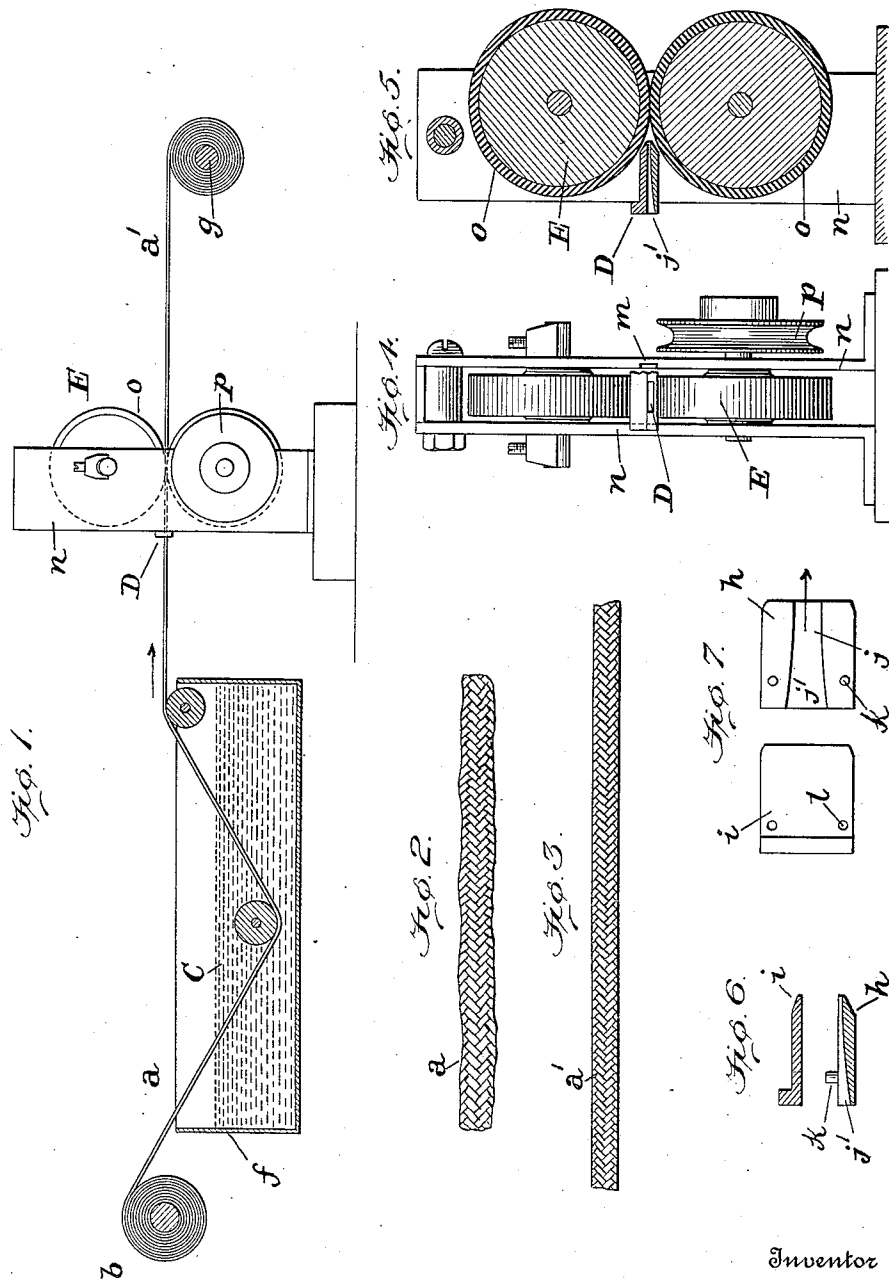


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METHOD OF AND APPARATUS FOR TREATING STRAW BRAID.
APPLICATION FILED OCT. 21, 1910.

1,058,023.

Patented Apr. 1, 1913.



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METHOD OF AND APPARATUS FOR TREATING STRAW BRAID.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HENRY H. GRESHAM, a citizen of the United States, residing at Baltimore, in the State of Maryland, have
5 invented certain new and useful Improvements in Methods of and Apparatus for Treating Straw Braid, of which the following is a specification.

This invention relates to a process of
10 treating rough flat straw braid of irregular width to reduce it to a uniform width.

The invention is more particularly applicable to hand-made plaited straw braid of commerce which, to adapt it for use in the
15 manufacture of hats and analogous articles of the better class, must be treated to render it fit for that purpose. Such braid, in addition to being more or less rough and crudely finished, is of very irregular width
20 and in such condition cannot be used in the manufacture of hats or other articles of the higher grade.

The object of this invention is to so treat this rough braid as to give it a uniform
25 width.

In its broad aspect my process consists in first dampening the braid and then applying to the dampened braid progressively increasing transverse and longitudinal pressure. The longitudinal pressure, in addition
30 to imparting a substantially uniform thickness to the braid, also elongates the braid to some extent.

In order to clearly illustrate the various
35 steps of my process, I have illustrated in the accompanying drawing one set of instrumentalities for carrying the same into effect.

In the drawing: Figure 1 is a diagrammatic view of a set of instrumentalities for carrying out the process. Fig. 2 is a plan view illustrating a specimen of rough hand-made straw braid of irregular width. Fig. 3 is a plan view of such a specimen of braid
45 after being treated by the process forming the subject of this invention. Fig. 4 is a view in elevation of forming means and pressure rollers that may be employed. Fig. 5 is a vertical section of the parts
50 shown in Fig. 4. Fig. 6 is a vertical section of the detached parts comprising the braid forming means. Fig. 7 is a plan view of the same parts separated.

As a preliminary to a discussion of my
55 process for treating the braid, it is perhaps best to state the qualities that a braid must

possess to comply with the requirements for use in connection with the higher grade of goods, such, for instance, as hats. Primarily, to give the article a finished, neat
60 appearance, the braid must be of uniform width, thickness, and, as far as possible, of uniform appearance. It must also be pliable and free from glue or other stiffening substance in order to be worked, as in the
65 construction of hats, the braid is passed through a sewing machine and must freely yield to the fingers of the operator while being shaped to the form of the hat.

My invention is designed to so treat straw
70 or other braid of irregular width and roughness of the type illustrated in Fig. 2 as to give it a generally narrower and uniform width and finished appearance. To this end I proceed as follows: The rough straw
75 braid, such as shown in Fig. 2, is first dampened by the application of water through any suitable agency. This dampening of the braid removes the brittleness of the straw or other material and prevents the
80 strands composing the braid from cracking and breaking when their positions are changed as hereinafter described. The dampened braid is then passed between surfaces imparting thereto a progressively
85 increasing transverse and longitudinal pressure whereby the braid is compressed at its edges and given a narrower and uniform width, and is afterward given a final pressure, the finished braid being then all ready
90 for use.

Referring to the drawing, *a* designates straw braid of irregular width, such as described, which, for convenience of manipulation, is wound in a dry condition upon a
95 spool *b*. From this spool the dry braid is led into a tank *f* containing water *C* and is passed beneath a roller mounted in said tank below the level of the water therein, and thence, from said tank, through a forming
100 die *D* and adjacent finishing rollers *E*, from whence it passes to a suitable collecting device, such as a spool *g*. The forming die and finishing rollers above referred to are mounted in suitable standards *n*, the
105 forming die being located closely adjacent the contact point of the rollers. This die is designed to impart progressively increasing longitudinal and transverse pressure to the rough braid, and to this end is constructed as follows: This forming die com-
110 prises two plates *h-i* joined together at

their meeting faces by dowel pins *k* and having their adjacent edges inserted and retained within grooves *m* formed in the faces of the standards *n*. The upper plate *i* has its under face formed as a plane surface. The lower plate *h*, however, is provided with a die channel *j* having its entrance end *j'* outwardly flaring and transversely converging from said entrance end to its exit end, as shown. In addition to this transverse convergence, the die channel *j* progressively decreases in depth from its entrance end to its exit end, as will be seen from Figs. 5 and 6 of the drawing. The exit end of this forming die is located closely adjacent the contact points of compressing rollers *E*, which have their peripheries provided with a covering of elastic material *o*, and serve to draw the braid through the forming die, being driven by a pulley *p* on the shaft of one of the rollers. The dampened braid with its irregular width passes from the moistening tank *f* to the forming die *D*. As the braid enters the channel *j* forming this die, a progressively increasing transverse pressure is imparted to its edges by the continued convergence of the side walls of the channel. At the same time, owing to the continued decrease in the depth of the channel, a progressively increasing longitudinal pressure is applied to the braid, acting not only to smooth the braid, but also serving to somewhat elongate the same. The braid, therefore, in passing through this die is given a narrower and uniform width, and by reason of the longitudinal pressure imparted thereto, a substantially uniform thickness and a more finished appearance than it originally had. As the braid issues from the exit end of the forming channel *j*, it is gripped between the peripheries of the rollers *E* and a final pressure imparted thereto. As above stated, the finished braid, after passing through the rollers *E*, is wound upon some suitable collecting device and is ready for use. In the drawing I have indicated the finished braid by *a'* and such suitable collecting device by the spool *g*.

While I have described specific instrumentalities in connection with my process, I desire it to be understood that the instrumentalities and the process itself to some extent, however, may be varied within the spirit of my invention and of the appended claims.

What I claim, therefore, and desire to secure by Letters Patent is:

1. The process of treating flat straw braid of irregular width which consists in first dampening the braid, then applying thereto progressively increasing transverse and longitudinal pressure whereby said braid is

given a generally narrower and uniform width.

2. The process of treating flat straw braid of irregular width which consists in first dampening the braid, then applying simultaneously thereto progressively increasing transverse and longitudinal pressure whereby said braid is given a generally narrower and uniform width.

3. The process of treating flat straw braid of irregular width which consists in first dampening the braid, then applying simultaneously thereto progressively increasing transverse and longitudinal pressure whereby said braid is simultaneously given a uniform width and is elongated.

4. The process of treating flat straw braid of irregular width which consists in dampening the braid, passing the braid between surfaces to apply thereto progressively increasing transverse and longitudinal pressure whereby said braid is given a generally narrower and uniform width, and applying a final pressure to the narrowed braid.

5. The process of treating flat straw braid of irregular width which consists in dampening the braid, passing the braid between surfaces to apply simultaneously thereto progressively increasing transverse and longitudinal pressure whereby said braid is simultaneously given a generally narrower and uniform width and is elongated, and applying a final pressure to the narrowed and elongated braid.

6. The process of treating flat straw braid of irregular width which consists in first dampening the braid, then passing the braid between transversely and vertically converging surfaces to apply simultaneously thereto progressively increasing transverse and longitudinal pressure whereby said braid is given simultaneously a generally narrower and uniform width and is elongated, and applying a final pressure to the faces of the narrowed and elongated braid.

7. In a device for treating irregular flat straw braid, two opposite relatively inclined surfaces arranged to engage the edges of said braid and reduce the same to substantially uniform width, and opposite relatively inclined surfaces arranged to engage the upper and lower faces of said braid to reduce the same to substantially uniform thickness, both sets of surfaces coacting to simultaneously apply to the braid passing therebetween, a progressively increasing transverse and longitudinal pressure.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY H. GRESHAM.

Witnesses:

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