No. 637,490. Patented Nov. 21, 1899.

W. G. TOWER & A. F. BAUER.

BEEF SPLITTING MACHINE.

(Application filed Jan. 17, 1899.)

(No Model.) 4 Sheets—Sheet 1.

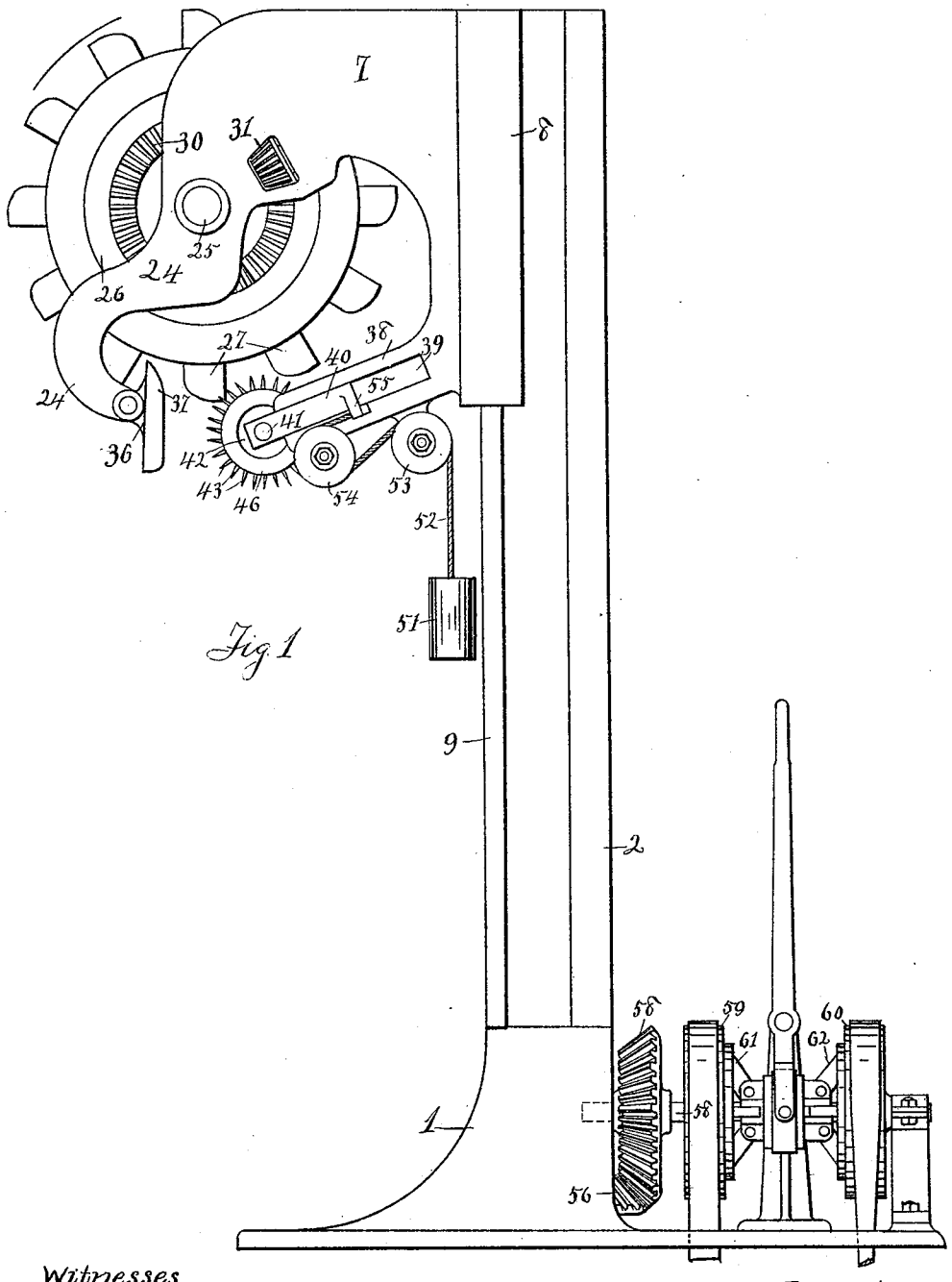

Fig. 1

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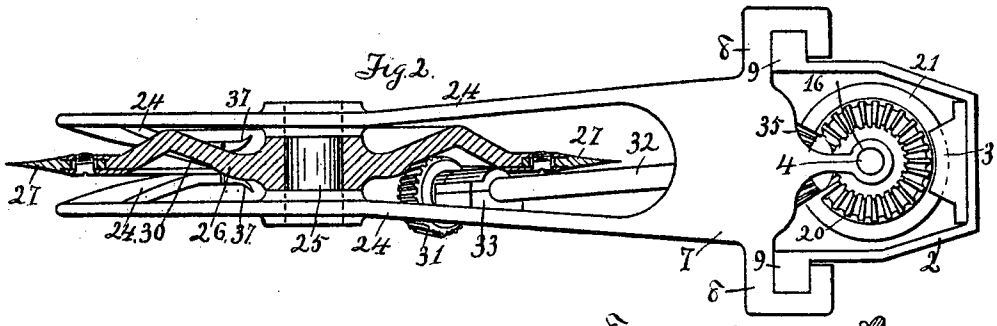
Fig. 2.



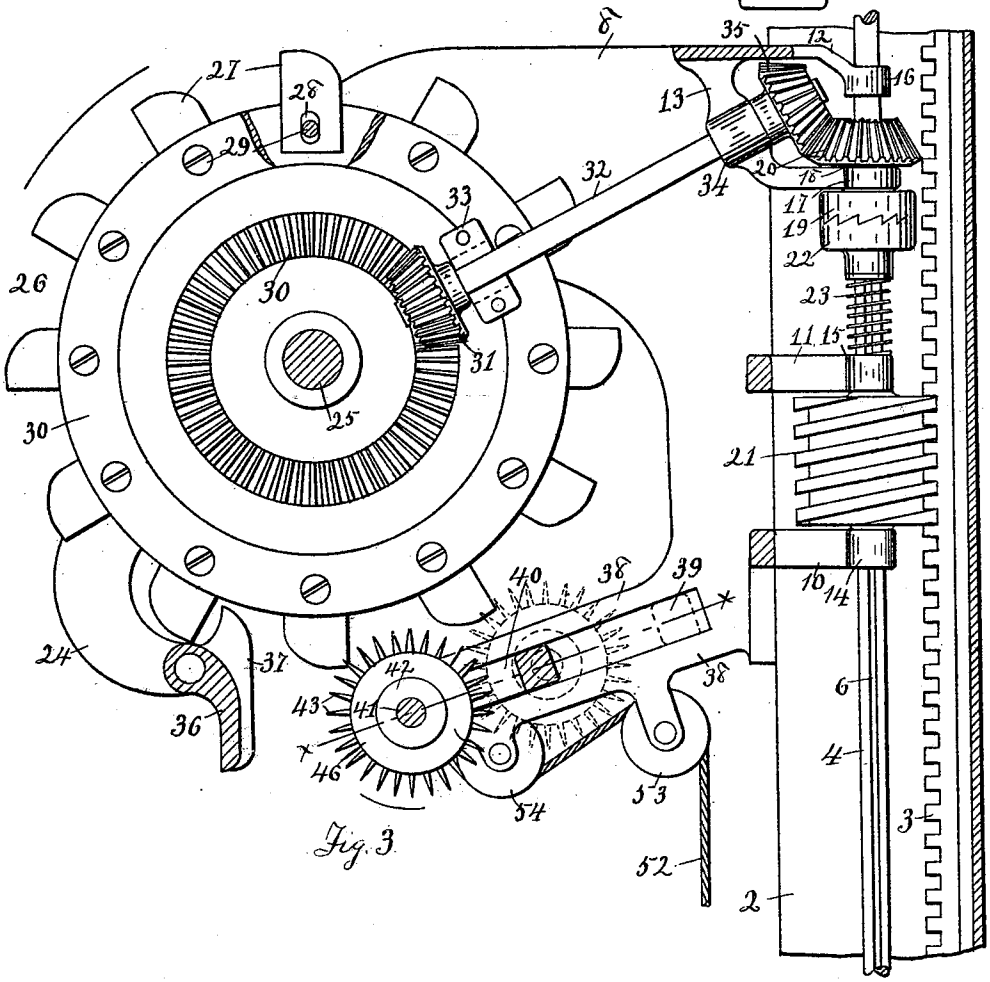


Fig. 3.

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Fig. 4.

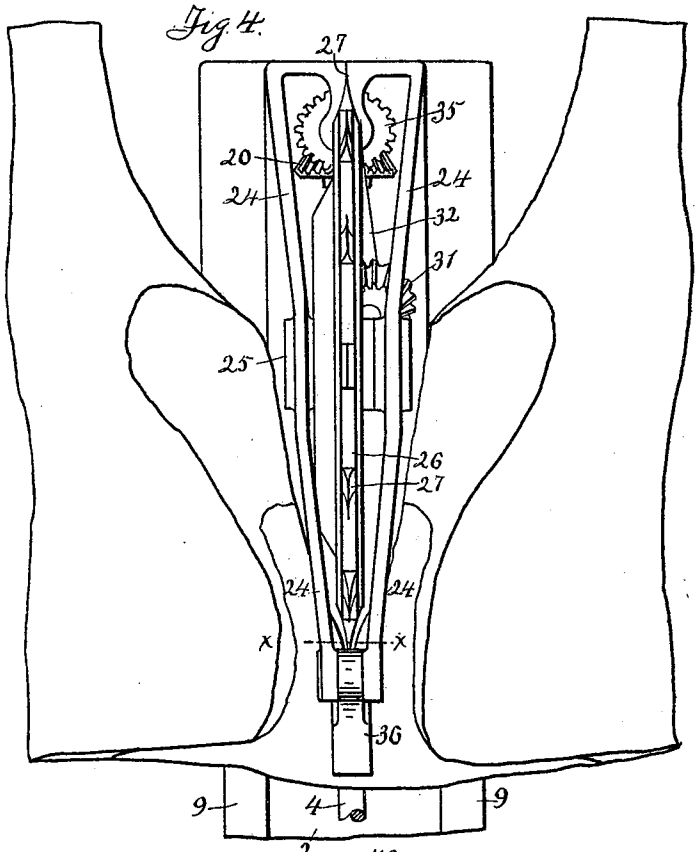

Fig. 5.

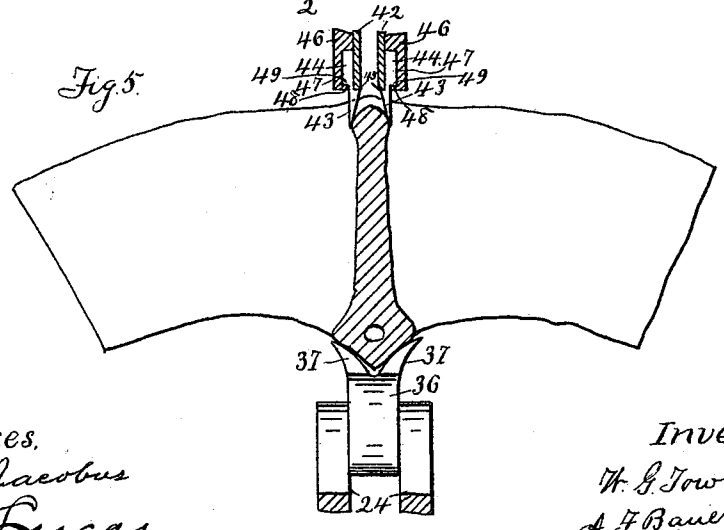

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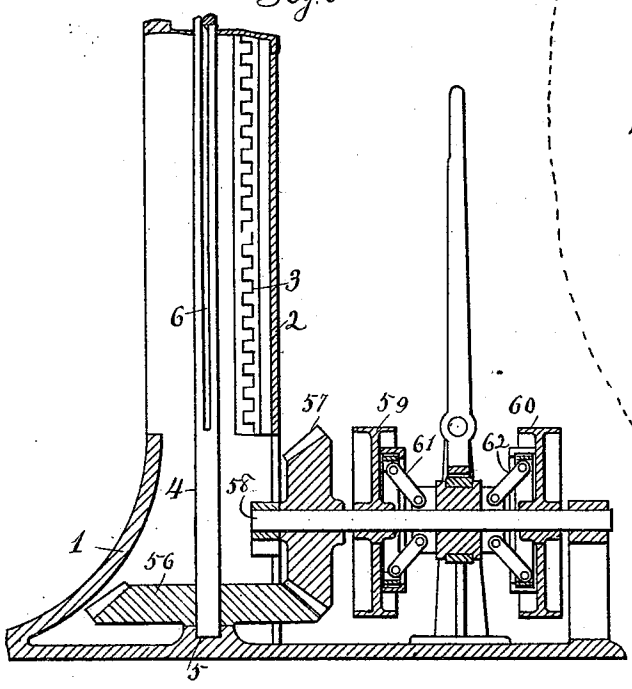
Fig. 8



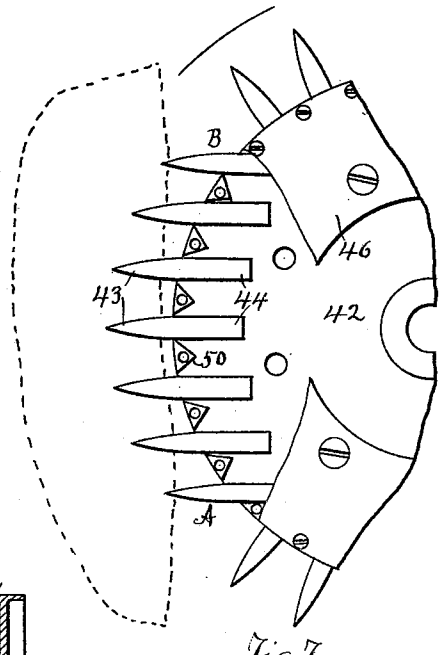
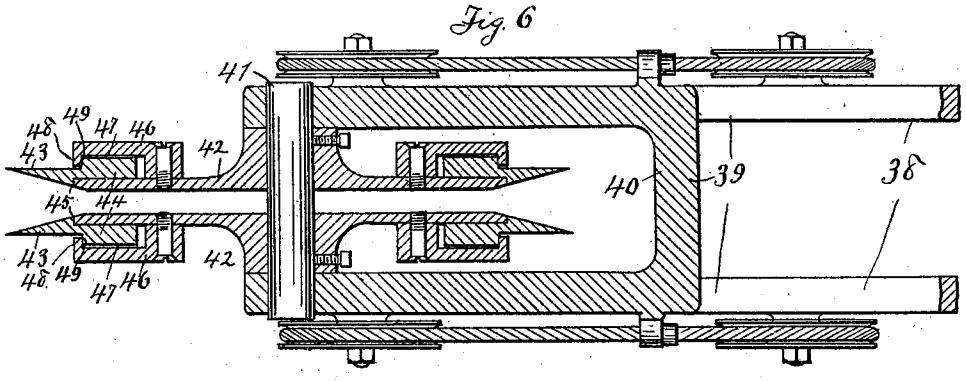


Fig. 7

Fig. 6



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UNITED STATES PATENT OFFICE.

WALLACE G. TOWER AND AUGUST F. BAUER, OF KANSAS CITY, MISSOURI.

BEEF-SPLITTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 637,490, dated November 21, 1899.

Application filed January 17, 1899. Serial No. 702,421. (No model.)

To all whom it may concern:

Be it known that we, WALLACE G. TOWER and AUGUST F. BAUER, citizens of the United States, residing at Kansas City, in the county of Jackson, in the State of Missouri, have invented certain new and useful Improvements in Beef-Splitting Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

Our invention relates to certain new and useful improvements in beef-splitting machines; and our invention consists in certain features of novelty hereinafter described, and pointed out in the claims.

Figure 1 represents a side elevation of a beef-splitting machine embodying our improvements. Fig. 2 represents a top plan view showing the cutter-wheel in cross-section. Fig. 3 represents a detail elevation, with the head-block partly broken away, showing the cutting and guiding mechanism and the means for operating the same. Fig. 4 is a front elevation showing the relation of the carcass to the cutter-wheel and inner guide-shoe. Fig. 5 represents a cross-section on the line X X of Fig. 4. Fig. 6 represents a cross-section on the line X X of Fig. 3, showing construction of the rear guide. Fig. 7 represents an elevation of a portion of one of the spiked wheels of the rear guide, with the binding-plate partly broken away to show the arrangement of the spikes therein and also showing its relation to the carcass, shown in dotted lines. Fig. 8 represents a cross-section of the base and part of the column, showing the means for operating the driving-shaft.

Similar letters and numerals refer to similar parts throughout the several views.

1 represents the base, and 2 represents the hollow column, of the machine, said column being of such height as to permit the suspension under the knife of the beef-carcass at such height as to permit the splitting of the same throughout. Said column is provided internally with the rack 3, extending throughout its height, and is open on one side to permit the vertical movement of the head-block and its operating parts.

4 represents a vertical shaft mounted in a foot-step in the base, Fig. 8, and having a key-seat 6 throughout its length.

7 represents the head-block, provided with the lateral wings 8, arranged to embrace and travel upon the track or ways 9 on the column. Upon said head-block are formed the arms 10, 11, and 12 and the yoke 13, having the journal-bearings 14 15 16 upon the shaft 4, the journal-bearings 17 of the yoke being upon the sleeve 18 of the clutch-section 19 and driving-pinion 20, which are loosely mounted upon the shaft 4. Between the bearings 14 and 15 a worm is splined upon the shaft 4 and arranged to operate in the rack 3. The clutch-section 22 is also splined upon the shaft 4 and is held in operative relation with the clutch-section 19 by the spring 23, bearing upon the arm 11. Upon said head-block are formed the arms 24, in which is journaled the shaft 25, upon which is mounted the disk 26, bearing the cutting-blades or cleavers 27, said cleavers extending beyond the periphery of the disk and being adjustably mounted thereon by means of the slot 28, through which passes the binding-bolt 29, as shown in Fig. 3. Upon the face of said disk is formed or provided the bevel-gear 30, with which meshes the bevel-pinion 31 on the shaft 32, said shaft being journaled in the bearing-block 33 upon one of said arms 24 and in the bearing 34 on the yoke 13. 35 represents a bevel-pinion mounted on said shaft 32 and meshing with the driving-pinion 20 on the shaft 4. Now it is apparent that as the shaft 4 revolves, the worm 21, operating in the rack 3, will cause the head-block to move up or down on its ways, carrying with it the disk 26, and the revolution of the shaft in one direction will cause the clutch-section 22 to engage the clutch-section 19, operating the driving-pinion 20 and causing the disk, with its cleavers, to revolve, while when said shaft 4 revolves in the other direction the clutch will release against the pressure of the spring and the disk will not be operated, the relation and the operation of the clutch being such that the disk and its cleavers will be operated as the head-block is moved down and will stand still as the head-block is moved up on its ways, the disk revolving in the direction indicated by the arrow in Figs. 1 and 3.

When the carcass is suspended under the cleavers ready for operation, it is essential that means be provided to guide and hold the carcass that it be split upon the center line (or substantially so) of the backbones and the spines thereon and also to resist the impact of the blow from the cleavers. To meet these requirements, the arms 24 are extended in advance and below the line of the cleavers and at their extremities have pivotally connected therewith the shoe 36, formed with the wings 37 and arranged to embrace and move down the inner face of the carcass along the chine, as shown in Figs. 4 and 5. This shoe serves to hold the carcass in proper relation to the cleavers and to receive the impact of the blow of the cleavers in making the cut. To further hold the carcass and insure a true cut upon the proper line through the spines upon the vertebra, there are provided the arms 38, extending under the path of cleavers, in which is formed the track or way 39, in which a carrier 40 is arranged to travel. On said carrier is journaled the shaft 41, upon which are mounted the parallel disks 42. 43 represents pointed spikes extending beyond the periphery of said disks and having the weighted inner ends 44. Said spikes are provided with a shoulder 45, bearing upon the periphery of the disks and are retained upon the disks by means of the plates 46, secured upon the disk and provided with the recess 47, embracing the weighted end of the spike and having the lip 48 engaging the shoulder 49 to prevent the escape of the weighted end from the recess. The triangular block 50 is interposed between the spikes to separate the same and also to support and determine the position of the same at the point of entering the carcass, for it is manifest that, the carcass being stationary, as the head-block descends and the spikes penetrate the carcass the wheel will be revolved in the direction indicated by the arrow in Fig. 7, and as the wheel thus revolves as the spike approaches the position A in Fig. 7 the weighted inner end will tilt the spike and cause it to assume a substantially horizontal position supported upon the face of the triangular block 50, and as the wheel continues to move down the carcass the spike will enter substantially horizontally therein, and the weighted end being free to move within its recess the spike will maintain substantially its horizontal relation until at B it leaves the carcass. By this arrangement the spikes do not cut or tear, but simply puncture the carcass, and being done while the carcass is still warm leave but little, if any, mark upon the meat. As shown in Fig. 1, said spikes penetrating the carcass embrace the point of the spine of the backbone, and thus in conjunction with the shoe 36 hold the backbone steadily in position for the cleavers to make the split upon the proper line.

51 represents a weight carried on the cord 52, which, passing over the pulleys 53 54, mounted on the arms 38, is secured to the eye 55 on the carrier, the purpose of such weight being to insure the certain and efficient action of the spikes in penetrating the carcass.

The main driving-shaft 4 is operated, as shown in Figs. 1 and 8, by the bevel-gear 56, mounted on said shaft and driven by the bevel-gear 57, mounted on the shaft 58, having suitable bearings supported upon the base. On said shaft 58 are loosely mounted the two pulleys or band-wheels 59 and 60, belted to run in opposite directions and adapted to operate through the friction-clutches 61 62 the shaft 58, it being observed that it is desirable that the pulley which operates to draw the head-block down and split the beef should be arranged to give a slow motion and the pulley which operates to elevate the head-block should be arranged to give a rapid or quick return motion; but as such is a familiar construction further description is not needed.

Having thus fully described our improvements, what we claim as our invention, and desire to secure by Letters Patent, is—

1. In a beef-splitting machine having a suitable base, the combination with a vertical column mounted on said base and provided with an internal rack, and having an open side, ways formed on said column adjacent to said open side, and a vertical shaft mounted in a foot-step in said base, extending through said column, of a head-block provided with lateral wings arranged to embrace and travel upon said ways, arms on said head-block having bearings upon said shaft, a worm splined upon said shaft, carried between said arms and arranged to engage said rack, a wheel mounted in said head-block provided with a series of cleavers, gearing mounted in the head-block for operating said wheel, a clutch splined upon said shaft arranged to operate said gearing, and means for operating said shaft, substantially as set forth.

2. In a beef-splitting machine, having a suitable base, the combination with a vertical column mounted on said base and provided with an internal rack and having one open side, ways formed on said column adjacent to said open side, and a vertical shaft mounted in a foot-step in said base and extending through said column, of a head-block provided with lateral wings arranged to embrace and travel upon said ways, arms on said head-block having bearings upon said shaft, a screw splined upon said shaft, carried between said arms and arranged to engage said rack, a wheel mounted in said head-block provided with a series of cleavers, arms on the head-block extending below the path of said cleavers, a shoe having lateral wings arranged to embrace the inner face of the chine pivotally connected with said arms, gearing mounted in the head-block for operating said wheel, a clutch splined upon said shaft arranged to operate said gearing,

and means for operating said shaft, substantially as set forth.

3. In a beef-splitting machine having a suitable base and column, a head-block arranged to travel vertically on said column, a splitting-wheel provided with a series of cleavers mounted in said head-block, arms on said head-block extending below the path of said cleavers, and a shoe having lateral wings arranged to embrace the inner face of the chine pivotally connected with said arms, substantially as set forth.

4. In a beef-splitting machine a guide-shoe having lateral wings arranged to embrace the inner face of the chine, substantially as set forth.

5. In a beef-splitting machine the combination with a splitting mechanism of a guide-shoe arranged to embrace the inner face of the chine and travel in advance of the splitting mechanism, substantially as set forth.

6. In a beef-splitting machine having a suitable base and column, the combination with a head-block arranged to travel vertically on said column, and a series of revolving cleavers mounted on a shaft journaled in said head-block, of arms on said head-block forming a way extending below the path of said cleavers, a carrier arranged to operate in said way, a shaft journaled on said carrier, a pair of parallel circular plates mounted on said shaft, and a series of spikes arranged to penetrate the carcass and embrace the points of the vertebral spines, and a weight connected with said carrier, substantially as set forth.

7. In a beef-splitting machine having a suitable splitting mechanism, a way extending below the path of said splitting mechanism, a carrier arranged to operate in said way, a shaft journaled on said carrier, a pair of parallel plates mounted on said shaft, and movable spikes having weighted ends mounted on said plates arranged to penetrate the carcass and embrace the points of the vertebral spines, substantially as set forth.

8. In a beef-splitting machine having a suitable splitting mechanism, a way extending below the path of said splitting mechanism, a carrier arranged to operate in said way, a shaft journaled on said carrier, a pair of parallel plates mounted on said shaft, movable spikes having weighted ends mounted on said plates arranged to penetrate the carcass and embrace the points of the vertebral spines, and triangular blocks arranged between said spikes substantially as set forth.

9. In a beef-splitting machine a rotating guide arranged to travel down the back of the carcass and provided with spikes arranged to penetrate the carcass and embrace the points of the vertebral spines, substantially as set forth.

10. In a beef-splitting machine a rotating guide consisting of a pair of parallel disks, movable spikes extending beyond the periphery of said disks and having a shoulder engaging the periphery, weighted end on said spikes, a plate provided with a recess having a lip engaging a shoulder on said weighted ends and triangular blocks arranged between said spikes, substantially as set forth.

11. In a beef-splitting machine a rotating guide consisting of a pair of parallel disks, recessed plates secured upon said disks, and movable spikes having weighted ends mounted in said recesses and arranged to penetrate the carcass and embrace the points of the vertebral spines, substantially as set forth.

12. In a beef-splitting machine the combination with the splitting mechanism of a guide-shoe arranged to embrace the inner face of the chine and travel in advance of the splitting mechanism, and a guide arranged to travel down the back of a carcass provided with movable spikes arranged to penetrate the carcass, and embrace the points of the vertebral spines, substantially as set forth.

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