(No Model.) 3 Sheets—Sheet 1.

F. M. CHAPMAN.

LIFE SAVER FOR CARS.

No. 524,190. Patented Aug. 7, 1894.

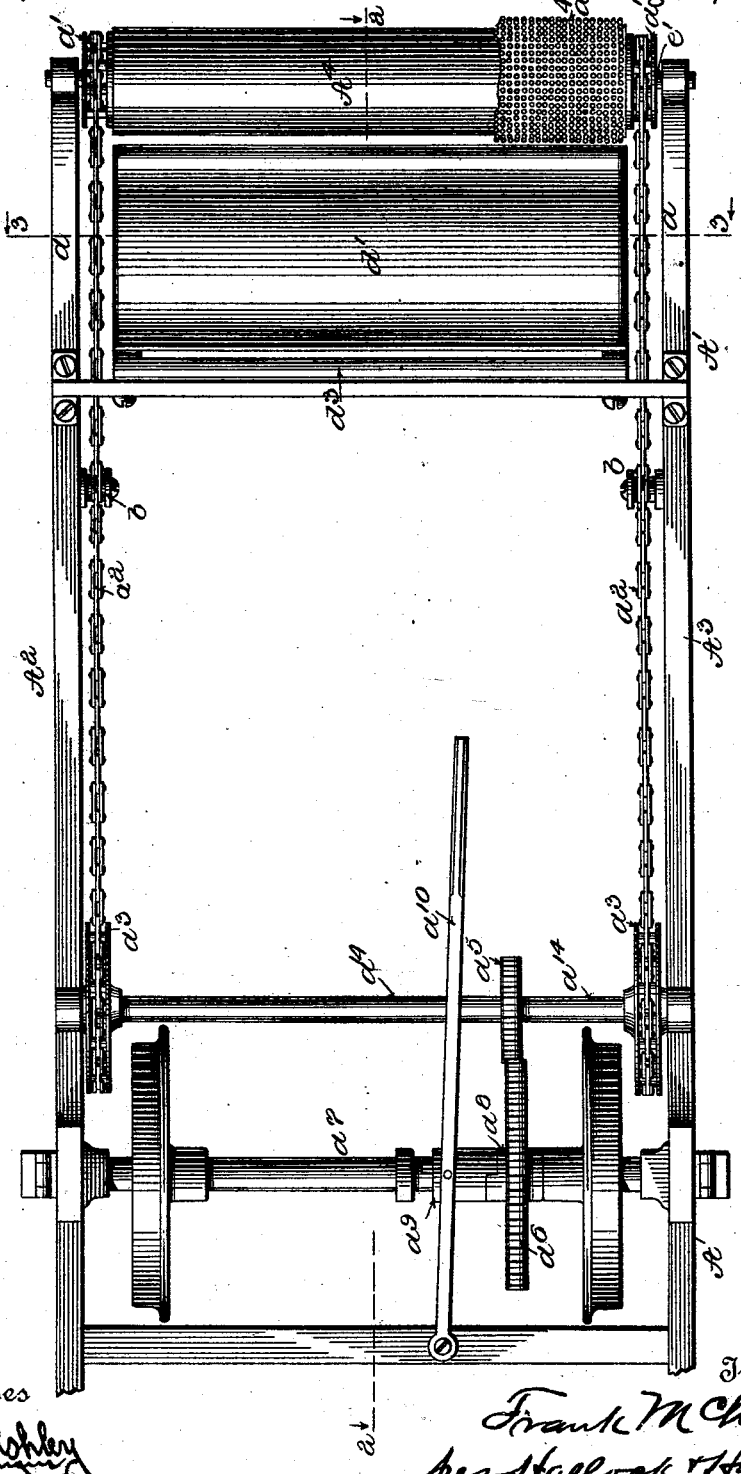

Fig. 1.

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(No Model.)

3 Sheets—Sheet 2.

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Fig. 2.

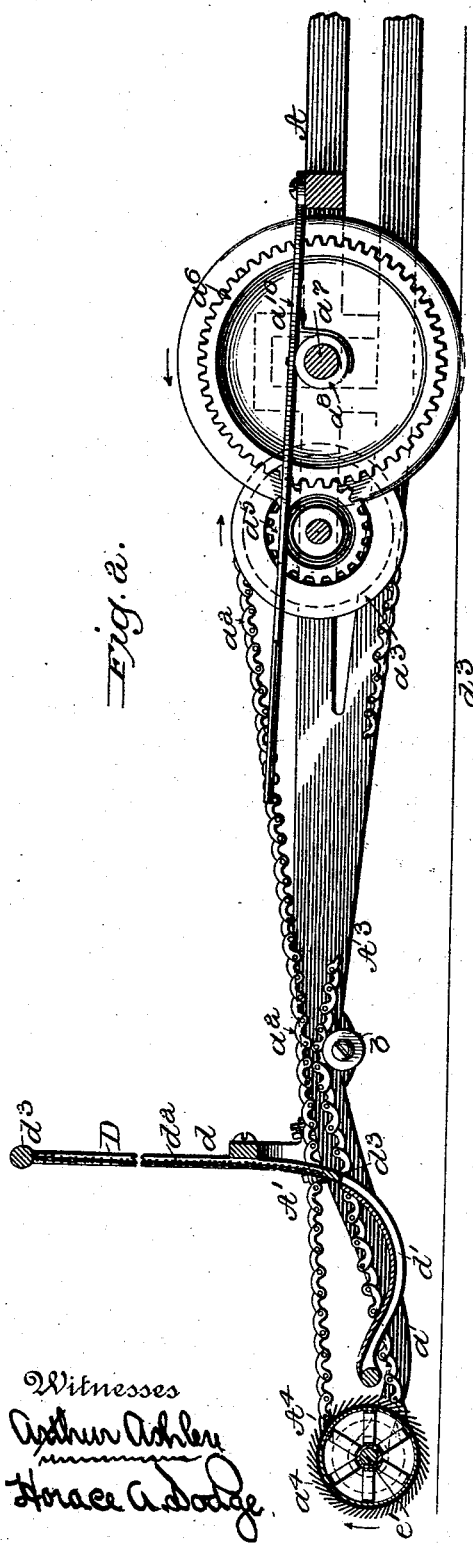
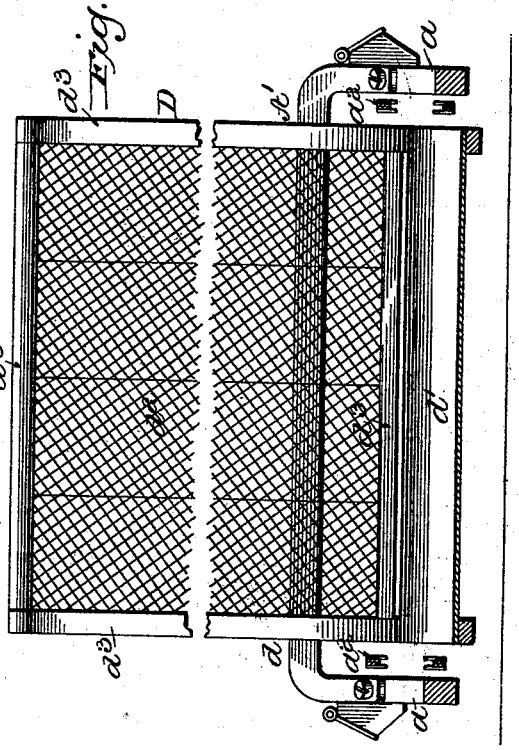


Fig. 3.



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(No Model.) 3 Sheets—Sheet 3.

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Fig. 4.

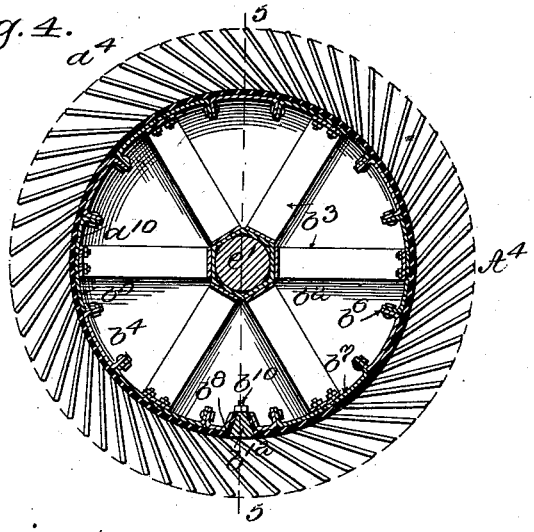


Fig. 5.

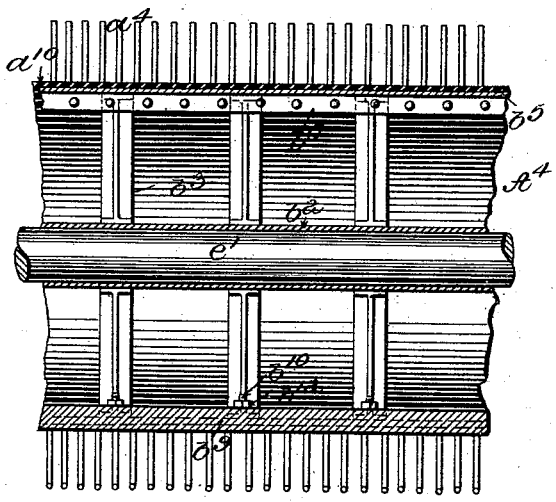
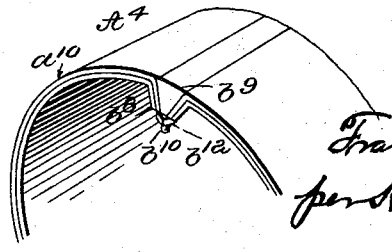


Fig. 6.



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UNITED STATES PATENT OFFICE.

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LIFE-SAVER FOR CARS.

SPECIFICATION forming part of Letters Patent No. 524,190, dated August 7, 1894.

Application filed February 15, 1894. Serial No. 500,246. (No model.)

To all whom it may concern:

Be it known that I, FRANK M. CHAPMAN, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Life-Savers for Street-Cars; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to devices to be attached to the front of a motor driven car for the purpose of preventing persons who should happen to get in the way of the car, while in motion, from being run over.

The object of my invention is to improve upon the general construction of such devices so that the person unfortunate enough to be in the path of the car will not only be protected from the wheels but will also be protected from the momentum of the car which throws the person forward and down.

My device is designed to remove the last danger by lifting the person into a receptacle before the momentum of the car can get in its work.

The invention consists of constructions and combinations all as will hereinafter be set forth in the specification and pointed out in the claims reference being had to the accompanying drawings, in which—

Figure 1 represents a top plan of my device secured to part of a car truck frame; Fig. 2, a longitudinal section on line 2—2 Fig. 1, looking in the direction of arrow 2; Fig. 3, a cross section on line 3—3 Fig. 1; Fig. 4, a transverse section of the buffer on an enlarged scale; Fig. 5, a longitudinal section of the buffer on an enlarged scale; and Fig. 6, a detail showing the slot, key, ends of the finger support, and means for holding them together.

A, represents a truck frame to which the life saving device A′ is attached. If the car is to be run in reverse directions a life saving device A′ is attached to each end of the car or its trucks. The life saver is attached in any desired way to the truck, preferably by means of arms A^2 and A^3 which hold the device in front of the car at any desired distance and are preferably at their front ends provided with a downward extension a which brings the buffer A^4 to a position that will prevent any object passing under it. The buffer is provided with fingers a^4 and is journaled in extensions a in any suitable manner. It is provided, also, with sprocket wheels a' at each end for the driving chains a^2 one on each side and in practice properly housed by a shield or other device (not shown). The under line or part of the chain is supported by a sheave b secured to the frame and prevents it from sagging. These chains a^2 are driven by sprocket wheels a^3 on a countershaft a^{14} and are of greater diameter than sprocket wheels a'. A driven pinion a^5 of less diameter than sprocket wheels a^3 is also on this shaft and receives its power from a drive wheel a^6 on one of the axles a^7 of the truck. This drive pinion a^6 is provided with a member a^8, of a clutch. The other member a^9 of the clutch is upon the axle a^7 and is controlled by a lever a^{10} in the usual manner. This arrangement of gearing will give to the buffer a very high speed whereby a result is obtained that makes this device peculiarly useful and efficacious in saving life.

It is a well known fact that most of the accidents are due to the high speed with which cable and other motor cars are run, and the inability of the operator to stop the car in time when he sees the danger to the person on the track. If the car is provided with the ordinary form of life saver, the probabilities are that the person will be knocked forward as well as down and severely injured by reason of the blow that will be given him by the part of the life saver that first hits his person. This will happen even if the life saver be provided with a rotating buffer at the front part and provided with resilient fingers for picking up the person and depositing him in a receptacle back of the buffer, if said buffer is not rotated at a very high rate of speed. When so rotated the buffer acts as an inclined plane which slides under the person and lifts him into the basket before any impact from the motion of the car could be felt by him. To accomplish this result the buffer is geared to its rotating mechanism so that it will revolve in a direction opposite to that in

which the car is going and may be produced by any desired means of gearing that will rotate the buffer and maintain the high rate of speed required; that is the periphery of the buffer should rotate so much faster than the periphery of the car wheels that the speed of the car will be less than the speed of the periphery of the buffer so that when the buffer strikes a person, its periphery lifts him over the buffer before the impact due to the speed of the car is felt at said buffer. This is accomplished by arranging the gearing between the car wheel and the buffer in such manner that a given point upon the periphery of the buffer will move in the same time a distance, if taken in a straight line, greater than a given point upon the periphery of the car wheels would move during one revolution of the said wheels if taken upon a straight line. In other words, the gearing is such that if the periphery of the car wheel were five feet and the periphery of the buffer were five feet, a given point upon the periphery of the buffer will travel more than five feet while a given point on the periphery of the car wheels is moving only five feet. As the circumference of the buffer is less than that of the car wheel in the example shown in the drawings it follows that a given point on the periphery of the buffer will have to rotate at a high rate of speed to traverse more distance in the same time than that of the car wheel. My gearing is designed to give to said given point on the buffer a very high rate of speed so that when the buffer strikes a person its rapid rotation will shield him from the impact of the car until he strikes the semi-elastic net in front of the body of the car, this result being due to the fact that the rapidly revolving buffer acts as an inclined plane to lift the person instead of a ram to knock him down as is the case when the buffer is not so rotated.

To protect the person operated upon by the buffer from injury by the car, when lifted by said buffer, a protecting netting or shield D is interposed between the car and the buffer. This shield may be of any desired height and has a forward extension d' that covers the space between the buffer and vertical part of the shield and which is preferably made of metal but may be of any other material that will not sag or allow the person dropped from the vertical part upon the horizontal part to come in contact with the track. The vertical part d of the shield is preferably made of elastic material of sufficient elasticity to give a little when the person strikes it, yet insufficient to throw him toward the buffer by the reaction after he has struck the shield. This part of the shield is formed by lacing back and forth the cord d^2 between the different parts of the framing d^3 and may be stretched according to the kind of material used.

The buffer is provided on its periphery with a number of finger like projections a^4 of any desired material, preferably of rubber of sufficient elasticity to give in a small degree when brought in contact with a person and projecting tangentially therefrom in the direction that the buffer is to be revolved to more readily engage the clothing of the person to be saved. The support a^{12} for the fingers may be of any suitable material, preferably rubber, to which the fingers are secured in any desired manner. The backing for this support is of sufficient strength and resistance to maintain the cylindrical shape of the buffer as any bending or depression caused by contact with a person would cause the buffer to act less efficiently than would be the case if the cylinder were unyielding. Another advantage is that the buffer is less liable to be injured if it should be run into by a heavy dray or wagon.

The preferred manner of forming the buffer is to secure to the shaft b', a series of hubs or a sleeve b^2 having radial arms b^3 made preferably of sheet metal bent into the form of a V and having the ends split and spread for attachment to the hubs or sleeve by one end and for attachment of a metal cylinder b^4 at the other end. This metal cylinder is formed of a series of angle irons b^5 joined together by their flanges b^6 and secured to the radial arms b^3 by their flanges b^7 which form when properly joined together a strong framing for the buffer that will resist any collision that a street car is liable to meet.

The manner of securing the key b^9 to the frame is preferably by means of pins b^{10} attached to the apex of the key and nuts b^{12} that abut against the inner edge of the metal forming the slot b^8. If it be desired to remove or put on a support a^{12} the object can be accomplished readily by means of this key and its securing device without removing the buffer from its journals. It will be noted that the periphery of the drum presents a solid face toward the track and that the gearing is secured to the ends, and, when properly housed, presents no surface that would retard the action of the buffer, as would be the case if the buffer were formed of several cylinders on a common shaft and having a space between them that would catch the leg or arm of a person and break or tear it off as would certainly be the case if gear or other driving mechanism worked in the spaces.

I am aware that a car having a buffer in front thereof and operated by gearing connected with one of the axles of the car, and a safety shield interposed between the buffer and truck of the car are old. I am also aware that the broad idea of a flexible shield is not new. My device differs from such constructions in that the flexible shield is in front of the car body to protect a person from being thrown against that part of the car, whereas in the devices above referred to the shield only protects the person from contact with the truck. Furthermore, the shield in front of the car body is a necessity, as the buffer lifts the person who would strike the car body were it not for the shield. The vertical part

of the shield must therefore be elastic to prevent the person from getting as hard a blow as he otherwise would receive if the shield were of stiff material. It is also necessary that the shield be not too elastic as the reaction might throw the person over the buffer. My device differs further from those referred to in that the rotation of a given point on the periphery of the buffer relative to a given point on the peripheries of the car wheel to which the intermediate gearing is connected is so much greater than the said point on the car wheel, that the said point on the buffer would travel a greater distance during one revolution of the wheels than said wheels would travel thereby giving to the periphery of the buffer a speed sufficient, especially with the aid of the fingers, to lift a person against the elastic shield before impact due to the momentum of the car could injure the person.

What I claim as new is—

1. The combination of a car; a buffer in front of said car; gearing connecting one of the car axles with the buffer, said gearing being arranged to rotate, during each revolution of the car wheels on said axles, a given point on the periphery of the buffer a greater distance than the circumference of said wheels; and a safety shield interposed between the buffer and front of the body of the car and having an elastic vertical part and horizontal part.

2. The combination of a car; a buffer in front of said car; gearing connecting one of the car axles with the buffer, said gearing being arranged to rotate, during each revolution of the car wheels on said axles, a given point on the periphery of the buffer a greater distance than the circumference of said wheels; and a safety shield interposed between the buffer and the front of the body of the car and having an elastic vertical part and a horizontal metal part.

3. The combination of a car; a buffer in front of said car having projecting fingers on its periphery; gearing connecting one of the car axles with the buffer, said gearing being arranged to rotate, during each revolution of the car wheels on said axles, a given point on the periphery of the buffer a greater distance than the circumference of the wheels; and a safety shield interposed between the buffer and front of the body of the car and having an elastic vertical part and a horizontal part.

4. The combination of a car; a buffer in front of said car having fingers projecting tangentially from its periphery; gearing connecting one of the car axles with the buffer, said gearing being arranged to rotate, during each revolution of the car wheels on said axles, a given point on the periphery of the buffer a greater distance than the circumference of said wheels; and a safety shield interposed between the buffer and front of the body of the car and having an elastic vertical part and a horizontal part.

5. In a life saving device, a buffer having the base of its cylinder formed of a series of angle irons joined together and provided with a series of fingers on a support inclosing said cylinder.

6. In a buffer for a life saving device, the combination of the metallic cylinder having the open V shaped slot, the finger support having its ends inserted in said slot, and the key having means for holding it in place in said slot.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK M. CHAPMAN.

Witnesses:

BLANCHE CHAPMAN FORD,

M. F. HALLECK.