F. D. MASON.

BEAD TRIMMER.

APPLICATION FILED MAR. 9, 1916.

1,197,522.

Patented Sept. 5, 1916.

2 SHEETS—SHEET 1.

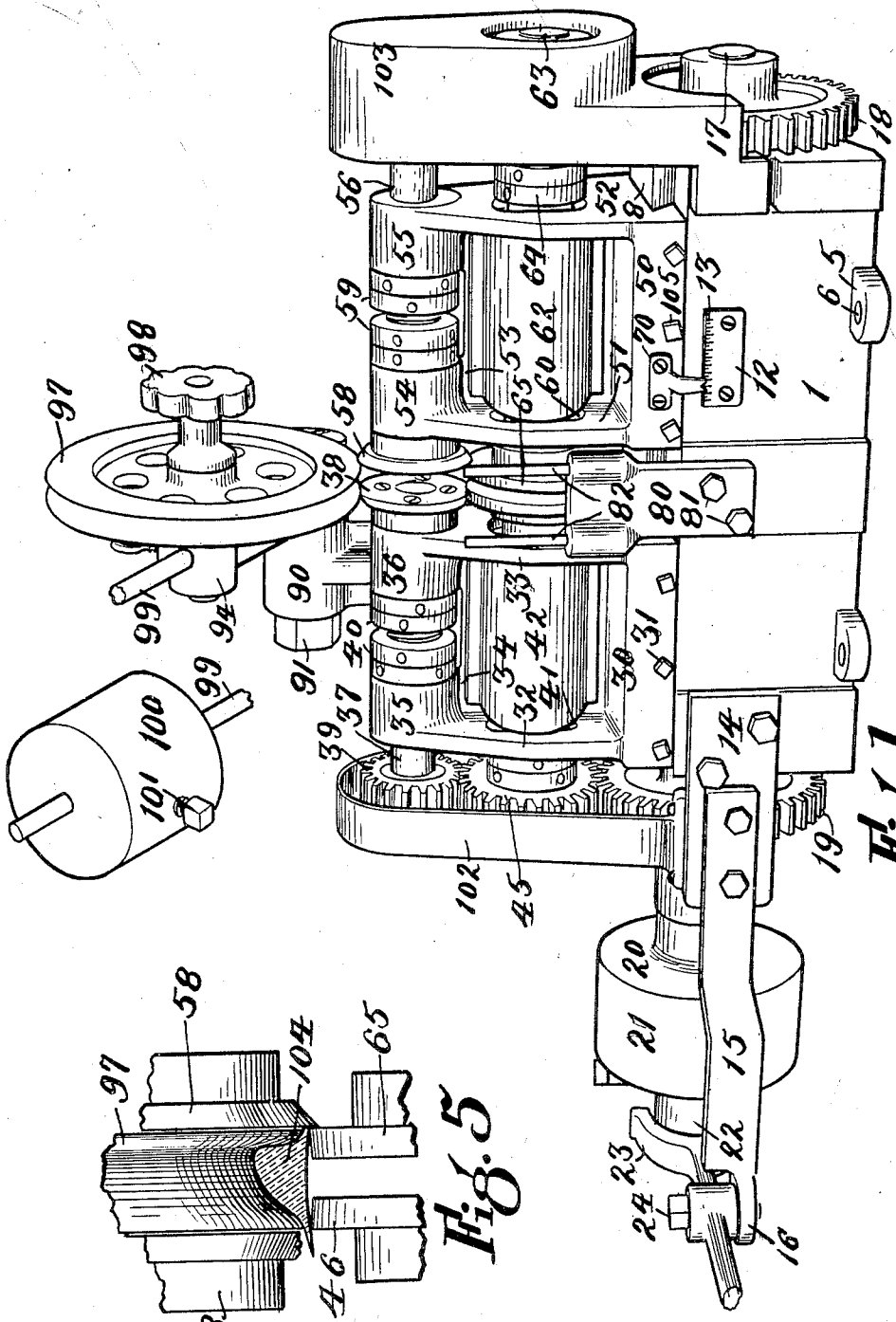


Fig. 1

Fig. 5

Inventor

Freeman D. Mason,

By C. E. Humphrey

Attorney

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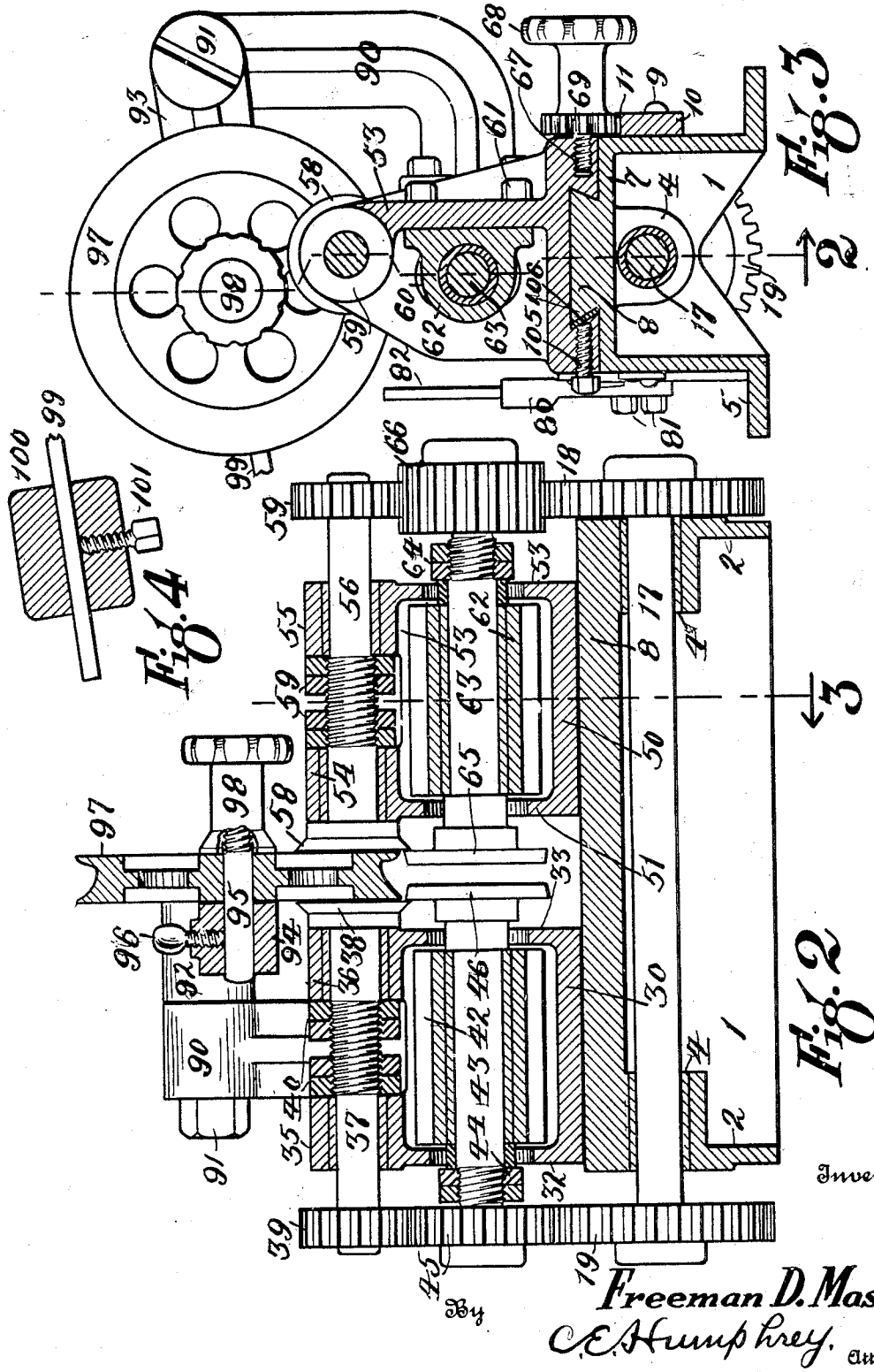


Fig. 3

Fig. 4

Fig. 2

Inventor

Freeman D. Mason,

By C. E. Humphrey.

Attorney

UNITED STATES PATENT OFFICE.

FREEMAN D. MASON, OF AKRON, OHIO, ASSIGNOR TO THE BRIDGEWATER MACHINE COMPANY, OF AKRON, OHIO, A CORPORATION OF OHIO.

BEAD-TRIMMER.

1,197,522. Specification of Letters Patent. Patented Sept. 5, 1916.

Application filed March 9, 1916. Serial No. 83,047.

To all whom it may concern:

Be it known that I, FREEMAN D. MASON, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented new and useful Improvements in Bead-Trimmers, of which the following is a specification.

This invention relates to trimming the edges of articles, such as the cores for beads used in pneumatic tires, to free them from projecting fins and other irregularities existing along their lateral portions, and the object of the invention is to provide a machine which will quickly and rapidly trim a continuous bead core or can be utilized for trimming a bead core of annular formation.

A further object of the invention is to provide a simple and effective machine for the purpose described which will rapidly and quickly trim the fins or other irregularities on a bead core and which can be changed so as to adapt the same for trimming beads of different sizes, and further equipped with mechanism for holding the beads in positive engagement with the trimming knives during the trimming operation.

With the foregoing and other objects in view, the invention consists in the novel construction, combination and arrangement of parts constituting the invention to be hereinafter specifically described and illustrated in the accompanying drawings which form a part hereof wherein is shown the preferred embodiment of the invention, but it is to be understood that changes, variations and modifications can be resorted to which come within the scope of the matter hereinafter claimed.

In the drawings in which similar reference numerals indicate like parts in the different figures, Figure 1 is a perspective view of a device embodying this invention; Fig. 2 is a longitudinal central sectional view of the device shown in Fig. 1 taken on line 2 of Fig. 3; Fig. 3 is a transverse section of the device shown in Fig. 1 taken approximately on line 3 of Fig. 2; and, Fig. 4 is a sectional view of a weight employed, and Fig. 5 is an enlarged detail in side elevation of the working portion of the trimming rolls upon an enlarged scale.

The device comprises a hollow bed 1 provided with end walls 2 and 3, both provided with tube-like apertures in which are mounted bearings 4. The lower portion of the bed is open and the lateral walls thereof are provided with projecting lugs 5 provided with apertures 6 to receive holding means for securing the device to a firm foundation. The upper wall 7 of the bed is provided with a longitudinal, upwardly-projecting, dovetailed ridge constituting a way 8. Secured by holding means 9 to the rear lateral face of the bed 1 is a longitudinally-extending bar 10 (see Fig. 3) the upper face of which is provided with rack teeth 11. Secured to the front lateral wall of the bed is a plate 12 bearing graduation marks 13. Also secured to the front wall of the bed is a plate 14 to which is secured a bracket 15 projecting longitudinally to the left of the bed in Fig. 1. The outer free end of the bracket 15 terminates in an apertured lug 16.

Mounted in the bearings 4 in the bed 1 is a driving shaft 17 bearing at its right end a spur gear 18 and outside of the other end of the bed, a spur gear 19. Outside of the gear 19 is a loose member 20 of a clutch consisting of a belt pulley 21. Mounted on the shaft beyond the belt pulley 21 is the fixed member 22 of a friction clutch which is shiftable longitudinally of the shaft 17 by means of a clutch lever 23 fulcrumed on a pin 24 mounted in the aperture in the lug 16. The clutch just described can be of any preferred construction but the fixed member 22 is preferably splined on the shaft 17 and the loose belt-pulley 21 is adapted to receive a belt so that when the clutch member 22 is thrown into clutching engagement with the member 21, rotation of the shaft 17 ensues.

Mounted on the upper wall 7 of the bed 1 is a fixed housing comprising a base member 30, the under face of which is provided with a dove-tailed groove to receive the projecting ridge 8 of the member 1 and which is held normally fixed in position by clamping screws 31 engaging the ridge 8. Extending upwardly from the base 30 are end members 32 and 33 similarly constructed and united by a lateral wall 34; said ends further terminate in bearings 35 and 36 in alinement with each other. Mounted in these bearings 35 and 36 is a counter-shaft 37 bearing at its inner end a circular, rotatable trimming-tool 38 and at its opposite end a spur-gear 39. The shaft 37 is held against

longitudinal movement through the medium of clamping collars 40. The end members 32 and 33 are provided with alined openings 41 and in alinement therewith and secured to the lateral wall 34 is a bearing 42, in which is mounted a shaft 43, held from longitudinal movement by means of collars 44 and which bears at one end a spur-gear 45 intermeshing with the gears 19 and 39. The opposite end of the shaft 43 bears a circular rotatable trimming tool 46 of a proper size and configuration to co-act with the trimming-tool 38. The housing comprising the base 30 and the bearings for the shafts carrying the trimming tools 38 and 46, ordinarily is stationary. Also mounted on the upper wall 7 of the bed 1 is a housing having a base 50 provided on its under face with a dove-tailed groove to receive the dove-tailed ridge of the member 1 and is arranged to be shifted longitudinally of said ridge toward and away from the mechanism described in the preceding paragraph. Extending upwardly from the base 50 are end members 51 and 52 united by an upright lateral wall 53 and the upper portions of the members 51 and 52 are provided with alined bearings 54 and 55 respectively in which is rotatably mounted a shaft 56 held against longitudinal movement by collars 59. The inner end of the shaft 56 bears a rotatable trimming tool 58 and the opposite end is provided with a spur gear 59. The end members 51 and 52 are provided with alined openings 60 and secured to the face of the upright transverse wall 53 by means of holding members 61 in a bearing 62 for a longitudinal shaft 63 in axial alinement with the shaft 43. This shaft 63 is held from longitudinal movement through the median of collars 64 and the shaft is provided at its inner end with a trimming tool 65 coöperating with the trimming tool 58. The opposite end of the shaft 63 is provided with a wide spur-gear 66 arranged to intermesh with the gears 18 and 59. Secured to the rear face of the base 50 of the shiftable housing is a stub-shaft 67 on which is rotatably mounted a hand wheel 68 provided with spur-teeth 69 adapted to intermesh with the rack teeth 11 on the bar 10. The front face of the base 50 is provided with an indicating finger 70 arranged to coöperate with the graduation marks 13 on the plate 12 for indicating the longitudinal position of the shiftable housing of which the portion 50 forms the base.

Secured to the central portion of the front lateral wall of the bed 1 is an upright bracket 80 held in position by holding means 81 and from which extend upwardly a pair of pins 82 constituting guiding means for a purpose to be later described.

Secured to the rear face of the upright wall 34 is a bracket 90 provided with a transversely-extending pin 91 on which is pivotally mounted a sleeve 92 bearing an oscillating arm 93. The arm 93 bears a collar 94 in which is mounted a pin 95 held in position by some holding means as a set-screw 96. Rotatably mounted on the pin 95 is a combined guiding and pressure-exerting roller 97 held in position by a hand-nut 98 threaded onto the outer end of the pin 95. Extending from the hub 94 on the arm 93 is a rod 99 bearing a counterweight 100 held in a determinate position through the medium of a set screw 101.

I customarily inclose the gears 19, 45 and 39 in a protecting cover 102 and the gears 18, 66 and 59 in a similar covering 103.

The arm 93 which bears the roller 97 is capable of being oscillated upwardly and downwardly on the pivot pin 91 in the bracket 90 and the roller 97 is so positioned that one of the faces thereof will just clear the inner front face of the trimming tool 38 and the longitudinal position of the shiftable housing comprising the base 50 and trimming tool 58 will be so adjusted as to nicely clear the opposite face of this roller 97. By this arrangement the article to be trimmed, such, for instance, as a bead core, in passing over the upper faces of the lower rotary cutting knives 46 and 65 will be held in constant engagement therewith so that the projecting portions of the article to be trimmed will project laterally beyond the outer faces of the members 46 and 65 and will be engaged by the upper trimming tools 38 and 58. The peripheral contour of the roller 97 will be such as to fit the upper face of the article to be trimmed and during the trimming operation the counterweight 100 will hold the roller 97 downwardly with sufficient force or pressure to keep the article, whether it be a continuous or an annular one, in engagement with the trimming knives 38, 58, 46 and 65.

In Fig. 5 is shown an enlarged detail of the trimming knives in actual operation in connection with the pressure roll 97 and a portion of a bead core 104. It will be apparent that when it is desired to trim articles varying in size or width, the shiftable housing comprising the base 50 and its connected parts are adjusted to the new requirements, and a pressure roll 97 is then mounted on the pin 95 provided with an appropriate peripheral contour to co-act with the article to be trimmed. The shiftable housing is temporarily locked in position by a set-screw 105 which engages a gib 106 inserted in the channel in the dove-tailed groove in the base 50 and when it is desired to shift this member the set screw 105 is released and the hand nut 68 given an appropriate revolution which causes the spur teeth 69 to co-act with the rack-teeth 11 thereby shifting the member a distance

which is indicated by the finger 70 on the graduated marks 13. When in proper position the set screw 105 is tightened up. During the feeding of the article to the trimming knives the pins 82 provide means for guiding the same and keep it from running laterally out of its course.

I claim:—

1. A machine of the class designated comprising a bed, a normally fixed housing mounted thereon, a pair of shafts mounted in said housing, co-acting rotary trimming tools mounted on said shaft, a shiftable housing mounted on said bed, a pair of shafts mounted in said latter housing, the axis of each of which is in alinement with the axis of one of the shafts on the fixed housing, co-acting rotary trimming tools mounted on said shafts, and means for simultaneously revolving all of said knives.

2. A machine of the class designated comprising a bed, a normally fixed housing mounted thereon, a pair of shafts mounted in said housing, co-acting rotary trimming tools mounted on said shafts, a shiftable housing mounted on said bed, a pair of shafts mounted in said latter housing, the axis of each of which is in alinement with the axis of one of the shafts on the fixed housing, co-acting rotary trimming tools mounted on said shafts, means for simultaneously revolving all of said knives, and means for moving the shiftable housing longitudinally of the axis of said shafts toward and away from said first housing.

3. A machine of the class designated comprising a bed, a normally fixed housing mounted thereon, a pair of shafts mounted in said housing, co-acting rotary trimming tools mounted on said shafts, a shiftable housing mounted on said bed, a pair of shafts mounted in said latter housing the axis of each of which is in alinement with the axis of one of the shafts on the fixed housing, co-acting rotary trimming tools mounted on said shafts, means for simultaneously revolving all of said knives, and a pressure roll engaging an article being trimmed near the co-acting portions of said knives.

4. A machine of the class designated comprising a bed, a normally fixed housing mounted thereon, a pair of shafts mounted in said housing, co-acting rotary trimming tools mounted on said shafts, a shiftable housing mounted on said bed, a pair of shafts mounted in said latter housing the axis of each of which is in alinement with the axis of one of the shafts on the fixed housing, co-acting rotary trimming tools mounted on said shafts, means for simultaneously revolving all of said knives, a pressure roll engaging an article being trimmed near the co-acting portions of said knives, and means for moving said shiftable housing longitudinally of the axes of said shafts toward and away from said first housing.

5. A machine of the class described comprising a bed, a driving shaft mounted therein, a pair of gears mounted on said shaft, a normally fixed housing mounted on said bed, a pair of shafts mounted in said housing, co-acting rotary trimming tools mounted on said shafts, intermeshing gears mounted on said shafts, one of which is adapted to intermesh with a gear on said first shaft, a shiftable housing mounted on said housing, a pair of shafts mounted in said shiftable housings the axis of each of which is in alinement with the axis of one of the shafts on the fixed housing, co-acting rotary trimming tools mounted on said shafts, gears mounted on said shafts adapted to intermesh and one of said gears adapted to intermesh with one of the gears on said first shaft, whereby all of said cutting tools revolve simultaneously.

6. A machine of the class described comprising a bed, a driving shaft mounted therein, a pair of gears mounted on said shaft, a normally fixed housing mounted on said bed, a pair of shafts mounted in said housing, coacting rotary trimming tools mounted on said shafts, intermeshing gears mounted on said shafts one of which is adapted to intermesh with a gear on said first shaft, a shiftable housing mounted on said housing, a pair of shafts mounted in said shiftable housing the axis of each of which is in alinement with the axis of one of the shafts on the fixed housing, co-acting rotary trimming tools mounted on said shafts, gears mounted on said shafts adapted to intermesh and one of said gears adapted to intermesh with one of the gears on said first shaft, whereby all of said cutting tools revolve simultaneously, and means for moving the shiftable housing longitudinally of the axes of said shafts toward and away from said first housing.

7. A machine of the class described comprising a bed, a driving shaft mounted therein, a pair of gears mounted on said shaft, a normally fixed housing mounted on said bed, a pair of shafts mounted in said housing, co-acting rotary trimming tools mounted on said shafts, intermeshing gears mounted on said shafts one of which is adapted to intermesh with a gear on said first shaft, a shiftable housing mounted on said housing, a pair of shafts mounted in said shiftable housing the axis of each of which is in alinement with the axis of one of the shafts on the fixed housing, co-acting rotary trimming tools mounted on said shafts, gears mounted on said shafts adapted to intermesh and one of said gears adapted to intermesh with one of the gears on said first shaft, whereby all of said cutting tools

revolve simultaneously, means for moving the shiftable housing longitudinally of the axes of said shafts toward and away from said first housing, and a pressure roll engaging an article being trimmed near the position of the co-acting portions of said knives during the trimming operation.

8. A machine of the class described comprising a bed, a driving shaft mounted therein, a pair of gears mounted on said shaft, a normally fixed housing mounted on said bed, a pair of shafts mounted in said housing, coacting rotary trimming tools mounted on said shafts, intermeshing gears mounted on said shafts, one of which is adapted to receive motion from one of the gears on the shaft mounted in said bed, a shiftable housing mounted on said bed, a pair of shafts mounted in said shiftable housing, the axis of each of which is in alinement with the axis of one of the shafts on the fixed housing, coacting rotary trimming tools mounted on the shafts in the said shiftable housing, gears mounted on said latter shafts adapted to intermesh and one of said gears adapted to intermesh with one of the gears on the shaft in said bed, whereby all of said trimming tools revolve simultaneously, means for moving the shiftable housing longitudinally of the axes of said shafts toward and away from said fixed housing, a pressure roll engaging an article while being trimmed and positioned near the coacting portions of said trimming knives during the trimming operation, and means for moving said shiftable housing.

9. A machine of the class designated comprising a pair of independently-mounted revoluble trimming tools the peripheral faces of which constitute a supporting instrumentality for the passage thereover of an article to be trimmed and a pair of coacting trimming tools each member of which is adapted to co-act with one of the members of the first pair for trimming said article, each of said latter trimming tools being independently mounted and all of said tools being simultaneously revoluble.

10. A machine of the class designated comprising a pair of independently-mounted revoluble trimming tools the peripheral faces of which constitute a supporting instrumentality for the passage thereover of an article to be trimmed and a pair of coacting trimming tools each member of which is adapted to co-act with one of the members of the first pair for trimming said article, each of said latter trimming tools being independently mounted and all of said tools being simultaneously revoluble, and means for shifting one member of each pair of trimming tools in unison toward and away from the oppositely-disposed members of the other pair of trimming tools.

11. A machine of the class designated comprising a bed, a normally fixed housing mounted thereon, a pair of shafts mounted in said housing, co-acting rotary trimming tools mounted on said shafts, a shiftable housing mounted on said bed, a pair of shafts mounted in said latter housing, coacting rotary trimming tools mounted on said shafts, means for simultaneously revolving all of said knives, interengaging means carried by said bed and shiftable housing, one of which is revoluble for shifting the position of said shiftable housing.

12. A machine of the class designated comprising a bed, a normally fixed housing mounted thereon, a pair of shafts mounted in said housing, co-acting rotary trimming tools mounted on said shafts, a shiftable housing mounted on said bed, a pair of shafts mounted in said latter housing, coacting rotary trimming tools mounted on said shafts, means for simultaneously revolving all of said knives, indicating mechanism carried by said bed and shiftable housing for indicating the position of the latter.

13. A machine of the class designated comprising a bed, a normally fixed housing mounted thereon, a pair of shafts mounted in said housing, co-acting rotary trimming tools mounted on said shafts, a shiftable housing mounted on said bed, a pair of shafts mounted in said latter housing, coacting rotary trimming tools mounted on said shafts, means for simultaneously revolving all of said knives, and means for moving said shiftable housing, said means comprising rack-teeth carried by one element, and a spur-pinion engaging with the teeth on said rack carried by the other member and adapted when rotated to shift said housing.

In testimony whereof I have hereunto set my hand.

FREEMAN D. MASON.