

J. B. BROCKHURST.
 RAZOR STROPPING DEVICE.
 APPLICATION FILED SEPT. 21, 1909.

1,015,938.

Patented Jan. 30, 1912.

2 SHEETS—SHEET 1.

Fig. 1.

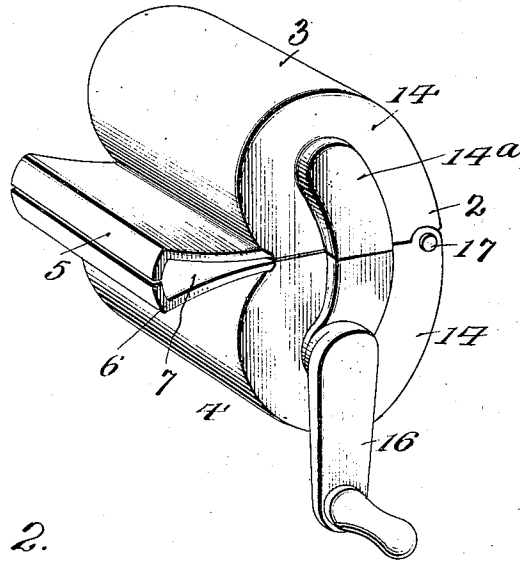


Fig. 2.

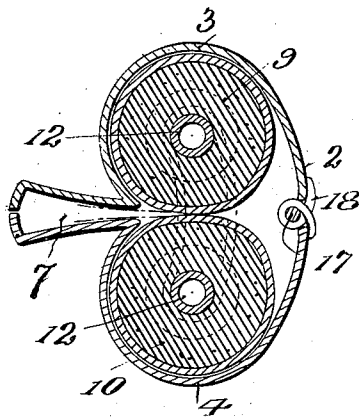


Fig. 3.

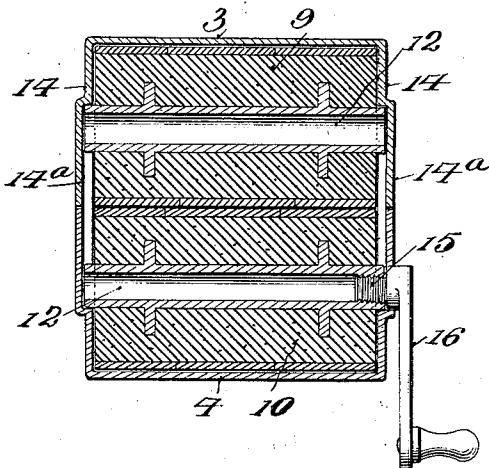
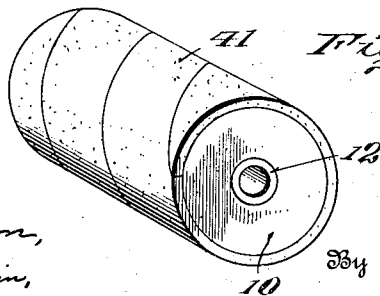


Fig. 4.



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2 SHEETS—SHEET 2.

Fig. 5.

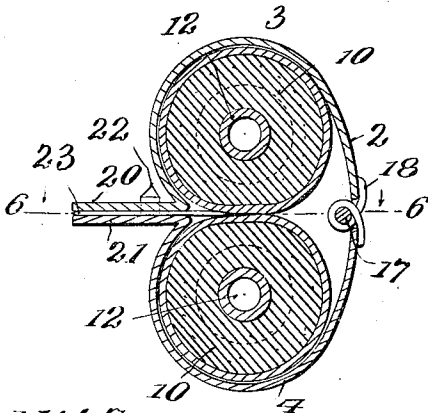


Fig. 6.

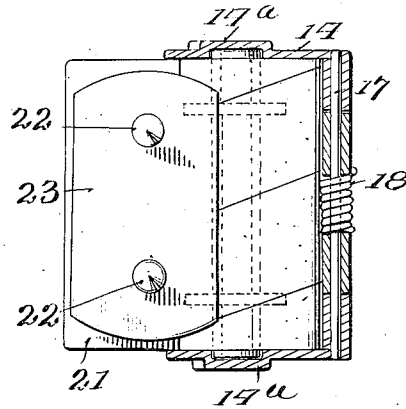


Fig. 7.

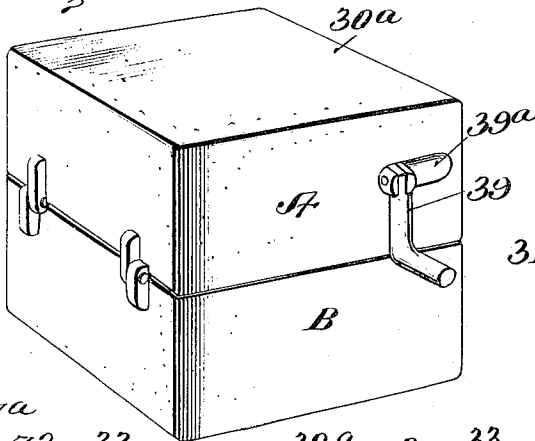
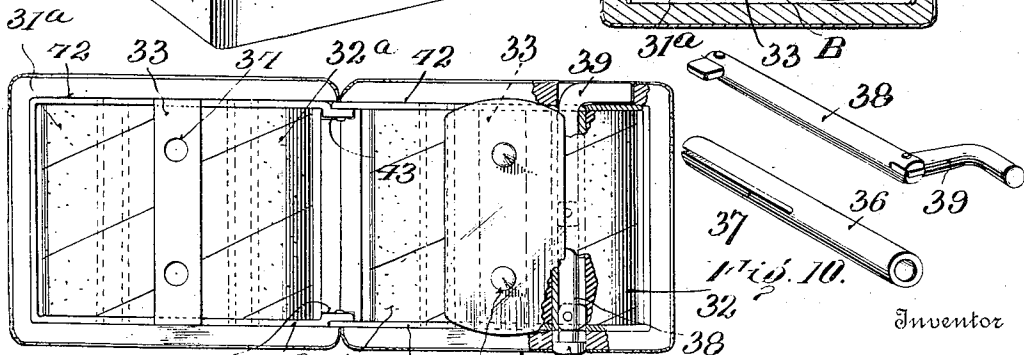
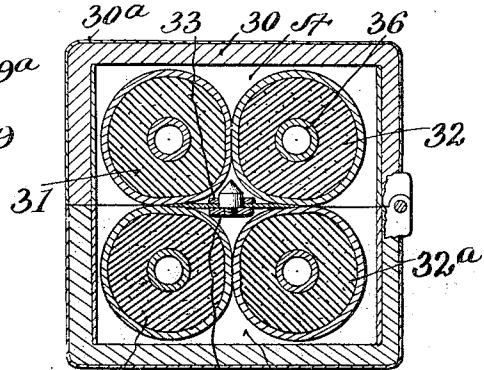


Fig. 8.



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Fig. 9.

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JAMES B. BROCKHURST, OF RED BANK, NEW JERSEY.

RAZOR-STROPPING DEVICE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JAMES B. BROCKHURST, citizen of the United States, residing at Red Bank, in the county of Monmouth and State of New Jersey, have invented certain new and useful Improvements in Razor-Stropping Devices, of which the following is a specification.

My invention relates to stropping and sharpening devices for razors and particularly to a stropping device adapted either to be used in sharpening ordinary concave razor blades or safety razors.

In the ordinary stropping or sharpening of the razors, the angle at which the blade is held to the stropping surface is constantly varying. This is injurious to the edge of the blade, particularly where the blade is drawn in one direction with one of the faces against the stropping surface and in the other direction with its opposed face against said surface for the reason that it tends to bend the minute teeth which form the cutting edge of the razor from one side to the other and thus weakens these teeth at the base and causes them to break. Furthermore, it does not leave these teeth in the same plane as the razor blade, but bent to one side or the other.

My invention has for its object the provision of a stropping device wherein the stropping surface at all times has an unvarying angle to the edge of the blade, and further to provide a stropping device wherein both faces of the blade are acted upon by the stropping surface at the same time, so that each side or face of the blade will be equally, continuously and effectively stropped and having the least deviation from a straight line thereby insuring a high degree of perfection in the sharpening and polishing of the edge of the blade.

A further object is to provide a stropping and sharpening device wherein these minute teeth shall be forced all into the same plane and whereby the foreign matter accumulated between the teeth may be removed.

Broadly my invention includes the provision of opposed pressing and abrading members of yieldable material which are so mounted that they may be pressed toward each other, so that the opposed pressing or abrading members are pressed against each

other and the surface of the pressing members will be deformed to a nearly flat surface where the rolls contact, a support being provided whereby a razor blade may be held with its edge inserted between said pressing members so that the flattened faces of the rolls will move across the opposed faces of the edge of the blade and strop or sharpen the same.

Further, my device includes the provision of a case within which these pressing and abrading members are contained, the case being adapted to be held in the hand and closed upon a razor blade to press the said pressing members against the blade and against each other to force the minute teeth on the blade into the same plane and the pressing members being provided with means whereby they may be easily moved by hand from the back of the blade in a direction toward the edge thereof.

My invention further includes certain details of construction and arrangements of the parts set forth in the accompanying specification and more particularly stated in the appended claims.

For a full understanding of the invention, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a perspective view of one form of my invention; Fig. 2 is a transverse section thereof; Fig. 3 is a transverse section taken on a plane at right angles to the section of Fig. 2; Fig. 4 is a perspective view of one of the sharpening rolls; Fig. 5 is a transverse section similar to Fig. 2 but showing a modified form of my invention; Fig. 6 is a view of Fig. 5 transverse to the plane of Fig. 5; Fig. 7 is a perspective view of another form of my invention, the case being closed; Fig. 8 is a transverse section thereof; Fig. 9 is a plan view showing the case opened, a portion of the case being broken away; and, Fig. 10 is a perspective view of the telescopic hinged crank, the parts being disassembled.

Corresponding and like parts are referred to in the following description and indicated in all the views of the accompanying drawings by the same reference characters.

Referring to the form of my invention shown particularly in Fig. 2, 2 indicates generally a casing which is composed of

two similar and nearly cylindrical sections 3 and 4. These sections are hinged to each other on one edge as will be later described and on the other edge are provided with the outwardly projecting jaws or plates 5 and 6. These jaws are flared outwardly and then turned sharply inward, so that the space between the two jaws has the shape of an ordinary concave-faced razor blade. The pressing members preferably have the form of rolls 9 and 10, which are formed of elastically yielding material, such as rubber, so that when the two rolls are pressed against each other with the razor blade between them, the cylindrical form of the rolls shall be deformed and the contacting faces thereof flattened, the faces of the rolls being, of course, covered with leather or other like material designed to give an edge to the blade.

The pressing rolls 9 and 10 are formed as before remarked of any elastically yielding substance and are preferably molded around the central shafts 12 which are supported in bearings in the casing, so that the rolls are rotatable therein. One of the shafts 12 is screw-threaded at its end or otherwise adapted to engage with the projecting end 15 of a crank 16. As shown the end plates 14 of the casing sections 3 and 4 are recessed, so as to form slightly arcuate seats 14^a within which the ends of the roll shafts are received and removably supported, permitting the rolls to rotate freely, but allowing them to be withdrawn from the casing when the sections are opened. The sections 3 and 4 are provided with hinge ears through which passes a spindle 17, and surrounding this spindle is a spring 18 which presses against the backs of the two sections 3 and 4 and acts to hold the case closed when not in use. The rolls 9 and 10 contact with each other and indeed when the casing sections are pressed together the rolls are positively compressed against each other, and thus when one roll is rotated the other roll is rotated, but in a reverse direction.

In Figs. 5 and 6 I show another form of my invention which is obviously the same as the form previously described except that the jaws, designated by the numerals 20 and 21, are adapted to support a safety razor blade. To this end one of these jaws is provided with projecting pins 22, while the other jaw is formed with perforations through which the pins 22 project when the jaws are closed. These pins 22 are so placed that they engage with the openings in the shank of an ordinary safety razor blade, so that the blade, designated in Fig. 5 by the numeral 23, will be held rigidly in its stropping position with one edge of the blade projecting inward beyond the jaws and into the interior of the case and between the opposed rolls 9 and 10. The rolls 9 and 10

are of an elastically yielding material, such as previously described, and become flattened when they are positively pressed against each other, so that the flattened faces form a very acute angle with the blade.

The operation of the invention so far described is as follows: The jaws are opened thus separating the rolls 9 and 10 and the blade inserted between the jaws. The jaws are forced toward each other and down upon the blade by gripping the jaws 5 and 6 or 20 and 21 and the rolls 9 and 10 rotated by actuating the crank 16. The pressing rolls rotating in opposite directions and on opposite faces of the blade will operate on both faces of the blade at the same time and as the flexible rolls are pressed against each other the contacting faces thereof will be relatively flattened and that portion of the roll which is in contact with the edge of the blade will be nearly in a plane co-incident with the plane of the razor blade, thus the contacting surface will have only the slightest deviation from a straight line and have an extremely acute angle with the edge of the blade.

In Figs. 7 to 10 I show another form of my invention which is adapted to hone or strop at one and the same operation, both faces of each edge of the ordinary safety razor blade, by using in combination two pairs of opposed pressing rolls, each of said rolls contacting with the next adjacent roll on each side. In this construction, 30 designates an exterior case which may be made of wood covered with leather 30^a or any suitable material and which is formed in two sections A and B hinged at their rear edges, so that the sections may open to permit the insertion of the razor blade. Mounted within each section is a pair of pressing rolls 31 and 32 which contact with each other along a considerable portion of their circumference and hence are held pressed against each other when the sections are positively forced toward each other in the pressing and sharpening operation. The opposed section of the casing is also provided with the two pressing rolls 31^a and 32^a which are placed against each other, as above described, and which when the case is closed are forced against the rolls 31 and 32 just referred to. Crossing each of the sections A and B transversely is a bridging strip 33. One of these is formed with the perforations 34 and the other carries the pins 35 adapted to engage through said perforations, these pins and perforations being so located that the pins will pass through the perforations usual to safety razor blades. It is of course only necessary that one of the rolls 31 and 32 should be rotated in order to drive all three of the others. While I may use the crank shown in Fig. 1 for this purpose, I preferably form one of the rolls

with a tubular shaft 36 which at one end is slotted, as at 37. Mounted within the tubular shaft 36 is the rod 38 having at its end the lug 39 which projects into the slot 37.

5 It is seen that the rod while shiftable through the tubular shaft 36 is yet in rotative engagement with the shaft 36 at all times. The extremity of the rod 38 is bifurcated and pivotally mounted therein is the handle 39. It will be seen that when the rod 39 is pulled out of the tubular shaft 36 and into the position shown in Fig. 7, that the crank handle may be operated to rotate the tubular shaft 36, while the pivotal connection at 39 permits the crank handle to be turned into alinement with the rod 38 and into position to be telescoped into the tubular member 36 until the bent end of the crank handle is received within a recess 39^a in the side of the case. The other side of the case is formed with a recess supporting a button 40 which is intended to be covered by the covering material 31^a of the case. When the rod 38 is telescoped into the tube 36 its end will contact with this button 40 and force it outward. When it is desired to move the rod outward in order to disengage the crank it is only necessary to push upon this button 40 which will project the rod 38 sufficiently to permit the handle 39 to be turned upon its pivot into operative position.

I may form the pressing rolls 9 and 10 in any desired manner and cover them with any suitable material, such as leather. Preferably the rolls are covered with a strip of leather 41 which is wrapped around the roll spirally, as shown in Fig. 4, this strip being fastened to the material of the roll in any suitable manner. I have found in practice that a roll covered with a spiral strip of leather or other stropping material gives a much better edge to the razor than if the strip extended circumferentially around the roll. By this means the grain of the stropping leather as the rolls are rotated, will be moved diagonally against the edge face of the blade.

While I have shown a telescopic crank shaft with a hinged crank handle in Fig. 10, I do not wish to be limited to its use with this particular style of stropping device, as it is obvious that the same form of crank handle and telescopic shaft might be applied to the device shown in Figs. 1 and 5 without altering these forms of my invention. I have shown what I believe to be the most effective details of construction, but I do not wish to be limited to this, as it is obvious that the spirit of my invention may be applied in many different ways and that the construction illustrated may be varied to a considerable extent.

Referring particularly to Figs. 7, 8 and 9, I provide a U-shaped frame which supports

the rollers and which is located within each section of the exterior case 30. The extremities of each U-shaped frame 42 fit snugly into slots 43 in the outer wood casing. This properly spaces the side members of the U-shaped frame from each other and retains them at the proper distance, thus squaring the frame nicely within the wood casing 30. I do not wish to limit myself to these details of construction, though I regard it as very effective, as it prevents any deformation of the case, and consequent binding of the rollers.

In explanation of the principles upon which my invention operates it may be said that the edge of a keen razor blade is composed of minute delicate, hair-like teeth which act somewhat like the teeth of a saw, and which through use become clogged, injured, and out of alinement, and thus cause the razor to become dull. These minute teeth, in other words, become bent from one side to the other and it is necessary to realine them in order to bring the razor to a proper cutting edge. The foreign substances must be removed from between the teeth and the teeth straightened. This straightening out of the teeth and removing foreign substances from between them may be repeated as often as necessary, and the edge each time will be placed in proper position until such time as the teeth again become bent and clogged, and until such time as the teeth become so injured that they cannot be realined and it becomes necessary to form new teeth upon the edge by the use of abrasive material. In other words the razor must be reground. In stropping the razor in the usual manner, by a backward and forward movement over a strop the teeth become bent or turned alternately in opposite directions as the blade is reciprocated. This bending of the teeth first in one direction and then in the other tends to cause the teeth to break off, and the blade is "overstropped."

My invention is intended to act in an entirely different manner from ordinary stropping devices. It provides means for forcing the teeth into alinement with each other, and into alinement with the plane of the razor blade, so that the teeth instead of being turned alternately in one direction and the other are simply returned to their original position. Consequently the edge remains keen for a much longer period than when the blade is stropped in the manner ordinarily practiced. It is therefore to be noted that the compressing and sharpening rollers revolve away from the edge of the blade, thus removing the foreign accumulations between the teeth and rolling the teeth into proper alinement. My device presses, rolls and draws out the teeth and the foreign accumulation, and this pressing

and drawing out of the teeth is in a direction away from the edge.

In the operation of my invention two things are to be particularly noted, one is that the blades are inserted between the rolls so that the edge of the blades is short of the point of the greatest pressure between the rolls. In other words it will be seen in Figs. 2, 5 and 8 that the blade does not entirely separate the rolls but that a plane cutting the axes of both rolls does not touch the razor blade and that the rolls at the point of greatest pressure will contact with each other and be pressed closely together. It is further to be noted that the rolls rotate away from the razor blade.

In carrying out the principle of my invention it is important and very essential that the rollers be in actual contact at the point of maximum pressure on their flattened faces, for the reason that the pressing effect of the yielding face of the pressing members increases up to the point of maximum pressure and that thus the pressure of the yielding pressing members increases as the surface of the pressing members is carried over the interstices between the teeth. If this pressure did not increase to a point beyond the edge of the razor blade the yielding material of the pressing members would not sink down into the spaces between the teeth, would fail to enter these spaces or interstices and thus the foreign accumulations between the teeth would not be removed, nor would the pressing members aline the teeth in a lateral direction.

The pressure between the yielding pressing members must be greater at the apex of each tooth than at the base of the tooth in order to give the pressing members a flattened face at this point. This is for the reason that the blade is thicker at the base of the teeth than at its apex and the surface of the yielding pressing member would meet the base of the tooth at an earlier period than the same point on the surface of the pressing member meets the apex of the tooth. Therefore, the point of maximum pressure should be beyond the edge of the blade so that the yielding material of the pressing members will be forced into the spaces between the teeth throughout the whole extent of the teeth and will contact with the teeth throughout their whole extent instead of simply at the base. This drawing out of the foreign accumulations and the lateral alining of the teeth would not occur should the point of maximum pressure coincide with the apices of the teeth or the base of the teeth. With my construction the point of maximum pressure is in advance of the edge of the blades. The portion of each pressing member which engages with the fine hair like teeth on the blade presses these teeth out into alinement

with the plane of the blade and the portion of each pressing member which is forced into the spaces between the teeth also performs the office of laterally alining the teeth and thus the teeth are acted upon on four planes, the upper and lower planes, and the two side planes, and thus the teeth are alined so that they are absolutely perpendicular to a plane at right angles to the plane of the blade. The yielding abrasive and pressing members sink down into the interstices between the teeth and as the surface of each member passes from the base of the tooth of the apex of the tooth it not only bends all the teeth into alinement with each other, but grinds or abrades the fine edges of the teeth.

From the above it will be seen why it is necessary that the pressing and abrading rolls or members should move from the back of the razor blade across the edge thereof and why the edge of the razor should not be coincident with the point of maximum pressure between the pressing members. It is furthermore noted that I have provided means whereby the two sections supporting the pressing and abrading rolls may be positively forced toward each other, the device being so constructed that the two sections are easily gripped in the hand or between the members of a vise for instance, and the rolls forced against each other with any desired amount of pressure.

It will be seen that my invention provides a sharpening or stropping device for thin, fine blades, such as razor blades of a very simple character and one wherein both faces of the blade are sharpened into cutting condition at the same time, and that in one form of my invention I provide means for sharpening both faces of a safety razor blade simultaneously. The device is compact and may be cheaply made but its principal advantage lies in the fact that the blade is put into cutting condition not primarily by abrading the material of the blade at its edge and thus cutting away the fine hair-like teeth but that it operates on an entirely new principle of pressing these teeth into alinement with each other and thus bring them back to their original sharp or cutting condition.

Having thus described the invention, what I claim is:—

1. A razor sharpening device including two hinged duplicate half sections forming a case and provided with opposed manually actuatable blade clamping members supported one on each section of the casing and adapted to clamp a blade between the two sections, rolls of yielding elastic material supported in the respective sections and adapted to be forced against each other when the case is closed to flatten the contacting faces of the rolls against each other and

against the cutting margin of a blade, and means for rotating the rolls in opposite directions.

2. A razor sharpening device including a case formed of two sections hinged to each other and adapted to be manually pressed together, each section having mounted therein a pressing roll of yielding elastic material, and means on the case whereby the rolls may be rotated in opposite directions, said sections of the case when closed forming a blade clamping means for supporting a blade with its edge between the contacting faces of the closed rolls.

3. A razor sharpening device including oppositely disposed pairs of pressing rolls, each of said rolls being formed of yielding elastic material, means whereby one pair of pressing rolls may be forced toward the other pair to flatten the contacting faces of the rolls into a parallel relation, and means for supporting a double edged blade with its median axis disposed in a plane between the rolls of each pair and with its opposed edges between the opposed pairs of rolls, and means for rotating each roll in opposite directions to the next adjacent roll and in a direction toward the adjacent edge of the blade.

4. A razor sharpening device including oppositely disposed pairs of pressing rolls of yielding elastic material, means whereby one pair of pressing rolls may be forced toward the other pair to flatten their contacting faces into a parallel relation, a blade support extending midway between the rolls of each pair and with its supporting face disposed in a plane between the opposed pairs of rolls, and means for rotating each roll in an opposite direction to the adjacent rolls.

5. A razor sharpening device including a case formed of two sections hinged to each

other, each section being provided with a pair of pressing rolls of yielding elastic material, the sections being hinged to each other whereby one section may be forced toward the other to force the pressing rolls of one section into contact with the pressing rolls of the other section, opposed clamping bars, one for each section of the case and extending medially between the pair of rolls of that section, said clamping bars when the case is closed clamping a blade between them and holding the blade with its opposed edges between the opposed pairs of rolls, and means mounted on the case for rotating the rolls.

6. In a machine for stropping double edged razor blades, a blade support, stropping members contacting with both sides of both edges of the blade, and means for actuating the stropping members.

7. In a machine for stropping double edged razor blades, a blade support, and means for simultaneously stropping all four cutting faces of the blade.

8. In a blade stropping device, a case made in two sections, a stropping roll mounted in each section, the stropping rolls being opposed, the sections of the case being pivotally connected to each other to permit one section to be forced toward the other, and opposed parallel blade gripping members extending parallel with the stropping rolls and one attached to each section of the case and adapted to hold a blade between them with its edge in contact with the stropping rolls when the sections are closed upon each other.

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

JAMES B. BROCKHURST. [L. S.]

Witnesses:

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ADOLF L. ENGELKE.