To all whom it may concern:

Be it known that I, ROBERT E. JORDAN, 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 Hog-Scraping Structures, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates primarily to the treatment of animals, and more especially to hog dehairing structures.

The object of the invention is to provide a structure in which the effective parts are so disposed in a rotatable mounting as to be capable of a certain degree of automatic adjustment therein, in contradistinction from a rigid securement in the same.

Another object within the contemplation of the invention is to provide a rotatable mounting to which beater elements are attached for slight self-adjustment—as distinguished from a rigid and unyielding fastening—whereby any tendency to develop breaking strain on the parts is reduced to a minimum, with consequent prolongation of the life of the structure.

Still another object is to construct the mounting so that it will have a normal tendency to maintain the beater-elements disposed thereon outstanding and in an effective position during their cycle of movement in relation to the animal being treated.

A further object of the invention is to present an assembled structure, comprising a mounting and a set of beater-elements loosely attached thereto whereby such elements, though of a flexible character, are, in use, maintained in proper operating position at the necessary instant of time, and are also reinforced whereby they are made more effective for their designed purpose during their impingement against the animal under treatment.

Still another and more specific object of the invention is to secure each of the beater-elements, in juxtaposition to a reinforcing element,—both of these elements being preferably of a flexible character,—in a mounting so that these elements may have a slight play or adjustment at the point of their securement in order that any tendency thereof to break at a particular point intermediate of their ends is substantially reduced, wherefore replacement of such elements is rendered necessary less frequently than in other apparatus now in use.

Other objects and advantages are inherent in the proposed structure, all as apparent or will be obvious from the following description.

This invention in general seeks to provide an animal dehairing structure which is particularly adapted for use in treating hogs and which structure, from an operative standpoint, will in practical use be found to possess a high degree of efficiency and durability and which, structurally considered, is of great simplicity.

The invention resides broadly in the features of construction, combination of elements, and related aggregation of the parts thereof, all as exemplified in the construction hereinafter set forth, and the scope of application of which will be indicated in the claims hereto appended.

In order that this invention may be more clearly comprehended, drawings illustrating one of the many possible embodiments and utilizations of the same are hereto appended as a part of this disclosure, it being manifest that other possible embodiments and utilizations, employing the underlying principles of the invention, naturally fall within the spirit thereof and within the objects contemplated thereby.

In these drawings:

Figure 1 is a view in elevation of a machine constructed in accordance with my invention;

Fig. 2 is a view in elevation, partly in section, of one of the beater-instrumentalities of the machine embodying my improvement; one set of the beater-elements and reinforcing elements carried thereby appearing, in dotted lines, in the position they assume as the beater-instrumentality is rotated;

Fig. 3 is a view in top plan of the same;

Fig. 4 is a detail view in section, on an
enlarged scale, of one of the element-securing devices.

Fig. 5 is a fragmentary view in elevation thereof; and

Fig. 6 is a view similar to Fig. 4 of a modified form of the structure therein revealed.

In hog dehairing and polishing machines, as now constructed, the beater-elements are rigidly clamped in a mounting; and, while rotating at the rate, say, of 165 revolutions per minute, in coming into contact with the hog, a hinge reaction is caused at a point adjacent to that at which the elements are clamped, and these elements will then naturally break at that point in a comparatively short time. In present-day practice, one type of structure which is much in use includes, generally, a rotatable mounting comprising radiating portions to which beater-elements are secured by a bolt. Each of these radiating portions tends to maintain the beater-element in operating position; but no means of support are provided for preventing the element from bending over, in one direction, and this is a serious defect in the structure, as practice has demonstrated. The normal breaking-point of each of the beater elements, in this type of structure, is adjacent the bolt because, at that point, the element is rigidly clamped to its respective radiating portion and has a normal tendency to bend at that point and quickly become weakened so that it will eventually break there. This is another serious defect in this sort of structure. Replacements in this type of apparatus are rendered necessary so frequently that the expense of operating them is very high.

My present invention is predicated upon the discovery of effective means for overcoming these defects:

In Figs. 1 to 5, I have illustrated a preferred embodiment of the invention, which comprises a novel form of mounting, and a novel means of securing the beater-elements therein, all as will now be described.

The mounting, which is designated generally by the reference-character 5, includes a set of aggrouped castings, each comprising a body-portion 6, a straight radiating portion 7 and a curved radiating portion 8. As seen in Fig. 2, a straight portion 7 and a curved portion 8 are aggrouped as companion portions, and are held in such relation by a bolt 9. By reason of the fact that both portions are angulated in opposite directions with relation to the body portion 6, a space between them is provided, and this may be of any required dimensions. Extending between the angulated sections of the companion portions 8 and 9 is a bolt 10 which constitutes an axis for the operating elements presently to be described. It is to be understood that each of these bolts 10 is rigidly secured between the angulated sections and has no relative movement in respect thereto.

In the space between the angulated sections is a beater-element 11, preferably formed of a flexible material, such as rubber belting, and these carry at their outer ends hair-removing scrapers 12.

Juxtaposed to each beater-element 11 is a reinforcing element 13, preferably constructed of material similar to that of the element 11, but of less length, as shown in Fig. 2.

Due to the violent strains imposed upon the beater-element 11 in action, I have found it desirable to connect it to the bolt 10 by a holding element 14, preferably made of metal, and, as shown in Figs. 4 and 6, comprising two side-plates 15, 15 secured by rivets 16 which also extend through the flexible material of the beater-element. Each reinforcing element 13 is similarly connected to the bolt 10 by a metallic holding element 17. Preferably and as shown, each of these holding elements 14 and 17 is relatively thicker than the elements 11 and 13 and thereby performs the additional function of spacing the elements 11 and 13 from each other, as illustrated in Fig. 2. It is to be noted, however, that the space between the inside surfaces of the companion sections 7 and 8 is of greater dimension than the thickness of the holding elements 14 and 17, together, so that there is provided a certain degree of freedom of movement of these elements 14 and 17 on the bolt 10. This permits a sliding, axial movement of the beater and reinforcing elements 11 and 13 on the bolt 10. There is, in consequence, no point at which these elements are rigidly clamped to each other or to the mounting. The shifting of the elements on the bolts 10 effects a constant shifting of the point of strain thereon and, thus, reduces likelihood of breaking thereof to a minimum, and there is not the hinge reaction above described with respect to the structure of present-day practice.

In addition to the axial movement of each beater-element and its reinforcing element, I have found it desirable also to provide for a rocking movement of the members 14 and 17 on the bolts 10, and this is accomplished by forming the bolt-engaging surfaces 18 of the members 14—and the corresponding portions of the members 11—are similarly formed—with a more or less curved contour, as shown in Fig. 4, for instance. It will be seen, therefore, that each set of beater and reinforcing elements has two distinct and independent movements on the holding bolt 10, one being the aforementioned sliding movement in an axial direction, and the other being the aforementioned rocking
movement. It is to be noted that the space between the radiating straight and curved sections of the mounting is sufficient to permit these movements to the required extent; but these sections are not so remote from the elements as to prevent their having a contacting engagement therewith.

In Fig. 4, I have illustrated a structure in which the rocking movement is not provided for, because in some instances it may be desirable to prevent this.

In action, the beater-instrumentality operates in the following manner:

As shown in Fig. 1, there are a plurality of these beater-elements, each mounted on a supporting shaft 19, the shafts being driven in synchronism by a suitable drive-mechanism, the details of which form no part of the present invention and are, therefore, not necessary herein to be set forth. The beater-instrumentalities are disposed on these shafts in vertical arrangement, and operate in sets; the set on the right-hand side of the machine, as viewed in Fig. 1, comprising three of these instrumentalities, say, each of which operates in a counter-clockwise direction, and they perform their effective action as they swing inward and move downward against the animal disposed between the two sets of instrumentalities. The set of instrumentalities on the left-hand side is designed to operate as the beater-elements swing inward and upward.

Due to the fact that the beater-elements are desirably constructed of flexible material, their tendency is to swing backward. This tendency is partly but not entirely resisted by the reinforcing element 13 which, also, is arranged to swing backward against the curved section 8 of the mounting. This section operates to limit the backward swinging movement of the reinforcing element and, thus, of the beater-element. During the cycle of movement of the beater-instrumentality, if the beater-elements were not in some way restrained, they would have a normal tendency to swing over and downward; but this is resisted by the straight section 7 of the mounting. Therefore, the straight and curved sections perform their prescribed functions of maintaining the beater and reinforcing elements in a normal outstanding position, and this is a feature of novelty, I believe, that is of great importance in this type of structure in that it contributes in a large measure toward relieving strains upon the beater-element as the same swings first in one direction and then in another during the rotative movement of the mounting which carries it. This action of parts of the mounting, in connection with the sliding and rocking movements of the beater and reinforcing elements on the bolts 10, further tends to relieve strains and what would normally be a hinging action and reaction thereon as the same swing with speed and impinging force toward and against the animal under treatment.

From the foregoing, it will be perceived that I have devised a simple and effective structure for the purposes intended.

What I claim is:

1. A beater-structure including a rotatable mounting-member and a beater-element carried by and freely movable axially on said member.

2. A beater-structure including a shaft, a rotatable mounting-member on the shaft, and a flexible beater-element carried by and bodily movable freely on said member.

3. A beater-structure including a mounting-member and a beater-element loosely carried by said member to permit slight play at the point of attachment of the element to the member, whereby the point of strain may constantly shift.

4. A beater-structure including a mounting-member and a flexible beater-element carried by and freely movable on the member and also having a rocking movement thereon.

5. As an article of manufacture, a beater-structure including a mounting-member and beater-elements sustained thereby and each bodily movable freely thereon.

6. As an article of manufacture, a beater-structure including a mounting-member and a series of flexible beater-elements independently carried loosely by the member for free individual adjustment thereon.

7. As an article of manufacture, a beater-structure including a mounting-member and a series of flexible beater-elements independently carried loosely by the member for free individual axial adjustment thereon.

8. As an article of manufacture, a beater-structure including a mounting-member and a series of flexible beater-elements independently carried by the member for individual adjustment thereon, such adjustment including a rocking movement of the elements.

9. As an article of manufacture, a beater-structure including a mounting-member and a series of flexible beater-elements independently carried by the member for individual axial adjustment thereon, and also having a rocking movement on the member.

10. As an article of manufacture, a beater-structure including a mounting-member and a series of flexible beater-elements independently carried by the member for individual axial adjustment thereon, and also having a rocking movement on the member on an axis angular to that of the member.

11. A beater-structure including a mounting-member, a beater-element loosely carried by and freely adjustable on the mem-
12. A beater-structure including a mounting-member, a flexible beater-element carried by and axially adjustable freely on the member, and a flexible reinforcing-member also carried by and axially adjustable on the member.

13. A beater-structure including a mounting-member, a flexible beater-element carried by and axially adjustable on the member, and a flexible reinforcing-member also carried by and axially adjustable freely on the member independently of the axial adjustment of the beater-element.

14. A beater-structure including a rotatable mounting-member, a flexible beater-element carried by and axially movable freely on the member, and a flexible reinforcing-element juxta posed to the beater-element and axially movable freely on the member and in relation to the beater-element.

15. A beater-structure including a rotatable mounting-member, a plurality of flexible beater-elements mounted on the member for independent and free movement axially thereon, and flexible reinforcing elements mounted on the member in juxtaposition to but spaced-apart from the beater-elements.

16. A beater-structure including a rotatable mounting-member, a plurality of flexible beater-elements mounted on the member for independent and free movement axially thereon, and flexible reinforcing elements mounted on the member in juxtaposition to but spaced-apart from the beater-elements and freely movable axially on the member.

17. A beater-structure including a rotatable mounting-member, a plurality of flexible beater-elements mounted on the member for independent axial movement thereon, and flexible reinforcing elements mounted on the member in juxtaposition to but spaced-apart from the beater-elements and axially movable on the member, the beater and reinforcing elements also having an individual rocking movement on the member.

18. A beater-structure including a rotatable mounting-member comprising a body-portion and outstanding radial portions, a plurality of beater-elements swingingly carried by the member and sustained in a relatively upright position by one of said radial portions and axially movable on the member between said radial portions, and having also a rocking movement irrespective of the axial movement, and a plurality of beater-elements swingingly carried by the member and juxtaposed to the beater-elements and movable thereby to abut against the other of the radial portions of the mounting-member.

19. A beater-structure including a rotatable mounting-member comprising a body-portion and outstanding radial portions, a plurality of beater-elements swingingly carried by the member and sustained in a relatively upright position by one of said radial portions and axially movable on the member between said radial portions, and having also a rocking movement irrespective of the axial movement, and a plurality of beater-elements swingingly carried by the member and juxtaposed to the beater-elements and movable thereby to abut against the other of the radial portions of the mounting-member.

20. A beater-structure including a rotatable mounting-member comprising a body-portion and outstanding radial portions, a plurality of beater-elements swingingly carried by the member and sustained in a relatively upright position by one of said radial portions and axially movable on the member between said radial portions, and having also a rocking movement irrespective of the axial movement, and a plurality of beater-elements swingingly carried by the member and juxtaposed to the beater-elements and movable thereby to abut against the other of the radial portions of the mounting-member and having also a rocking movement irrespective of the axial movement.

21. A beater-structure including a rotatable mounting comprising a series of related sections secured together and each formed with a straight radial portion and a curved radial portion, bolts extending between the radial portions, metallic beater-holding elements encompassing the bolts and slideable thereon, flexible beater-elements secured in said holding elements and normally sustained in a perpendicular position by said straight radial portions, metallic reinforcement-holding elements also encompassing the bolts in normally spaced-apart relation to the beater-holding elements and slideable in relation thereto, and flexible reinforcing strips secured in said holding elements and juxtaposed to the beater-elements and engageable with said curved radial portions.

22. A beater-structure including a rotatable mounting comprising a series of related sections secured together and each formed with a straight radial portion and a curved radial portion, bolts extending between the radial portions, metallic beater-holding elements encompassing the bolts and slideable and rockable thereon, flexible beater-elements secured in said holding elements and normally sustained in a perpendicular position by said straight radial portions, metallic reinforcement-holding elements also encompassing the bolts in normally spaced-apart relation to the beater-holding elements and slideable in relation thereto, and flexible reinforcing strips secured in said holding elements and juxtaposed to the beater-elements.
ments and engageable with said curved radial portions.

23. A beater-structure including a rotatable mounting comprising a series of related sections secured together and each formed with a straight radial portion and a curved radial portion, bolts extending between the radial portions, metallic beater-holding elements encompassing the bolts and slidable and rockable thereon, flexible beater-elements secured in said holding elements and normally sustained in a perpendicular position by said straight radial portions, metallic reinforcement-holding elements also encompassing the bolts in normally spaced-apart relation to the beater-holding elements and slidable in relation thereto and rockable on the bolts irrespective of the sliding movements of the elements, and flexible reinforcing strips secured in said holding elements and juxtaposed to the beater-elements and engageable with said curved radial portions.

24. A beater-structure including a rotatable mounting comprising a series of related sections secured together and each formed with a straight radial portion and a curved radial portion, bolts extending between the radial portions, metallic beater-holding elements encompassing the bolts and slidable thereon, flexible beater-elements secured in said holding elements and normally sustained in a perpendicular position by said straight radial portions, metallic reinforcement-holding elements also encompassing the bolts in normally spaced-apart relation to the beater-holding elements and slidable in relation thereto, and flexible reinforcing strips secured in said holding elements and juxtaposed to the beater-elements and engageable with said curved radial portions, said metallic sustaining-elements being of greater thickness than the flexible elements secured thereon and acting also as spacing instrumentalities.

25. A beater-structure including a rotatable mounting comprising a series of related sections secured together and each formed with a straight radial portion and a curved radial portion, bolts extending between and rigid in the radial portions, metallic beater-holding elements encompassing the bolts and slidable thereon, flexible beater-elements secured in said holding elements and normally sustained in a perpendicular position by said straight radial portions, metallic reinforcement-holding elements also encompassing the bolts in normally spaced-apart relation to the beater-holding elements and slidable in relation thereto, and flexible reinforcing strips secured in said holding elements and juxtaposed to the beater-elements and engageable with said curved radial portions, said metallic sustaining-elements being of greater thickness than the flexible elements secured thereon and acting also as spacing instrumentalities.

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

ROBERT E. JORDAN.

Witnesses:

W. J. RICHTER,

HARRY C. LEVINSON.