

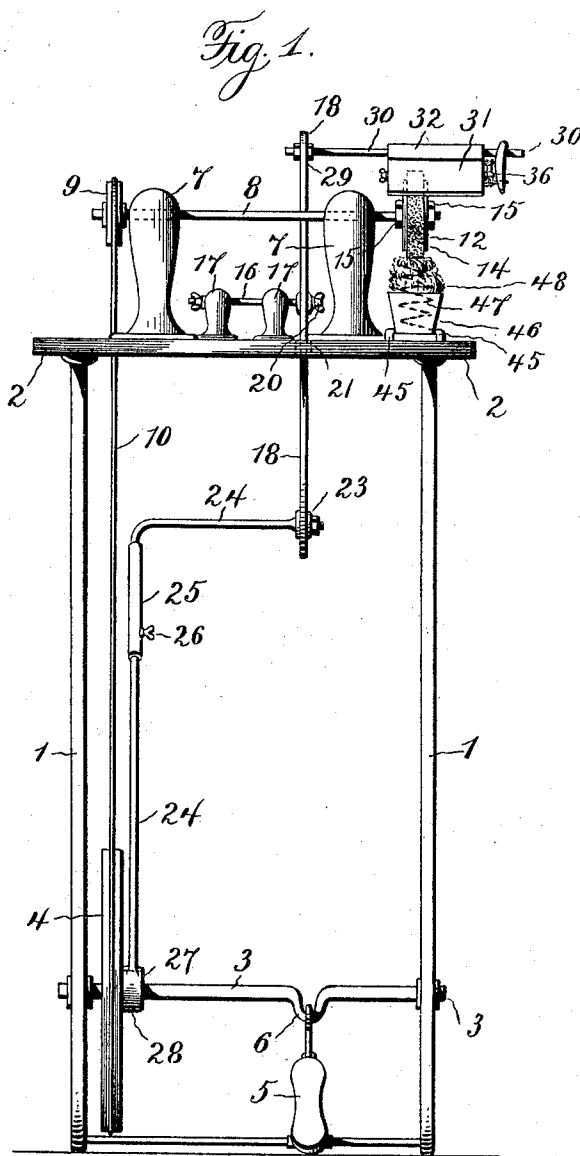
(No Model.)

3 Sheets—Sheet 1.

H. FISCHER & A. RICKENBACHER.
MACHINE FOR CONCAVING RAZORS.

No. 537,411.

Patented Apr. 9, 1895.



Witnesses:
James Hutchinson.
G. W. Rea.

Inventors.
Hugo Fischer & Adam Rickenbacher,
By James L. Norris
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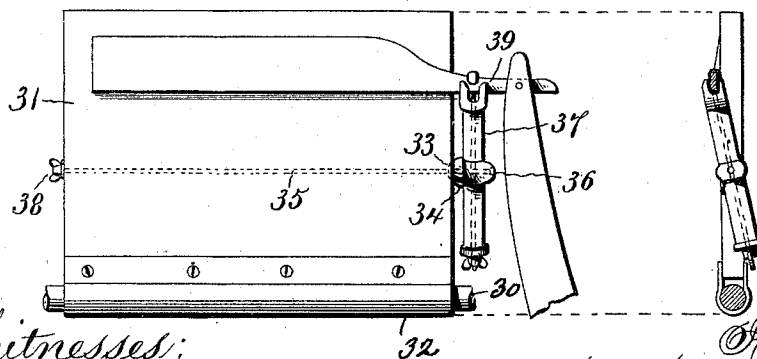
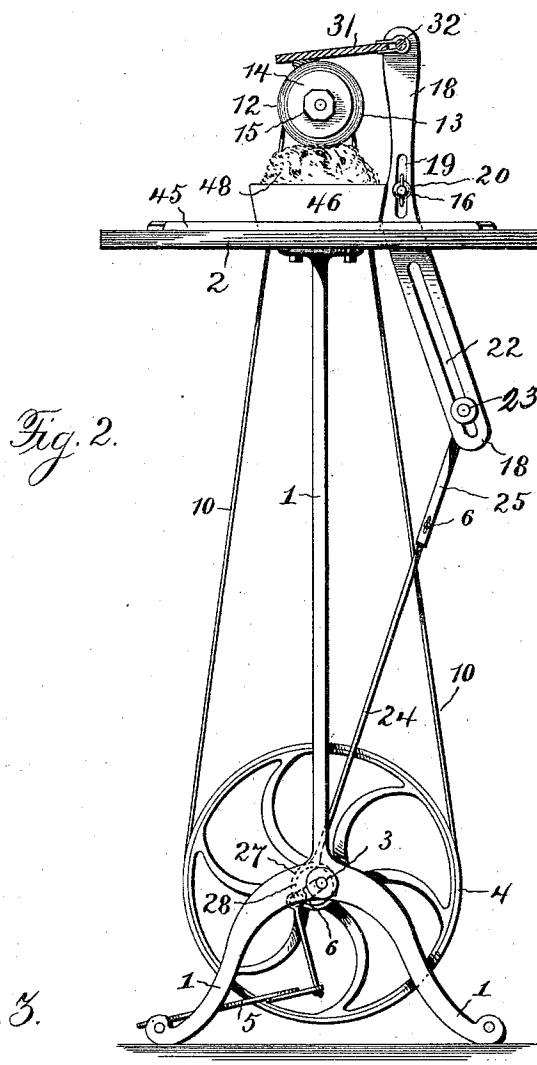


Fig. 4.

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Fig. 5.

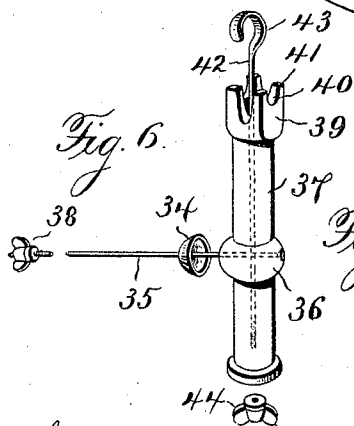
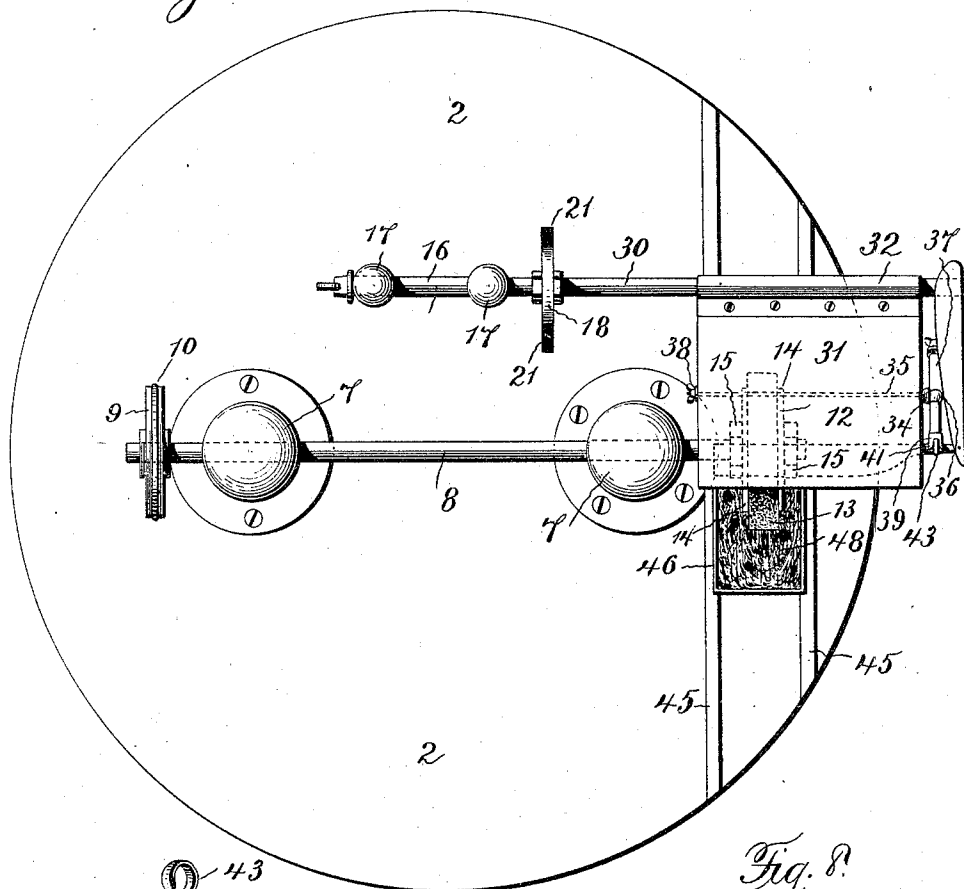


Fig. 7.

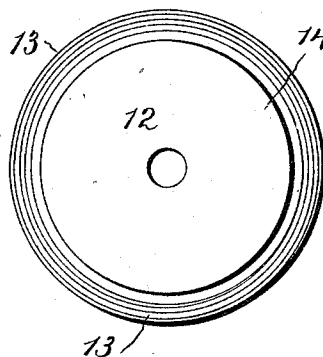
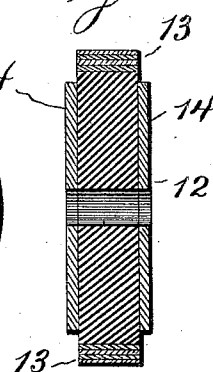


Fig. 8.



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UNITED STATES PATENT OFFICE.

HUGO FISCHER AND ADAM RICKENBACHER, OF LYNCHBURG, VIRGINIA.

MACHINE FOR CONCAVING RAZORS.

SPECIFICATION forming part of Letters Patent No. 537,411, dated April 9, 1895.

Application filed November 8, 1894. Serial No. 528,233. (No model.)

To all whom it may concern:

Be it known that we, HUGO FISCHER and ADAM RICKENBACHER, citizens of the United States, residing at Lynchburg, in the county of Campbell and State of Virginia, have invented new and useful Improvements in Machines for Concaiving Razors, of which the following is a specification.

Our invention relates to machines for concaving razors, our purpose being to provide mechanism having a simple construction and organization, of parts whereby a razor may be quickly and accurately ground, by a barber, or by any person of ordinary experience and expertness, without requiring skilled labor and expensive mechanism, which involve the necessity of sending the razor away and incurring a considerable expenditure of time and money.

It is our purpose, also, to provide simple and novel means for locking and holding the razor in position upon the grinding-wheel and for vibrating the same uniformly in order to form the concavity desired; the vibratory movement being capable of diminution, or enlargement to suit the requirements of each case.

It is our further purpose to provide novel means for holding the razor upon the face of the grinding wheel in such manner that it may be ground to a true edge without danger of chipping the wheel, or mutilating the edge of the blade.

The invention consists, to the several ends specified, of the novel features of construction and of the novel parts and combinations of parts hereinafter fully described and then particularly pointed out in the claims.

To enable others skilled in the art to which said invention pertains to fully understand and to make, construct, and use the same, we will now describe said invention in detail, reference being had, for such purpose, to the accompanying drawings, in which—

Figure 1 is a front elevation of a machine in which our invention is incorporated. Fig. 2 is a side elevation of the same. Fig. 3 is a plan view of the plate upon which the razor is mounted for grinding. Fig. 4 is an edge elevation of the same, the point of view being upon the right hand of Fig. 3. Fig. 5 is a plan view of the machine. Fig. 6 is a detail view

of the bolt and clamping devices by which the razor is held during the process of grinding. Fig. 7 is a side elevation of the grinding wheel. Fig. 8 is a diametrical section of the same.

The reference numeral 1, in said drawings, indicates the frame of the machine, which supports a horizontal work-table 2 and a power-shaft 3, arranged beneath the table, said shaft carrying a belt-pulley 4, which may, also, serve as a fly-wheel. The shaft may be driven by any suitable power, but may also be operated by any ordinary form of treadle 5, having a pitman connection with a crank 6.

Upon the table 2 are arranged two upright brackets 7, substantially similar to each other, and in these brackets is supported a horizontal shaft 8, having a small pulley 9, which is geared to the driving pulley 4 by a belt 10. This pulley is usually mounted upon the left hand end of the shaft, as shown in the drawings, and upon the other, or right hand end, is the grinding-wheel 12, the peculiar construction of which we will now explain. The body of the wheel is formed of rubber which is vulcanized in part, or not at all, so as to leave its elasticity unimpaired. Upon the periphery of this body of rubber is wound a strip of emery-cloth 13, several layers deep, the loose ends being fastened by glue, or cement. This strip may be wound upon any suitable disk, or form, other than the rubber body of the wheel, upon which it is placed when required for use. The wheel is then placed upon the shaft 8, between washers 14, which are pressed against the parallel faces of the wheel in any suitable manner, as, for example, by nuts 15. This pressure expands the rubber against the winding of emery cloth, drawing the latter perfectly smooth and causing it to adhere with great tenacity to the rubber. It is evident that by simply releasing the rubber from the strain imposed upon it, the winding of emery cloth may be readily removed and a new one substituted.

Upon the table 2, at a suitable point with relation to the shaft 8, is a short shaft 16, substantially parallel with it and supported in any suitable bearings 17. This shaft serves as a pivotal axis for a vibratory arm 18, provided with a slot 19, to receive the end of the shaft 16, to which it is clamped by a thumb-screw 20. The point of pivotal vibration may

be shifted within the limits of the length of the slot 19, thereby giving a greater or less length to said arm from the point of pivotal support to its upper end. Below said point 5 the arm passes through a slot 21 in the table, said slot lying at right angles to the two shafts 8 and 16. The lower end of the arm, which lies in a vertical plane parallel with the plane of rotation of the driving-pulley 4, is provided 10 with a longitudinal slot 22, in which lies a pivotal coupling 23, capable of adjustment in said slot. This coupling is connected to a rod 24, which receives a telescoping extension-rod 25, fastened by a set-screw 26 at any point 15 of adjustment. The lower end of said rod is connected to a ring 27 within which lies an ordinary eccentric 28, mounted on the power-shaft.

Upon the upper end of the arm 18 is a seat 20 29 for a mandrel 30, which lies in substantial parallelism with the shaft 8 and is rigidly fixed in the seat 29. Upon this mandrel is mounted a flat plate 31, of wood or other suitable material and having a circular, or cylindrical sleeve, or opening, 32, which receives 25 the mandrel 30 upon which said plate may be moved and turned. Upon the edge of this plate next the free end of the mandrel is a seat 33 adapted to receive a hemispherical bearing 34, through which passes centrally a rod, or strong wire 35, having at its end a keeper, or yoke 36, which lies in the bearing 34. The keeper, or yoke, surrounds a bolt 37, 30 lying parallel with the edge of the plate, while the rod or wire 35 is at a right angle therewith and extends across the plate parallel with the mandrel, its end projecting through a bearing, or side piece, and receiving a thumb-screw 38, by which the yoke or keeper 40 36 may be drawn into the hemispherical bearing 34. Upon the end of the bolt 37 is a bracket 39, having a central slot 40, on each side of which are forks 41, adapted to receive the shank of the razor blade. A rod 42, lying 45 in a longitudinal recess in the bolt, carries a hook 43 on its end which curves over the shank of the blade lying in the forks 41, against which said hook is drawn by a thumb-screw 44, thereby clamping the razor securely 50 in position with its blade lying against the lower face of the plate 31, the edge of the blade lying adjacent to the free edge of the plate. The arrangement of the parts is such that when the plate 31 is allowed to assume 55 its normal position by gravity, the flat face of the razor will be upon the grinding face of the wheel 12. The machine being set in motion, the wheel will revolve and a limited reciprocating movement will be given at each 60 revolution of the power shaft 3 to the plate 31. The operator who sits, or stands, in front of the machine, guides the plate 31 upon the mandrel 30 by his hand, moving it in such manner as to bring every part of the blade 65 into proper contact with the grinding-wheel.

Upon the face of the table 2 are guide-ribs 45, between which a water reservoir 46 is in-

serted and moved until it lies beneath the wheel 12. In this cup is a light spiral or other form of spring 47, by which a sponge 48 is 70 held with suitable pressure against the grinding wheel thereby keeping the grinding face moist, preventing the razor from heating, and by its constant wiping action keeping the grinding-face always perfectly clean. 75

By the reciprocation of the plate 31, through the action of the arm 18, the concave in the blade of the razor is extended in width and given the required curve, the degree of vibration of the arm being easily adjusted to the 80 width of the blade and the work required by shifting the points of pivotal support for the arm and of pivotal connection of its actuating rod. As the vibration of the arm is uniform in degree and in time, the work can 85 readily be done in an accurate and satisfactory manner without special skill or experience previously acquired.

The mechanism described is not intended for edging razors, but for concaving them. 90 Nevertheless, when the work approaches completion, the edge of the razor will have been ground down until it is extremely fine and it is at this point that one of the advantages of using the plate 31 will be found. Unless the 95 blade is placed flat upon a surface similar to that of the plate 31, and immovably held by a suitable lock, the edge of the razor will catch in the grinding wheel and turn the razor over instantly, the grinding-face being frequently 100 chipped and the thin edge of the blade mutilated thereby.

What we claim is—

1. In a machine for concaving razors, the combination with a shaft carrying the grind- 105 ing wheel, of a vibratory arm mounted and adjustable on a pivotal axis parallel with said shaft, a rod adjustably connected to the lower end of said arm and to an eccentric on the driving-shaft, a plate movable longitudinally 110 and revolubly on a mandrel carried by the upper end of the arm and parallel with the shaft of the grinding wheel, and means for locking the razor blade to the lower face of said plate, substantially as described. 115

2. In a machine for concaving razors, the combination with a grinding-wheel and its shaft, of a vibratory support, a plate movable on said support in parallelism with the shaft, a sliding bolt lying in a keeper upon one side 120 of the plate at a right angle with the shaft, a hook arranged between forked supports on the end of the bolt, and means for clamping the bolt and hook, substantially as described.

3. In a machine for concaving razors, the combination with a grinding-wheel and its shaft, of a flat plate of wood, a vibratory support for said plate upon which the latter is movable in parallelism with said shaft, and means for locking the blade of the razor 130 against the lower face of the said plate, substantially as described.

4. In a machine for concaving razors, the combination with a grinding-wheel and its

shaft of a vibratory arm adjustable on a piv-
otal axis parallel with said shaft, a driving
shaft, a rod extensible in length one end con-
5 and the other to a coupling adjustable in a
longitudinal slot in the lower end of the arm,
a flat wooden plate loosely mounted by one
edge on a mandrel carried by the upper end
of the arm and movable on said mandrel in
10 parallelism with the shaft of the grinding-
wheel, a keeper having a hemispherical seat
on an edge of the plate at a right angle with
its line of movement, a bolt passing through
said keeper, its end provided with forked sup-
15 ports for the shank of the razor-blade, a hook

lying between said forked supports, and
thumb-screws turning on threaded rods form-
ing part of the hook and the keeper, to draw
the former over the shank of the blade and
clamp the latter upon the bolt, substantially 20
as described.

In testimony whereof we have hereunto set
our hands and affixed our seals in presence of
two subscribing witnesses.

HUGO FISCHER.

[L. S.]

ADAM RICKENBACHER.

[L. S.]

Witnesses:

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