

No. 804,733.

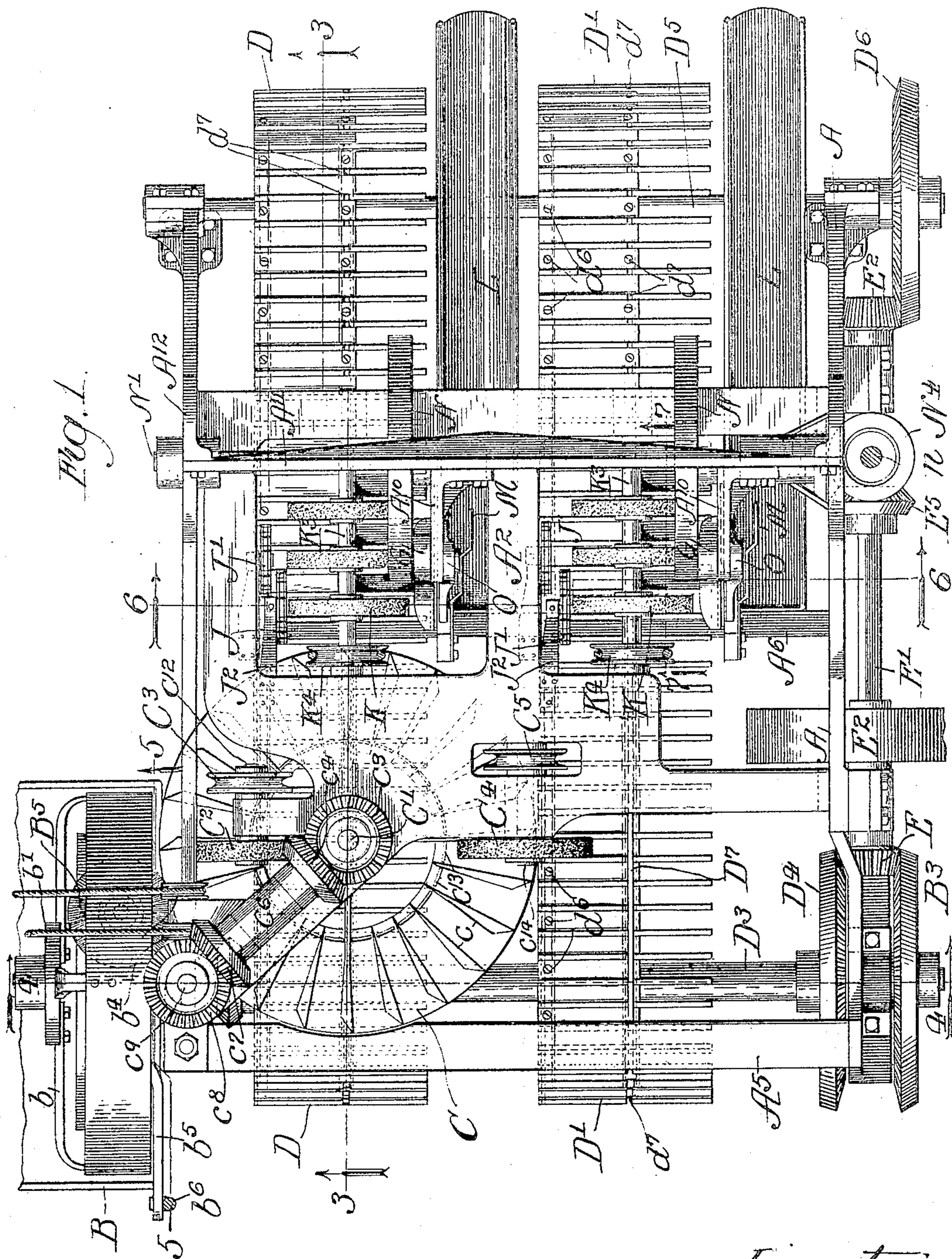
PATENTED NOV. 14, 1905.

W. J. KENNY.

FISH ASSORTING, CUTTING, AND CLEANING MACHINE.

APPLICATION FILED FEB. 23, 1904.

6 SHEETS—SHEET 1.



Witnesses
Harold H. Bennett.
W. H. Hall.

Inventor:
William J. Kenny
by Toole & Brown his Atty

No. 804,733.

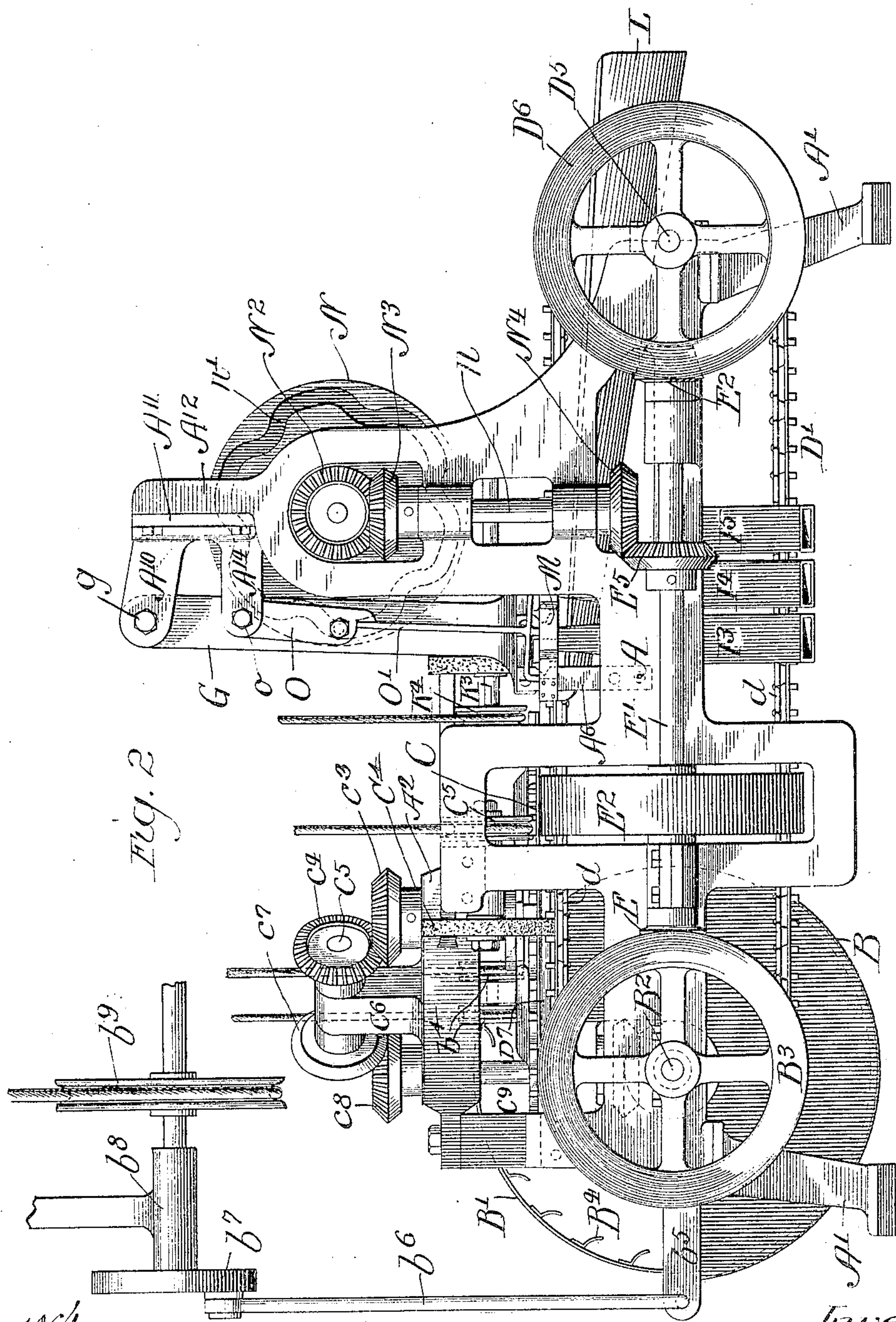
PATENTED NOV. 14, 1905.

W. J. KENNY.

FISH ASSORTING, CUTTING, AND CLEANING MACHINE.

APPLICATION FILED FEB. 23, 1904.

6 SHEETS—SHEET 2.



Witnesses:
H. A. Barrett,
W. H. Hall.

Inventor:
William J. Kenny
by Robert Brown & Sons, Attys

W. J. KENNY.

FISH ASSORTING, CUTTING, AND CLEANING MACHINE.

APPLICATION FILED FEB. 23, 1904.

6 SHEETS--SHEET 3.

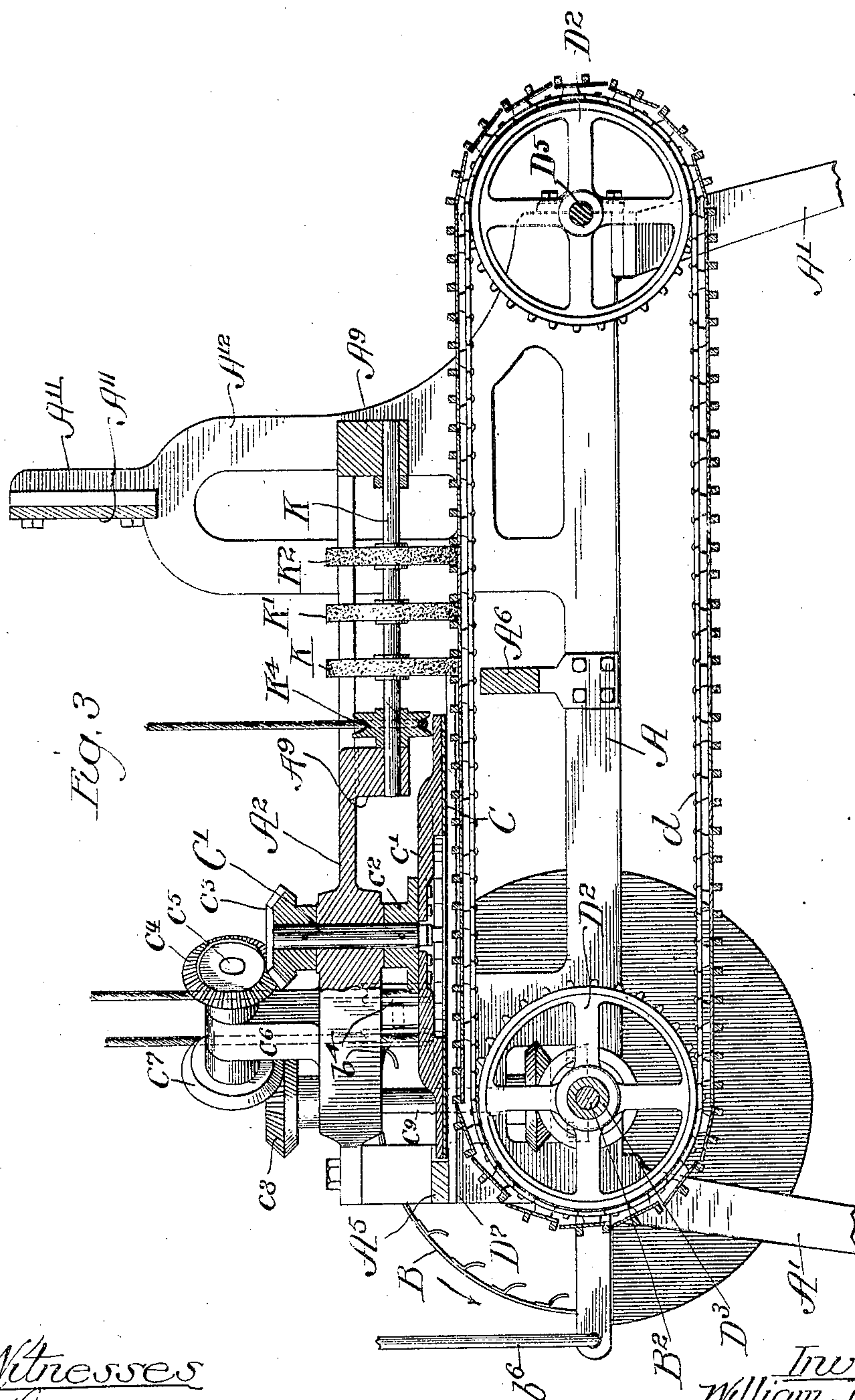


Fig. 3

Witnesses
H. G. Bennett
W. H. Hall

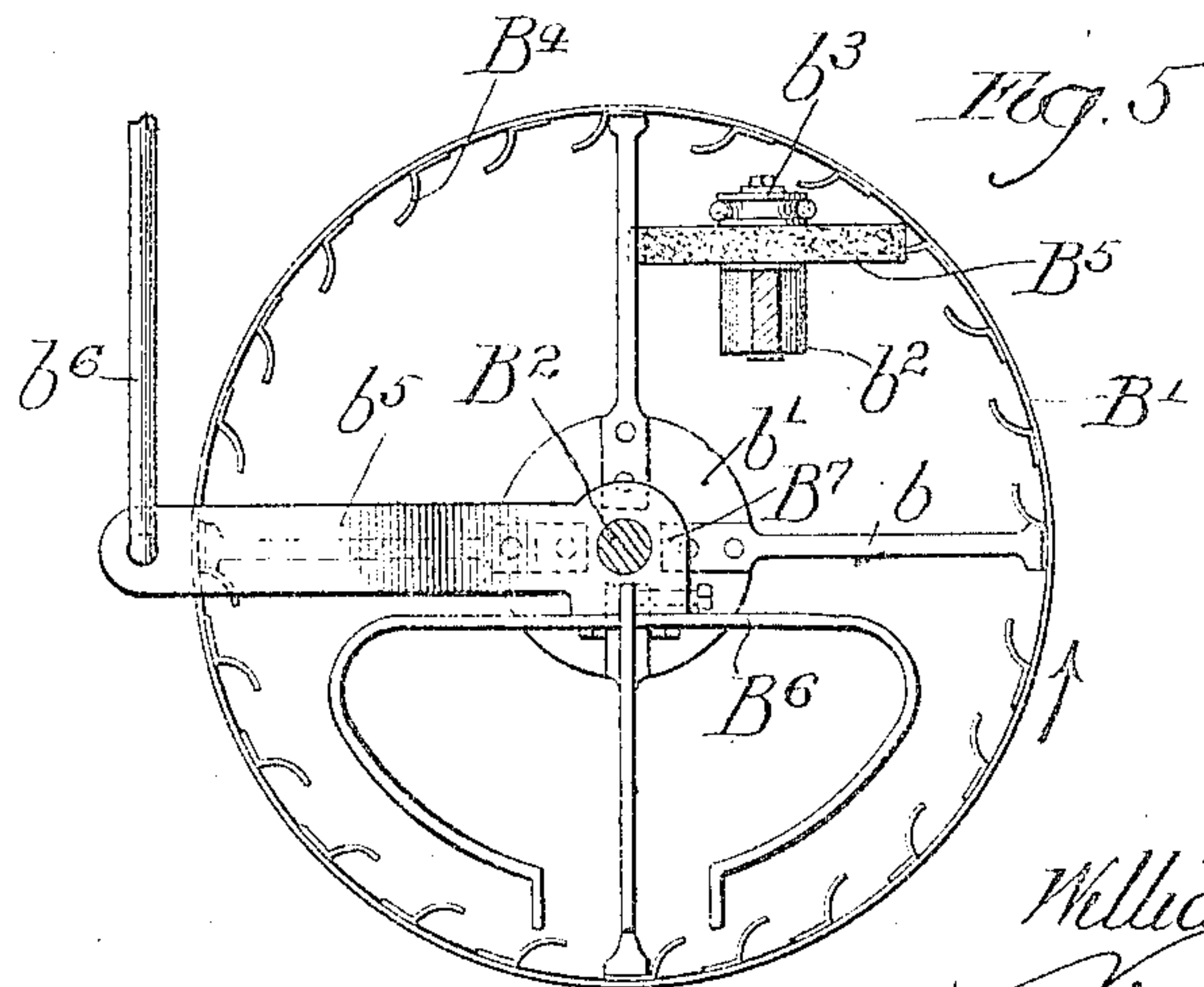
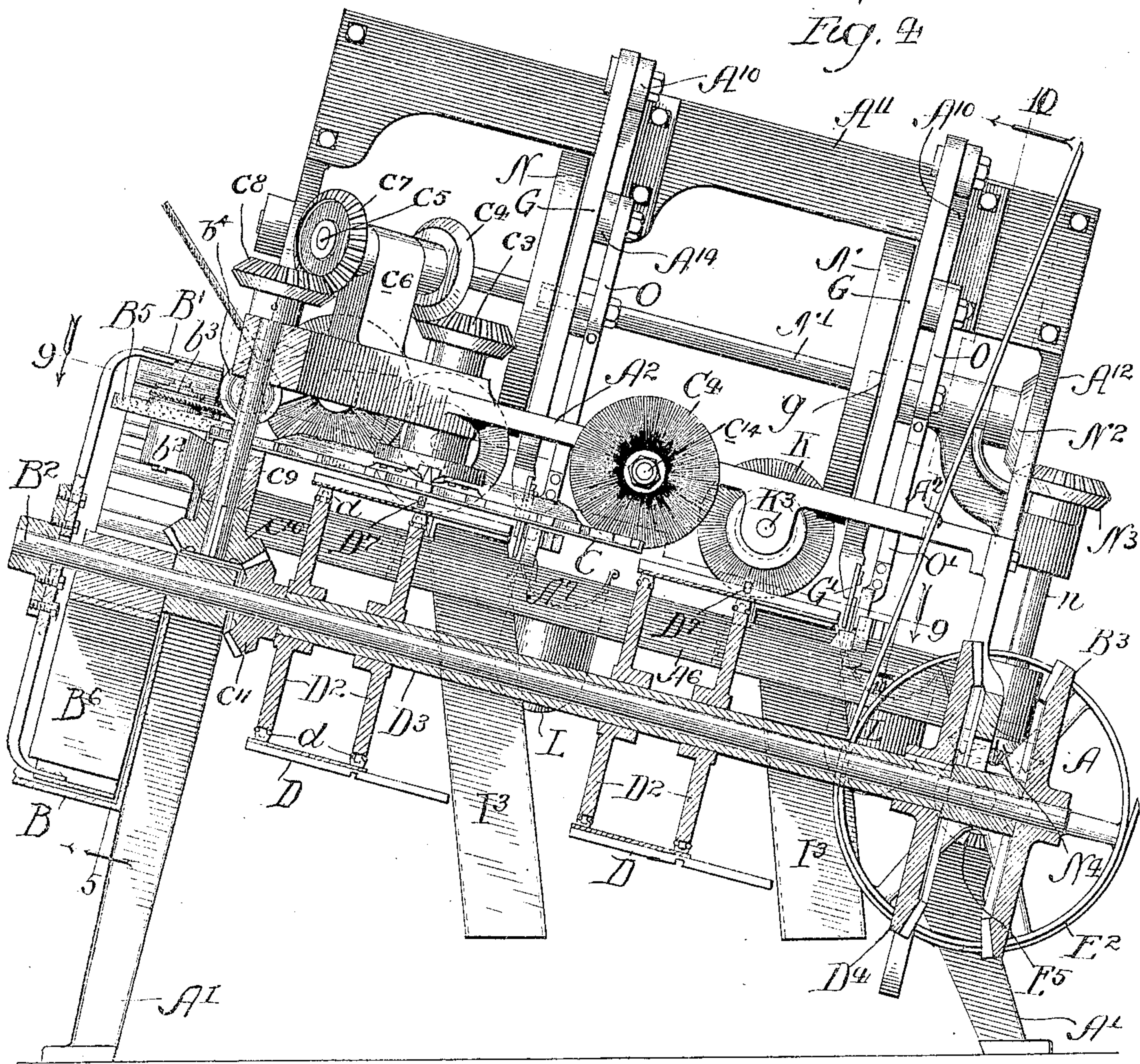
Inventor:
William J. Kenny
 By *Wool & Brown*
 his Attys

W. J. KENNY.

FISH ASSORTING, CUTTING, AND CLEANING MACHINE.

APPLICATION FILED FEB. 23, 1904.

6 SHEETS—SHEET 4.



Witnesses:
H. J. Barrett
W. H. Hall

Inventor:
William J. Kenny
 by *Robert Brown*
res. Atty

No. 804,733.

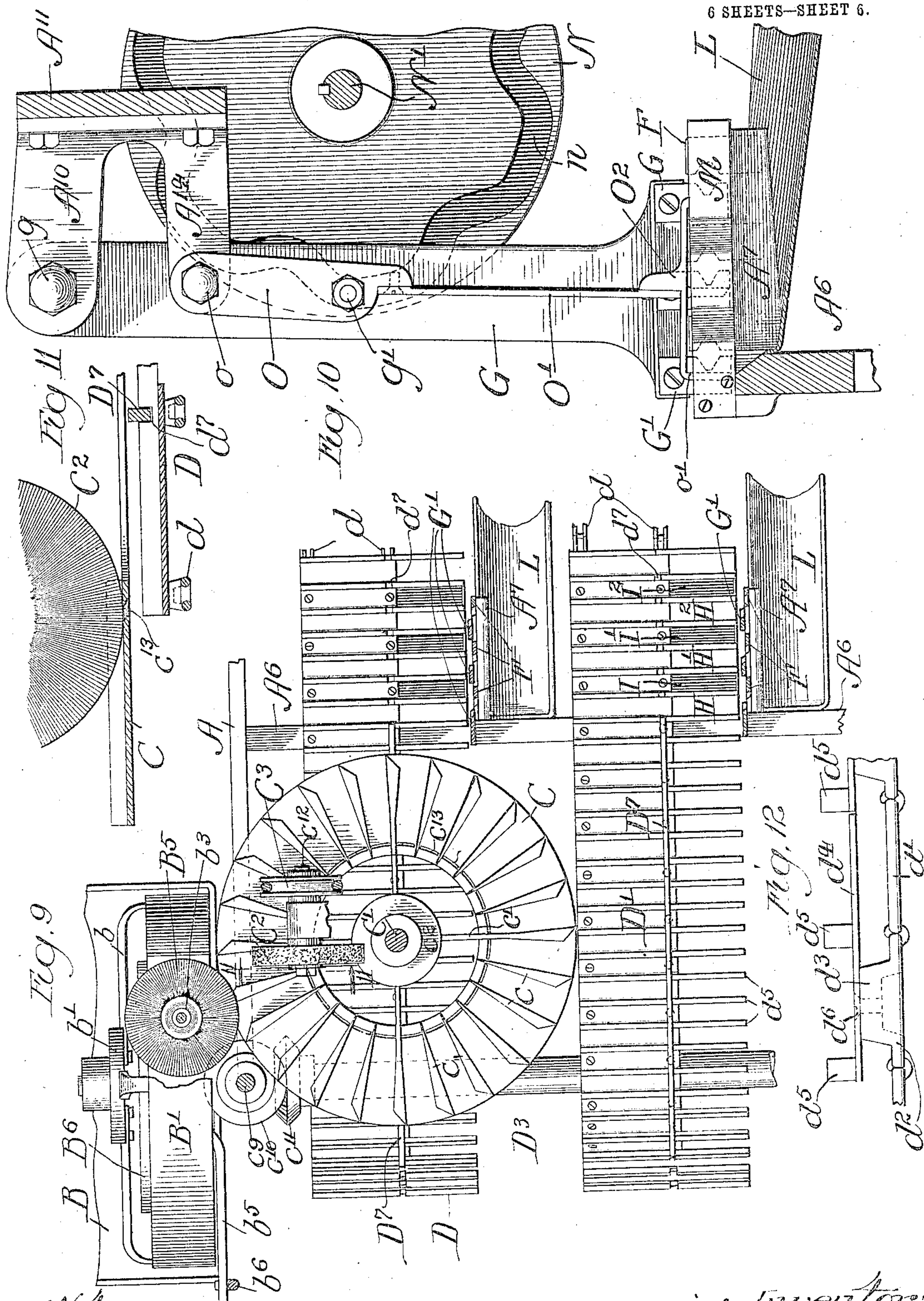
PATENTED NOV. 14, 1905.

W. J. KENNY.

FISH ASSORTING, CUTTING, AND CLEANING MACHINE.

APPLICATION FILED FEB. 23, 1904.

6 SHEETS—SHEET 6.



Witnesses:
H. B. Baugh
W. W. Hall.

Inventor:
William J. Henry
by Poole & Brown
his Attys

UNITED STATES PATENT OFFICE.

WILLIAM J. KENNY, OF MORTONPARK, ILLINOIS.

FISH ASSORTING, CUTTING, AND CLEANING MACHINE.

No. 804,733.

Specification of Letters Patent.

Patented Nov. 14, 1905.

Application filed February 23, 1904. Serial No. 194,885.

To all whom it may concern:

Be it known that I, WILLIAM J. KENNY, a citizen of the United States, and a resident of Mortonpark, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Fish Assorting, Cutting, and Cleaning Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to a novel machine for assorting, cutting, and cleaning fish, and is more especially adapted for operating on smaller fish, such as sardines and the like.

One object of my invention is to provide a machine by which is effected automatically the assorting, cutting, and cleaning of the fish, so that no part of this work is required to be done by hand operation.

A further object of my invention is to provide a novel mechanism for presenting the fish to the cutting mechanism head first regardless of the position in which they are presented by the feeding mechanism.

A further object of the invention is to provide a novel mechanism arranged for directing fish to two carriers from the feeding mechanism and by which they are directed to the cutting mechanism or assorting, cutting, and cleaning mechanisms and constructed to direct the fish which is presented head first by the feeding mechanism to one carrier and to direct the fish to the other carrier which are presented tail first by the feeding mechanism.

A further object of the invention is to provide an improved carrier which coöperates with the assorting, cutting, and cleaning mechanisms in such manner that the fish after being cut and cleaned are dropped from the carrier properly assorted into suitable chutes by which they directed from the machine.

A further object of the invention is to provide an improved gaging mechanism associated with the cutting mechanism and operating to assort the fish relatively to their length.

A further object of the invention is to provide a novel cutting and cleaning mechanism whereby the head and entrails of the fish are removed from the body at the same time.

My invention has other objects in view relating to the construction and improvements in the operation of fish cutting and cleaning

machine, as will hereinafter more fully appear.

Without an attempt to here limit or define the scope of the invention and in order that the detailed description of the machine which follows shall be readily understood, I will preface said detailed description by a brief reference to the leading features of the mechanism herein illustrated.

The machine herein shown as embodying my improvements embraces a suitable feeding-receptacle into which the fish are placed, a rotative feeding device or wheel therein consisting of a rim having on its inner face a plurality of pockets by which the fish are raised one by one from the receptacle, a rotative distributing-table located at one side of said feeding device and provided with radial pockets into which the fish which are carried upwardly from the receptacle by the pockets of the feeding-wheel are forced by a suitable brush or like device, two sets of assorting and cutting and cleaning mechanisms, and two carriers which receive the fish from said rotative distributing-table and carry them to said assorting, cutting, and cleaning devices. One of said carriers is located beneath the rotative distributing-table, which latter is cut away at its central part so that certain of the fish delivered thereon may pass directly across the rotative distributing-table through said central opening upon said first carrier, while the other carrier is located at the side of said rotative table and is adapted to receive the fish which are delivered upon the table tail first. The fish which are delivered to the table tail first are arrested before they reach the central opening of said table and are by said rotative table delivered to the carrier at the side thereof. The assorting, cutting, and cleaning mechanisms are so operated that the fish are assorted into two, three, or more sizes, depending upon the length of the fish when originally received, and the assorting device is provided with a number of chutes equal to the number of different sizes of fish which the machine is designed to assort and also with a chute to receive the head and entrails which are cut and removed from the fish.

Referring now to the drawings illustrating the details of said machine, Figure 1 is a plan view of a machine embodying my invention. Fig. 2 is a side elevation thereof. Fig. 3 is a longitudinal vertical section taken on line 3 3 of Fig. 1. Fig. 4 is a transverse vertical

section taken on line 4 4 of Fig. 1. Fig. 5 is a detail of the feeding-wheel for directing the fish from the feeding-receptacle to the distributing-table, said view being taken on line 5 5 of Fig. 1. Fig. 6 is a transverse vertical section taken on line 6 6 of Fig. 1. Fig. 7 is a detail vertical section taken on line 7 7 of Fig. 6. Fig. 7^a is a detail section taken on line 7^a 7^a of Fig. 7. Fig. 8 is a like section taken on line 8 8 of Fig. 6. Fig. 9 is a fragmentary top plan view of the feeding-receptacle, the distributing-table and the carriers showing in detail a part of the cutting mechanism. Fig. 10 is an enlarged side elevation of one of the cutters and the cam for operating the same, showing also the means for operating the cleaner. Fig. 11 is a detail view showing the manner of arresting and turning the fish which are delivered to the distributing-table tail first. Fig. 12 is a detail side view of one of the carriers.

As shown in the drawings, A A designate side members of the frame of the machine, supported on legs or standards A' and connected by transverse members A⁵ A⁶, Figs. 1 and 3, and A² designates an upper irregular-shaped top frame-plate, Fig. 1, and in which upper and side frame-plates and members the bearing-shafts of the several parts of the machine are mounted. The particular form of the upper and lower frames need not necessarily be made as illustrated, and a detailed description thereof is omitted as being unnecessary. The frame slants or slopes from left to right for a purpose which will hereinafter appear, so that the supporting-legs A' at one side are longer than those at the other side thereof.

B designates a feeding-receptacle which receives the fish and from which they are fed or delivered to the distributing-table. C designates said rotative distributing-table which is mounted beneath the upper frame-plates A² at the side of the feeding-receptacle. Said rotative distributing-table is provided with a central opening, Figs. 1 and 3, and in its top with a plurality of radial pockets formed between radial bars c, attached to the top face thereof, and which pockets extend from the margin of the table to the central opening therein. D D' designate endless carriers of special form, hereinafter to be described, which, as herein shown, travel in parallel paths, one beneath the central opening in the distributing-table and the other at one side of said table, and which carry the fish distributed thereto from the table to two sets of assorting, cutting, and cleaning mechanisms.

So far as the manner of receiving the fish from the feeding-receptacle and distributing the same to the two carriers is concerned any form of assorting, cutting, and cleaning mechanism may be employed.

I will now proceed to describe in detail the manner of feeding the fish from the feeding-

receptacle to the distributing-table and thereafter delivering the same properly from said table to the carriers, after which I will describe the construction and operation of the assorting, cutting, and cleaning mechanisms and the relation thereof to said carriers. Said feeding-receptacle B is supported at one side and near the front end of the machine and is closed at its side and bottom and open at its top. It is shown as broken away; but in its completed form the lower wall is adapted to extend laterally in the form of a receiving-hopper. The fish are raised one by one from said receptacle to the level of the distributing-table by means of a rotative feeding-wheel consisting of a rim B', a plurality of spokes b, located laterally at one side of the rim, and a central hub b'. Said central hub is affixed to a rotative shaft B², which extends transversely across the machine and is provided at its end remote from the feeding-wheel with a beveled wheel B³, which wheel meshes with a beveled pinion E, affixed to the main driving-shaft E' of the machine, and which extends longitudinally of the machine and is mounted in suitable bearings at the side thereof. Said shaft E is provided with a belt-pulley E². The inner face of the rim B' of said feeding-wheel is provided with a plurality of inwardly-extending hook-shaped plates constituting between the same and the rim pockets in which the fish are received and carried upwardly as the wheel revolves, said wheel revolving in the direction indicated by the arrows in Figs. 3 and 5. It is intended that said pockets shall receive a single fish, though in some instances where the fish are small two fish may be carried upwardly in a single pocket. The fish are discharged from said pockets of the feeding-wheel to the pockets of the distributing-table when raised to the level of the distributing-table by means of a rotative brush B⁵, which is affixed to a shaft mounted in a suitable bearing b² on the frame, said brush being located approximately at the level of the distributing-table, Fig. 4. The brush is adapted to be rotated through the medium of a driving-belt trained about a grooved driving-pulley b³, Figs. 4 and 5, and directed upwardly about guide-pulleys b⁴, mounted in the frame, as shown in Fig. 1, said belt being designed to be led from an overhead counter-shaft.

In order that the fish shall be kept in proper condition to pass readily into the pockets of the feeding-wheel, I have provided an agitating device which is shown more particularly in Fig. 5. Said device is located radially within the rim and comprises, as herein shown, three special-shaped arms which are attached to a hub B⁷, loosely mounted on the shaft B² and adapted to be rocked or oscillated thereon by means of an arm b⁵, extending outwardly at one side of the agitator. Said arm b⁵ is loosely connected at its outer end with a

vertically-reciprocating rod b^6 , which is attached at its upper end to a crank-disk b^7 , affixed to a shaft which is mounted in a hanger b^8 and which is provided with a pulley b^9 , by which the same and the crank-disk is rotated, Fig. 2. Rotation of said crank-disk imparts a rocking motion to said agitator to produce the result desired.

The bars c , between which are formed the distributing-table pockets, are preferably thickened at their outer ends, Figs. 1 and 9, so that the pockets shall be of equal width from end to end, and the outer ends of the bars are shown as beveled to facilitate the entrance of the fish from the pockets of the feeding-wheel. Devices for rotating said table are provided as follows: The table is provided with a plurality of radial spokes c' , by which it is attached to a central hub c^2 , and said hub is affixed to the lower end of a shaft C' , Fig. 3, which has bearing in the upper frame-plate A^2 . To the upper end of the hub is affixed a beveled gear-wheel c^3 , which meshes with a second gear-wheel c^4 , attached to a shaft c^5 , which has bearing in a standard c^6 , rising from said frame-plate A^2 . Attached to the other end of said shaft is a beveled gear-wheel c^7 , which meshes with a like beveled gear-wheel c^8 , affixed to the upper end of the shaft c^9 , Fig. 4, which has suitable bearing in the frame and is provided at its lower end with a beveled gear-wheel c^{10} , which meshes with a beveled gear-wheel c^{11} , that is attached to the transverse shaft B^2 , which operates the feeding-wheel. By mounting the distributing-table in this manner it will be observed that all of the bearings are above the table and do not interfere with the free passage of the fish delivered thereon through the central opening of the table.

The fish are delivered from the pockets of the feed-wheel by the brush B^5 to the several pockets of the distributing-table as the pockets are brought severally opposite to the place in the feed-wheel from whence they are discharged by said brush. Certain of the fish are passed directly through said pockets of the table to the central opening thereof, through which they drop upon the carrier D below. The fish are directed across the table partly by gravity due to the slant of the table and partly by the action of a rotative circular brush C^2 , which is affixed to a shaft c^{12} , mounted in a suitable bearing in the upper frame-plate of the machine, and said shaft and brush are rotated through the medium of a suitable belt from an overhead shaft designed to be trained about a grooved pulley on said shaft. Owing to the fact that the fish cannot be arranged in any special order in the feeding-receptacle, it is apparent that some of the fish will be delivered upon the distributing-table head first and others tail first. Those which are delivered head first are carried directly by the brush C^2 and gravity through

the central opening of the table upon the belt below. Those which are delivered tail first, however, should not pass upon the carrier in that position, and means are provided which operate in connection with the rotation of the table to arrest the fish which are so directed on the table tail first and to deliver them to the belt D' at the side of the table. The means herein shown for arresting the fish before they reach the central opening of the table and pass to the belt below embraces a slot c^{13} at the inner end of each pocket of the table, which is provided with beveled walls, Fig. 11, which are so arranged that the tail, fin, or other projecting part of the fish is depressed by the brush C^2 into said slot, whereby the fish is arrested and prevented from passing onto the carrier below. The pressure of the brush on the fish while sufficient to carry the same to the inner end of the slot is not sufficient after the fish has been thus arrested to injure the fish. The fish which are thus arrested in the pockets are carried by the rotation of the table around to the side belt or carrier D' , said belt or carrier being arranged slightly below the level of the table. At the side of the table opposite the brush C^2 is a second brush C^4 , the purpose of which is to force the fish out of the pocket in which it is held by engagement of its tail with said slot c^{13} upon the carrier D' . It will be observed that owing to the rotation of the table the fish thus arrested has at this time been turned so that its head points in the same direction as do the heads of the fish which were delivered directly to the belt D , whereby all the fish pass to the assorting, cutting, and cleaning mechanisms with their heads pointing in the same direction. The brush C^4 is affixed to a shaft c^{14} , which has suitable rotative bearing in the upper frame-plate A^2 and is provided with a grooved pulley C^5 , by which the same is designed to be rotated from a belt driven by overhead connections.

Next referring to the construction of the carriers D and D' and the manner of operating the same, said parts are made as follows: Each of said carriers consists of two endless sprocket-chains d , Figs. 3, 4, 10, and 12, made up of a plurality of detachably-connected links d' . The links d' are plain links, while the links d^2 are provided with lugs or projections d^3 , each of which carries a short plate d^4 , and each plate carries transverse slats d^5 , (two as herein shown,) which extend transversely across the belt and between which are formed a plurality of pockets to receive the fish from the distributing-table. The plates d^4 abut edge to edge, so as to form in the horizontal parts of the carriers a continuous surface, while at the same time the plates break up to permit the carriers to pass freely around their pulleys or driving-wheels. Said plates d^4 are attached to the lugs d^3 by means of screws d^6 , as more clearly shown in Figs. 1 and 12.

As herein shown, each plate d^4 of the carrier carries two of the transverse slats, so that on each plate are formed two pockets, one between the two slats carried thereby and another between one of said slats and the slat of an adjacent plate. The slats d^5 extend laterally beyond the plates d^4 for a purpose hereinafter to be described.

The sprocket-chains of the carriers are trained over front and rear sprocket-wheels D^2 D^2 , arranged in pairs, one pair at each end of the machine for each carrier. The front sprocket-wheels are mounted on a hollow shaft D^3 , which surrounds and has rotative bearing on the shaft B^2 , which operates the feed-wheel and distributing-table, as before described. The said hollow shaft is provided on its end adjacent to the drive-shaft E' with a beveled gear-wheel D^4 , which is coaxial with and adjacent to the gear-wheel B^3 of the shaft B^2 , and said gear-wheel D^4 is rotated by the same gear-pinion E that rotates the shaft B^2 . The rear sprocket-wheels D^2 are mounted on a shaft D^5 , which extends transversely across and has bearing at the rear end of the machine, Figs. 1, 3, and 6. The driving-shaft E' is provided at its forward end with a beveled pinion E^2 , Fig. 1, which meshes with a beveled gear-wheel D^6 on the end of the shaft D^5 .

Coöperating with each of the carriers is a longitudinal stop-bar D^7 , Figs. 1 and 3. The two stop-bars are attached at their front ends to the transverse frame member A^5 , and which occupy notches d^7 in the slats d^5 , Figs. 1 and 9. Said stop-bars, being attached to the frame, are stationary, so that the notches of the carriers pass beneath the same. Said bars serve as stops to arrest the fish after they have been delivered into the pockets of the carriers and to prevent the same from sliding off the carriers. The bars terminate at their rear ends adjacent to the assorting, cutting, and cleaning mechanisms, so that the fish may slide laterally out of the pockets of the carriers when they reach such mechanisms. The assorting, cutting, and cleaning mechanisms associated with both carriers are identical, and in the following description but one will be referred to. This feature of the machine is made as follows:

Projecting rearwardly from the transverse frame-bar A^6 at the side of each carrier and slightly below the level thereof and parallel therewith is an arm A^7 . Affixed to the inner face of each arm is a plurality of stationary blades or cutting-knives F F , the cutting edges of each of which face toward the front of the machine. The cutting edges of said knives are of general concave or V shape, the V -shaped openings of the knives being made widest at the front edges of the knives. Attached to the lower end of a vibratory bar G , Figs. 2, 8, and 11, are a plurality of knives or blades G' G' , which are complementary to the blades

F and which upon vibration of the arm G coöperate with the stationary blades to effect a shearing action between the same. The relation of the stationary and movable knife-blades is such that when in their open positions or are moved farthest away from each other a substantial opening is provided between the same, such opening being of sufficient size to receive the head of a fish.

Arranged opposite to each of the openings between each pair of knives and just below the extension-slats of the carrier are three parallel plates H H' H^2 of such width as to fill the spaces between adjacent extensions of the slats. Said plates are provided at their inner ends with lugs h , by which they are bolted to rearwardly-projecting arms A^8 of the cross-bar A^6 , Figs. 6 and 7. Said plates extend between the carrier proper and the knives and constitute guides or ways by which the fish pass from the main part of the carrier to the knives, it being understood that the stop-bar D^7 terminates short of said guide-plates to permit the fish to pass thereupon from the carrier. It may be stated that if but a single pair of knives for each carrier be employed only one guide-plate would be needed; but when the machine operates upon fish of different lengths, and it is therefore necessary to assort the same, a plurality of knives are employed and an equal number of guide-plates H to H^2 . A gage-plate M is located laterally outside of the knives to arrest the fish after the heads thereof have passed between the knives, and said gage-plate is offset, so as to permit the heads of the longer fish to project farther through the knives than the shorter fish, it being customary to cut away more of the longer than the shorter fish. The fish are forced from the carrier over the guide-plates to the coacting knives by means of brushes K K' K^2 , which are located over said plates and are affixed to a horizontal rotative shaft K^3 , which is rotatively mounted at its forward and rear ends in depending bearing-lugs A^9 . Said shaft is rotated through the medium of a grooved pulley K^4 , affixed thereto and adapted to be turned by a belt from an overhead shaft or otherwise. The brushes press lightly upon the fish, and the margins thereof are so yielding as to permit the slats to pass readily beneath the brushes. Means are employed which act in conjunction with said guide-plates to prevent the longer fish from passing to the first knives, but retaining them to be operated upon by the second or third pair of knives, depending upon the length of the fish. Said plates H H' H^2 are separated by spaces I I' I^2 , Fig. 9, through which the fish are dropped after their heads are cut off—that is to say, the fish which are decapitated by the first pair of knives while resting on the plate H are moved off said plate by the slat extensions and fall into the open space I , while the spaces I' I^2 bear a like re-

lation to the plates H' H^2 , respectively. Located just beneath said spaces H to H^2 , inclusive, are the receiving ends of troughs I^3 I^4 I^5 , respectively, by which the fish of assorted
5 lengths are directed from the machine.

The means for directing the different-length fish variously to the cutting-knives, and thereby effect the assortment referred to, are made as follows: J J' designate two holding wheels
10 or disks located over the carrier laterally inside of the knives. Said wheels are rotatively mounted on shafts or studs j , Fig. 6, carried by the forward ends of light spring-plates J^2 J^2 , which are attached to the upper frame-
15 plate in the manner clearly shown in Fig. 7, so that said wheels bear with a yielding pressure against the carrier beneath the same. Said wheels are provided on their peripheries with a plurality of projections j' and inter-
20 vening depressions, and said projections are made of such width as to fit snugly in the pockets between adjacent slats of the carrier and are adapted to bear yieldingly against the fish located therein. The wheels are rotated
25 by contact of the slats with the projections thereof. Preferably the projections are movable, as shown in detail in Fig. 7^a, consisting of blocks which are pivotally mounted between lugs j^2 , integral with the wheels. The
30 blocks are beveled on their forward and rear surfaces with respect to the direction of rotation of the wheels to permit the same to enter readily the spaces between the slats. The loose connection of the blocks with said wheels
35 permits the blocks or projections to maintain their engagement with the fish in the grooves or pockets of the carriers longer than if the projections were rigid with the wheels. Said wheels are located laterally out of line with
40 each other, one being located closer to its associated set of knives than the other, as clearly shown in Fig. 1, whereby the different holding-wheels act upon different length of fish. It will be noted that the holding-wheel J is
45 so located that its lowermost projection is located in lateral alinement with the guide-plate H , while the lowermost projection of the wheel J' bears a like relation to the second guide-plate H' . There is no holding-
50 wheel for the guide-plate H^2 . The operation of this part of the mechanism is as follows: As soon as a fish located in one of the pockets of the carrier is moved by the travel of said carrier past the forward end of the stop-bar D^7
55 it tends to pass at once by the action of gravity, assisted by the action of the brush K , over the first plate H into the opening between the first two pairs of knives. If the fish be so short that its tail terminates short of the first
60 holding-wheel J , it is directed at once over the guide-plate H into the opening between the first pair of knives. The fish is arrested by contact of the head thereof with the gage-bar M , and when thus stopped its head is re-
65 moved by a shearing action of the knives in

the oscillation of the knife-bar, the head of the fish falling into the chute L . The body of the fish is carried forwardly off of the plate H into the first space I and is through thence directed into the first chute I^3 . If, however, 70 the fish be of such length that its tail or any part thereof is engaged by the first holding-wheel J the pressure of said holding-wheel against the fish is so proportioned with respect to that of the associated brush K that 75 the pressure of the brush does not drag the fish from the holding-wheel, so that said fish will not be directed to the first pair of knives, but will be carried rearwardly by the carrier. If the fish be sufficiently short to avoid con- 80 tact with the second holding-wheel, it will be carried by its gravity and by contact of the second brush K' off of the carrier over the second plate H' and into the opening between the second pair of knives, and after it has 85 been decapitated it will be delivered to the second opening I' and dropped into the corresponding chute I^4 . If, however, the fish be of the longest length which the machine is designed to handle, it will be held by the 90 second holding-wheel and will be carried beyond said wheel into line with the third guide-plate H^2 and will be carried by its gravity and the action of the third brush K^2 between the third set of knives, the body of the fish be- 95 ing thereafter discharged into the third chute I^5 . Thus it will be seen that the fish are assorted into two or more lots, depending upon the number of pairs of knives employed, and the means herein described operates to pre- 100 vent the fish of one size from falling into the chute intended for fish of another size.

The knife-bar G is vibrated to move the movable knives past the stationary knives by the following construction: Said bar is hinged 105 at its upper end, by means of a bolt g , with a lug or projection A^{10} on a transverse bar A^{11} , extending transversely across the machine and supported on standards A^{12} , rising from the side members thereof. N designates a 110 cam adjacent to said knife-bar, which is affixed to a shaft N' , extending transversely across the machine and rotatively mounted at its ends in said standards A^{12} . Said shaft is rotated through the medium of a bevel- 115 gear N^2 , affixed thereto, which meshes with a bevel-gear N^3 , attached to the upper end of a vertical shaft n , which is provided at its lower end with a bevel-gear N^4 , meshing with a bevel-gear E^5 on the driving-shaft E' . Said 120 cam N is provided with a closed cam-groove n' , and the knife-bar is provided with a stud g' , which engages said groove. The groove is of such conformation as to vibrate the knives backward and forth several times during the 125 rotation of the cam.

The V-shaped cutting margins of the knives constitute when two knives are brought together an opening through which the head of a fish may pass, and the cutting edges coact 130

in such manner that the head of the fish will be severed all around, but not entirely severed centrally thereof. Means are provided which operate in connection with this manner of cutting the fish which serves to forcibly eject or force from the body of the fish the head thereof and, together with said head, the entrails of the fish, which will be torn from the body by reason of their integrality with the head—that is to say, the fish is not entirely severed by the knives, but there remains an unsevered portion of the fish which, adhering to the head when the same is torn from the fish, carries with it the entrails, and in this manner cleans the fish. The means for effecting this result is as follows: O, Figs. 2, 6, 4, and 10, designates a bar which is pivoted or hinged on a stud *o*, extending through an arm A^{14} , projecting rearwardly from the cross-bar A^{11} , before referred to. Said hinge connection of the bar O with the arm A^{14} is below the pivotal connection of the knife-bar with the arm A^{10} , as clearly shown in Fig. 10. The said arm is actuated by the cam N through the medium of the same stud *g'* which actuates the knife-bar, said stud being elongated to extend through both bars and thickened in its middle to afford a distance-block between said bars. Attached to the lower end of said bar O is a spring O' , which is provided at its lower end with a head O^2 , having downwardly-extending fingers *o'*. When the knives are separated, as shown in Fig. 8, said fingers are located at one side of the openings between the knives. Rotation of the cam N causes both bars G and O to swing on their axes; but by reason of the shorter leverage of the bar O said bar and the spring O' swing through a longer arc, and the lower or head end of the spring therefore swings faster than the lower end of the knife-bar. The head O^2 is prevented from swinging more rapidly than the lower end of the knife-bar by reason of the engagement of the fingers *o'* with the heads of the fish, which project through the openings between the knives, and said fingers are restrained until the fish have been severed sufficiently for the spring O' , which has been put under tension by reason of the restraint of said fingers *o'*, to forcibly throw the head from the fish. This will occur just before the head has been completely severed, and, as before stated, by reason of the fact that the head is not completely severed the entrails of the fish will be carried away from the body with the head.

It will be understood that the carriers travel quite slowly and that the fish are forced therefrom to the knives rapidly by reason of the relatively rapid movement of the wheels K K' K^2 , so that it is not necessary to arrest the movement or travel of the carriers while the fish is being thrust between the knives and the knives forced together to decapitate the fish;

but such operation is performed while any given pocket of the carrier is passing the pair of knives which accomplishes the decapitation. It will also be understood that all of the knives associated with each belt will not necessarily operate to cut and clean a fish at each swing of the knife-bar, for the reason that all of the pockets of both carriers are not at all times filled. If one half of the fish be delivered to the distributing-table tail first and the other half head first in regular alternation, it would be seen that only each alternate pocket of each carrier would be filled. It may occur, however, that a great majority of the fish will be delivered one way or the other, so that no regularity of presenting the fish to the knives occurs.

The operation of the machine described as a whole will be obvious from the foregoing, but may be briefly recapitulated as follows: The fish are placed in the feeding-receptacle B without regard to the order in which they are placed. When the machine is set in motion, the feeding-wheel carries the fish upwardly therefrom one by one, and they are delivered from the pockets of said wheel through the medium of the brush B^5 into the pockets of the rotative distributing-wheel. If the fish be delivered head first, they will be carried entirely through the pockets to and through the central opening of the distributing-wheel and delivered to the pockets of the carrier D below the same; but if the fish be delivered to the distributing-table tail first they will be arrested by the engagement of the tails or other parts thereof with the slots at the inner ends of the pockets and will be carried by rotation of the table to the side carrier D' and delivered to the pockets of said side carrier by means of the brush C^4 . When a fish is delivered to either of the carriers, it falls with its head against the stop-bar D^7 and is carried forwardly by the carrier until it passes the extreme rear end of said stop-bar. When the fish so passes the extreme rearward end of the stop-bar, if it be a short fish it will pass over the plate H, with the aid of the first brush K, with its head between the first pair of knives, until it is arrested by the gage-bar M, in which position it is decapitated; but if it be a longer fish it will be retarded or held by one of the holding-wheels J J' in the manner before described until released therefrom and when released therefrom will pass between the appropriate knives and be decapitated. After the fish has been decapitated it is carried by the extension-slats off of the guide-plate over which it was directed to the decapitating-knives into the next space between said plates and from thence into its proper chute I^3 , I^4 , or I^5 , by which it is directed from the machine. The head of the fish when decapitated is by means of the spring-bar O' thrown from the fish, to-

gether with the entrails, into the adjacent chute L and the head and entrails carried from the machine.

It is obvious that many changes may be made in the structural details of the machine without departing from the spirit of my invention, and I do not wish to be limited to such details except as hereinafter made the subject of specific claims.

I claim as my invention—

1. A machine for the purpose set forth comprising assorting, cutting and cleaning mechanisms embodied in a unitary structure and operated from a single source of power, means for receiving the fish from an indiscriminate mass and delivering them to the assorting mechanism with their heads directed toward the cutting and cleaning mechanisms, and means coöperating with the assorting mechanism for delivering the fish successively to the cutting and cleaning mechanisms.

2. A machine for the purpose set forth comprising assorting, cutting and cleaning mechanisms embodied in a unitary structure and operated from a common source of power, automatic means for delivering the fish from a mass to said assorting mechanism, embracing means acting on a thin portion of certain of the fish for directing the fish with their heads toward the cutting and cleaning mechanisms, and means coöperating with the assorting mechanism for delivering the fish successively to the cutting and cleaning mechanisms.

3. A machine for the purpose set forth comprising assorting, cutting and cleaning mechanisms embodied in a unitary machine and operated from a common source of power and operating successively in the order named, a carrier operated from said source of power for delivering fish to said assorting mechanism, a feeding-receptacle in which the fish are contained in a mass, and means for automatically directing fish from said feeding-receptacle to said carrier constructed to direct the heads of the fish toward the cutting and cleaning mechanisms.

4. In a machine for the purpose set forth, the combination with a carrier and a receptacle for the fish at one side of and below the level of the carrier, of a feeding-wheel rotating in said receptacle and provided with pockets by which the fish are raised from said receptacle, and means for directing the fish from said pockets to said carrier embracing a brush at the upper part of the wheel for brushing the fish laterally out of said pockets.

5. In a machine for the purpose set forth, the combination with a carrier and a receptacle for the fish, of a feeding-wheel rotating in said receptacle and provided with pockets by which the fish are raised from said receptacle, means for directing the fish from said pockets to the carrier, and an agitator located within said wheel at the lower part of said receptacle for directing the fish to said pockets.

6. In a machine for the purpose set forth, the combination with a carrier and a receptacle for the fish located at one side and below the level of the carrier, of a feeding-wheel rotating in said receptacle for raising the fish to the level of the carrier, comprising an annular rim, a plurality of radial spokes and a central hub, a shaft on which said hub is rotatively mounted, a plurality of pockets on said rim and means for directing the fish laterally from said pockets to said carrier.

7. In a machine for the purpose set forth, the combination with a carrier and a receptacle for the fish, of a feeding-wheel rotating in said receptacle comprising an annular rim, radial spokes and a central hub, a shaft on which said hub is mounted, a plurality of pockets on the inner cylindric face of said rim, and means for delivering the fish laterally from said pockets to said carrier, embracing a movable part within the upper part of the rim which ejects the fish laterally from said pockets.

8. In a machine for the purpose set forth, the combination with a carrier and a receptacle for the fish, of a feeding-wheel rotating in said receptacle comprising an annular rim, radial spokes and a central hub, a shaft on which said hub is mounted, a plurality of pockets on the inner cylindric face of said rim, an agitating device within the rim for directing the fish in an orderly manner to said pockets, and means for delivering the fish from said pockets to said carrier.

9. In a machine for the purpose set forth, the combination with a carrier and a receptacle for the fish, of a feeding-wheel rotating in said receptacle embracing an annular rim provided on its inner cylindric face with a plurality of pockets, means for delivering the fish from said pockets to said carrier, and an agitator located within said rim comprising an oscillatory arm and a plurality of agitator members affixed to said arm and directed toward the pockets, and means for oscillating the agitator.

10. In a machine for the purpose set forth, the combination with a carrier and a receptacle for the fish, of a feeding-wheel rotating in said receptacle and embracing an annular rim provided on its cylindric face with a plurality of transverse pockets, and means for directing the fish from said pockets to the carrier embracing a rotative brush at the upper part of the wheel which rotates at its edges through said pockets.

11. In a machine for the purpose set forth, the combination with a carrier and a receptacle for the fish located at one side and below the level of the carrier, of a feed-wheel rotating in said receptacle embracing an annular rim provided on its cylindric face with a series of transverse pockets, and means for directing the fish from said pockets to the carrier, embracing a rotative brush located ad-

adjacent to the carrier-level and rotating about an axis fixed relatively to the wheel, said brush acting to remove the fish from said pockets.

5 12. In a machine for the purpose set forth, two cutting mechanisms, two carriers, each for delivering fish to one of the cutting mechanisms, and a single feeding device, of means located between the feeding device and carriers for delivering the fish which are discharged from the feeding device head first to one of the carriers and for delivering those discharged tail first to the other carrier.

15 13. A machine for the purpose set forth comprising assorting, cutting and cleaning mechanisms, a receptacle for the fish, means for automatically discharging the fish from said receptacle and delivering them endwise to said mechanisms, said means operating to turn the fish which are discharged from said feed-receptacle tail first so that they will be presented to the assorting, cutting and cleaning mechanisms head first.

25 14. A machine for the purpose set forth comprising two sets of cutting mechanisms, two carriers, one for delivering fish to each set of cutting mechanisms, a receptacle for the fish and means for directing the fish from said receptacle to said carriers embracing means for directing to one carrier the fish delivered from the receptacle head first and to the other carrier the fish delivered from the receptacle tail first.

35 15. In a machine for the purpose set forth, the combination with two carriers and a receptacle for the fish, of a distributing device located between the receptacle and carriers, means for directing the fish from said receptacle to the distributing device constructed to deliver the fish endwise thereto, and means cooperating with said distributing device and acting on a thin part of a fish to direct the fish delivered thereto tail first to one of the carriers, while permitting fish directed thereto head first to be delivered to the other carrier.

45 16. In a machine for the purpose set forth, the combination with two carriers, and a receptacle for the fish, of a rotative distributing-table located between the receptacle and the carriers, and means for delivering fish from said receptacle to said table, the parts being so constructed and arranged that the fish which are delivered to said table head first are directed to one of the carriers, and means cooperating with the rotative movement of said table for reversing endwise the fish delivered tail first to the table and directing them to the other carrier.

60 17. In a machine for the purpose set forth, the combination with two carriers and a receptacle for the fish, of a rotative distributing-table located over one of said carriers and at the side of the other, and provided on its upper face with a plurality of radial pockets, and

with a central opening, means for delivering fish from said receptacle to said pockets, means whereby the fish delivered into said pockets head first are directed to the carrier beneath said table, means for arresting the fish delivered to the pockets tail first whereby such fish are carried by rotation of the table to the side carrier and means for directing said latter fish from the table to said side carrier. 70

18. In a machine for the purpose set forth, the combination with two carriers, of a rotative distributing-table located over one carrier and at the side of the other carrier, said table being provided with a central opening and on its upper face with a plurality of radial pockets, a receptacle for the fish, means for feeding the fish from said receptacle to said pockets of the distributing-table, said table being provided at the inner ends of said pockets with transverse stop-slots and means cooperating with said slots for arresting fish delivered to the table-pockets tail first. 80 85

19. In a machine for the purpose set forth, the combination with two carriers, of a rotative distributing-table located over one of the carriers and at the side of the other carrier, said table being provided with a central opening and with a plurality of radial pockets, and at the inner ends of said pockets with transverse stop-slots, a receptacle for the fish, means for delivering the fish from the receptacle to said pockets, and two movable brushes located over the table and bearing against the bottoms of said pockets, one located between the margin of said table and said central opening and the other at the margin of the table adjacent to the side carrier. 90 95 100

20. In a machine for the purpose set forth, the combination with two carriers, of a rotative distributing-table located over one of said carriers and at the side of the other carrier and provided with a central opening and with a plurality of radial pockets, a receptacle for the fish at the side of and below the level of said table, a feed-wheel rotative in said receptacle and provided with a plurality of pockets by which the fish are raised from the receptacle to the level of the table, a brush for brushing said fish from the pockets of the feed-wheel to the pockets of the table, and means whereby the fish, which are delivered head first to the table, are directed through the central opening thereof to the carrier beneath the same, and those which are delivered tail first to the table are directed from said table to the carrier at the side thereof. 105 110 115 120

21. In a machine for the purpose set forth, the combination with two carriers, of a rotative distributing-table located over one of said carriers and at the side of the other carrier and provided with a central opening and a plurality of radial pockets, a receptacle for the fish at the side of said table, a feed-wheel rotative in said receptacle and provided with a plurality of pockets for raising the fish to 125 130

the level of said table, a movable brush for directing the fish from the pockets of said wheel to the pockets of said table, said table-pockets being provided at their inner ends with slots, and movable brushes located over said table, one of which is adapted to direct the fish from said pockets through the central opening thereof into the carrier below, and the other of which is adapted to direct the fish from the pockets to the carrier at the side thereof.

22. In a machine for the purpose set forth, the combination with two carriers, of a rotative distributing-table located over one of the carriers and at the side of the other carrier and provided with a central opening and on its upper face with a plurality of pockets having at their inner ends stop-slots, and rotative brushes located over said table and coöperating with said pockets, one for directing fish through the pockets and the central opening to the carrier beneath, and the other for directing fish from the pockets to the side carrier.

23. In a machine for the purpose set forth, the combination with two carriers, and a rotative distributing-table provided with a plurality of radial pockets, of a receptacle for the fish at one side and below the level of the table, a feed-wheel rotative in said receptacle and provided with pockets for raising the fish to the level of said distributing-table, means for directing the fish from said feed-wheel pockets to the pockets of the distributing-table, a movable brush for directing certain of the fish from said pockets of the distributing-table to one carrier means for directing other fish to the other carrier embracing stop-slots in said table and movable brushes coöperating with said slots.

24. In a machine for the purpose set forth, a rotative distributing table provided with a central opening and between said central opening and the margin of the table with a plurality of radial pockets and with transverse stop-slots at the inner ends of said pockets.

25. In a machine for the purpose set forth, a flat rotative distributing-table having a continuous supporting-surface and provided with a central opening and on its upper face with a plurality of radial strips or bars extending from said central opening to the margin of the table and forming between the same a plurality of upwardly-opening pockets.

26. In a machine for the purpose set forth, a flat rotative distributing-table having a continuous supporting-surface and provided with a central opening and on its upper face with a plurality of radial strips or bars extending from said central opening to the margin of the table, and forming between the same a plurality of upwardly-opening pockets, said bars or strips being gradually thickened from their inner toward their outer ends to make

of substantially uniform width the pockets from end to end thereof.

27. In a machine for the purpose set forth, a flat rotative distributing-table having a continuous supporting-surface and provided with a central opening and provided also on its upper face with a plurality of radial strips or bars extending from said central opening to the margin of the table and forming between the same a plurality of pockets, said bars or strips being beveled at their extreme ends to facilitate the insertion of fish into said pockets.

28. In a machine for the purpose set forth the combination of a cutting mechanism, and a carrier for delivering the fish thereto, said carrier comprising two sprocket-chains one at each side of the carrier adapted to be trained over driving and supporting pulleys, a plurality of narrow plates extending transversely between and attached to said sprocket-chains and arranged edge to edge to form continuous supporting-surfaces in the horizontal parts of the carrier and slats attached to said plates and between which are formed pockets to receive the fish and extending beyond the carrier, and guide-plates associated with the cutting mechanism and coöperating with the extended ends of said slats.

29. A machine for the purpose set forth, comprising cutting mechanism, and a carrier for delivering fish thereto, said carrier comprising sprocket-chains adapted to be trained over driving and supporting pulleys, a plurality of narrow plates attached transversely to said sprocket-chains and arranged edge to edge so as to form continuous supporting-surfaces in the horizontal parts of the carrier and provided with slats between which are formed pockets to receive the fish, said slats extending beyond the plates at one side of the carrier and a guide-plate in line with the cutting mechanism at one side of the carrier over which the extended parts of the slats pass.

30. A machine for the purpose set forth comprising a plurality of cutting mechanisms arranged one in advance of the other, a carrier for delivering fish thereto provided on its upper surface with slats between which are formed pockets to receive the fish, said slats extending beyond the carrier at one side thereof, separated guide-plates at one side of the carrier, one in line with each cutting mechanism and over which the fish are directed from the carrier to said cutting mechanisms, said slats extending beyond the carrier and passing over said guide-plates, and a stationary stop-bar extending longitudinally of the carrier laterally inside of the extensions of the slats and serving to prevent the fish from sliding out of said pockets, said stop-bar terminating short of the first guide-plate.

31. A machine for the purpose set forth, comprising a cutting mechanism, a carrier for delivering fish thereto, slats on said carrier

between which are formed pockets to receive the fish, said slats being provided with a series of alined notches extending longitudinally of the belt, and a stationary stop-bar 5 attached to the machine-frame and fitting in said notches, said stop-bar terminating short of the cutting mechanism.

32. A machine for the purpose set forth comprising two sets of cutting mechanisms, 10 two carriers one for delivering fish to each cutting mechanism, said carriers each having a plurality of transverse pockets, a rotative distributing-wheel located over one of said carriers and at the side of the other carrier, 15 said distributing-wheel being provided with a central opening and with a plurality of radial pockets, means for delivering fish to said radial pockets, means whereby fish delivered to said pockets head first are delivered directly 20 through said central opening to the carrier beneath the same, means for arresting the fish in said pockets which are delivered tail first thereto, whereby said fish are carried by the rotation of the table to the carrier at the side 25 thereof, means for directing the fish so arrested in said pockets to said side carrier, and stationary stop-bars extending longitudinally of said carrier for preventing the fish passing through the pockets of the carriers, said stop- 30 bars terminating short of the cutting mechanisms.

33. In a machine for the purpose set forth, the combination with coacting cutting-knives between which the head of the fish is received, 35 and by which the fish is partially decapitated, of an ejecting device located laterally outside of said knives and acting to completely tear the head, together with the entrails, from the body of the fish.

34. In a machine for the purpose set forth, the combination with a carrier, of a cutting device located at one side of the carrier embracing coacting knives, the cutting edges 40 of which are concave or V shape, and an ejector for tearing the head and entrails from the fish before the head is fully severed.

35. In a machine for the purpose set forth, the combination with the coacting knife-blades, the cutting edges of which are made 50 of concave or V shape, and operating to partially decapitate the fish, and a device located laterally outside of said knives and adapted to bear against the head of the fish for forcibly ejecting said head and the entrails from 55 the body of the fish when the head is partially severed by said knives.

36. In a machine for the purpose set forth, the combination with coacting knives between which the head of the fish is received and by 60 which the fish are partially decapitated, means for delivering the fish to said knives, and a part adapted to bear laterally against the head of the fish while the head is being severed, in a manner to tear the head from the body of 65 the fish together with the entrails.

37. In a machine for the purpose set forth, the combination with coacting knives between which the head of the fish is received and by which the fish is partially decapitated, and a spring-pressed part adapted to bear laterally 70 against the head of the fish while it is being severed.

38. A cutting and cleaning mechanism for fish comprising a pair of coacting decapitating-knives, one of which is stationary, a 75 swinging bar to which is attached the other knife, an ejecting device comprising a swinging bar which carries at its lower end a part which bears laterally against the head of the fish when the latter is being severed, means 80 for swinging said knife and ejecting device bars, constructed to impart a quicker swing to the latter than the former, said ejecting device embracing a spring which permits it to be yieldingly retarded in the first part of 85 the cutting operation of the knives, and the tension of which acts to forcibly tear the head from the fish just before it is completely decapitated, whereby the entrails of the fish are ejected with the head. 90

39. A cutting and cleaning mechanism for fish comprising a pair of coacting decapitating-knives, one of which is stationary, a swinging bar to which the other knife is attached, 95 an ejecting device comprising a bar which swings in a plane parallel with the plane of movement of the knife-bar and the pivot of which is located between the pivot of the knife-bar and said knives, said ejecting device embracing a spring-mounted finger at its 100 lower end which swings laterally outside of and past the decapitating-knives, and means common to both of said bars for swinging the same.

40. A cutting and cleaning mechanism for 105 fish comprising a pair of coacting decapitating-knives, one of which is stationary, a swinging bar to which the other knife is attached, an ejecting device comprising a bar which swings in a plane parallel with the plane of 110 movement of the knife-bar and the pivot of which is located between the pivot of the knife-bar and said knives, said ejecting device embracing a spring-mounted finger at its 115 lower end which swings laterally outside of and past the decapitating-knives, and means for swinging said bars comprising a rotating grooved cam and a stud extending transversely through both bars and engaging at its end the 120 groove of the cam.

41. A cutting and cleaning device for fish comprising a carrier, a plurality of stationary knives at one side of the carrier, a plurality of coacting movable knives, a bar to the lower 125 end of which the movable knives are attached, a head-ejecting device comprising a swinging bar at one side of the knife-bar and pivoted at a point between said knives and the pivot-point of the knife-bar, a plurality of fingers 130 attached to the shorter bar by a spring, said

fingers swinging laterally past said knives and means common to said bars for swinging the same.

42. In a machine for the purpose set forth, the combination with a plurality of pairs of cutting-knives between which the fish are decapitated, and a carrier at one side thereof for delivering fish to said knives, of means coöperating with the carrier for delivering fish of one length to one set of knives and fish of another length to another set of knives, whereby fish of different lengths are separately decapitated and discharged from the machine.

43. In a machine for the purpose set forth, the combination with a plurality of pairs of coacting knives between which the fish are decapitated, and a carrier at one side thereof for delivering fish to said knives, of guide-plates extending laterally from said carrier to the knives for guiding fish of different lengths from said carrier severally to the different pairs of knives, and means for discharging the fish from the machine in lots according to their length.

44. In a machine for the purpose set forth, the combination with a plurality of pairs of coacting knives between which the fish are decapitated, and a carrier at one side thereof for delivering fish to said knives, of guide-plates extending laterally from said carrier to the knives for guiding fish of different lengths from said carrier severally to the different pairs of knives, said guide-plates being separated by intervening spaces through which the fish are discharged; and discharge-chutes communicating at their upper ends with said spaces.

45. In a machine for the purpose set forth, the combination with a plurality of pairs of coacting decapitating-knives, and a carrier for delivering the fish to said knives and provided with a plurality of transverse slats between which are formed pockets to receive the fish, of stationary guide-plates separated by intervening spaces and extending between the coacting knives and one margin of the carrier for guiding the fish from the carrier to the knives, said slats extending laterally from said carrier over said plates, and discharge-chutes communicating with said spaces between the plates.

46. In a machine for the purpose set forth, the combination with a plurality of pairs of coacting decapitating-knives, and a carrier traveling past the knives at one side thereof for delivering the fish laterally in line with said knives and provided with a plurality of transverse pockets to receive the fish, of a plurality of guide-plates separated by intervening spaces and extending from said carrier to said knives over which the fish are delivered from said carrier to the knives, said slats extending laterally from said carrier over the

guide-plates, rotating brushes for directing the fish from said carrier over the plates to the knives, means coacting with the conveyer for presenting the fish to said knives in accordance with their lengths, and means for discharging the fish of different lengths separately from the machine.

47. In a machine for the purpose set forth, the combination with the carrier, and a plurality of sets of knives located at one side thereof; of a plurality of brushes located over said carrier for directing the fish laterally to said knives and holding or retarding devices located above the carrier and laterally opposite said brushes which engage the fish while on the carrier.

48. In a machine for the purpose set forth, the combination with a plurality of pairs of coacting knives, and a carrier at one side of which the knives are located for delivering the fish laterally in line with said knives, of brushes located over the carrier for directing the fish laterally from the carrier to the spaces between the knives, a plurality of guide-plates extending between the carrier and knives and separated by intervening spaces, and over which plates the fish are delivered from the carrier to the knives, and holding devices co-operating with the carrier at the side thereof laterally opposite to the knives and constructed and arranged to hold the longer fish from the first set of knives and to permit the fish to be delivered to the knives in advance of the first set, and means coöperating with the holding device for discharging the fish of different lengths separately.

49. In a machine for the purpose set forth, the combination with a plurality of pairs of coacting decapitating-knives, and a carrier for delivering the fish to said knives and provided with a series of transverse pockets, guides extending between the carriers and knives for guiding the fish to the knives, a plurality of brushes located over the carrier for directing the fish laterally from the carrier to the said knives, and holding-wheels located over the carrier one in advance of the other at the side of the brushes laterally opposite the knives and at different distances from said knives, said guide-plates being separated by intervening spaces and chutes communicating with said spaces through which the fish are discharged from the machine.

50. In a machine for the purpose set forth, the combination with the coacting knives and the carrier at one side of the knives having transverse pockets, of a holding-wheel having peripheral projections which are adapted to engage certain of the fish to restrain the fish engaged thereby between the same and the carrier during the time the fish are passing thereunder, means for discharging the fish, not engaged by the holding-wheel, head first from said pockets to the knives, and

means cooperating with said discharging means for directing the fish of different lengths from the machine separately.

51. In a machine for the purpose set forth, the combination with the coacting knives and the carrier at one side of the knives having the transverse pockets, of a holding-wheel located over the carrier at the side thereof remote from the knives having peripheral projections which are adapted to fit within said pockets for restraining the fish engaged thereby between the same and the carrier during the time the fish are passing thereunder, means for directing the fish from said pockets to said knives when free from said holding-wheel, and means for discharging the fish from the machine in separate lots corresponding to their lengths, the projections of the holding-wheel being loosely connected with the wheel.

52. In a machine for the purpose set forth, the combination with a plurality of pairs of coacting knives, and a carrier for delivering the fish to said knives and provided with a plurality of transverse slats between which are formed pockets to receive the fish, said slats extending laterally from said carrier, of a plurality of guide-plates separated by intervening spaces extending from said carrier to the coacting knives for guiding the fish from the carrier to the knives, a plurality of brushes located over said carrier in line with the guide-plates for directing the fish from said carrier to the knives, and holding-wheels located over said carrier at the side thereof remote from said knives and provided with projections which extend into the pockets, and located one in advance of the other and successively farther from the knives, whereby the shorter fishes are delivered to the first set of knives, the longer fishes to the next pair and so on.

53. In a machine for the purpose set forth, the combination with a plurality of pairs of coacting knives, and a carrier for delivering fish to said knives and provided with a plurality of transverse slats forming between the same pockets, said slats extending beyond the carrier, of brushes located over said carrier for directing the fish laterally from the carrier to the knives, guides extending between the carrier and knives over which the fish are directed to the knives and holding-wheels located over said carrier at the side of the brushes remote from the knives and provided with projections adapted to enter the pockets and bear upon the fish, said holding-wheels being located one in advance of the others and successively at greater distances from the knives.

54. In a machine for the purpose set forth, the combination with two sets of cutting-knives and a single feeding device, of means for directing the fish from the feeding device to the cutting-knives, head first, comprising mechanism located between the feeding device and the knives for reversing the fish leaving

the feeding device tail first, means for directing the reversed fish to one set of knives and means for directing the fish not reversed to the other set of knives.

55. In a machine for the purpose set forth, the combination with two carriers, and a distributing-wheel located over one of the carriers and at the side of the other, and having a central opening and provided on its upper face with a plurality of radial pockets extending from its margin to said central opening, said pockets being provided at their inner ends with stop-slots, of means for feeding the fish to said pockets and a brush located over the wheel and cooperating with the pockets as they pass thereunder for carrying the fish through the pockets delivered thereto head first to the central opening and thence to the belt beneath, and acting on the fish delivered tail first to said pockets, to force the tail or other thin part of the fish into the stop-slot of said pocket and thereby stopping the fish and means located at another part of the table for directing the fish thus arrested to the other carrier.

56. In a machine for the purpose set forth, the combination with a rotative part provided with a central opening and a plurality of pockets having at their inner ends holding-slots adapted to engage and hold fish delivered tail first to said pockets, means located at one side of said rotative part for delivering fish endwise into said pockets, means for forcing certain of the fish through said pockets into said central openings and acting to force the thin parts of certain other fish into said slots, and means located at another part of said rotative part for releasing the fish from said slots and discharging them from the pockets.

57. In a machine for the purpose set forth, the combination with a pocket having at its inner end a holding-slot adapted to engage and hold a fish delivered tail first to said pocket and means for releasing the fish from said slot and discharging it from the pocket in a direction the reverse of that in which the fish entered the pocket.

58. In a machine for the purpose set forth, the combination with assorting, cleaning and cutting mechanisms, a carrier for delivering fish to said mechanisms, the cleaning and cutting mechanisms being located at one side of the carrier and the assorting mechanism being located over the carrier and a receptacle for the fish located at one side and below the level of the carrier, of a feeding-wheel rotating in said receptacle and provided on its rim with pockets by which the fish are raised from said receptacle, and means for directing the fish laterally from said pockets to said carrier, said carrier being inclined transversely thereof toward the cleaning and cutting mechanisms, and the shaft about which said feeding-wheel rotates being inclined to correspond with the inclination of said carrier.

59. In a machine for the purpose set forth, the combination with a rotative part provided with a plurality of radial narrow pockets, each pocket having at its inner end a holding-slot, 5 said rotative part having a central opening communicating with said pockets, means for delivering fish to said pockets, a brush located over the rotary part and acting in the direction of the lengths of said pockets, tending to 10 force the fish therethrough into said central opening, said brush engaging the pockets over said holding-slots whereby the tails or other thin parts of the fish delivered to the pockets tail first are forced into the holding-slots, and 15 means for releasing the fish from said holding-slots and discharging them from said rotary part.

60. In a machine for the purpose set forth,

the combination with a pocket having at its inner end a holding-slot adapted to engage and 20 hold a fish delivered tail first to said pocket, means for delivering the fish endwise into said pocket, and means for releasing the fish from said pocket after it has been arrested by the slot therein and for discharging it from the 25 pocket in a direction the reverse of that in which the fish entered the pocket.

In testimony that I claim the foregoing as my invention I affix my signature, in presence of two witnesses, this 15th day of February, 30 A. D. 1904.

WILLIAM J. KENNY.

Witnesses:

WILLIAM L. HALL,
GERTRUDE BRYCE.