My present invention relates generally to razor blades, particularly to those of the wafer type and to a method of manufacturing such blades.

One of the main objects of my invention is to provide a simple and inexpensive method for manufacturing single-edged blades of the narrow gauge type, i.e., blades which have come into extended use in connection with the self-feeding and self-discharging razor holders. Such blades are about as long as the usual wafer type blades and about as thick, but they are of approximately half the width of the usual type.

It is difficult enough to manufacture single or double-edged blades of the ordinary type, i.e., blades having a width of approximately an inch; the difficulty arising in many respects from the nature of the material employed and the article made. For example, one of the main difficulties heretofore encountered and overcome at least partially by numerous expedients lies in properly grasping and guiding the blanks, either individually or in strip form, from which the blades are ultimately fashioned.

In the manufacture of blades having a width hardly greater than one-half an inch, this difficulty becomes tremendously magnified, as will be readily understood. It is an object of my present invention to solve this problem and to provide an expeditious procedure for manufacturing these narrow gauge blades in quantity.

One of the main features of the invention lies in utilizing, so far as possible, the machines and instrumentalities readily available and heretofore employed in the manufacture of similar blades of double width, i.e., of the usual well-known width of approximately one inch. I accomplish this by employing a procedure which leaves the ultimate cutting of a blank to the desired smaller size to the last, and which obviates in this way the readily understandable difficulties of handling narrow gauge blanks or strips.

More particularly, it is a feature of my invention to provide a double-edged blade of the wafer type having a width at least twice that of the ultimate narrow gauge blade desired, and cutting or similarly treating this double-edged blade as a final procedure so as to provide two narrow gauge single-edged blades thereof. In the embodiment herein disclosed, I make the double-edged blade of substantially twice the width desired for the narrow gauge blades, and by severance along a medial line I obtain two back to back duplicate narrow gauge single-edged blades.

Pursuant to this general object, and to the foregoing feature of manufacture, it is another feature of my invention to complete the hardening, tempering, grinding and polishing procedures while the blank is still in the double width state.

Another feature of my invention lies in preliminarily weakening the double width blank, as by scoring, so as to facilitate the ultimate severance as outlined above.

Where the carrying out of my invention involves the treatment of a continuous strip, it is another feature of my invention to provide a set of longitudinally arranged openings or apertures along a medial portion of the strip and utilizing these apertures as guiding and grasping means for the strip. Where such apertures are provided, I prefer to space them by intervals bearing a definite relationship to the lengths of the blades desired, thereby providing upon each finished blade certain complete apertures or partial apertures which may be employed as means for facilitating the ultimate proper position of each blade upon a suitable blade seat.

Preferably, a single set of apertures is provided along a medial longitudinal line substantially parallel to the opposite longitudinal edges of the double width strip. In this way, the ultimate severance of the strip will occur along a line passing through the apertures, thereby providing upon each blade some portion of at least one aperture. While I have referred to the openings as being present primarily for the purpose of facilitating feeding, nevertheless it will be understood that these openings or apertures may be incorporated in the strip wholly or mainly for imparting definite contours to the finished blades.
For the attainment of the foregoing objects and such other objects as may herein-after appear or be pointed out, I have illustrated several embodiments of my invention in the accompanying drawings in which—

Figure 1 is a plan view of a continuous strip, wherein I have diametrically shown certain features of my invention;

Figure 2 is a view similar to Figure 1 showing a modification;

Figure 3 is a view similar to Figure 2 showing a modification;

Figure 4 is a plan view of a completed blade constructed from the strip of Figure 1;

Figure 5 is a similar view bearing the same relationship to Figure 2; and

Figure 6 is a similar view bearing the same relation to Figure 3.

One way of carrying out my invention is diametrically illustrated in Figure 1 wherein a strip 10 of suitable steel embodies a width from one longitudinal edge 11 to the other longitudinal edge 12 of substantially twice the width of the desired blades. The strip is of substantially uniform unhardened quality throughout. As an initial procedure I weaken a medial longitudinal area thereof as by scoring along the medial longitudinal line 13. This scoring may be effected upon one or both sides of the strip 10. Where a continuous strip is employed, such as that shown in Figure 1, I prefer also to preliminarily score along spaced transverse lines 14, these lines being set at intervals equal to the lengths of the narrow gauge blades being made.

I then proceed to grasp and guide the strip in any desired or suitable manner and subject the same to the requisite instrumentalities for hardening and tempering the strip and thereupon grinding and polishing the opposite longitudinal edges 11 and 12. Since the strip is of the usual size, for many years employed in the industry as an element from which the customary inch-wide blades have been manufactured, the difficulties of handling and treating the strip are no greater than they have been in the past; and any suitable means for grasping, guiding, and otherwise treating the strip during the hardening, tempering, and grinding of the opposite edges, may be selected. As a final procedure I sever the strip along the scoreings with the result that a narrow gauge blade 18 (Figure 4) is provided, this blade having the requisite length, the necessary scantiness of width, and the desired temper finish and polish, ready for packing and shipping.

In Figure 2 I have shown a modified way of carrying out my invention wherein a similar strip 16 is provided with a set of apertures 17 along a medial longitudinal line. These apertures are provided as an initial procedure, while the strip is still in unhardened condition, and I prefer at the same time to provide a longitudinal medial scoring 18 corresponding to the line 13 of Figure 1. The apertures 17 are so spaced and arranged that the spacing thereof bears a definite relationship to the lengths of the blades being made. In the embodiment illustrated, I have spaced the apertures in such a manner that two thereof will position themselves symmetrically between each two transverse scoreings 19. The apertures 17 may be satisfactorily employed in connection with the grasping and guiding means selected to subject the strip 16 to the necessary instrumentalities. After the strip has been hardened and tempered, and the opposite longitudinal edges 20 and 21 suitably ground, polished, and finished, the severance is effected along the scoreings with the result that a number of completed narrow gauge blades 22 as shown in Figure 5 are immediately produced. It will be noted that each of these blades has a front cutting edge 23, an unsharpened rear edge 24, and semicircular recesses 25 symmetrically arranged along the edge 24. These recesses may find utility in suitably locating the blade upon a correspondingly prepared blade seat, or in advancing the blade along said seat so as to position the cutting edge 23 in proper relationship to a guard.

In Figure 3, I have shown a modification wherein the number of apertures 26 is cut that of the apertures 17, the apertures 27, the spacing spaced by distances substantially equal to the lengths of the blades being made. In this embodiment, a longitudinal weakening, as by scoring 27, is provided upon the unhardened strip, and transverse scoreings 28, if employed, are made to pass through the apertures 26. As a result, the ultimate severance of the strip will immediately produce finished narrow gauge single-edged blades 29 of the character shown in Figure 6. Each of these blades has a cutting edge 30, an unsharpened rear edge 31, and beveled rear corners 32 of a character which render them utilizable in a well-understood manner for locating, advancing, or similarly controlling the actual employment of the blade in connection with a suitable holder. Needless to say, each of the bevels 32 is produced by one-quarter of one of the apertures 26 initially provided in the strip.

Although I have illustrated and described the carrying out of my invention in a continuous manner from a continuous strip of suitable unhardened steel, nevertheless it will be obvious that as to certain phases of my invention the employment of a continuous strip of steel is unessential. The essence of one phase of my invention relates to the individual double-width blanks between the transverse scoreings. Each of these blanks has a width at least twice the narrow gauge blade being produced, and this blank is subjected in any suitable or desired manner to the necessary procedural steps which harden and temper it and
which provide completed cutting edges along its opposite longitudinal ends. As a final procedure, each of these blanks is severed along a medial longitudinal line which produces two completed back to back razor blades of the narrow gauge single-edged wafer type. It will thus be seen that I have provided a method for producing narrow gauge blades which is simple, expedient, and highly efficient, obviating all difficulties which might be encountered in attempting to handle a blank of suitably small width to provide only one of the blades desired. It will also be obvious that many changes in the details of procedure herein described and illustrated for the purpose of explaining the nature of my invention may be made by those skilled in the art without departing from the spirit and scope of the invention as expressed in the appended claims. It is therefore intended that these details be interpreted as illustrative and not in a limiting sense.

Having thus described my invention and illustrated its use, what I claim as new and desire to secure by Letters Patent is:

1. The herein described method of making a single-edged razor blade of the wafer type, which comprises the steps of first making a double-edged blade of at least twice the width of the single-edged blade desired, forming a set of openings along a medial longitudinal portion thereof, and finally severing said double-edged blade along a line passing through said openings.

2. The herein described method of making a single-edged razor blade of the wafer type, which comprises the steps of first making a double-edged blade of at least twice the width of the single-edged blade desired, providing said double-edged blade with a medial longitudinal weakened portion, and finally severing said double-edged blade along said weakened portion.

3. The herein described method of making a single-edged razor blade of the wafer type, which comprises the steps of medially scoring a steel blank of substantially uniform unhardened quality and having a width twice that of the blade desired, thereupon hardening and tempering the blank, grinding and polishing the opposite longitudinal edges thereof, and finally breaking the blank along the line defined by the scoring.

4. The herein described method of making single-edged razor blades of the wafer type, which comprises the steps of medially scoring a steel strip of substantially uniform unhardened quality and having a width twice that of the blades desired, also scoring the strip along transverse lines spaced by the lengths of the blades desired, hardening and tempering the strip, grinding and polishing the longitudinal edges thereof, each two transverse scorings thereby defining a double-edged blade of double width therebetween, and finally breaking the strip along the lines defined by the scorings.

5. The herein described method of making single-edged razor blades of the wafer type, which comprises the steps of providing a series of longitudinally spaced apertures along the medial portion of a steel strip, the strip having a substantially uniform unhardened quality and a width twice that of the blade desired, grasping and guiding the strip by means of said apertures to subject the strip to instrumentalities which harden and temper the strip and also grind and polish the opposite longitudinal edges thereof, and finally severing the strip along lines whereof one passes longitudinally through said apertures.

6. The herein described method of making single-edged razor blades of the wafer type, which comprises the steps of providing a set of longitudinally arranged apertures along the midportion of a steel strip, said strip being of substantially uniform unhardened quality and having a width twice that of the blades being made, said apertures being spaced by intervals which bear a predetermined relationship to the lengths of the blades being made, grasping and guiding the strip by means of said apertures to subject the strip to instrumentalities which temper and harden the strip and also grind and polish the opposite longitudinal edges thereof, and finally severing the strip transversely into blade lengths and longitudinally along a line passing through said apertures.

In witness whereof, I have signed and sealed this specification this 26th day of January, 1928.

MÁRCUS B. BEHRMAN.