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 MEANS FOR APPLYING LIQUIDS TO YARNS, THREADS, FILAMENTS, STRAWS,
 TAPES, BRISTLES, OR LIKE TEXTILE MATERIALS
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FIG. 1

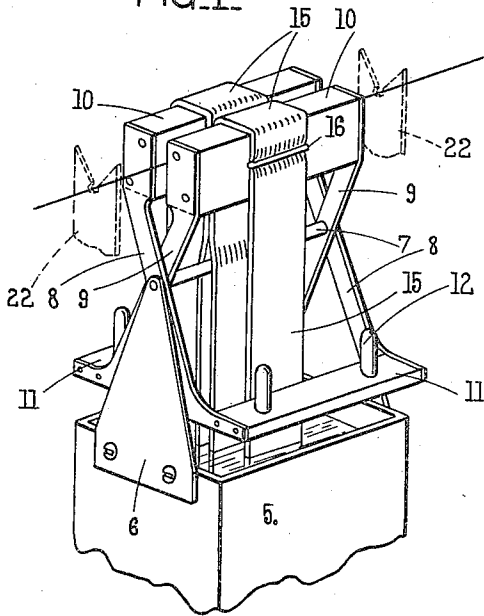


FIG. 3

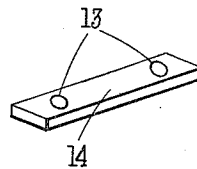


FIG. 2

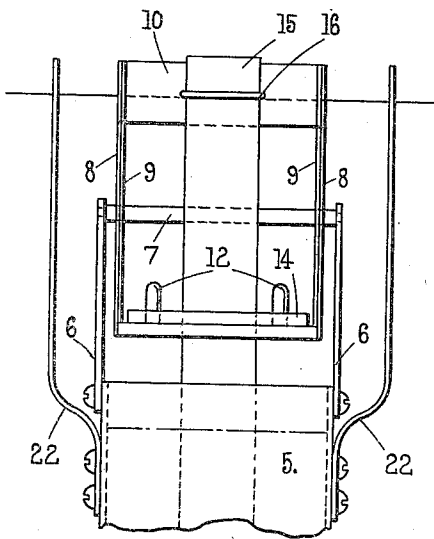
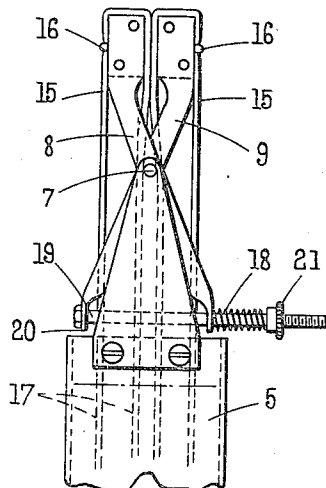


FIG. 4



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MEANS FOR APPLYING LIQUIDS TO YARNS,
THREADS, FILAMENTS, STRAWS, TAPES,
BRISTLES, OR LIKE TEXTILE MATERIALS

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5 Claims. (Cl. 91—38)

This invention relates to the treatment of
yarns, threads, filaments, straws, tapes, bristles
and like textile materials, (hereinafter referred
to as "yarns"), and is particularly concerned with
the application of liquid materials to the surface
of such yarns while they are travelling. It is
an object of this invention to provide means
whereby the uniform and constant application of
liquid over the whole surface of a travelling yarn
may be accomplished.

According to this invention means for apply-
ing liquid materials to travelling yarns comprises
a pair of opposing surfaces of absorbent material
adapted to be supplied with the liquid to be ap-
plied, and means for pressing together the sur-
faces upon the travelling yarn with a constant
and uniform pressure. In this manner the liquid
is applied over the whole surface of the yarn, in
a uniform and constant manner, irrespective of
the time for which the operation is continued, and
of the precise manner in which the yarn is ini-
tially set in the wick at the beginning of the op-
eration.

One form of apparatus by means of which the
invention may be carried out comprises two pairs
of arms, each pair being pivoted together at their
mid points after the manner of a pair of scissors,
the upper ends of the said arms carrying two
opposing horizontal bars or blocks, while the
lower ends carry two horizontal platforms on
which weights may be placed so that the hori-
zontal bars or blocks are pressed together. The
arms and the other parts carried by them are
suspended on suitable pivots in a frame or stand,
at the points where the arms are pivoted together.
Wicks are suspended over the upper horizontal
bars or blocks and are supplied with the liquid
to be applied. The yarn is caused to pass along
and between the two horizontal bars or blocks,
being pressed on opposite sides by the two wicks
provided with liquid material. The wicks may
depend into a trough containing the liquid, so
that the supply is effected by capillary action, or
the liquid may be caused to drip on to the wicks,
which then mainly serve to distribute it evenly
on to the yarn. At each end of the device a guide
may be provided to direct the yarn between the
wicks. The wicks may be simply suspended over
the bars or blocks or clipped thereto, or alter-
natively the bars or blocks may have an absorbent
covering supplied with liquid by means of sepa-
rate wicks, or by means of drip tubes. Other
forms of weight loaded pressing arrangements
may be adopted, or springs, (preferably adjust-

able) may be used to press the wicks together on
to the yarn.

Any material of the kind previously mentioned
may be treated according to the invention but
the invention is particularly applicable to the
treatment of artificial materials continuously
with their production, and especially artificial
materials of cellulose acetate or other organic
derivatives of cellulose continuously with their
production by the dry or evaporative method.
Such materials however, may be treated other-
wise than continuously with their production, as
for example, during bobbin-to-bobbin or other
winding operations, and further, yarns of natural
fibres such as silk, cotton, wool or the like or
mixed yarns may be treated in a similar manner.

The invention may be used to apply any de-
sired liquid to the yarn, but is particularly suit-
able for the application of a relatively thin
limpid liquid such as may ordinarily be applied
by means of a wick. Thus the invention may be
applied to the lubrication of yarns in any textile
operation e. g. knitting by means of lubricating
oils or other agents, or again, water may be ap-
plied to the yarns for the purpose of conditioning
them. Dyes or other effect materials of a liquid
character, or any other liquids required to pre-
pare the yarns for dyeing or other operations may
similarly be applied. The liquid may be of such
a nature as to render the yarns sticky, e. g. so that
added effect materials such as powders or fibres
may be caused to adhere to them. Thus for ex-
ample in the case of artificial materials of cellu-
lose acetate or other organic derivatives of cellu-
lose, suitable solvents or softeners such as ace-
tone, or a mixture of alcohol and methylene di-
chloride may be applied to the yarn, for this or
any other purpose.

Another application of the present invention
is the lubrication of yarns of cellulose acetate or
other organic derivatives of cellulose continuous-
ly with their production by the dry or evapora-
tive method. This operation prior to the twist-
ing of the yarns nullifies the effect of any
electrification of the separate filaments which
may occur by causing the bundle of filaments
forming untwisted yarn to stick together until
they are twisted. For this purpose, wherein a
relatively small quantity of lubricating liquid
must be applied to the yarn, the apparatus ac-
cording to the present invention is particularly
applicable. In a similar manner, and for a sim-
ilar purpose, a size may be applied to the yarn,
which dries on the yarn. In this case, twisting
may be dispensed with entirely, the sizing ma-

terial serving to hold the yarn together after it has dried; for example, molten wax may be used for this purpose, the apparatus being heated by any suitable heating means up to or above the melting point of the wax, which is preferably supplied in molten form to the absorbent material by means of drip tubes.

The present invention may be employed in the production of straws, tapes, bristles or the like from artificial materials, whether continuously with their production or otherwise. In this operation, a bundle of continuous filaments is passed through the device according to the invention, which is then adapted to apply a solvent or softening liquid to them in quantities which are uniform along the length of the filaments. After having been moistened in this manner the filaments are caused to adhere to one another to form a unitary filament. In the manufacture of straws or tapes this adhesion is followed by the application of pressure to the filaments between a pair of rollers. In this operation the device according to the invention is particularly useful since a high degree of uniformity in the application of the solvent or softening liquid is of the greatest importance, and it is essential that when the filaments are set to run in the moistening device they should be set in such a manner that the degree of moistening should be definite and constant.

The invention is not of course confined to the use of one moistening device. Two or more devices supplying the same or different liquids may be used on the same yarn, or one or more of the devices according to the invention may be used in conjunction with moistening devices of any other character for the purpose of applying one or more liquids to a travelling yarn.

Two forms of apparatus according to the invention will now be described with reference to the accompanying drawing, but it is to be understood that the following description is given by way of example only and is in no way limitative.

In the drawing:—

Fig. 1 is a perspective view of one form of device according to the invention;

Fig. 2 is a front elevation of Fig. 1;

Fig. 3 shows a weight for use with the device shown in Figs. 1 and 2; and

Fig. 4 is an end elevation of a further form of device.

Referring to Figs. 1 and 2, 5 is a container having secured to its end walls brackets 6 adapted to support a horizontal spindle 7. Pivotally mounted at each end of the spindle 7 is a pair of scissors-like arms 8, 9, the arms 8 of each pair being connected at their upper ends by a block 10 and at their lower ends by a platform 11, and the ends of the arms 9 of each pair also being similarly connected. The platforms 11 are provided with pegs 12 adapted to enter holes 13 in weights 14 placed on the platforms 11. Wicks 15 are doubled over the blocks 10 and secured thereto by staples 16, the ends 17 of the wicks depending into the container 5. On the insides of the block 10 the wicks 15 face each other and are pressed together to a degree determined by the amount of the weights 14 placed on the platforms 11.

In the modification shown in Fig. 4 the pressure between the wicks 15 is caused by a spring 18. The spring is carried on one end of a screw 19 passing through lower extensions 20 of the

arms 8, 9. The tendency of the spring 18 is to draw the arms 8, 9 towards each other so as to press the wicks 15 together, and the pressure thus exerted may be regulated by means of a nut 21. A similar screw may be provided in connection with the arms 8, 9 at the other end of the blocks 10.

Guides 22 supported by the container 5 or otherwise at each end of the device keep the material 23 under treatment in position between the wicks 15, so that it follows a steady path, and, by the constant and uniform pressure urging the wicks on to it, receives a constant application of the liquid supplied by the wicks.

What we claim and desire to secure by Letters Patent is:—

1. Apparatus for the application of liquids to travelling yarns, threads, filaments and like textile materials, comprising a vessel adapted to contain the liquid to be applied, two oppositely disposed wicks, pivotally connected arms supporting said wicks and weights adapted to be carried by said arms for causing the wicks to press against each other at a point where the yarn is to pass between them, said wicks extending downwardly into said vessel and thereby adapted to feed the liquid to the yarn in controlled amount by capillary action.

2. Apparatus for the application of liquids to travelling yarns, threads, filaments and like textile materials, comprising a vessel adapted to contain the liquid to be applied, two oppositely disposed wicks, pivotally connected arms supporting said wicks and springs carried by said arms for causing the wicks to press against each other at a point where the yarn is to pass between them, said wicks extending downwardly into said vessel and thereby adapted to feed the liquid to the yarn in controlled amount by capillary action.

3. Apparatus for the application of liquids to travelling yarns, threads, filaments and like textile materials comprising a vessel adapted to contain the liquid to be applied, two oppositely disposed wicks, pivotally connected arms supporting said wicks, and means for pressing together the faces of said wicks at a point where the yarn is to pass between them, said wicks extending downwardly into said vessel and thereby adapted to feed the liquid to the yarn in controlled amount by capillary action.

4. Apparatus for the application of liquids to travelling yarns, threads, filaments and like textile materials, comprising a pair of opposing wicks adapted to be supplied with liquid in controlled amount by capillary action, pivotally connected arms supporting said wicks, means for pressing together the faces of said wicks and means adapted to direct passage of the yarn between the faces of said wicks and to preclude motion transverse to the yarn between the yarn and the wicks.

5. Apparatus for the application of liquids to travelling yarns, threads, filaments and like textile materials, comprising a pair of opposing wicks adapted to be supplied with liquid in controlled amount by capillary action, pivotally connected arms supporting said wicks, means for pressing together the faces of said wicks at a point where the yarn is to pass between them, and guides adapted to direct the yarn between the faces of said wicks so as to preclude motion transverse to the yarn between the yarn and the wicks.

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