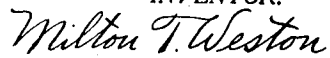


ANTISKID ATTACHMENT FOR AUTOMOBILES.

Patented Oct. 12, 1920.

1,355,372.

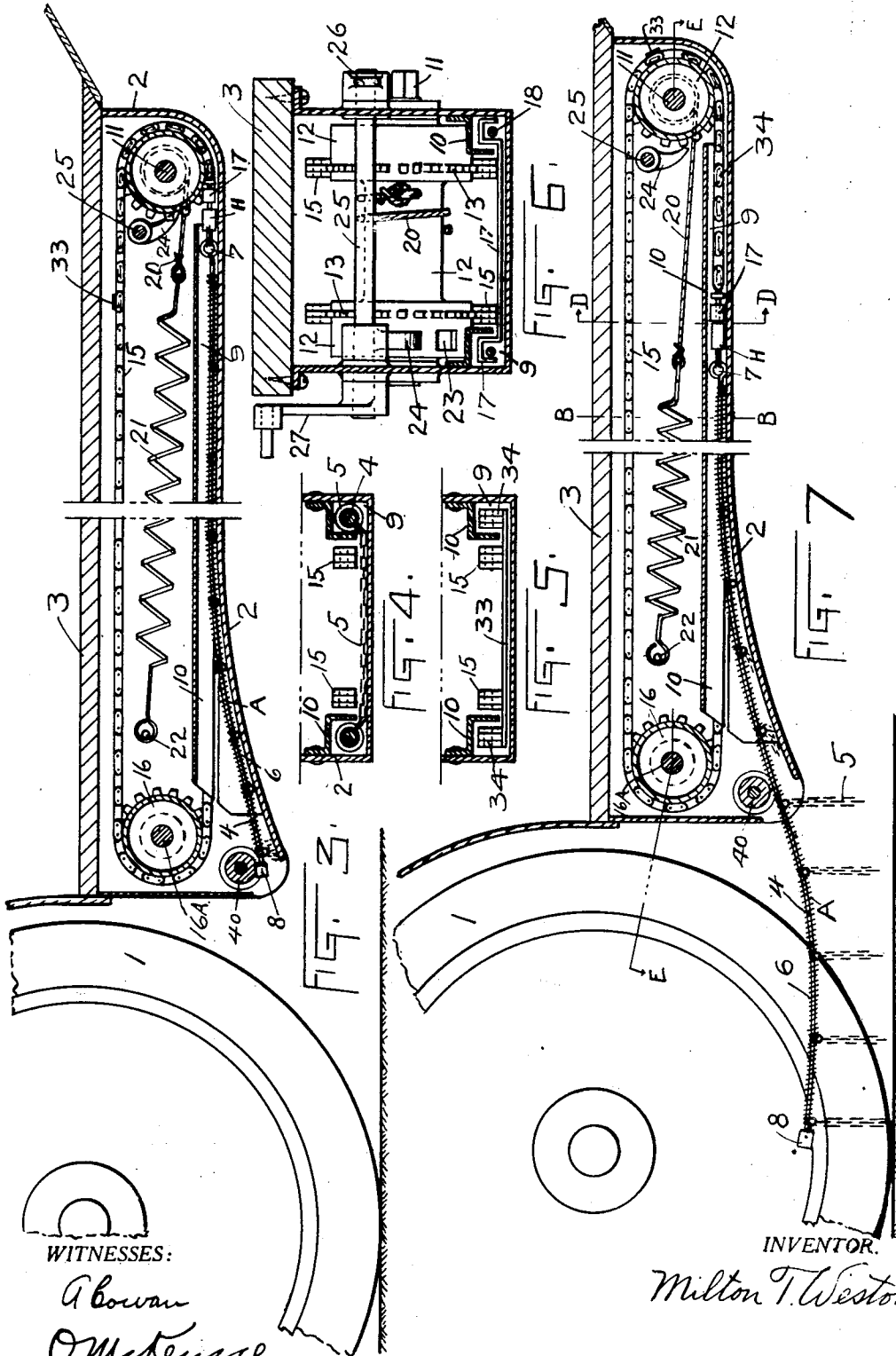


M. T. WESTON.
 ANTISKID ATTACHMENT FOR AUTOMOBILES.
 APPLICATION FILED MAY 20, 1916.

1,355,372.

Patented Oct. 12, 1920.

5 SHEETS—SHEET 2.



WITNESSES:

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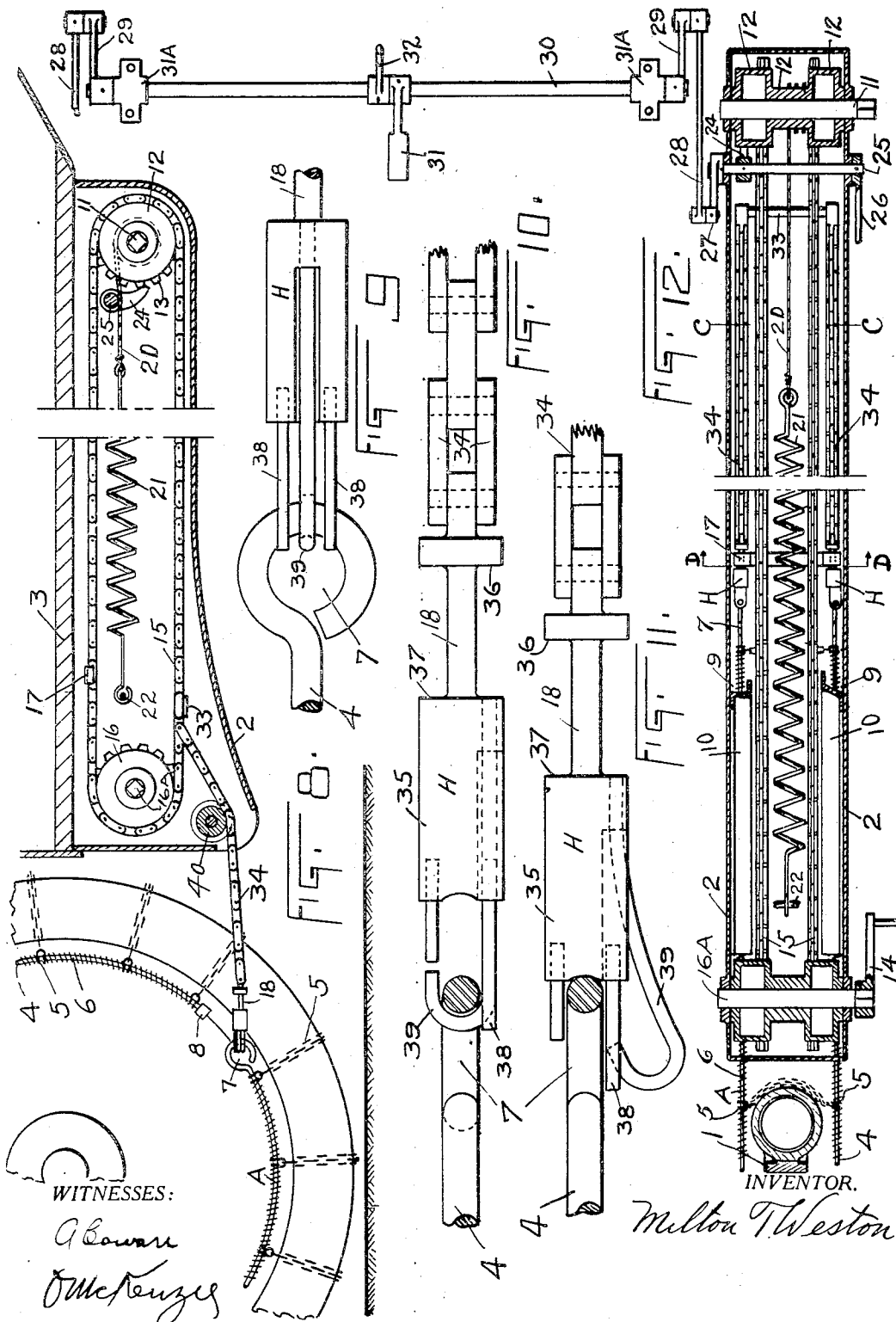
Milton T. Weston

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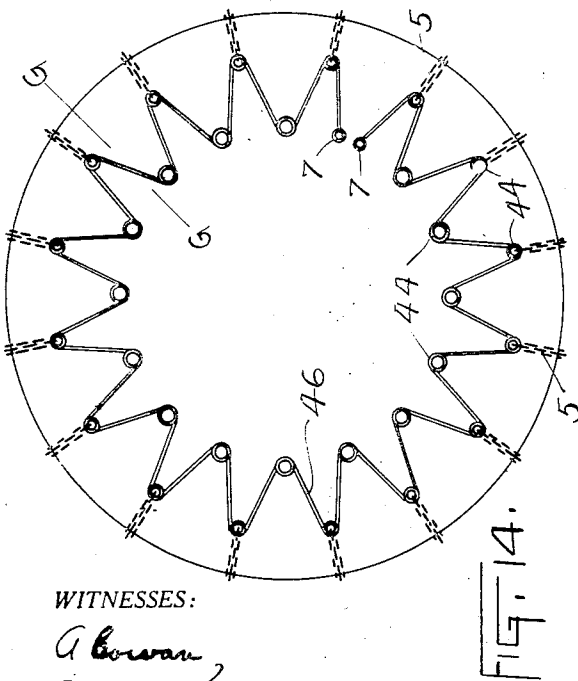
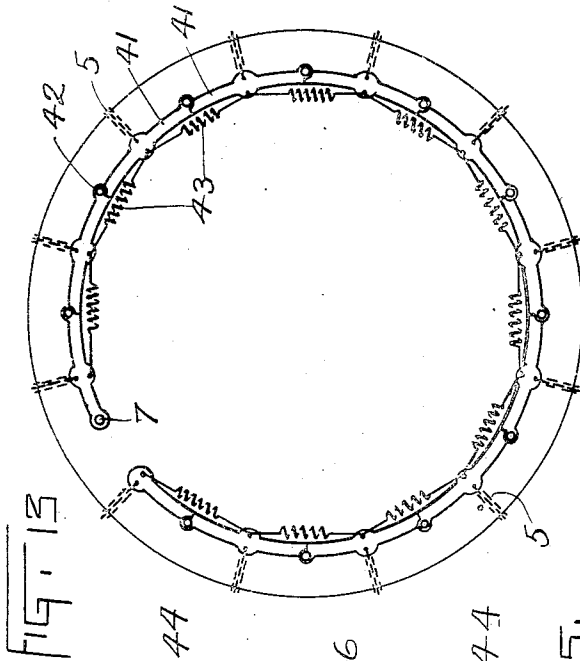


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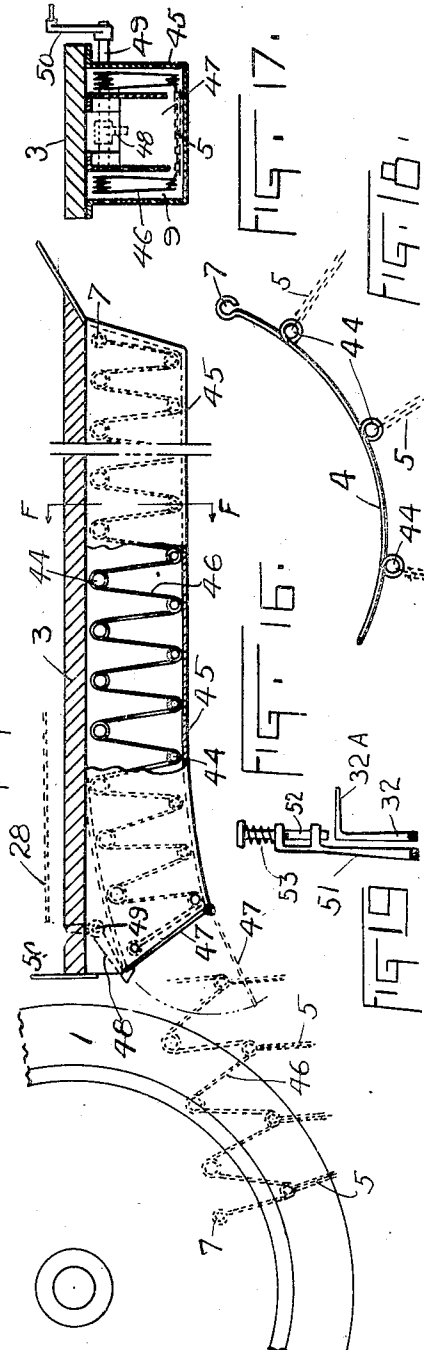
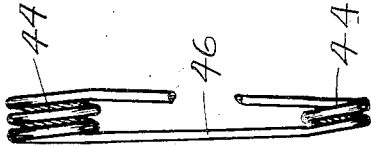
5 SHEETS—SHEET 4.



WITNESSES:

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FIG. 15.



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1,355,372.

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 5 SHEETS—SHEET 5.

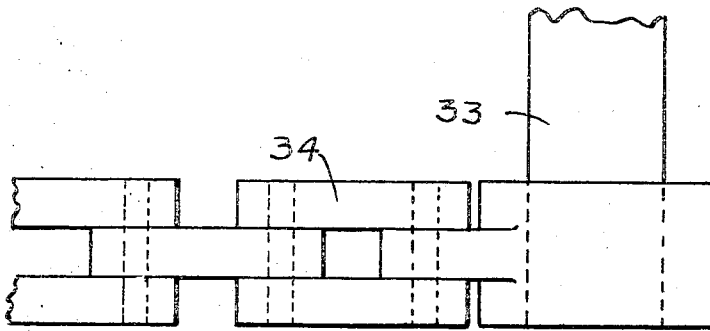


Fig. 20

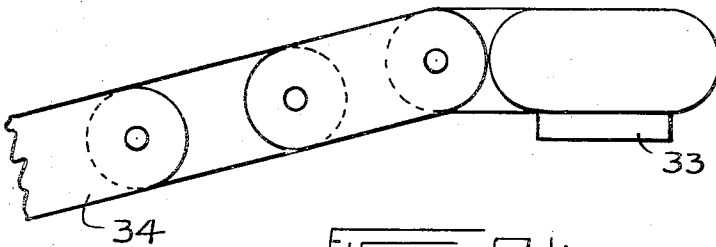
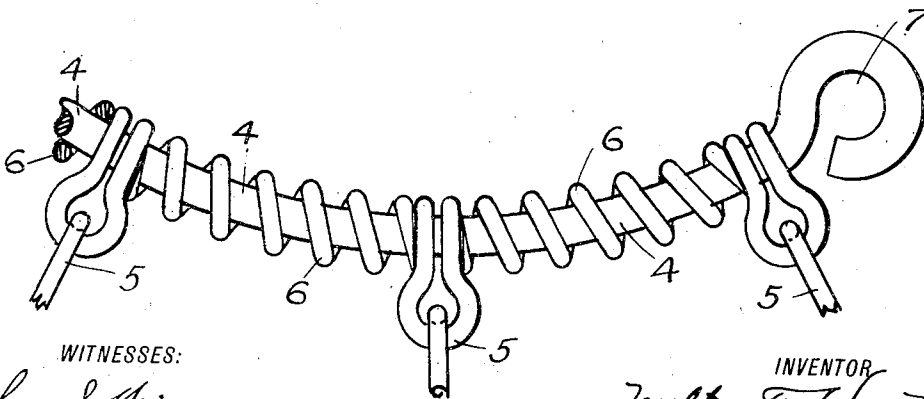


Fig. 21



WITNESSES:

Chas. S. Hise

INVENTOR

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Fig. 22

UNITED STATES PATENT OFFICE.

MILTON T. WESTON, OF NEW YORK, N. Y.

ANTISKID ATTACHMENT FOR AUTOMOBILES.

1,355,372.

Specification of Letters Patent.

Patented Oct. 12, 1920.

Application filed May 20, 1916. Serial No. 98 826.

To all whom it may concern:

Be it known that I, MILTON T. WESTON, a citizen of the United States, and resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Antiskid Attachments for Automobiles, of which the following is a specification.

My invention relates to improvements in anti-skid attachments for automobiles and, in a simple form, consists essentially of a retaining casing mounted on a vehicle and an anti-skid member removably mounted in and normally carried by said retaining casing. The retaining casing is adapted for mounting on the vehicle adjacent to a wheel thereof and in such relation to the latter that the anti-skid member may be instantly transferred from said retaining casing to the periphery of the wheel while the vehicle is in motion. The preferred location for the retaining casing is on the underside of the running board of the vehicle as shown in the several views. It may however, be attached to the vehicle in some other position if found desirable.

The object of my invention is to provide a new and useful improvement in anti-skid attachments for automobiles which will enable the operator of same to instantly apply the anti-skid member to the periphery of the wheel, while the vehicle is in motion, to prevent skidding or slipping of same on smooth or slippery surfaces and to thus avoid serious injuries to passengers and machine. A further object is to provide means for readily and conveniently removing the anti-skid member from the wheel and replacing same in the retaining casing where it is again ready for emergency use.

My invention is fully described in the following specification and clearly shown in the accompanying drawings in which similar reference members refer to similar parts in all the views.

Figure 1, is a side view of the preferred form of my invention.

Fig. 2, is a view similar to Fig. 1, showing the anti-skid member passing from its retaining casing to the periphery of the vehicle wheel.

Fig. 3, is an enlarged longitudinal sectional side view through the retaining casing as shown in Fig. 1.

Fig. 4, is a cross section of the bottom part of the casing on a line B—B of Fig. 7.

Fig. 5, is a view similar to Fig. 4, on a line C—C of Fig. 12.

Fig. 6, is a cross section of the casing on a line D—D of Figs. 7 and 12.

Fig. 7, is a vertical longitudinal section of my invention taken just inside the outer wall of the casing as illustrated in Fig. 2.

Fig. 8, is a longitudinal sectional view similar to Figs. 3 and 7, and is intended to illustrate the method of drawing the anti-skid member back into the retaining casing. Only the necessary parts to clearly illustrate the action are shown.

Fig. 9, is an enlarged detail side view of the self-releasing hook.

Fig. 10, is an enlarged detail plan view of the self-releasing hook shown in conjunction with the end of a hoop member.

Fig. 11, is a view similar to Fig. 10, showing the self-releasing hook in freed relation to the end of the hoop member.

Fig. 12, is a horizontal sectional view on a line E—E of Fig. 7.

Fig. 13, shows a modification in the construction of the anti-skid member.

Fig. 14, illustrates a further modification in the construction of the anti-skid member.

Fig. 15, is an enlarged sectional detail of the modification shown in Fig. 14, on a line G—G.

Fig. 16, is a longitudinal sectional view illustrating the application of the modification shown in Fig. 14.

Fig. 17, is a cross sectional view on a line F—F of Fig. 16.

Fig. 18, is a partial view of a hoop member having a series of coils for the purpose of increasing its flexibility.

Fig. 19, is a detail view of the arrangement of the emergency brake lever and the lever operating the anti-skid attachment.

Fig. 20 is an enlarged detail of the method of attaching the short chains to the cross bar carried by the endless chains and as shown in Fig. 12.

Fig. 21 is an enlarged detail side view of the short chains and their attachment to the cross bars as illustrated in Fig. 8.

Fig. 22 is an enlarged detail view of one end of a side member showing clearly the relation of the end cross chains and the spacing coils to the eye on the end of the said side member. This view also illustrates the construction and use of the spring spacers.

The preferred form of my invention is illustrated in Figs. 1 and 2. In Fig. 1, the

anti-skid member A is in its normal position in the retaining casing 2 which is shown attached to the underside of the running-board 3 of the vehicle. In Fig. 2, the anti-skid member A is shown partially ejected from the casing 2 and in contact with the periphery of the wheel 1.

The anti-skid member A, as shown in the several general and detail views in the drawings, consists of a pair of open hoop members 4, preferably make of spring steel of suitable section which will permit them to be straightened without danger of breaking as they are drawn into place in the retaining casing 2. These open hoop members 4 are somewhat smaller in diameter than the diameter of the wheel and are so designed and so constructed that they tend to contract toward their respective centers. A plurality of flexible cross tread members 5 join the two hoop members 4 together, said hoop members, when in place on the wheel 1, being oppositely disposed with respect to the tire of said wheel. The tendency of the hoop members 4 to contract toward their respective centers, or toward the axis of the wheel 1, draws the flexible tread members 5 snugly across the tread of the wheel and causes the anti-skid member A to surround and to attach itself to the periphery of the wheel.

The cross tread members 5 are equally spaced circumferentially around the hoop members 4 and may be held in that relation by the spacing coils 6, which are flexible and the use of which avoids any construction which would weaken the hoop members 4. One end of each of the hoop members 4 is formed into an eye 7, which serves the purpose of holding the end cross chains 5 in place at that end and also provides means of attachment for drawing the anti-skid member A into place in the casing 2, as illustrated in Fig. 8. The other end of each of the hoops 4 may be provided with a similar eye, or with any other suitable means, to keep the end cross chains in place, as for example the cylindrical nut 8 pinned or otherwise secured to the hoops 4.

The retaining casing 2, which is preferably attached to the underside of the running-board 3, in any suitable manner, is substantially U-shaped in cross section and of suitable size and length to admit the entire anti-skid member A when extended. Spaces 9 are formed on either side, preferably at the bottom, of the retaining casing 2, by the bent strips 10 attached to the inner walls of the casing 2. These spaces 9 receive and hold the hoop members 4 in an extended position and in parallel relation to each other and also in proper relation to the tire of the wheel 1. The casing 2 is wide enough horizontally to insure

ample distance between the spaces 9 in order that the hoop members 4 will positively be guided clear of the sides of the tire as they pass from the casing 2 to their position on the periphery of the wheel 1, in the manner to be described hereinafter. When the anti-skid member A is in the retaining casing 2 the tread members 5 simply rest on the bottom of said casing between the bent strips 10.

The casing 2 is shown curving or dipping down at the rear so as to correct, in a measure, the tendency of the anti-skid member A to curl upward as it leaves the casing and also to bring the end of the anti-skid member into approximate tangential contact with the tire of the wheel 1 as it leaves the casing 2.

Mounted on the shaft 11, which has its bearings in the forward end of the casing 2, is a drum 12 on which are shown two sets of sprocket teeth 13. The shaft 11 extends through the outer wall of the casing 2 and is squared to receive a removable crank 14 which may also be used on shaft 16^a to be referred to later.

Two endless chains 15 pass around the drum 12 and engage the teeth 13 thereon and are driven thereby when the drum 12 is caused to revolve in either direction. The two endless chains 15 also pass around an idler drum 16, on a shaft 16^a, mounted in the rear end of the casing 2. The projecting end of the shaft 16^a is squared to receive the removable crank 14 previously referred to.

In this construction, revolving the drum 12 causes the two endless chains 15 to travel in parallel order which keeps a transverse bar 17, attached to said chains, square with the casing 2. This transverse bar 17 extends into the spaces 9 and is designed to engage the shanks 18 of the self-releasing hook H, shown in detail in Figs. 9, 10 and 11, and which will be more fully described later. The object of the transverse bar 17 is to insure simultaneous and parallel ejection of the two hoop members 4 from the retaining casing 2.

A chain or cable 20 is wound around the drum 12 which is shown reduced in diameter between the two sets of sprocket teeth 13. One end of this cable is attached to the drum and the free end is secured to one end of a spring 21. A coiled tension spring is here shown and is anchored at its opposite end to a pin 22 fixed in the walls of the casing 2. The cable 20 is given a sufficient number of turns around the drum 12 to cause the required travel of the endless chains 15 to bring the first tread member 5, of the anti-skid member A, into engagement with the tread of the wheel 1 and the road surface as shown in Fig. 7. The cable 20, however, is

not long enough to cause the self-releasing hook H to be expelled from the casing 2 by the action of the spring 21.

On the periphery of the drum 12 is a notch 23, Fig. 6 (the equivalent of a ratchet tooth) shown at its inner end, which is engaged by the tripping latch or pawl 24 mounted on and secured to the rocker shaft 25 having bearings in the walls of the casing 2, adjacent to the drum 12. The engagement of the pawl 24 with the notch 23 holds the tension in the spring 21 by preventing the turning of the drum 12 and the unwinding of the cable 20. Only one notch 23 is necessary and is so located on the periphery of the drum 12 that the anti-skid member A will be held substantially in the position in which it is shown in Figs. 1 and 3.

Both ends of the rocker shaft 25 project through the casing 2. A lever 26 is mounted on the outer end in order that the pawl 24 may be disengaged from the notch 23 by hand when desired and as illustrated in Figs. 2 and 7. On the inner end of the rocker shaft 25 is mounted and secured a crank arm 27 to the outer end of which is pivoted the connecting rod 28 having its opposite end attached to a crank arm 29 on a transverse rocker shaft 30 mounted on the body of the vehicle in suitable bearings 31^A. The rocker shaft 30 may be partially turned by the operator of the machine pressing the foot lever 31 or pulling the hand lever 32.

Some distance forward of the transverse bar 17 previously described, is another transverse bar 33 also attached to the endless chains 15 and extending laterally into the spaces 9 in the casing 2. Attached to the ends of this transverse bar 33, within the spaces 9, are the two relatively short chains 34 carrying the self-releasing hooks H, previously referred to.

The two transverse bars 17 and 33 bear such relation to each other, in location on the chains 15, that the former will engage the shanks 18 of the self-releasing hooks H, on the free ends of the short chains 34, as they are drawn into place in the spaces 9 in the casing 2. From this it will be seen that another function of the bar 17 is to maintain the short chains 34 in proper relation to the endless chains 15 and to positively prevent jamming of their free ends in the spaces 9 during the ejecting of the anti-skid member.

The two short chains 34 are of sufficient length to reach from their points of attachment to the endless chains 15, to the ends of the hoop members 4 of the anti-skid member A, in order to permit engagement of the self-releasing hook H with the eyes 7 of the hoop members 4 when all are brought into the relation to each other clearly illustrated in Fig. 8.

The self-releasing hook H consists essentially of a body 35, a part of which is re-

duced in diameter to form the shank 18. This reduction in diameter provides a forward shoulder 36 and a rearward shoulder 37, said shoulders being alternately engaged by the transverse bar 17 as the anti-skid member is drawn into or ejected from the casing 2. Projecting from the hook body 35 are one or more fixed tongues 38, and a spring tongue 39, mounted to operate adjacent to said fixed tongues. In Figs. 9 and 10, the spring tongue 39 is shown engaging the eye 7 of a hoop member 4 and as long as the hook is drawing the anti-skid member into the casing the tension will maintain the spring tongue 39 in engagement with the eye 7. When the hook H is moved toward the eye 7 as in ejecting the anti-skid member from the casing as shown in Fig. 11, the spring tongue 39 will automatically release itself from the eye 7, in an obvious manner, and cannot again engage said eye 7, being prevented by the rigid tongues 38.

Rollers 40 are mounted in the rear end of the casing 2 to reduce as much as possible the frictional resistance to the anti-skid member as it is drawn into or ejected from said casing.

The operation of my invention as described above is as follows: Assuming the automobile to be in motion and the anti-skid member to be in place in the casing 2, the operator of the machine either presses the foot lever 31 or pulls the hand lever 32 when he desires to apply the anti-skid member A to the wheel 1. This action on the part of the operator withdraws the pawl 24 from the notch 23 through the medium of the rocker shaft 30, crank arm 29, connecting rod 28, crank arm 27, and rocker shaft 25 on which the pawl 24 is mounted. The drum 12, being thus released, is revolved clockwise by the contraction of the spring 21 acting through the cable 20, Figs. 3 and 7. The endless chains 15 are caused to travel around the drum 12 and idler drum 16, carrying the transverse bars 17 and 33 and also the short chains 34 rearward in the casing 2. The transverse bar 17, being in engagement with the shanks 18 of the self-releasing hook H, as already explained, brings the latter in contact with the eyes 7 of the hoop members 4 and allows the spring tongues 39 to release themselves from the eyes 7. The rearward movement continued forces hoop members 4 from the casing 2. As the rear ends of the hoop members 4 leave the casing 2 they tend to curve upward but the contact of the first tread member 5 with the revolving tire of the wheel carries the ends of the hoop members downward as they continue to be ejected from the casing in the manner explained and as illustrated in Figs. 2, 7 and 16. As soon as the first tread member 5 passes between the tread of the wheel and the road surface, as in Fig.

7, it is obvious that the anti-skid member will be drawn out of the casing 2 by the action of the revolving wheel on the road surface and will be independent of the ejecting mechanism in the casing thereafter. The ejecting mechanism, therefore, need only be sufficient to partially eject the anti-skid member as the action of the wheel itself will continue the ejecting movement until the anti-skid member is entirely free from the casing 2.

The hoop members 4 are constructed to resume their normal hoop shape as they leave the casing 2. They therefore tend to contract toward their respective centers which is toward the axis of the wheel. This action draws the tread members 5 snugly across the tread of the wheel as they come successively in contact with same and holds the anti-skid member in operative position on the tire of the wheel.

When it is desired to remove the anti-skid member from the wheel 1 and replace it in the retaining casing 2, the wheels of the vehicle may be raised, as shown in Fig. 8, so as to be free to revolve. The removable crank 14 is placed on the squared end of the shaft 11, or on shaft 16^a if more convenient, and the pawl 24 is held out of engagement with the notch 23 by raising the lever 26. The crank 14 is turned clockwise (putting tension on the reverse side of the drum 12 temporarily, Fig. 8) until the hooks H, on the free ends of the short chains 34, are ejected from the rear of the casing 2, far enough to reach the eyes 7 on the hoops 4 as shown in Fig. 8. The hooks H are then attached to the eyes 7 as shown in this view and the crank 14 turned in the reverse direction which draws the anti-skid member into the casing and at the same time puts the spring 21 under the required tension by winding the cable 20 on the drum 12, Figs. 3 and 7. When the anti-skid member reaches the position shown in Figs. 1 and 3 the pawl 24 will engage the notch 23 and the device is again set for immediate and convenient use.

In practice I propose to mount the hand lever 32 on the vehicle adjacent to the emergency break lever 51 as illustrated in Figs. 1 and 2 and as shown in the detail view in Fig. 19. It will be readily seen from the description of my invention that its action is practically instantaneous, being effective the moment the first tread member 5 is interposed between the tread of the wheel 1 and the road surface.

The detail view in Fig. 19, shows how the hand lever 32 may be operated simultaneously with or independently of the emergency brake lever 51. A bolt 52 is mounted in the upper end of the emergency brake lever 51 and is offset as shown in order to come into engagement with the hand

lever 32 when it is pressed downward by the operator just as he pulls the emergency brake lever. The bolt 52 is held in its normal position where it will not engage the hand lever 32, by the spring 53.

By reference to Fig. 19, it will be seen that the emergency brake lever 51 can be operated independently of the hand lever 32 when the bolt is left in its normal position. It will also be seen that the hand lever 32 can be operated without interfering with the emergency brake lever 51 by simply pulling the convenient outstanding handle 32 A. When, however, both levers are to be operated together the bolt 52 is first depressed as the emergency lever 51 is pulled by the operator. The bolt 52 will engage the hand lever 32 and move it therewith and retaining casing for said anti-skid device.

With this arrangement of the levers 32 and 51 the anti-skid devices A need not be applied until the need of them or an emergency arises. In a vast majority of cases the present types of anti-skid devices are put on prematurely as a measure of precaution on account of the difficult and disagreeable task of putting them on along the road. This means excessive wear on both tires and anti-skid devices which is avoided by the use of my invention.

In the foregoing description of my invention I have explained mechanism which will accomplish the result I desire to obtain with my invention. It is obvious, however, that one skilled in the art may make modifications in the mechanical design of the apparatus which will give substantially the same results I have described and which will clearly come within the scope of my invention.

I have illustrated one of these possible modifications in the design and construction of the hoop members in Fig. 13, wherein they are shown composed of a series of non-flexible parts 41 having pivoted joints 42. Springs 43 attached to adjacent non-flexible parts 41, on the inner side as shown, tend to draw said non-flexible parts 41 inwardly toward the center of the hoop. Tread members 5 are attached to the non-flexible parts 41 as shown. These cross tread members and the hoop members just described constitute an anti-skid device whose action in operation is exactly like the device previously described and may be drawn into and ejected from the casing 2 in exactly the same manner.

The modification in Fig. 18, is primarily intended to show how the flexibility of the hoop member 4 shown in Figs. 1 to 12, may be greatly increased. The hoop 4 is here shown made up of a series of coiled and uncoiled portions from a continuous bar or strip. The coiled portions 44 may have one or more convolutions depending upon the

flexibility desired. The winding action of the coils 44, as the hoop members 4 are straightened, gives the added flexibility. The coils 44 are convenient points of attachment for the tread members 5 but are not intended primarily for this purpose.

This modification just described and shown in Fig. 18, is further developed in Figs. 14 and 15 in which the coils 44 are alternately in staggered relation to each other. The hoop member 46 thus constructed will not only have great flexibility in the plane of the hoop but, when straightened to enter the retaining casing 45, will be compressible longitudinally as will be clearly seen in Fig. 16.

The use of this form of anti-skid device is particularly advantageous on automobiles having relatively short wheel bases where, in consequence, the available space on the running-board is necessarily limited. An additional advantage of this type is that no special mechanism is required to eject it. Being compressible longitudinally it follows that this type will expand longitudinally when released. The casing 45 shown in Fig. 15, is so designed, as regards its length, that the amount of compression of the anti-skid member 46, necessary to confine it in said casing, will give sufficient expansion when released to bring the first tread member 5 between the tread of the wheel and the road surface, when the action of the wheel thereafter will continue to draw the anti-skid member from its casing in the manner previously described.

The casing 45 shown in Figs. 16 and 17, is modified slightly to accommodate the type of anti-skid member 46 just described. As before stated, the ejecting mechanism is omitted as it is not required. The spaces 9 are somewhat larger to admit the larger type of hoop members 46. A hinged gate 47 is provided at the rear end of the casing 45, said gate being held against the pressure of the hoop members 46 by a latch 48 mounted on a rocker shaft 49 mounted in the casing 45 as shown in Figs. 16 and 17. The crank arm 50 corresponds to the crank arm 27, previously described, and is operated by the same system of mechanical parts and in exactly the same manner as illustrated in Figs. 1 and 2.

Pressing the foot lever 31, or pulling the hand lever 32, will therefore disengage the latch 48 from the hinged gate 47, which will then swing downwardly in the design shown in Fig. 16, due to the pressure of the hoop members 46, bearing against it. The hoop members 46, being thus released, will spring outwardly and bring the first tread member 5 in contact with the tread of the revolving wheel 1. The continued expansion of the hoop members 46, acting in conjunction with the downwardly moving tread of the wheel,

brings the first tread member 5 between the tread of the wheel and the road surface. The anti-skid device will thereafter be drawn from its casing 45 by the action of the revolving wheel. Being normally hoop shaped it will surround and attach itself to the wheel as previously described.

Other means of ejecting the anti-skid device from its retaining casing could undoubtedly be devised but I believe that the principle of carrying an anti-skid device in a suitable casing on a vehicle so as to be instantly transferable to the periphery of a wheel thereof while said vehicle is in motion, is broadly new.

Having thus described my invention I claim as new and desire to secure by Letters Patent:

1. In a device of the type described the combination with the running board of a vehicle, of an elongated support adapted to receive and to retain an anti-skid device in an extended position when the same is not in use, an anti-skid device normally hoop-shaped but capable of being straightened and drawn into said elongated support, and means for drawing said anti-skid device into the elongated support.

2. In a device of the type described the combination with a vehicle wheel, of an anti-skid device normally hoop-shaped but capable of being straightened to enter an elongated support, an elongated support attached to the vehicle adjacent to and in the plane of the vehicle wheel said elongated support being adapted to retain said anti-skid device in an extended position, and means to eject the anti-skid device from said elongated support to bring the same into operative engagement with the vehicle wheel.

3. In a device of the type described the combination with an anti-skid device which is normally circular in contour to conform to the periphery of a vehicle tire but which is capable of being substantially straightened to enter a suitable support on the vehicle body, in combination with a retaining casing having receptacles for said anti-skid device said receptacles being adapted to hold the anti-skid device substantially straight, means in the casing for drawing the anti-skid device into the said receptacles in the casing and means in the casing to eject the anti-skid device from the receptacles in the casing.

4. In a device of the type described the combination with an anti-skid device, of a retaining casing for said anti-skid device said retaining casing being adapted for attachment to a vehicle adjacent to a wheel thereof, spring controlled means for ejecting the anti-skid device from said retaining casing, and winding means for returning the anti-skid device to the retaining casing.

5. In a device of the type described the

combination with an anti-skid member, of a retaining casing for said anti-skid member said retaining casing being adapted for attachment to a vehicle body adjacent to a wheel thereof, spring controlled means for ejecting the anti-skid device from said retaining casing, winding means for resetting the ejecting means, and holding means for said resetting means.

6. In a device of the type described the combination with an anti-skid member, of a retaining casing for said anti-skid member said retaining casing being adapted for attachment to a vehicle adjacent to a wheel thereof, spring controlled ejecting means to expel the anti-skid device from said retaining casing, tripping means for releasing said ejecting means, means for restoring the anti-skid device to the retaining casing and resetting the ejecting means simultaneously, and means for holding the ejecting means in its reset position.

7. In a device of the type described, a retaining means for an anti-skid device comprising the combination of a casing adapted for attachment to a vehicle adjacent to a wheel thereof, receptacles on each side of the interior of said casing, crank controlled chain and sprocket means within the casing to draw an anti-skid device into said receptacles, spring controlled chain and sprocket means within the casing to eject an anti-skid device from the receptacles and latch and lever tripping means to release said ejecting means.

8. In a device of the type described the combination with an anti-skid device comprising cross tread members and a pair of open spring hoop members provided with means of attachment at their ends, of a support for the same, drums revolubly mounted in the ends of said support, endless means carried on said drums, flexible means attached to said endless means and movable therewith the free ends of said flexible means being provided with self-releasing means adapted to engage the ends of the hoop members of the anti-skid device when the same is in position on the tire of the vehicle wheel, and means to revolve the drums to draw the anti-skid device from the wheel and into the support.

9. In a device of the type described the combination with an anti-skid device comprising a plurality of cross tread members and a pair of open spring hoop members which are provided with means of attachment at their ends, of a support for the same attached to the vehicle, drums revolubly mounted in said support, endless means carried by said drums, flexible means attached to said endless means and movable therewith said flexible means being provided with automatic releasing means adapted to

engage the ends of the hoop members of the anti-skid device when in position on the vehicle wheel, means to revolve the drums in one direction to draw the anti-skid device into the support, and separate means to revolve the drum in the opposite direction to eject the anti-skid device from the support.

10. In a device of the type described the combination with a retaining casing having means for ejecting an anti-skid device carried therein and latch means for restraining the ejecting means, of releasing means for said restraining means said releasing means being mounted on the body of the vehicle adjacent to the emergency brake lever, and means for moving said releasing means simultaneously with said emergency brake lever or independently thereof.

11. In a device of the type described a wheel and tire, an anti-skid device therefor, an emergency brake, and means for simultaneously operating said brake and automatically applying said anti-skid attachment to the said wheel and tire.

12. The combination with a vehicle wheel, of an anti-skid device which is normally circular in contour to conform to the periphery of said wheel, but which is capable of being substantially straightened to move endwise into and out of gripping engagement with said wheel, and means for holding said device independently of said wheel and projecting it into gripping engagement with said wheel while in motion.

13. The combination with a vehicle wheel, of an anti-skid device, comprising a plurality of cross tread members and a pair of open spring hook members normally tending to conform to the curvature of said wheel, and means for mounting said anti-skid device independently of the wheel, said mounting means being adapted to project said device endwise into engagement with said wheel and permitting said device to progressively engage said wheel under the tension of said hook members.

14. The combination with a vehicle wheel, of an anti-skid device normally tending to conform to the curvature of said wheel, means for holding said device independently of said wheel and for moving it endwise in a direction tangential to the wheel into and out of gripping engagement with the periphery of said wheel, said anti-skid device being adapted to retain itself in position on said wheel.

Signed at New York in the county of New York and State of New York this 19th day of May A. D. 1916.

MILTON T. WESTON.

Witnesses:

A. COWAN,
O. MCKENZIE.