(No Model.) 2 Sheets—Sheet 1.

# D. A. COBB.

## APPARATUS FOR SHAPING TUBULAR FABRICS.

No. 470,800. Patented Mar. 15, 1892.

Fig. 1.

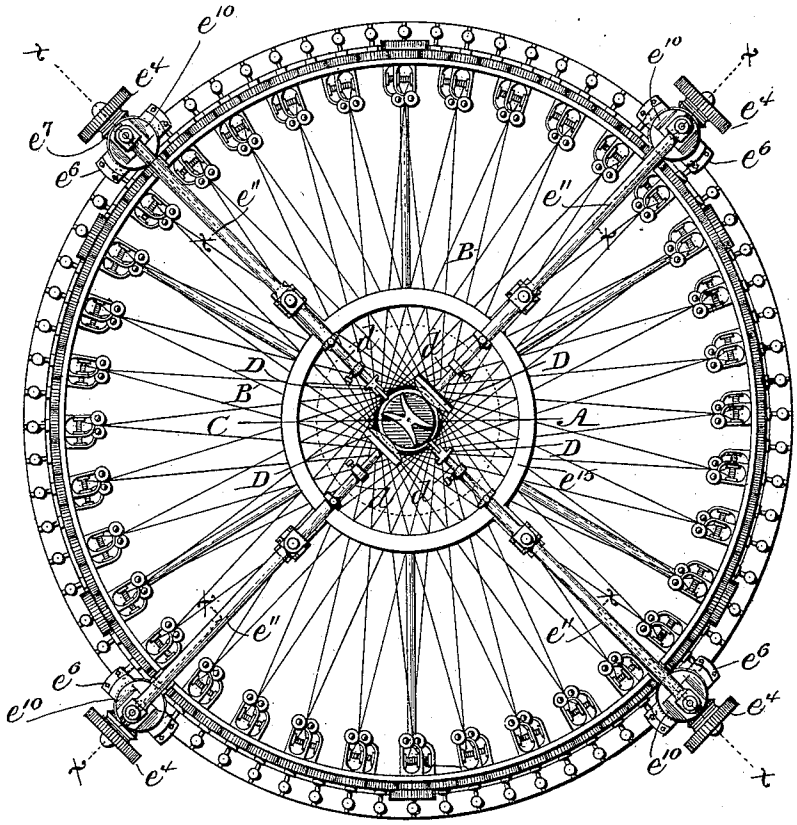
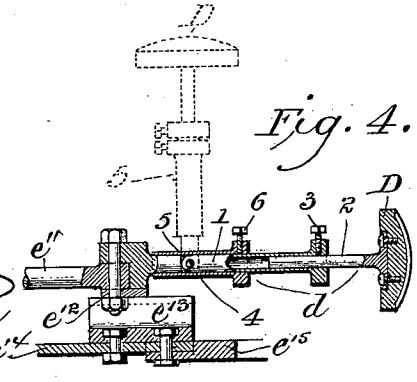



Fig. 4.

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

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## APPARATUS FOR SHAPING TUBULAR FABRICS.

No. 470,800. Patented Mar. 15, 1892.

Fig. 2.

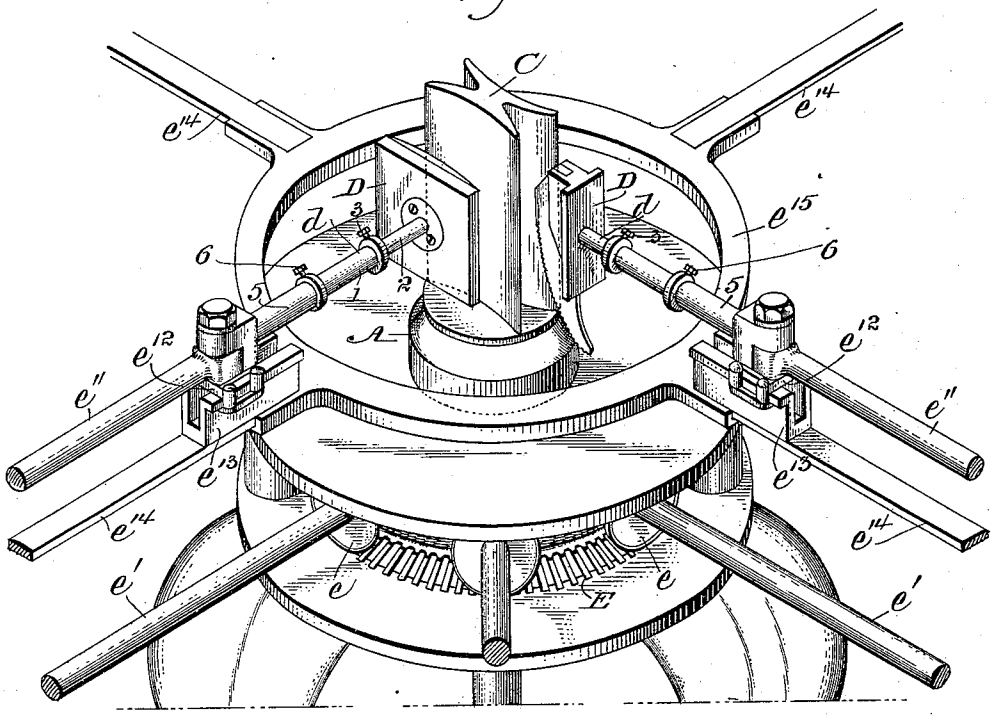



Fig. 3.

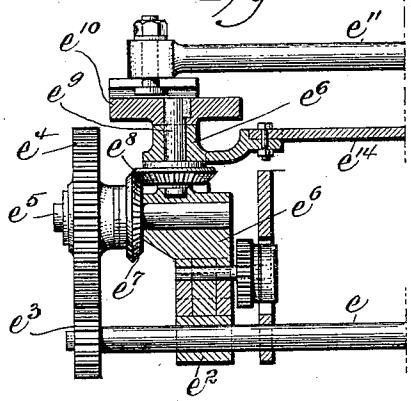



Fig. 5.

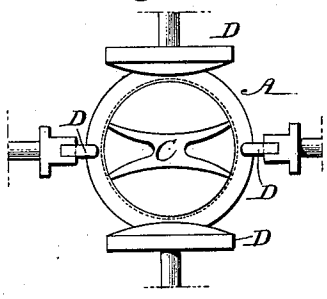



Fig. 6.

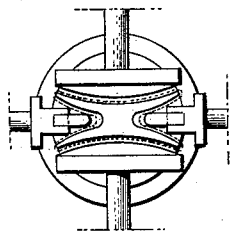
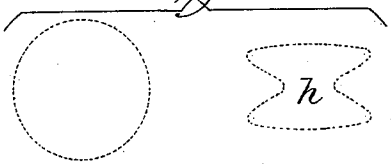


Fig. 7.

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# UNITED STATES PATENT OFFICE.

DEWEY A. COBB, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE WESTON & WELLS MANUFACTURING COMPANY, OF SAME PLACE.

## APPARATUS FOR SHAPING TUBULAR FABRICS.

SPECIFICATION forming part of Letters Patent No. 470,800, dated March 15, 1892.

Application filed January 6, 1891. Serial No. 376,929. (No model.)

*To all whom it may concern:*

Be it known that I, DEWEY A. COBB, a citizen of the United States, residing at the city and county of Philadelphia, and State of Pennsylvania, have invented certain new and useful Improvements in Apparatus for Shaping Tubular Fabrics, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view of a braiding-machine embodying my invention. Fig. 2 is a perspective view of the braiding-core, the supplemental core, and adjuncts, two of the reciprocating compressing-heads with their immediate connections being shown. Fig. 3 is a vertical section through the outer gear and cam mechanism for operating the compressing-heads, as on the lines *x x*, Fig. 1. Fig. 4 is a similar section through one of the head-supporting arms and immediate connections, the dotted lines representing the position of the head when it is thrown up out of action. Fig. 5 is a plan of my improved shaping-core mounted upon the main or braiding core, the reciprocating heads being represented at the end of their back-stroke preparatory to acting upon the braided tube. Fig. 6 is a view similar to Fig. 5, showing the head-blocks in their inward or compressing position. Fig. 7 illustrates cross-sections of the braided tube before and after compression, respectively.

This invention relates to apparatus for imparting to interbraided tubular fabric a predetermined cross-sectional shape or configuration other than that of the core upon which the fabric is braided.

The invention is particularly, though not exclusively, designed for use in connection with a circular-braiding machine equipped with the automatic discharging core or former for which Letters Patent of the United States No. 341,974 were issued on the 18th day of May, 1886, to Joseph L. Wells, assignor, &c., the relation of my device in respect to said core or former being such that as the braided tube is discharged from the latter the tube is compressed into any desirable cross-sectional form, preferably an approximately H shape or bellows-like form, substantially as and for the purpose hereinafter described.

In carrying out my invention I employ a suitable core or former, upon which the braided tube is delivered, in combination with compressing devices adapted to operate relatively with said core to compress said tube and impart thereto a shape practically similar to that of the core, as hereinafter explained. Incidentally the invention comprises details of construction, which will be duly pointed out.

Referring to the annexed drawings, A represents the central core or former of an ordinary wire-braiding machine, said core or former being of the Wells type above mentioned. B represents the wires, of steel or other suitable material, that are interbraided upon the tapered portion of the core or former in the usual and well-known way, the tubular fabric thus formed being automatically discharged from the core as the braiding proceeds. Upon this core or former, so as to be in effect a continuation thereof, I mount another or supplemental core C, of a cross-sectional shape substantially similar to that which it is desired to impart to the braided tube. In the present instance the core C is H-shaped in cross-section, or approximately so, as shown.

D represents four head-blocks, which are adapted to act simultaneously against the respective opposed faces of the core C. Each of these blocks is mounted upon an arm or plunger *d*, that is reciprocated by suitable mechanism. It will thus be seen that during the braiding operation the fabric produced continuously envelopes the core C and that the plungers, as they are reciprocated, compress the fabric and impart thereto a cross-sectional shape approximating that of said core. The devices for reciprocating the arms or plungers are so timed in respect to the braiding mechanism that the entire tube as it is formed is uniformly acted upon by the head-blocks. As the compressed wires by reason of their resiliency rebound more or less when relieved from pressure, the extent of compression of the wires in order to compensate for such reaction is a trifle greater than that ultimately desired, the configuration of the core and the

range of movement of the head-blocks determining, of course, the limit of compression requisite.

In the drawings I have illustrated a simple mechanism for reciprocating the head-blocks; but of course any other suitable mechanism to the same end may be employed without affecting my invention. The said illustrated mechanism is of the following description: E, Fig. 2, represents the central bevel-gear, from which the usual train of race-gears is driven. Engaging this gear at points in line vertically with the head-blocks, respectively, are bevel-pinions $e$, each of which is fixed to a radial shaft $e'$, that is mounted in a box $e^2$ on the under side of the outer circular frame of the machine. On the outer end of each radial shaft $e'$ is fixed a pinion $e^3$, which engages a spur-wheel $e^4$, loosely mounted upon a stud $e^5$, that projects from a horizontal two-part box $e^6$. This box is supported upon the circular frame of the machine, as shown. Fixed on the inner side of the spur-wheel is a bevel-wheel $e^7$, which gears with a similar bevel-wheel $e^8$, mounted within the box $e^6$. The stud $e^9$, upon which the last-mentioned wheel is fixed, carries on its upper end a cam or crank wheel $e^{10}$, to which is connected one end of a rod or pitman $e^{11}$, the other or inner end thereof being connected with the proper head-block plunger $d$. The latter connection is pivoted upon a suitable cross-head $e^{12}$, that is guided within or upon a way $e^{13}$, mounted upon a radial supporting-arm $e^{14}$. This arm in the present illustration is fixed to an extension of the box $e^6$ and to a central circular ring $e^{15}$, which unites and supports the inner ends of the respective arms. By this construction it is apparent that during the operation of the braiding-machine the rotating bevel-wheel E actuates the cam or crank wheel by means of the gearing described, and the latter perforce, through the medium of the connecting-rod and its adjuncts, reciprocates the head-block. As all the head-blocks are likewise geared with the wheel E, obviously said blocks are simultaneously reciprocated.

To provide for the adjustment of the throw of these blocks to or from the central core or former, I make their respective arms $d$ in telescopic sections 1 2, as seen in Fig. 4, and provide the ends of the sections 1 with set-screws 3, that are adapted to bear upon the inner ends of the other sections 2, respectively, upon which the head-blocks are borne. Thus said sections 2, with their blocks, may be adjusted radially, as occasion may require, and by proper manipulation of the respective screws said sections may be fixed at the predetermined points of adjustment.

I sometimes joint or hinge each of the arm-sections 1 at a suitable point thereon, as at 4, and provide the jointed section with a longitudinally-adjustable sleeve 5, in which works a suitable set-screw 6. Thus if this sleeve be pushed over upon the two jointed portions of the section 1 and be fixed in place by means of the set-screw said portions will be rigidly connected and the section, with its block and adjuncts, will be maintained in operative horizontal position; but if the sleeve be pushed upon one part only of the section the outer part of the latter, with the head-block and its supporting-section, may be swung up out of operative position, as clearly represented in Fig. 4.

The interbraided fabric, shaped cross-sectionally, as above described, and as illustrated in Fig. 7 at $h$, is more especially adapted for upholstery uses, the H shape thereof not only rendering the elastic fabric readily compressible transversely, but permitting a series of lengths thereof to be arranged side by side, so as to present a uniform bearing-surface for the covering material.

Having thus described my invention, I claim as new and wish to secure by Letters Patent—

1. In a braiding-machine, the combination, with the central core or former, upon which the fabric is braided, of the supplemental core or former, upon which said fabric is continuously fed as the braiding proceeds, and devices adapted regularly to compress said fabric upon the supplemental core or former, substantially as described.

2. In a braiding-machine, the combination, with the central core or former, upon which the fabric is braided, of the supplemental core or former, upon which said fabric is continuously fed as the braiding proceeds, the reciprocating head-blocks adapted to compress said fabric upon the supplemental core or former, and mechanism adapted to reciprocate said head-blocks, substantially as described.

In testimony whereof I have hereunto affixed my signature this 30th day of October, A. D. 1890.

DEWEY A. COBB.

Witnesses:
CHARLES H. BOND, Jr.,
JOHN R. NOLAN.