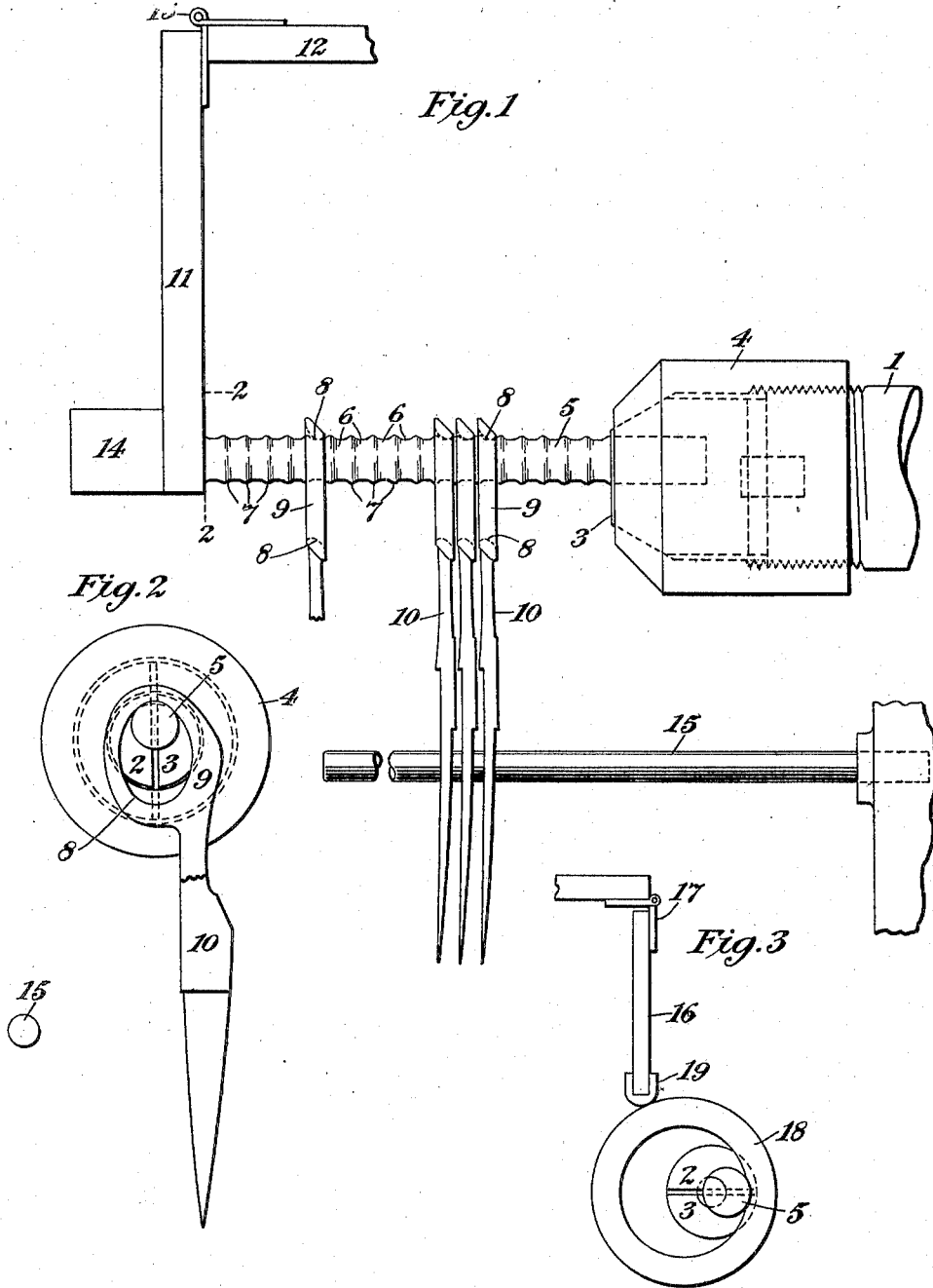


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 MACHINE FOR SMOOTHING INTERIOR SURFACES.  
 APPLICATION FILED MAR. 10, 1919.

1,325,700.

Patented Dec. 23, 1919.



Inventor  
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# UNITED STATES PATENT OFFICE.

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MACHINE FOR SMOOTHING INTERIOR SURFACES.

1,325,700.

Specification of Letters Patent.

Patented Dec. 23, 1919.

Application filed March 10, 1919. Serial No. 281,834.

*To all whom it may concern:*

Be it known that I, FREDERIC H. RAUH, a citizen of the United States, and resident of South Orange, Essex county, New Jersey, have invented certain new and useful Improvements in Machines for Smoothing Interior Surfaces, of which the following is a specification.

My invention relates to apparatus for removing the roughnesses or excrescences which are usually found in such articles as malleable castings or drop forgings, for instance the bur on drop forgings; and my improvements consist in certain novel means whereby the desired result may be obtained by concussion instead of by grinding or similar abrading processes.

To explain the principle of my invention I will show how it may be applied to the removal of bur from the inside of the bow of a drop-forged scissors blade, referring in so doing to the accompanying drawings wherein Figure 1 is a side view of an apparatus embodying my invention and showing several scissors blades in position to be operated upon; Fig. 2 is an end view taken on the line 2—2 of Fig. 1 looking to the right; and Fig. 3 shows a modification for use with easily rotatable articles. Similar parts are designated by corresponding reference numerals in all the figures. A rotatable shaft, 1, for instance the shaft of a lathe, is provided with a chuck 2—3, clamped by the collar 4 threaded on the shaft, and being adapted to grasp a spindle or arm 5 so as to hold it eccentrically relative to the center of rotation of the shaft 1. The type of chuck shown is suitable for this purpose; but other well known forms of chuck might be employed.

The spindle-arm 5 is provided with annular conformations suitable to cooperate most advantageously with the shape of the article to be operated upon. In the present instance I have shown a series of circumferential grooves 6, 6, separated by rounded beads 7, 7, which is an arrangement admirably adapted to operate upon the transversely rounded surfaces 8, 8, of the inside of the bows 9, 9, of scissors blades 10, 10. A swing stop 11 is pivoted to a suitable support, 12, as at 13, and is adapted to normally swing close to the end of the arm 5, for instance under the influence of a weight, as 14, so as to keep the articles upon the arm from

flying off its ends. Another stop, as 15, is placed in such a position that it will arrest the articles upon the arm 5 if they tend to swing forward and upward around the arm.

In Fig. 3 I have shown a modification wherein a stop 16, preferably swinging upon a hinge 17, or otherwise yieldably operable, is placed so as to intercept the upward swing of such an article as a ring 18, causing it to fall back instead of progressively swinging around the arm. This stop 16 may have a padded end, as 19, or the stop itself may be made of leather or similar material, its duty being to arrest the swing of the article 18 without injuring its outer surface. In operation, the stop 11 is swung out and the scissors blades are slipped onto the arm 5, which is rapidly revolved by the shaft 1. The stop 11 is then allowed to fall into place at the end of the arm 5. The rapid revolution of the eccentrically held arm 5 causes it to toss or drive the scissors bows away from it, only to be instantly met by it at another point in its orbit of rotation; and the continuation of these blow-like contacts, in a remarkably short period of time, will flatten down and remove the bur or other excrescences on the inner curves of the bows, smoothing them down to a uniform surface or causing them to scale off.

In the drawings it has been assumed that the shaft 1 is to rotate clock-wise, and the stops 15, 16, have been located with that movement in view.

These stops should be adjusted so as to properly control the particular class of articles which are being polished at any time. And having pointed this out I deem it to be unnecessary to give further illustrations. When the smoothing process has progressed sufficiently, the stop 11 is swung out, the articles are drawn off the arm 5, another set are slipped on the arm, and the stop is again dropped into place. In practice all this can be done without stopping the shaft 1. I wish it to be understood that the apparatus shown and described is used as an illustrative type of mechanism embodying my invention, and that I do not limit myself to the precise form or type of mechanism shown, as these may be varied by one skilled in the art by the use of mechanical equivalents or the like without departing from the spirit of my invention as claimed.

Having thus described my invention, what

I claim and desire to secure by Letters Patent of the United States is:—

1. In a machine for smoothing interior surfaces, rotatable means, unitary supporting and smoothing means carried by the rotatable means and eccentrically disposed relative to the center of rotation.
2. In a machine for smoothing interior surfaces, rotatable means, unitary supporting and smoothing means consisting of an arm carried by the rotatable means and eccentrically disposed relative to the center of rotation.
3. In a machine for smoothing interior surfaces, rotatable means, smoothing means consisting of an arm having a series of circumferential grooves carried by the rotatable means and eccentrically disposed relative to the center of rotation.
4. In a machine for smoothing interior surfaces, rotatable means, supporting and smoothing means detachably carried by the rotatable means in fixed relation thereto and eccentrically disposed relative to the center of rotation.
5. In a machine for smoothing interior surfaces, rapidly rotatable means, and unitary means carried thereby adapted to support freely a circumferentially closed article and, when rotated, to operate against the inner surface of such article with a succession of rapid contacts.
6. In a machine for smoothing interior surfaces, rapidly rotatable means, and unitary means carried eccentrically thereby adapted to support freely a circumferentially closed article and, when rotated, to operate against the inner surface of such article with a succession of rapid contacts.
7. In a machine for smoothing interior surfaces, shaft rotating means, a shaft, a chuck carried thereby, an arm held eccentrically by said chuck, and a movable stop adjacent to the free end of the arm.
8. In a machine for smoothing interior surfaces, shaft rotating means, a shaft, a chuck carried thereby, an arm held eccentrically by said chuck, a movable stop adjacent to the free end of the arm, and an anti-rotation element to prevent the rotation of an article carried by said arm.
9. In a machine for smoothing interior surfaces, shaft rotating means, a shaft, a chuck carried thereby, an arm having circumferential variation held eccentrically by said chuck, and a movable stop adjacent to the free end of the arm.

FREDERIC H. RAUH.

Witness:

AGNES SCHAEFER.