O. SCHENK
MACHINE FOR OPENING OYSTERS
Filed Dec. 27, 1920

Fig. 1

Fig. 2

Fig. 3

Fig. 4

Fig. 5
MACHINE FOR OPENING OYSTERS.

My invention relates to a new method of opening oyster shells and to a new machine for putting my method into effect.

One of the objects of my invention is to enable oysters to be opened much more rapidly than it is possible for even the most skilled workman to open oysters by hand. Another object is to enable unskilled persons to open oysters; there are many hotels and restaurants where it is impracticable to serve shell oysters, because they do not have enough of that business to warrant their keeping a skilled oyster opener. Another object of my invention is to provide means for opening oysters which practically eliminates the danger of bits of shell getting among the opened oysters; oysters may be opened by my method and with my machine without splintering the shell. Another object of my invention is to provide for opening oyster shells without injuring the oyster.

I effect the above mentioned and other objects, which will be referred to later, by the method which consists primarily in forcing a pointed instrument or knife between the shells at their hinge. The mouth of the shell, that is, the end remote from the hinge, is held against a fixed bearing or abutment and the instrument is forced between the shells at the hinge by pressure directed substantially toward the month of the shell. A very slight separation of the shells at that point ruptures the hinge. As soon as the hinge is ruptured I relieve the pressure and move the mouth of the shell to a lower point on the abutment. Then entering the knife once more at the hinge I drive it by a quick impulsive movement toward the abutment. The mouth of the shell is held at a point on the abutment low enough so that as the knife enters between the shells it slides along the inner surface of the upper half of the shell and severs the shell-closing muscle from the upper half.

Referring to the accompanying drawings. Figure 1 is a side elevation of a machine whereby my method of opening oysters may be put into effect.

Figure 2 is a plan of the machine.

Figure 3 is a view showing the operation of cutting the oyster from the lower half of the shell after the upper has been removed.

Figure 4 shows the first step of my method which consists in rupturing the hinge of the shell.

Figure 5 shows the second step, that of severing the muscle from the upper shell.

In the present structure the base 10 of the machine is made of wood and at one end of the base a vertical wall 11 is attached by suitable iron angle plates 12, which wall I will hereinafter refer to as the abutment. Mounted on the base 10 is a frame 13, in the upper portion of which a bar 14 is mounted to slide longitudinally on a line parallel to the base 10. At the end adjacent to the abutment this bar carries a spear shaped knife 15. The knife is moved longitudinally by means of a lever 16. This lever is attached to a sort of floating fulcrum; that is, at 17 it is pivotally attached to a link 18, which link is pivotally attached to a second link 19, the latter being attached to the frame 13 at 20. The lever is pivotally attached to the bar 14 at 21, and this point of attachment is made adjustable by providing the lever with extra holes 22 and the bar with extra holes 23, for the reception of pivotal member 24. A spring 24 normally draws the lever 16 toward the abutment, if desired this spring may be attached differently. That is, it may be attached from a point 25 on the frame 13 to the pivot member 21. In order to balance the strain, two springs are provided, which will be seen by referring to Figure 2. Mounted on the base 10 is a block 26 which carries a stationary knife 27. The machine may be secured to a table or provided with legs or some form of pedestal. So far as my present invention is concerned this is immaterial.

The operator stands at A, facing the machine. Taking an oyster in his hand with the hinge adjacent to his index finger and having pushed the lever 16 from him, he places the hinge of the shell against the point of the knife 15. Then holding the shell approximately parallel with the line of movement of the knife he draws the lever toward him until the mouth of the shell bears against the abutment. Then with a slight jerk or a steady pressure on the lever he forces the point of the knife between the shells, thus rupturing the hinge, but he does not force the point far into the shell at this time. (See Fig. 3). Backing the lever away from the abutment he lowers the mouth of the shell and draws the lever toward him again, bringing the mouth of the shell against the abutment, as in Figure 5. He then gives the lever a quick jerk and removes his hand from it, allowing the spring 24 to act.
24 to move the lever. By reference to Figure 5 it will be seen that with the mouth of the shell held low on the abutment, the knife upon entering the shell quickly impinges on the inner surface of the upper half and lifts it to a position suggested by dotted lines. By sliding along the inner surface of the shell in this way the knife severs the muscle from the shell neatly and without the slightest injury to the oyster. The spring supplements the start given by the handle by the operator, and backed by the momentum of the handle, which is heavy, the movement of the knife has an impulsive quality that is very effective in severing the muscle from the shell. The effect may be likened to that of a butcher’s cleaver, as compared to cutting by steady pressure on a knife. As soon as the muscle is severed from the shell the operator takes the lower half of the shell and the oyster from beneath the knife, leaving the upper half on top of the knife. The upper half of the shell, in fact, seldom remains on the knife but usually falls off of it. With the lower half of the shell still in the same position in his hand, the operator passes the shell beneath the knife 27, causing the knife to pass between the oyster and the shell, thus severing the lower muscle.

While, as I have previously stated, oysters can be opened by my method and with the machine described without previous experience much faster than the most skillful workman can open them by hand, the operator of my machine very quickly acquires a skill and dexterity in its operation which enables him to open oysters with remarkable rapidity. The machine and method are both devised with the view of eliminating every unnecessary motion. The oysters opened in this way are free from bits of shell and on the whole are cleaner than hand-opened oysters. The operator is farther removed from the oysters than when opening them by hand, and there is less probability of his breath coming in contact with the oysters.

In the present machine the base and abutment are wood, but it is obvious that they may be made of metal. The wood abutment has certain advantages, however; the oyster shell is less likely to slip on the wood, especially in the second operation, as in Figure 5, than if the abutment were of metal. Where the abutment is made of metal it may be covered with wood or some other non-metallic material; or it may be roughened somewhat like the surface of a file. It is desirable, however, to be able to place the shell against any part of the abutment, as the angle at which the oyster is held during the second operation may be varied somewhat according to the contour of the shell. This is one of the points wherein the operator quickly acquires a certain skill. There is considerable variation in the shape of oyster shells and the operator quickly acquires the knack of holding the shell at an angle appropriate to its own characteristics and he soon gets to doing this subconsciously.

It is not to be understood that my invention is limited to the particular movements described, as there is more or less variation in the work of different operators. The important point in my method is to enter the knife at the hinge and rupture the hinge, then to change the direction of action of the knife so that it will sever the muscle from the upper half of the shell without injuring the oyster. The details of action whereby these main objects are accomplished are more or less optional with the operator. Nor is it to be assumed that the machine is limited to the particular construction shown. Take for example, the linked fulcrum arrangement; the object of this is to give the knife a considerable length of stroke, but there are other ways in which this can be effected, as will be evident to any skilled mechanic.

What I claim is as follows:

1. A machine for opening oysters, comprising a movable knife, an abutment against which to hold an oyster while its shell is opened with the knife, a spring constantly tending to move the knife toward the abutment, and a manual operating member whereby to move the knife to and fro with reference to the abutment, said member having a large range of movement relative to the distance moved by the knife, and being heavy enough to enable momentum imparted to it by the operator to supplement the action of the spring in moving said member toward the abutment.

2. A machine for opening oysters, comprising a base, an abutment carried thereby, a knife mounted on said base and adapted to move longitudinally to and fro with reference to the abutment, a lever fulcrumed on the base for moving the knife and a spring connected to and adapted to move the knife toward the abutment.

OTTO SCHENK.