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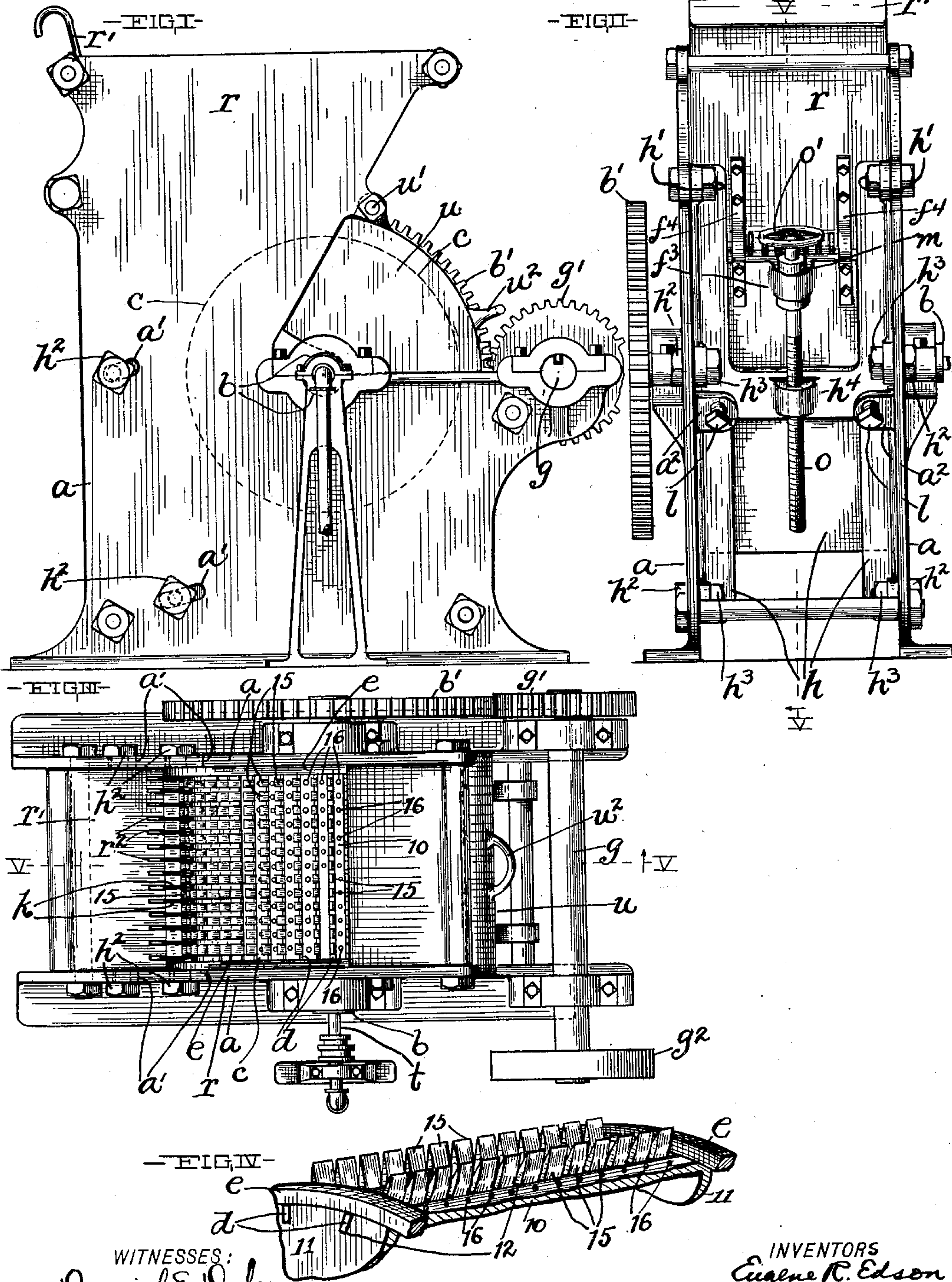
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E. R. EDSON & J. D. CLOUGH.
CUTTING MACHINE.

(Application filed Sept. 12, 1900.)

(No Model.)

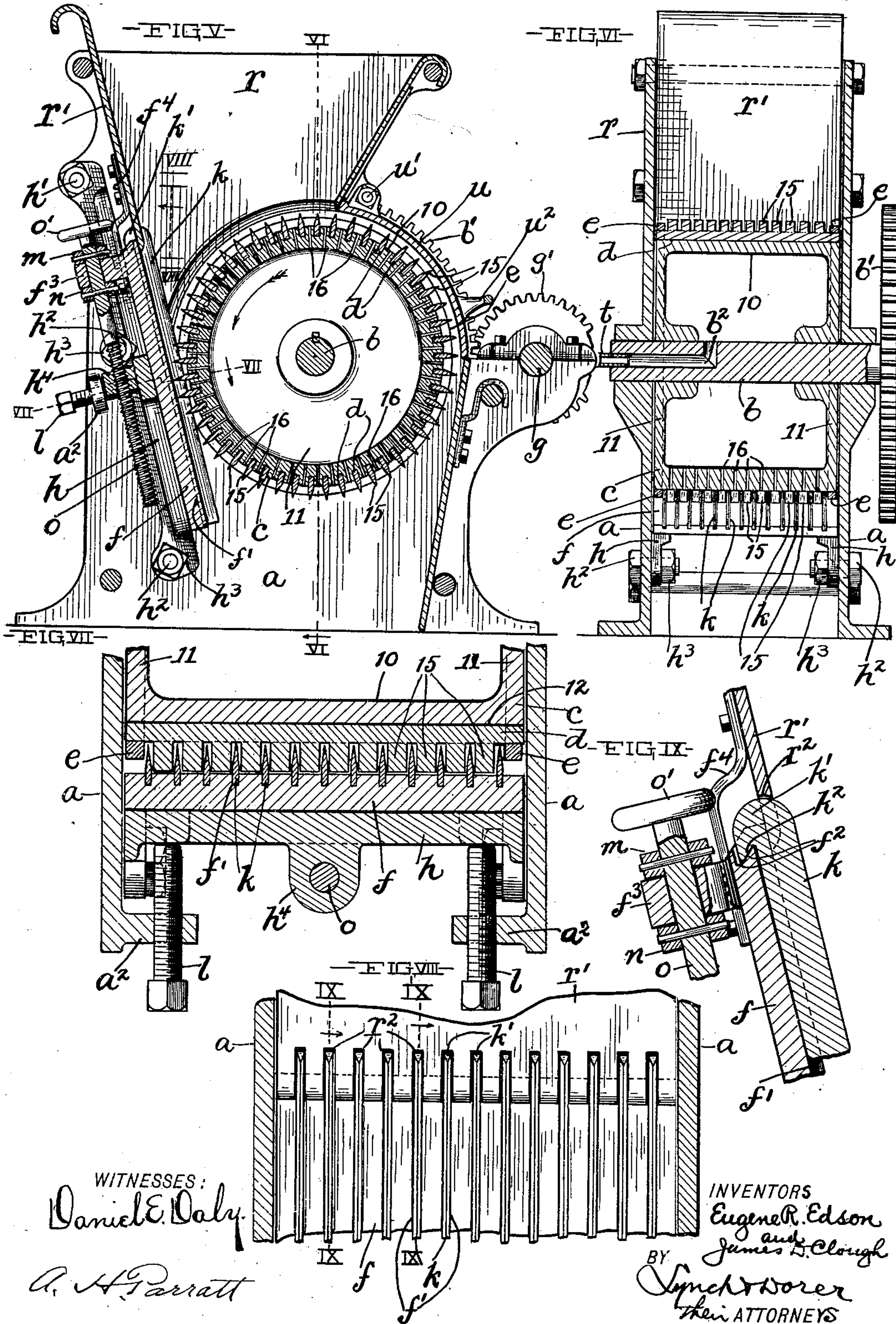
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UNITED STATES PATENT OFFICE.

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CUTTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 672,893, dated April 30, 1901.

Application filed September 12, 1900. Serial No. 29,766. (No model.)

To all whom it may concern:

Be it known that we, EUGENE R. EDSON and JAMES D. CLOUGH, residents of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Cutting-Machines; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

Our invention relates to improvements in machines for cutting fish or parts of fish or similar material.

The object of this invention is to provide a machine of the character indicated that is simple and durable in construction and exceedingly effective for the purpose for which it is designed.

With this general object in view and to the end of realizing other advantages hereinafter appearing our invention consists in certain features of construction and combinations of parts hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure I is a side elevation of a machine embodying our invention. Fig. II is a left-hand side elevation relative to Fig. I. Fig. III is a top plan of the machine. Fig. IV is a view in perspective of a portion of the severing-drum *c*. Fig. V is an elevation, mostly in central vertical section, on line V V, Figs. II and III, looking in the direction of the arrow. Fig. VI is an elevation, mostly in central vertical section, on line VI VI, Fig. V, looking in the direction of the arrow. Fig. VII is a top plan in section on line VII VII, Fig. V. Fig. VIII is an elevation in section on line VIII VIII, Fig. V, showing the inner side of the upper end portion of the knife-bearing plate *f* and the lower end of the hopper-wall supported from the said plate. Fig. IX is a vertical section on any one of lines IX IX, Fig. VIII. Figs. IV, VII, VIII, and IX are drawn on a larger scale than the remaining figures.

Referring to the drawings, *a* and *a* designate two vertically-arranged side frames or standards that are arranged a suitable distance apart, tied together in any approved manner, and constituting the main supporting structure or stationary framework of our improved machine. A shaft *b* is arranged

horizontally and transversely of and suitably supported in the frames or standards *a* and *a*. Upon this shaft, between the frames or standards *a* and *a*, is operatively mounted a severing-drum *c*. This drum is preferably hollow, as shown in Figs. IV and V, to render it light, and consists, therefore, of a cylindrical shell 10, arranged concentrically of the shaft, and two heads 11 and 11, arranged at opposite ends, respectively, of the shell 10 and keyed or fixed upon the shaft in any approved manner. The shell 10 is provided at its external periphery with numerous knife-bars *d*, arranged longitudinally of the shell and at short intervals circumferentially of the shell. Each knife-bar *d* engages, preferably, a corresponding recess 12, formed in and longitudinally and extending from end to end of the shell 10, and the opposing side walls of the said recess prevent displacement of the said bar circumferentially of the drum.

Two bands or rings *e* and *e* are sprung or forced in any approved manner upon opposite ends, respectively, of the shell 10 and extend over and hold the knife-bars *d* within the engaging recesses 12. The rings or bands *e* prevent, therefore, displacement of the knife-bars radially and outwardly from the drum.

Each knife-bar *d* is provided with several cutting-blades 15, arranged at suitable intervals longitudinally of the bar and in line endwise. The spaces formed between adjacent blades 15 of each knife-bar register circumferentially of the drum with the spaces formed between the blades of the remaining knife-bars, as shown in Fig. III, so that each blade 15 of each knife-bar forms one of a series of cutting-blades arranged at comparatively short intervals circumferentially of the drum. Each knife-bar *d* has its blades projecting preferably radially from the periphery of the drum.

Relatively stationary upright knives *k* extend up and down at one side of the drum and have their cutting edges facing the drum. The arrangement of the upright knives *k* relative to the cutting-blades 15 of the severing-drum is such that each blade 15 shall during the rotation of the drum have an orbit or sweep extending between two adjacent upright knives *k*. In other words, the knives *k* and the circumferential series of cutting-

blades 15 of the severing-drum alternate, so as to cause the blades 15 during the rotation of the drum to revolve between the knives k . The knives k have their cutting edges extending into close proximity to the peripheral surface of the severing-drum. The upright knives are of course parallel and are supported, preferably, from a correspondingly-arranged plate f , that has as many grooves or recesses f' extending from the upper edge of the plate downwardly as there are knives borne by the said plate, and each groove or recess f' has the width required to render it capable of snugly receiving a knife k , and the said groove or recess f' is enlarged at its upper end as required to form an upwardly-facing shoulder f^2 , as shown very clearly in Fig. IX, that is engaged by a downwardly-facing shoulder k^2 , formed by a lug or projection k' , with which the upper end of the knife that engages the said groove or recess is provided. The side walls of each groove or recess f' prevent lateral displacement of the engaging knife, and the shoulder f^2 , formed at the upper end of the said recess, in conjunction with the engaging lug or projection k' of the knife, prevents displacement of the knife downwardly upon the knife-bearing plate and is consequently instrumental in supporting the said knife.

The severing-drum is rotated during the operation of the machine in the direction indicated by the arrow, Fig. V—that is, in the direction required to cause the cutting-blades thereof to revolve from above toward the relatively stationary knives k . Obviously any fish or parts of fish or other material that is fed into the V-shaped space formed between the upper portion of the severing-drum and the adjacent relatively stationary knives k is upon falling between the said drum and knife-bearing plate f operated upon by the knives k and by the drum's cutting-blades 15. The knives k make upright cuts—that is, cut or sever the material up and down. The blades 15 of the severing-drum sever the material horizontally or longitudinally of the drum. The blades 15 and the knives k are, it will be observed, very positive in their operation. The blades 15 of the severing-drum are instrumental also in feeding the material to the place where it is operated upon by the said blades 15 and the relatively stationary knives k .

As already indicated, the knife-bearing plate f is arranged at one side of the severing-drum. A driving-shaft g , that is arranged horizontally and parallel with the drum-bearing shaft, is located at the opposite side of the drum and supported in any approved manner from the frames or standards a and a . A pinion g' is operatively mounted or fixed upon the shaft g at the outer side of one of the frames or standards a and meshes with a spur-gear b' , that is fixed or operatively mounted upon the drum-bearing shaft at the said side of the said frame or standard. The shaft is provided

with a driving-pulley g^2 , (shown only in Fig. III,) to which power is applied in any approved manner.

The knives k are adjustable toward the severing-drum as required to take up any wear upon the cutting edges of the said knives and upon the cutting edges of the blades 15 of the drum, and to this end the knife-bearing plate f lies against a frame h , that is arranged at the outer side of the said plate and is adjustable toward and from the severing-drum. The frame h has its upper end hinged or pivoted horizontally, as at h' , and on a line parallel with the axial line of the severing-drum to the stationary frames or standards a . The frame h is positively secured in the desired adjustment to each frame or standard a by means of bolts h^2 and nuts h^3 . Preferably the frame h is secured to each frame or standard a in the desired adjustment at its lower end and at a point centrally between the said end of the upper and hinged end of the frame. Each bolt h^2 and the engaging nut h^3 , that are instrumental in securing the frame h in the desired adjustment to a frame or standard a , are arranged and abut against opposite sides, respectively, of the said standard or frame a , and the bolt-hole a' , with which the said frame or standard a is provided for accommodating the location and operation of the said bolt, is elongated, as shown in Fig. I and in dotted lines, Fig. III, in the direction required to accommodate the adjustment of the knife-plate-bearing frame h relative to the severing-drum.

Means employed for shifting the knife-plate-bearing frame h inwardly, as aforesaid, comprises, preferably, two screws l and l , that are arranged at the outer side of the said frame h , at right angles to the said frame, a suitable distance apart and preferably centrally between the upper and lower ends of the frame, and each screw l extends through and engages a correspondingly-threaded nut a^2 , that is formed upon or integral with the adjacent stationary standard or frame a . Obviously upon the loosening of the bolts h^2 and nuts h^3 the frame h can by properly manipulating the screws l be adjusted as required to bring the knives of the knife-plate into the desired adjustment relative to the severing-drum.

A not unimportant feature of our invention consists in rendering the knives k adjustable up and down, so that when the said knives become worn at any point sufficient to render them unfit for further use at the said point an unworn portion of the cutting edges of the said knives can be brought into operation, and to this end the knife-bearing plate at its upper end and upon its upper side is provided with a laterally and outwardly projecting lug f^3 , through which extends an upright screw o , that has bearing in the said lug. Two collars m and n are mounted and fixed upon the screw l in any approved manner at the upper end and lower end, respectively, of the lug f^3 and prevent up-and-down movement of the screw independently of the knife-

bearing plate, and consequently establish operative connection between the said plate and the screw so far as up-and-down movement of the plate is concerned. The screw o has its threaded portion extending through a correspondingly-threaded nut h^4 , that is formed upon the outer side and preferably integral with the frame h . Obviously, therefore, the screw is shifted endwise, upwardly, or downwardly upon turning it in the one direction or the other, and the knife-bearing plate is shifted up or down according as the screw is shifted upwardly or downwardly. The screw has its upper end above the upper collar m provided with a hand-wheel o' .

A hopper r is formed above the space between the knife-bearing plate f and the severing-drum. The material that is to be cut or severed into pieces is dumped or fed into the said hopper in any approved manner. The hopper's side walls, that are arranged at opposite sides, respectively, of the V-shaped space formed between the severing-drum and the knife-bearing plate, slope, preferably, downwardly and inwardly, and the hopper's sloping side wall r' , that is arranged at the top of the knife-bearing plate, is rigidly secured to two brackets f^4 and f^4 , with which the upper end of the said plate is provided. The said sloping side wall r' is therefore adjustable up and down with the knife-bearing plate and extends upwardly far enough to accommodate the said adjustment. The remaining side walls of the hopper are preferably vertically arranged and formed by upward extensions of the frames or standards a of the machine.

To prevent clogging of the spaces between adjacent blades 15 of the severing-drum or to prevent adherence or sticking of any material that lodges upon the said drum to the external peripheral surface of the drum, I provide the shell 10 of the drum with numerous orifices 16, preferably forming an orifice 16 between adjacent blades 15 of each circumferential series of blades 15, and introduce steam into the chamber of the drum by means of a suitably-applied steam-supply pipe t , that has its discharging end in open relation, as shown in Fig. VI, with a port or passage-way b^2 , formed in the shaft b , which port or passage-way is in open relation with the drum's internal chamber. Obviously the steam supplied to the drum at the shaft's port or passage-way b^2 escapes from the drum through the orifices 16, and the heating of the drum and the action of the steam directly upon any material lodging upon and having a tendency to adhere to the peripheral surface of the drum will prevent the sticking of the said material to the drum.

A cover u is arranged concentrically and circumferentially of the drum c , between the inner side of the shaft b and the hopper r . The cover u has its upper end hinged, as at u' , horizontally and longitudinally of the drum to the hopper and is provided exter-

nally and centrally at or near its lower end with a handle u^2 . The cover u performs the function of a guard to prevent injury resulting to or from the severing-drum between the hopper and the driving-shaft, and by swinging this cover upwardly and rearwardly access is conveniently afforded to the exterior of the drum for cleaning, repairs, and other purposes. We would remark also that the hopper-wall r' extends far enough upwardly and downwardly to accommodate the up-and-down adjustability of the knife-bearing plate f , and the lower end of the said hopper-wall preferably overlaps the upper end of the inner side of the knife-plate and has slots r^2 arranged as required to accommodate the location of the knives k .

What we claim is—

1. A cutting-machine comprising a series of uprightly-arranged knives located a suitable distance apart laterally and adjustable endwise up and down, and revoluble cutting-blades having, respectively, an orbit, sweep or path extending between adjacent knives of the aforesaid series of knives, substantially as and for the purpose set forth.

2. A cutting-machine comprising a series of uprightly-arranged knives located a suitable distance apart laterally and adjustable endwise up and down, means for shifting the said knives simultaneously upwardly or downwardly and holding them in the desired adjustment, and a rotary drum provided, upon its periphery at intervals longitudinally of the drum, with series of cutting-blades arranged at suitable intervals circumferentially of the drum and having an orbit, sweep or path extending between adjacent knives of the aforesaid series of knives, substantially as and for the purpose set forth.

3. A cutting-machine comprising a series of uprightly-arranged knives located a suitable distance apart laterally, and a horizontally-arranged, or approximately horizontally arranged, rotary drum provided, upon its external periphery, with recesses extending longitudinally of the drum and arranged at suitable intervals circumferentially of the drum, knife-bars engaging the said recesses and having cutting-blades formed thereon at intervals longitudinally of the drum and alternating with the aforesaid knives, and means for securing the knife-bars in place, substantially as and for the purpose set forth.

4. The combination, with a severing-drum consisting of a hollow shell having peripheral cutting-blades and orifices formed in the shell and connecting with the chamber formed within the shell, of a fluid-pressure-supply pipe in open relation with the said chamber so that fluid under pressure can be delivered to and between the cutting-blades through the shell of the drum and prevent the adherence or sticking of any material to the blades and to the external peripheral surface of the drum.

5. The combination, with a severing-drum

consisting of a hollow shell, a plurality of series of peripheral cutting-blades arranged at suitable intervals circumferentially of the drum, and orifices in the shell between the blades of each series of blades, of means for conducting fluid under pressure into the chamber of the shell, substantially as and for the purpose set forth.

6. In a cutting-machine of the character indicated, the combination, with the suitably-supported and suitably-operated severing-drum arranged horizontally or approximately horizontally, of an upright knife-bearing plate movable up and down and arranged at one side of the drum and having its drum-facing side provided with knives extending up and down the plate, a frame bearing the said plate and supported so as to render it capable of being actuated laterally toward or from the drum and thereby adjust the plate laterally relative to the drum, means for securing the said frame in the desired adjustment, and means for shifting the plate upwardly or downwardly independently of the plate-bearing frame, substantially as and for the purpose set forth.

7. In a cutting-machine of the character indicated, the combination, with the stationary framework, and the suitably-operated severing-drum arranged horizontally or approximately horizontally and supported in the framework, of an upright knife-bearing plate arranged at one side of the drum and having its drum-facing side provided with knives extending up and down the plate, a frame bearing the said plate and hinged or pivoted horizontally or approximately horizontally to the stationary framework so as to render the plate adjustable relative to the drum, means for securing the said hinged or pivoted frame in the desired adjustment, nuts a^2 formed upon the stationary framework at the outer side of the hinged or pivoted frame and the screws engaging and extending through the said nuts into engagement with the outer side of the last-mentioned frame, substantially as and for the purpose set forth.

8. In a cutting-machine of the character indicated, the combination, with the suitably-supported and suitably-operated severing-drum arranged horizontally or approximately horizontally, of an upright knife-bearing plate arranged at one side of the drum and having its knives upon its drum-facing side, a suitably-supported frame arranged at the outer side of and bearing the said plate and pro-

vided with an upright nut h^4 upon its outer side, a correspondingly-arranged screw engaging the said nut and such an operative connection between the screw and the knife-plate as will lower or elevate the said plate according as the screw is turned in the one direction or the other, substantially as and for the purpose set forth.

9. In a cutting-machine of the character indicated, the combination, with the suitably-supported and suitably-operated severing-drum arranged horizontally or approximately horizontally, of an upright knife-bearing plate arranged at one side of the drum and having its knives upon its drum-facing side, a suitably-supported frame arranged at the outer side of and bearing the said plate and provided with an upright nut h^4 upon its outer side, a correspondingly-arranged screw engaging the said nut, a box-forming lug formed upon the outer side of the knife-plate and affording bearing for the screw, and collars fixed upon the screw at the upper and lower ends of the said lug, substantially as and for the purpose set forth.

10. A cutting-machine of the character indicated comprising a suitably-supported and suitably-operated severing-drum arranged horizontally or approximately horizontally, an upright knife-plate arranged at one side of the drum and having its knives upon its drum-facing side, a suitably-supported frame arranged at the outer side of and bearing the knife-plate, means whereby the said plate is adjustable up and down and held in the desired adjustment, and a hopper arranged over the space formed between the drum and the knife-plate and having one of its walls rigid and adjustable with the said plate, substantially as set forth.

11. The combination, with an upright knife-plate having parallel grooves or recesses extending up and down the plate and arranged at intervals widthwise of the plate and enlarged at their upper ends to form upward-facing shoulders upon the plate, of the knives engaging the said grooves or recesses and provided with lugs overlapping and resting upon the aforesaid shoulders.

Signed by us at Cleveland, Ohio, this 31st day of August, 1900.

EUGENE R. EDSON.
JAMES D. CLOUGH.

Witnesses:

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