

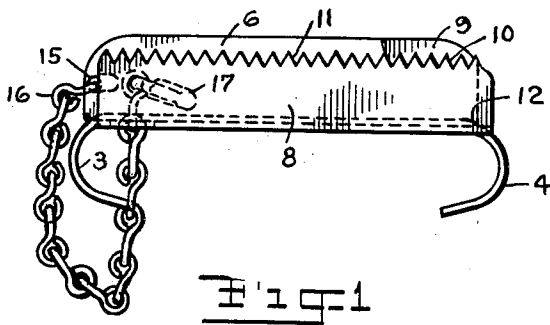
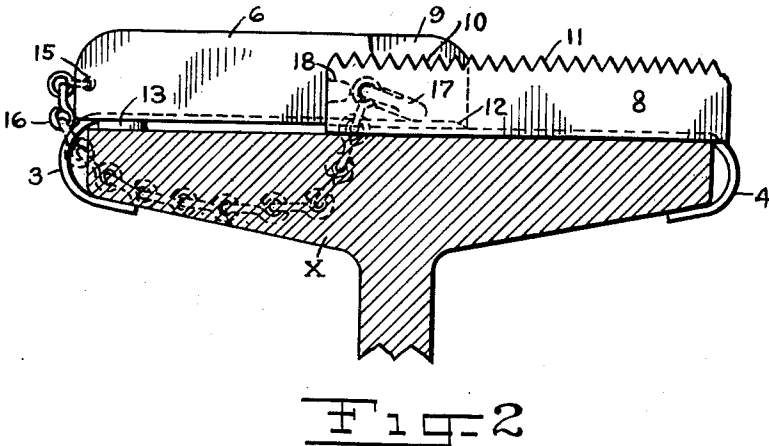
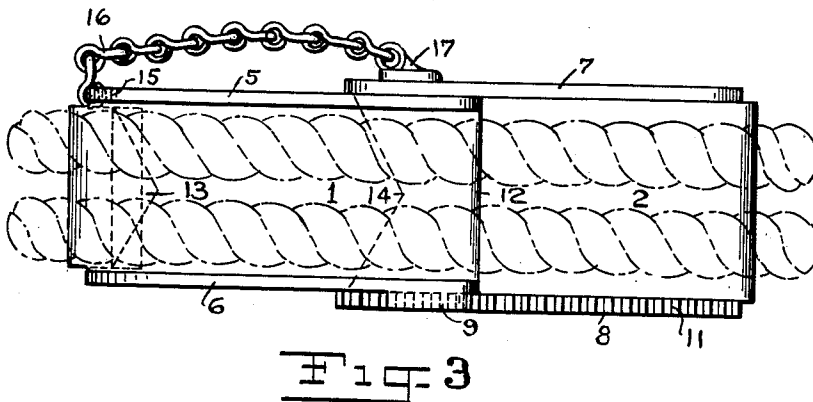
Nov. 7, 1933.

N. NELSON

1,933,751

ROPE PROTECTOR AND GUIDE

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UNITED STATES PATENT OFFICE

1,933,751

ROPE PROTECTOR AND GUIDE

Norman Nelson, Newark, N. J.

Application December 6, 1932. Serial No. 645,943

8 Claims. (Cl. 254—190)

The improvements relate to devices for guiding and protecting ropes, cables and the like against injury and undue wear and tear and at points where they have frictional engagement with other elements, and they relate primarily to means for protecting and positioning ropes or lines for suspending scaffolds in the erection of steel building frames. They may, however, be employed for other purposes to which they are adaptable.

The objects of the present improvements, among others, are to provide strong, very simple and effective means for protecting ropes or lines which are run over steel beams or other similar supporting members and from which are hung scaffolds for riveters or other workmen, which can be very quickly and easily adjusted to the beam or other support and applied thereto, when so applied will retain their position thereon under all the conditions and exigencies of use, may be with like facility removed therefrom and applied to others or adjusted thereon, and which will under all conditions effectively protect and position and guide the rope or line applied thereto.

In the erection of steel frames for buildings, it is common practice to first erect the main columns and girders and the other parts of the frame and bolt them together to form a temporary frame securement, and then as this work progresses upward to suspend from the horizontal elements—which are usually of I-beam construction—by means of ropes, scaffolds to support riveters, who rivet these parts, including joists, beams, wind-bracing and other elements of the frame. This work is considered extra hazardous, and the security of the men engaged in it is a matter of the highest importance. The edges of the beams from which the scaffolds are suspended are relatively sharp, and the weight imposed upon the suspending lines is considerable, while the vibrations of the scaffold and the other movements of the same while the work is going on causes unusual wear and tear on the fibres and strands of the rope, so that where the ropes pass over the beams they soon deteriorate and wear to such an extent as to be unsafe, and must, therefore, frequently be renewed. It is quite usual to renew the lines suspending the needle beams which support the platform of the scaffold every few days, and these ropes must be watched carefully to insure against breaking and precipitating the scaffold structure and the workmen thereon to the lower portions of the construction or even to the ground level—fre-

quently hundreds of feet—and thus causing serious injuries and even fatalities to the workmen on the platforms or working below them. It is also necessary to move the scaffold horizontally along the horizontal beams and to raise and lower it so that the workmen can cover a certain area, and in sliding the suspending lines along the beams, and working them over the said beams, the said lines are subjected to a considerable amount of wear and tear and abrasion. These ropes are a very considerable item of expense to the contractor, as they must of necessity be of high quality and strength, and must be provided with spliced eyes at their ends. Nor is it advisable to provide guides and protectors for the said ropes which require the use of tools to secure them in position or to disconnect them. It is to provide for the protection and guidance of the ropes and the adjustment of the guide and protector under all ordinary working conditions, to eliminate danger of accidents from breaking ropes and effect an important economy in the use thereof, that the present improvements are primarily designed.

The improvements are illustrated in the accompanying drawing, in which—

Figure 1 is a side elevation of a protector and guide in closed up position embodying the improvements;

Figure 2 is a view of the same extended; and Figure 3 is a plan.

In the said drawing, 1 and 2 represent slidably arranged overlapping plates, plate 1 being the upper and plate 2 the under one. Over these plates the ropes, indicated in dotted lines in Fig. 3, work. At its outer edge plate 1 is provided with an inwardly curved depending and integral flange 3 and at the opposite edge of plate 2 a similar flange 4 is provided. The function of these flanges is primarily to protect the rope against undue wear and abrasion where it passes over the edges of an I-beam flange or other support and to provide a connection between the protector and said support. In the illustrative application of the improvements, these depending flanges engage over the upper and outer edges of the flange of an I-beam, represented at X, and as will be seen, provide a secure connection. Their particular form, however, is not essential, so long as they provide a smooth track for the rope, and they may if desired, be made of resilient metal so shaped or provided with gripping means as to engage supports of other form. Thus their lower portions may be straight or only slightly curved and also may be provided

with rubber pads, buttons or other means for frictionally engaging it, or may have prongs thereon.

The plate 1 is provided along each longitudinal or side edge with upstanding guards 5 and 6 and the plate 2 with similar guards 7 and 8, which serve to confine and guide the rope passing over them. The guard 6 of the plate 1 has a laterally extending boss 9 at its inner end provided with downwardly extending teeth or other serrations 10, while the guard 8 of the plate 2 has complementary serrations 11, by means of which, and through the engagement of the teeth with each other, the plates may be securely locked in any desired adjustment within their range, and may be quickly connected and disconnected and without the use of tools or other means for connecting them. As beams or other supports may vary in width from five to ten inches, or more, this adjustment and the means for accomplishing it quickly and without the manipulation of any connecting means is of great importance under ordinary conditions of use. It will be seen that with this arrangement the protecting and guiding device may be almost instantly adjusted to supports of various widths, secured thereon, disconnected or loosened for application to another support or movement on a given support, and without the use of tools or the manipulation of any connecting means. It will also be seen that the plates are held securely in locked position by the pressure of the rope passing over them and that the greater the tension on the rope, and the resulting pressure caused thereby, the more secure will be the locking engagement.

The flanges 3 and 4 merge in their respective plates on a curve, and this curve begins well below the upper edge of the support and carries the flange outwardly to some extent, so that there is a space between its medial portion and the vertical side of the support. This provides a rounded surface, without any sharp edges for the rope extending and working over it which prevents undue wear or abrasion of the rope, and permits it to slide thereover without binding action. It also causes the lower portions of the flanges to be pressed against the support, giving them a tendency to grip the said support firmly. The inner edge of the upper plate 1 is beveled, as indicated at 12, so that the rope will slide thereover freely and will not be subjected to abrasive action thereby.

On the bottom of the upper plate 1 is an angular boss 13, adapted to bear upon the upper surface of the support and hold the outer end of the plate accurately in horizontal position, as this boss is of the same thickness as the lower plate 2. The inner edge of the plate 2 is provided with a recess 14 to receive this boss when the plates are closed up, and so that they may be brought into substantial coincidence when so closed.

In the outer end of the flange 5 an aperture 15 is provided to receive the looped end of the chain 16, and on the inner end of the flange 7 of plate 2 an eye boss 17 is fixed to receive the opposite end of said chain. In this manner the two plates are securely and permanently connected, so that they cannot be separated, and there is also provided a means for carrying them or hanging them while not in working position. To receive the end of the chain 16 when the plates are brought to closed up positions, a notch 18 in the vertical inner edge of the upright flange 7 is provided.

Various modifications in the illustrative embodiment of the improvements herein described

and shown, to adapt it to other particular uses or for other reasons, may be made without departing from the scope of the invention.

What I claim is.

1. In a device of the character indicated substantially smooth laterally disposed members slidably arranged with respect to each other providing a surface for a rope, line or cable, curved portions depending from opposite extremities of said members on curved lines providing a protecting surface for said line, said members and portions adapted to be mounted on a fixed support with said members on the upper surface and said portions extending over ends thereof, and means for detachably connecting said members comprising engaging portions on each constructed and arranged to be held in engagement by pressure of the line on said members.

2. In a device of the character indicated substantially smooth laterally disposed members slidably arranged with respect to each other providing a surface for a rope, line or cable, curved portions depending from opposite extremities of said members on curved lines providing a protecting surface for said line, said members and portions adapted to be mounted on a fixed support with said members on the upper surface and said portions extending over ends thereof, and means for detachably connecting said members comprising engaging portions on each constructed and arranged to be held in engagement by pressure of the line on said members, said engaging portions being in the form of complementary projections and recesses.

3. In a device of the character indicated substantially smooth laterally disposed members slidably arranged with respect to each other providing a surface for a rope, line or cable, curved portions depending from opposite extremities of said members on curved lines providing a protecting surface for said line, said members and portions adapted to be mounted on a fixed support with said members on the upper surface and said portions extending over ends thereof, and means for detachably connecting said members comprising engaging portions on each constructed and arranged to be held in engagement by pressure of the line on said members, said engaging portions being positioned to engage each other at various points to which said slidably arranged members may be moved.

4. In a device of the character described substantially smooth laterally disposed members slidably arranged with respect to each other providing a surface for a rope, line or cable, curved portions depending from opposite extremities of said members on curved lines providing a protecting surface for said line, said members and portions adapted to be mounted on a fixed support with said members on the upper surfaces and said portions extending over ends thereof, and means for detachably connecting said members comprising engaging portions on each constructed and arranged to be held in engagement by pressure of the line on said members, said engaging portions being in the form of complementary projections and recesses adapted to engage and disengage one another on other than slidable movement of the slidably arranged members.

5. In a device of the character indicated substantially smooth laterally disposed members slidably arranged with respect to each other providing a surface for a rope, line or cable, curved portions depending from opposite extremities of

said members on curved lines providing a protecting surface for said line, said members and portions adapted to be mounted on a fixed support with said members on the upper surface and said portions extending over ends thereof, and means for detachably connecting said members comprising engaging portions on each constructed and arranged to be held in engagement by pressure of the line on said members, upstanding side flanges on said members slidably arranged with respect to one another, said upstanding members carrying said engaging portions.

6. In a device of the character indicated, substantially smooth laterally disposed members slidably arranged with respect to each other providing a surface for a rope, line or cable, curved portions depending from opposite extremities of said members on curved lines providing a protecting surface for said line, said members and portions adapted to be mounted on a fixed support with said members on the upper surface and said portions extending over ends thereof, and means for detachably connecting said members comprising engaging portions on each constructed and arranged to be held in engagement by pressure of the line on said members, upstanding side flanges on said members slidably arranged with respect to one another, said upstanding members carrying said engaging portions, and a flexible connecting means secured to the said upstanding flanges of each said slidably arranged member.

7. In a device of the character indicated substantially smooth laterally disposed members

slidably arranged with respect to each other providing a surface for a rope, line or cable, curved portions depending from opposite extremities of said members on curved lines providing a protecting surface for said line, said members and portions adapted to be mounted on a fixed support with said members on the upper surface and said portions extending over ends thereof, and means for detachably connecting said members comprising engaging portions on each constructed and arranged to be held in engagement by pressure of the line on said members, upwardly extending side flanges on said slidably arranged members carrying said engaging portions, and said engaging portions comprising recesses and projections in the upper portions of said flanges adapted to interlock with one another at various points to which said members may be moved and constructed and arranged to be held in such engagement by pressure of the line.

8. In a device of the character indicated substantially smooth laterally disposed members slidably arranged with respect to each other providing a surface for a rope, line or cable, curved portions depending from opposite extremities of said members on curved lines providing a protecting surface for said line, said members and portions adapted to be mounted on a fixed support with said members on the upper surface and said portions extending over ends thereof, and means for detachably connecting said members comprising engaging portions on each, said engaging portions being in the form of complementary projections and recesses.

NORMAN NELSON.

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