

(No Model.)

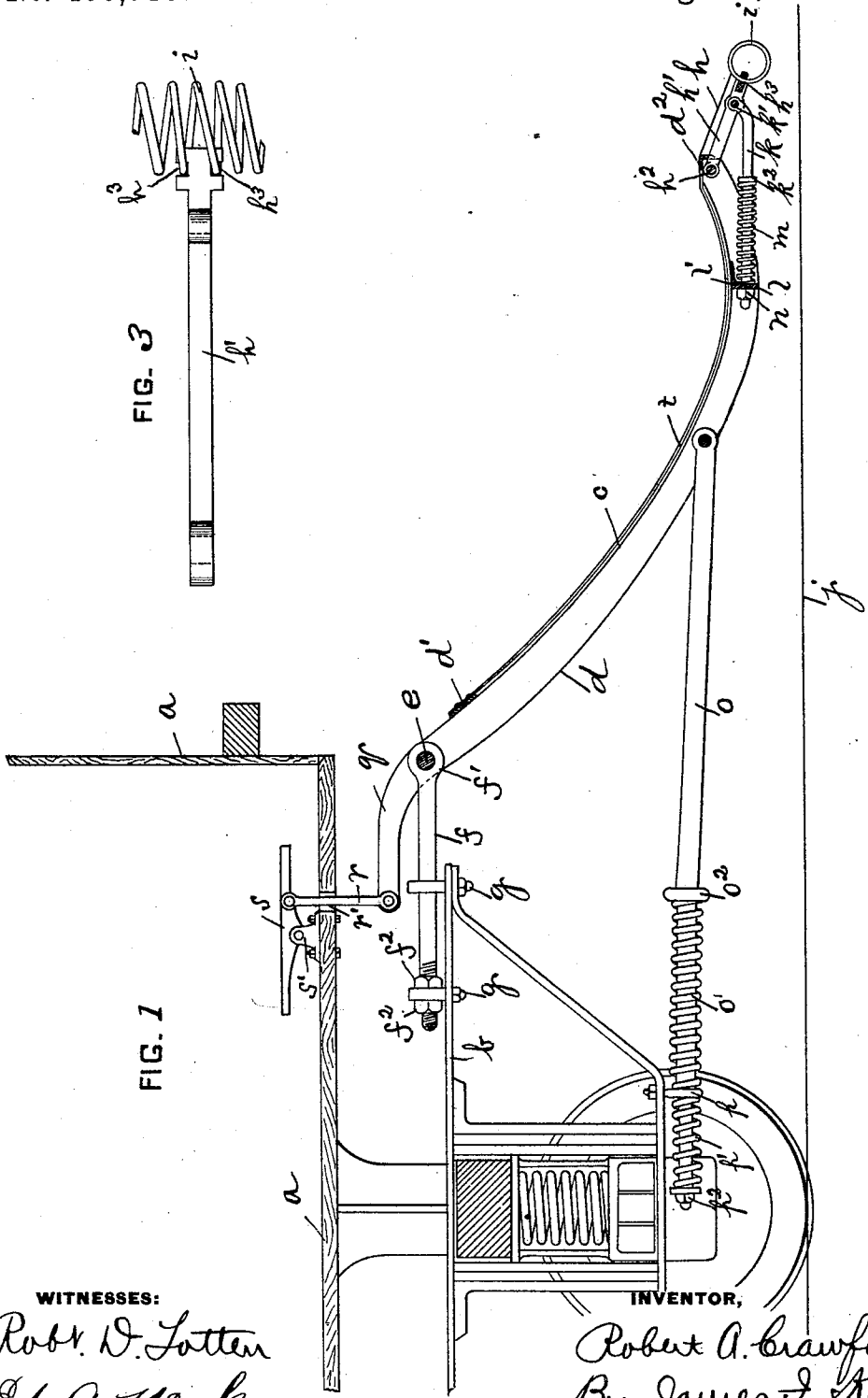
2 Sheets—Sheet 1.

R. A. CRAWFORD.

PILOT OR GUARD FOR LOCOMOTIVES AND CARS.

No. 480,713.

Patented Aug. 16, 1892.



WITNESSES:

Robt. D. Lottan
Ed. A. Wenk.

INVENTOR,

Robert A. Crawford
By James I. Kay
Att'y.

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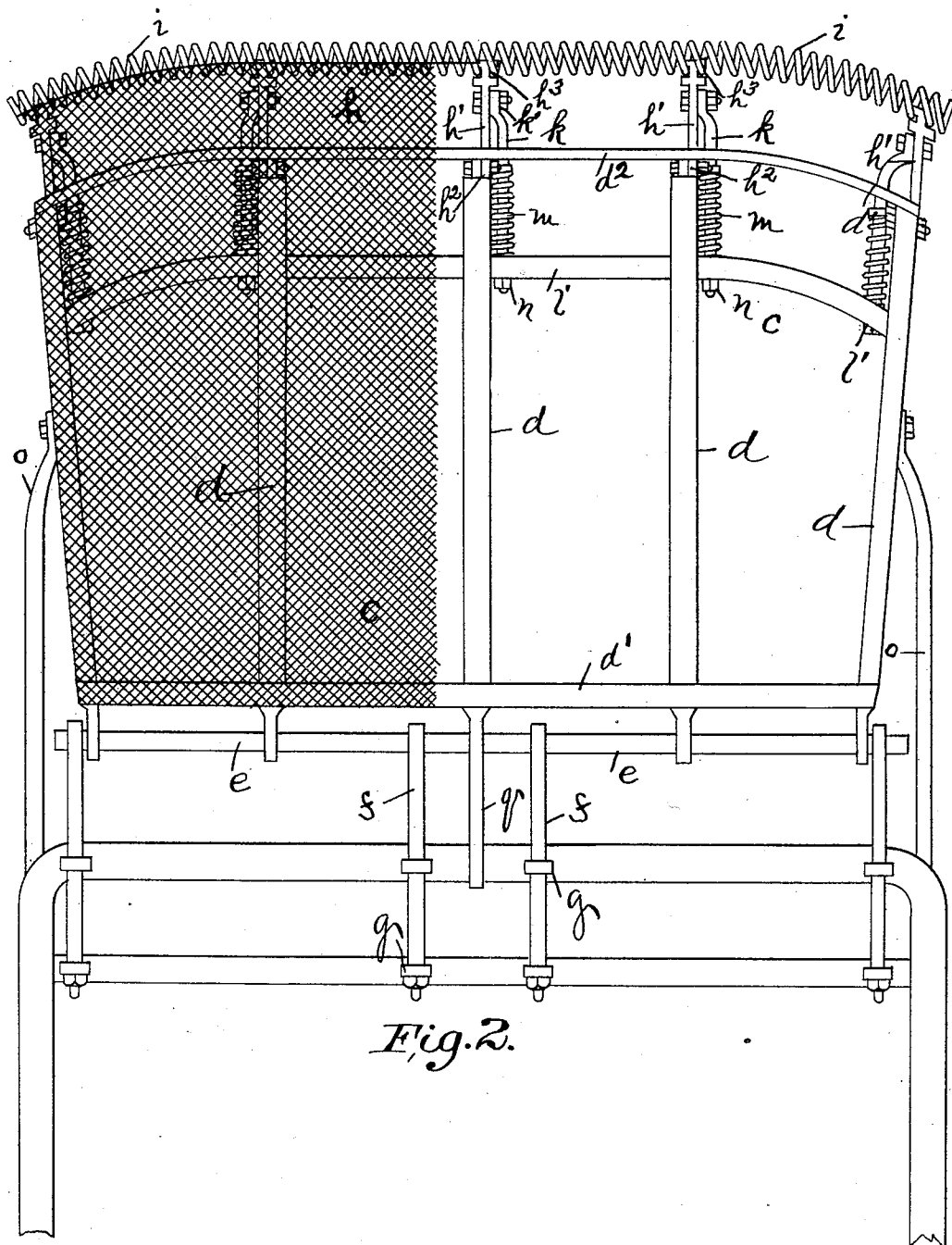


Fig. 2.

WITNESSES:

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UNITED STATES PATENT OFFICE.

ROBERT A. CRAWFORD, OF ALLEGHENY, PENNSYLVANIA.

PILOT OR GUARD FOR LOCOMOTIVES AND CARS.

SPECIFICATION forming part of Letters Patent No. 480,713, dated August 16, 1892.

Application filed August 17, 1891. Serial No. 402,864. (No model.)

To all whom it may concern:

Be it known that I, ROBERT A. CRAWFORD, a resident of Allegheny, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Pilots or Guards for Locomotives and Cars; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to pilots or safety-guards for use on locomotives and all kinds of traction-cars, such as electric and cable.

Many fatal and serious accidents occur in the thoroughfares of large cities where traction-cars are in operation by persons being overtaken by the cars and when struck falling so as to be dragged beneath the car and badly mutilated.

The object of my invention is to provide a pilot or safety-guard which will act to lower itself automatically when it comes in contact with a person or other obstacle in its path, and thereby prevent the possibility of the person or obstacle of whatever nature being dragged beneath the body of the car, while in its normal position it is sufficiently elevated to run clear of small stones or obstacles over which the car can pass without interference.

To these ends my invention consists, generally stated, in a pilot or safety-guard having rods pivoted at their forward ends to said pilot or guard, the rear ends of said rods resting in suitable supports, and springs interposed between shoulders on said rods and said supports, whereby upon coming in contact with an obstacle said pilot or guard is automatically lowered.

It further consists in a pilot suitably pivoted to the body of the car and a second or supplementary pilot or fender pivoted at the forward end of the main pilot, both pilots being provided with spring-actuated rods, whereby upon the supplementary pilot coming in contact with an obstacle both pilots will be automatically deflected toward the level of the track.

It further consists in certain details and novel combinations of parts, all of which will be more fully hereinafter set forth and claimed.

To enable others skilled in the art to make and use my invention, I will describe the same more fully, referring to the accompanying drawings, in which—

Figure 1 is a view of the front portion of a car with my improved device applied thereto. Fig. 2 is a plan view, and Fig. 3 a view of one of the bars of which the supplementary pilot is composed and the manner of connecting it to the spiral coil.

Like letters indicate like parts.

As stated, my invention is applicable for locomotives and traction-cars of all kinds; but for convenience of illustration I will describe and illustrate it in connection with a traction-car.

In the drawings, Fig. 1 illustrates the forward end of a traction-car *a*, mounted on a truck *b* in the ordinary manner. Secured to this truck *b* is the main pilot or guard *c*. This pilot or guard *c* may be constructed in any suitable manner, the one shown being constructed of angle-iron and consisting of the curved parallel bars *d*, secured to the cross-shaft *e* and connected at their front and rear ends by the cross-bars *d'* *d*², respectively. The bars *d* being curved, the pilot *c* as thus constructed will present a receptacle capable of receiving and supporting the body of a person. The pilot *c* is secured to the truck *b* by means of the extension-bolts *f*, having the loops or rings *f'* at their forward ends, through which the cross-shaft *e* passes and is adapted to turn therein. The extension-bolts *f* are secured to the truck *b* by means of eyebolts *g*, the nuts *f*² serving to retain the said extension-bolts *f* rigidly in place. Any suitable number of extension-bolts *f* may be employed, as may be found necessary. At the forward end of the main pilot *c* is pivoted a supplementary pilot or guard *h*. This supplementary pilot *h* is composed of the parallel bars *h'*, pivoted at *h*² to the several parallel bars *d* of the main pilot *c*. The forward ends of said bars *h'* are provided with notches *h*³, with which the wires of a spiral spring *i* engage and which support said spiral spring. Any other convenient manner of connecting the bars *h'* to the spiral coil may, however, be employed. The coils of the spring *i* are formed of wire or other suitable spring metal with sufficient resiliency to prevent injury to the body of the person with whom it may come in contact. The supplementary guard *h* is held in an inclined position with reference to the track *j* by means of the bolts or rods *k*. These bolts

k are pivoted to the parallel bars h' at k' , near the forward ends thereof, while the rear ends of said bolts pass through suitable openings formed to receive them in the depending flange l of the cross-bar l' , secured to the main pilot c . The bolts k are provided with collars k^2 , and spiral springs m , encircling the bolts k , are interposed between the said collars k^2 and the flange l of the cross-bar l' . Nuts n engage with the threaded ends of the bolts k beyond the flange l , so that by tightening the nuts n the tension of the springs m may be increased, as well as the inclination of the supplementary guard h . The main pilot c is likewise provided with a series of bolts o , pivoted at their forward ends to the bars d of the main pilot c , the rear ends of said bolts o passing through eyebolts secured to the truck b . Springs o' are interposed between collars o^2 on the said bolts and the eyebolts p . The bolts o extend rearwardly beyond the eyebolts p , and springs p' are likewise interposed between said eyebolts p and nuts p^2 on the rear ends of said bolts o . At or about the center of the cross-shaft e is secured the lever q , and connecting with the rear end of said lever is the link r , passing up through an opening r' in the floor of the car. The upper end of the link r is connected to the foot-lever s , pivoted in the standard s' . The link r is connected to the foot-lever s at such a point that by the motor-man applying his foot to the rear end of the foot-lever s the main pilot c , together with the supplementary pilot h , will be lowered closer to the level of the track, while by applying his foot to the forward end of said foot-lever s a contrary action will take place.

The main pilot c and the supplementary pilot h are covered with wire-netting t or other suitable material capable of supporting the body of a person falling therein.

Any suitable means other than those shown and described for securing the several parts of the apparatus in position may be included within the scope of my invention, and I do not confine myself to the double form of guard shown, as I may use only one, or I may apply one to the forward end of an ordinary rigid and unyielding pilot with which many cars are already supplied.

The operation of my improved safety attachment is as follows: The main pilot c and the supplementary pilot h are first adjusted by means of the bolts o and k , respectively, to the desired height above the level of the track and generally at a height to avoid such small stones and other obstacles over which the body of the car can pass without interference. When the car is traveling along and overtakes a person crossing in its path, before the motor-man can stop the car the spiral spring i , extending across the front of the supplementary pilot, will first come in contact with the body of such person. The resiliency of the spiral spring i will act to break the force of the blow and prevent serious injury

to the body of the person struck. The impact imparted to the spiral spring i will be sufficient to overcome the resistance of the springs m on the bolts k of the supplemental pilot h . The resistance of said springs m being overcome, the said bolts k will recede, the result, as apparent, of such action being to further deflect the supplementary pilot h and bring its forward end closer to the level of the track. The spiral coil i will consequently be lowered closer to the track, and so prevent all liability of the body of the person being dragged under the car. The person on being struck will either fall into the main pilot c upon the wire-netting or in case the person falls forward in front of the car the motor-man can stop the car before such person has been seriously injured, as the pressure against the spiral coil i will act to keep said coil close to the track and prevent any possibility of the person being dragged beneath the car. As soon, however, as the obstruction has been removed the tension of the springs m will force forward the bolts k and raise the supplementary pilot to its normal position. In this manner the supplementary pilot h will be deflected automatically, the construction being so simple that there is little liability of the parts getting out of order. In case the motor-man sees the person in time to place his foot upon the rear end of the foot-lever s the main pilot c and the supplementary pilot h will be lowered through the connections described. The action of the bolts o and springs o' of the main pilot c will be the same as that of the bolts k and springs m of the supplementary pilot h , as just described, their function being auxiliary to that of the bolts k and springs m .

In case it is desired to raise the double safety-guard, it is only necessary for the motor-man to place his foot upon the forward end of the foot-lever s , when the main pilot c and supplementary pilot h will be raised, the springs p' on the bolts o acting to bring the pilots to their normal position when the foot of the motor-man is withdrawn from the foot-lever s .

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with a locomotive or car, of a pilot or guard pivoted thereto, rods pivoted at their forward ends to said pilot or guard, the rear ends of said rods resting in suitable supports, and springs encircling said rods, said springs being interposed between shoulders on said rods and said supports, substantially as and for the purposes set forth.

2. The combination, with a pilot or guard, of a supplementary pilot or guard pivoted thereto, rods pivoted to said supplementary pilot or guard and resting in suitable supports on said main pilot or guard, and springs interposed between shoulders on said rods and said supports, and nuts engaging the inner ends of said rods, substantially as and for the purposes set forth.

3. A pilot or guard for locomotives or cars, consisting of a series of parallel bars having their inner ends pivoted to a suitable support, the outer ends of said bars engaging
5 with a spiral coil extending across the front of said pilot, substantially as and for the purposes set forth.

4. A pilot or guard for locomotives or cars, consisting of a series of parallel rods having
10 their inner ends pivoted to a suitable support, the outer ends of said bars having notches formed therein adapted to engage a spiral coil extending across the front of said pilot or guard, substantially as and for the
15 purposes set forth.

5. The combination, with a locomotive or car, of a pilot pivoted thereto, rods pivoted to said pilot and extending rearwardly through
20 suitable supports on the truck of the car or car-body, and springs interposed between shoulders on said rods and the said supports and also between said supports and nuts engaging the inner ends of said rods, substantially
25 as and for the purposes set forth.

6. The combination, with a locomotive or car, of a pilot pivoted thereto, rods pivoted to said pilot and extending rearwardly through
suitable supports on the truck or car-body, springs interposed between shoulders on said

rods and said supports and also between said
30 supports and nuts engaging the inner ends of said rods, and lever connections between said pilot and a lever in the car for lowering and raising said pilot, substantially as and for the
purposes set forth.

7. In combination with a locomotive or car, a main pilot pivoted thereto, rods pivoted to said pilot and extending back through supports on the truck or car-body, springs interposed between shoulders on said rods and
40 said supports and also between said supports and nuts engaging the inner ends of said rods, and a supplementary pilot or guard pivoted to said main pilot, said supplementary guard having rods pivoted thereto and said rods extending back through supports on said main
45 pilot, and springs interposed between shoulders on said rods and said supports, and connections between said main pilot and a lever within the car for lowering and raising said
50 main pilot and supplementary pilot, substantially as and for the purposes set forth.

In testimony whereof I, the said ROBERT A. CRAWFORD, have hereunto set my hand.

ROBERT A. CRAWFORD.

Witnesses:

J. RODGERS MCCREERY,
ROBT. D. TOTTEN.