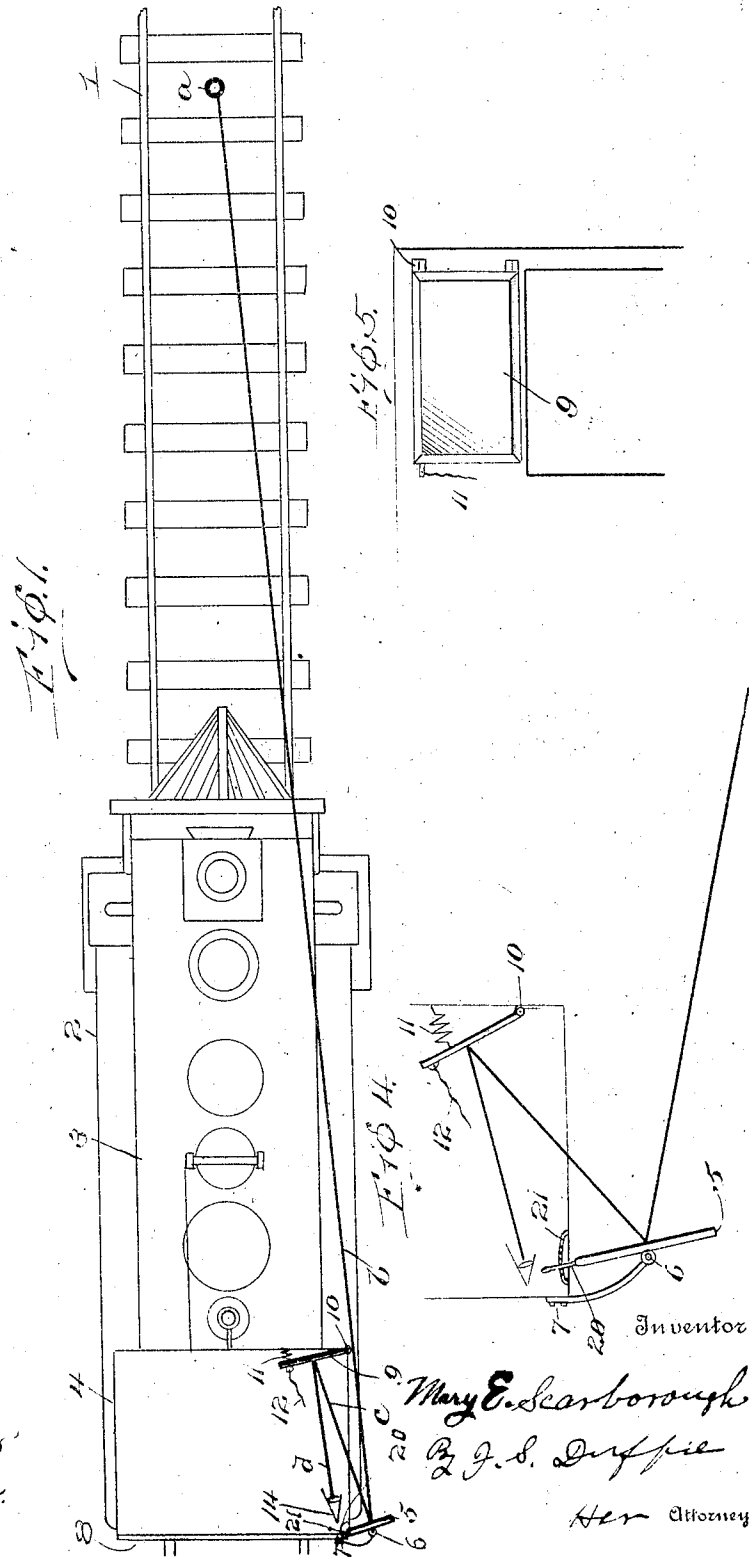


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2 SHEETS--SHEET 1.

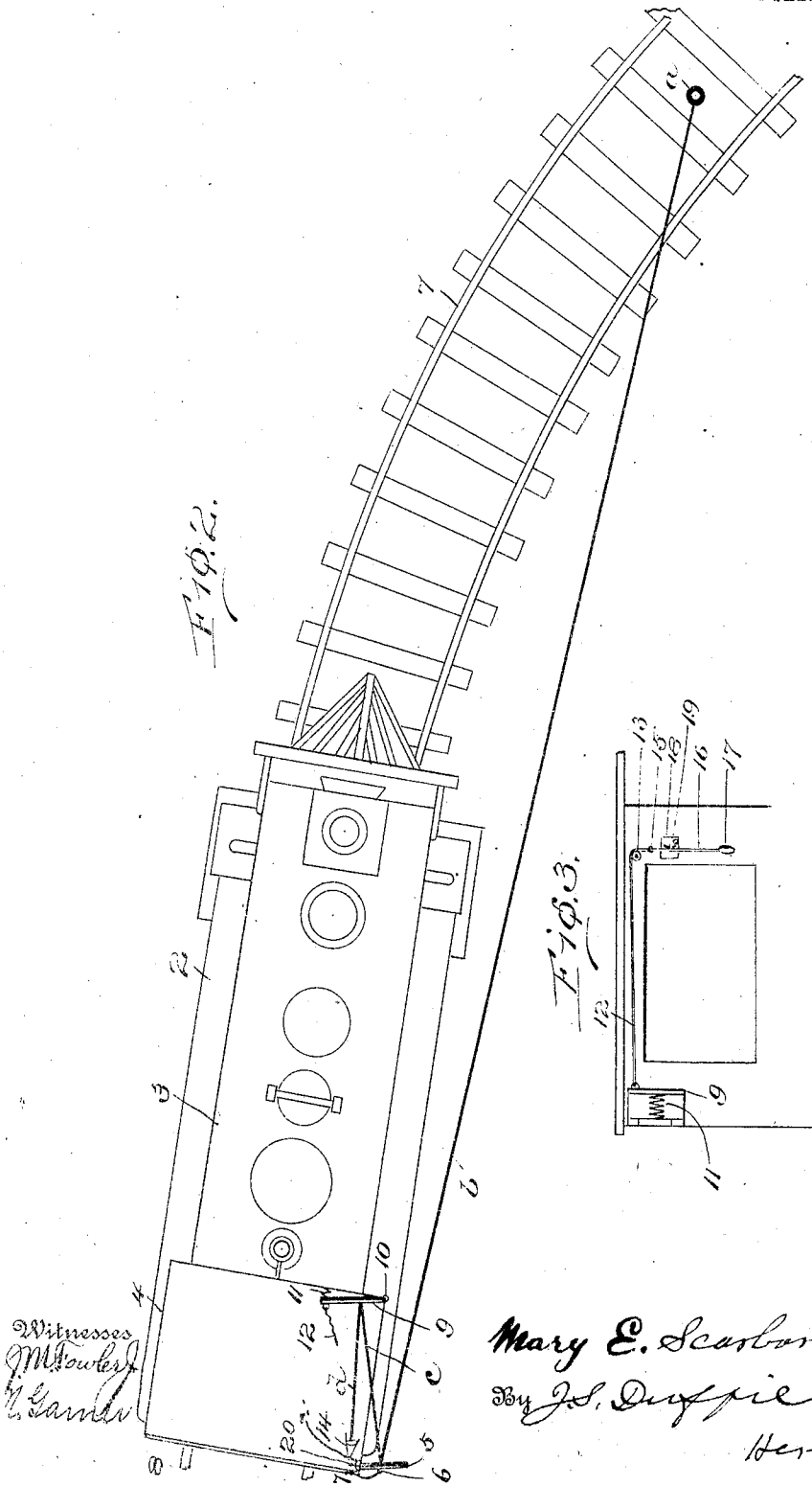


M. E. SCA. BOROUGH.
 REFLECTING MIRROR FOR LOCOMOTIVES.
 APPLICATION FILED JULY 20, 1910.

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Patented Dec. 5, 1911

2 SHEETS—SHEET 2.



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REFLECTING-MIRROR FOR LOCOMOTIVES.

1,010,690.

Specification of Letters Patent.

Patented Dec. 5, 1911.

Application filed July 20, 1910. Serial No. 572,840.

To all whom it may concern:

Be it known that I, MARY ELIZABETH SCARBOROUGH, a citizen of the United States, residing at Oklahoma, in the county of Oklahoma and State of Oklahoma, have invented certain new and useful Improvements in Reflecting-Mirrors for Locomotives, of which the following is a specification.

My invention is a device for showing obstructions or defects on a rail road track to the engineer or other operator in the cab, and consists in a reflector hinged on the outside of the cab opposite one of the side windows with means of changing the angle of the reflector to catch and reflect the obstruction or defect on or in the rail road ahead of the engine and of an inside reflector with means for changing its angle so as to throw the reflected rays back to the engineer.

In the accompanying drawings: Figure 1 is a top plan view of an engine and its cab, the top removed, and a portion of a straight rail way track, also showing the positions of the reflectors. Fig. 2 is a top plan view of an engine and its cab, the top removed, and a portion of a curved rail way track, also showing the positions of the reflectors. Fig. 3 is a detail view showing the inside reflector with means for changing its angle and holding the same at a desired angle. Fig. 4 is a detail view showing the means by which the reflectors are hinged and their angles changed. Fig. 5 is a view showing one of the front doors of the cab with the inside reflector hinged above the door.

In view of the many accidents which occur on rail roads arising from obstructions and defects on the track ahead of the engine and in view of the fact that the front door of the engineer's cab is small and nearly always clouded more or less with dust and vapor, whereby the engineer is prevented from seeing clearly ahead of the engine, and therefore, many times unavoidably running into obstructions and defects in the road, this invention was conceived for the prevention, as far as possible, of such accidents and relief of persons suffering therefrom.

My invention is described as follows:

The numeral 1 represents a rail way track, 2 a locomotive or steam engine, 3 the boiler, 4 the cab, 5 a reflector hinged to the outside of the right-hand wall of the cab, 6 the arm to which said reflector is hinged, 7

screws or bolts by which the arm is secured to the rear wall 8, of the cab; 9 represents the inside reflector, 10 a hinge by which it is hinged above the front door of the cab; 11 represents a coil spring by means of which the free end of the inside reflector 9, is drawn back to the front wall of the cab; 12 shows part of a cord attached to the free end of the inside reflector and passing over a pulley 13, immediately or nearly immediately over the seat 14, of the engineer; the cord extends a little below said pulley and by means of a ring 15, has attached to it a rod 16, provided with a hand hold 17. This rod passes through a keeper 18, having secured therein a spring 19, which, by means of friction, holds said rod in position and thereby also holds said reflector 9, at the angle desired.

Extending from the inner edge of the reflector 5, is a spring arm 20, which passes into the inside of the cab and rides on a corrugated graduated scale 21, horizontally and rigidly secured on the inside of the cab and immediately opposite the window, near which the outside reflector is secured, and on a line with the sill of the window by which the reflector 5, may be secured at any angle at which it is placed. The upper edge of the inside reflector 9, may be inclined slightly forward so as to throw the reflection down when the engineer is in a sitting position.

The operation of this invention may be readily understood. First, we must understand that the angle of reflection is exactly the same as the angle of incidence. Now, for the purpose of explanation, we will first observe that the object or defect of the road may be at the circle "a", the beam of light "b" may be called the incident beam, and strikes the reflector 5, at an angle of about 10 degrees to the right, and then it is immediately reflected to the inner reflector 9, at an angle of about 10 degrees to the left and in this respect it becomes the incident ray c and then it is reflected back to the engineer at his seat 14, and becomes the reflected ray "d".

Now, by observing the diagram, Fig. 2, we will see that the railroad track is represented as curved to the right; this causes the beam of light "b" to strike the reflector 5, at an angle slightly different from that shown in Fig. 1, and I may change the angle of the reflector slightly in order to throw

the beam of light at the same point on the reflector 9, in Fig. 1, or I may let it stand at the angle at which it is placed and let the beam of light "c" strike the reflector a little to the left of the center, in which case I might have to operate the rod 16, and thereby slightly change the angle of the reflector 9, so as to throw the reflected ray "d" to the engineer, but practically it scarcely ever will become necessary to change either one of the reflectors, because the reflector 5, will take in a great sweep of the scenery in front and reflect it to the inner reflector 9, and it in turn will reflect it to the engineer, but whenever it becomes necessary, by a great curve in the road or other cause, I can shift the angles of the reflectors to take in any point ahead desired.

I have only shown the reflectors placed in one side of the cab; a twin device may be placed in the other side of the cab if desired, but such a necessity will scarcely arise because if the reflector 5, be placed near the top of the cab it will look over the top of the engine and take in scenery not only in front but on each side of the road.

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

1. In combination with the cab of a locomotive engine, an arm 6, secured to the rear right hand corner of the cab of said engine, a reflector 5, hinged to said arm on the outside of the right hand wall of said

cab and near one of its windows, a graduated scale 21, horizontally and rigidly secured on the inside of said cab and near said window, a spring arm 20, secured to said reflector and extending therefrom into said cab and riding on said graduated scale, said reflector adapted to throw rays of light into the cab, and a reflector 9, situated in said cab and hinged to the front wall thereof, and adapted to receive the reflected rays from said reflector 5, and means for adjusting the angular positions of said reflectors to throw said rays to the engineer's seat in the cab, substantially as shown and described.

2. In combination with a railway cab, an outside reflector hinged on the outside of said cab near one of its windows, and an inside reflector hinged against the inside of the wall of said cab, said outside reflector adapted to collect the rays in front of the engine and reflect them to the inside reflector said inside reflector adapted to collect said rays and reflect them to the engineer's seat with means for adjusting the angular position of each of said reflectors, substantially as shown and described.

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

MARY ELIZABETH SCARBOROUGH.

Witnesses:

J. L. MIDDLETON,
JOE. C. RIGBY.