N. GARFINKLE.

ARTIFICIAL FEATHER CONSTRUCTION.

APPLICATION FILED JULY 17, 1911.

**1,030,072.** Patented June 18, 1912.

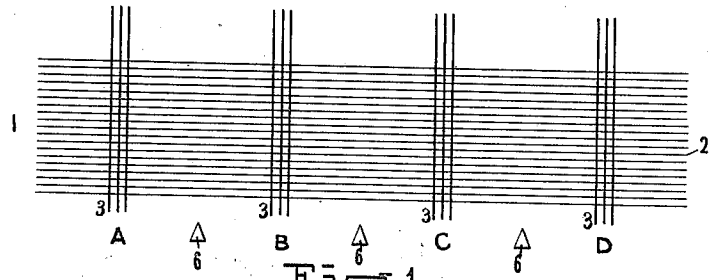
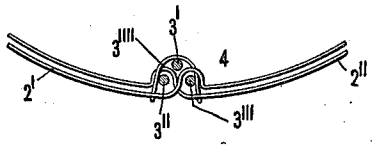



Fig. 1.

Fig. 3.



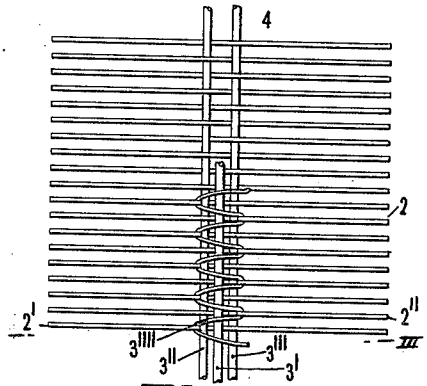
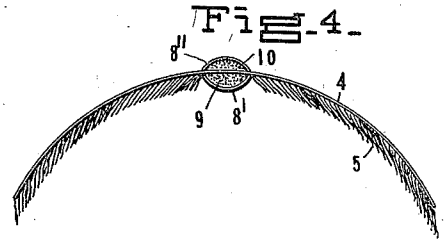




Fig. 2.

Fig. 4.



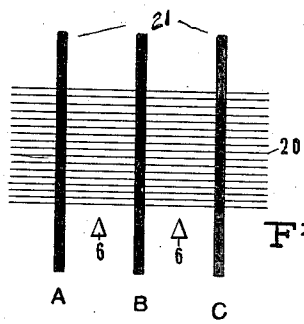




Fig. 6.

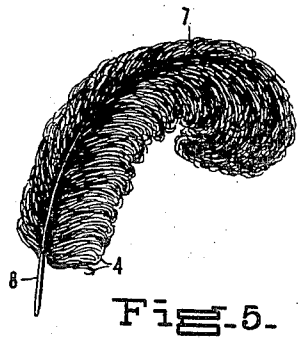



Fig. 5.

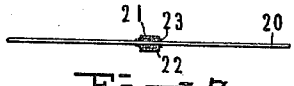



Fig. 7.

WITNESSES

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# UNITED STATES PATENT OFFICE.

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## ARTIFICIAL-FEATHER CONSTRUCTION.

1,030,072. Specification of Letters Patent. Patented June 18, 1912.

Application filed July 17, 1911. Serial No. 638,807.

*To all whom it may concern:*

Be it known that I, NATHAN GARFINKLE, a citizen of the United States, and a resident of the city of Paterson, county of Passaic, and State of New Jersey, have invented certain new and useful Improvements in Artificial-Feather Construction, set forth in the following specification.

This invention relates to artificial plumes and feathers, more particularly to those simulating ostrich feather construction.

An object of the invention is to make practicable the production artificially of an ostrich plume, the general appearance of which is not merely similar to a natural ostrich plume, but which bears such near resemblance to a natural ostrich plume that the difference can only be determined by expert close inspection.

A further object of the invention is to make possible the artificial production of such a product more cheaply than can the natural product be obtained; to make the artificial product more durable than the natural; and to make possible the production of such artificial plumes with flues of any desired unknotted length.

Illustrative embodiments of my invention are described in the following specification, which should be read in connection with the accompanying drawings, which form a part of this application, in which like characters designate corresponding parts, and in which—

Figure 1 is an illustrative diagram showing the fabric from which the artificial flues are severed; Fig. 2 is a diagram illustrating the weave of the flue fabric for a single flue; Fig. 3 is a section through line III—III of the showing in Fig. 2; Fig. 4 is a section through a plume quill showing the disposition of the flues and the appearance of a single flue; Fig. 5 is a perspective view of a finished plume made in accordance with the invention; Fig. 6 is a diagrammatic representation similar to Fig. 1, but showing a modification; and Fig. 7 is a sectional view drawn to an enlarged scale showing the modified flue construction of Fig. 6.

It should be noted that each flue of a natural ostrich plume comprises a central ridge or stem from which project obliquely from opposite sides, but in the same plane, a series of fine filaments. Thus the natural flue construction is by no means truly imitated by a thread or flat ribbon, the former being rounded in section and the latter being rectangular in section and neither having the lateral filaments.

In furthering the objects of the present invention the fabrication of flues corresponding almost exactly, as to size and appearance, to the flues of a natural ostrich plume is contemplated. According to a preferred construction these artificial flues are first woven as a continuous fabric 1 of any desired length and of any desirable width, limited merely by the size of suitable well known loom construction. For weaving the fabric 1 the weft threads 2 are preferably fine silk threads operated in the usual manner by a shuttle. The warp however, is localized at spaced localities across the weft, the spacing corresponding to double the length of the flue filaments for one side of the flue, that is, about twice one eighth of an inch. Thus, Fig. 1 indicates the warp threads 3 localized in the localities A, B, C and D, the space between two adjacent localities such as A and B being equal to twice the length of the flue filaments 5 as shown for the flue 4 of Fig. 4. The weave in this fabric 1 is shown clearly in diagrammatic form in Figs. 2 and 3 for one locality such as A, each such locality having the same weave. The warp thread 3′ is shown overlying all the weft threads 2 and is located intermediate the warp threads 3″ and 3‴. The weft threads 2 are interwoven according to the well known homespun weave with the two warp threads 3″ and 3‴, as shown particularly in Fig. 2. The fourth warp thread 3⁗ zig-zags across the three warp threads 3′, 3″ and 3‴ and on each side thereof loops about one of the under weft threads 2 to lock the same firmly to the localized warp structure, all substantially in the same plane. For example the warp thread 3⁗ loops under the left hand portion of the weft thread 2′ which itself underlies the warp thread 3″ at that side. The warp thread 3⁗ then passes over to the right and loops under the right hand portion of the weft thread 2″ which at this locality underlies the right hand warp thread 3‴. This zig-zagging and looping of the warp thread 3⁗ is repeated indefinitely and may be accomplished in a loom of well known construction. After the weaving of the flue fabric 1 and upon leaving the loom it may

be stripped or sheared into a plurality of separate flues 4 by cutting each weft thread at a locality half way between adjacent positions of the warp threads 3. In Fig. 1 the knives 6 are shown for this purpose, although it is to be understood that any suitable severing mechanism may be employed. After the flue construction is severed into the individual flue strips, it is, of course, obvious that these flue strips are of a continuous length limited merely by the capacity of the loom. These flue strips are then cut into suitable lengths for forming the actual flues to be used in the plume, such as the plume 7. A suitable quill 8 is provided and split into two sections 8′ and 8″. The flue strips cut into suitable lengths, are then placed crosswise over the quill section 8′ and are then arranged side by side throughout the length of the quill in an obvious manner to simulate a plume of the desired fullness. The quill section 8′ has preferably first been filled with a suitable adhesive or cement filler 9 and after the application and arrangement of the flues 4 has applied to it the top quill section 8″ likewise filled with a suitable adhesive or cement 10 to join with the filler on the bottom section 8′. Other well known means, such as lashing, may be employed to clamp the quill sections.

The mere process of weaving the construction described and severing the woven flue structures is capable of finishing a suitable flue structure. It may be desirable, however, to coat the flue fabric 1 after weaving with a suitable sizing such as gum tragacanth or with any well known water proofing compound of a glossy character. A diagonal disposition may be given to flue filaments 5, such as is indicated in Fig. 4, by drawing each flue strip through a suitable die which may be formed by a loop of cloth or felt and may be slightly heated to facilitate melting the sizing and giving an inclined set to the filaments 5. If desired, parts only of the flues, and particularly the ends thereof, may be thus treated to prevent unraveling of the weave and to more nearly simulate the natural flue.

The warp thread 3 may be fine cotton or linen threads and, in fact, the weft threads forming the filaments of the flues need not of necessity be silk, although it is desired that they be of such fine size as to approximate the filaments of a natural flue.

As a modification in the method of manufacture, a number of cross threads 20 may be arranged close together in parallel, (see Fig. 6) and pairs of strips 21 and 22 of suitable material such as artificial silk coated on their inner faces with a cement 23 may be rolled against the opposite sides of the threads 20 so as to adhere thereto firmly. These pairs of strips 21 and 22 should be arranged in spaced positions A, B and C the same as the arrangement for the localized warp threads in Fig. 1. Likewise the flue fabric of Fig. 6 should be separated midway between the localities of the strips 21 and 22, as by suitable knives 6.

What is claimed and what is desired to be secured by United States Letters Patent is:—

1. An artificial feather-flue comprising, a central rib; laterally projecting filaments of a size and texture substantially identical with the filaments of a natural flue and lying closely side by side in the same plane; said filaments being firmly secured to said rib.

2. An artificial woven ostrich-plume-flue comprising, a central rib formed of warp threads; and laterally projecting weft filaments interlocked at their middle portions with said warp threads, said flue substantially duplicating a natural flue in size, texture and appearance.

3. An artificial woven ostrich-plume-flue comprising, a central rib formed of warp threads; and laterally and obliquely projecting weft filaments interlocked at their middle portions with said warp threads, said flue substantially duplicating a natural flue in size, texture and appearance.

4. An artificial plume comprising, a quill; a number of flues, each continuous, and fixed at its mid-portion to said quill to lie by the side of its neighbor and to extend out laterally from said quill; each flue comprising a central rib throughout its length and a multitude of filaments projecting obliquely from said rib and fixed thereto.

5. An artificial plume comprising a quill, a number of flues, each continuous and fixed at its mid-portion to said quill and extending laterally from said quill, each flue comprising a central rib and a multitude of filaments fixed to said rib, and some of said filaments being arranged to project obliquely from said rib.

6. An artificial woven ostrich-plume-flue comprising a central rib formed of threads, and a plurality of flue filaments interwoven with said threads having relatively loose portions projecting laterally from said threads, said flue substantially duplicating a natural flue in size, texture and appearance.

7. An artificial woven ostrich-plume-flue comprising a central rib formed of a plurality of relatively straight parallelly arranged threads disposed in different planes, and a multitude of flue filaments interwoven with said threads, said filaments having relatively loose end portions projecting laterally from said threads, said flue substantially duplicating a natural flue in size, texture and appearance.

8. An artificial woven ostrich-plume-flue comprising a central rib formed of a plu-

rality of relatively straight parallelly arranged threads disposed in different planes, a multitude of flue filaments interwoven with said threads having opposite end portions projecting laterally from said threads, and a locking thread zig-zagging across said straight threads, serving to lock said flue filaments to said straight threads, said flue substantially duplicating a natural flue in size, texture and appearance.

9. An artificial ostrich-plume-flue comprising, a central rib formed of a plurality of relatively straight parallelly arranged threads disposed in different planes, and a multitude of flue filaments interwoven at their middle portions with said threads, said filaments having relatively loose end portions projecting laterally from opposite sides of said threads, said flues substantially duplicating a natural flue in size, texture and appearance.

10. An artificial plume comprising, a quill, a number of flues each continuous and fixed at its mid-portion to said quill and extending laterally from said quill, each flue comprising a central rib and a multitude of filaments fixed to said rib, some of said filaments being arranged to project obliquely from said rib, and a coating on said rib and filaments adapted to maintain a substantially fixed relation between said filaments and said rib.

11. An artificial plume comprising a quill, a number of flues, each continuous and fixed at its mid-portion to said quill to lie side by side and to extend out laterally from said quill, each flue comprising a central rib and a multitude of filaments projecting out laterally from said rib, said quill comprising a pair of hollow members arranged one above and one below said flues, and an adhesive material contained in the hollow of each of said members adapted to fix said members to said flues.

In witness whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

NATHAN GARFINKLE.

Witnesses:
LEONARD DAY,
SIDNEY NEWBORG.