July 10, 1962 M. K. KAUSCHE 3,043,269

AUTOMATIC STANCHION

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FIG. 1

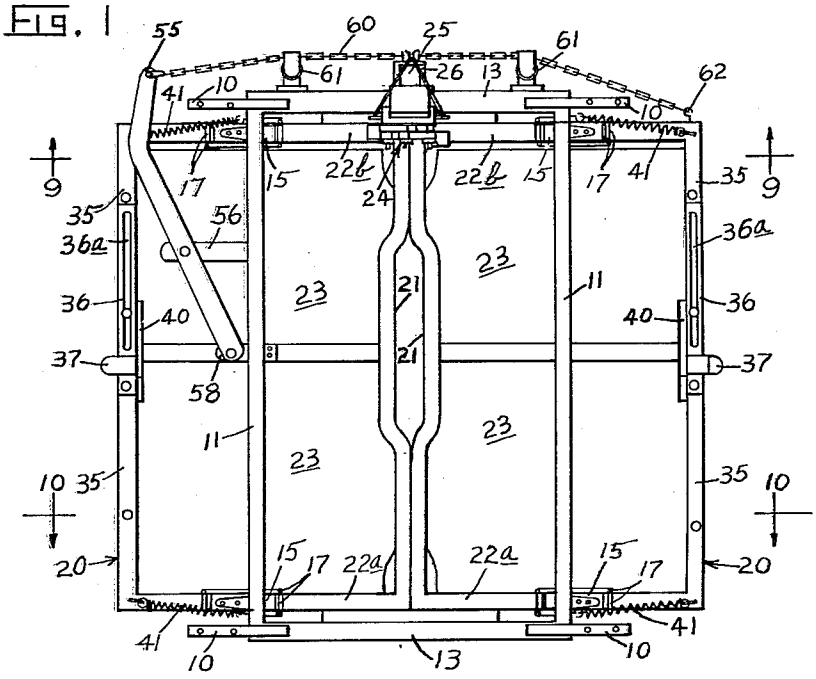
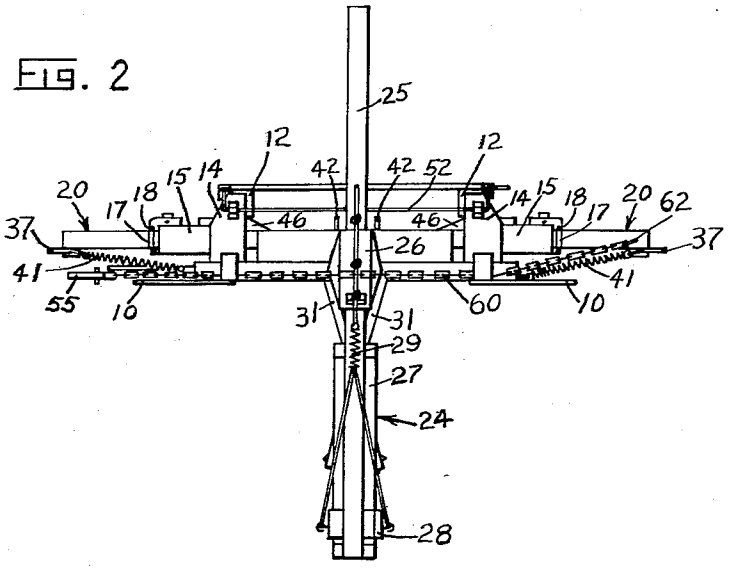


FIG. 2



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FIG. 3

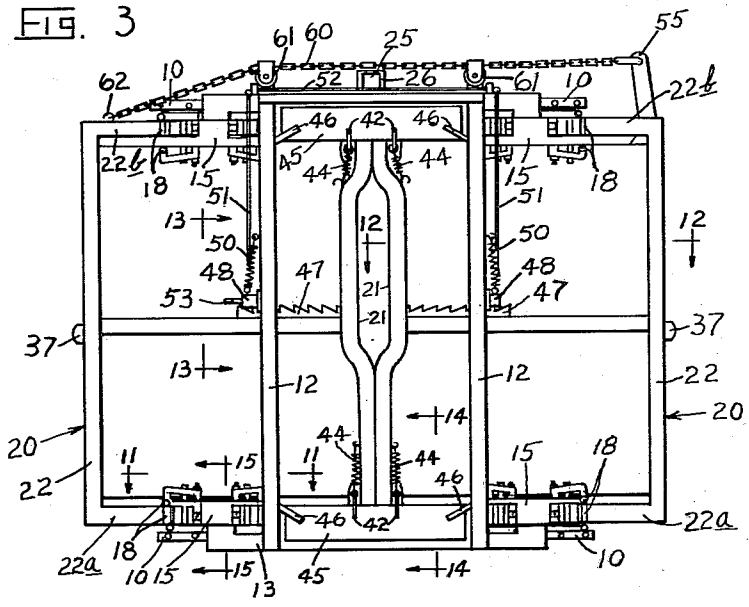
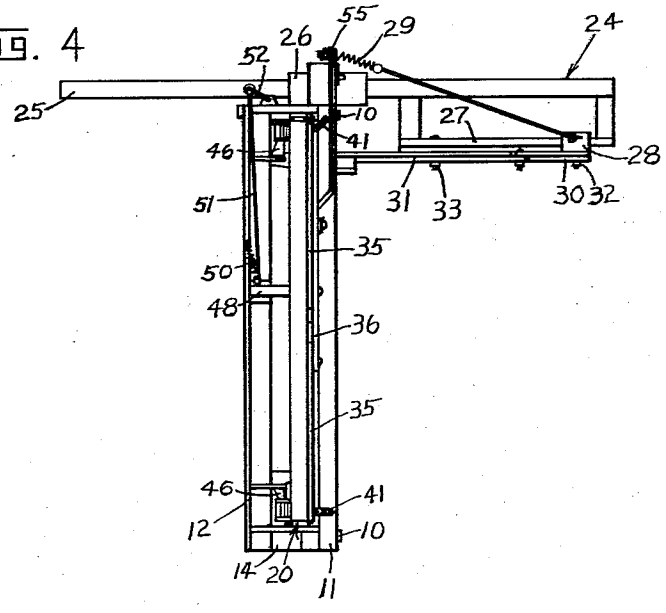


FIG. 4



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AUTOMATIC STANCHION

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FIG. 5

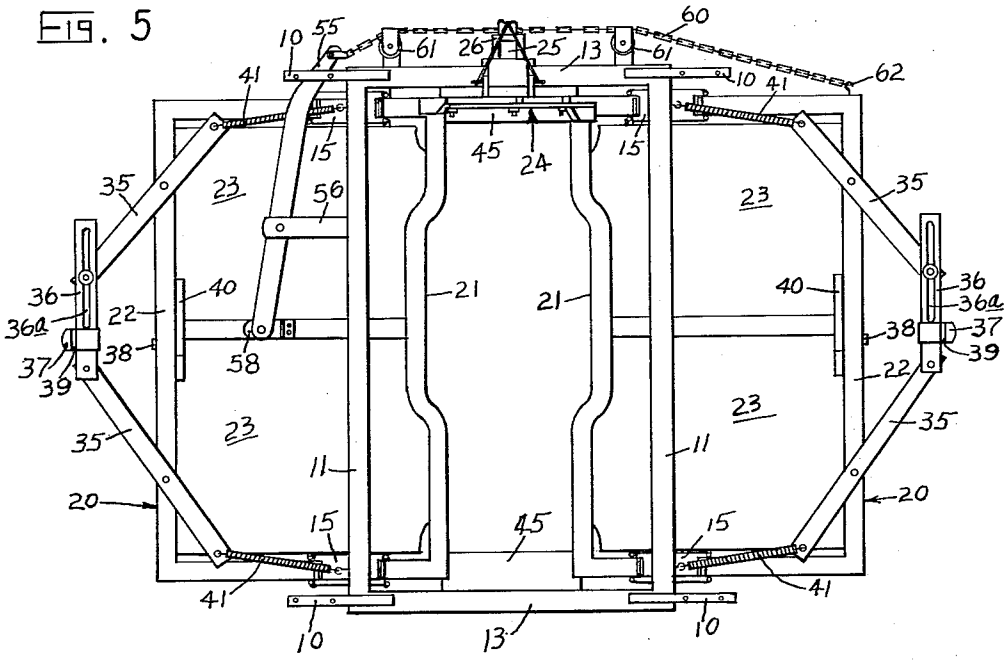
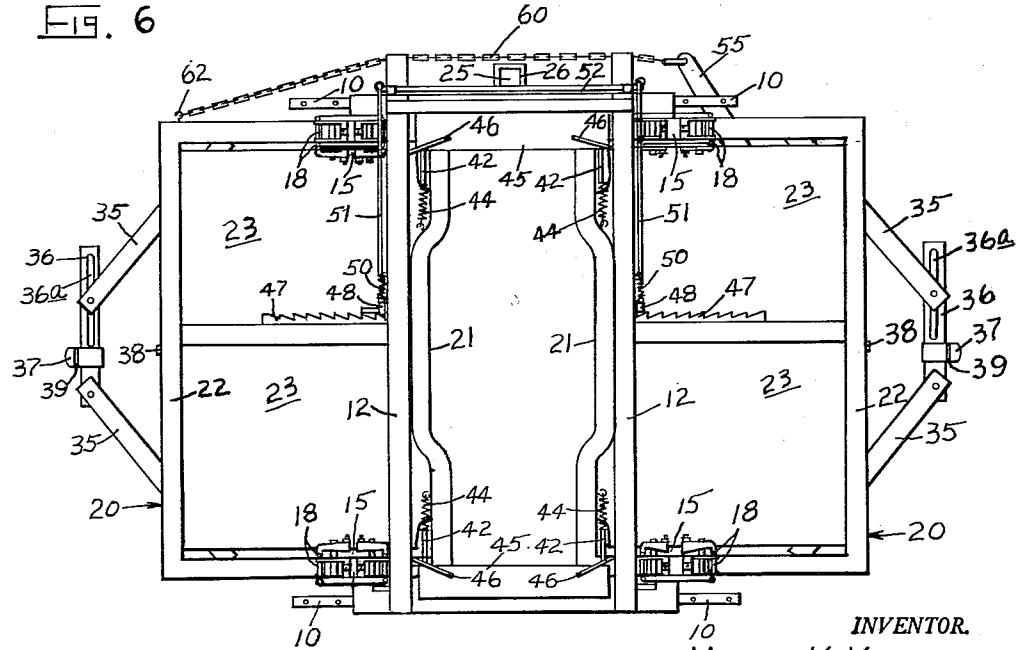


FIG. 6



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FIG. 7

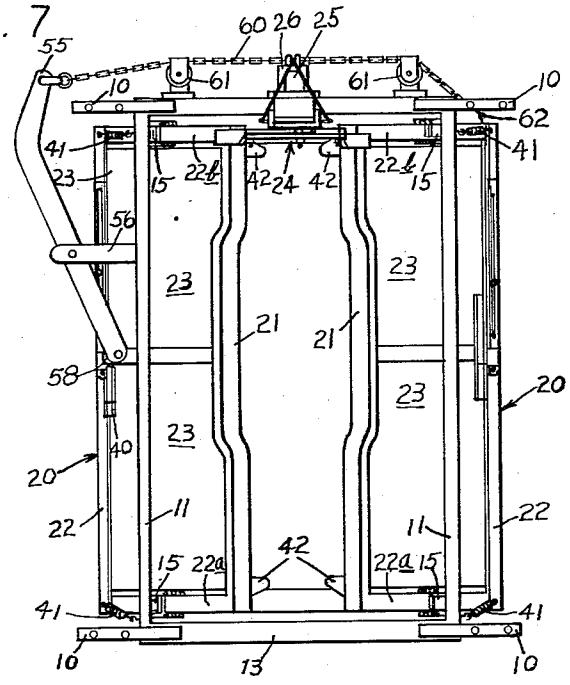
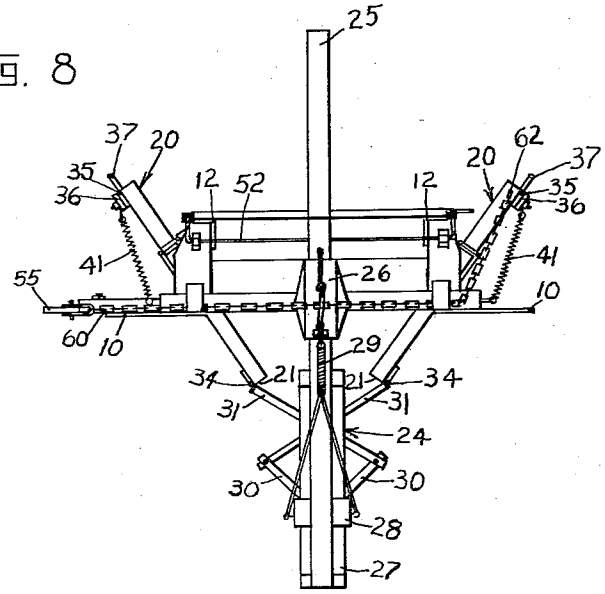


FIG. 8



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FIG. 9

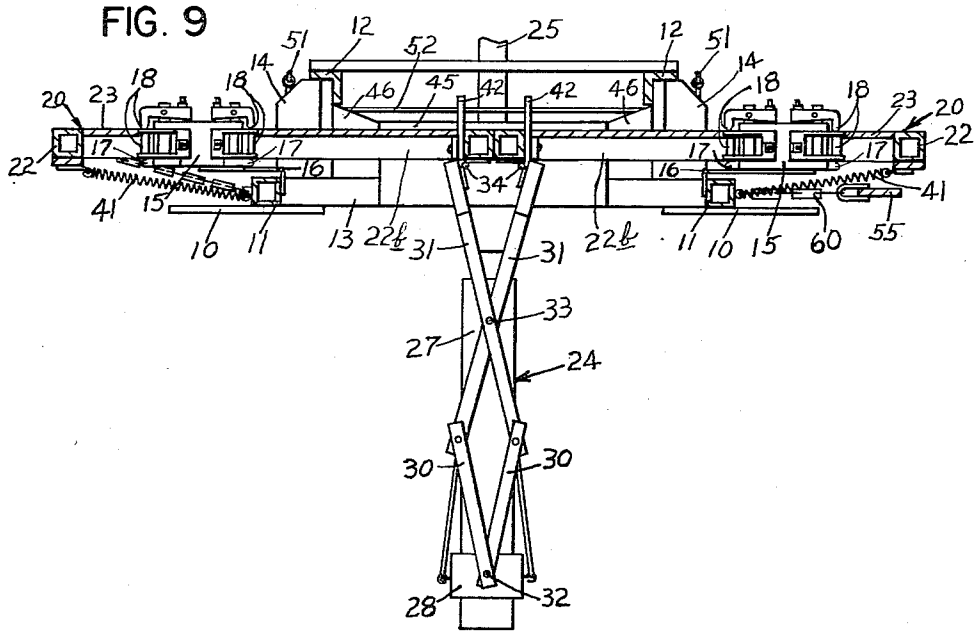


FIG. 10

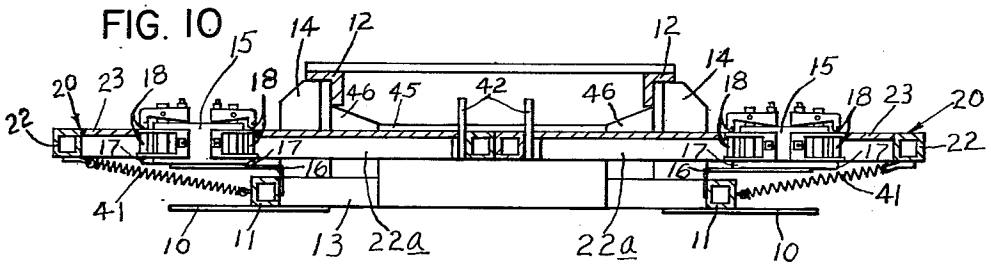
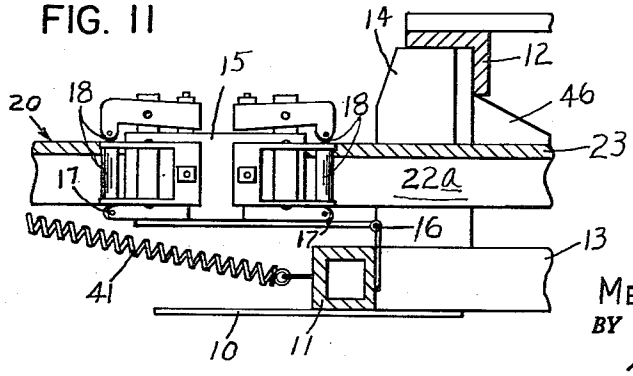


FIG. 11



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FIG. 12

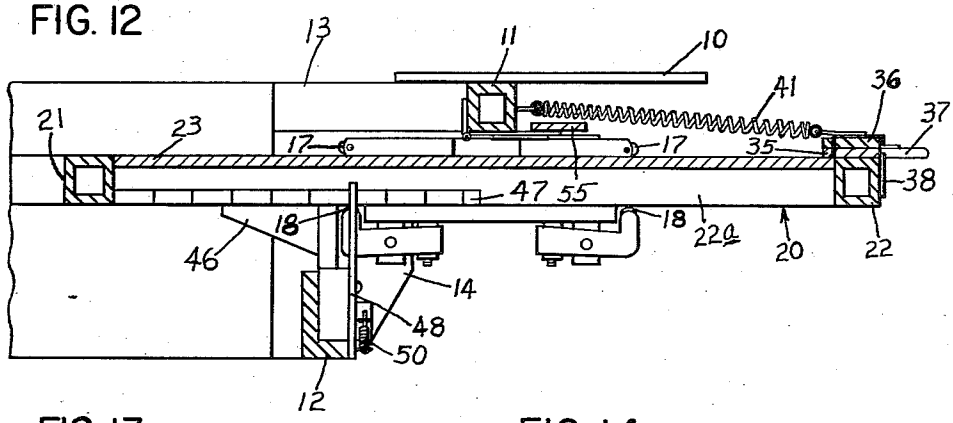


FIG 13

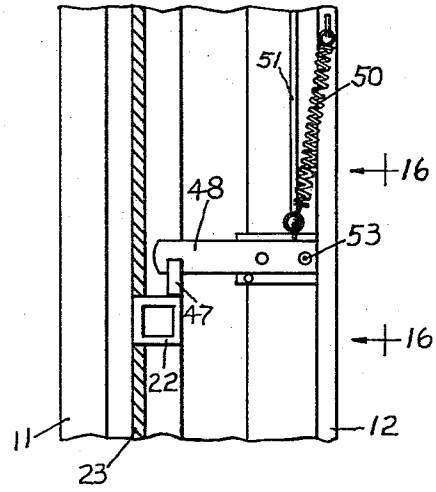


FIG. 14

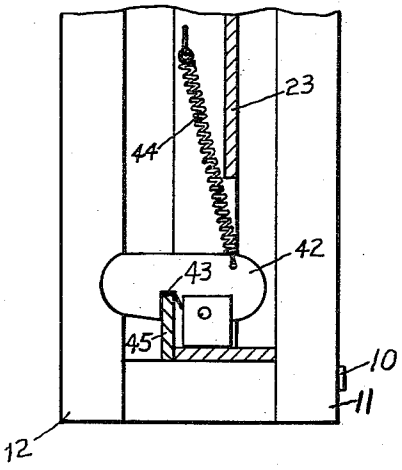


FIG. 15

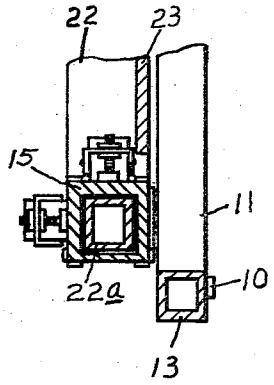
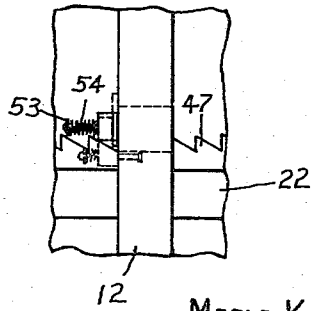


FIG. 16



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United States Patent Office

3,043,269
Patented July 10, 1962

3,043,269

AUTOMATIC STANCHION

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Filed Feb. 13, 1961, Ser. No. 88,738
9 Claims. (Cl. 119—98)

The present invention relates to a novel automatic stanchion for stock chutes.

This invention is particularly concerned with an automatic stanchion device designed to securely hold animals for ranch operations such as branding and ear marking. Various methods are used today to hold animals when necessary. Most mechanical devices for this purpose are manual or semi-automatic. The latter require triggering by an individual attempting to position the animal. This often causes failure due to the improper placement of the animal's neck at the moment of triggering. The present invention is particularly designed for use with cattle or sheep but may be adapted for use with any such stock animals.

It is a first object of this invention to provide an automatic stanchion which does not require any manual triggering operation by the person positioning the stock or by any other person. The stanchion is designed to close automatically about the neck of the animal in response to the movement of the animal itself.

It is another object of this invention to provide an automatic stanchion which will adjust itself for each animal being locked therein. Its self adjustable feature relieves the necessity of providing any manual adjustments to adapt the device to specific animals.

It is another object of this invention to provide an automatic stanchion which can be manufactured in any desired size so as to be adaptable to any size chute. The size and relative proportions of the stanchion are immaterial so long as the basic inter relation between its parts is maintained.

It is another object of this invention to provide an over-center biasing toggle action on a pair of stanchion gates so that the continued motion of the gates, due to the pushing of the animal, will increase the speed of their closing until they finally lock about the animal's neck. This over-center biasing effect produces a rapid blocking action which insures completion of the closing operation once it is initiated by the movement of the animal.

It is another object of this invention to provide a positive lock on the stanchion gates so as to maintain them in locked position for as long as desired. Once this positive mechanical lock is activated it cannot be released except by manual force being applied to the stanchion. Movement of the animal locked in the stanchion will not release the stanchion lock.

It is another object of this invention to provide a mechanism on the stanchion which will automatically release the positive lock when the stanchion is being reset. No individual resetting of the locks is required.

It is another object of this invention to provide releasable spring tension for the over-center biasing toggle arrangement. By releasing the spring tension of the biasing assembly the gates can be more easily reset by a single individual.

Basically the present invention consists of a vertical frame adapted to be rigidly secured in a stock chute. Hinged to this vertical frame are two pairs of vertically aligned and laterally spaced hinged sleeves. These sleeves slidably support a pair of complementary stanchion gates adapted to fit about the neck of the animal. These gates are mounted in a stock chute so as to be abutted by the shoulders of the animal while it is moving down the chute. The motion of the two gates is inter-related by a lazy tong arrangement located longitudinally with respect to the

stock chute. Movement of the animal against the gates tends to slide them rearwardly in the sleeves and at the same time to pivot the sleeves relative to the frame and stock chute. This tends to close the gates about the animal's neck. This tendency is further buttressed by a biasing spring arrangement which provides a toggle action so that the gates increase in force about the animal's neck as it pushes against them. The gates are locked securely in a transverse position by a series of pawls which engage plates fixed to the stanchion frame. These pawls are releasable when the gates are spread apart by means of inclined cam surfaces fixed to the frame. Spreading action of the gates is prevented while the animal is locked therein by one way ratchets fixed to the gates and operatively engaged by pawls mounted on the frame. To facilitate opening of the gates releasable levers are included on the gates which operate to release the spring tension of the biasing toggle springs. Movement of the two gates is inter-related by a lever system so that when one gate is pulled apart and swung to its resetting position the other gate will follow.

The above objects will become more evident from a study of the proposed embodiment of the invention disclosed in the accompanying drawings. This embodiment is merely exemplary of forms which could be taken according to the present invention. For this reason the following description is not intended to limit the invention except as the invention is defined in the annexed claims.

In the drawings:

FIGURE 1 is an elevational view of the stanchion as it would be seen from the inside of the stock chute;

FIGURE 2 is a top view of the stanchion as seen in FIGURE 1;

FIGURE 3 is an elevational view taken from the side opposite to that seen in FIGURE 1;

FIGURE 4 is a side elevational view taken from the right hand side of FIGURE 3;

FIGURE 5 is a view similar to FIGURE 1, showing a gate being spread apart in a transverse plane;

FIGURE 6 is a view taken from the side opposite to that shown in FIGURE 5;

FIGURE 7 is a view similar to FIGURE 1 showing the gates in their reset positions;

FIGURE 8 is a top view of the stanchion as seen in FIGURE 7;

FIGURE 9 is a sectional view taken along line 9—9 of FIGURE 1 on a slightly increased scale;

FIGURE 10 is a sectional view taken along line 10—10 of FIGURE 1 at a slightly increased scale;

FIGURE 11 is an enlarged sectional view taken along line 11—11 in FIGURE 3;

FIGURE 12 is an enlarged sectional view taken along line 12—12 of FIGURE 3;

FIGURE 13 is an enlarged sectional view taken along line 13—13 in FIGURE 3;

FIGURE 14 is an enlarged sectional view taken along line 14—14 in FIGURE 3;

FIGURE 15 is an enlarged sectional view taken along line 15—15 in FIGURE 3; and

FIGURE 16 is a sectional view taken along line 16—16 in FIGURE 13.

Referring now to the drawings the over all assembly of this stanchion is shown in FIGURES 1 through 8. In FIGURES 1 through 4 the stanchion gates are closed as they would be closed about the neck of an animal. In FIGURES 5 and 6 the gates are in an intermediate position wherein they are spread transversely apart. In FIGURES 7 and 8 the gates are reset in preparation for the reception of a new animal. The remaining figures show specific portions of the stanchion assembly.

The automatic stanchion of this invention is composed of a basic vertical frame which consists of two inside vertical posts 11 and two outside vertical posts 12. The two

inside posts 11 are spread apart a greater distance than the outside posts 12. The inside posts 11 are preferably made of rectangular tubing or solid stock while the outside posts 12 are preferably formed of angle iron. Also included in the frame structure are two transverse braces 13 which connect the upper and lower ends of the inside posts 11 to form a rigid rectangular inside frame. The two outside posts 12 are connected to the transverse braces 13 by means of spacers 14 which are extended from the posts 12 to the braces 13 to complete the rigid frame structure. This frame is adapted to be rigidly fixed within a stock chute. The chute itself is not shown in the drawings but may be of any conventional type. The frame may be secured to the chute in any manner desired such as by use of the transverse mounting brackets 10, shown fixed to the inside posts 11.

Mounted on the inside vertical posts 11 are four hinged sleeves 15 having vertical pivots 16 about which they are free to move with respect to the inside posts 11. The sleeves 15 have horizontal openings cut therethrough and surrounded by a series of fixed rollers 17 and adjustable rollers 18. The rollers 17 and 18 are provided to insure proper movement of the gates which are mounted within the sleeve 15.

The stanchion is provided with a pair of complementary gates 20 having contoured inner edges 21 facing one another. These edges 21 have cut out portions which are complementary to each other and are designed to fit about the neck of an animal which is to be held by the stanchion. The edges 21 are contoured so that when the gates 20 are closed about the animal they will receive the neck of the animal but will not allow the body or the head of the animal to pass through the gates. Each gate is the mirror image of the other. The gates consist of a tubular skeleton frame 22 and intermediate panels 23 which merely fill the spaces between the frame members of the skeleton frame 22. The skeleton frame 22 includes lower horizontal elements 22*a* and upper horizontal elements 22*b* which are slidably received within the apertures of the hinged sleeves 15. It it these elements 22*a* and 22*b* which are slidably supported by the rollers 17 and 18. Thus the gates 20 are mounted by the hinged sleeves 15 for both pivotal and sliding movement relative to the stanchion frame.

In order to inter-relate the movement of the two gates 20 a lazy tong assembly 24 is provided at the top of the stanchion. This assembly 24 consists of a longitudinal slide bar 25 which is slidably mounted by a slide bearing 26 fixed to the top surface of the upper transverse brace 13. The slide bar 25 has fixed thereto a parallel slide plate 27 which is mounted adjacent to the slide bar 25 and slightly below it. A slide 28 is mounted on the slide plate 27 for longitudinal movement relative to the stock chute. The lazy tong assembly 24 has a pair of short tong levers 30 and a pair of long tong levers 31. The short levers 30 are pivoted at their outer ends to one another and to the slide 28. This pivot is designated by the numeral 32. The long levers 31 are pivoted intermediate their ends at 33. This pivot 33 is a fixed pivot located on the slide plate 27. The outer ends of the long levers 31 are pivoted to the remaining ends of the short levers 30. The remaining ends of the long levers 31 are pivotally connected to the respective gates 20. This pivot is designated by the numeral 34 and is located about a vertical axis at each of the gates 20. The entire lazy tong assembly is biased by a tension spring 29 located above the assembly and connected to the slide 28 and the slide bearing 26. The force exerted by this spring assembly 29 tends to force the two pivots 34 apart to thereby open the two gates 20. The lazy tongs assembly 24 acts to position each of the gates 20 in precisely the same attitude with respect to the frame. Thus movement of either of the gates 20 will result in the same movement of the remaining gate 20.

The inside surface of each gate 20 is provided with a pair of vertically aligned pivoted levers 35. These levers 35 are interconnected by an intermediate handle 36 which is pivoted to the lower lever 35 and is pivoted to the upper lever 35 by means of a slot 36*a* cut through the handle 36. The handle 36 has a locking slide 37 mounted thereon. This locking slide 37 is provided with a vertical groove 39 which is adapted to receive a vertical locking key 38 fixed to the edge of the gate 20. A backing plate 40 is provided adjacent the levers 35 and handle 36 so as to provide a vertical guide for the movable elements. A pair of springs 41 are located at the top and bottom of each gate 20. These springs 41 interconnect the lower ends of the pivoted lever 35 and the inside vertical posts 11. These springs 41 constitute the toggle bias assembly. The springs 41 are tension springs and urge the gates 20 toward one another and toward the center of the frame. Due to the offset position of the connections of the springs 41 relative to both the gates 20 and the posts 11, the springs 41 tend to swing over their centers to provide the toggle biasing force desired. As the gates 20 are spread the tension exerted by spring 41 will increase, as will also the tendency of the springs 41 to swing over center and thereby bring the gates 20 to a transverse position across the stock chute.

In order to securely lock the gates 20 in a transverse position a pair of pivoted latches 42 are provided on the skeleton frame 22. Each latch 42 is provided with a notch 43. The latches 42 are biased by small tension springs 44. The latches 42 are adapted to engage vertical transverse plates 45 which are fixed to the transverse braces 13. The transverse plates 45 each have a pair of inclined cam plates 46 fixed thereto at the lateral end of the plates 45. The notches 43 are adapted to grip the edges of the plates 45. The cam plates 46 are designed to release the latches 42 in opposition to the biasing action of springs 44 when the gates 20 are spread transversely apart parallel to the plates 45.

Since this stanchion is designed to be automatically closed by the action of the animal being locked therein, it is desirable that the gates 20 be free to move inward to securely grasp the neck of the animal. This intermovement is possible due to the action of the springs 41. At the same time that the gates 20 have attained a transverse position it is desirable that they be locked so as not to be forced outwardly by later movement of the animal locked in the stanchion. In order to prevent this outward movement, a rack 47 is fixed to the intermediate member of the skeleton frame 22 of each gate 20. This rack 47 has inclined teeth cut thereon. The teeth are adapted to be engaged by pivoted pawls 48 which are mounted on the outside posts 12. The pawls 48 are biased into engagement with the racks 47 by small tension springs 50. The two pawls 48 are interconnected by vertical rods 51 which are pivoted to a connecting rod 52 which is located transversely above the top spacer 14. The left hand pawl 48, seen in FIGURE 3, and fully shown in FIGURES 13 and 16 is provided with a manual handle 53 which has a locking spring 54. The handle 53 is slidable relative to the pawl 48 so as to engage the lower surface of an abutment on frame 22. By pushing the handle 53 into the gate 20 the two pawls 48 can be locked out of engaging position with respect to the racks 47. This inter-relation is required in order to release the racks 47 to allow the gates 20 to be manually reset.

Since this stanchion is designed primarily for use by one man, the two gates 20 should be inter-related so that opening of one gate 20 will simultaneously open the other gate 20. This action is attained by the use of an operating lever 55, pivoted to a brace 56 and extending transversely a short distance from the inner post 11. The lower end of the lever 55 is pivoted to a hinged ear 58 located on the left hand gate 20, as seen in FIGURES 1, 5 and 7. The upper end of the lever 55 has a chain 60 connected to it. The chain 60 extends over the transverse brace 13 and is guided by a pair of pulleys 61. The re-

maining end of the chain 60 is connected at 62 to the right hand gate 20, as seen in FIGURES 1, 5 and 7. Thus when the right hand gate 20 is pulled transversely relative to the frame, the left hand gate 20 will follow its motion in a transverse direction opposite to that of the other gate. The gates 20, after being spread transversely, are then pivoted about the vertical pivots 16. In order to allow this pivotal movement the hinged ear 58 is provided on the gate 20. After the gates 20 have been pivoted about the axes of vertical pivots 16 the lever 55 will be inoperative and the chain 60 will be slack.

Operation of the Stanchion

The operation of this stanchion is quite simple. It is designed primarily for use by one man who is to herd the animals through the stock chute individually. As the animals move through the chute advantage is taken of their common tendency to insert their heads through any opening large enough to receive them and then to shove forward to try to push their body on through. The two gates 20 are initially set in the position shown in FIGURES 7 and 8. In this position the springs 41 are over center and tend to hold the gates 20 in a pivoted attitude relative to the rigid frame. This position is further buttressed by the action of the spring biasing assembly 29 on the lazy tong assembly 24. The two long levers 33 have a tendency to hold the edges 21 of the gates 20 apart. The animal then pushes against the two contoured inner edges 21 in his attempt to move through the opening between the two gates 20. As it pushes against the gates 20, the gates 20 tend to spread outwardly and transversely. The gates 20 move in a horizontal plane relative to the hinged sleeve 15 and also pivot about the vertical axes of the vertical pivot 16. As the gates 20 pivot about these axes the springs 41 are brought to a closer transverse position. After the springs 41 are swung to a position where they subtend an angle of 45 degrees relative to the transverse members of the frame, the springs 41 will tend to move the gates 20 toward one another. This over center action provides a toggle effect which increases as the angle of the springs 41 relative to the transverse members becomes smaller. This tends to snap the two gates 20 about the animal's neck and also insures that the gates 20 will abut the sides of the animal's neck and will not move outwardly and allow the animal to escape.

When the two gates 20 attain a transverse position relative to the frame, the pivoted latches 42 will snap over the plate 45 and the notches 43 will secure the gate 20 relative to the frame. The position of the stanchion will be that shown in FIGURES 1 through 4. The two gates 20 may be spread the distance sufficient to engage the animal's neck. In FIGURE 1 the two gates 20 are shown adjacent to one another but in actual use, they will always be spread at least a minimum amount. Regardless of this spreading, the latches 42 will engage the smooth plates 45. At the same time that the latches 42 are secured to the plates 45 the pawls 48 will engage the racks 47 to thereby prevent any outward movement of the gates 20. The animal is then securely locked within the stanchion and the operations desired may be performed upon it without fear of the animal becoming free until it is manually released.

Release of the animal is obtained by releasing the two pawls 48 by use of the handle 53 and the locking spring 54 so as to maintain the pawls 48 in a released position. The user of the stanchion then releases the tension on springs 41 by moving the blocking slide 37 out of engagement with the key 38. This allows the levers 35 to swing about their horizontal pivots and provides a suitable handle 36 for the user to pull upon to move the gates 20. He then pulls the right hand gate, shown in FIGURES 1 and 5, until the two gates 20 are spread apart from one another to their maximum position, as shown in FIGURE 5. During this spreading action the four latches 42 will ride along the cam plate 46 and will be released from engagement with the plates 45. When the latches 42 have been released the operator then pivots the right hand gate 20 about the axis of the vertical pivots 16. This movement is transmitted to the remaining gate 20 by the lazy tong assembly 24. When the gates 20 have reached the positions shown in FIGURES 7 and 8, the two levers 35 are again pivoted to their vertical positions and the handle 36 is locked to the gate 20 by use of the slide 37. This renews the tension of the springs 21 and the stanchion is then fully reset for the next operation.

The stanchion is preferably set within a stock chute in a transverse position. The opening between the posts 11 or 12 is preferably wide enough to allow movement of the animal through the frame of the stanchion. When the two gates 20 are pulled transversely apart the animal is allowed to go between the posts 11 and 12 and continue to the area desired. Thus the movement of the animal through the stanchion is continuous in a straight path.

The basic concept of this invention consists of a pair of gates which are both pivotally and slidably mounted on a fixed vertical frame. The gates are biased by toggle springs, operatively connected between the gates and the frame, and are inter-related by a lazy tong arrangement which is spring biased to hold the gates in their reset position. As the gates are closed, the lazy tong assembly adapts itself to their positions, and exerts a continuous pressure tending to hold the edges abutting the animal apart. Automatic latches are provided to hold the gates in a transverse position about the animal's neck. These latches are automatically released when the gates are reset.

Various modifications will be evident to one skilled in this field after studying the above description. However, since this embodiment is merely illustrative of many forms possible without deviating from this invention, only the following claims are intended to define and limit the extent of the invention.

Having thus described my invention, I claim:

1. An automatic stanchion for a stock chute comprising:
   - a rigid vertical frame adapted to be fixed securely across the stock chute in a transverse position;
   - hinge means pivotally mounted on said frame for motion about transversely spaced vertical axes;
   - gate means slidably carried by said hinge means for movement perpendicular to said vertical axes;
   - first yieldable means operatively connected between said gate means and said frame adapted to urge said gate means toward the center of said frame;
   - lazy tong means slidably carried by said frame for longitudinal motion relative to the stock chute, said lazy tong means including lever means pivotally connected to said gate means,
   - and second yieldable means operatively connected between said lazy tong means and said frame adapted to urge said lever means apart at the connection of said lever means to said gate means.

2. The invention as defined in claim 1 further comprising:
   - releasable latch means pivotally mounted on said frame for movement about a horizontal axis,
   - and means fixed to said gate means adapted to be engaged by said latch means when said gate means attains a lateral position across the stock chute.

3. The invention as defined in claim 1 further comprising:
   - releasable latch means mounted on said gate means,
   - and means fixed to said frame adapted to be engaged by said latch means when said gate means attains a lateral position across the stock chute.

4. An automatic stanchion for a stock chute comprising:
   - a rigid rectangular vertical frame having inner and outer

pairs of spaced vertical posts, said frame being adapted to be fixed across the stock chute in a transverse position;

hinged sleeves pivotally joined to the inner pair of posts for pivotal motion about a pair of spaced vertical axes;

a pair of gates slidably carried by said sleeves for movement perpendicular to said axes, each of said gates having complementary inner edges facing one another adapted to receive the neck of an animal in the stock chute;

first yieldable means operatively connected between each of said gates and the adjacent inner vertical post adapted to urge said gates toward the center of the frame;

a pair of horizontal levers, each lever being pivoted at its first end to one of said gates and being pivoted to one another intermediate their respective ends about a vertical axis;

and second yieldable means operatively connected to the remaining ends of said levers and to said frame, said last named means being adapted to urge said first ends of said levers apart.

5. The device as defined in claim 4 further comprising:

a vertical plate secured between said outer posts,

a pair of latches respectively pivoted to said gates having an outside edge adapted to ride over one edge of said plate and having a notched edge adapted to engage said one edge of said plate when the respective gate is parallel to said plate,

and third yieldable means operatively connected to said latches and the respective gates adapted to urge said notched edge into engagement with the plates.

6. The device as defined in claim 4 further comprising:

a vertical plate secured between said outer posts,

a pair of latches respectively pivoted to said gates having an outside edge adapted to ride over one edge of said plate and having a notched edge adapted to engage said one edge of said plate when the respective gate is parallel to said plate,

third yieldable means operatively connected to said latches and the respective gates adapted to urge said notched edge into engagement with the plates,

and oppositely inclined cam plates fixed to said plate adapted to be abutted by said notched edge of said latches as the gates are separated in a direction parallel to the plate.

7. The device as defined in claim 4 further comprising:

a vertical plate secured between said outer posts,

a pair of latches respectively pivoted to said gates having an outside edge adapted to ride over one edge of said plate and having a notched edge adapted to engage said one edge of said plate when the respective gate is parallel to said plate,

third yieldable means operatively connected to said latches and the respective gates adapted to urge said notched edge into engagement with the plates,

a rack fixed to the outer surface of each gate having inclined teeth cut thereon;

and yieldable pawls pivotally mounted on said outer posts adapted to engage the teeth on said racks when the gates attain transverse positions with respect to the stock chute.

8. The device as defined in claim 4 wherein said first yieldable means comprises:

a vertical lever pivoted to one gate about a horizontal axis;

a tension spring fixed at one end to said vertical lever at a location spaced from its pivotal connection of the vertical lever to the gate and fixed at its remaining end to the adjacent inner post;

and latch means operatively engageable between said vertical lever and the respective gate adapted to fix said vertical lever relative to the gate.

9. The device as defined in claim 4 wherein said second yieldable means comprises:

a bar slidably mounted on said frame for movement longitudinally relative to the stock chute, the pivotal connection of said horizontal levers being fixed relative to said bar;

a second pair of horizontal levers respectively pivoted to the remaining ends of said horizontal levers and being pivoted at their remaining ends to one another and to a movable longitudinal slide carried on said bar;

and a tension spring operatively connected between said frame and said longitudinal slide.

References Cited in the file of this patent

UNITED STATES PATENTS

2,099,956 Flatley ---------- Nov. 23, 1937
2,703,554 Haggard et al. ---------- Mar. 3, 1955