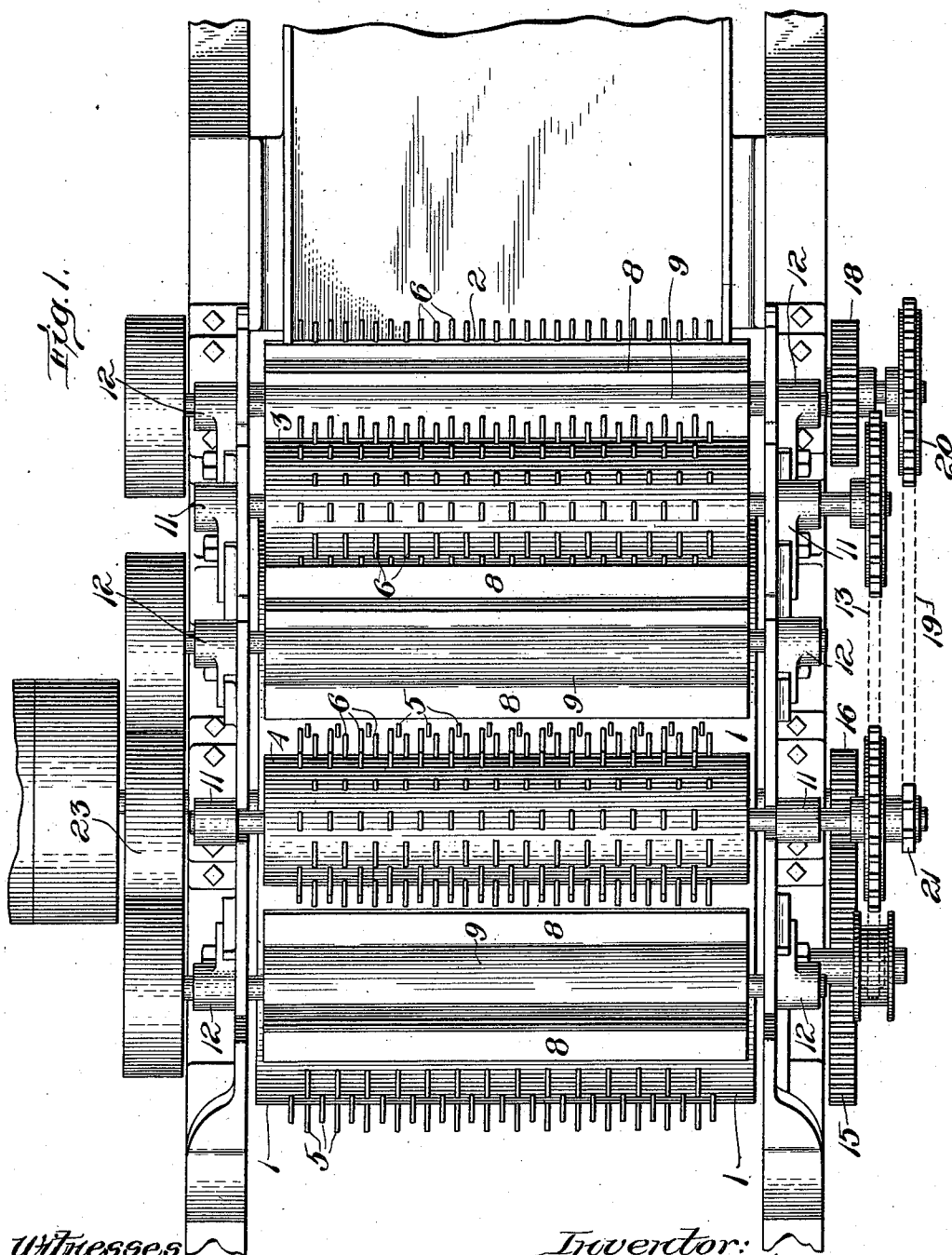


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APPLICATION FILED NOV. 3, 1909.

Patented Aug. 15, 1911.  
3 SHEETS—SHEET 1.



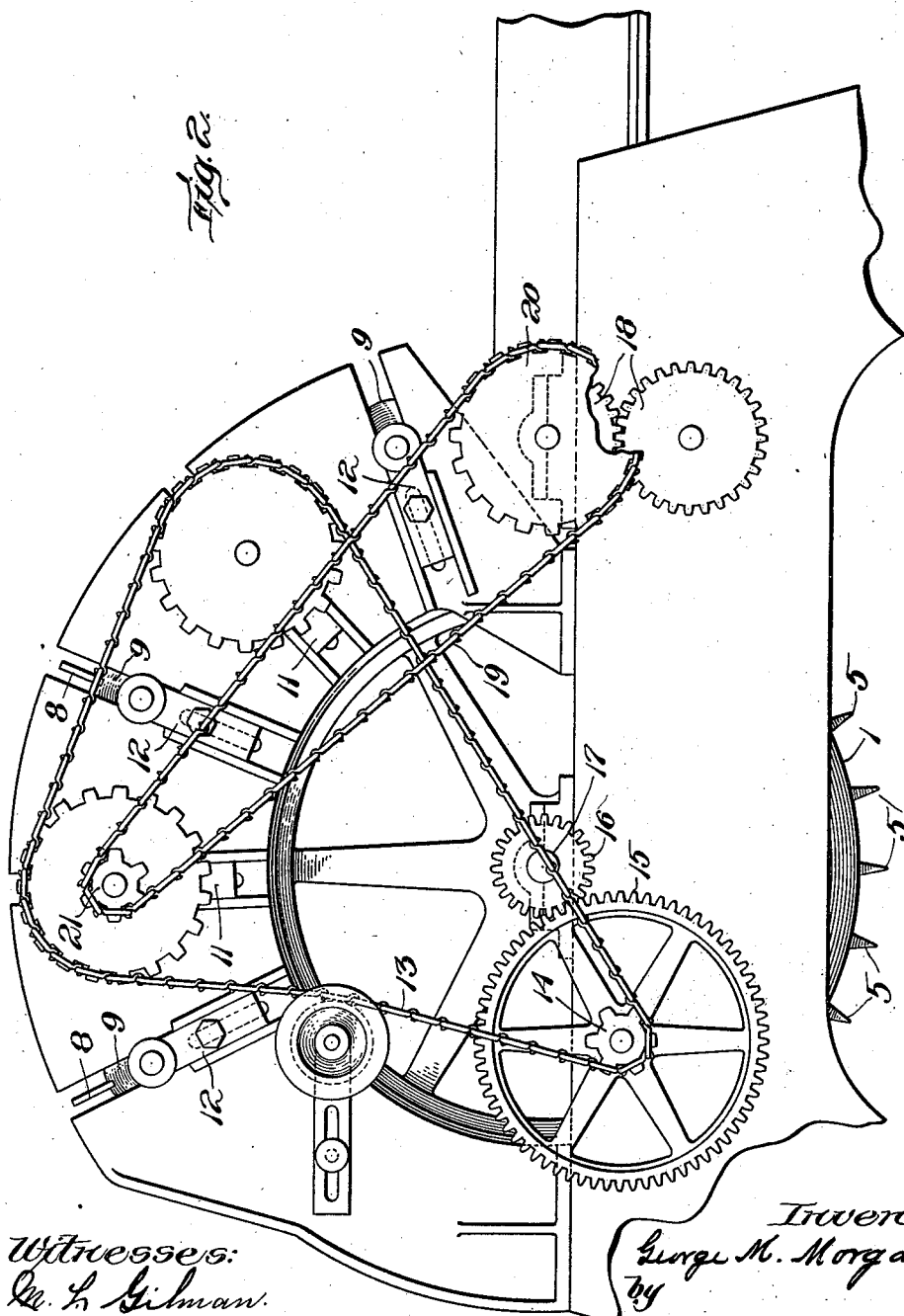
Witnesses  
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Inventor:  
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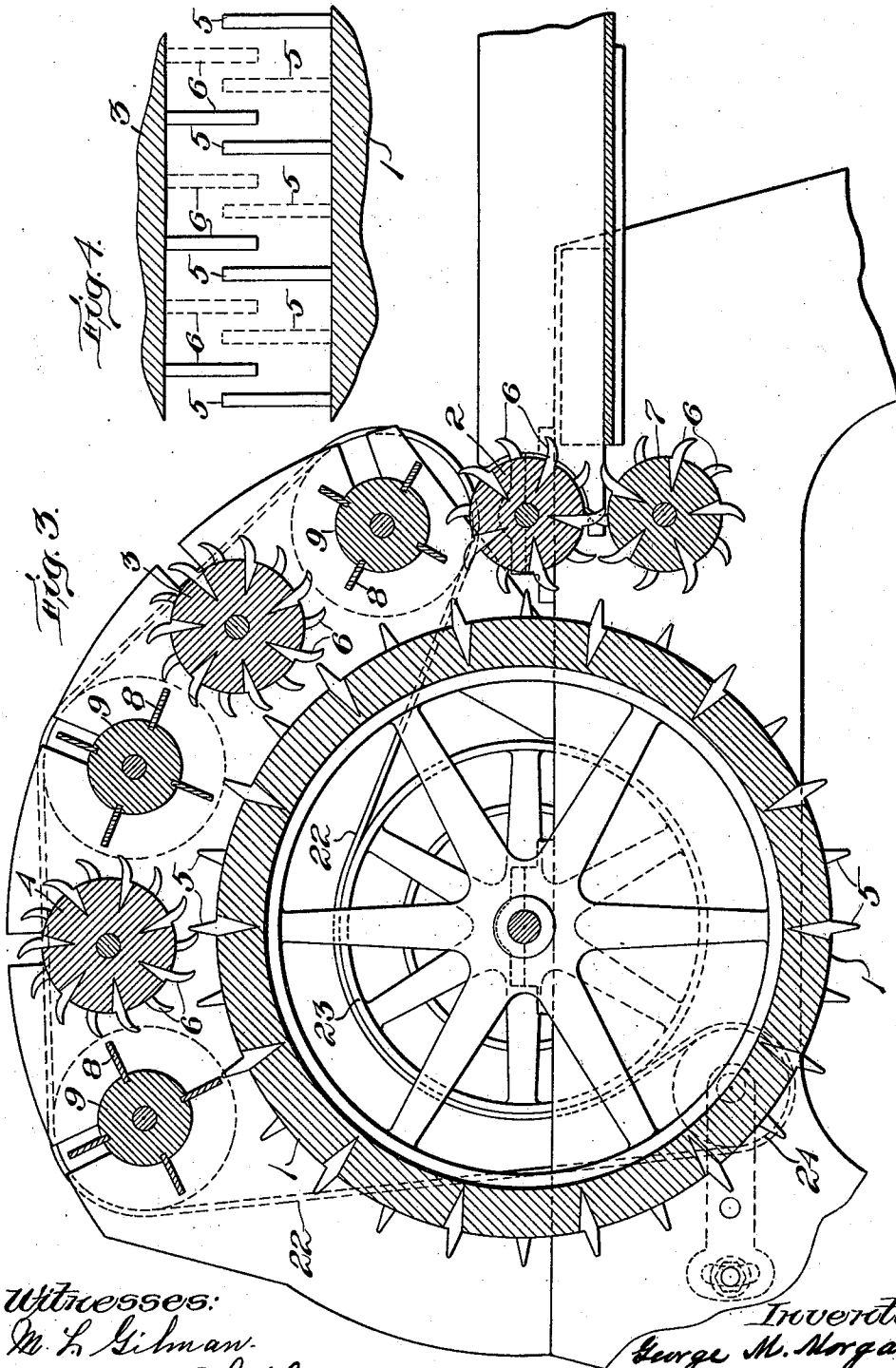
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# UNITED STATES PATENT OFFICE.

GEORGE M. MORGAN, OF BOSTON, MASSACHUSETTS.

## HAIR-PICKING MACHINE.

1,000,430.

Specification of Letters Patent. Patented Aug. 15, 1911.

Application filed November 3, 1909. Serial No. 526,030.

*To all whom it may concern:*

Be it known that I, GEORGE M. MORGAN, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Hair-Picking Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to machines for picking curled hair such as is used in the manufacture of mattresses, upholstered furniture, and similar articles.

The object of the invention is to provide a machine which is adapted to operate upon the hair in the condition in which it comes from the washing and drying operations, *i. e.* in the "rope," and which will operate in a reliable and efficient manner to rapidly pick and separate the hair and reduce it to proper condition for use in the manufacture of the articles into which it is commonly incorporated.

To these ends the invention consists of the features of construction and combination of parts hereinafter described and set forth in the claims.

The various features of the invention will be understood from the accompanying drawings and the following detailed description of the machine illustrated therein.

In the drawings Figure 1 is a plan view of a hair picking machine embodying the invention in its preferred form; Fig. 2 is a side elevation of the machine; Fig. 3 is a vertical longitudinal section; and Fig. 4 is a sectional detail showing the relative arrangement of the teeth on the picker drum and the retarding cylinder.

As shown in the drawing, the machine is provided with a large picker drum 1 which is driven at a high speed, and a series of worker or retarding cylinders 2, 3 and 4 arranged in succession around the periphery of the drum and driven at a comparatively slow speed. The picker drum is provided with straight radially extending teeth 5 and the retarding cylinders are provided with teeth 6, the outer ends of which are curved rearwardly or in a direction opposite to the direction of rotation of the cylinders. The retarding cylinder 2 not only acts as a retarding cylinder, but coöperates with a simi-

lar toothed cylinder 7 in feeding the hair which is to be picked to the action of the picker drum. The feeding cylinders 2 and 7 are driven at a much slower speed than the retarding cylinders 3 and 4, so that the hair, which may be in the form of the usual "rope," is fed slowly to the picker drum. The teeth of the feed cylinder 7 are curved rearwardly and these teeth mesh deeply with the teeth on the cylinder 2 so that the hair is firmly held against the drag of the picker drum, as the unpicked hair slowly advances. The teeth of the retarding cylinders 3 and 4 and of the combined retarding and feeding cylinders 2 mesh slightly with the teeth of the picker drum so that they will act effectively in catching and retarding the hair carried forward by the teeth of the more rapidly revolving drum.

The provision of substantially straight radial teeth on the picker drum and rearwardly curved teeth on the retarding cylinders is an important feature of the invention. It is important to the proper and rapid picking of the hair that the retarding cylinders should firmly and effectively hold the hair against forward movement and this result is secured by the rearward curving of the teeth at their outer ends. With this construction the pull on the hair exerted by the teeth of the picker drum tends to carry the hair inward along the curved teeth and the teeth maintain their hold upon the hair for a materially longer time than would be the case if the teeth were straight. At the same time the teeth shed or cast off the hair during the continued rotation of the cylinder without danger of injury thereto. It is also important that the rapidly traveling teeth of the picker drum should not put sufficient strain or pull upon the strands of hair to break or injure the same, but, on the contrary, should be of such a character that they will cast off or release the hair before undue strain is put thereon. This action of the picking teeth is insured by providing the picker drum with substantially straight radially extending teeth. This form of teeth will pick out and carry forward strands of hair held by the retarding cylinders in case such hairs do not offer undue resistance to separation. Any undue strain upon the hair engaged by the teeth of the picker drum will, however, cause the hairs to slide off the ends of the teeth and consequently the hairs

will be released from the picking teeth before sufficient strain is put thereon to injure or break them. In order to further minimize the danger of injury to the hair the teeth on the picker drum and retarding cylinders are spaced comparatively far apart longitudinally of the drum and cylinders and the succeeding longitudinal rows of teeth are staggered. The teeth are also so arranged that the circumferential rows of teeth on the drum pass substantially midway between the circumferential rows of teeth on the retarding cylinders. Since successive longitudinal rows of teeth are staggered, this causes the teeth in the drum in passing between two adjacent teeth on a retarding cylinder to pass close to one of the teeth and a considerable distance from the other teeth. This arrangement results in an effective and rapid picking of the hair without danger of injury thereto. The relative arrangement of the teeth on the drum and retarding cylinders is illustrated in Fig. 3. As here shown, the drum teeth 5 shown in full lines, pass close to the left-hand side of the retarding cylinder teeth 6 shown in full lines and close to the right-hand side of the teeth 6 in the succeeding row, shown in dotted lines. The drum teeth 5 in the next succeeding longitudinal row of teeth shown in dotted lines pass close to the right-hand side of the retarding cylinder teeth 6, shown in full lines, and close to the left-hand side of the retarding cylinder teeth 6, shown in dotted lines.

In the operation of the machine the hair, which may be in the "rope", is slowly fed forward by the cylinders 2 and 7 and is picked and carried forward by the teeth of the picker drum 1 and delivered to the teeth of the retarding cylinder 3. Here the masses of hair which have not been picked out and loosened by the picker teeth are held and retarded while being acted upon by the teeth of the picker, the hair being further picked and loosened and carried forward and delivered to the teeth of the retarding cylinder 4. Here the masses of hair are again retarded and held while the picking and loosening of the hairs is completed by the rapidly revolving picker drum. The picked hair is delivered at the left-hand side of the picker drum. Any hair which is carried up on the teeth of the slowly revolving retarding cylinders is knocked off and delivered on to the picker drum by the wings 8 of the rapidly revolving strippers 9, one of which cooperates with each of the retarding cylinders.

The retarding cylinders and strippers are mounted in bearings 11 and 12 respectively, which may be adjusted radially to bring the cylinders and strippers into proper relation with the picker drum and to each other. The retarding cylinders 3 and 4 are driven through a sprocket chain 13 passing over

sprocket wheels on the ends of the cylinder and over a small sprocket wheel 14. The sprocket wheel 14 is connected with a large gear 15 which is engaged and driven by a pinion 16 on the drum shaft 17. The feeding cylinders 2 and 7 are connected by gears 18 and are slowly driven through a sprocket chain 19 passing over a sprocket wheel 20 on the end of the shaft which carries the cylinder 2, and over a small sprocket wheel 21 secured to the shaft of the cylinder 4. The strippers are driven at a rapid speed by a belt 22 passing over pulleys on the end of the stripper shaft, over a pulley 23 on the drum shaft, and about a tightening pulley 24.

While it is preferred to employ the specific construction and arrangement of parts shown and described, it may be understood that this construction and arrangement is not material except so far as it is set forth in the claims, and may be varied without departing from the invention.

Having set forth the nature and object of the invention and specifically described one form of the machine in which it may be embodied, what I claim is:

1. A hair picking machine having in combination, a picking drum provided with substantially straight widely-spaced radial teeth, means for feeding the hair to said cylinder, a series of retarding cylinders arranged at intervals around the drum and provided with spaced rigid teeth in mesh with the teeth of the drum and having their extremities curved rearwardly, a rotating device at the ascending side of each retarding cylinder adapted to knock back upon the drum any hair that is carried up on the curved teeth, and means for driving the drum at a high speed and the rotary retarding cylinders at a comparatively low speed, substantially as described.

2. A hair picking machine, having in combination, a picker drum provided with substantially straight rigid radial teeth widely spaced, a series of retarding cylinders provided with rigid rearwardly curved teeth in mesh with the teeth of the picker drum, a pair of feeding cylinders provided with similarly curved teeth deeply in mesh with each other, the teeth of one of these feeding cylinders being in mesh with the teeth of the picker drum whereby it is caused to serve also as a retarding cylinder and mechanism for driving the drum at high speed, the retarding cylinders at a comparatively low speed, and the feeding cylinders at a still slower speed.

3. A hair picking machine, having in combination, a picker drum provided with substantially straight rigid radial teeth widely spaced, a series of retarding cylinders provided with rigid rearwardly curved teeth in mesh with the teeth of the picker drum, a pair of feeding cylinders provided with

similarly curved teeth deeply in mesh with each other, the teeth of one of these feeding cylinders being in mesh with the teeth of the picker drum whereby it is caused to serve  
5 also as a retarding cylinder, a stripper co-operating with each retarding cylinder, and mechanism for driving the drum at high

speed, the retarding cylinders at a comparatively low speed, and the feeding cylinders at a still slower speed.

GEORGE M. MORGAN.

Witnesses:

WARREN G. OGDEN,

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,  
Washington, D. C."

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