

M. G. BUNNELL.
RAZOR BLADE GRINDER.
APPLICATION FILED DEC. 11, 1908.

1,005,808.

Patented Oct. 17, 1911.

2 SHEETS-SHEET 1.

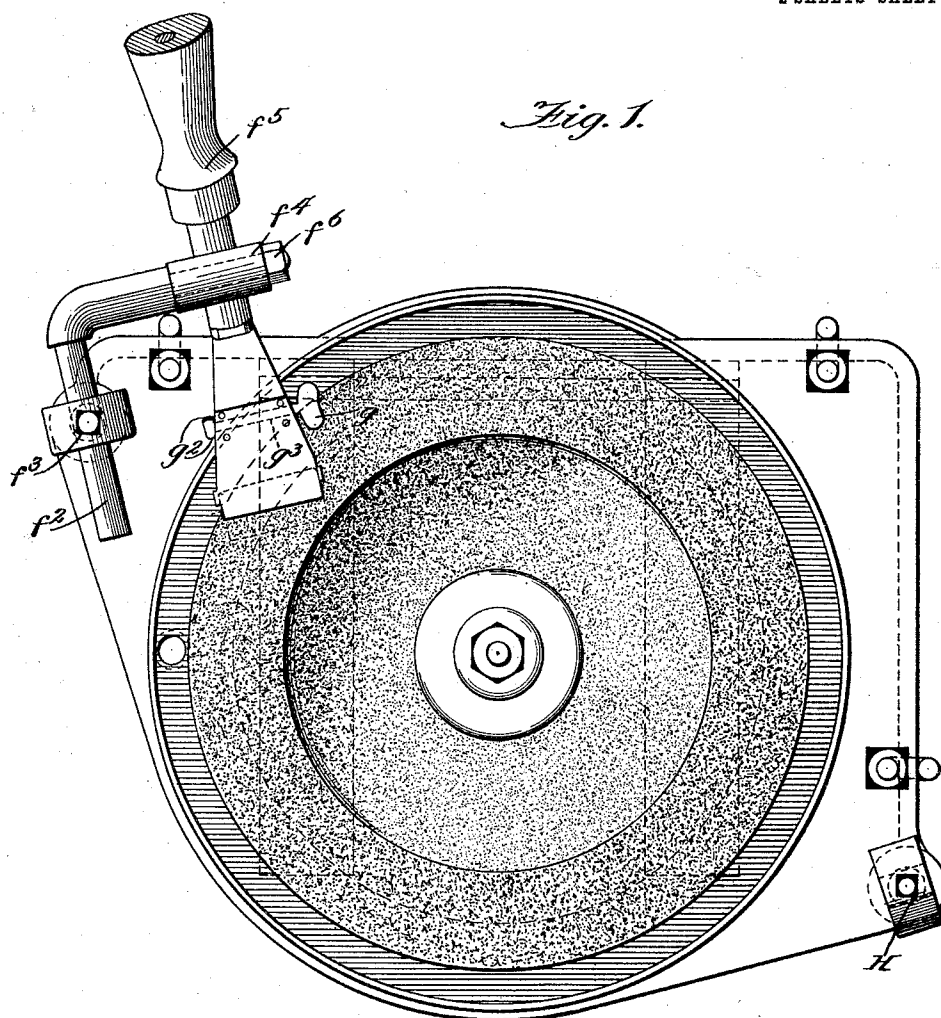


Fig. 1.

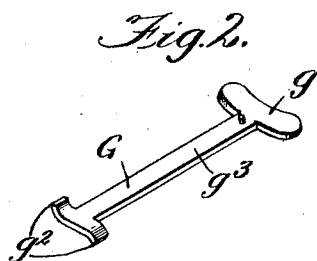


Fig. 2.



Fig. 3.

Witnesses:

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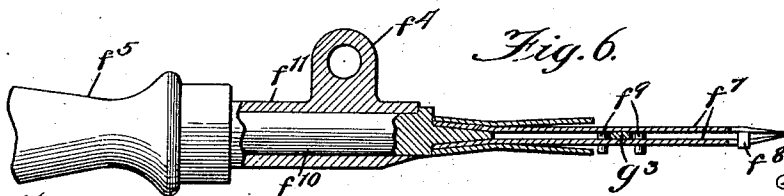
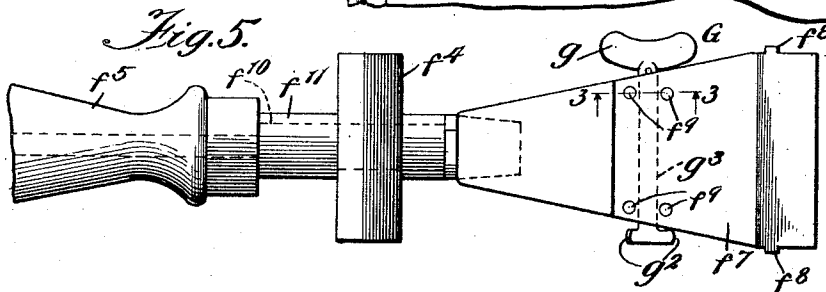
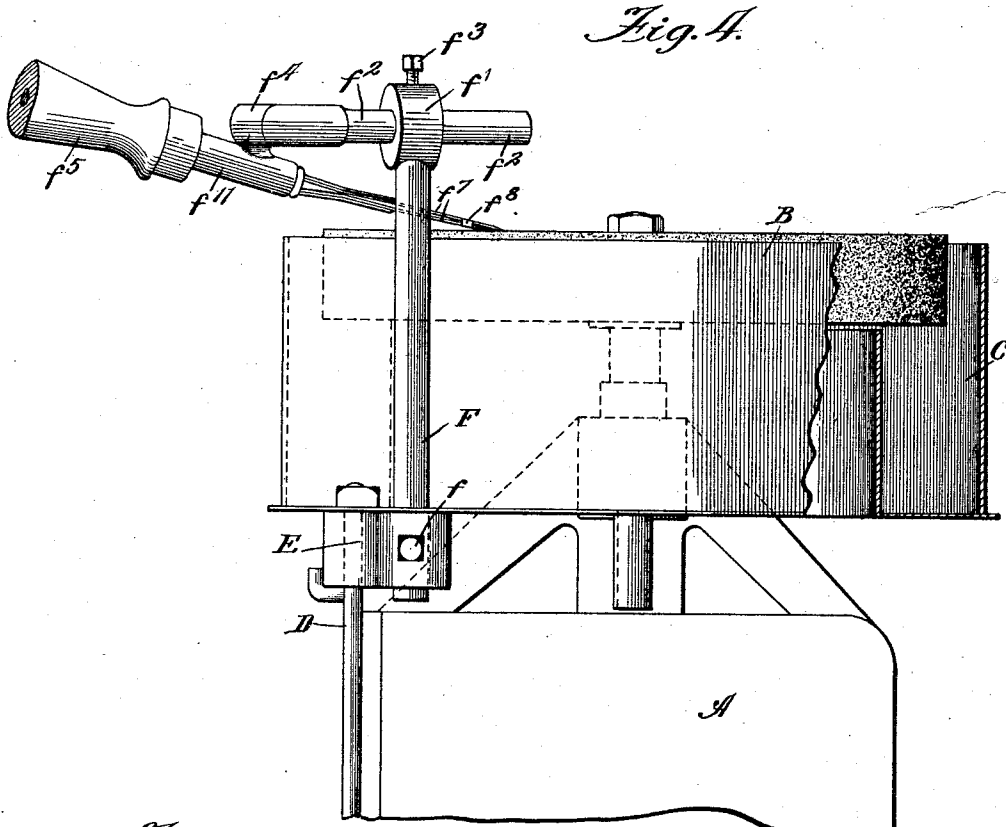
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2 SHEETS—SHEET 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

MORTON G. BUNNELL, OF CHICAGO, ILLINOIS, ASSIGNOR TO JOSIAH CRATTY AND
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RAZOR-BLADE GRINDER.

1,005,808.

Specification of Letters Patent.

Patented Oct. 17, 1911.

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To all whom it may concern:

Be it known that I, MORTON G. BUNNELL, a citizen of the United States of America, and resident of Chicago, Cook county, Illinois, have invented a certain new and useful Improvement in Razor-Blade Grinders, of which the following is a specification.

My invention contemplates an improved and highly efficient machine for grinding the blades of safety razors.

In a machine characterized by my invention the blades are placed in a holder which has a handle, and which is so mounted that it can be turned and held in any direction, and thus accurately applied to the surface of the grinding wheel. The handle of the holder is heavier than the clamping portion which holds the blade, whereby as soon as the holder is released it lifts the blade out of contact with the wheel. The holder can be turned or adjusted in any direction, and when the handle thereof is raised by the operator it brings the blade into engagement with the flat upper surface of the grinding wheel, to which surface it readily adjusts or accommodates itself.

With a device embodying the principles of my invention, as will hereinafter more fully appear, the blades of safety razors can be ground and sharpened very rapidly and with such facility as to reduce the cost of manufacture of such blades.

In the accompanying drawings—Figure 1 is a plan view of a razor-blade-grinding machine embodying the principles of my invention. Fig. 2 is a detail perspective of the device by which the blade-holder is opened to permit removal and insertion of the blades. Fig. 3 is a detail and more or less fragmentary section through the razor-blade holder. Fig. 4 is a side elevation of the machine shown in Fig. 1. Fig. 5 is an enlarged plan view of a razor-blade holder. Fig. 6 is a longitudinal section of the device shown in Fig. 5.

It will be seen that Fig. 3 is a section on line 3—3 in Fig. 5.

As thus illustrated, my improved razor-blade-grinder comprises a motor A for driving the horizontally disposed grinder wheel B, which latter is adapted to rotate about a vertical axis. The said grinder wheel is provided with a receptacle C arranged below the periphery thereof, and adapted to catch the water or drippings from the edge

of the wheel. The said motor rotates the wheel at the desired rate of speed, which can be determined in accordance with requirements.

The frame D of the machine has a casting E in which is mounted a vertical rod or standard F, the said rod being held in the said casting by a set screw f . In this way the rod can be raised and lowered or turned about a vertical axis according to the position desired for the razor-blade. At the upper end of the rod or standard F there is an eye f' in which a horizontal rod f^2 is adjustably held by a set screw f^3 , the rod f^2 being thereby adapted for both endwise and rotary adjustment. The rod f^2 is angular or L-shaped in form, being provided at its free end with a rotary sleeve f^4 to which is secured the handle f^5 . This sleeve f^4 is held on by a nut f^6 , but the arrangement is preferably such that this sleeve is always free to rotate on the rod f^2 . The handle f^5 has its other end provided with a couple of flat and cooperating spring jaws f^7 , the lower jaw being provided with upturned lugs f^8 to engage the end lugs of a certain form of razor-blade, whereby the blade is held against further insertion in the holder, and is prevented from becoming displaced during the operation of grinding its edges. The said spring jaws are connected by pins f^9 which are attached to one jaw and adapted to slide in the other jaw. Between the said pins, and held in place thereby, is a key or opening device G, which consists of a flat piece of metal provided at one end with a handle g , and at the other end with lugs g^2 for preventing the said device from being withdrawn from the holder. With this device, and by grasping the handle g , so as to twist the portion g^2 , the two spring jaws f^7 can be caused to separate. In this way the blades can be inserted and removed at will.

The handle f^5 has a shank f^{10} mounted in a sleeve f^{11} which is secured rigidly to and crosswise of the sleeve f^4 . In this way the handle f^5 can be turned about an axis longitudinally of its length, and it can also be rocked about an axis extending longitudinally of the sleeve f^4 , whereby the holder is always free to be rocked about two axes, one extending at right angles to the other. The adjustment of the blade-holder is obtained by adjusting the rods F and f^2 and by then tightening the set screws f and f^3 . After

this, the movement of the blade is about two axes which are at right angles to each other, and the blade-holder is never locked or set against movement about either one of these two axes. Such being the case, the blade is held upon the upper surface of the grinder-wheel by an upward movement of the handle f^5 , and by a twisting movement of the said handles sufficient to give the edge of the blade an even contact with the grinder-wheel throughout its length. The handle f^5 is heavier than the holder, whereby its weight will always be sufficient to carry the blade out of contact with the grinder-wheel. The operator inserts the blade and then holds the edge upon the grinder-wheel by raising the handle.

Another blade-holder structure like the one already described can be attached at the point H on the frame, and others can be attached at different points on the circumference of the wheel. In fact, with my improved construction the one wheel can be made to serve in common for several blade-holders, whereby several operators can work around the machine and grind blades on the same wheel.

What I claim as my invention is:

1. In a machine of the class described, a grinder-wheel mounted for rotation about a vertical axis, a pair of spring jaws for holding a blade in engagement with the upper surface of said wheel, and a rotary opening device inserted between said jaws, adapted to be turned to separate the jaws.

2. In a machine of the class described, a grinder-wheel mounted for rotation about a vertical axis, a handle mounted to be turned freely about two axes extending at right angles to each other to vary the angle of the blade in different directions, spring jaws at the one end of said handle, and a flat piece inserted between said jaws adapted to be turned to open the jaws.

3. In a machine of the class described, a grinder-wheel mounted to rotate about a suitable axis, a handle mounted for free manipulation about two axes extending at an angle to each other, means for preventing the handle from moving lengthwise of either axis, means carried by said handle for holding a razor-blade in engagement with said wheel, and a plurality of connected rods and set screws for adjustably holding the same in place, whereby the position of the blade may be varied relative to the said wheel, said handle affording means for controlling the blade on the wheel.

4. In a machine of the class described, a grinder-wheel mounted for rotation about a suitable axis, a pair of spring jaws for holding a blade in engagement with the upper surface of said wheel, a rotary opening device inserted between said jaws, adapted to be turned to separate the jaws, and a plu-

rality of connected rods and set screws for adjustably holding the same in place, whereby the position of the blade may be varied relative to the said wheel.

5. In a machine of the class described, a grinder-wheel mounted for rotation about a suitable axis, a handle mounted to be turned freely about two axes extending at right angles to each other, spring jaws at the other end of said handle, a flat piece inserted between said jaws, adapted to be turned to open the jaws, and a plurality of connected rods and set screws for adjustably holding the same in place, whereby the position of the blade may be varied relative to the said wheel.

6. In a grinding machine, an L-shaped supporting rod, means for adjustably supporting one arm of said rod, whereby it may rotate about a horizontal axis, move up and down, move endwise or swing laterally about a vertical axis, and a holder with a handle mounted to turn on the other arm of said L-shaped rod, said holder adapted to support the article to be operated upon.

7. In a grinding machine, an L-shaped supporting rod, means for adjustably supporting one arm of said rod, whereby it may rotate about a horizontal axis, move up and down, move endwise, or swing laterally about a vertical axis, and a holder with a handle mounted to turn on the other arm of said L-shaped rod, said holder adapted to support the article to be operated upon, said holder having two axes of motion relative to said L-shaped rod, which axes extend at right-angles to each other.

8. In a grinding machine, an L-shaped supporting rod, means for adjustably supporting one arm of said rod, whereby it may rotate about a horizontal axis, move up and down, move endwise, or swing laterally about a vertical axis, a holder with a handle mounted to turn on the other arm of said L-shaped rod, said holder adapted to support the article to be operated upon, a rotary grinding wheel, and a vertical shaft upon which said wheel is mounted, said holder having a handle of sufficient weight to raise the article from the upper surface of the said wheel.

9. In a grinding machine, a blade holder provided with a shank and handle, a sleeve in which the shank is mounted to turn freely but held against endwise movement, a second sleeve rigid with said first sleeve, extending at right angles thereto, and a support upon which said second sleeve is mounted to turn freely, but held against endwise movement, the two sleeves providing two axes about which the blade holder may be freely manipulated by said handle, but the said handle and blade holder being held against movement lengthwise of either axis.

10. In a grinding machine, a blade holder provided with a shank and handle, a sleeve in which the shank is mounted to turn freely but held against endwise movement, a second sleeve rigid with said first sleeve, extending at right angles thereto, a support upon which said second sleeve is mounted to turn freely, but held against endwise movement, the two sleeves providing two axes about which the blade holder may be freely manipulated by said handle, but the said handle and blade holder being held against movement lengthwise of either axis, and means permitting said axes to be moved bodily, either vertically or horizontally, or to be swung bodily about a vertical axis.

Signed by me at Chicago, Illinois, this 5th day of December 1908.

MORTON G. BUNNELL.

Witnesses:

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E. H. CLEGG.

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