m^2 of the actuator rests against a corresponding face c^6, forming the upper end of the stirrups c', when the actuator is in normal position. The ears b^2 are shouldered, as at b^6, to slightly overlap the lower end of the slot $d^\times$ to prevent accidental displacement of the connected end of the shoe, and preferably the upper end of the stirrup is cut away or notched, as at c^7, to coöperate with the plate D, at the upper end of the slot therein, for a similar purpose.

My invention is not restricted to the precise construction and arrangement herein shown, as the same may be modified or changed in different particulars without departing from the spirit and scope of my invention.

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

1. A double-acting band-brake comprising a rotatable drum, a surrounding expansible shoe having normally separated ends, a fixed member provided with a slot through which both ends of the expansible shoe are extended, the opposite ends of said slot constituting back-stops against which one or the other of the ends of the shoe may bear, and means for drawing together the ends of said shoe, said means including a member pivotally mounted directly upon one end of the shoe and in sliding engagement with the other end thereof, one of said ends, when the brake is applied, bearing against one of said back-stops when the drum is rotating in one direction, and the other end of said shoe bearing against the other back-stop when the drum is rotating in an opposite direction.

2. A double-acting band-brake comprising a rotatable drum, a surrounding expansible shoe having normally separated ends, means to draw the ends toward each other to tighten the shoe upon the drum, a cam to positively separate the ends when said means is released, and fixed back-stops to coöperate with one or the other end of the shoe according to the rotation of the drum, when the brake is set.

3. A double-acting band-brake comprising a rotatable drum, a surrounding split friction-ring, means to contract the friction-ring upon the drum, and a fixed back-stop member interposed between said means and the circumference of the drum, to coöperate with and positively hold one or the other side of the ring according to the direction of rotation of the drum, when the brake is set, said back-stop member having an opening through which the ends of the ring are extended.

4. A double-acting band-brake comprising a rotatable drum, a surrounding split friction-ring, an actuating-lever pivotally mounted on one end of the ring to coöperate with a fulcrum on the other end, to contract the ring upon the drum, and fixed means between the drum and the actuating-lever, having a slot through which the ends of the ring are extended, the ends of the slot acting to engage and positively hold one or the other end of the ring according to the direction of rotation of the drum, when the ring is contracted.

5. A double-acting band-brake comprising a rotatable drum, a surrounding split friction-ring, an actuating-lever pivotally mounted on one end of the ring to coöperate with a fulcrum on the other end, to contract the ring upon the drum, a cam on said lever to separate the ends of the ring when the lever is released, and fixed means to positively hold one or the other side of the ring according to the direction of rotation of the drum, when the ring is contracted.

6. A double-acting band-brake comprising a rotatable drum, a surrounding split friction-ring having an external shoulder on each end, means to contract the ring upon the drum, and a fixedly-mounted bar having a longitudinal slot through which the ends of the ring extend, the shoulder of one or the other end coöperating with the adjacent end of the slot according to the direction of rotation of the drum, when the ring is contracted.

7. A double-acting band-brake comprising a rotatable drum, a surrounding split friction-ring having an external shoulder on each end, a stirrup mounted on one end of the ring, an actuating-lever extended through the stirrup and pivotally mounted on the other end of the ring, and a fixedly-mounted bar having a lon-

gitudinal slot through which the shouldered ends of the ring extend, one or the other end of the slot forming a back-stop for the shoulder of the adjacent end of the ring according to the direction of rotation of the drum, when the actuating-lever is rocked to contract the ring upon the drum.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ALFRED LA FRANCE.

Witnesses:

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