

H. C. WILSON.
 AUTOMATIC RAZOR BLADE SHARPENING MACHINE.
 APPLICATION FILED MAY 10, 1911.

1,028,170.

Patented June 4, 1912.

2 SHEETS-SHEET 1.

Fig. 1.

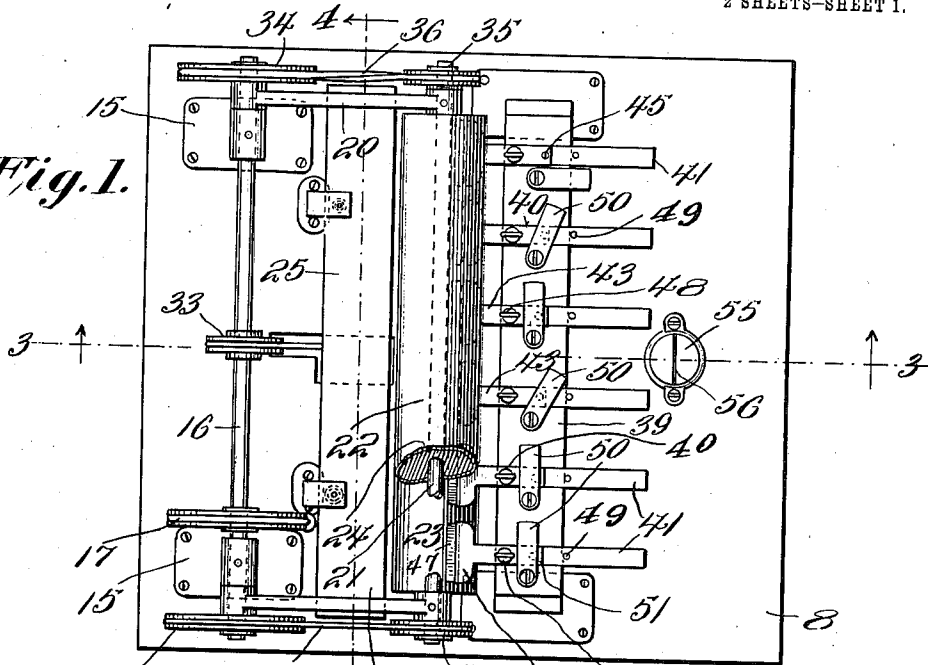
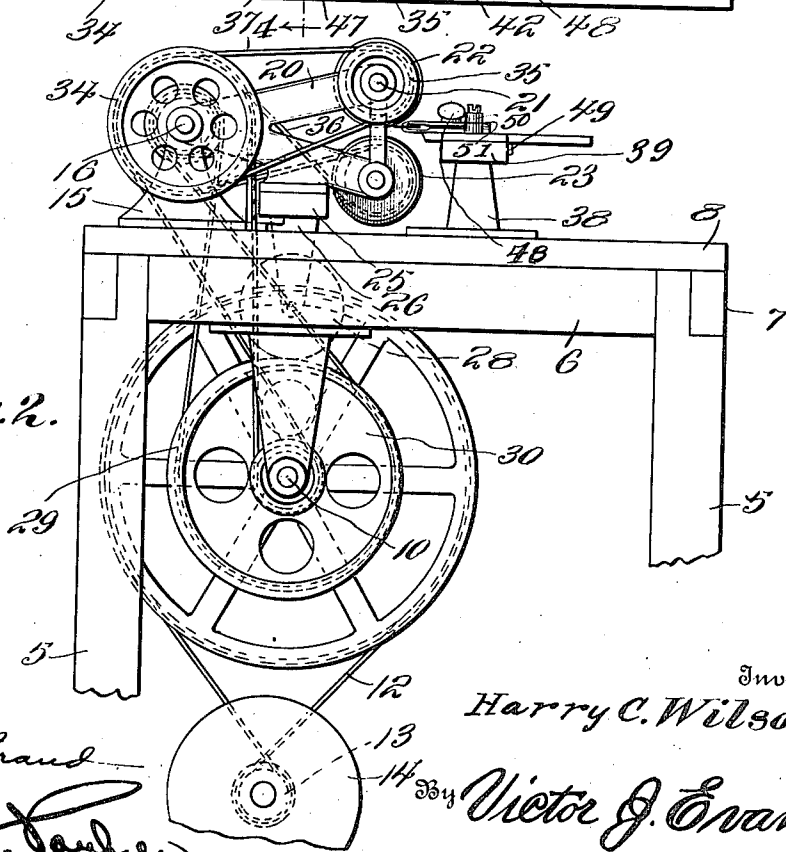


Fig. 2.



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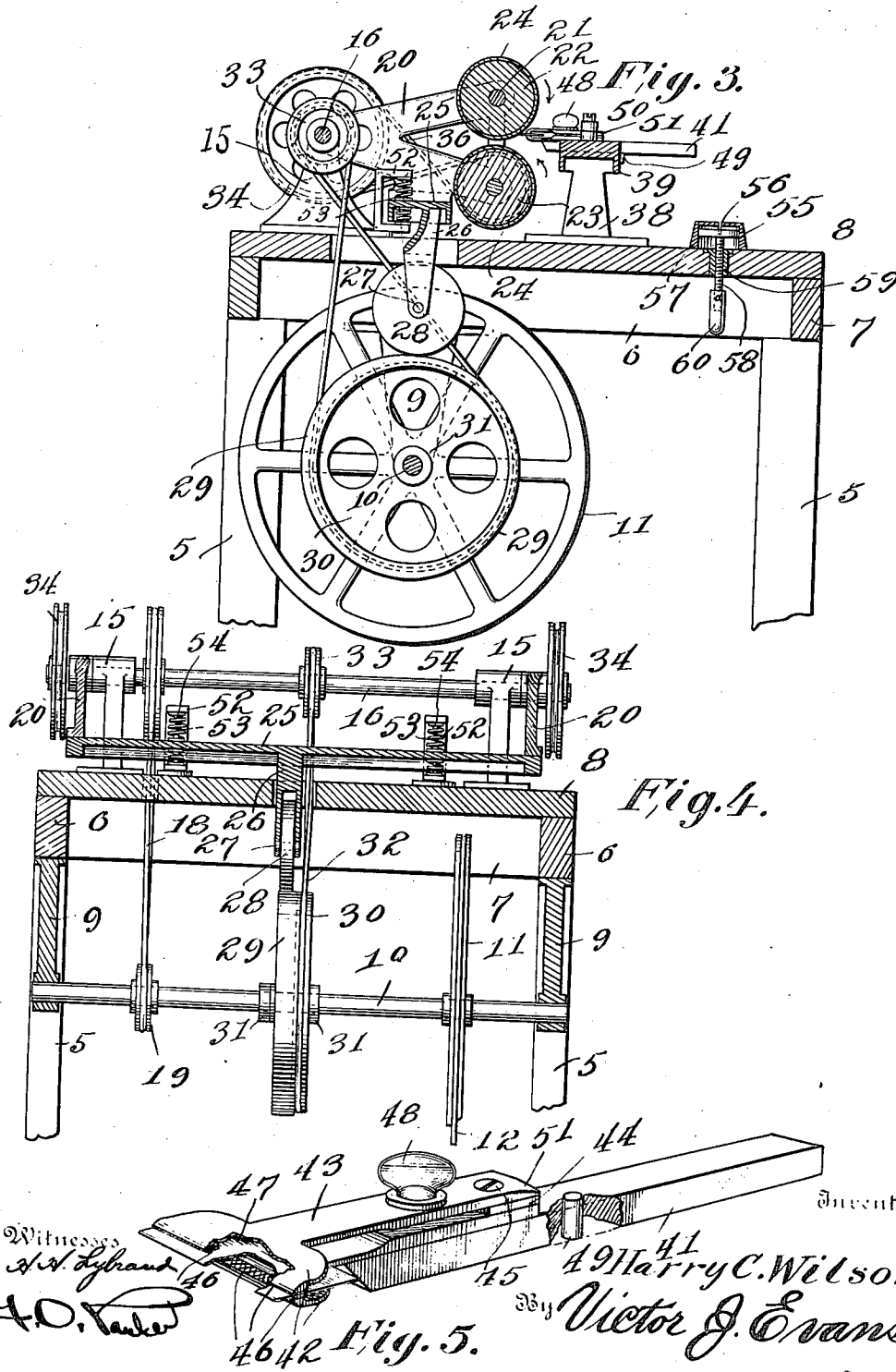
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UNITED STATES PATENT OFFICE.

HARRY C. WILSON, OF NEW YORK, N. Y.

AUTOMATIC RAZOR-BLADE-SHARPENING MACHINE.

1,028,170.

Specification of Letters Patent.

Patented June 4, 1912.

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To all whom it may concern:

Be it known that I, HARRY C. WILSON, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented new and useful Improvements in Automatic Razor-Blade-Sharpening Machines, of which the following is a specification.

The invention relates to sharpening machines, and more particularly to the class of automatic razor blade sharpening machines.

The primary object of the invention is the provision of a machine in which one or more razor blades may be conveniently held in position, whereby the same can be automatically sharpened, when the machine is being operated.

Another object of the invention is the provision of a machine of this character in which a plurality of razor blades may be conveniently held, so that the beveled cutting edges thereof may be properly dressed for the sharpening of the same, through the action of either rotary honing or stropping cylinders or rollers, the same being alternately moved into operative position with respect to the blades for presenting knife edges thereto, the said cylinders or rollers being moved into working relation with respect to the blades through the medium of cam mechanism, and held in such position for a predetermined period of time, so that the beveled cutting edges of the blades will be uniformly and evenly dressed in a single operation of the machine.

A further object of the invention is the provision of a machine of this character in which the dressing rollers are adapted to rotate at a uniform speed and in reverse directions with respect to each other, so that when the same are brought into contact with the beveled edges of razor blades for the sharpening thereof, the cutting or knife edges of the blades will be evenly dressed, without the formation of an irregular knife edge thereon, the dressing rollers being controlled by means of suitable mechanism for moving the same alternately into engagement with opposite beveled faces of the blade to be sharpened, the period of time of contact of the rollers with the beveled surfaces of the blade being predetermined, so that one beveled surface of the blade will not be greater than the other beveled sur-

face, nor will the said blade be cut away on one side of its knife edge more than on the other side thereof, thus assuring a straight and uniform cutting edge to the blade.

A still further object of the invention is the provision of a machine of this character in which razor blades may be positively and securely clamped and acted upon for the sharpening thereof, in a uniform manner when the machine is in operation.

A still further object of the invention is the provision of a machine of this character which is simple in construction, thoroughly reliable and efficient in operation, and inexpensive in manufacture.

In the drawings, accompanying and forming a part of this specification, is illustrated the preferred form of embodiment of the invention, which, to enable those skilled in the art, to carry the invention into practice, will be set forth at length in the following description, while the novelty of the invention will be pointed out in the claims hereunto appended.

In the drawings: Figure 1 is a top plan view of a machine constructed in accordance with the invention, one of the dressing rollers being partly broken away. Fig. 2 is a fragmentary side elevation of the machine. Fig. 3 is a fragmentary sectional view on the line 3—3 of Fig. 1. Fig. 4 is a similar view on the line 4—4 of Fig. 1, looking in the direction of the arrow. Fig. 5 is a perspective view of one of the blade holding clamps or devices, the same being partly broken away.

Similar reference characters indicate corresponding parts throughout the several views of the drawings.

Referring to the drawings by numerals, the machine comprises a supporting frame formed with vertical legs 5, the same being united at their upper ends by means of horizontally disposed side and end rails 6 and 7, respectively, the same being connected to the legs in any suitable manner, and having fixed thereto at their upper edges a table or platform 8 which covers the top of the frame.

Fixed to the lower edges of the side rails 6 of the supporting frame, near the rear end thereof, are depending hangers 9, in the free ends of which is journaled a rotary driven shaft 10, on which is fixed a pulley wheel 11,

over which is trained the driving cable or band 12, the same being crossed and also trained over a pulley wheel 13 operated from a suitable motor 14, the pulley wheel 13 being of considerably less size than the pulley wheel 11, so that the rotary driven shaft 10 will travel at less speed than the driving pulley 13 controlled by the motor.

Fixed to the table or platform 8 of the supporting frame, near the opposite side edges thereof, and rearwardly with respect to the hangers 9 are vertical bearings 15, in which is journaled a rotatable counter shaft 16 having fixed thereto a pulley wheel 17, over which is trained an endless driving band or belt 18, the same being crossed and also trained over a pulley wheel 19 fixed to the driven shaft 10, the said pulley wheel 19 being of considerably less size than the pulley wheel 17, and by reason of the crossing of the belt or band 18, said counter shaft 16 will rotate in a reverse direction to the driven shaft 10. Loosely mounted upon the counter shaft 16, outside of the bearings 15, are forwardly extending arcuately movable triangular-shaped supporting arms or brackets 20, in the forward ends of which are journaled the supporting shafts 21 of upper and lower spaced rotary dressing rollers 22 and 23, respectively, the same being provided with dressing surfaces 24, preferably of leather or other material for use in honing or stropping razor blades, the rollers 22 and 23 being of any desirable length, and in this instance, extending horizontally across a greater portion of the table or platform 8 of the machine. The dressing surfaces 24 of said rollers are adapted to be brought alternately into contact with the beveled cutting edges of razor blades clamped in a rigid holder or support upon the table or platform 8, in a manner presently described.

Fixed to or integral with the arms 20 is an inverted U-shaped cross or union bar 25, the same being formed with a central depending forked bracket or bearing 26, the fork of which has journaled therein a stud axle 27, on which is mounted a friction wheel or roller 28, the latter being in contact with a cam rim 29 integral with and fixed to a rotatable pulley wheel 30 at one side thereof, the said pulley wheel 30 being loosely journaled upon the driven shaft 10, between collars 31 fixed to and surrounding the said shaft 10. Trained over the pulley wheel 30 is an endless band or belt 32, the latter being crossed and also trained over a pulley wheel 33 fixed centrally to the counter shaft 16, the said pulley wheel 33 being of considerably less size than the pulley wheel 30, so that the cam rim 29 will rotate at considerably less speed than the speed of rotation of the counter shaft, the cam rim 29 being constructed on its

perimeter at diametrically opposed points thereof to gradually raise and lower the arms 20 at predetermined intervals, and also sustain the said arms in such adjusted positions through equal definite periods of time, thereby bringing the dressing rollers 22 and 23 alternately in engagement with the opposite beveled faces of the cutting edges of the razor blade, when supported and clamped in the machine, so that the said blade will be equally and uniformly dressed on both sides of its sharpened edge.

Fixed on the outer ends of the counter shaft 16 are pulley wheels 34, and also fixed on the outer ends of the shafts 21 are pulley wheels 35, over which latter and the pulley wheels 34 are trained endless bands or belts 36 and 37, respectively, the said belts 36 being crossed, so that the upper dressing roller 22 will be rotated in a reverse direction with respect to the direction of rotation of the lower dressing roller 23. The pulley wheels 35 carried by the shafts 21 of the dressing rollers are of uniform size, so that the said dressing rollers will uniformly rotate and be driven at the same speed. The pulley wheels 35 are of less size than the pulley wheels 34, so that the dressing rollers will rotate at higher speed than the counter shaft 16, for the proper and positive sharpening of the razor blades.

Fixed to the table or platform 8 on the supporting frame and rising therefrom, forwardly of the dressing rollers, are vertical posts 38, having integral therewith, at their upper ends, a transversely extending horizontally disposed clamping or supporting bar 39, the same being formed at intervals with spaced clamp receiving grooves 40, in its upper face, the same being extended transversely of the said bar, and in which are adapted to be detachably mounted clamping devices, presently described.

The clamping devices each comprise a shank 41 of a width and depth corresponding to the groove 40, in which the same is adapted to engage, and having mounted at one end thereof a pair of clamping jaws 42, the same being formed on the outer ends of spring arms 43, the same being spaced from each other by means of a spacer block or plate 44 fitted between the inner ends of said arms, and secured in superimposed position upon the top face of the shank 41 by means of a screw member 45. The jaws 42 are inwardly curved at their free outer edges, and are provided on adjacent faces with roughened gripping surfaces 46, so that upon the closing of the jaws, the said gripping surfaces will positively grip a safety razor or other blade 47, for securely clamping the said blade in the clamping device. The forward edges of the jaws 42, by reason of the fact that the same are inwardly curved, will afford sufficient space

between the inner adjacent faces of the jaws 42, at their inner edges, to accommodate the different styles of razor blades, of ordinary well-known construction.

5 Swiveled in the uppermost spring arm 43 is a winged adjusting screw 48, the same being threaded into a suitable aperture in the lowermost spring arm 43, so that upon tightening of the screw 48, the arms will be moved toward each other, thereby bringing the clamping jaws 42 in gripping engagement with the razor blade 47, when inserted therebetween for holding the same in the clamping device, so that the cutting edge of the blade 47 may be positioned in the path of movement of the dressing rollers 22 and 23 on placing the clamping device upon the supporting bar 39, whereby the said dressing rollers 22 and 23 will alternately contact with opposite beveled faces of the cutting edge of the blade for the sharpening thereof.

Mounted in the shanks 41 of the clamping devices are depending stop lugs 49, which are adapted to contact with the forward edge of the supporting bar 39, when the shanks 41 are inserted in the grooves 40 therein, so as to prevent the clamping devices being forced rearwardly in the supporting bar too far, when the blades to be sharpened are held by said devices. Thus, the said blades will be properly positioned relative to the dressing rollers. Pivoted upon the supporting bar 39, contiguous to the grooves 40 therein, are swinging locking handles or arms 50, which are adapted to be moved across the grooves 40 and overlie the clamping devices, for locking the same within the said grooves 40, the arms, when in locking position, being adapted to contact with the uppermost spring arms 43, at their rear ends, the said uppermost arms, at one corner thereof, being beveled, as at 51, to permit the locking handles or arms 50 to readily slide upon the same and firmly hold the clamping devices in the supporting bar 39 for positioning the razor blade 47 relative to the dressing wheels, whereby the same will sharpen the said blade during the operation of the machine.

50 Fixed to the table or platform 8, contiguous to the cross or union bar 25, are vertically disposed U-shaped brackets 52, in which are mounted cushioning or equalizing devices, comprising coiled tensioned springs 53, the same being arranged on opposite sides of the said cross or union bar 25 to act upon the same for positively holding the friction wheel 28 in constant contact with the cam rim 29, when the machine is being operated, and also to absorb any shocks or jars incident to the travel of the said wheel, the springs 53 being engaged upon centering lugs 54, which are adapted to prevent any displacement of the springs, during the operation of the machine.

Mounted at any suitable point upon the table or platform 8, forwardly thereof, is a razor blade gaging device, comprising an inverted cup-shaped body 55, the same being provided in its top and diametrically opposed points of its side wall with a razor blade receiving slot 56, in which is adapted to be engaged the razor blade 47 to be sharpened. Working within the body 55 is a gage disk 57, the latter being carried at the inner end of an adjusting screw 58 threaded in a collar 59 fixed within the table or platform 8, the opposite end of the adjusting screw 58 being formed with a handle 60, whereby on the turning thereof, the said gage disk 57 may be raised or lowered in the body 55 for adjusting the razor blade 47, so as to hold the same in position to be conveniently clamped between the jaws 42 of the clamping device, whereby a predetermined portion of the blade 47 will extend or protrude beyond the said jaws 43 of the clamping device.

In the operation of the machine, the razor blades 47 to be sharpened are clamped between the jaws 42 of the clamping devices, which latter are then positioned within the supporting bar 39 elevated above the table or platform 8 on the frame, and locked thereto, so that the blades will protrude into the path of movement of the dressing rollers 22 and 23, whereupon on the starting of the machine, the counter shaft 16 will be driven from the shaft 10 which receives its motion from the motor 14, and from this counter shaft 16 is driven the pulley wheel 31 and simultaneously the dressing rollers 22 and 23, which will be brought into contact with opposite beveled faces of the cutting edges of the razor blades 47, thereby sharpening the same, the said rollers 22 and 23 being alternately moved into working position on the raising and lowering of the arms 20, which are moved through the medium of the friction roller 28, as the same travels over the cam rim 29, the latter being fixed to the pulley 30 which is loose upon the shaft 10, but is adapted to rotate in the same direction therewith. The dressing rollers 22 and 23 will sharpen the cutting edges of the blades, which will be uniformly beveled at opposite side faces thereof, and straight throughout the extent of the cutting edge.

When the razor blades have been sharpened, the same are removed from the clamping devices for use in a safety razor, in the ordinary well-known manner. When it is desired to place the razor blades 47 in the clamping devices, each of said blades is mounted within the gage device, the same being properly adjusted so that the clamping devices may be conveniently engaged with the blade, whereby its cutting edge will protrude the proper distance from said clamping device, the clamping devices be-

ing of a construction to permit the ordinary well-known safety razor blades, now in use, to be mounted therein.

What is claimed is:

5 1. In a machine of the class described, a supporting frame having a table, a razor blade clamp support, means mounted in the support for holding a razor blade, opposed rotary dressing rollers movable into contact
10 with opposite beveled faces of the cutting edge of such blade, a counter shaft mounted upon the table and having connection with the dressing rollers for rotating the same in reverse directions, a motor driven shaft con-
15 nected with the counter shaft for driving the same, a cam operated by the counter shaft, and friction means connected with the dressing rollers and adapted to travel upon the cam for raising and lowering said roll-
20 ers alternately into contact with the said razor blade for the sharpening thereof.

2. In a machine of the class described, a supporting frame having a table, a razor blade clamp support, means mounted in the
25 support for holding a razor blade, opposed rotary dressing rollers movable into contact with opposite beveled faces of the cutting edge of such blade, a counter shaft mounted upon the table and having connection with
30 the dressing rollers for rotating the same in reverse directions, a motor driven shaft connected with the counter shaft for driving the same, a cam operated by the counter shaft, friction means connected with the
35 dressing rollers and adapted to travel upon the cam for raising and lowering said rollers alternately into contact with the said razor blade for the sharpening thereof, and means for tensioning said friction means
40 and also sustaining it in engagement with the cam.

3. In a machine of the class described, a support, bearings rising from said support, a rotatable shaft journaled in said bearings,
45 swinging arms loosely connected with said shaft, opposed rotary dressing rollers journaled in said arms in spaced relation to each other, a clamp receiving bar mounted upon the support forwardly of the said dressing
50 rollers, a plurality of razor blade clamps removably mounted in said bar for positioning razor blades in the path of movement of the dressing rollers, whereby the latter will sharpen the said blades, a motor
55 driven shaft journaled in said support, connections between the motor driven shaft and the said first-named shaft for rotating the latter, a cam wheel loosely mounted upon the motor driven shaft, a friction roller con-
60 nected with the arms and engageable with the cam wheel, whereby the said arms will be raised and lowered for bringing the dressing rollers into alternate contact with the razor blades, and connections between
65 the cam wheel and the said first-named shaft

for rotating said cam wheel independently of the said motor driven shaft.

4. In a machine of the class described, a support, bearings rising from said support, a rotatable shaft journaled in said bearings, swinging arms loosely connected with said shaft, opposed rotary dressing rollers jour-
naled in said arms in spaced relation to each other, a clamp receiving bar mounted upon the support forwardly of the said dressing
75 rollers, a plurality of razor blade clamps removably mounted in said bar for positioning razor blades in the path of movement of the dressing rollers, whereby the latter will sharpen the said blades, a motor
80 driven shaft journaled in said support, connections between the motor driven shaft and the said first-named shaft for rotating the latter, a cam wheel loosely mounted upon the motor driven shaft, a friction roller con-
85 nected with the arms and engageable with the cam wheel, whereby the said arms will be raised and lowered for bringing the dressing rollers into alternate contact with the razor blades, connections between the
90 cam wheel and the said first-named shaft for rotating said cam wheel independently of the said motor driven shaft, and means acting upon the connections between the friction roller and the arms for holding said
95 friction roller in constant contact with the cam wheel, and also for absorbing shocks and jars incident to the travel thereof.

5. In a machine of the class described, a supporting frame having a platform, bear-
10 ings rising from the platform near the opposite sides thereof and rearwardly of the same, a counter shaft journaled in said bearings, swinging arms loosely connected with said shaft, hangers fixed to the frame
10 and depending therefrom, a motor driven shaft journaled in said hangers, pulley wheels fixed to the counter and motor driven shafts, respectively, an endless band trained over said pulley wheels for driving
11 the shafts in unison, rotatable dressing rollers journaled in the arms in spaced relation to each other, connections between the counter shaft and the said rollers for driving the latter in reverse directions to
11 each other, a clamp support rising from the platform forwardly of said dressing rollers, a plurality of razor blade clamps removably fitted in said clamp support, whereby razor
12 blades will be held in the path of movement of the dressing rollers for the sharpening thereof, a union bar connecting the arms, a depending fork formed on the union bar, a friction roller journaled in said fork, a
12 pulley wheel loosely journaled on the motor driven shaft, a cam rim carried by the last-named pulley wheel and engageable by the said friction roller for automatically raising and lowering the dressing rollers into alter-
13 nate contact with opposite beveled faces of

the cutting edges of such razor blades held within the clamps, and connections between the counter shaft and the said loose pulley wheel for driving the same independently of the motor driven shaft.

6. In a machine of the class described, a supporting frame having a platform, bearings rising from the platform near the opposite sides thereof and rearwardly of the same, a counter shaft journaled in said bearings, swinging arms loosely connected with said shaft, hangers fixed to the frame and depending therefrom, a motor driven shaft journaled in said hangers, pulley wheels fixed to the counter and motor driven shafts, respectively, an endless band trained over said pulley wheels for driving the shafts in unison, rotatable dressing rollers journaled in the arms in spaced relation to each other, connections between the counter shaft and the said rollers for driving the latter in reverse directions to each other, a clamp support rising from the platform forwardly of said dressing rollers, a plurality of razor blade clamps removably fitted in said clamp support, whereby razor blades will be held in the path of movement of the dressing rollers for the sharpening thereof, a union bar connecting the arms, a depending fork formed on the union bar, a friction roller journaled in said fork, a pulley wheel loosely journaled on the motor driven shaft, a cam rim carried by the last-named pulley wheel and engageable by the said friction roller for automatically raising and lowering the dressing rollers into alternate contact with opposite beveled faces of the cutting edges of such razor blades held within the clamps, connections between the counter shaft and the said loose pulley wheel for driving the same independently of the motor driven shaft, and resilient means acting upon the union bar for sustaining the friction roller in contact with the cam and also for absorbing shocks and jars incident to the travel of the roller upon the cam rim.

7. In a machine of the class described, a supporting frame having a platform, bear-

ings rising from the platform near the opposite sides thereof and rearwardly of the same, a counter shaft journaled in said bearings, swinging arms loosely connected with said shaft, hangers fixed to the frame and depending therefrom, a motor driven shaft journaled in said hangers, pulley wheels fixed to the counter and motor driven shafts, respectively, an endless band trained over said pulley wheels for driving the shafts in unison, rotatable dressing rollers journaled in the arms in spaced relation to each other, connections between the counter shaft and the said rollers for driving the latter in reverse directions to each other, a clamp support rising from the platform forwardly of said dressing rollers, a plurality of razor blade clamps removably fitted in said clamp support, whereby razor blades will be held in the path of movement of the dressing rollers for the sharpening thereof, a union bar connecting the arms, a depending fork formed on the union bar, a friction roller journaled in said fork, a pulley wheel loosely journaled on the motor driven shaft, a cam rim carried by the last-named pulley wheel and engageable by the said friction roller for automatically raising and lowering the dressing rollers into alternate contact with opposite beveled faces of the cutting edges of such razor blades held within the clamps, connections between the counter shaft and the said loose pulley wheel for driving the same independently of the motor driven shaft, resilient means acting upon the union bar for sustaining the friction roller in contact with the cam and also for absorbing shocks and jars incident to the travel of the roller upon the cam rim, and means for locking the clamps in the clamp receiving bar.

In testimony whereof I affix my signature in presence of two witnesses.

HARRY C. WILSON.

Witnesses:

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FRANK O. PAULEN.