

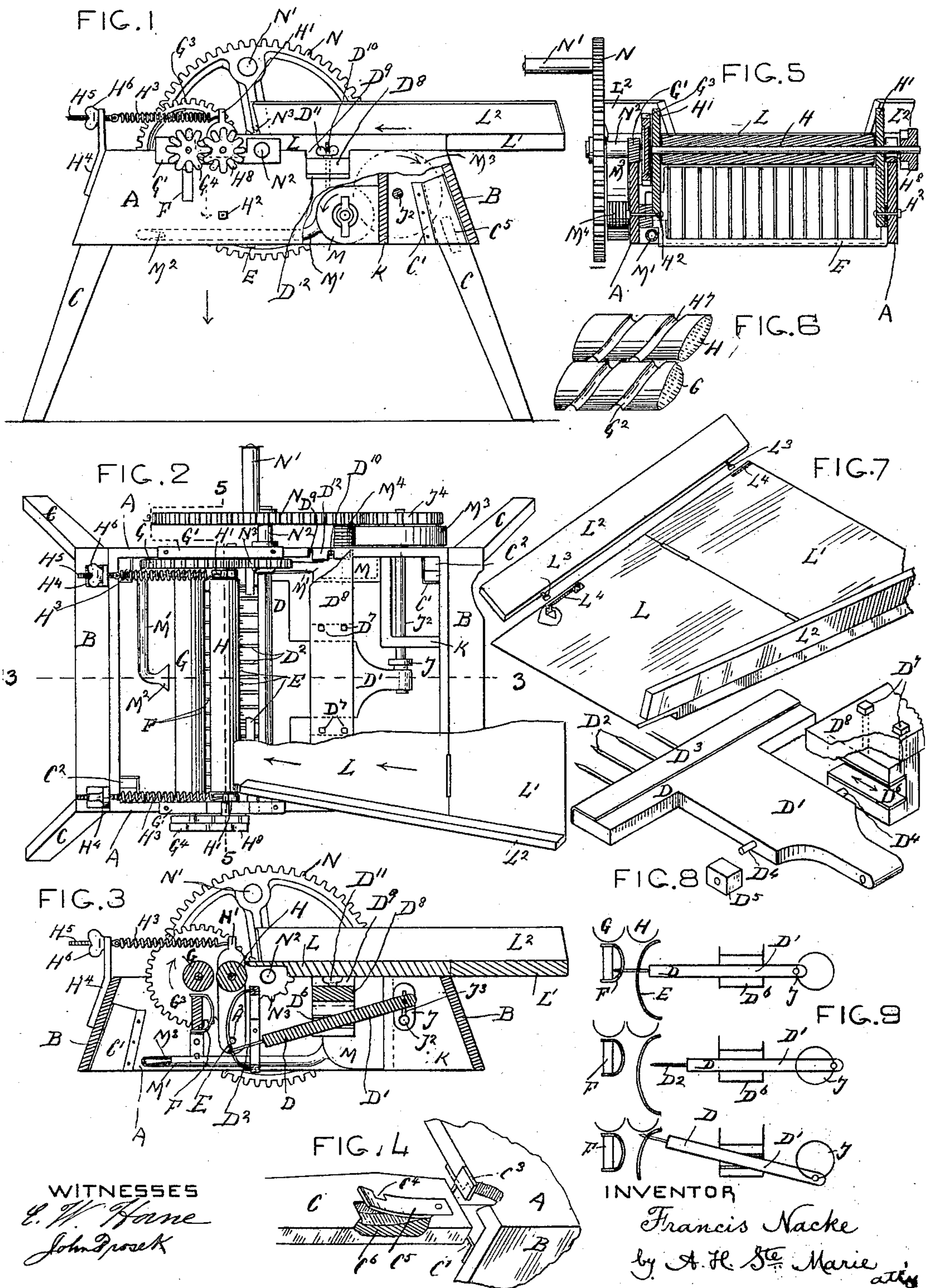
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Patented Feb. 18, 1902.

F. NACKE.
HAIR PICKER.

(Application filed May 7, 1901.)

(No Model.)



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HAIR-PICKER.

SPECIFICATION forming part of Letters Patent No. 693,802, dated February 18, 1902.

Application filed May 7, 1901. Serial No. 59,166. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS NACKE, a citizen of the United States of America, and a resident of the city and county of San Francisco, State of California, have invented a new and useful Hair-Picker, of which the following is a specification.

This is an improved machine for picking hair, fiber, wool, and othersimilar stuffing material, and is particularly well adapted for the use of itinerant upholsterers.

The primary object of the invention is the provision of a portable picker for pulling apart and cleaning hair or other filling material that has become matted and dust-laden.

In the drawings accompanying this specification, Figure 1 is a left side elevation of a simple form of my improved picker, a part of the frame being broken away to reveal within-lying detail. Fig. 2 is a plan of the same, a part of a feeding-table being omitted to expose underlying detail. Fig. 3 is a vertical longitudinal section on the line 3 3 of Fig. 2 looking up or toward the right-hand side of the machine. Fig. 4 is a detailed view in perspective, showing a means for holding in place the disconnectible legs of my picker. Fig. 5 is a vertical cross-section on the line 5 5 of Fig. 2 looking to the right or toward the front or feeding end of the machine. Fig. 6 is a broken perspective view showing detail of feed-rolls. Fig. 7 is a perspective of the feeding-table. Fig. 8 is a perspective of a comb or rake like hair-separator and parts thereto related, and Fig. 9 is a series of diagrams illustrating the operation of said separator.

For the sake of brevity and clearness I shall describe my machine as if it were simply a hair-picker; but let it be understood that no right is waived thereby—that is to say, I claim my invention for all the uses to which it can be put, whether employed to pick hair or fiber or wool or other stuffing.

The mechanism for my machine is mounted on a strong light frame, preferably of a rectangular inverted-hopper shape, comprising sides A and ends B, properly clipped or screwed together. This frame is held at the proper elevation by legs C, which are removably secured within the corners of the frame, as shown, so they will lie snugly each against

a side A and an end B and take up the divergent flare or slant of the corners of the inverted-hopper-like frame, and thus perform to the machine the function of braces, as well as legs. These legs are inserted in keepers or mortises C', partly filled with stationary wedges C², one in each corner of the frame, which holds the said legs laterally rigid when in position. Each leg C is held firmly snapped into position by means of a catch C³, secured to the under side of the frame and engaging a notch C⁴ of a flat spring C⁵, which spring is fastened above a gain or depression C⁶ in the leg and deflected outwardly therefrom. It is of course understood that this spring C⁵ automatically grasps the catch C³ by its notch C⁴ when the leg has been forced into position, and the leg is unsnapped for disjoining by pressing back the said spring into its said gain or depression. (See Fig. 4.) The legs C might be made more firm by joining them rigidly together in groups of two or more by tenoned tie-girths (not shown) should the picker be large-sized and intended mostly for shop use rather than to be frequently moved or carried from place to place.

This machine is not intended to tear or break the hair, but simply to pull it apart, loosen it up, and give it an even regular softness and elasticity and at the same time to leave it in more or less connected sheets for convenience in the even distribution. This I effect by means of a comb or rake D, the teeth of which are made to pass through gratings E F and to draw the hair from feed-rolls C H. The said comb or rake in Figs. 2 and 8 is shown to be somewhat T-shaped, comprising a head D and a lever-shank D', which is its most convenient form, as will presently appear. The teeth D² of this comb are preferably formed of pointed steel rods of the proper size and length, secured rigidly to the head D or to a separable plate D³, as seen in Fig. 8. The position of this comb and its teeth is normally horizontal and transversely of the machine. Although this is my preferred arrangement, I do not confine myself to it, as the comb will do excellent work when otherwise acting. As shown in said Fig. 8, this comb is fulcrumed and journaled somewhat centrally of its lever-shank D' by lateral pivots or bearing-pins D⁴ to and within

suitable apertures of sliding blocks, such as D^5 , one block to each pivot D^4 . These blocks are held by and are free to reciprocate normally horizontal each within a guide D^6 , fastened by bolts D^7 to a cross-beam D^8 . The beam D^8 is adjustable vertically within gains D^9 , Figs. 1, 2, and 3, by bolts D^{10} , with thumb-nuts D^{11} and slitted plates D^{12} straddling said bolts, the plates being withdrawn or placed above the bar when it is desired to lower the comb for long hair and forced in under the bar to raise the comb for short hair. This plate provision is for cheapness and simplicity, and I may adopt other means. The end of the lever-shank D' which is remote from the comb D is pivotally connected with either a simple crank J , Figs. 2, 3, and 9, or a crank-wheel, (not shown,) thus effecting a seesaw reciprocation of the comb. In either case the revolution of the crank or crank-wheel is effected by a shaft J^2 , which is journaled in a bracket K . (Best seen in Fig. 2.) As shown in Fig. 3, the crank J is provided with a slot J^3 , so as to adjust the sweep of the comb by varying the radius or position radially of the pivotal connection.

In the diagrams, Fig. 9, the crank is assumed to be turning to the right. The middle diagram illustrates the extreme withdrawn or idle position of the comb, so that as the crank turns toward the position represented in the lower diagram the comb is elevated and thrust forward, and its points or teeth D^2 pass between the parallel bars of the grating E , which is vertically disposed and curves rearward of the machine, and as the crank revolves to the position indicated in the upper diagram the comb is in its most extended position and the points of its teeth have been thrust through the other grating F , which is oppositely curved and disposed opposite to and rearward of the grate E . By these repeated evolutions of the comb any hair that may be made to pass downward between the gratings E F is pulled down by the teeth, the grates acting to remove the hair from the teeth as the latter become withdrawn to their idle or neutral position and to direct it to the ground or floor or to a receiver below. (Not shown.) This suggests the function of the adjacent convexity of the grates. As will be understood, the rear grate F prevents the hair from being pushed back, while allowing the teeth of the comb to go through it, and the front grate E strips the hair off the teeth of the comb as the latter is retracted. These two gratings are rigidly secured to the sides A of the frame, transversely thereof, as shown.

Now in order to effect the complete severance or pulling asunder of matted or bunched hair resistance must be offered to the action of the comb. This I accomplish by means of rollers or cylinders G H , which are also the feed-rolls to the machine, and by an automatic adjustment of said rollers or cylinders in relation to each other. The remote roller G , or the one to the left in the

three first figures of the drawings, is journaled in boxes G' , that are rigidly secured to or formed in the upper edges of the sides A of the frame. The other roller H is journaled in the upper ends of normally perpendicular arms or levers H' , pivoted to the sides A of the frame at their ends, as at H^2 , Figs. 3 and 5. These arms or levers are free to rock to and from the stationary journaled roller G upon their pivots H^2 . The roller H is held pressed against or toward the roller G by spiral springs H^3 , which are connected by one of their ends to the upper ends of the arms H' , one spring to each arm, and made fast at their other ends to cleats H^4 on the remote end B of the frame, each by means of an eyebolt H^5 and a thumb-nut H^6 . By these—bolt H^5 and nut H^6 —the tension of the springs H^3 is regulated to accommodate varying conditions. By this means the roller H is kept positively, adjustably, and automatically pressed against the roller G or against material that may be fed to them, which tends to hold the material from being drawn down or slid between these feeding and grasping rollers G H by the above-explained action of the comb D . To better hold all parts of the material fed to these rollers, their surfaces may be provided with any suitable devices which will have a retaining action on the material passing through the same; but I preferably form the same with spirally-running striations G^{12} H^7 , Fig. 6, which cross as the rollers turn oppositely one to the other and have the desired action on said material.

It will be seen later that I have geared my machine to get a very rapid motion of the comb D with a comparatively slow revolution of the rollers G H , so that the comb has to seize and descend with what of the descending material the tardy feeding-rollers will present to its teeth. Since the hair must yield to the positive descent of the comb, the former is pulled and loosened apart and rendered open and soft and pliable by the operation. This, however, leaves the hair more or less interlinked, so that the product is a loosely-continuous web of even thickness and elasticity, which is a desirable condition.

The hair is fed to the rollers G H upon a table L , which is clipped or hooked on the upper edges of the sides A of the machine-frame, so that its inner end almost contacts the periphery of the spring-pressed roller H along most of its length, this end of the table being somewhat narrower than the length of the roller, in order to obviate dribbling upon the spindles or journals of either feed-roll G H . This feed-table comprises a bottom board or plate L , with hinged leaf L' adapted to fold upon the same, and fence or side pieces L^2 , detachably connected with both said bottom board and leaf by means of bent or headed pins L^3 , engaging suitably-shaped slots L^4 , as suggested in Fig. 7. I prefer to spread the hair to be picked upon the said table and then gradually feed it to the rollers

with one hand while operating the machine with the other.

During the process of picking the hair I apply a blast of air to the descending loosened material by means of an ordinary fan-blower M, the current force being conveyed by a tube M' to its vent M². This vent is shown in Fig. 2 as an ordinary funnel-shaped exit pointing toward the center of the comb transversely. Although I may employ a more elongated outlet for the air-blast, the form shown is satisfactory, as all foreign matters have been completely dislodged by the impulsive rending effect of the action of the comb-teeth. However, this fan-blower provision is not an essential feature of my invention, and it is not supplied with the cheaper machines.

My hair-picker can be operated by hand or by power, as preferred. As shown it is run by means of a large driving-gear N, to the circumference of which a hand-crank N' is attached. This gear N is keyed to an end of a main driving-shaft N², which is journaled in the sides A of the frame parallel with the feed-rolls G H. A small gear N³ is keyed to this driving-shaft near that side A of the frame which is adjacent to the large gear-wheel N. In mesh with this small gear N³ is a larger or speed-diminishing gear G³, which latter is keyed to a spindle of the non-adjustable feed-roller G, by which means this roller G is made to revolve at a reduced speed. The other or spring-pressed roller H is made to revolve jointly with its mate or sister roller G by equal gears G⁴ H⁸, the teeth of which are staggered or double alternate, as is best seen in Fig. 1. These gears G⁴ H⁸ are preferably at the ends of the rollers that are remote from the before-mentioned gears G³ N³ and keyed each to its respective spindle on the roller to which it belongs. Meshing with the large crank-gear N is a comparatively small or speed-multiplying gear J⁴, which is keyed to that end of the shaft J² that operates the comb D. Between the last-mentioned gear J⁴ and the adjacent side of the frame, on the shaft J², is secured another wheel M³, preferably frictional, which contacts a comparatively small friction-wheel M⁴, that operates the blast-fan M.

For the most convenient operation of the picker the crank-gear N is placed to the right of the machine, so that its revolution is to the right. Now by following the trains of transmission it will be seen that the rollers G H revolve toward each other looking downward, so as to feed the hair to the comb below. The rake-operating gear J⁴ turns to the left looking from the right of the machine and imparts to the comb its upper thrusting, descending, and lower retracting motion above described, and as to the blower M it of course accommodates itself to any direction of revolution.

In conclusion, as to the relative speeds of the various parts in this transmission of mo-

tion the comb acts quite rapidly, as before said, as compared with the feeding propensity of the rollers G H, and the fan M revolves at consistently rapid speed.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. A picker of the kind described, comprising means for feeding the material to be picked, fixed grates on each side of the line of feed of said material between which said material may pass from said mechanism, a comb adapted to be thrust through said grates and any material passing therebetween, and means for operating the comb, substantially as described.

2. A picker of the kind described, comprising feeding means for the material to be picked, fixed grates located one on each side of the line of feed, a comb adapted to be thrust through said grates and any material passing therebetween, and means for operating the comb, substantially as described.

3. A picker of the kind described, comprising feed-rolls for the material to be picked, means for operating the rolls, fixed grates located adjacent each side the line of feed from the rolls, a reciprocating oscillating comb adapted to be thrust through said grates, and means for operating the comb, substantially as described.

4. A picker of the kind described, comprising means for feeding the material to be picked, oppositely-disposed grates arranged out of the path of the material discharged from the feeding means, a comb mounted independently of the grates adapted to be thrust through both grates and any material therebetween, and means for operating the comb, substantially as described.

5. A picker of the kind described, comprising rollers adjustable in relation to each other and arranged to feed the material to be picked, means for operating said rollers, oppositely-curved grate-bars between which the fed material passes, an oscillatory reciprocating comb moved at greater speed than said rollers and acting to pull the material therefrom through said grate-bars, and means for operating the comb, substantially as described.

6. A picker of the kind described, comprising self-adjusting feed-rolls for the material to be picked, means for operating the rolls, oppositely-disposed separated grates guiding the material therefrom, a pivotally-mounted comb adapted to be thrust into said material through said grates, guides along which the pivots of said comb can slide, and means for operating the comb, substantially as described.

7. A picker of the kind described, comprising feed mechanism, grates between which the material to be picked may pass from said mechanism, a comb adapted to act in conjunction with the grates upon the material fed therethrough, actuating means for the comb,

and means for adjusting said actuating means to vary the sweep of the comb, substantially as described.

8. A picker of the kind described, comprising feed mechanism for the material to be picked, grates between which said material is fed by said mechanism, an oscillatory comb adapted to be reciprocated through said grates, adjustable guides for said comb to accommodate it to the length of the material to be operated upon by the machine, and means for operating the comb, substantially as described.

9. A picker of the kind described, comprising feeding means, grates between which the material to be picked passes from said feeding means, a comb adapted to operate on said material through the grates, means for operating the comb, a fan, means for operating the fan, and a tube M' operating to direct a blast of air from the fan onto the picked material as it leaves the grates, substantially as described.

10. A picker of the kind described, comprising feeding means, oppositely-disposed curved grate-bars adjacent said feeding means, a comb adapted to be thrust through

the grate-bars, and means for operating the comb, substantially as described.

11. A picker of the kind described, comprising rotary feeding means for material to be operated upon, oppositely-disposed curved grate-bars adjacent said feeding means, a comb adapted to be thrust through the grate-bars, and means for operating the comb to pull the material away from the feeding means, substantially as and for the purpose described.

12. A picker of the kind described, comprising feeding means for the material to be picked, a grate adjacent the line of feed from said feeding means but out of the path thereof, a comb adapted to be thrust through said grate, the teeth of the comb extending in the same general direction as the body thereof, and means for operating the comb, substantially as described.

Signed at San Francisco this 27th day of April, 1901.

FRANCIS NACKE. [L. S.]

Witnesses:

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