

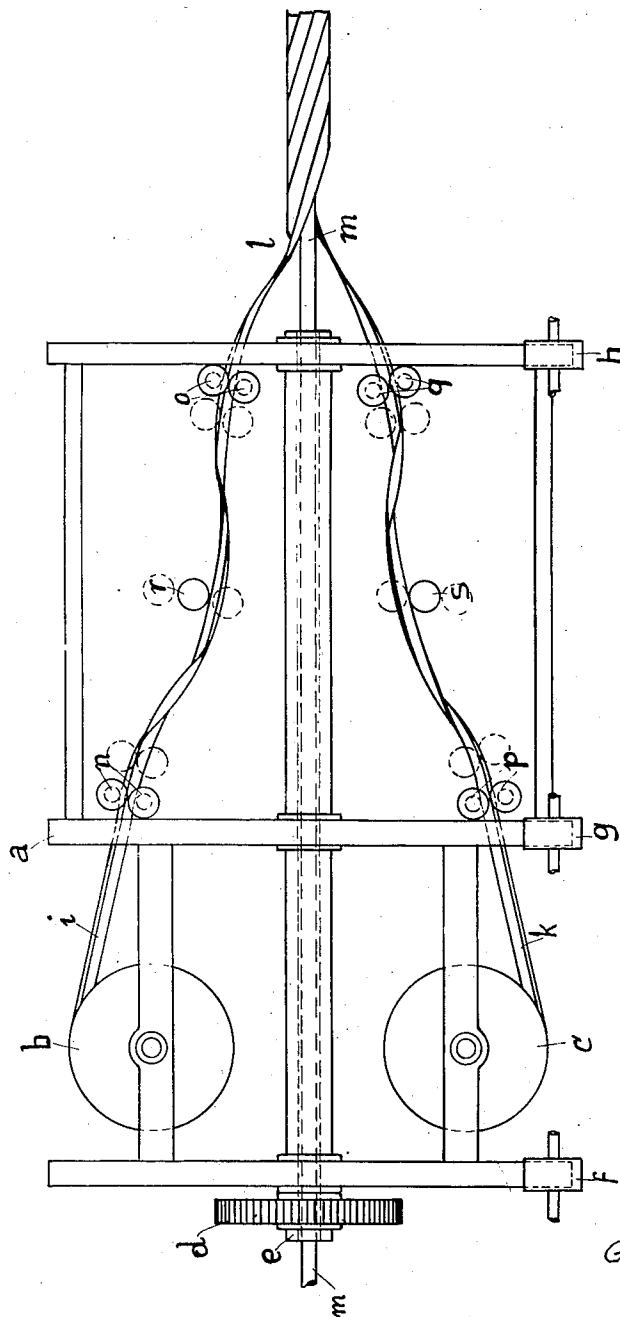
June 2, 1931.

G. ZAPF

1,808,444

MANUFACTURE OF WIRE CABLES

Filed Dec. 8, 1927



G. Zapf
INVENTOR

By: Marks & Clark
Attys.

UNITED STATES PATENT OFFICE

GEORG ZAPF, OF COLOGNE, GERMANY, ASSIGNOR TO FELTEN & GUILLEAUME CARLS-
WERK ACTIEN-GESELLSCHAFT, OF KOLN-MULHEIM, GERMANY

MANUFACTURE OF WIRE CABLES

Application filed December 8, 1927, Serial No. 238,690, and in Germany December 13, 1926.

It has already been proposed in the manu-
facture of wire cables from round wires,
to shape the separate wires beforehand, by
means of special devices, into helical lines,
without twisting them about their axis, in
order that the cables shall not have a ten-
dency to twist and shall not be under stress.
This method fails, however, when wires of
non-circular section are to be laid, as in such
a case, for giving the wires their correct
position in the cable, it is necessary to twist
each wire once about its axis over a length
corresponding to the length of lay.

The present invention relates to a method
of and a machine for the manufacture of
wire cables, which are free from a tendency
to twist and are not under stress, with one
or more laid layers of wires of non-circular
section. The new method consists in this,
that the wires of non-circular section are
drawn immediately in front of the laying
point through devices in which they are
given both the bend and the twist they re-
quire in the finished cable.

The new method and the machine for
carrying it into effect are shown in the
accompanying drawing, which represents a
side elevation of the laying machine, but
in which only two of the bobbins in the
bobbin frame are shown. The bobbin frame
 α within which the bobbins b and c are
mounted is rotated by means of the toothed
wheel d about its shaft e . It is supported
on the rollers f , g and h which are mounted
on either side. The shafts of the bobbins
 b and c are journaled in the bobbin frame
in such a manner that they take part in the
motion of the bobbin frame. The wires of
non-circular section i and k coming from
the bobbins b and c are laid at the point l
around the core m which is fed through the
hollow shaft of the machine. The new ar-
rangement consists, in the example shown,
in this, that along the paths followed by
the wires two pairs of section rollers n , o
and p , q are provided for each wire, through
which the wires i and k pass in such a
manner that along the portion of the path
lying between the two pairs of rollers they
are twisted once about their own axis. This

is effected by giving the ends of the wires,
when preparing the machine, after they
have been passed through the pair of rollers
 n and p but before they are introduced be-
tween the pairs of rollers o and q , a single
turn about their axes. Thus, when the ma-
chine is running, the wires, along the
stretches n , o and p , q have the necessary
turn imparted to them for their correct posi-
tion in the cable. This turning of the wires
is accompanied by a transition into the heli-
cal form, which is so great that, in cables
having a long lay, the preliminary form
given to the wires along the stretch lying
between the pairs of rollers, corresponds to
the shape of the helical line in the cable.
In the case of cables having a short length
of lay the bend in the helical line may be
increased by the wires i , k being guided over
additional rollers r and s , which are later-
ally displaced to the lines connecting the lines
of contact between the rollers n , o and the
rollers p , q . Preferably the machine will
be so arranged that both the distance of the
pairs of rollers n , o or p , q belonging to
one wire and the lateral displacement of the
rollers r and s with respect to the connecting
lines between the rollers n and o and the
rollers p and q can be adjusted to suit the
circumstances. In order that each roller
pair shall be adjustable along the wire, the
holders t , u , v and t' , u' , v' are movably
attached by means of set screws x on to the
connecting rods w which have an inclina-
tion corresponding to the connecting lines
 n , o and p , q . On the holders t , u , t' , u' ,
the rollers pairs n , o , p , q , respectively, are
movably attached by means of set-screws y ,
whilst the central rollers r and s are similar-
ly attached, in a movable manner, to the
holders v and v' , respectively.

The new method may be employed both
in the case of cables consisting entirely of
wires of non-circular section and in the case
of those cables in which such wires, shaped
in the manner described, are to be laid over
round wires.

In the drawings, the dotted lines indicate
the adjustable positions of the rollers.

The method is also not limited to the

manufacture of supporting cables, but can be employed with the same advantages for instance in the manufacture of hollow electric conductors or cable armourings consisting of wires of non-circular section. The cables made by the new method have this advantage, that they are almost entirely free from a tendency to twist and are practically not under stress and that the wires of non-circular section permanently retain their correct position. This results in the cables having a very high tensile strength and great durability.

What I claim is:

1. A laying machine for the manufacture of wire cables from wires of non-circular section comprising in combination a rotatable bobbin frame, a plurality of bobbins journaled therein, means for guiding the wires from said bobbins to the laying point comprising two pairs of rollers mounted in the bobbin frame so as to lie along the path of each wire coming from a bobbin and to revolve with said frame for twisting the wires about their axes, means on said frame interposed between the bobbins and the laying point for bending the wires, and means for adjusting the said pairs of rollers with respect to one another, as and for the purposes set forth.

2. A laying machine for the manufacture of wire cables from wires of non-circular section comprising in combination a rotatable bobbin frame, a plurality of bobbins journaled therein, means for guiding the wires from said bobbins to the laying point comprising two pairs of rollers mounted in the bobbin frame so as to lie along the path of each wire coming from a bobbin and to revolve with said frame for twisting the wires about their axes, a roller interposed between each two pairs of rollers mounted on the bobbin frame laterally of the line connecting the two pairs of rollers so as to be out of alignment with the same for bending the wires, and means for adjusting the said pairs of rollers with respect to one another, as and for the purposes set forth.

In testimony whereof I have signed my name to this specification.

GEORG ZAPF.