

E. A. SMITH.
FISH DRESSING MACHINE.

APPLICATION FILED MAR. 8, 1909. RENEWED JAN. 22, 1912.

1,034,525.

Patented Aug. 6, 1912.

4 SHEETS—SHEET 1.

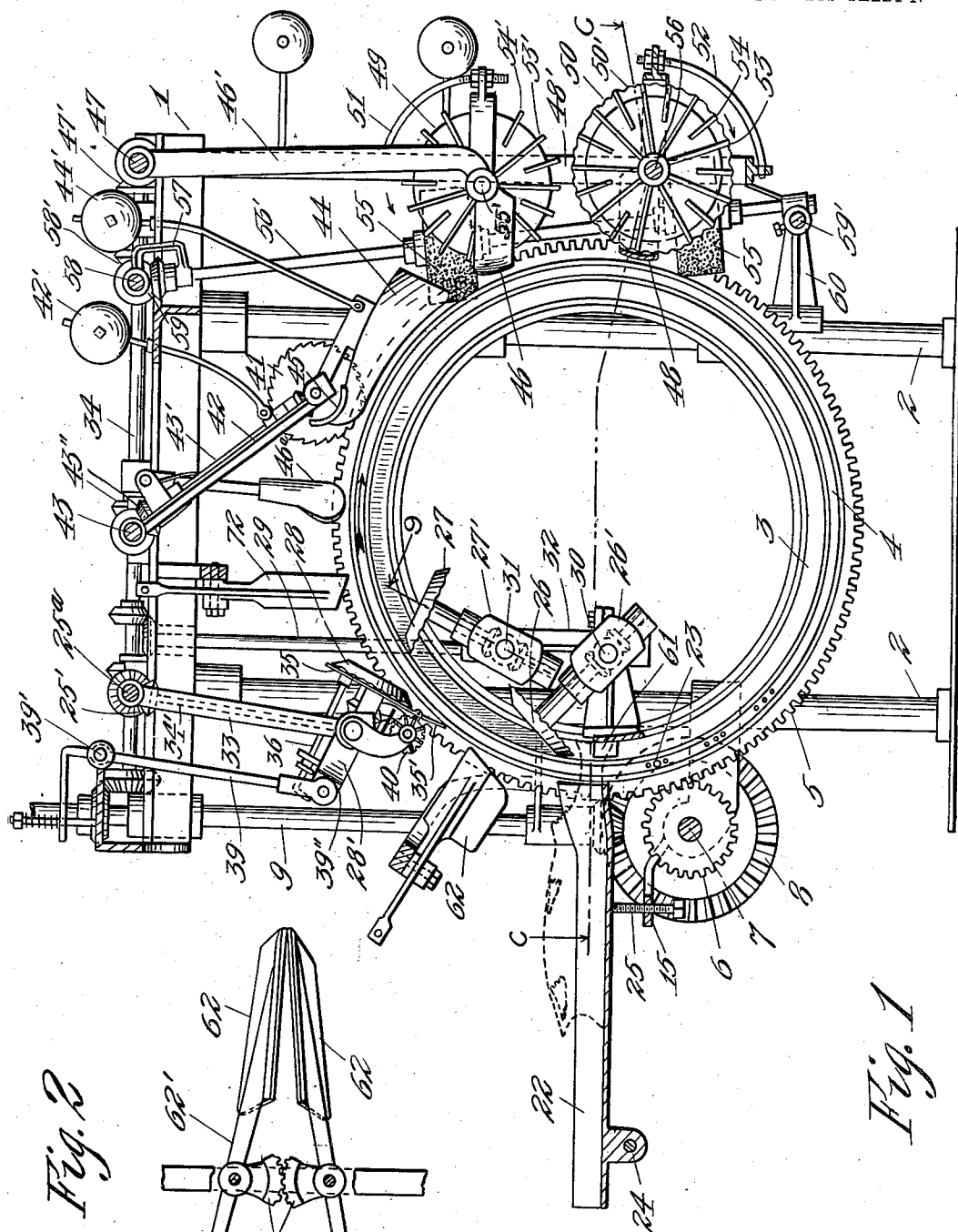


Fig. 2

Fig. 1

Witnesses

Arleta Adams
Walter Harris

By

Inventor

Edmund A. Smith

Adams & Brooks

Attorneys

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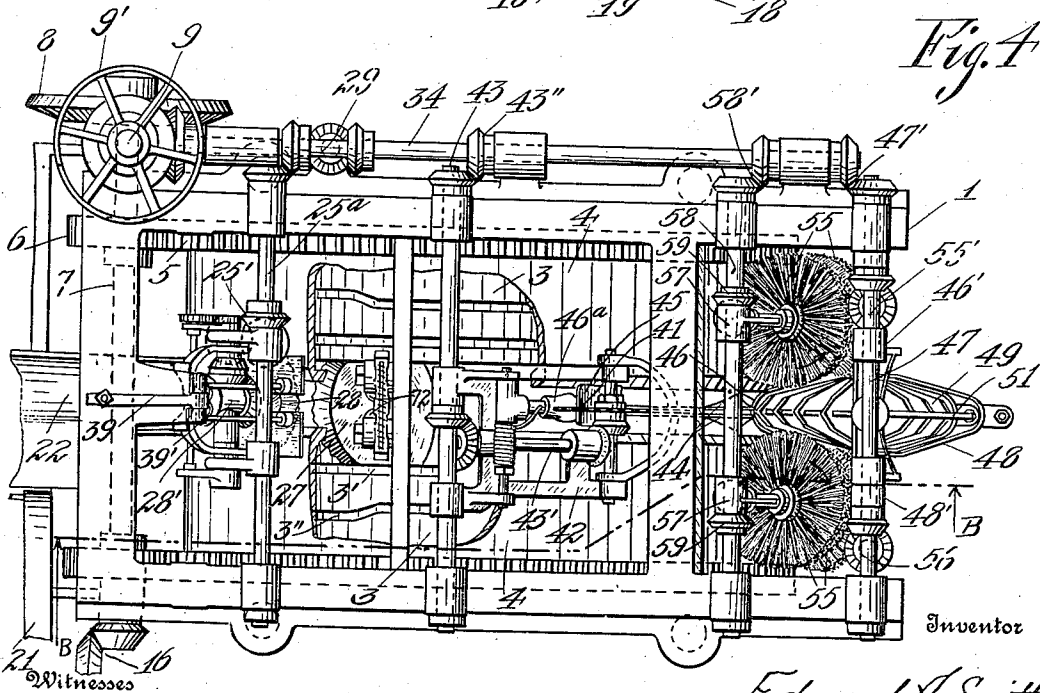
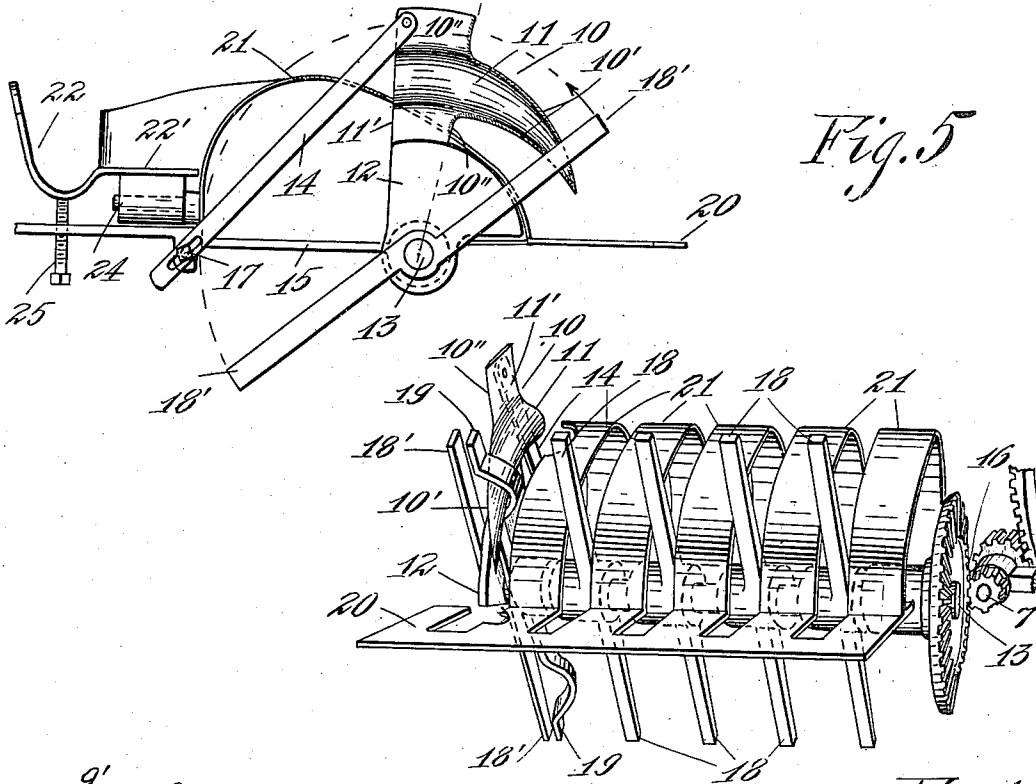


Fig. 3
Arbitz Adams
Walter Norris
Edmund A. Smith
Adams & Brooks
Attorneys

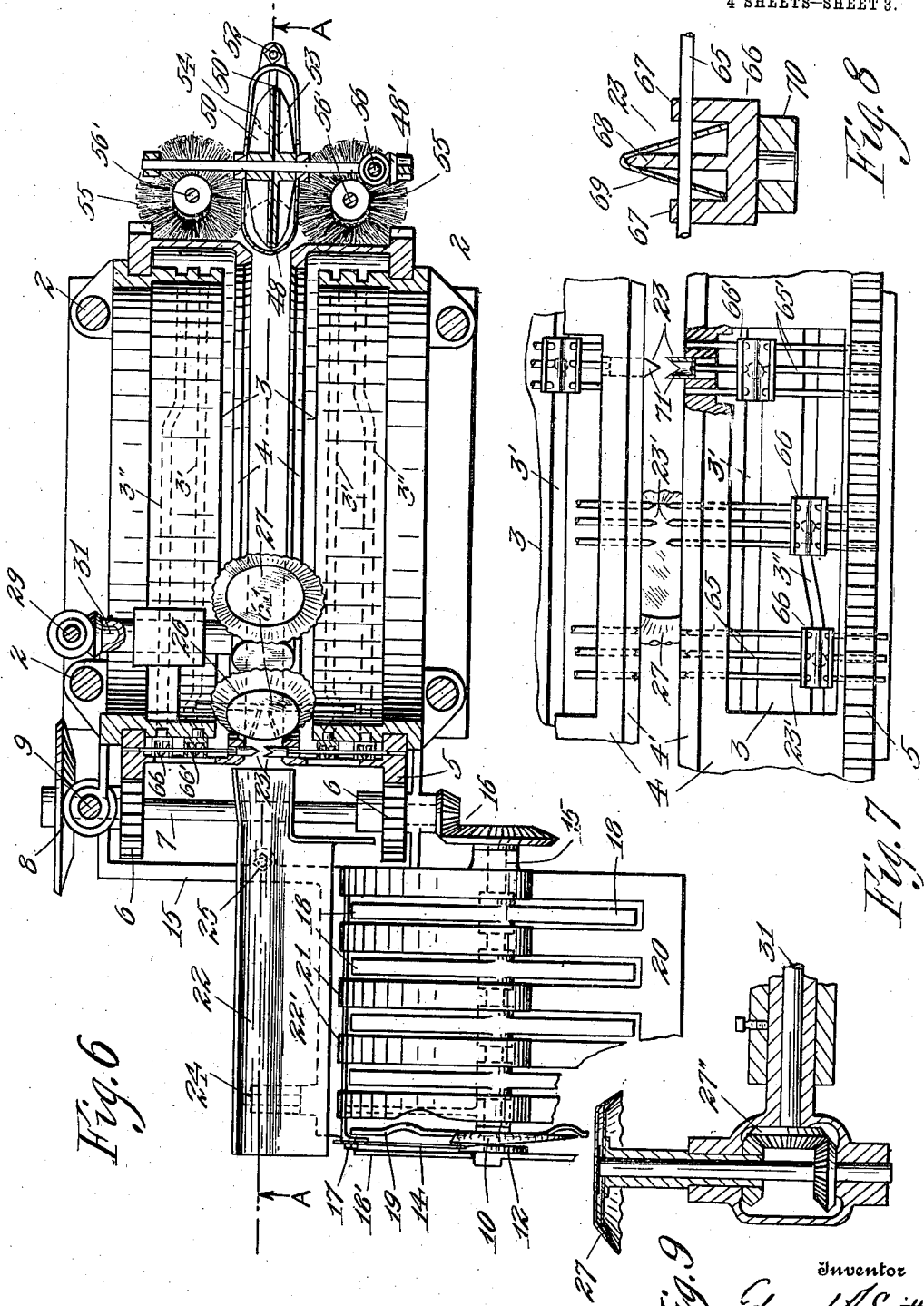
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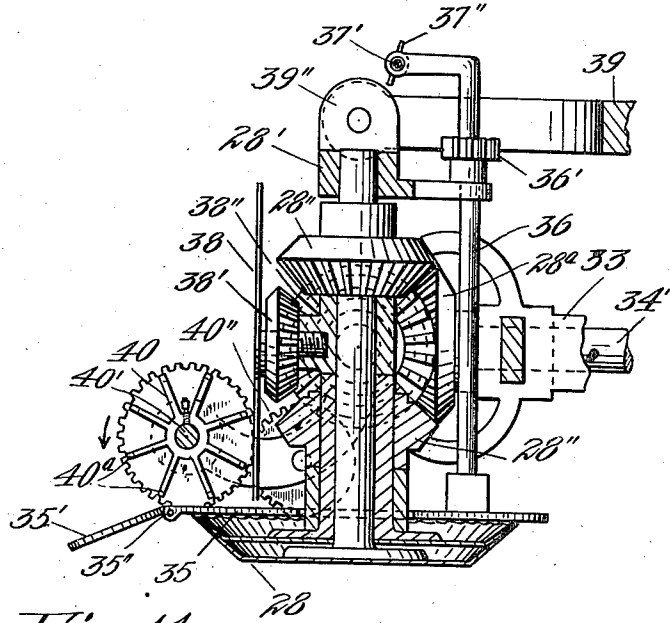


Fig. 11

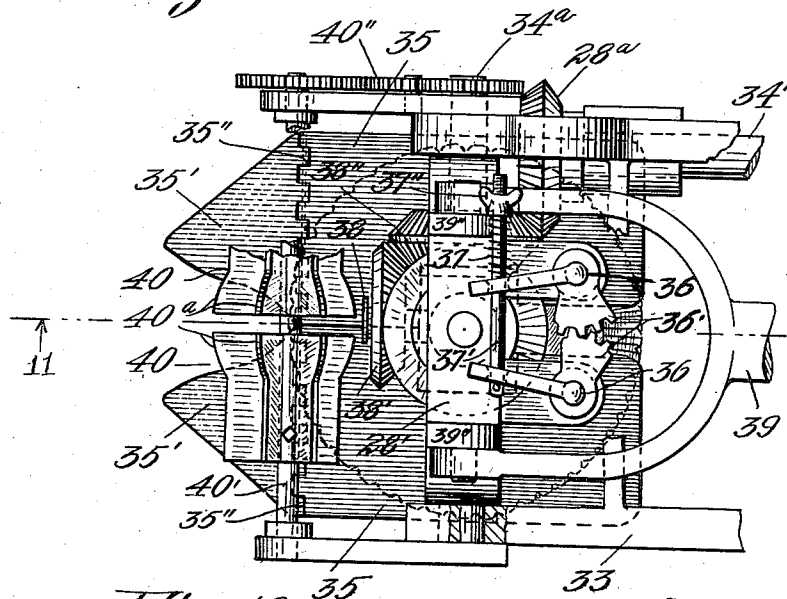


Fig. 10

Inventor.

Edmund A. Smith

Witnesses

Arleta Adams
Walter Norris.

By

Adams & Brooks

Attorneys

UNITED STATES PATENT OFFICE.

EDMUND AUGUSTINE SMITH, OF SEATTLE, WASHINGTON, ASSIGNOR TO SMITH CANNERY MACHINES COMPANY, OF SEATTLE, WASHINGTON, A CORPORATION OF WASHINGTON.

FISH-DRESSING MACHINE.

1,034,525.

Specification of Letters Patent.

Patented Aug. 6, 1912.

Application filed March 8, 1909, Serial No. 482,178. Renewed January 22, 1912. Serial No. 672,796.

To all whom it may concern:

Be it known that I, EDMUND AUGUSTINE SMITH, a citizen of the Dominion of Canada, and a resident of the city of Seattle, in the county of King and State of Washington, have invented certain new and useful Improvements in Fish-Dressing Machines, of which the following is a specification.

The primary object of the invention is to obtain more perfect operations in severing the heads and fins from fish bodies.

Further objects and advantages will be set forth as the description progresses and those features on which I desire protection defined in the claims.

With reference to the accompanying drawings, wherein like reference numerals designate corresponding parts throughout the several views: Figure 1 is a longitudinal vertical section of a machine embodying the features of my invention, taken on lines A—A and B—B of Figs. 6 and 3 respectively. Fig. 2 is a plan view of the forward body guides removed. Fig. 3 is a plan view of the machine with portions of some of the parts broken away. Fig. 4 is a perspective view illustrating the decapitating cutter and attendant mechanism. Fig. 5 is an end elevation of the same viewed from the left of Fig. 4. Fig. 6 is a horizontal section taken on line C—C of Fig. 1, with portions of some of the parts broken away. Fig. 7 is a fragmentary view illustrating the relative positions of the engaging devices during the fin severing operations. Fig. 8 is a sectional view of one of the engaging devices taken longitudinally of one of the prongs, portions of the latter being broken away. Fig. 9 is a longitudinal section of the inner fin severing device taken on line 9 of Fig. 1. Fig. 10 is a plan view in partial broken section of the outer fin severing device removed, and Fig. 11 is a vertical sectional view of the same taken on line 11 of Fig. 10.

With reference to the drawings, I have shown the main frame of the machine formed with a top part 1, supported on uprights 2 secured to a suitable base, and supporting circular tracks 3, 3 which are spaced apart and secured, each to a respective pair of the said uprights. Mounted in the main frame is a carrier comprising sections 4, 4 conveniently supported on the tracks 3, 3 for rotation and provided with gear teeth 5 meshing with respective gears 6, secured

to a shaft 7 journaled on the main frame. This shaft has connection, by means of suitable gearing 8, with a shaft 9 rotatably supported on said frame and provided with a pulley 9' (see Fig. 3), to which power is applied to rotate the carrier in the direction indicated by the arrow in Fig. 1.

The construction and arrangement of the aforementioned parts are the same as in my present pending application, Serial No. 397,436.

Reference numeral 10 designates a cutter provided with cutting edges 10' curving rearwardly one without the other from a common point and having angular base portions 10'' extending in relatively opposite directions. Intermediate the edges 10' is a portion 11 suitably curved in cross section at a gradually increasing degree from the point of the cutter and extending into a base portion 11', secured at one side edge to a sector shaped member 12 apertured to receive freely a shaft 13, journaled on an extension 15 of the main frame and connected by gearing 16 with shaft 7.

Pivotaly connected with cutter 10 is a stay arm 14, slotted to receive a cap screw 17 seated in extension 15 and normally clamping said arm against the extension to secure the cutter from movement.

Cutter 10 is employed to decapitate the fish which are advanced for cutting, as will be later understood, by arms 18, 18' and 19 secured to shaft 13. Each arm 19 has its outer end portion bowed or curved to clear portion 11 of the cutter and support the fish along the pectoral girdle while the companion arms 18' and 18 support the head and body portions respectively.

Extending lengthwise of shaft 13 at its upwardly moving side is a plate like section or table 20 secured to extension 15 and having suitable openings extending outwardly from its inner edge for passage of the arms 18, 18' and 19 as clearly shown. Extending over shaft 13 from table 20 are bowed members 21 which guide the body of the fish as advanced, the said members projecting at the opposite side of the shaft beyond the sweep of the arms to withdraw the fish body from engagement therewith, after passing the cutter 10, and guide the same for delivery by gravity to a lateral extension 22' of a feed way 22. See Figs. 5 and 6.

In the operation of decapitation, the fish,

placed flatwise upon table 20 with its abdomen against the guides 21 and the pectoral girdle in the path of the bowed end portions of arms 19, is caught up by the advancing set of arms and advanced upon the cutter 10 which enters between the head and body parts with the portion 11 engaging the pectoral girdle to adjust the fish relatively to the edges 10' and 10'' so that cuts severing the head will be produced without cutting away undue portions of meat from the body.

Mounted on the carrier are devices 23 arranged in opposing relations on respective sections 4 for gripping the fish body and engaging respective cam grooves 3' suitably provided in the tracks 3 to move the grippers 23 apart as they approach the feed way 22, in which the fish body is placed upon its back and advanced tail foremost to the carrier, and move the said grippers to engage the fish when they reach the point of feed.

The fish body should be engaged by the grippers 23 midway the width of the tail portion, and I therefore provide for adjustment of the feed way relatively to the point at which the grippers close so that it may be set in accordance with the size of the fish to be dressed. For this purpose I preferably pivot the feed way 22 on extension 15, as at 24, for vertical adjustment at its forward end, and provide an adjusting means in the form of a vertically disposed screw 25 seated in said extension to adjustably support the feed way at its forward end, as clearly shown. See Figs. 1 and 6.

Lying above the point of feed, within the sweep of the grippers 23, are cutters 26 and 27 and adjacent the latter, but on the opposite side of the path of the carrier, is a cutter 28. The arrangement of the aforesaid cutters being the same as disclosed for similar cutters in my aforementioned application and each cutter likewise comprising a pair of circular blades secured to suitable spindles and formed with outwardly flaring cutting rims rotatably fitting one within the other in substantially the same manner as disclosed in my former Patent No. 796,538.

The cutters 26 and 27 are mounted on heads 26' and 27' respectively and connected with a shaft 29, journaled on the main frame, by means of suitable gearing, including drive shafts 30 and 31 rotatably supported, each on a respective one of said heads and having gear connections with shaft 29. The heads of these cutters are supported on a bracket 32 secured to the adjacent track section 3, and the connection between the cutter 26 and its drive shaft is identical to that disclosed for the cutter 27, (see Fig. 9) in which bevel gears secured to respective spindles of the cutter are shown engaging a similar gear 27'' secured to drive shaft 31.

With reference to Fig. 1, it will be observed that the cutter 26 is positioned with its cutting edge presented for cutting adjacent the point at which the fish is fed to the machine so as to produce a cut severing the caudal fin, as in my aforementioned pending application and as will be later understood.

In the case of the cutter 28, I have shown the same mounted on a head 28' carried by a hanger 33 swingably supported on a shaft 25^a, journaled on the frame part 1 and connected by suitable gearing with a shaft 34 having driving connection with shafts 9 and 29 by means of gears as clearly shown in Figs. 1 and 3.

Associated with cutter 28 are oppositely disposed fin guides embodying novel features which insure their engagement with the fins. Said guides including base sections 35 (see Figs. 10 and 11) secured adjacent their rear ends to respective stems 36 journaled on head 28' and connected for simultaneous equal movement in relatively opposite directions by gear sectors 36' secured to said stems and meshing one with the other. Projecting forwardly of the base sections 35 are guide sections 35' having suitable connections with the base sections, as at 35'' for movement to various angular positions, and resting at their forward ends on the carrier sections 4 to engage the fish body at opposite sides.

In connection with the fin guides I have shown a tension device including a spring 37 coiled about a screw-threaded rod 37', connected with an angular extension of one of the stems 36 and engaging freely in a suitable aperture provided in a similar extension of the other stem 36, the said spring bearing against said last extension and a thumb nut 37'' on rod 37 to yieldingly press the base sections 35 one against the other at their forward ends as clearly shown in Fig. 10.

Above the guide sections 35 I have shown a means 38 for removing the fins severed by cutter 28, the same comprising oppositely disposed arms, as in my present pending application Serial No. 335,517, secured to a bevel gear 38' rotatably mounted on head 28' and meshing with a gear 38'' secured to a shaft 34^a journaled on said head. This shaft is connected with cutter 28 by oppositely disposed gears 28'' meshing with gear 38'' and secured to respective arbors of said cutter.

The head 28' is pivotally connected with hanger 33 concentric with shaft 34^a, which is driven through the medium of a gear 28^a meshing with gear 38'' and secured to a shaft 34' journaled on said hanger and connected with shaft 25^a by gears 25'.

With reference to Fig. 1 it will be observed that the head 28' is positioned with the lower corner or heel of cutter 28 in the

path of the carrier at the forward side of the head and in connection with the latter I have shown a counterbalancing device comprising a spring pressed angle lever 39 fulcrumed on the main frame as at 39' and pivotally connected with lugs 39'' of head 28'. At the forward side of head 28' I have provided means for engaging the fish body in advance of cutter 28 to augment the depression produced in the body by the heel of said cutter and thereby bring the horizontal fins to more erect positions for cutting, the said means conveniently consisting of convex edge portions as 40^a of winged members 40 secured in spaced apart relations, for passage of the anal fin therebetween, to an axle 40' rotatably mounted on head 28' and connected by a train of gears 40'' with shaft 34^a.

Reference numeral 41 designates a cutter arranged in line with the center of the path of the carrier, to split the fish, and rotatably mounted on a frame 42 swingably supported on a shaft 43 journaled on frame part 1 and connected with shaft 34 by means of gears 43''. The shaft 43 is connected with the arbor of cutter 41 by suitable gearing including a shaft 43' rotatably mounted on frame 42.

Extending rearwardly from the splitter 41 is a spreader of substantially the same construction and operation as the spreader described in my aforementioned application Serial No. 335,517 and likewise swingably connected with the arbor of the splitter and provided with extensions 44 and laterally projecting shoes 45. Weights 42' and 44' connected with the frame 42 and extensions 44 respectively keep the same from bounding outwardly when the fish body strikes the shoes 45.

In advance of the splitter is a spring-pressed presser 46^a of substantially the same construction and operation as the presser described in my aforementioned pending application Serial No. 335,517 and likewise swingably mounted on the frame of the splitter.

The remaining parts to be now described are the same in construction and arrangement as in my aforementioned pending application Serial No. 397,436.

Reference numerals 46 and 48 designate scrapers mounted in the path of the fish body beyond the splitter 41 on hangers 46' and 48' respectively which are swingably supported on a shaft 47 journaled on frame part 1 and connected with shaft 34 by gears 47'. Associated with the scrapers 46 and 48, respectively, are rotary devices 49 and 50 which serve to remove the entrails dislodged by the scrapers. As shown, each scraper extends about the edge of its respective removing device adjacent the carrier and is provided with outwardly extending arms

swingably mounted on the spindle of said device so that the scraper may be adjusted to present its upper edge in the proper position for scraping. To secure the scrapers in adjusted positions I have shown curved bolts 51 and 52 seated on the hangers 46' and 48' respectively and provided with screw threads engaging lock nuts arranged at opposite sides of respective lugs provided on the outer extremities of the scrapers.

The removing device 50 is formed with a disk like center portion provided with a circular cutting edge 50' and having at each side laterally projecting wings 53 and 54 arranged alternately in spaced apart relations. These wings extend inwardly from the outer edge of the center portion and, as will be observed, each is formed of considerable width throughout the major portion of its length so as to offer support for the entrails dislodged from the fish body. The device 49 is substantially the same as device 50 excepting that the cutting edge is omitted and the wings 53' and 54' are extended across the edge of the center portion.

The devices 49 and 50 are driven through the medium of shafts 55', 56, journaled on the frames 46', 48' and connected, by suitable gearing, with shaft 34 and with the spindles of respective removing devices to rotate the latter in the directions indicated by the arrows shown in Fig. 1.

Reference numeral 55 designates adjusters conveniently in the form of circular brushes secured to respective shafts 56' disposed at opposite sides of the scraping and removing devices and rotatably supported on angle brackets 57, swingably engaged with a shaft 58 journaled on frame part 1, and connected with shaft 34 by means of gears 58'. These adjusters are arranged adjacent their respective scraping and removing devices to engage the fish body at opposite sides as said devices enter the same, and the shafts 56' are connected with shaft 58 by means of gears 59 suitably arranged to rotate the adjusters in the direction indicated by the arrows shown in Fig. 3, whereby the opposing sides of the adjusters will hold the side walls of the fish body in position during the scraping and removing operation.

To support the shafts 56' at their lower extremities I have shown the same engaged with suitable journals provided on a bar 59' having secured thereto lateral extensions as 60 which engage adjacent uprights 2 of the main frame.

After the fish has been decapitated the body portion is moved back downward on the feedway 22 to project the tail part between the carrier sections 4, as heretofore described, into engagement with a suitable stop 61 provided within the sweep of the grippers 23, as indicated by dotted lines in Fig. 1. As the said grippers pass the point of

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feed they are moved into engagement with the fish body, as heretofore described, and hold the same to movement with the carrier, thereby bringing the tail portion of the fish body against the cutter 26 to produce a cut severing the caudal fin.

During upward movement of the fish body from the point of feed it passes between suitable guides 62 carried by spring pressed arms 62' pivotally supported on a cross member of the main frame and connected by suitable gear sectors 63 to obtain equal adjustment of the guides 62 to insure the fish body swinging to position between the carrier sections 4, the opposing edge portions 4' of which serve as a seat for the fish body as it moves toward the cutters 27 and 28.

As the fish body approaches head 28' the tapering tail portion passes between the guide sections 35' into engagement with heel of cutter 28 and thereby adjusts said head outwardly permitting said sections to swing rearwardly on connections 35'' and embrace the body at a suitable inclination to insure their engagement with the horizontal fins. As the body is advanced between these guide sections it forces them to move laterally with the base sections 35 against action of spring 37, and the convex portions 40^a of member 40 pressing upon said body tends to draw the horizontal fins to erect positions between the wings of said members which support the said fins for severing action of cutter 28, while cutter 27 severs the dorsal fin and adjusts the body outwardly to position it for subsequent operations.

Associated with the grippers 23 are other means for engaging the fish body to secure the same in adjusted position following the fin severing operation, the said means comprising devices 23' arranged in opposing relations on the carrier sections 4 and engaging respective cam grooves 3''. These grooves are suitably provided in the track sections 3 to move the devices 23' into engagement with the fish body as it passes the cutter 28 and move them to relatively disengaging positions as the body passes beneath said sections.

Each of the devices 23' includes a plurality of prongs 65 supported on a head 66 and slidably engaged in suitable apertures provided in the edge portions of the respective carrier section 4. Each head 66 is provided with a suitable roller 70, for engaging the adjacent cam groove 3'', and formed with upwardly projecting extensions 67, 67 and 68 provided with suitable apertures which slidably receive respective prongs 65 so that the latter may be adjusted longitudinally for proper engagement with the fish body. To secure the prongs in adjusted position I provide a resilient means 69 for each head in the form of a V-shaped spring which straddles the extension 68 and is provided with aper-

tures through which the prongs 65 pass. These apertures are suitably arranged so that the edges of the walls thereof normally engage respective prongs to secure the same from movement. When desired to release the prongs for adjustment, the operator presses the leaves of the spring toward each other.

The devices 23 are identical in form and construction to that just described for the devices 23' excepting that in lieu of prongs 65 I provide a plurality of stems 65' for each device 23. These stems are slidably mounted in suitable apertures provided in the edge portions of respective carrier sections 4 and adjustably engaged with respective heads 66' in the same manner as that described for the prongs 65 of the heads 66. On the opposing ends of the center stems 65' I provide gripping members 71 which are suitably mounted on respective stems for rotary movement to avoid mutilation of the fish body as it swings toward and from the carrier.

Referring now to the further operation of the machine, the fish body passes from the cutter 27 between suitable guide members 72 arranged substantially the same as those disclosed in Fig. 2 to center the body relatively to the splitter 41 as the heads 66 are moved to engage the prongs 65 with the body to secure it in adjusted position. From the guides 72 the fish body passes into engagement with the presser 46, splitter 41 and spreader 44 successively, the latter of which spreads the side walls of the body apart for entrance of the scraper 46 as the body passes between the adjacent adjusters 55, which act to draw the said walls about the scraper as the wings on device 49 break the entrails crowded out by the scraper. As the fish body passes scraper 48, the device 50 severs the membrane along the back bone and conveys away the entrails and pigment dislodged while the adjacent adjusters 55 hold the walls of the body in proper position to be acted upon by said scraper. As the fish body passes beneath the carrier the heads 66 are moved in the manner heretofore described to disengage the prongs 65, and as the grippers 23 approach the point of feed they are moved apart to release the said body from the carrier.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent of the United States of America, is:

1. In a fish dressing machine, a cutter provided with rearwardly diverging side cutting edges, one of said cutting edges being of concave form lengthwise of the cutter and the other of convex form.

2. In a fish dressing machine, a cutter comprising an intermediate portion curved in cross section, and rearwardly diverging

side cutting edges curved lengthwise of the blade to provide one concave and one convex cutting edge.

3. In a fish dressing machine, means for supporting a fish body, and a cutter for operation on a fish body arranged on said means, said cutter being provided with concave and convex cutting edges curving rearwardly in diverging paths, said cutting edges being disposed in a common plane one outwardly of the other relatively to said means.

4. In a fish dressing machine, a cutter curved in cross section and having concave and convex side cutting edges said side cutting edges lying in a common plane and diverging rearwardly, and extensions on said cutter for producing cuts extending at an angle to said cutting edges.

5. In a fish dressing machine, rotatably supported conveying means for the fish, a cutter arranged in the path of said conveying means for operation on the fish as conveyed, said cutter having rearwardly diverging cutting edges and an intermediate curved portion arranged to engage the forward end portion of the fish body and adjust the same relatively to said cutting edges, and means extending into the path of said first means for removing the fish therefrom by and during movement thereof.

6. In a fish dressing machine, a cutter, a rotatable means for advancing the fish body to said cutter, said means comprising a plurality of spaced arms, and a means for guiding the fish body as it is advanced, extending between the arms of said first means.

7. In a fish dressing machine, a cutter, means for advancing a fish body to said cutter, means supporting said first means for movement, and a means on which the fish is guided as it is advanced by said first means, said last means extending to a point without the path of said first means.

8. In a fish dressing machine, a cutter, a guide formed with a slot extending lengthwise of and to points on opposite sides of said cutter, and means movable through the slot of said guide past said cutter for advancing a fish on said guide.

9. In a fish dressing machine, a cutter, a guide formed with a slot extending lengthwise of and to points on opposite sides of said cutter, and rotatably supported means having an arm arranged for movement past said cutter through the slot of said guide for advancing a fish on said guide to said cutter and past the latter.

10. In a fish dressing machine, a cutter, a rotary means for advancing a fish to said cutter, said rotary means having an arm arranged to engage the fish, and a relatively fixed guide arranged to have the fish moved

thereon by the arm of said rotary means, said guide extending without the path of said arm.

11. In a fish dressing machine, a cutter, a means for advancing a fish to said cutter, said means comprising a hub provided with a plurality of spaced arms, means supporting said first means for rotation, and a guide for the fish extending over said first means and provided with slots for reception of the arms thereof.

12. In a fish dressing machine, a cutter, means for advancing a fish to said cutter, means supporting said first means for movement in a curved path, and a relatively fixed guide arranged to support a fish during its movement toward said cutter, said guide being provided on the far side of the cutter with a downwardly extending portion lying without the path of said first means.

13. In a fish dressing machine, a cutter, a means for advancing a fish to said cutter comprising a hub provided with spaced series of arms, and a guide for the fish extending over said means to support a fish as it is advanced by the arms of said means.

14. In a fish dressing machine, a cutter, a means for advancing a fish to said cutter comprising a hub provided with spaced series of arms, and a guide for supporting the fish as it is advanced to said cutter, said guide extending over said means and being provided with openings for reception of the arms thereof.

15. In a fish dressing machine, a cutting means, fin guides supported for movement toward and from one another and projecting forwardly of said cutting means, means yieldingly pressing said fin guides toward one another, and means connecting said fin guides for equal bodily movement in relatively opposite directions.

16. In a fish dressing machine, a cutting means, fin guides swingingly supported and projecting forwardly of said cutting means, and means connecting said fin guards for equal movement in relatively opposite directions including stems fixed to said guides and provided with meshing toothed members.

17. In a fish dressing machine, a cutting means, fin guides supported for movement toward and from one another and projecting forwardly of said cutting means, stems fixed to said fin guides, means supporting said stems for rotation, toothed members fixed to said stem and meshing with one another, and means yieldingly holding said stems against rotation.

18. In a fish dressing machine, a carrier, means for supporting the same for movement, a cutter arranged in the path of said carrier, means for supporting said cutter,

and adjustable fin guides for said cutter arranged for movement independently of said cutter toward and from said carrier.

19. In a fish dressing machine, a carrier, means supporting the same for movement, a cutter arranged in the path of said carrier, means supporting said cutter for movement toward and from said carrier, and fin guides supported for movement with said cutter and for independent movement in the direction of movement of said carrier, said fin guides being supported so as to project forwardly of said cutter.

20. In a fish dressing machine, a carrier, means for supporting the same for movement, a cutter arranged in the path of said carrier, means supporting said cutter for movement toward and from said carrier, and fin guides supported for movement with said cutter projecting forwardly thereof and below the same and normally bearing on said carrier.

21. In a fish dressing machine, a carrier, means for supporting the same for movement, a cutter arranged in the path of said carrier, means supporting said cutter for movement toward and from said carrier, and fin guides supported for movement with said cutter and for movement independent thereof in the direction of movement of said carrier, said fin guides projecting forwardly of said cutter and normally bearing on said carrier.

22. In a fish dressing machine, a carrier, means supporting the same for movement, a cutter arranged in the path of said carrier, means for supporting said cutter, and fin guides arranged forwardly of said cutter for movement independent thereof in a common direction to various angular positions relatively to said carrier.

23. In a fish dressing machine, a carrier, means for supporting the same for movement, a cutter arranged in the path of said carrier, means for supporting said cutter for movement toward and from said carrier, and fin guides movably supported on said last means and connected for swinging in a common direction independently of said means.

24. In a fish dressing machine, a carrier, means for supporting the same for movement, a cutter arranged in the path of said carrier, means for supporting said cutter for movement toward and from said carrier, and fin guides supported on said last means for movement toward and from one another and for movement independent of said means in the direction of movement of said carrier.

25. In a fish dressing machine, a carrier, means supporting the same for movement, a cutter arranged in the path of said carrier,

means for supporting said cutter for movement toward and from said carrier, and fin guides supported on said last means and being hinged for movement in the direction of travel of said carrier.

26. In a fish dressing machine, a fin severing device comprising a cutter having a heel and a cutting edge arranged above and in advance of said heel, and means arranged in advance of the cutting edge of said cutter having a convexed portion arranged to engage the fish simultaneously with the heel of said cutter to cause the fins to assume more erect positions for cutting.

27. In a fish dressing machine, a fin severing device comprising a cutter having a heel and a cutting edge arranged above and in advance of said heel, and a rotary means arranged in advance of the cutting edge of said cutter having a convexed portion arranged to engage the fish simultaneously with the heel of said cutter to cause the fins to assume more erect positions for cutting.

28. In a fish dressing machine, a fin severing device comprising a cutter having a heel and a cutting edge arranged above and in advance of said heel, and a rotary means arranged in advance of the cutting edge of said cutter, said rotary means having wings provided with convex portions arranged to engage the fish simultaneously with the heel of said cutter to cause by pressing on the fish the fins thereof to assume more erect positions for cutting.

29. In a fish dressing machine, a fin severing device comprising a cutter having a heel and a cutting edge arranged above and in advance of said heel, fin guides projecting forwardly of the cutting edges of said cutter, and means projecting between and below said fin guides for exerting pressure on the fish to compel fins engaged between said guides to assume erect positions.

30. In a fish dressing machine, a carrier, means supporting the same for movement, means supported for movement toward and from said carrier, a cutter on said last means, said cutter having a heel arranged in the path of said carrier for engagement with the fish and a cutting edge arranged above and in advance of said heel, fin guides supported on said last named means and projecting forwardly of said cutter, and rotary means extending between and below said fin guides for engagement with the fish, as specified.

Signed at Seattle, Washington, this 9th day of February, 1909.

EDMUND AUGUSTINE SMITH.

Witnesses:

FRANK E. ADAMS,
ARLITA ADAMS.