No. 670,540. Patented Mar. 26, 1901.

S. A. FLOWER.

MACHINE FOR ROPING AND CURLING FIBERS.

(Application filed June 11, 1900.)

(No Model.) 2 Sheets—Sheet 1.

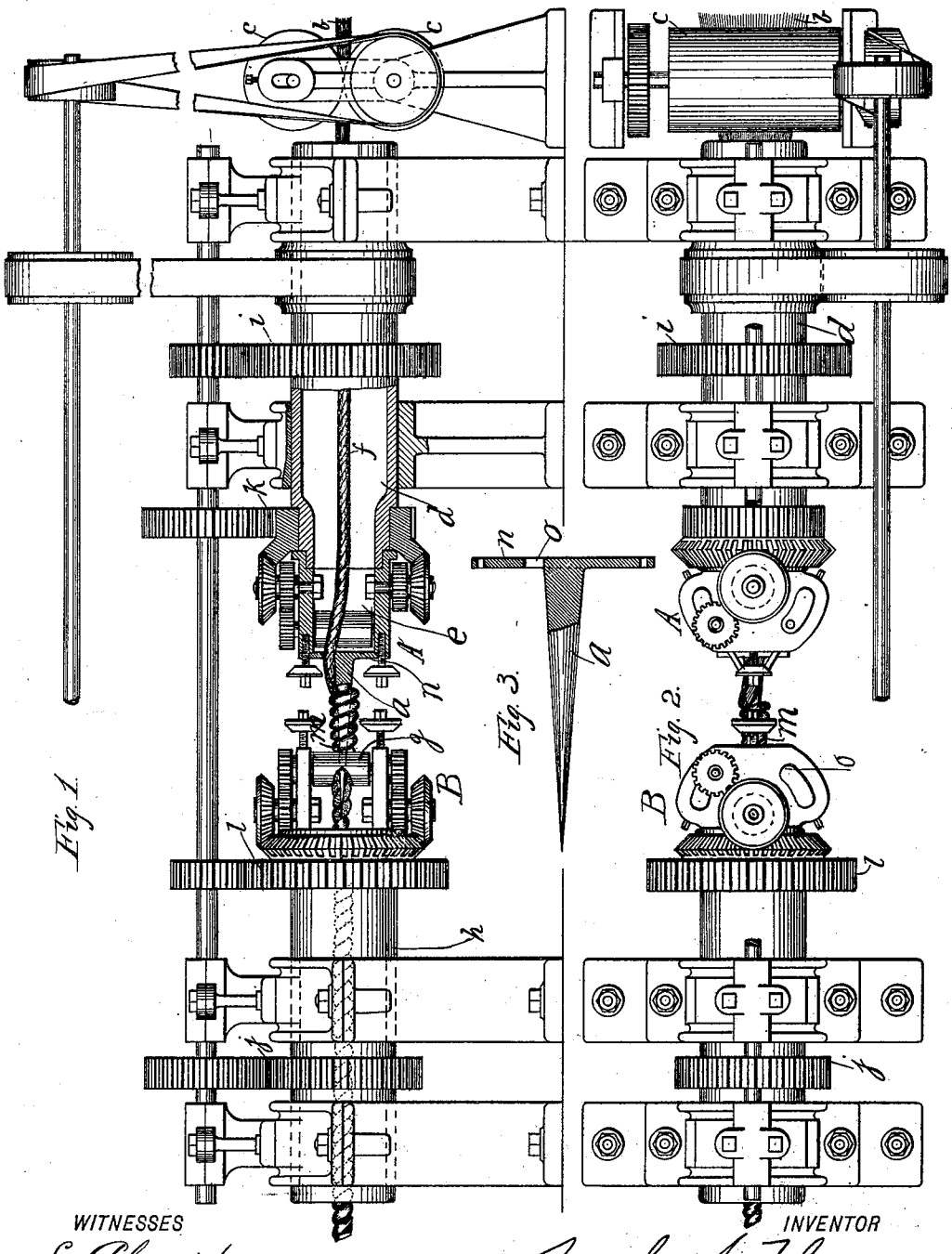


Fig. 1.

Fig. 3.

Fig. 2.

WITNESSES

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Fig. 4.

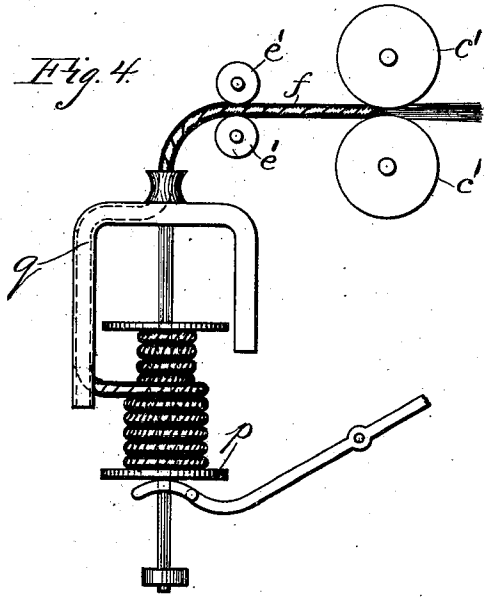
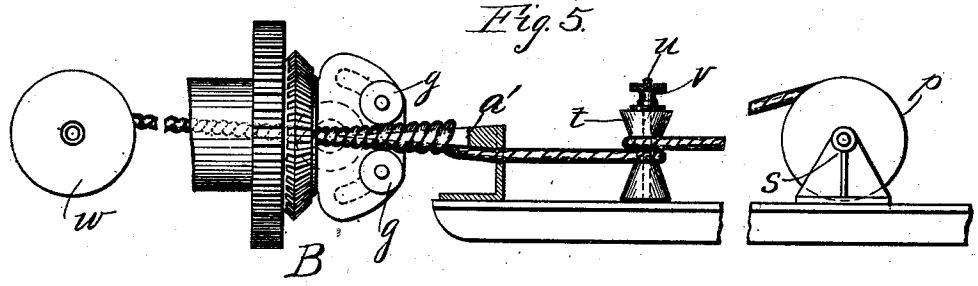


Fig. 5.



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UNITED STATES PATENT OFFICE.

SAMUEL A. FLOWER, OF NEWARK, NEW JERSEY.

MACHINE FOR ROPING AND CURLING FIBERS.

SPECIFICATION forming part of Letters Patent No. 670,540, dated March 26, 1901.

Application filed June 11, 1900. Serial No. 19,807. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL A. FLOWER, a citizen of the United States of America, and a resident of Newark, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Machines for Roping and Curling Animal and Vegetable Fibers, of which the following is a specification.

My invention relates to apparatus for roping or twisting and curling animal and vegetable fibers for upholstery purposes by means of drawing and twisting heads of the character represented in the patent granted to me September 24, 1895, No. 546,660; and it consists of an improved contrivance of a taper mandrel with one or a pair of drawing and twisting heads in a novel manner, by which the work may be accomplished more effectively and expeditiously, as hereinafter described, reference being made to the accompanying drawings, in which—

Figure 1 is partly a side elevation and partly a sectional elevation of a machine in which the said taper mandrel is employed in connection with a pair of drawing and twisting heads in accordance with my invention. Fig. 2 is a plan view of the said machine. Fig. 3 is a detail of the taper mandrel used in connection with the drawing and twisting head or heads. Figs. 4 and 5 are details showing the manner of using the mandrel in connection with a single drawing and twisting head for the same purpose and with like effects.

In Figs. 1 and 2, A and B represent a pair of twisting and drawing heads arranged in alinement with and fronting each other. They are geared for both being rotated in the same direction, but so that head A rotates slower than head B, as seen by the different proportions of the gears *i* and *j*, by which they are driven, respectively. They carry the usual drawing-rolls *e* and *g*, rolls *e* being driven at faster speed than rolls *g*, as seen by the different proportions of gears *k* and *l*, and both pairs turn on their axes in the same direction to receive the fibers *b* to be twisted and curled from the feed-rolls *c* and deliver the product at the other end of the machine. Between the feed-rolls *c* and the rolls *e* of head A the fibers are twisted in the usual way, as shown at *f*. At the delivery side of the rolls *e* the taper-mandrel *a* is supported by its base, the taper end being free. It may be supported in any approved way, but as shown its disk-head *n* is attached to the head-frame, said disk having a throat *o*, through which the twist *f* is led from rolls *e* and is coiled on the mandrel and passed between rolls *g*, between which the mandrel also extends, as shown in Fig. 1, so that as head B rotates faster than head A it draws the coils tightly around the mandrel and gives permanent set to the curls of the fibers, and at the same time rolls *g* draw the coiled rope from the mandrel and pass it along to be delivered from the machine onto a reel or other apparatus for receiving it. The head B running faster than head A causes effective stress on the rope and close winding of the coils, gradually reducing them along the taper-mandrel to a solid rope as they escape from the end of the mandrel. The taper form of the mandrel facilitates the movement of the coils along it.

While it may be preferable for compactness of apparatus and economy of space and labor to unite the two drawing and twisting heads, together with the taper mandrel, in one machine, as thus far described, and represented in Figs. 1 and 2, the rope *f* may first be coiled on bobbins *p*, as in Fig. 4, wherein *c'* indicates the same feed-rolls and *e'* the same rolls of the drawing and twisting head A as in Fig. 1, and be subsequently coiled on a stationary taper mandrel *a'* by a like drawing and twisting head B', the rope being passed from head A through a flyer *q* in the common way of winding ropes or yarns, after which the bobbins may be transferred to suitable bearing-supports *s* to be delivered to the mandrel in any suitable way—as, for example, passing around a tension-spool *t*, set on a fixed pivot-stud *u*, whereon an adjusting-nut *v* may be provided to regulate the tension of the rope on the mandrel. The operation of the drawing-head B' with relation to the fixed mandrel *a'* and the rope is practically the same as in the other arrangement, except that the drawing-head will not rotate as fast as with the rotating mandrel, but will rotate as much slower as the rotations of head A to put the same number of coils in the rope.

The spool *w* in Fig. 5 is merely to indicate a reel onto which the rope may be delivered from the machine after being completed. Any other way of disposing of the rope may be employed as preferred.

It is to be understood that the drawing and twisting head to which this invention relates is of the specific character represented in my patent before referred to and comprising a pair of drawing-rolls mounted at the end of and transversely to a tube in bearings carried by the tube. They are so geared that while rotating on their own axes and also rotating with the tube said rolls may grip and draw a rope between them.

What I claim as my invention is—

In fiber twisting and curling apparatus, the combination of a taper mandrel, means for delivering a rope or twist of fibers on the mandrel at or near the larger end, a drawing and twisting head having its axis of rotation coincident with the longitudinal axis of the mandrel and having the point of the mandrel extending between its drawing-rolls, said rolls adapted to coil the rope on the mandrel and to bite and draw the coils of rope around and off from the mandrel and geared independently of the mandrel for so drawing the coils therefrom.

Signed by me this 1st day of June, 1900.

SAMUEL A. FLOWER.

Witnesses:

J. M. HOWARD,

C. SEDGWICK.