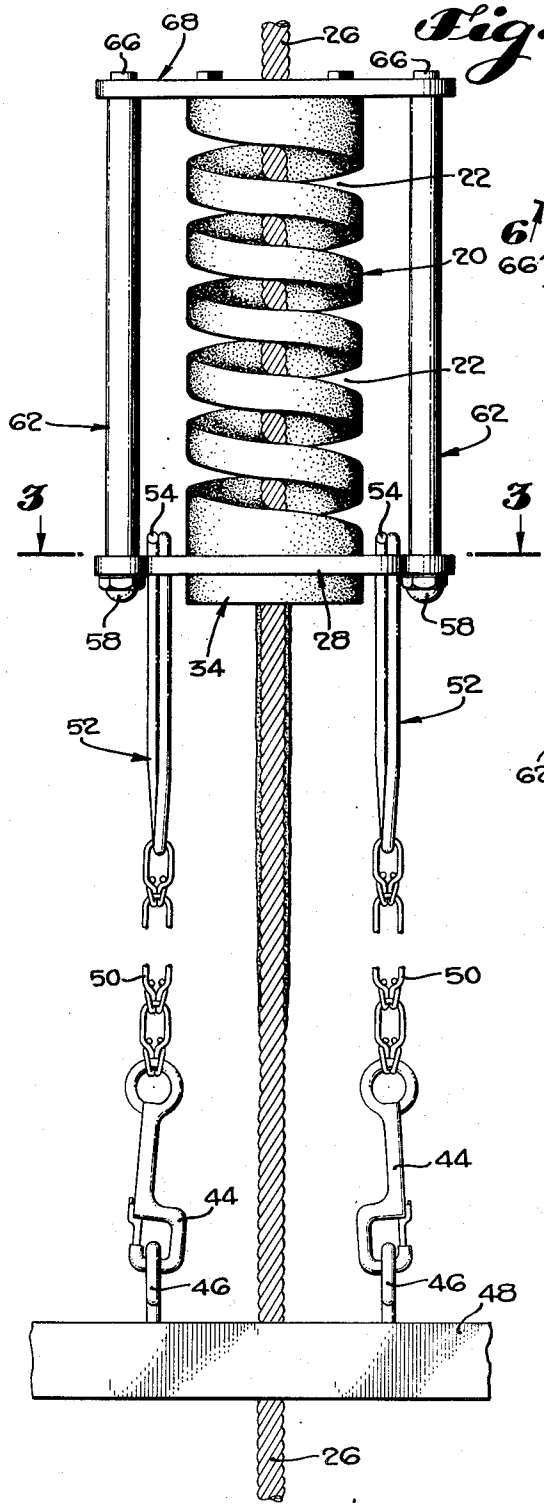
Nov. 3, 1953 DE MONT G. MILLER ET AL 2,657,414

ADJUSTABLE LINE WIPING DEVICE

Filed Feb. 11, 1949 5 Sheets-Sheet 1

Fig. 1.



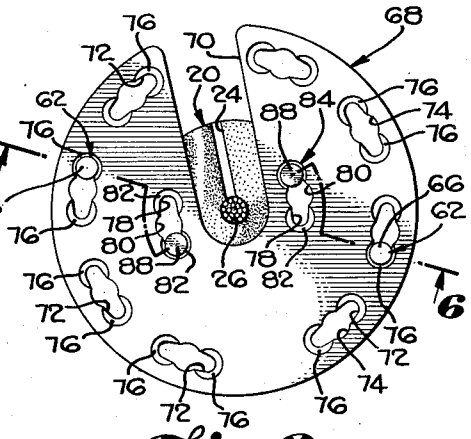


Fig. 2.

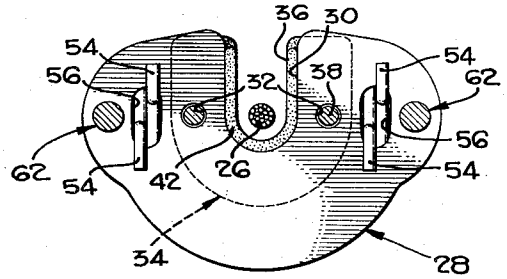


Fig. 3.

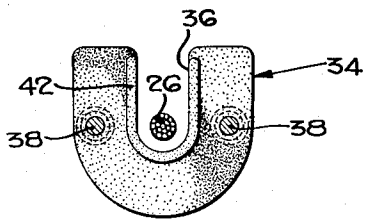


Fig. 4.

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BY Lyon & Lyon

ATTORNEYS

Nov. 3, 1953 DE MONT G. MILLER ET AL 2,657,414

ADJUSTABLE LINE WIPING DEVICE

Filed Feb. 11, 1949 5 Sheets-Sheet 2

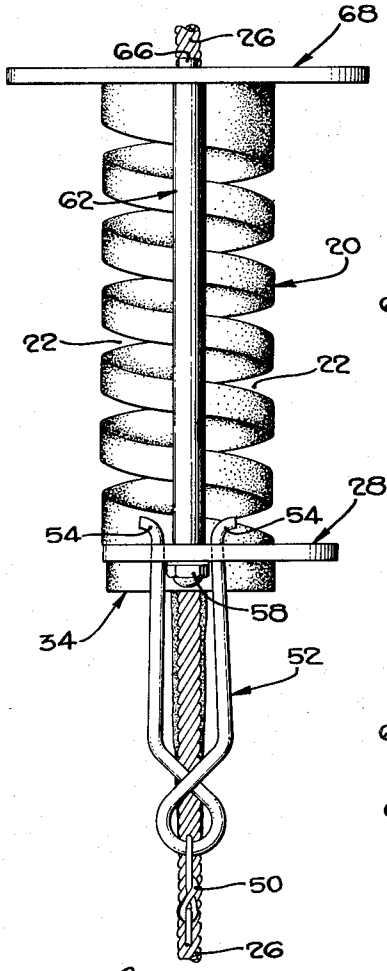


Fig. 5.

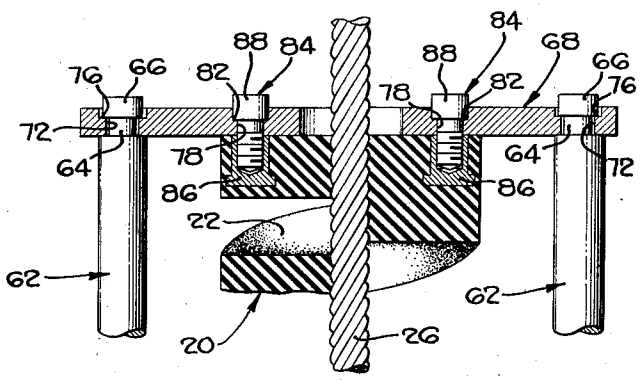


Fig. 6.

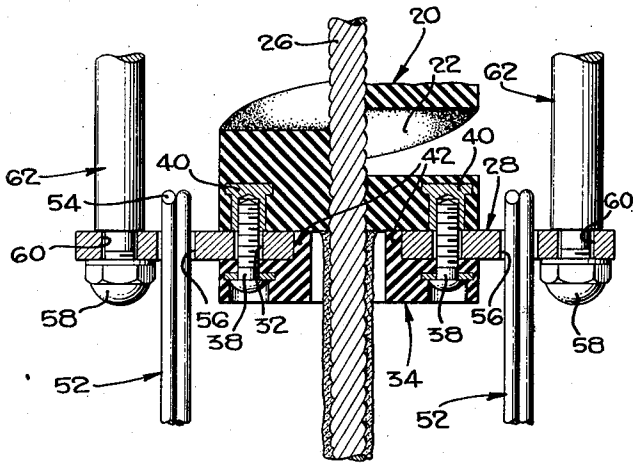


Fig. 7.

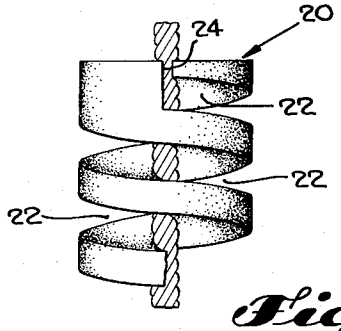


Fig. 8.

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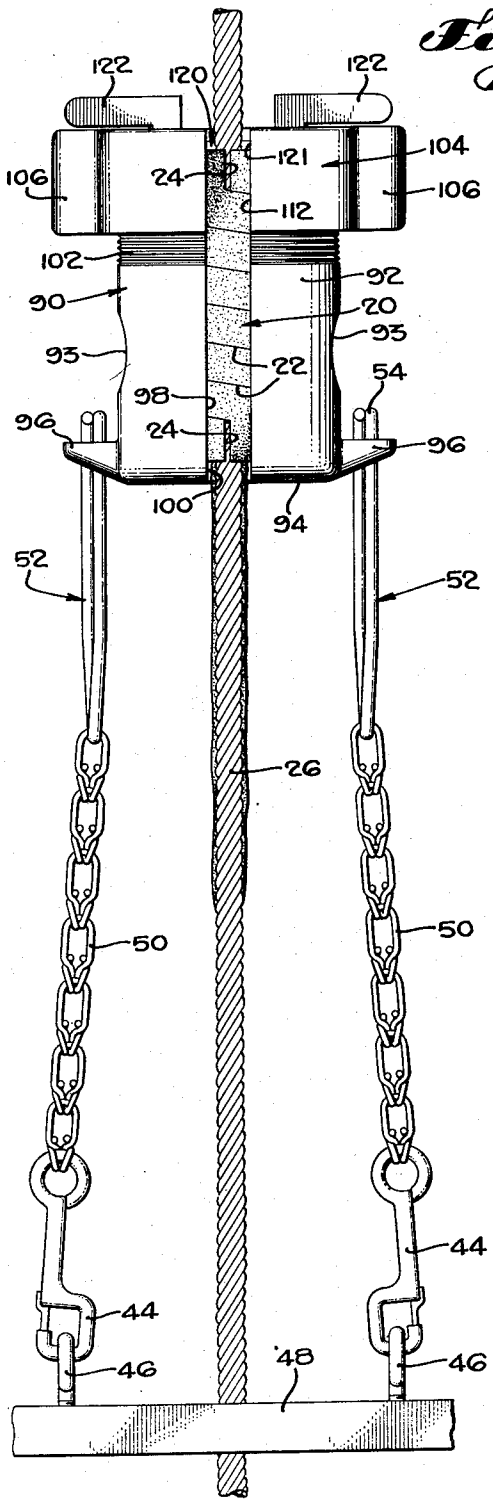
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ADJUSTABLE LINE WIPING DEVICE

Filed Feb. 11, 1949 5 Sheets-Sheet 3

Fig. 9.



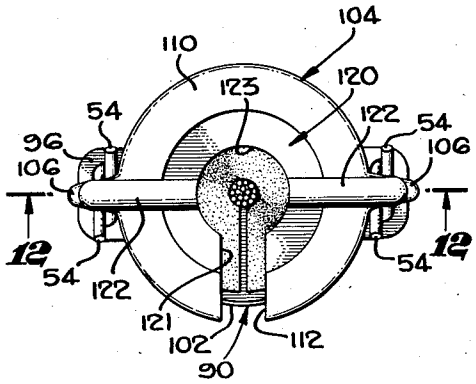


Fig. 10.

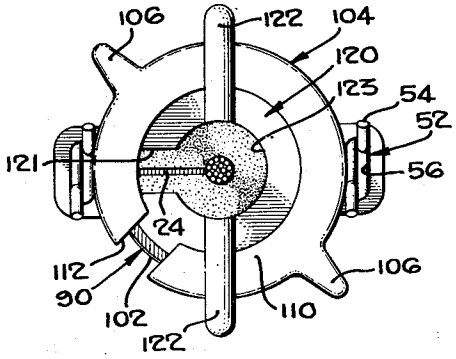


Fig. 11.

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Nov. 3, 1953 DE MONT G. MILLER ET AL 2,657,414

ADJUSTABLE LINE WIPING DEVICE

Filed Feb. 11, 1949 5 Sheets-Sheet 4

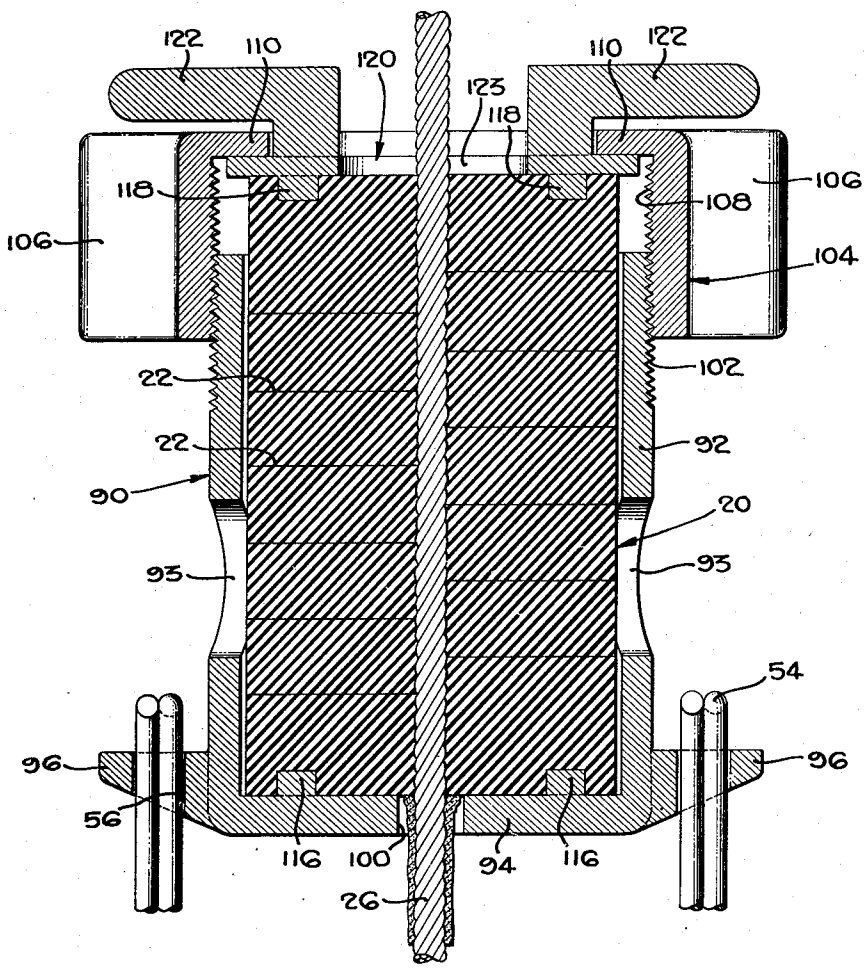


Fig. 12.

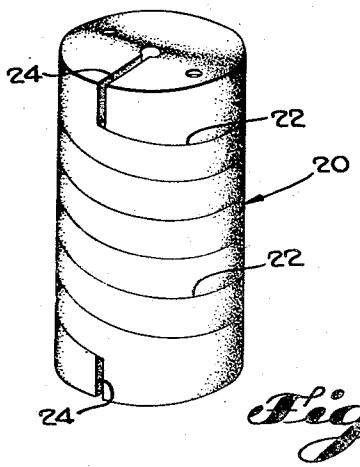


Fig. 13.

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ADJUSTABLE LINE WIPING DEVICE

Filed Feb. 11, 1949 5 Sheets-Sheet 5

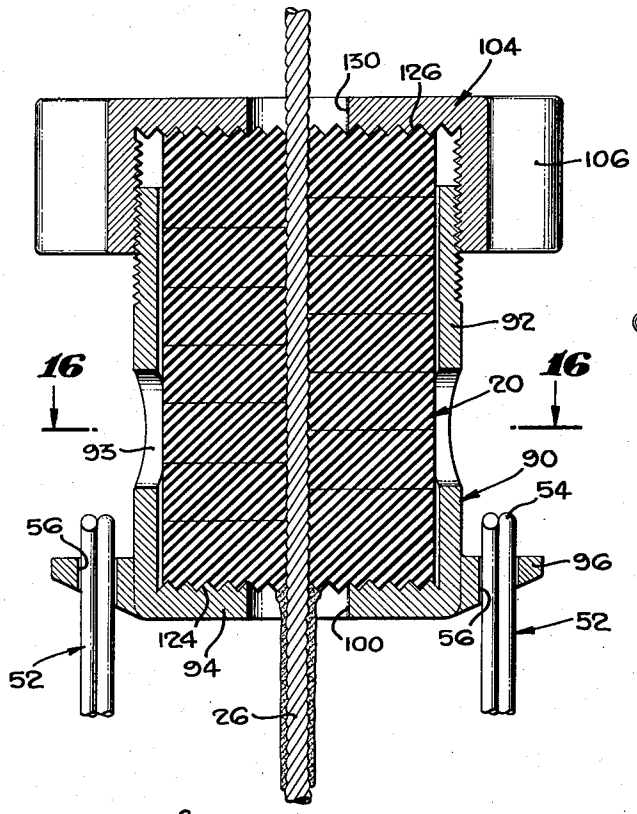


Fig. 14.

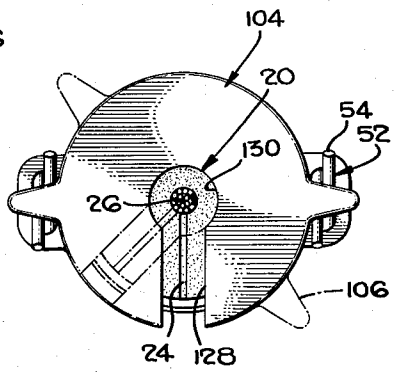


Fig. 15.

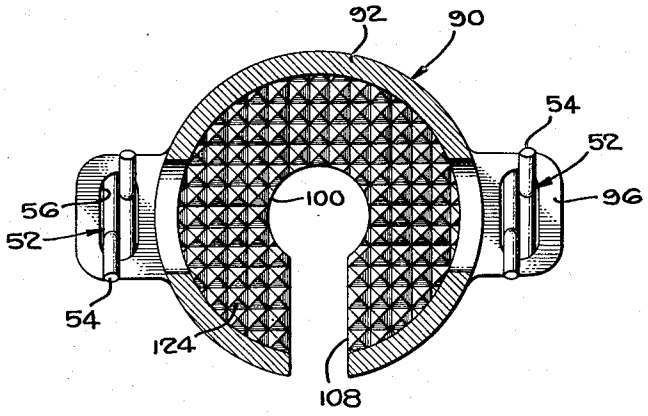


Fig. 16.

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ATTORNEYS

Patented Nov. 3, 1953

2,657,414

UNITED STATES PATENT OFFICE

2,657,414

ADJUSTABLE LINE WIPING DEVICE

De Mont G. Miller, San Marino, and John C. Grant, Los Angeles, Calif., assignors to Byron Jackson Co., Vernon, Calif., a corporation of Delaware

Application February 11, 1949, Serial No. 75,794

27 Claims. (Cl. 15—210)

1

This invention relates to line wiping devices, and more particularly to a device for accommodating line wiping elements to various sized cables, wires, ropes and the like and for increasing the useful life of such line wiping elements.

Whenever a line or cable is lowered into a well bore containing liquid, and particularly an oil well bore, a certain amount of such liquid and in addition, mud, sand and the like will adhere to the line when it is withdrawn from the bore. Unless said liquid and said accumulated foreign substances are removed from the line at a point adjacent the mouth of the bore, they will usually be spattered about the derrick floor. The liquid therefore is lost and its presence and that of the foreign substances endanger the safety of the well operators due to the attendant hazard of a slippery working surface. Moreover, inasmuch as the liquid is frequently of a corrosive nature, unless it is thoroughly removed from the line before it is rewound about its reel or drum, the useful life of said line will frequently be materially shortened.

In United States Patent No. 2,239,159, issued April 22, 1941, to De Mont G. Miller, there is disclosed and claimed a line wiping device which effectively removes accumulated well liquid from the surface of a line or cable. This device comprises a wiping element of yieldable material such as rubber or a like elastomer in the form of a cylinder having a line receiving slot or passage extending helically from adjacent one end of said cylinder to adjacent the other end, and axial slots or passages at both of said ends of the cylinder connecting with said helical slot and providing a passage opening to the periphery of the cylinder adapted to receive the line or cable. When the line or cable is applied to said cylinder by the reception of said line within said passage, withdrawal of the line and associated tools from the well bore causes said line to straighten and since its straightening is resisted by the shape of the cylinder, the material of the cylinder bears against the line and upon passage of the line through said cylinder wipes the line clean.

Such wiping element and similar wiping elements to which the present invention is adapted have achieved considerable commercial success in the field. However, inasmuch as travel of the line through such elements tends to wear down the elements at their surfaces which bear against the line, it has been found necessary to frequently replace elements due to there having been worn therethrough an axial central bore which prevented thoroughly effective cleaning of the line.

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In addition, an associated problem existed where such a wiping element particularly adaptable for a line or cable of a certain diameter was called upon to wipe lines or cables of lesser diameter. Here wiping was of course less effective inasmuch as upon a straightening of the line the wiping element did not bear as hard against said line.

United States Patent No. 2,285,742, issued June 9, 1942, to De Mont G. Miller, disclosed and claimed a metallic body structure adapted to encircle the aforesaid type wiping element and to apply an adjustable, radially directed compressing force to said element whereby, upon the wearing of the element by the line or cable, radial force could be applied to the element in order to more closely force the bearing surfaces of the element against the line or cable and thus avoid the necessity of too early replacement of the wiping element. Such expedient has found considerable commercial success, but a certain unevenness of pressure on the wiping element found in this arrangement has resulted in a less than optimum wiper element longevity.

The present invention contemplates the application of an entirely different structure to the aforedescribed type of helically passaged elastomer wiping element and it is its principal object to provide in combination therewith means whereby the life of such a line wiping element may be considerably increased and its necessary replacement delayed considerably longer than heretofore possible.

A further object of the invention is to provide in combination with a helical wiper means whereby such a line wiping element is easily adjusted to accommodate effectively various sized lines or cables.

Another object of the invention is to provide a wiper assembly including means whereby the amount of wiping pressure exerted upon a line or cable being wiped may be controlled within very close limits.

Yet another object is to provide a wiping device wherein the wiping element is easily and simply replaced when finally, because of wear, it becomes unfit for further use.

In addition, a general object of the invention is to provide a line or cable wiping assembly adaptable for use with various sized lines or cables, pressurally adjustable about said lines or cables, and adapted to clean or wipe much greater lengths of line than has heretofore been possible.

Further objects of the invention will appear hereinafter.

In the drawings:

Figure 1 is a view in front elevation of the preferred embodiment of a line wiping device built in accordance with this invention;

Figure 2 is a top plan view thereof;

Figure 3 is a cross-sectional view thereof taken on the line 3—3 of Figure 1;

Figure 4 is a top plan view of a bumper element to be used in conjunction with the invention;

Figure 5 is a partial view of the preferred embodiment in side elevation at an angle of 90° from the view shown in Figure 1;

Figure 6 is a fragmentary sectional view of such embodiment taken on the line 6—6 of Figure 2;

Figure 7 is a similar fragmentary sectional view taken, however, through the bottom plate of the embodiment, rather than as in Figure 6 the top plate thereof;

Figure 8 is a side elevational view of a portion of the wiping element with the line or cable passing therethrough;

Figure 9 is a view in front elevation of a modified embodiment of a line wiping device built in accordance with the invention;

Figure 10 is a top plan view thereof aligned in position to receive the line to be wiped;

Figure 11 is the same plan view showing the elements of the device in line wiping position;

Figure 12 is a view of said modified embodiment in front elevation taken partly in section on the line 12—12 of Figure 10;

Figure 13 is a perspective view of the wiping element in the line wiping position it assumes when in the operative condition of this embodiment;

Figure 14 is a view of a third embodiment of this invention in front elevation taken partly in section;

Figure 15 is a top plan view thereof showing the elements of the device in line wiping position; and

Figure 16 is a cross-sectional view of this embodiment taken on the line 16—16 of Figure 14 and having the wiping element removed.

The structure hereinafter to be described in each embodiment includes a uniformly helixed elastomer wiping element having a yieldable line wiping passage defined by the radial inner walls of the body and a holder including a bottom member releasably anchored to the derrick floor and an upper member or structure associated with said bottom member and capable of applying torsional stress to the wiping element in order to cause the wiping element to closely grip the line or cable. This is accomplished by relative rotation between the upper and lower members, each of said members being relatively non-rotationally affixed to respective extremities of the wiping element.

The preferred embodiment is illustrated in Figures 1 through 8. An elastomer line wiping element 20 comprising an integral uniform helix having helical passages 22 and at either end axial passages or slots 24 which connect with said helical passages. The inner wall surface of said helical body defines an axially extending yieldable line wiping passage adapted to receive the line or cable 26. As indicated above, the element 20 is preferably formed in accordance with the teaching of the Miller Patent No. 2,239,159. A bottom plate 28 generally semi-circular in shape is provided with a line receiving slot 30 and bores 32. A resilient bumper 34 having a line receiving slot 36 is adapted to be positioned below said

lower plate 28 and is held thereagainst by anchor bolts 38 which project through the said bores 32 and are threadedly received within bushings 40 which are molded within the base of the wiping element 20. By this means the lower plate 28 is clamped to the wiping element 20, and below said plate 28 is clamped the bumper 34 which serves to absorb any sudden shock to the assembly caused by contact with an enlargement upon the upwardly moving line or cable and serves as a spark preventing means. It will be noted that said bumper 34 is provided with an upwardly extending flange 42 which conforms to and abuts the inner periphery of the slot 30 of the lower plate 28.

As more particularly shown and described in the aforementioned United States Patent No. 2,285,742, an anchoring means is provided for the lower plate 28 which consists of snap hooks 44 connected to eyes 46 on the derrick floor 48 and which snap hooks are connected to chains 50 which in turn are connected to spring connectors 52. Such spring connectors 52 are constructed from lengths of spring wire bent to provide spring arms crossed at one end to form eyes to which are connected the chains 50 and having their extremities flared at 54. Such flared extremities provide latching portions which are received in the slots 56 of the lower plate 28 and thus provide anchoring means to hold down the lower plate 28 and the assembly from upward movement, being spring-releasable upon the striking of the bumper 34 by an enlargement on the line 26, such as a rope socket for example, in order to prevent damage to the assembly.

Rigidly secured to the lower plate 28 by the threaded cap nuts 58 are posts or spacer rods 62, the lower ends of which are of reduced diameter and pass through bores 60 in said plate 50. Said rods 62 are threaded to receive said nuts 58. Such posts or spacer rods at their upper extremities are provided with pin portions 64 and head portions 66 which are adapted to retain upper plate 68. It is the function of said upper plate 68 to impart a twist or torsional stress to the wiping element 20 in order to cause said wiping element 20 to grip the line 26 and such upper plate 68 is held in its strain-applying position by the posts 62 in manner to be hereinafter described.

The upper plate 68 comprises a flat circular member slotted at 70 to permit reception of the line 26 and includes a plurality of circumferentially disposed outer slots 72 having enlarged central portions 74, said slots being counterbored at either end to provide shallow counterbores 76. Similar slots 78 are provided radially inwardly of said slots 72 and have central enlarged portions 80 and shallow counterbores 82. It is the function of the outer slots 72 to receive the extremities of the rods 62 and it is the function of the inner slots 78 to receive anchor bolts 84. Said anchor bolts 84 thread into bushings 86 molded into the wiping element 20 and are provided with enlarged heads 88.

The device is applied to the line or cable preferably with its top plate 68 removed. This is done by inserting the line or cable 26 through the slot 30 of the bottom plate 28 and manipulating the line into the wiping element 20 by means of helical passages 22 and slots 24. It will be noted that in the absence of gripping means such as is provided by the instant invention, it is not permissible to provide a central axial bore through the said line wiping element 20 but hav-

ing such gripping means as is herein provided, such a bore may be present and such bore will aid considerably in the insertion of the line 26 within the wiping element 20 since distortion of the wiping element is thereby avoided and it may thereby be easily centrally aligned about the line or cable 26. Having installed the unit thus far, the spring connectors 52 affixed by the snap hooks 44 to the derrick floor 48 are inserted through the slots 56 in the lower plate 28 in order to hold down the device and in order to prevent its twisting about the line. The top plate 68 is then applied to the line and attached to the upper end of wiping element 20 by the bolts 84 which pass through the enlarged portions 80 of the slots 78. In order to accommodate the wiping element 20 to the diameter of the line 26 being used, and in order to assure thorough wiping action of such line, it is usually found desirable to apply a gripping force about said line. In the instant invention this is accomplished torsionally by twisting the upper plate 68 with respect to the axis of the wiping element. In the instant embodiment, this is accomplished by twisting the upper plate 68 clockwise until proper gripping action is assured, whereupon the said top plate 68 is placed down over the extremities of the rods 62, the pin portions 64 and head portions 66 passing through the enlarged central portion 74 of the particular slots 72 which happen to register therewith. A resilient counter-twisting effect will be caused by the wiping element 20 which brings the heads 86 of the anchor bolts 84 to the extremities of the slots 78 as shown, thereupon holding the top plate 68 upon the wiping element 20 by virtue of the counterbores 82. Similarly the top plate 68 is twisted until the head portions 66 of the rods 62 seat in the counterbores 76 as shown, thus preventing upward movement of the upper plate 68 with respect to said rods 62. It will be noted that if preferred, prior to twisting of the upper plate 68, the anchor bolts 84 may be screwed down firmly into the counterbores 82.

The entire assembly is therefore first releasably anchored to the derrick floor, and second disposed in firm gripping relationship to the line 26; and therefore the line 26 may be brought in and fluid and foreign substances wiped cleanly therefrom. It will be noted that by virtue of the hereinabove described torsional clamping, small lines or cables may be accommodated and as effectively wiped as larger lines or cables. Since the gripping force of wiping element 20 upon the line does not depend upon radial compression but rather upon a torsional strain throughout the element which distributes the wiping pressure uniformly about the circumference of the line, concentrated abrasion of the element is avoided and longevity thereof increased. However, eventually abrasion from the line 26 will create an enlarged central axial bore within the wiping element such as will considerably decrease the wiping effect. Thereupon the operator need but rotate the top plate 68 slightly in order to register the respective head portion 66 of the posts 62 with the respective enlarged central portions 74 of the slots 72, lift the top plate 68 and further twist same to take up the gripping slack, reregistering and reconnecting the post extremities with other slots 72. In this manner, as the line 26 abrades the wiping element 20 and enlarges its central axial bore, the torsional strain in said wiping element may be increased periodically and the effective life of the wiping element enhanced. Obviously, eventually a point will be reached whereby further increase of torsional strain in the wiping element can no longer effectively cause said element to grip the line. The top plate 68 is thereupon simply removed from the wiping element 20, the anchor bolts 38 unthreaded from said wiping element 20, and a new wiping element installed.

A second embodiment of the invention is shown in Figures 9, 10, 11, 12 and 13. In this embodiment a similar wiping element 20 is used, but it will be noted that in operation the helical passages 22 are closed. This is due to the fact that not only does this embodiment impart a torsional strain to the wiping element, but in the process of applying this strain it also imparts an axial compressive strain to the element, the condition of the element in operation being shown in Figure 13. In this embodiment, instead of a lower plate, there is provided a cylindrical body 90 having a side wall 92 with drain apertures 93, an integral bottom 94, and ears 96 having the slots 56 which receive the flared extremities 54 of the spring connectors 52. A line receiving slot 98 extends the length of the side wall 92 and also radially inwardly therefrom to a central aperture 100 formed in the bottom 94. The upper portion of the side wall 92 is threaded at 102 to receive in threaded engagement a cap 104.

The cap 104 is a circular member having manipulating ears 106 and having an internal bore 108 threaded to coact with the threaded side wall 92. A flange 110 extends radially inwardly of said bore 108 and a line receiving slot 112 extends radially inwardly through the cap and flange.

Each end of the line wiping element 20 is provided with a plurality of molded recesses, the lower end to receive projections 116 extending upwardly of the bottom 94 of the cylindrical body 90 and the upper end to receive projections 118 depending integrally from a torsion applying, or plate member 120 which is provided with a slot 121 and a central aperture 123. Such plate member comprises an annular ring from which depend integrally the aforesaid projections 118 and from which extends a pair of manipulating ears 122 and, with the cap 104, comprises the head structure.

The basic operation of this embodiment is quite similar to that of the aforedescribed preferred embodiment, the operation of the assembly principally depending upon an application of torsional strain to the line wiping element 20. In installing such device, the cylindrical body 90 is applied to the line 26, said line passing through the slot 98, the cap 104 and plate member 120 being removed. The said body 90 is held down by virtue of the spring connectors 52 and associated linkage. Slightly above the said body 90 the wiping element 20 is applied to the line 26 as hereinbefore described and is then slid down said line into the body 90 and the projections 116 registered with the lower recesses in the said wiping element. The cap 104 and plate member 120 are then brought into position above the said body 90 and the cap threaded down over the threaded side wall 92 until the projections 118 of the plate member 120 are substantially in engagement with their matching recesses in the upper end of the wiping element. The projections 118 are thereupon inserted in such recesses and the cap 104 turned until its flange 110 rests upon the top of said plate member 120. As with the first embodiment, torsional strain is then ap-

plied to the wiping element 20 in order to cause it to grip the line 26. This is accomplished by turning said plate member 120. In order to retain the plate member in this turned position against the resiliency of the wiping element, the cap member 104 is screwed down tightly against said plate member, frictionally clamping said member in order to hold the wiping element in gripping position.

As the wiping element is gradually worn, additional torsional strain may be imparted thereto as with the first embodiment by slightly loosening the cap 104 and additionally turning the plate member 120 and thereafter screwing down the said cap member in order to frictionally clamp the plate member. Replacement of the wiping element 20 is accomplished by removing the cap 104 and plate member 120 and substituting a new wiping element. As heretofore stated, it will be observed that in this embodiment there not only exists a torsional strain upon the wiping element 20 but that such wiping element 20 is under compression from the cap 104. In order to obtain optimum equal distribution of the wiping pressure throughout the length of the wiper element upon twisting of such wiper element, it is recommended that a suitable lubricant be used in the wiping element in order to minimize friction which might exist between the sides of the helical passage 22. As hereinafter will become apparent, this same condition exists in the third embodiment of the instant invention to be hereinafter described, and the use of a lubricant therewith is likewise recommended.

The third embodiment of the invention is shown in Figures 14 through 16. Such embodiment, as with the second embodiment, comprises a wiping element 20 and a cylindrical body 90, said cylindrical body 90 receiving the wiping element 20 and being held down by the spring connectors 52. There is provided a head structure consisting of the cap member 104 threaded onto the side wall 92. However, instead of having the projections 116 extending from the bottom 94 of said cylindrical body 90, the inner surface 124 of said bottom is roughened, that is, provided with a coarse knurling. Again, instead of providing a plate member 120, as with the second embodiment, the inner upper surface 126 of the cap 104 is similarly coarsely knurled. Thus, in the installation of the wiping device after the wiping element 20 has received the line 26 and is received in turn in the body member 90, the cap member 104 is aligned through its slot 128 and central aperture 130 and is threaded down on the side wall 92. Such threading causes the knurled inner surface 124 of the bottom 94 and the knurled inner surface 126 of the cap 104 to become embedded in the wiping element 20 and causes a twisting of said wiping element 20 to produce the desired torsional strain and consequent gripping of the line. As is obvious, the further the cap 104 is threaded down upon the side wall 92, the tighter will this gripping be. As with the second embodiment, replacement of the wiping element 20 is effected by removing the cap 104 and substituting a new wiping element.

While there has been described what is at present considered preferred embodiments of the present invention, it will be apparent to those skilled in the art that various modifications and changes may be made without departing from the essence of the invention, and it is intended to cover herein all such modifications and changes as come within the true scope and spirit of the appended claims.

We claim:

1. A line wiping device comprising: a body of yieldable material having a line wiping passage therethrough adapted to receive a line; and a holder therefor, said holder including a first member relatively non-rotationally affixed to an extremity of said yieldable body, a second member relatively non-rotationally affixed to the other extremity of said yieldable body, and posts rigidly connected to said second member, said first and said second members being relatively rotatable to tighten said yieldable body about said line, and said first body being connectible to said posts.

2. A line wiping device comprising: a body of yieldable material defining a helical line wiping passage opening to the periphery of said body and being adapted to receive a line; and a holder therefor, said holder including a first member relatively non-rotationally affixed to an extremity of said yieldable body, a second member relatively non-rotationally affixed to the other extremity of said yieldable body, and posts rigidly connected to said second member, said first and said second members being relatively rotatable to tighten said yieldable body about said line, and said first body being connectible to said posts.

3. A holder for a yieldable line wiping element having a line wiping passage therethrough adapted to receive a line, said holder including: a first member relatively non-rotationally affixable to an extremity of said line wiping element, a second member relatively non-rotationally affixable to the other extremity of said line wiping element, and posts rigidly connected to said second member, said first and said second members being relatively rotatable to tighten said line wiping element about said line, and said first body being connectible to said posts.

4. A line wiping device comprising: a body of yieldable material having a line wiping passage therethrough adapted to receive a line; and a holder therefor, said holder including a first member relatively non-rotationally affixed to an extremity of said yieldable body, said member defining a series of circumferentially disposed slots, a second member relatively non-rotationally affixed to the other extremity of said yieldable body, and posts rigidly connected to said second member, said first and second members being relatively rotatable to tighten said yieldable body about said line, and said posts being receivable in said slots of said first member to rigidly connect said first member to said second member.

5. A line wiping device comprising: a body of yieldable material defining a helical line wiping passage opening to the periphery of said body and being adapted to receive a line; and a holder therefor, said holder including a first member relatively non-rotationally affixed to an extremity of said yieldable body, said member defining a series of circumferentially disposed slots, a second member relatively non-rotationally affixed to the other extremity of said yieldable body, and posts rigidly connected to said second member, said first and second members being relatively rotatable to tighten said yieldable body about said line, and said posts being receivable in said slots of said first member to rigidly connect said first member to said second member.

6. A holder for a yieldable line wiping element having a line wiping passage therethrough adapted to receive a line, said holder including: a first member relatively non-rotationally affixable to an extremity of said line wiping element, said member defining a series of circumferentially disposed slots, a second member relatively non-rotationally affixable to the other extremity of said line wiping element, and posts rigidly connected to said second member, said first and said second members being relatively rotatable to tighten said line wiping element about said line, and said posts being receivable in said slots of said first member to rigidly connect said first member to said second member.

7. A line wiping device comprising: a body of yieldable material having a line wiping passage therethrough adapted to receive a line; and a holder therefor, said holder including a body member adapted to receive said yieldable body and relatively non-rotationally affixed to an extremity thereof and a head structure, said head structure being relatively non-rotationally affixed to the other extremity of said yieldable body and being threadably rotatable on said body member and being adapted to tighten said yieldable body about said line.

8. A line wiping device comprising: a body of yieldable material defining a helical line wiping passage opening to the periphery of said body and being adapted to receive a line; and a holder therefor, said holder including a body member adapted to receive said yieldable body and relatively non-rotationally affixed to an extremity thereof and a head structure, said head structure being relatively non-rotationally affixed to the other extremity of said yieldable body and being threadably rotatable on said body member and being adapted to tighten said yieldable body about said line.

9. A holder for a yieldable line wiping element having a line wiping passage therethrough adapted to receive a line, said holder including a body member adapted to receive said yieldable line wiping element and relatively non-rotationally affixable to an extremity thereof and a head structure, said head structure being relatively non-rotationally affixable to the other extremity of said yieldable body and being threadably rotatable on said body member and being adapted to tighten said line wiping element about said line.

10. A line wiping device comprising: a body of yieldable material having a line wiping passage therethrough adapted to receive a line; and a holder therefor, said holder including a body member adapted to receive said yieldable body and relatively non-rotationally affixed to an extremity thereof, a torsion applying member relatively non-rotationally affixed to the other extremity of said yieldable body and relatively rotatable with respect to said body member to tighten said yieldable body about said line, and a cap threadably connectible to said body member and clampable on said torsion applying member.

11. A line wiping device comprising: a body of yieldable material defining a helical line wiping passage opening to the periphery of said body and being adapted to receive a line; and a holder therefor, said holder including a body member adapted to receive said yieldable body and relatively non-rotationally affixed to an extremity thereof, a torsion applying member relatively non-rotationally affixed to the other extremity of said yieldable body and relatively rotatable with respect to said body member to tighten said yieldable body about said line, and a cap threadably connectible to said body member and clampable on said torsion applying member.

12. A holder for a yieldable line wiping element having a line wiping passage therethrough adapted to receive a line, said holder including a body member adapted to receive said line wiping element and relatively non-rotationally affixable to an extremity thereof, a torsion applying member relatively non-rotationally affixable to the other extremity of said line wiping element, and relatively rotatable with respect to said body member to tighten said line wiping element about said line, and a cap threadably connectible to said body member and clampable on said torsion applying member.

13. A line wiping device comprising: a body of yieldable material having a line wiping passage therethrough adapted to receive a line; and a holder therefor, said holder including a body member adapted to receive said yieldable body, said body member having a roughened surface engageable with an extremity of said yieldable body and a cap having a roughened surface engageable with the other extremity of said yieldable body, said cap being threadably rotatable on said body member to tighten said yieldable body about said line.

14. A line wiping device comprising: a body of yieldable material defining a helical line wiping passage opening to the periphery of said body and being adapted to receive a line; and a holder therefor, said holder including a body member adapted to receive said yieldable body, said body member having a roughened surface engageable with an extremity of said yieldable body and a cap having a roughened surface engageable with the other extremity of said yieldable body, said cap being threadably rotatable on said body member to tighten said yieldable body about said line.

15. A holder for a yieldable line wiping element having a line wiping passage therethrough adapted to receive a line, said holder including a body member adapted to receive said line wiping element, said body member having a roughened surface engageable with an extremity of said line wiping element and a cap having a roughened surface engageable with the other extremity of said line wiping element, said cap being threadably rotatable on said body member to tighten said line wiping element about said line.

16. A line wiping element for use with a torsion applying holder having upper and lower relatively rotatable members, said members each having extending elements associated therewith, comprising: a body of yieldable material having a line wiping passage, the upper and lower portions of said line wiping element being recessed to receive respectively said extending elements of said upper and lower holder members, whereby to affix said upper and lower portions relatively non-rotationally to said upper and lower holder members respectively.

17. A line wiping element for use with a torsion applying holder having upper and lower relatively rotatable members, said members each having extending elements associated therewith, comprising: a body of yieldable material defining a helical line wiping passage opening to the periphery of said body and being adapted to re-

ceive a line, the upper and lower portions of said line wiping element being recessed to receive respectively said extending elements of said upper and lower holder members, whereby to affix said upper and lower portions relatively non-rotationally to said upper and lower holder members respectively.

18. A replaceable line wiping element for use with a torsion applying holder having upper and lower relatively rotatable members, said members each having extending elements associated therewith, comprising: a cylindrical body of yieldable material defining a helical line wiping passage opening to the periphery of said body, said passage having axially extending end portions, the upper and lower portions of said body being recessed to receive respectively said extending elements of said upper and lower holder members, whereby to affix said upper and lower portions relatively non-rotationally to said upper and lower holder members respectively.

19. A line wiping element for use with a torsion applying holder having upper and lower relatively rotatable members, said members having extending threaded elements associated therewith, comprising: a body of yieldable material having a line wiping passage, the upper and lower portions of said line wiping element having molded therein threaded bushings adapted to threadedly receive respectively said threaded extending elements of said upper and lower holder members, whereby to affix said upper and lower portions relatively non-rotationally to said upper and lower holder members respectively.

20. A line wiping element for use with a torsion applying holder having upper and lower relatively rotatable members, said members each having extending threaded elements associated therewith, comprising: a body of yieldable material defining a helical line wiping passage opening to the periphery of said body and being adapted to receive a line, the upper and lower portions of said line wiping element having molded therein threaded bushings adapted to threadably receive respectively said threaded extending elements of said upper and lower holder members, whereby to affix said upper and lower portions relatively non-rotationally to said upper and lower holder members respectively.

21. A replaceable line wiping element for use with a torsion applying holder having upper and lower relatively rotatable members, said members each having extending threaded portions associated therewith, comprising: a cylindrical body of yieldable material defining a helical line wiping passage opening to the periphery of said body, said passage having axially extending end portions, the upper and lower portions of said cylindrical body having molded therein threaded bushings adapted to threadably receive respectively said threaded extending elements of said upper and lower holder members, whereby to affix said upper and lower portions relatively non-rotationally to said upper and lower holder members respectively.

22. A line wiping device comprising: an elastomer body shaped to define a uniform helix, the radially inner wall surface of said helical body defining an axially extending yieldable line wiping passage; and a holder therefor, said holder including a lower member relatively non-rotationally affixed to the lower portion of said body and an upper member relatively non-rotationally affixed to the upper portion of said body, said lower and upper members being relatively turnable about the helix axis so as to uniformly vary the diameter of said yieldable line wiping passage to thereby adjust the wiping pressure exerted by the inner wall of said passage upon the line.

23. A line wiping device comprising, in combination: an integral uniformly helix shaped elastomer body, the body having a radially inner wall surface defining an axially extending yieldable line wiping passage, a nonresilient upper member, means securing said upper member to the upper end of said body, a nonresilient lower member, means securing said lower member to the lower end of said body, said upper and lower members being relatively turnable about the helix axis so as to uniformly vary the size of said yieldable line wiping passage to thereby adjust the wiping pressure exerted by said inner wall surface upon the line.

24. A line wiping device comprising, in combination: an integral uniformly helix shaped elastomer body, the body having a radially inner wall surface defining a uniform axially extending yieldable line wiping passage, a nonresilient upper member, means securing said upper member to the upper end of said body, a nonresilient lower member, means securing said lower member to the lower end of said body, said upper and lower members being relatively turnable about the helix axis so as to uniformly vary the size of said yieldable line wiping passage to thereby adjust the wiping pressure exerted by said inner wall surface upon the line, and releasable elements connecting the said upper and lower members to prevent relative turning movement therebetween.

25. A line wiping device comprising, in combination: an integral uniformly helix shaped elastomer body, the body having a radially inner wall surface defining a uniform axially extending yieldable line wiping passage, said body having upper and lower end surfaces lying substantially in planes normal to the helix axis, a nonresilient upper member, means securing said upper member to the upper end surface of said body, a nonresilient lower member, means securing said lower member to the lower end surface of said body, said upper and lower members being relatively turnable about the helix axis so as to uniformly vary the size of said yieldable line wiping passage to thereby adjust the wiping pressure exerted by said inner wall surface upon the line.

26. A line wiping device comprising: an integral helical body of yieldable material defining a uniform axial yieldable line wiping passage adapted to receive a line; and a holder therefor, said holder including a lower member relatively non-rotationally affixed to the lower portion of said yieldable body, and an upper member relatively non-rotationally affixed to the upper portion of said yieldable body, said lower and upper members being relatively turnable about the helix axis to uniformly and yieldingly tighten said helical body about said line, and releasable elements connecting said lower and upper members to each other to prevent relative rotation therebetween.

27. A line wiping device comprising: an integral helical body of yieldable material defining a uniform yieldable line wiping passage to receive a line; said body having upper and lower end surfaces lying substantially in planes normal to the helix axis, and a holder therefor, said holder including a lower member rigidly con-

nected to the lower end surface of said yieldable body and an upper member rigidly connected to the upper end surface of said yieldable body, said lower and said upper members being relatively turnable about said axis to uniformly tighten said yieldable body about said line, and means for rigidly interconnecting said lower and said upper members.

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References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
2,097,016	Bowen	Oct. 26, 1937
2,178,912	Leahey	Nov. 7, 1939
2,229,071	Godstrey	Jan. 21, 1941
2,239,159	Miller	Apr. 22, 1941
2,285,742	Miller	June 9, 1942
2,440,571	Bow	Apr. 27, 1948