Feb. 24, 1931. E. V. CAMP 1,793,676

ROAD GUARD

Original Filed Oct. 13, 1928 2 Sheets-Sheet 1

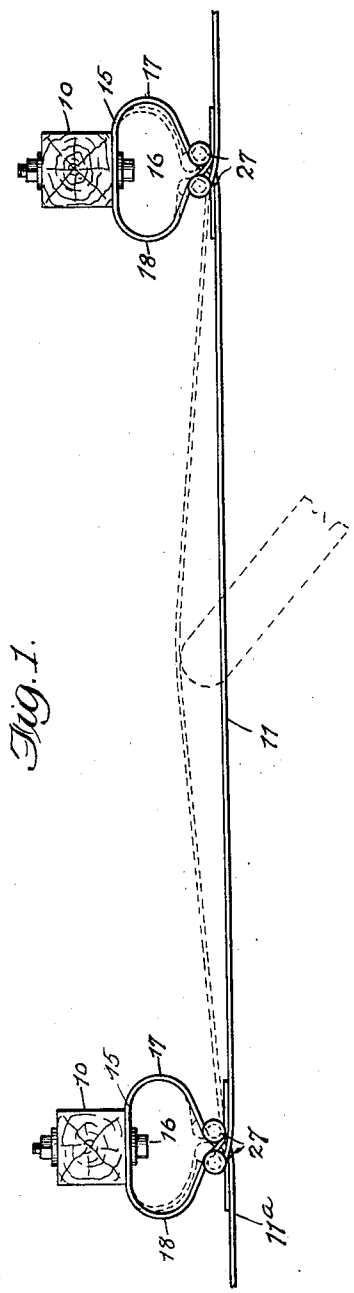


Fig. 1.

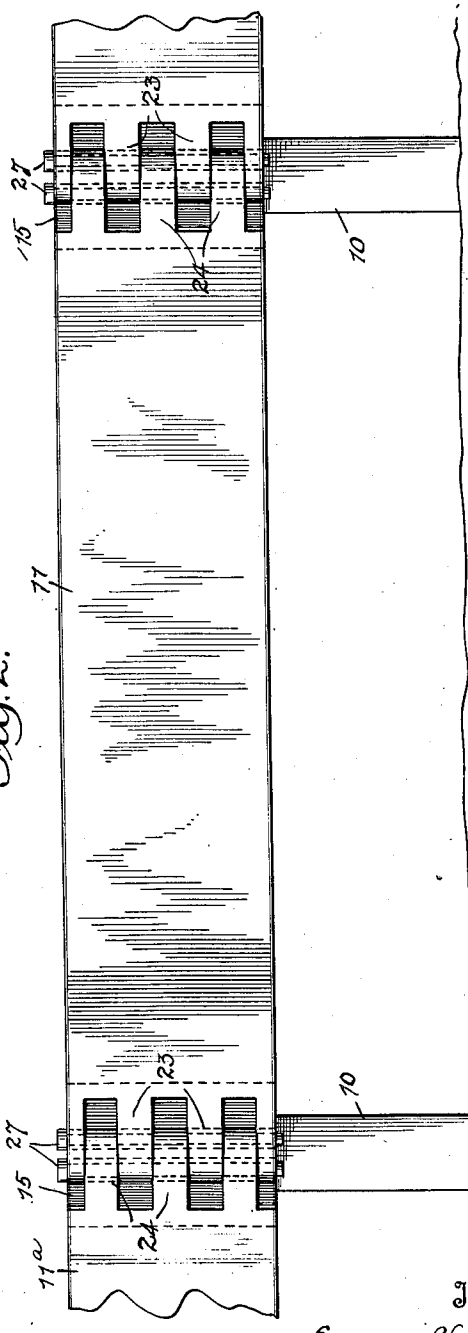


Fig. 2.

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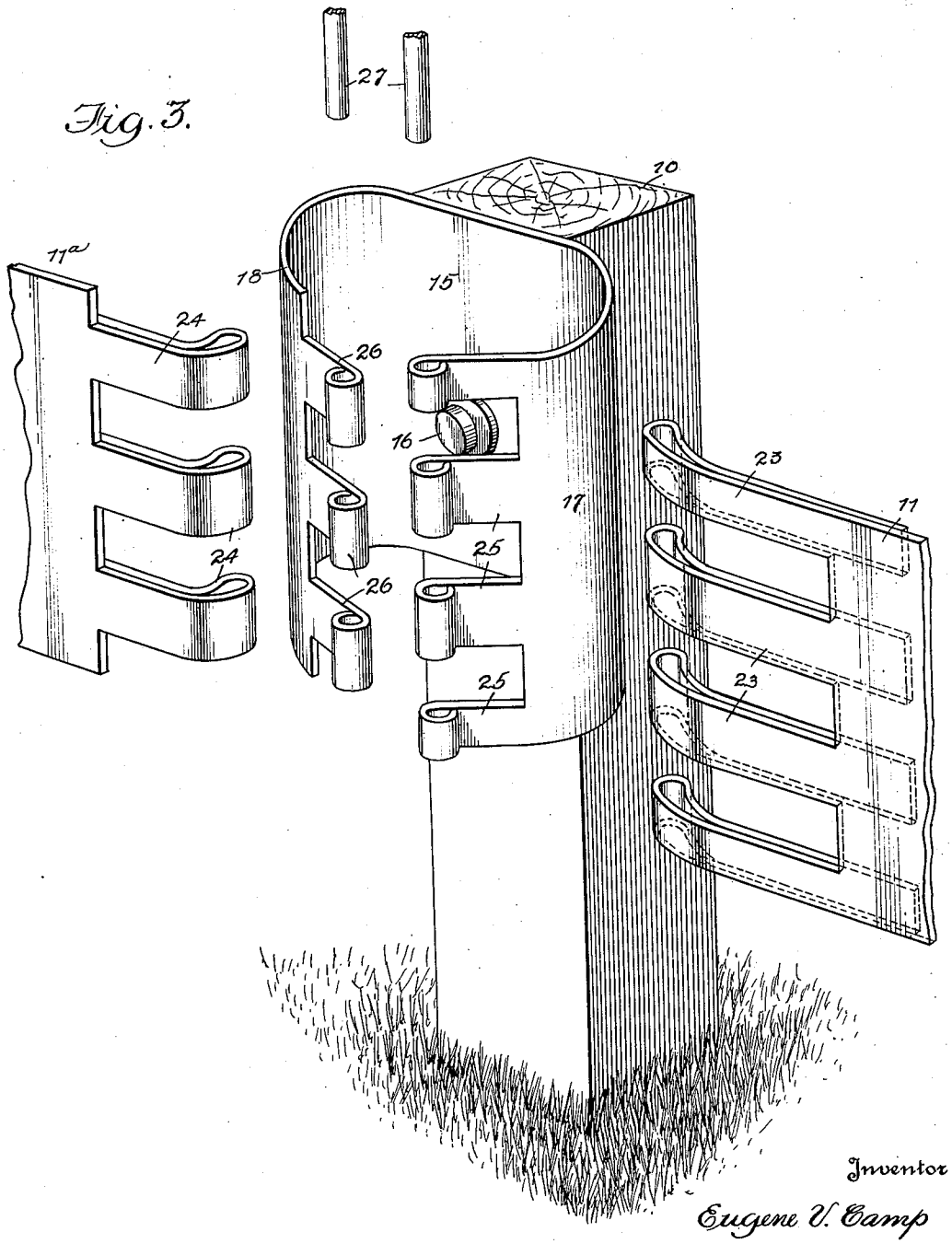
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Fig. 3.



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UNITED STATES PATENT OFFICE

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ROAD GUARD

Original application filed October 13, 1928, Serial No. 312,234. Divided and this application filed June 2, 1930. Serial No. 459,010.

The invention relates to a novel form of road guard of the general type shown and described in my copending application Serial No. 312,234, filed October 13, 1928, and of which application the present case is a division, the object of the invention being to provide an effective road guard that will absorb the force of the shock of impacts of automobiles or other road vehicles, which are diverted from the roadway by accident or otherwise, and also to serve to guide or direct the vehicle back onto the roadway without serious damage or impairment to the vehicle or to the guard, to which ends the invention comprises a longitudinal series of strips or bands of sheet metal disposed along the side of the roadway on suitable supports and joined together and attached to the supporting means by spring connectors comprising sections of sheet metal bent to substantially ring form, so that, when each is attached to the support with its axis substantially normal to the longitudinal axis of the strip or strips, it provides a pair of lateral spring wings, the proximate ends of which are slotted to form tongues, in staggered relation on the respective edges, the ends of the sheet metal strips being also slotted to form tongues which interlace with the tongues of the spring supports, means being provided for connecting the tongues of adjacent strips with the tongues on the far side of each spring connector, so that the force of impact of the vehicle against any strip will be absorbed, in part, by the inherent resiliency of the strip and in part by the spring action of the connectors, which are capable of yielding laterally and also normally with reference to the support; the particular arrangement of the aligning strips and their spring supports providing for the distribution of the stresses, imposed by impact, among the series of aligning strips and their spring supports.

The invention is illustrated in the accompanying drawings, in which:—

Fig. 1 is a plan view of a section of the guard.

Fig. 2 is a vertical elevation thereof.

Fig. 3 is an enlarged perspective exploded view showing the ends of two of the impact strips, the spring connector for joining the same and the mode of securing the connector to the fixed support.

Referring to the drawings, 10 indicates the usual form of fixed support consisting of posts, planted at intervals along the side of the roadway and which constitute the rigid supports for the guard. Secured to the face of each of the posts 10 by means of a bolt 16 or equivalent fastening means is a spring member or connector 15 preferably formed of resilient sheet metal, such as sheet steel, which is bent to substantially annular or ring form to provide lateral spring arms 17 and 18, which extend forwardly from the post or other support and are provided on their proximate vertical edges with a series of slots which form spaced tongues 25 and 26, respectively, the tongues on the respective edges being arranged in staggered relation and each tongue being provided with an eye or loop at its end, which are in vertical alignment and form the sockets by means of which the respective wings are connected to the ends of the resilient strips or bands. Associated with the loops on the ends of the tongues 25 and 26 are pins 27.

The spring connectors 15, when attached to the post or other rigid supporting means, are adapted to connect the ends of the impact members of the guard, which, in accordance with the present form of the invention, consist of strips, ribbons or bands of sheet metal, preferably sheet steel, cut to a length to span the spaces between the successive posts or supports, the ends of each strip being notched to form tongues 23 and 24, the tongues on one end being arranged in staggered relation with respect to the tongues on the opposite end and each tongue being bent to form an eye or loop, which constitutes a socket member cooperating with a corresponding socket member on the spring support, when the guard is assembled, as hereinafter explained. The loops are formed by bending the ends of the tongue rearwardly and preferably spot welding the overlapping portion

of the tongue to the body of the latter, as clearly indicated in Fig. 3.

In assembling and erecting the guard, the posts 10 or other supports are spaced at distances, so that, when the strips 11 are connected in longitudinal series to the spring supports, each strip will be maintained under longitudinal tension imposed thereon by the spring connectors. The tongues 23 on one end of a strip, indicated by the numeral 11 in Fig. 3, will interlace with the tongues 25 on the spring connector 15 and the loops of the tongues 23 will be brought into vertical alignment or registry with the loops on the ends of the tongues 26 of the spring connector and the corresponding hinge pin 27 will be engaged with the registering loops, thereby locking the end of the strip 11 carrying the tongues 23, in hinged relation to the spring support 15. The tongues 24 on the end of the next sheet metal strip 11′ in the series will interlace with the tongues 26 on the spring support 15 and the loops on the ends of said tongues 24 will be brought into registry with the loops on the ends of the tongues 25 of the spring support 15, the loops being locked together by the corresponding hinge pin 27. With this arrangement, the ends of the tongues of successive strips are pivotally connected to the ends of the tongues on the far sides of each spring connector, so that the spring arms 17 and 18 of the connector impose a longitudinal stress on the respective strips 11 and 11′ and the force of impact of a vehicle on either of the strips will be taken up in part by the action of the spring arms 17 and 18 of the connectors 15 to which the respective ends of the impacted strip is secured. If the force of the impact is very great, the arms 17 and 18 of the two spring connectors 15, to which the strip 11 or 11′ is connected, will be moved laterally until the normally separated portions of the spring connectors are brought into abutting relation and both spring arms of each connector 15 will move together, thereby transferring a part of the force of impact to the next strip or band in the series and thence to the next succeeding spring connector, and so on until the entire force of the impact is absorbed or dissipated. The particular construction of the spring supports enables the latter to be compressed or deformed laterally in either direction and also in a direction normal to the post or support, so that, should a vehicle strike the guard immediately in front of or adjacent to one of the spring connectors, the force of the impact would be taken up by the compression of the spring connector in a direction normal to the face of the post or support and the stress would be transferred in part to both of the strips attached to said connector and thence to the spring connectors of the posts or supports next in order in both directions in the series.

In addition to absorbing the force of impact of the vehicle, the substantially continuous smooth surface of the interconnected series of strips 11 and the inherent resiliency of the strips and their supports serve to deflect or guide the vehicle back onto the roadway. If the vehicle impacts any of the strips at an angle, the guiding action is easy and gradual and it has been found that little or no damage, either to the vehicle or to the guard, results other than a little scratched paint and the vehicle is safely directed back onto the roadway. In the event that the impacting vehicle strikes the guard substantially normal to the surface of the latter, the continuous spring action of the connected strips and their spring connectors will effectively absorb the shock of impact and the forward movement of the vehicle will not only be gradually arrested, but the vehicle will frequently be forced backwardly onto the road surface by the reaction of the guard.

An extensive application of this type of guard directed along the sides of roadways, particularly at curves, at the entrance of bridges and along the parapets or side rails of bridges, demonstrates the fact that the guard is effective in arresting the movement of even the heaviest vehicles and, in most instances, in guiding or directing the vehicle back onto the roadway and, as hereinbefore stated, without serious damage or impairment to either the vehicle or to the guard.

It will be particularly noted that the tongues on the ends of the barrier strips are in contact with the tongues on the near side of each of the spring supports, so that any relative motion between the support and the strip will encounter a frictional resistance set up between the contacting tongues on the strips and the support, respectively, which will produce a snubbing action in addition to the spring action and, therefore, assist in arresting the movement of the skidding vehicle and taking up the force of the impact. By reference to Fig. 3, it will be seen that the inner faces of tongues 23 will engage the outer faces of tongues 25 or the loops on the ends of said tongues and, similarly, the inner faces of the tongues 24 will contact with the loops on the ends of tongues 26 and that a relatively strong frictional resistance will be set up between these contacting members upon any relative movement between the spring support and the barrier strips secured thereto.

What I claim is:

1. A road guard, comprising a plurality of spaced supports, resilient connectors fixed to said supports, each connector including an open sided ring of spring sheet metal having tongues arranged in staggered relation on the respective proximate edges and having aligning loops on their ends, sheet metal strips secured to and extending between successive

connectors and having tongues on their ends adapted to interlace with the tongues on the connectors, said tongues having loops on their ends registering with the loops on the remote sides of the corresponding connectors, and pins engaging the registering loops.

2. A road guard, comprising spaced supports and sheet metal strips secured under longitudinal tension between connectors carried by the supports, each connector comprising an open spring ring of sheet metal having spaced tongues in staggered relation on the adjacent vertical edges and loops on the ends of the tongues, each strip having tongues on its end adapted to interlace with the tongues on the near side of each cooperating connector, said tongues having loops on their ends adapted to align with the loops of the tongues on the far side of each cooperating connector, and pins engaging the registering loops.

3. A road guard, comprising a series of strips of sheet metal in substantially longitudinal alignment, spring connectors interposed between the ends of successive strips and adapted to secure the guard to rigid supporting means along the roadway, each strip having loop ended tongues disposed in staggered relation at its respective ends, each connector having a body portion of spring metal bent to substantially annular form having loop ended tongues on its vertical edges adapted to interlace with the tongues of successive strips with the loops on the strip tongues in alignment with the loops on the far side of the connector, and pins in the aligning loops.

4. A road guard, comprising a plurality of sheet metal strips arranged in substantially longitudinal alignment, spring elements interposed between the ends of successive strips, each element having wings extending forwardly from the body thereof, each wing having a series of tongues thereon staggered with relation to those on the opposite wing, each strip having a series of tongues on its end adapted to interlace with the tongues of the cooperating spring elements, and means for connecting the tongues of each strip to the tongues on the far side of each spring element.

5. A guard of the class described, comprising a fixed support, a spring element fixed to said support and extending laterally thereof, a plurality of resilient wings carried by said element, and impact members pivotally connected to said wings.

In testimony whereof I affix my signature.

EUGENE V. CAMP.