

March 14, 1961

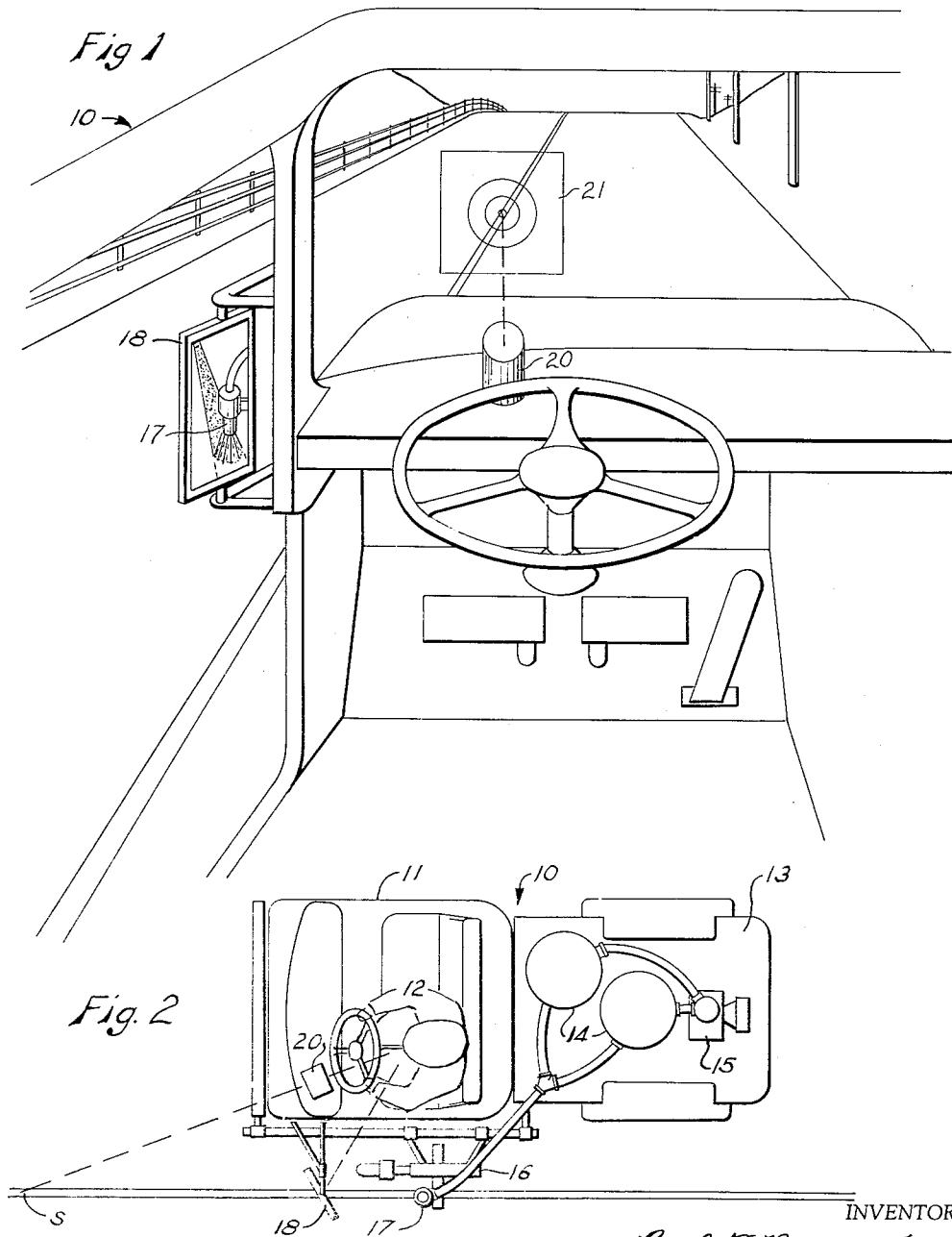
C. F. BROWN, JR

2,974,875

ROAD STRIPING MACHINE WITH OPTICAL SIGHT

Filed March 6, 1959

2 Sheets-Sheet 1



Carl F. Brown, Jr.

BY

KARL W. FLOCKS

ATTORNEY

March 14, 1961

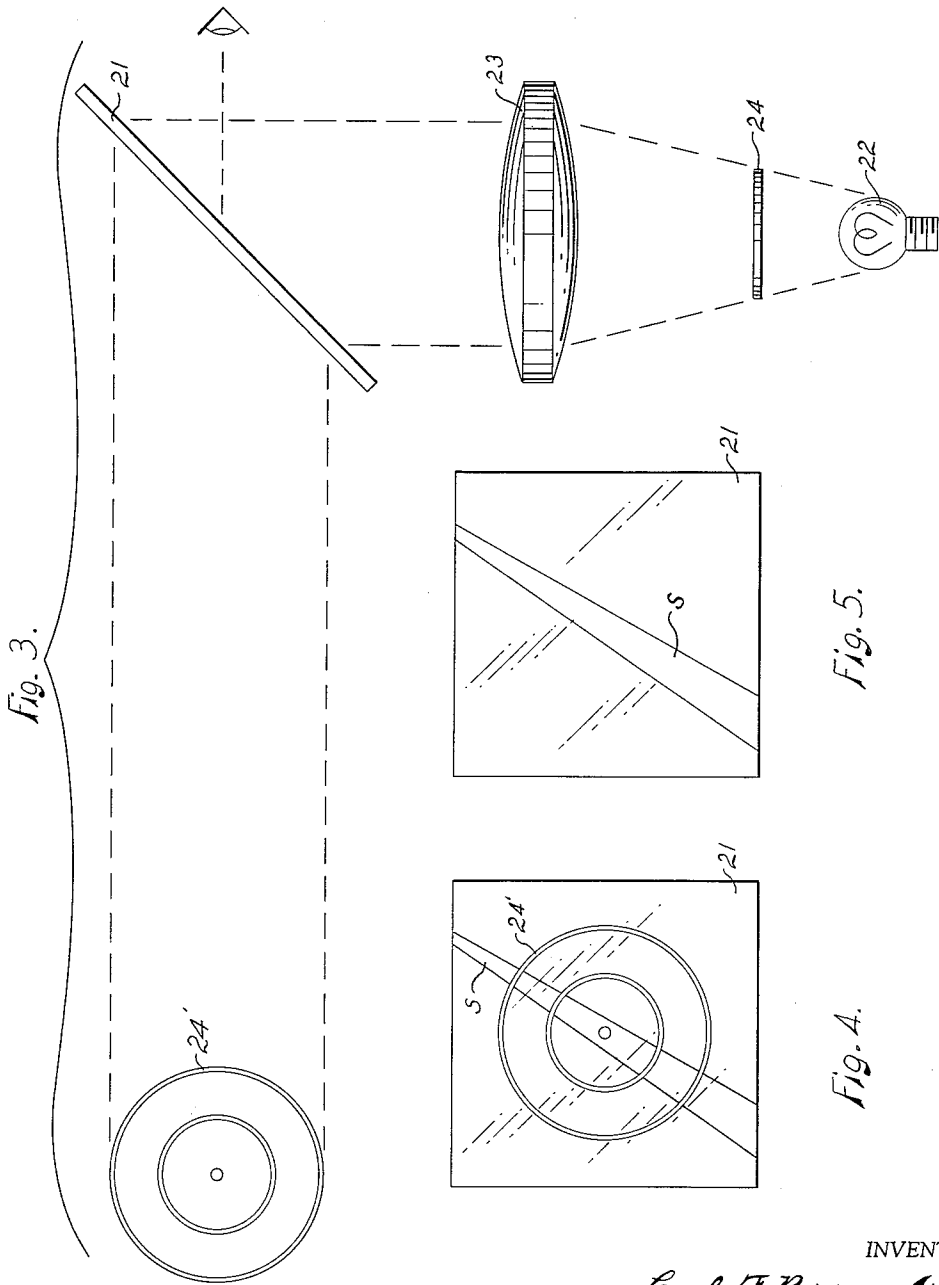
C. F. BROWN, JR

2,974,875

ROAD STRIPING MACHINE WITH OPTICAL SIGHT

Filed March 6, 1959

2 Sheets-Sheet 2



INVENTOR

Carl F. Brown, Jr.

BY

KARL W. FLOCKS

ATTORNEY

1

2,974,875

ROAD STRIPING MACHINE WITH OPTICAL SIGHT

Carl F. Brown, Jr., Huntingdon, Pa., assignor to Wald Industries, Inc., Huntingdon, Pa., a corporation of Pennsylvania

Filed Mar. 6, 1959, Ser. No. 797,754

1 Claim. (Cl. 239—150)

The present invention relates to a road striping machine provided with an optical sight to assist in the guiding of the machine during road striping operations.

With the advent of the automobile, it has been widely recognized that the provision of guide stripes on roadway surfaces is an important adjunct to highway safety. In order to permit the rapid application of paint stripes onto the highway surface, with substantial economy and rapidity, there have been developed various machines which generally are in the nature of steerable motor vehicles having paint spraying equipment mounted thereon. The spraying equipment usually comprises tanks for the paint, an air compressor, or the like, for generating a supply of compressed air and paint spray guns.

As the art developed, it was found necessary to provide the operator of the paint spraying machine with a guide device to help him orientate and maintain the spraying machine in the proper part of the roadway so that the paint stripe would be applied at the proper place. These guides have included booms extending outwardly in front of the vehicle, gauges having strings, the ends of which were held by attendants walking along the sides of the roadway and holding the ends of the string at the shoulders of the road, and the provision of transparent plates in a fender of the vehicle through which the driver could observe a pointer fastened to and extending downwardly from the front bumper of the vehicle. Of these various approaches to the provision of an aiming device or guide, only the boom has found any wide application in commercial paint striping equipment. While these booms could be cantilevered from the front of the vehicle, present day commercial practice is to provide these booms with a supporting wheel at the front thereof. The provision of the front supporting wheel on the boom prevents the boom from swaying, and makes it a much more stable guiding device than the cantilevered boom.

It will be appreciated that these guide booms are quite lengthy, extending out in front of the road striping machine some ten or twelve feet. Because of their length, they have been either jointed at their middle, or have been made telescopic. In either case, it will be understood that these booms are costly to manufacture. Further, when these booms are raised during the time that the road striping machine is in transit, i.e., is going to or from the job site, it obstructs the view of the driver of the vehicle.

When in use, the swiveled front support wheel of the boom often vibrates, this vibration occurring at certain critical speeds, these speeds being in the desired range of operating speeds for the machine. These vibrations cause misalignment in the boom, and thus result in some inaccuracy in the laying of the paint stripe. In addition, these front support swivel wheels often cause the boom to have an undesired movement, due to their bumping on the road surface, and this is another source of inaccuracy in the road striping operation, particularly since the front swivel wheels are generally of relatively small diameter. It may also be mentioned that the extending

2

boom constitutes a hazard during the paint striping operations, since it is the boom which enters an intersection first, thus becoming a substantial traffic hazard. In addition, the forwardly extending booms represent a traffic hazard from the point of view of approaching vehicles, the driver of which may not recognize just how far towards him the boom extends from its vehicle.

Also, it has been found that with some paint striping machines, the boom causes an inaccuracy in the positioning of the paint stripe on curves, since the result obtained with the boom is to have the stripe laid closer to the inside of the curve than is desired, and closer than is aimed for.

An object of the present invention is to provide a road striping machine that will be simpler, more economical and safer than such machines of the prior art.

Another object of the present invention is the provision of a road striping machine which may be accurately guided to apply a stripe onto a road, and this irrespective of the condition of the road surface and the speed of travel of the machine.

Other objects and many of the attendant advantages of the present invention will be readily understood from the following specification, taken in conjunction with the attached drawings, wherein:

Fig. 1 is a view from the driver's station of an improved road striping machine in accordance with the present invention;

Fig. 2 is a plan view, partially schematic, showing a road striping machine in accordance with the present invention;

Fig. 3 is a showing of an optical system comprising a part of the road striping machine of the present invention;

Fig. 4 is a view of the apparatus of Fig. 3, as actually constructed;

Fig. 5 is another view of the apparatus shown in Fig. 4.

Referring now to the drawings, wherein like reference characters are used to designate like or corresponding parts throughout the several views, there is shown in Fig. 1 and in Fig. 2 a road striping machine generally designated 10. As is best seen in Fig. 2, the machine 10 comprises an automotive vehicle 11 having the usual steerable front wheels and rear drive wheels, not shown. The vehicle 11 has a driver's station 12, and it may be seen from Fig. 2 that a driver is shown seated at the driver's station 12 in the usual manner. At the rear of the driver's station 12 is a bed 13 which carries the usual containers 14 for paint and an air compressor 15. Mounted on the outside of the vehicle 11, on the left of and slightly to the rear of the driver's station 12 is a spray gun carriage 16 having a spray gun 17 thereon. A mirror 18 is provided at the left side of the driver's station 12, and is so mounted that a driver at the station 12 will be able to see the reflection of the paint spray gun 17 and the roadway immediately therebeneath, and behind the vehicle so the operator can see quality and straightness of the painted line. There may also be seen in Fig. 2 an aiming device 20.

As viewed from the driver's station 12, the aiming device 20 may be seen to be mounted on the dashboard of the vehicle 11 and the mirror 18 with an image 17' of the spray gun 17 therein may be seen in the Fig. 1 showing. The aiming device 20 is, as is apparent from Figs. 1 and 2, so positioned that there is a viewing screen 21 in the line of sight between the eyes of the driver seated or located at the station 12 and the center of the roadway, indicated by the stripe S. It will be understood that the stripe S is either a newly marked center line stripe, or is an old stripe that is being repainted.

Referring now to Fig. 3, it may be seen that the aiming device 20 comprises the viewing screen 21 which is

preferably a polarizing plate with the planes thereof placed in the vertical direction. Conveniently below the screen or plate 21 is a light source 22 and an achromat lens system 23. Between the lens system 23 and the light source 22 is a reticle 24. As will be understood, the light rays from the source 22 will pass through the reticle 24 and thence through the achromat lens system 23 to thereby project an image of the reticle 24 onto the screen or plate 21. This will provide the driver with an image 24' of the reticle 24, as may be seen from Fig. 4. There may also be seen in Fig. 4 the stripe S, and it will be observed that the driver is able to see both the image 24' of the reticle and the stripe S, and that the center of the reticle image 24' is directly on the stripe S, thus showing the driver that his vehicle is properly oriented.

In Fig. 5, there is shown the image obtained by the driver at the driver's station 12 when his head is not in proper alignment with the aiming device 20. In this situation, if the driver has shifted his head to either the left or the right, misalignment of the paint striping machine 10 will be avoided because the driver will be unable to see the image 24' and he will see only the road and stripe S. This will immediately indicate to the driver that his head is out of position and he may then quickly correct the position of his head in order to again pick up the image 24'.

There has been provided a paint striping machine which is safer and more economical, as well as more compact than the known paint striping machines. In addition, the paint striping machine of the present invention is more accurate than prior paint striping machines, and is not subject to errors due to the condition of the road surface and/or the curvature of the road.

It will be obvious to those skilled in the art that various changes may be made without departing from the spirit of the invention and therefore the invention is not limited to what is shown in the drawings and described

in the specification but only as indicated in the appended claim.

What is claimed is:

- 5 An apparatus for spraying a paint stripe on a roadway comprising a steerable vehicle, said vehicle having a driver's station, a windshield mounted forward of said driver's station, paint striping means operatively associated with and mounted on said vehicle for spraying the paint stripe on the roadway, said paint striping means
- 10 including a paint spray emitting means mounted on the left side of said vehicle in a downwardly pointing position so as to spray in a stream having an axis in a vertical plane passing through the stripe on the roadway, and an optical sighting device wholly and vertically
- 15 mounted in the space between said driver's station and said windshield, said optical sighting device comprising an inclined polarized semi-mirror, a lens, a reticle, and a light source mounted in cooperative relationship one
- 20 beneath the other, said semi-mirror appearing to project an image of said reticle on the road so that the eyes of the driver located at said station and the center of the roadway a predetermined distance ahead of said vehicle
- 25 and said reticle can be lined up in a plane inclined from the horizontal when said spray emitting means is positioned over the stripe on the roadway, said paint spray emitting means being to the left and below the driver station, said optical sighting device being in front of and generally below the level of the eyes of the driver at the drive station.

References Cited in the file of this patent

UNITED STATES PATENTS

2,379,167 Lynn ----- June 26, 1945

FOREIGN PATENTS

489,169 Italy ----- Jan. 15, 1954
535,189 Great Britain ----- Apr. 1, 1941