June 24, 1958 G. WYNN 2,840,036

STRAND OILER

Filed March 5, 1954 2 Sheets-Sheet 1

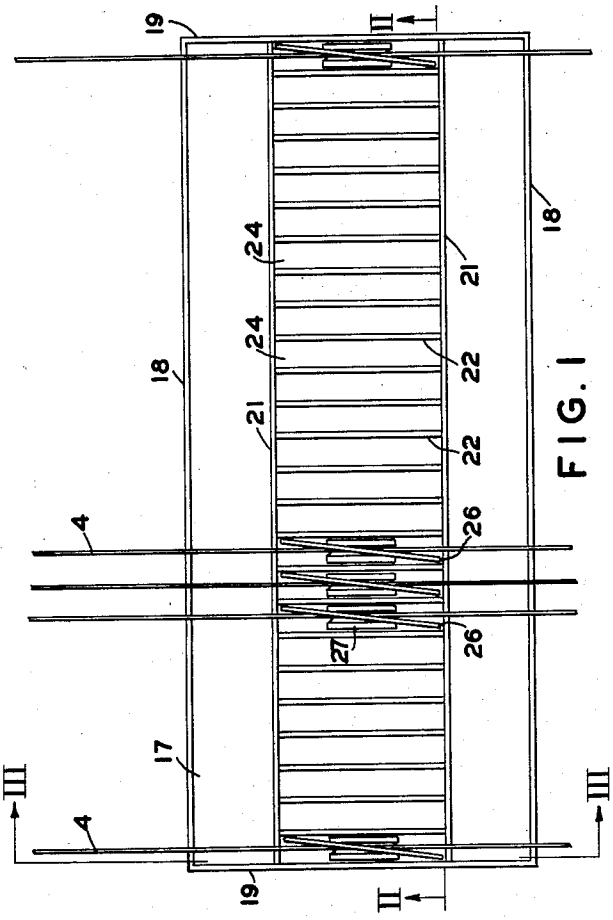


FIG. 1

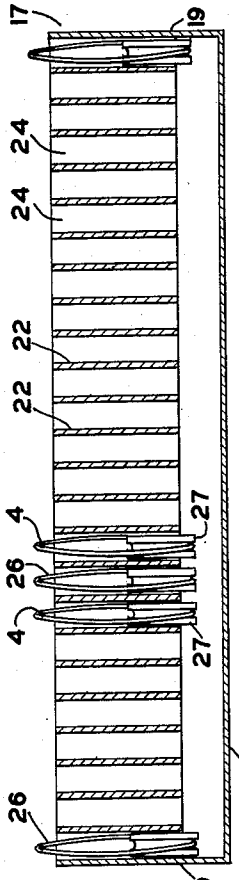


FIG. 2

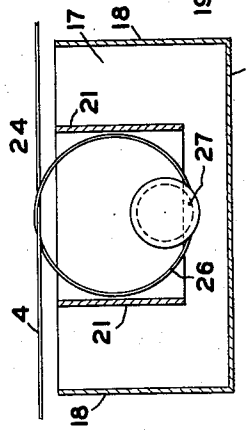


FIG. 3

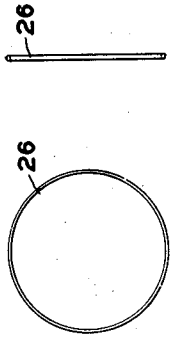


FIG. 4

FIG. 5



FIG. 6

FIG. 7

INVENTOR.
GEORGE WYNN

BY

G. R. Harris
ATTORNEY

June 24, 1958 G. WYNN 2,840,036

STRAND OILER

Filed March 5, 1954 2 Sheets-Sheet 2

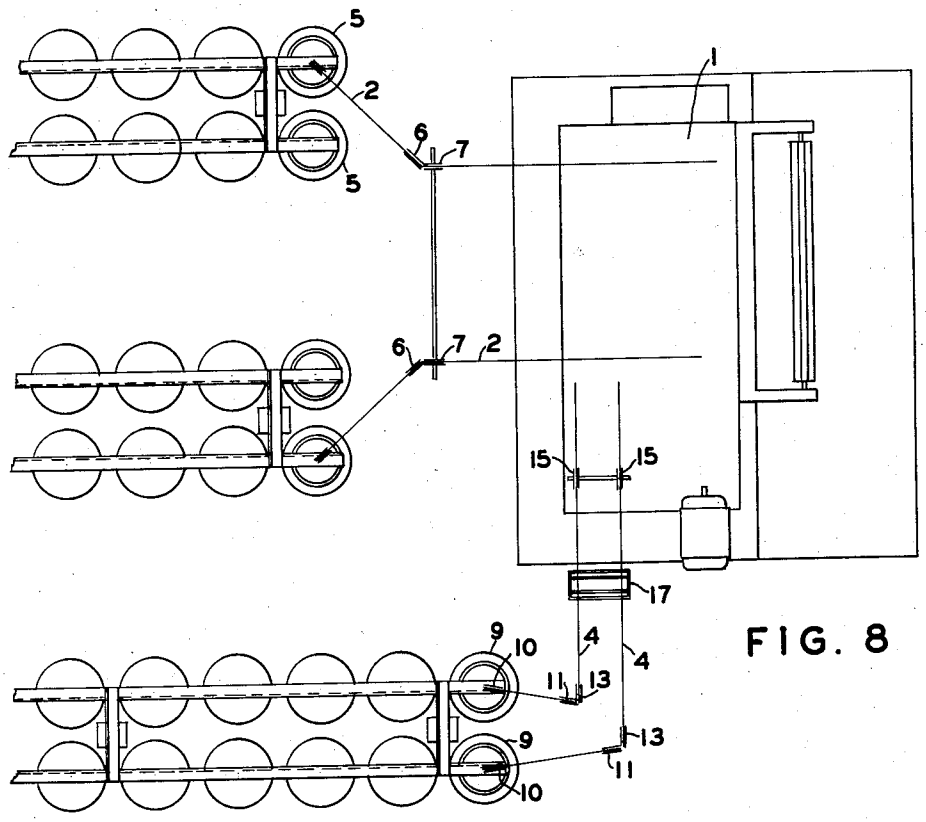


FIG. 8

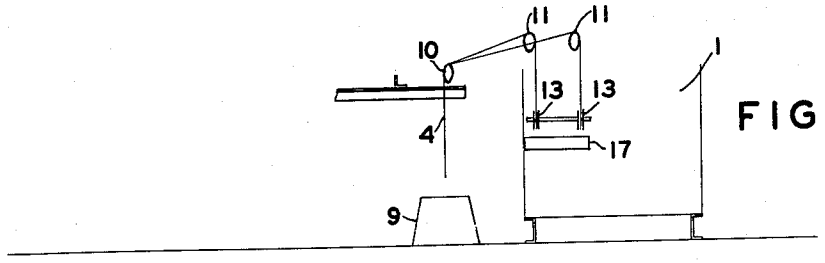


FIG. 9

INVENTOR.
GEORGE WYNN

BY

L. R. Harris
ATTORNEY

United States Patent Office 2,840,036 Patented June 24, 1958

2,840,036

STRAND OILER

George Wynn, Coraopolis, Pa., assignor to Jones & Laughlin Steel Corporation, Pittsburgh, Pa., a corporation of Pennsylvania

Application March 5, 1954, Serial No. 414,480

2 Claims. (Cl. 118—234)

This invention relates to apparatus for applying a thin film of oil to a strand of wire moving in an axial direction and is more particularly concerned with apparatus of such type which may be used with machines for manufacturing field fence.

Wire field fence is composed of wires called line wires, which are horizontal when the fence is erected, and wires called "stay wires," which are positioned vertically when the fence is erected. These wires are knotted at their intersections to form the rectangular meshes which make up the fence. Field fence is commercially made on continuous machines known as looms which automatically wrap the stay wires around the continuous line wires at their intersections, so forming the fence. Such machines form a number of these wraps or knots at a time and so are fed with as many individual line wires as are required for the particular size of fence being made and a plurality of stay wires. Both types of wires are fed continuously from reels into the field fence loom or machine. It is desirable to coat each stay wire with a thin film of oil as it enters the field fence loom to facilitate the wrapping or knotting of such wire about the line wires. However, the wires are not fed into the field fence machine at a constant rate. The field fence machine advances the woven fence the length of one mesh between successive knotting or wrapping operations, and likewise feeds in stay wires between each knot-forming operation. During the actual forming of the knot the stay wire is momentarily at rest. Thus, the stay wires are fed into the machine intermittently, or in a series of jerks. Because of this intermittent feed, conventional methods of lubricating horizontally fed stay wires have not proved satisfactory.

It is the principal object of my invention to provide apparatus which effectively lubricates stay wires intermittently fed into a field fence machine. Other objects will appear in the course of the following description and explanation of my invention.

I have found that horizontally fed stay wires may be effectively lubricated if each such strand of wire supports a wire ring which dips into a reservoir of lubricating oil. These rings must be maintained at a small angle of inclination with respect to the vertical plane in which the wire travels and must be provided with means to prevent the ring being jerked upwardly every time a strand of wire is moved forward. A present preferred embodiment of my invention is illustrated in the attached figures, to which reference is now made.

In the drawings, Figure 1 is a plan view of the apparatus of my invention.

Figure 2 is a vertical cross section through the apparatus of Figure 1 taken on the plane II—II.

Figure 3 is a vertical cross section through the apparatus of Figure 1 taken on the plane III—III.

Figure 4 is a detail view of an oiler ring as used in my apparatus.

Figure 5 is another view of such ring.

Figure 6 is a detail view of a counterweight as used in my apparatus.

Figure 7 is another view of such counterweight.

Figure 8 is a schematic plan view of a field fence loom including my invention, together with a conventional arrangement for feeding line wire and stay wire strands into the machine.

Figure 9 is an end elevation of a portion of Figure 8.

Field fence loom 1 is shown schematically only as such machine in itself forms no part of my invention. This machine 1 is fed with line wires 2—2 and stay wires 4—4. Line wires 2—2 come from spools or reels 5—5 and pass over pulleys 6—6 and 7—7 into loom 1. Stay wires 4—4 come from spools or reels 9—9. Each stay wire 4 passes over an overhead pulley 10 and a second overhead pulley 11, then downwardly and under pulley 13 and pulley 15 into the loom 1. Pulleys 13 and 15 define the ends of a more or less horizontal path by which stay wire 4 enters loom 1. Because of the intermittent feed of stay wire 4 to loom 1 previously mentioned, the path of such a strand between pulleys 13 and 15 is not fixed, although it is confined to a vertical plane passing through pulleys 13 and 15. When stay wire 4 is being fed into loom 1, it is taut, but when it is not being advanced, it slacks.

Beneath the path of stay wires 4—4 above described and intermediate pulleys 13—13 and 15—15 is positioned an oil reservoir 17 which may take the form of a rectangular tank open at the top. This tank has side walls 18—18, end walls 19—19, and a bottom 20. Within this reservoir 17 are positioned a pair of vertical plates 21—21 running from end to end parallel to side walls 18—18. Between these vertical plates 21 are positioned vertical plates 22—22 parallel to end walls 19—19. These plates 21—21 and 22—22 form a series of rectangular cells 24—24, open at top and bottom and extending down into reservoir 17, but stopping short of bottom 20 of this reservoir. Each stay wire 4 passes over a cell 24 of reservoir 17 in the direction of the long dimension of cell 24. Each stay wire 4 passes through a ring 26 which is supported by stay wire 4 only and hangs from it within cell 24. The diameter of ring 26 is slightly less than the length of cell 24, and the distance between side walls 22—22 of cell 24 is considerably smaller than the diameter of ring 26 so that ring 26 hangs in a plane inclined at a small angle to that of stay wire strand 4. I prefer that this angle be on the order of 5°. Ring 26 is not otherwise confined by cell 24 but can move vertically in this cell and can rotate about its axis freely.

Within cell 24 is a cylindrical counterweight 27 having an axial dimension slightly less than the distance between side walls 22—22 of cell 24. The diameter of counterweight 27 is materially greater than its axial dimension, although less than the length of a side wall 22 of cell 24. Counterweight 27 is provided with a circumferential groove groove 28 and is positioned within cell 24 so that it rides on and is supported by ring 26, this ring fitting within groove 28 above mentioned. Counterweight 27 is free to move vertically within cell 24 except as supported and restrained by ring 26 and can also move parallel to side wall 22 subject to this same restraint. Counterweight 27 can rotate freely about its axis and will rotate in this manner of ring 26 is rotated about its axis. The dimensions of counterweight 27 relative to cell 24 are such that it cannot turn crosswise in cell 24, nor is there sufficient clearance between the axial dimension of counterweight 27 and either side wall 22 to permit ring 26 to pass between counterweight 27 and side wall 22.

The operation of my apparatus will now be described with reference to the preferred embodiment illustrated in the attached figures and described in the foregoing paragraphs. Reservoir 17 is filled with oil to a level above the

counterweight **27**. Thus, a portion of ring **26** is always immersed in oil. When stay wire **4** is at rest, ring **26** hangs therefrom within cell **24** supporting counterweight **27**. When stay wire **4** is fed into loom **1**, it is pulled from a slack to a taut position between pulleys **13** and **15** and is at the same time moved lengthwise of cell **24**. This feeding movement thus raises strand **4** at the same time it moves it axially and so raises ring **26** also. In the absence of counterweight **27**, ring **26** would be jerked upwardly by the sudden tautening of wire strand **4**, losing contact with stay wire strand **4** and also being lifted above the level of the oil in reservoir **17**. Ring **26** would, of course, fall back upon stay wire **4**, but the latter would then have come to rest. Therefore, ring **26** would not have been caused to rotate about its axis any substantial amount by the movement of strand **4**. With counterweight **27** in place, however, ring **26**, although raised by the tautening of wire **4**, is not jerked above wire **4** any substantial amount nor out of contact with the oil in reservoir **17**. Instead, it maintains contact with wire **4** as the latter is advanced toward loom **1** and so is rotated through an arc during this axial movement of wire **4**. This rotation of ring **26** brings up oil from reservoir **17** and discharges it on the surface of wire strand **4**.

In the absence of plates **22—22**, ring **26** would tend to position itself crosswise of wire strand **4** and so would not be rotated substantially by axial movement of strand **4**. In the absence of plates **21—21**, ring **26** would be carried along with stay wire strand **4** when it was advanced axially and would not be rotated substantially. As has been mentioned, plates **22—22** keep ring **26** inclined at a small angle to wire **4**, and plates **21—21** allow ring **26** to rotate but prevent it from moving along with the stay wire strand **4**.

The size of the various elements of my apparatus is largely a matter of choice as long as the previously mentioned relationships between the various elements are preserved. In one installation with which I am familiar the oiler rings **26** are made of #13 AWG round steel wire to a diameter of 3⅞ inches. Each cell **24** is 4 inches long inside and $1\frac{1}{16}$ inch wide. Counterweight **27** is made of steel 1⅝ inches in diameter and its axial dimension is $2\frac{1}{32}$ inch. Circumferential groove **28**, which is semi-circular in cross section, has a radius of $\frac{3}{16}$ inch.

One type of field fence with which I am familiar has top and bottom line wires, known as selvage wires, of #11 AWG steel wire. The remaining wires and all stay wires are of #14½ AWG steel wire. Another type has selvage wires of #12½ AWG steel wire, and remaining line wires and all stay wires of #15½ AWG steel wire.

I claim:

1. Apparatus for applying a film of oil to a strand of wire moving in an axial direction comprising an oil reservoir, means defining a path of travel of said strand over said oil reservoir, a ring enclosing said path and supported in said oil reservoir by said strand of wire when occupying said path, a pair of vertical plates positioned in said oil reservoir parallel to a plane through said path of travel and confining said ring, and a cylindrical weight having a circumferential annular groove positioned to ride on said ring between said plates with its axis perpendicular to said plates.

2. Apparatus for applying a film of oil to a strand of wire moving intermittently in an axial direction comprising an oil reservoir, means defining a path of travel of said strand over said oil reservoir, a ring enclosing said path of travel and supported in said oil reservoir by said strand of wire when occupying said path, a first pair of vertical plates positioned in said oil reservoir parallel to a vertical plane through said path of travel, a second pair of vertical plates spaced apart a distance only slightly greater than the diameter of said ring and forming with said first pair of plates a four-sided box enclosing said ring, and a cylindrical weight having a circumferential groove positioned to ride on said ring within said box, the axial dimension of said weight being slightly less than the distance between the first pair of vertical plates and the diameter of said weight being less than the distance between the second pair of vertical plates.

References Cited in the file of this patent

UNITED STATES PATENTS

1,499,699	Schweiter	July 1, 1924
1,906,728	Van Duyn	May 2, 1933

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 2,840,036 June 24, 1958

George Wynn

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 2, line 55, strike out "groove", first occurrence, line 62, for "of ring" read -- if ring --; column 3, line 42, for "1 5/6 inches" read -- 1 5/8 inches --; column 4, line 5, for "remaining wires" read -- remaining line wires --.

Signed and sealed this 26th day of August 1958.

(SEAL)
Attest:

KARL H. AXLINE
Attesting Officer

ROBERT C. WATSON
Commissioner of Patents