

(No Model.)

2 Sheets—Sheet 1.

G., J. G. & M. O. REHFUSS.
MACHINE FOR FORMING TASSEL BUNCHES.

No. 467,435.

Patented Jan. 19, 1892.

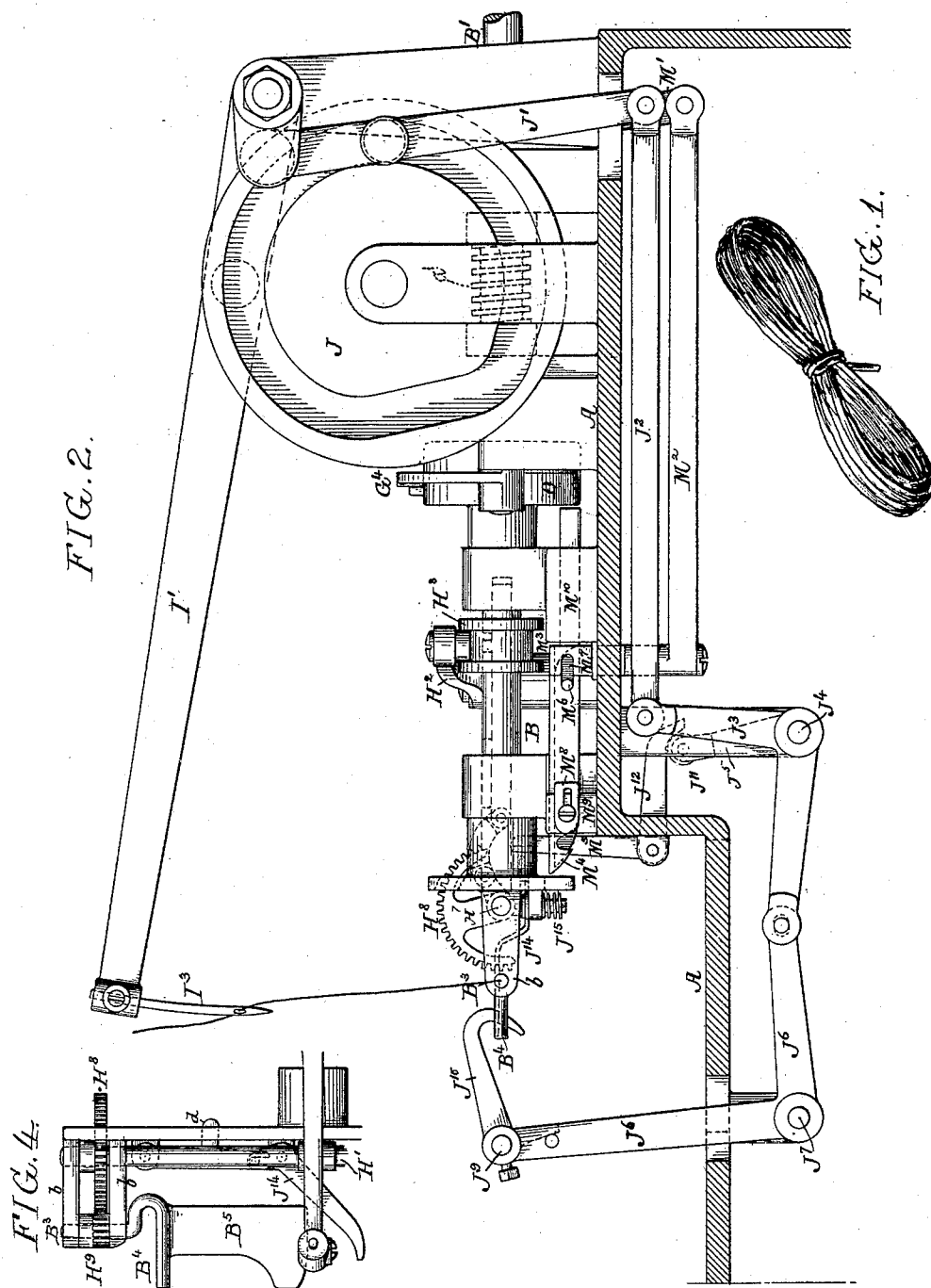


FIG. 4.

FIG. 2.

FIG. 1.

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Pied D. Goodwin.

Inventors:
George Rehfuß,
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Houson & Houson

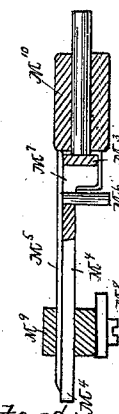
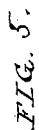
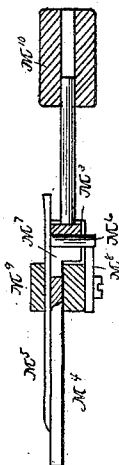
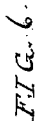
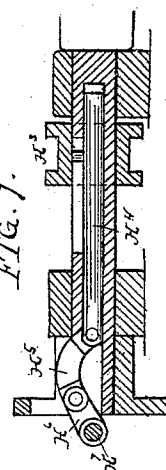
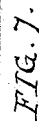
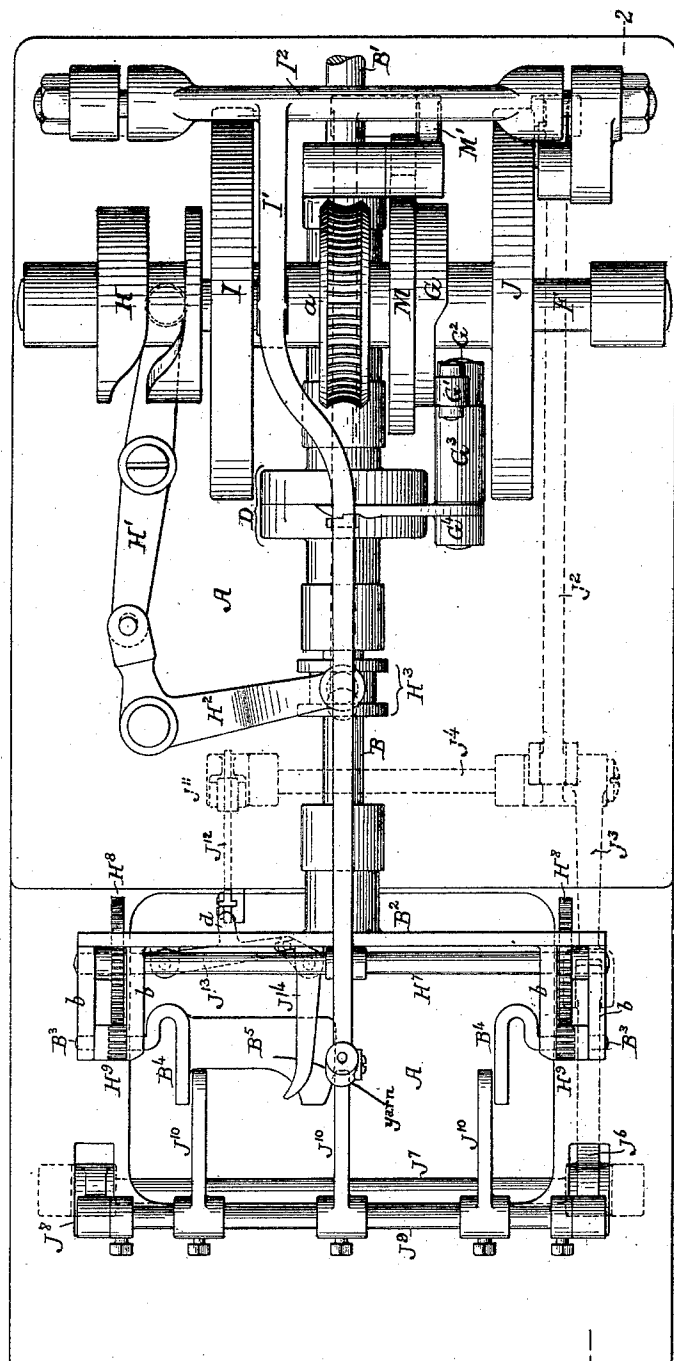
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Witnesses
Hamilton D. Turner.
Fred D. Goodrum.

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UNITED STATES PATENT OFFICE.

GEORGE REHFUSS, JOHN GEORGE REHFUSS, AND MARTIN O. REHFUSS, OF
PHILADELPHIA, PENNSYLVANIA.

MACHINE FOR FORMING TASSEL-BUNCHES.

SPECIFICATION forming part of Letters Patent No. 467,435, dated January 19, 1892.

Application filed April 21, 1891. Serial No. 389,840. (No model.)

To all whom it may concern:

Be it known that we, GEORGE REHFUSS, JOHN GEORGE REHFUSS, and MARTIN O. REHFUSS, citizens of the United States, and residents of Philadelphia, Pennsylvania, have invented certain Improvements in Machines for Forming Tassel-Bunches, of which the following is a specification.

The object of our invention is to construct a machine for automatically winding tassel-bunches consisting of a longitudinal skein or hank of chenille or other yarn having the end of the yarn suitably secured to prevent the unwinding of the said hank or skein, our machine being especially adapted for winding that form of tassel-bunch in which there are cross-windings at or about the center of the skein or at different points on said skein, in order to hold the longitudinal wrappings in place. This object we attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a view of a tassel-bunch such as produced upon the machine. Fig. 2 is a side view of the machine, parts being shown in section. Fig. 3 is a plan view of the same, and Figs. 4, 5, 6, and 7 are detached views of parts of the machine.

A is the bed-plate of the machine, and B is a winding-shaft free to turn in suitable bearings on said bed-plate and adapted to be connected to the driving-shaft B' by means of a clutch D, which in the present instance is similar to that forming the subject of Letters Patent No. 362,997, dated May 17, 1887. The driving-shaft B' has a worm a' , (see dotted lines, Fig. 2,) which engages with a worm-wheel a on a cam-shaft F, arranged transversely to the shaft B' and having a series of cams G, H, I, J, and M. The cam G acts upon an anti-friction roller G', carried by an arm on a rock-shaft G², which is free to turn in a suitable bearing G³ on the bed of the machine, and has another arm G⁴ for operating the clutch D, so that while the driving-shaft B' rotates continuously intermittent movements of rotation are imparted to the winding-shaft B. Said shaft B has at its outer end a winding-head B², and in suitable arms or standards b , near each end of said winding-head, are

mounted shafts B³, which terminate at their inner ends in winding-hooks B⁴, one of which carries an inwardly-projecting plate B⁵, extending nearly to the center or axis of the winding-head, for a purpose explained hereinafter. The cam H acts upon a lever H', pivoted to the bed-plate A, and this lever in turn acts upon a lever H², which imparts longitudinal sliding movement to a sleeve H³, mounted on the winding-shaft, which latter is hollow and receives a central shaft H⁴, the latter, as shown in Fig. 7, acting through the medium of the link H⁵ on an arm H⁶, carried by a transverse shaft H⁷, which is free to turn in bearings in the arms b , this shaft having near each end a toothed segment H⁸, which meshes with a pinion H⁹ on the winding hook-shaft B³. The cam I acts upon an anti-friction roller on an arm I', which projects from a rock-shaft I², hung between centers at one end of the machine, the outer end of said arm I' carrying an eye-pointed needle I³, as shown in Fig. 2. The cam J acts upon an anti-friction roller on an arm J', which is connected by a link J² to a lever J³ on a rock-shaft J⁴, free to turn in depending hangers J⁵ beneath the bed A, said lever J³ engaging with another lever J⁶, likewise hung to a rock-shaft J⁷, beneath the bed, one arm of said lever J⁶ and an arm J⁸ at the other end of said rock-shaft J⁷ carrying a rock-shaft J⁹, to which are secured a series of hooked fingers J¹⁰. The rock-shaft J⁴ carries an arm J¹¹, which acts upon one arm of a lever J¹², the other arm thereof acting upon a lug on an arm J¹³, hung to a stud on the winding-head B², said arm J¹³ acting upon a lever J¹⁴, one arm of which operates, in conjunction with the plate B⁵, to form a retainer for the loose end of the thread, as described hereinafter, said lever J¹⁴ being acted upon by a spring J¹⁵, Fig. 2, which tends to move it into engagement with the plate B⁵. The cam M acts on an anti-friction roller carried by a swinging lever M', which is connected by a link M² to a sliding head M³, carrying a hook M⁴, and adjacent to and guided on this sliding hook is a knife-blade M⁵, as shown in Figs. 2, 5, and 6. The blade M⁵ has a pin M⁶, projecting through a slot M⁷ in the hook M⁴ and head M³, and when the hook M⁴

is projected this pin M^6 comes into contact with a stop M^8 on one of the bearings M^9 for the hook, and is thereby retracted in relation to the hook, as shown in Fig. 6; but as the hook
 5 nears the limit of its backward movement the rear end of the knife comes into contact with the bearing M^{10} or other equivalent stop, and the knife is thereby projected again, as shown in Figs. 2 and 5.

10 In the operation of the machine the loose end of the yarn is in the first instance confined between the plate B^5 and lever J^{14} and passes thence through the eye of the needle, which is held normally in the elevated position shown in Fig. 2. The clutch D being
 15 put in operation, a rotary movement is imparted to the winding-head B^2 and the yarn is wound upon the winding-hooks B^4 for the desired number of turns. The clutch D is then thrown out of action, and the winding
 20 hook-shafts B^3 are rotated by the mechanism receiving its movement from the cam H . This has the effect of forming the transverse wrappings around the bunch, such wrappings being at the center of the bunch, owing to the
 25 fact that during such transverse winding operation the yarn has a bearing upon the inner end of the internally-projecting plate B^5 . When the central wrapping has been completed, the needle descends through the center
 30 of the bunch, and thus carries the yarn through the same from one side to the other, so as to retain the end of the central wrapping. The hook M^4 then advances and catches the loop of thread from the needle, and on
 35 the retraction of the hook the knife M^5 is projected so as to cut the yarn, the needle then rising through the bunch. Before the central wrapping was formed on the skein, however, the rock-shaft J^4 had a slight movement
 40 imparted to it sufficient to carry the lever J^{14} beyond the point where said central wrapping was to be formed, and on the rise of the needle the rock-shaft J^4 is moved in the opposite
 45 direction, so as to move the hooked arms J^{10} inward over the bunch, the lever J^{14} resting against the central wrapping of the bunch under the tension of the spring J^{15} . After the hooks J^{10} have been moved inward so far as
 50 to engage with the bunch the movement of the rock-shaft J^4 is reversed and the hooked arms move outward, so as to pull the bunch from the winding-hooks B^4 and permit it to drop from the machine, and at the same time
 55 the lever J^{14} , swinging inward, catches the loose end of yarn hanging from the needle I^3 and confines the same against the plate B^5 , so that the parts are in position for a repetition of the operation. Where there are to be two
 60 or more cross-wrappings on the skein, the number of needles and co-operating parts will be increased accordingly, the yarn from all of the needles forming the skein and the yarn from each needle forming a cross-wrapping in line with said needle. In cases where a series
 65 of turns to form a cross-wrapping is not re-

quired the means for rotating the hooks B^4 may be dispensed with.

Having thus described our invention, we claim and desire to secure by Letters Patent—

1. In a tassel-bunch-forming machine, the rotating winding-head having winding-hooks rotating on said head in a direction at right angles to its own rotation, and means for rotating said winding head and hooks, substantially as specified.

2. In a tassel-bunch-forming machine, the rotating winding-head having winding-hooks rotating in a direction at right angles to its own rotation, a guide-plate, the inner end of which provides a bearing for the yarn during the rotation of said winding-hooks, and means for rotating the winding head and hooks, substantially as specified.

3. In a tassel-bunch-forming machine, the rotating winding-head, a needle swinging in a direction transversely to the plane of movement of said head, and means for rotating the head and vibrating the needle, substantially as specified.

4. In a tassel-bunch-forming machine, the rotating winding-head, a needle swinging in a direction transversely to the plane of rotation of said head, a cutter for the yarn, and means for rotating the winding-head, vibrating the needle, and operating the cutter, substantially as specified.

5. In a tassel-bunch-forming machine, the rotating winding-head and the needle swinging in a direction transversely to the plane of rotation of said head, in combination with reciprocating hooks for pulling the bunch from said winding-head, and means for rotating the head, vibrating the needle, and reciprocating the hooks, substantially as specified.

6. In a tassel-bunch-forming machine, the rotating winding-head, the needle swinging in a direction transversely to the plane of rotation of said winding-head, a cutter for severing the yarn, a retainer for engaging the free end of the yarn and holding the same in position for a fresh wind, and means for operating the parts, substantially as described.

7. In a tassel-bunch-forming machine, the rotating winding-shaft and its head having winding-hooks rotating in a direction at right angles to its own rotation, spur-pinions on the hook-shafts, a rock-shaft having segments meshing with said spur-pinions, a shaft movable longitudinally in the winding-shaft, and means for reciprocating said internal shaft and for imparting the movement of the same to the rock-shaft carrying the said toothed segments, substantially as specified.

8. In a tassel-bunch-forming machine, the combination of the winding-shaft, winding mechanism thereon, the driving-shaft, a clutch connecting the two, a shaft having cams for operating different elements of the winding mechanism, and gearing connecting

said cam-shaft and the driving-shaft, substantially as specified.

9. In a tassel-bunch-forming machine, the combination of longitudinal and transverse winding mechanism, a swinging needle, means for actuating said needle, a cutter, and a discharging device, whereby a longitudinal skein is first formed and then cross-wound, and the yarn then carried transversely through the skein and cut off and the bunch discharged, substantially as specified.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

GEORGE REHFUSS.
JOHN GEORGE REHFUSS.
MARTIN O. REHFUSS.

Witnesses:

EUGENE ELTERICH,
HARRY SMITH.