C. E. CARPENTER.

RAZOR STROPPER.

APPLICATION FILED AUG. 5, 1915.

1,198,823.

Patented Sept. 19, 1916.

2 SHEETS—SHEET 1.

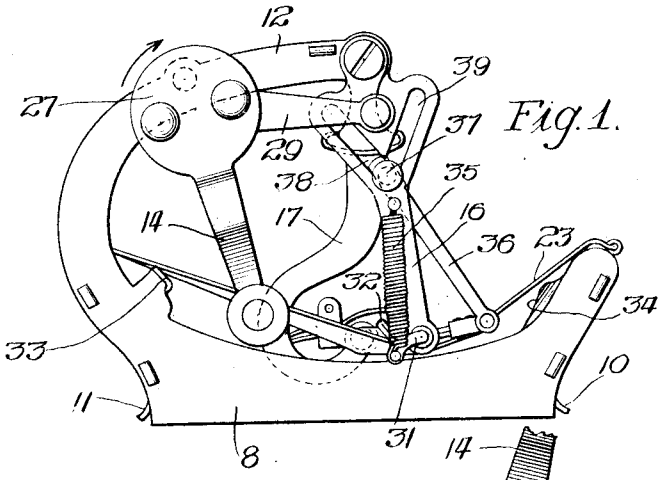


Fig. 1.

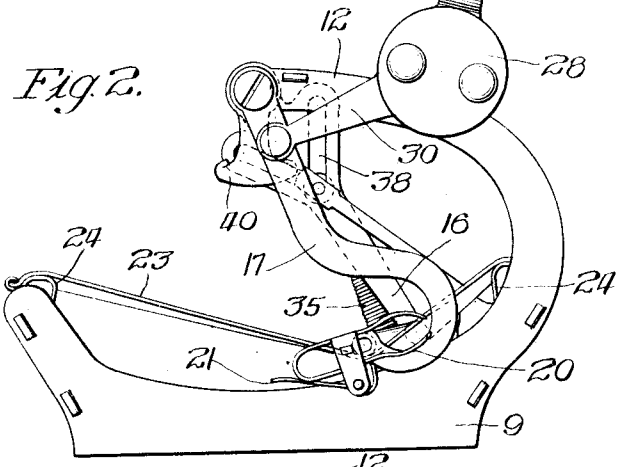


Fig. 2.

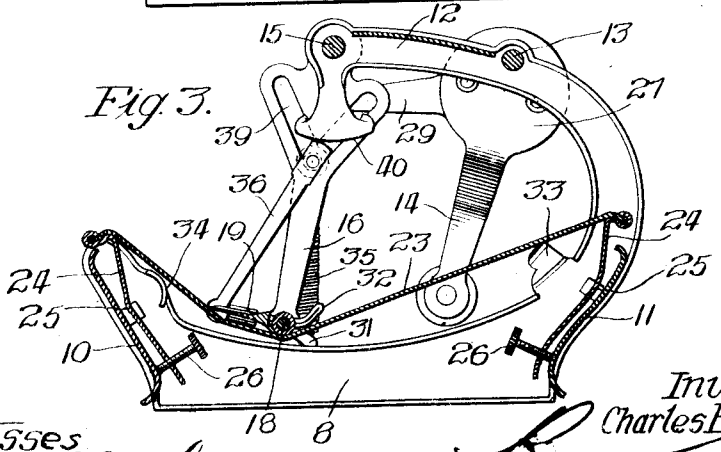


Fig. 3.

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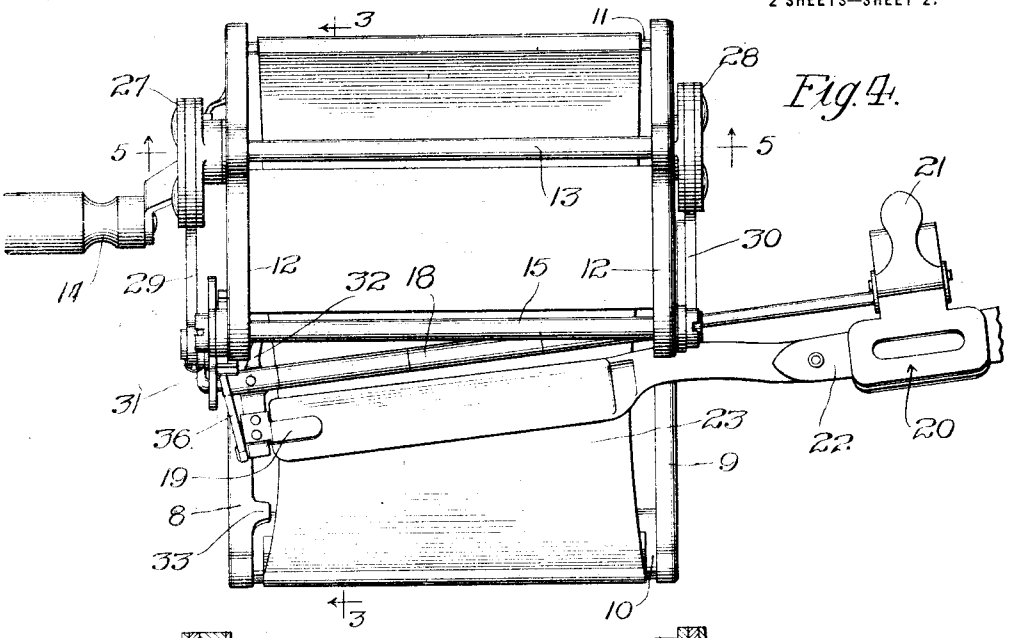


Fig. 4.

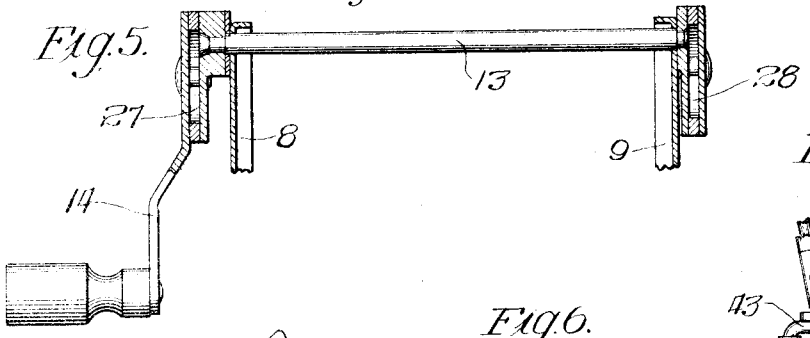


Fig. 5.

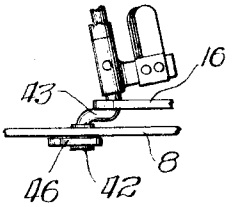
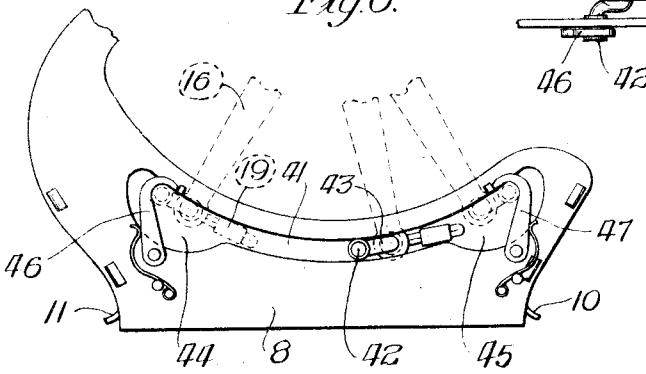


Fig. 7

Fig. 6.



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UNITED STATES PATENT OFFICE.

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RAZOR-STROPPER.

1,198,823. Specification of Letters Patent. Patented Sept. 19, 1916.

Application filed August 5, 1915. Serial No. 43,747.

To all whom it may concern:

Be it known that I, CHARLES E. CARPENTER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Razor-Stroppers, of which the following is a specification.

The present invention has to do with certain improvements in razor stroppers of that general type in which the razor blade is honed back and forth over the surface of a belt or honing strap of suitable material.

One of the objects of the invention is to provide a construction of such form that the razor blade may be very easily set into the carriage whereby it is held during the honing operation.

Another object is to provide a construction such that during the alternate back and forth honing movements, the blade will be tilted from side to side with respect to its direction of travel, so that in each direction of travel the blade will be drawn across the face of the belt while lying at the desired angle on the belt. In this connection one of the objects of the invention is to secure the result above mentioned, while at the same time securing the periodical reversal of the blade so as to alternately hone the faces of its cutting edge.

Another feature of the invention has reference to the construction of a mechanism whereby the foregoing objects may be attained in a very simple manner. In this connection, it is desired to provide a construction such that the completed stropper may be very easily and readily assembled from a comparatively small number of standard parts.

Other objects and uses of the invention will appear from a detailed description of the same which consists in the features of construction and combinations of parts hereinafter described and claimed.

Referring to the drawings: Figure 1 shows a side view of the assembled stropper, looking at the crank or operating side of the same. In this figure the crank stands near its lowermost position; Fig. 2 shows a view similar to Fig. 1, with the exception that it is looking toward the opposite side of the mechanism, with the crank standing near its uppermost position; Fig. 3 is a vertical section taken on the line 3—3 of Fig. 4, looking in the direction of the arrows, the crank standing near its lowermost position; Fig. 4 is a plan view of the completed stropper; Fig. 5 is a vertical section taken on the line 5—5 of Fig. 4, looking in the direction of the arrows; Fig. 6 is a detail view of a modified construction of the carriage reversing mechanism; and Fig. 7 is a detail section taken on the line 7—7 of Fig. 6, looking in the direction of the arrows.

Referring to the several figures, the operating mechanisms are shown as being mounted within a simple type of framework. This framework comprises the side plates 8 and 9 joined together by the end plates 10 and 11. The side plates 8 and 9 are of similar construction, each of them being provided with an upwardly extending arm 12. These arms serve to support the operating mechanisms, while, at the same time, leaving a free and unobstructed space between them within which the razor and operating mechanisms may travel back and forth.

Journaled in the arms 12 and extending across the space between them is the operating shaft 13. This shaft may be driven by the crank 14 so as to rotate the shaft in the direction of the arrows shown in Fig. 1.

Extending between the extreme ends of the arms 12 is the rod 15 which likewise spans the space between the arms. Journaled on said rod at one side of the machine is the swinging arm 16, and the swinging arm 17 is journaled on said rod at the other side of the machine. These rods are free to swing synchronously but not in unison. At their lower ends the arms 16 and 17 carry the cross-wise extending rod 18 which is journaled in the lower ends of the arms, so that it can be rocked back and forth. This rod carries the carriage within which the razor blade is mounted. The carriage illustrated comprises clips 19 adjacent to the arm 16, and a clamping device 20 adjacent to the arm 17. The clamping device 20 is provided with a lever 21 whereby it may be clamped firmly into engagement with the handle 22 of a razor or to a suitable razor blade carrier. The clips 19 serve to support the other end of the razor blade or carrier. The clips 19 and the clamping device 20 are secured to the rock shaft 18, so that as the same is rocked back and forth the razor blade will be turned over so as to

present the opposite faces of its cutting edge to the belt.

In the construction illustrated, the honing surface comprises a belt 23 which extends along the lower portion of the device, and has its ends suitably supported therein. In the arrangement illustrated, each end of this belt is connected into a blade 24; the blades in turn being pivoted to the end pieces of the frame at the points 25. Thumb-screws 26 serve as a convenient means for tilting the blades or limiting their tilting movement so as to allow the desired amount of slack to exist in the belt.

Mounted on the ends of the main shaft 13 are the crank disks 27 and 28. The disk 27 is drivingly connected to the arm 16 by the crank 29, and the disk 28 is drivingly connected to the arm 17 by the crank 30. By reason of these connections, the arms 16 and 17 are swung alternately back and forth as the crank 14 is rotated. This back and forth swinging carries with it the razor blade so as to hone the same on the belt.

I will now describe the construction of blade reversing mechanism shown in Figs. 1 to 5 inclusive. On the rod 18, are the cranks 31 and 32, best shown in Figs. 1, 3, and 4. The crank 31 projects to the outside of the machine and is adapted to engage a stop 33 when the carriage approaches one extreme movement, while the crank 32 lies to the inside of the machine, and is adapted to engage a stop 34 when the carriage approaches the other extreme of movement. A spring 35 has one end connected to a suitable portion of the arm 16 and its other end connected to the crank 31, so as to maintain the rock shaft 18 in either of the two positions into which it may be thrown. In the position shown in Fig. 1, the carriage is traveling toward the left, and at the proper time in the cycle of movements, the crank 31 will engage the stop 33, so as to throw the razor over to the other side, and on the back stroke the other side of the cutting edge will be honed.

In order to maintain the cutting edge of the razor in engagement with the belt independent of the spring 35, I have provided the link 36. The upper end of this link has the pin 37 which may travel in either of the slots 38 and 39 in the upper portion of the arm 16. The upper end of the link 36 travels beneath a stationary cam 40, best shown in Figs. 2 and 3. The link 36 cannot rise until its upper end has been carried past one end or the other of the cam 40. The lower end of the link 16 is connected to the clips 19 or any other suitable portion of the razor blade carrier, and, therefore, the edge of the blade cannot rise away from the belt until the carrier approaches the extreme limit of its movement so as to permit the link 36 to rise past the cam 40.

If both of the crank disks 27 and 28 were to be mounted in the same phase relationship on the main shaft 13, the arms 16 and 17 would travel back and forth in unison, so that the edge of the razor blade will always lie on the belt at the same angular position with respect to the direction of travel. However, it is recognized that the correct honing movement is one in which the razor blade is alternately reversed in angular position at the same time that it has turned over to present the opposite faces of its cutting edge to the belt. Therefore, I have made provision for always maintaining this desired angular relationship. This is done by arranging the disks 27 and 28 at different phase positions on the shaft 13. In the arrangement illustrated in the drawings, the disk 28 leads the disk 27, so that when the razor is traveling toward the left in Fig. 1, the arm 17 is leading the arm 16, and so that when the operation reverses to secure travel toward the right, the arm 17 will again be leading the arm 16. This fact is well illustrated in Figs. 1, 2, and 4, wherein it will be seen that the edge of the blade lies at an angle to the direction of travel.

In Figs. 6 and 7 I have shown a modified construction of reversing mechanism in which the stops 33 and 34, the spring 35, and the link 36 may all be dispensed with. In this case, one of the side frames is provided with an arcuate slot 41 within which travels the crank pin 42 of a crank 43 on the rod 18. The pin 42 is shown as provided with a roller to facilitate its travel within the slot. Each end of the slot 41 is enlarged as shown at 44 and 45, and adjacent to said enlarged portions are the pivoted hooks 46 and 47. The pin 42 projects beyond the slot a distance sufficient to engage the hooks 46 and 47 at the extreme limits of travel, as shown by dotted lines in Fig. 6. When the carriage is approaching the left extreme movement, the crank pin engages the hook 46; by reason of the relationship of said hook to the position of the crank, the crank will be pulled down and thrown over so as to secure the reversal of the carriage. The crank is enabled to perform this movement by reason of the enlargement 44 of the slot 41. A similar action takes place except in a reverse direction when the carriage approaches the other extreme limit of its travel. By reason of the travel of the crank pin 42 within the slot 41, the desired pressure of the razor blade against the belt may be secured without the necessity of using other mechanisms.

I do not limit myself to the features of construction herein shown and described, except as I may do so in the claims, but I contemplate within the scope of my invention any other equivalent mechanisms operating in equivalent manners to produce equivalent results.

I claim:

1. In a razor stropper, the combination of a frame, a belt extended upon the frame, a driven shaft, a pair of disks on the shaft mounted out of phase relationship, a pair of oscillatable arms, connecting cranks one between each disk and arm and arranged to oscillate said arms synchronously one in advance of the other when the driven shaft is rotated, and a blade carriage mounted at the swinging ends of the arms arranged to move a blade across the belt in alternately changing angular positions, substantially as described.

2. In a razor stropper, the combination of a frame, a belt extended upon the frame, a pair of arms oscillatably mounted on the frame, a carriage mounted at the swinging ends of said arms for holding a blade in operative position upon the belt, means for periodically reversing the blade carriage whereby the position of the blade upon the belt is reversed with each oscillation of the arms, and means for locking the blade carriage against reversal of position until after each such oscillation is substantially completed, substantially as described.

3. In a razor stropper, the combination of a frame, a belt extended upon the frame, a pair of oscillatable arms mounted on the frame, a rock shaft extended between the swinging ends of said arms, a carriage mounted on the shaft for holding a blade operatively upon the belt, means for causing the shaft to be rocked when the arms have reached their limits of oscillation, whereby the position of the blade upon the belt is reversed, and means for oscillating said arms synchronously one in advance of the other, whereby the blade is moved across the belt in alternately changing angular positions, substantially as described.

4. In a razor stropper, the combination with a honing belt, of a pair of oscillatable arms, means for securing between the arms a blade in honing position upon the belt, and means for oscillating said arms synchronously one in advance of the other, whereby the blade is moved across the belt in alternately changing angular positions, substantially as described.

5. In a razor stropper, the combination with a honing belt, of a pair of oscillatable arms, means for securing between the arms a blade in honing position upon the belt, means for oscillating said arms synchronously one in advance of the other, whereby the blade is moved across the belt in alternately changing angular positions, and means for periodically reversing the honing position of the blade upon the belt, substantially as described.

6. In a razor stropper, the combination of a frame, a belt extended upon the frame, a pair of oscillatable arms mounted on the frame, means for causing said arms to be oscillated, a rock shaft extending between said arms at the swinging ends thereof, means carried by said shaft for clamping a blade in honing position upon the belt, cranks upon the shaft, and stop members arranged to engage with the cranks for rocking the shaft when the arms are oscillated to extreme positions, whereby the honing position of the blade upon the belt is periodically reversed, substantially as described.

7. In a razor stropper, the combination of a frame, a belt extended upon the frame, oscillatable arms mounted upon the frame, means for oscillating said arms, a rock shaft between the arms, a carriage for the blade mounted upon the shaft, and means for holding the blade in honing position against the belt, including a spring connected with the rock shaft arranged to maintain the blade upon the belt in either of two reversible positions, stop members for periodically reversing the position of the rock shaft and blade carried thereon, and other means for locking the rock shaft against movement except when the arms have swung to their limits of oscillation, substantially as described.

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Witnesses:
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