Aug. 1, 1944. G. R. RAGUPOS 2,354,928

OYSTER OPENING METHOD

Filed Feb. 19, 1943

Fig. 1

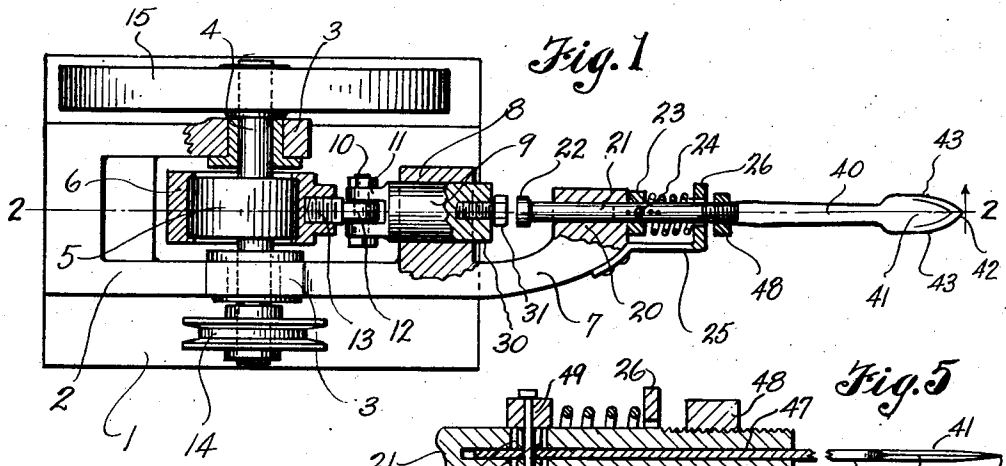


Fig. 5

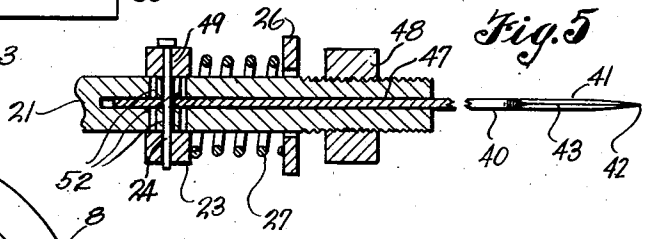


Fig. 2

Fig. 4

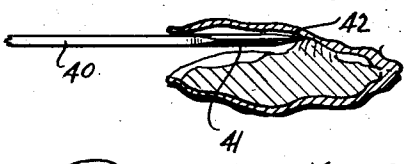


Fig. 3

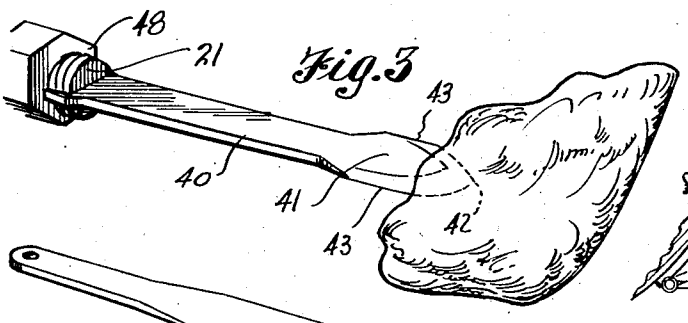


Fig. 7

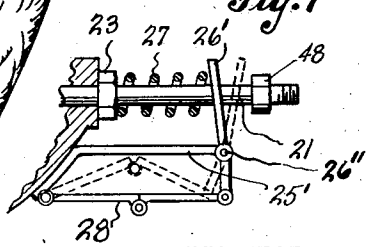
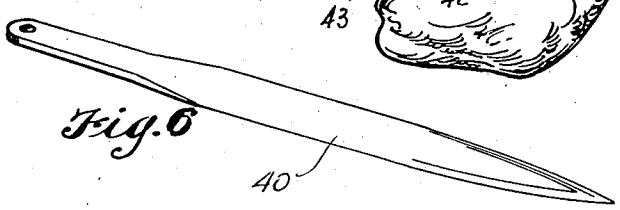


Fig. 6



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Patented Aug. 1, 1944

2,354,928

UNITED STATES PATENT OFFICE

2,354,928

OYSTER OPENING METHOD

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Application February 19, 1943, Serial No. 476,397

4 Claims. (Cl. 17—45)

This invention relates to improvements in method for the opening of oysters, and the like, and it has reference more particularly to a method that contemplates use of a mechanically powered device to be employed, first, for the opening of the oyster shell, then for cutting the muscle that holds the half shells so that they may be opened apart, and finally for cutting the meat from the shell.

It is the principal object of this invention to provide a method for the opening of oysters, that will greatly expedite this tedious task and which requires no special training or practice in order that the work may be quickly, properly and economically accomplished.

In the accompanying drawing, I have illustrated a machine whereby the method may be carried out and wherein—

Fig. 1 is a plan, or top view of the present oyster opening machine; parts thereof being broken away and shown in section for clearer understanding.

Fig. 2 is a horizontal section of the machine taken on the line 2—2 in Fig. 1.

Fig. 3 is a perspective view of the oyster opening tool illustrating the manner in which an unopened oyster shell is applied thereto for opening and for cutting the muscle to free the half shells for opening apart.

Fig. 4 is a sectional detail of an oyster, indicating the use of the tool in the cutting of the muscle from the shell.

Fig. 5 is a sectional detail showing the manner in which the tool is fixed to its mounting slide.

Fig. 6 is a perspective view of a shell entering tool of an alternative form.

Fig. 7 is a detail of the spring tensioning means.

Referring more in detail to the drawing—

The machine comprises a supporting base portion that is designated by reference numeral 1, and on which base the frame structure 2 of the machine is fixed. This frame, preferably of metal, includes the horizontally alined bearings 3—3 in which a transverse shaft 4 is rotatably mounted. The bearings 3—3 are spaced apart, and mounted on the shaft 4 between these bearings, either as an integral part of the shaft, or as a member keyed or otherwise fixed thereto, is an eccentric journal 5 about which a collar 6 is rotatably fitted and secured.

The frame structure has a forwardly directed horizontal arm designated by reference numeral 7 and formed on this arm, in alinement with the plane of rotation of the eccentric, is a bearing 8 in which a hammer element 9 is reciprocally contained; the hammer being connected at its inner end to the collar 6 by means of a pivot bolt 10 that extends through ears 11—11 on the hammer end, and pivotally through the head portion 12 of a bolt 13 that is threaded into the collar as will be understood best by reference to Figs. 1 and 2. The parts are so joined that rotation of the shaft 4 causes the eccentric journal 5 to effect reciprocal action of the hammer in bearing 8.

The shaft 4 is equipped at one end with a belt wheel 14 whereby it may be rotatably driven, and at its other end, it mounts a fly wheel 15 thereon to insure steady action of the hammer.

At the end of the forwardly extending arm portion 7 of the frame, beyond the bearing 8 which supports and guides the hammer, is a guide bearing 20, and reciprocally mounted therein, in axial coincidence with the axial line of the hammer, is a slide 21. Preferably this slide is a round rod, and at its inner end, adjacent the hammer, is formed with a head 22 and at the other end, at the outside of the bearing 20, a stop or nut 23 is fixed thereon by a pin 24 that is extended through the nut and a hole in the slide. As will be noted by reference to Figs. 1 and 2, there is a bracket 25 fixed to the extending arm 7 of the frame, and this is extended along the outer end portion of the slide and at its end has a laterally turned leg 26, with an opening therein through which the slide freely operates. A coiled spring 27 is disposed under compression between the leg 26 and the nut 23, and this operates to yieldingly hold and move the slide to its inner limit of travel as determined by the location thereon of the nut 23.

In Fig. 7, I show means whereby the spring pressure may be released when such is desired, and held under compression only when such is more practical. For this purpose, I have provided a lever 26′ with a hole in one end through which stem 21 extends with clearance. This lever is hinged by a pivot 26″ on a bracket 25′ that is fixed to the frame, and a hinged toggle lever 28 connects the outer end of the lever 26′ with the base of the bracket. When the toggle is straightened out, as in Fig. 7, it operates to move the lever 26′ to a position for placing the spring 27 under compression. When the toggle is broken, as seen in dotted lines in Fig. 7, compression is relieved from the spring and it will not operate to return the slide for contact by the hammer. Then the slide will be impinged by the hammer only when it is pushed inwardly; for example, by placing an oyster shell against

the end of the knife and pushing inwardly. This provides for limiting the chopping action of the chisel to any extent desired.

It will be observed that a bolt **30** is adjustably threaded into the outer end of the hammer and this has a wear head portion **31** that is adapted, incident to reciprocation of the hammer, to engage with the head of the slide when the hammer is driven outwardly. It is desirable that the inward travel of the slide, when the spring is under compression, be so determined by the position of the nut **23** thereon, that the hammer blow will strike the slide during the latter part of the outward reciprocal travel of the hammer. In other words, while the hammer stroke preferably is approximately one-half inch, the slide movement is only approximately $\frac{3}{16}$ of an inch and is effected by the hammer on the latter part of its outward stroke. When the hammer retracts, the spring **27**, if compressed, causes the slide to follow back until stopped by the nut **23**. Thus the stroke of the slide is comparatively short and in view of the high rate of reciprocation of the hammer, it is more in the nature of a vibration.

Mounted on the outer end of the slide, as a continuation thereof, is the oyster opening tool of chisel-like nature, which, as illustrated best in Fig. 3, comprises an elongated shank **40** formed at its forward end with a symmetrically widened blade **41** terminating in a sharpened point **42**. Also, the opposite side edges of the blade are sharpened as at **43**. The shank of the tool at its inner or mounting end, is somewhat tapered to bring it down to a width equal to the diameter of the slide bar, and this mounting portion is adapted to fit within a longitudinal slot **47** that is formed in the outer end portion of the slide. To hold the tool, a nut **48** is threaded onto the outer end portion of the slide, and may be tightened against the tapering side edges of the shank to hold it rigidly mounted. Furthermore, there is a hole **49** through the inner end of the mounting portion which receives the pin **24** which secures the nut **23** on the slide, and this, together with the nut **48**, holds the tool perfectly rigid relative to the slide.

Assuming that the shaft **4** is being driven, and that the hammer is being reciprocated at the desired speed, the use of the machine for opening an oyster is as follows:

First, the toggle is adjusted to release the spring tension, then the oyster, held in hand by the workman so that the joint between the half shells is toward the sharpened end of the blade, as indicated by the showing of the oyster in Fig. 3, is caused to engage the point of the blade and the blade and slide thereby shifted inwardly a slight distance. As the blade vibrates under the impinging action of the hammer, it is apparent that the chopping action that results will cause the blade to cut through and to enter the shell. The extent of reciprocation of the blade is determined by the pressure applied against it and position in which the oyster is held. The maximum reciprocation is determined by the setting of nut **23**. To provide for setting the nut **23** to allow shorter or longer vibrating action of the blade, the slide may have a series of holes **52** therein to receive the pin **24** as noted in Fig. 5. After the blade has once entered the shell, the operator, by manipulation of the toggle, places the spring under compression so that the blade will have its full stroke. In some instances, it may be desirable to retain the spring under compression at all times. After the blade has once cut through the shell, then the shell may be manipulated in a manner whereby the blade can be made to cut the muscle free from the shell. This action has been illustrated in Fig. 4. Then, after the muscle has been cut, the tool shank may be used as a pry whereby to open or separate the two half sections of the shell.

While it is possible to use the tool, after the top shell has been removed, as a means of cutting the meat from the lower half shell, it has been found desirable in some cases merely to deliver the lower half-shell with the meat therein to other operators who, by use of a special knife, can remove the meat more expeditiously than can be accomplished by this tool.

In some instances, it is desirable that the meat be retained in the half shell and be served in that manner.

In Fig. 6, I have illustrated a modified form of tool which has a longer and more pointed blade for entering the shell. This has been found to be more practical for some of the larger kinds of oysters. However, its use and its functions are substantially the same as those described with reference to the device shown in Fig. 3.

Machines of this character have been in use and have proven to be very practical and it has been demonstrated that ordinary unskilled labor can, by its use, exceed the output of oysters opened by hand by those who have long been experienced in the work.

The great success of this machine is thought to be due to the fact that the slide which mounts the tool or knife is not connected to the hammer, but is free, and while it receives the blows of a hammer that reciprocates through an extended travel, the knife has a relatively short action that makes it easy to pilot into the shell. Manifestly, long travel of the blade would be too violent and would gouge and chop the oyster shell, where the short vibratory action is easy to apply.

It is readily apparent that details of construction of the machine might be varied without departing from the spirit of the invention. Therefore it is not desired that the claims shall be restricted to details of construction, but that they be given an interpretation that is commensurate with the scope of the invention herein disclosed.

It has been found that it is not essential that the point of the opening tool be applied to the joint between the closed edges of the half shells, but it may be just as well applied directly against the side of the oyster near the seam, as its action will be to cut through the shell to obtain the same results as are accomplished by the blade entering between the half shells at the seam.

Also, it is to be understood that the position of the machine may be changed to best accommodate the worker. In other words, the tool may extend horizontally, or it may extend vertically. It is antipicated that in an establishment using several of these machines, they would be arranged in alinement with the reciprocating blade extended horizontally and all of the machines operatively connected with a line shaft. However, this is optional to the user.

Having thus described my invention, what I claim as new therein and desire to secure by Letters Patent is:

1. The method of opening oysters which comprises causing a tool of chisel-like form to rapid-

ly vibrate in an endwise direction, and moving the oyster shell against the blade end to cause it to chisel into the shell.

2. The method of opening oysters which comprises causing a tool of chisel-like form to rapidly vibrate in an endwise direction, and moving the oyster shell against the blade end to cause it to chisel into the shell, then to manipulate the shell relative to the sharpened end of the tool to cause its chisel end to cut the muscle whereby the half shells are held together, then to use the tool shank as a pry for separation of the half shells.

3. The method of opening oysters and the like, which comprises supporting a tool having one end of chisel-like form, for endwise reciprocation, causing a hammer body to rapidly reciprocate, then pressing the oyster shell against the chisel end of the tool to move the head end portion thereof into position to be impinged by the hammer for driving the tool into the shell.

4. The method of opening oysters or the like, comprising causing a hammer element to reciprocate, supporting a tool of chisel-like form for limited endwise movement, applying a yieldable pressure against the tool to extend it in one direction, then pressing the oyster shell against the chisel end of the tool to move it toward its other limit, and into position for impingement thereagainst by the reciprocating hammer, whereby the chisel end of the tool will be driven into the oyster.

GERONIMO R. RAGUPOS.