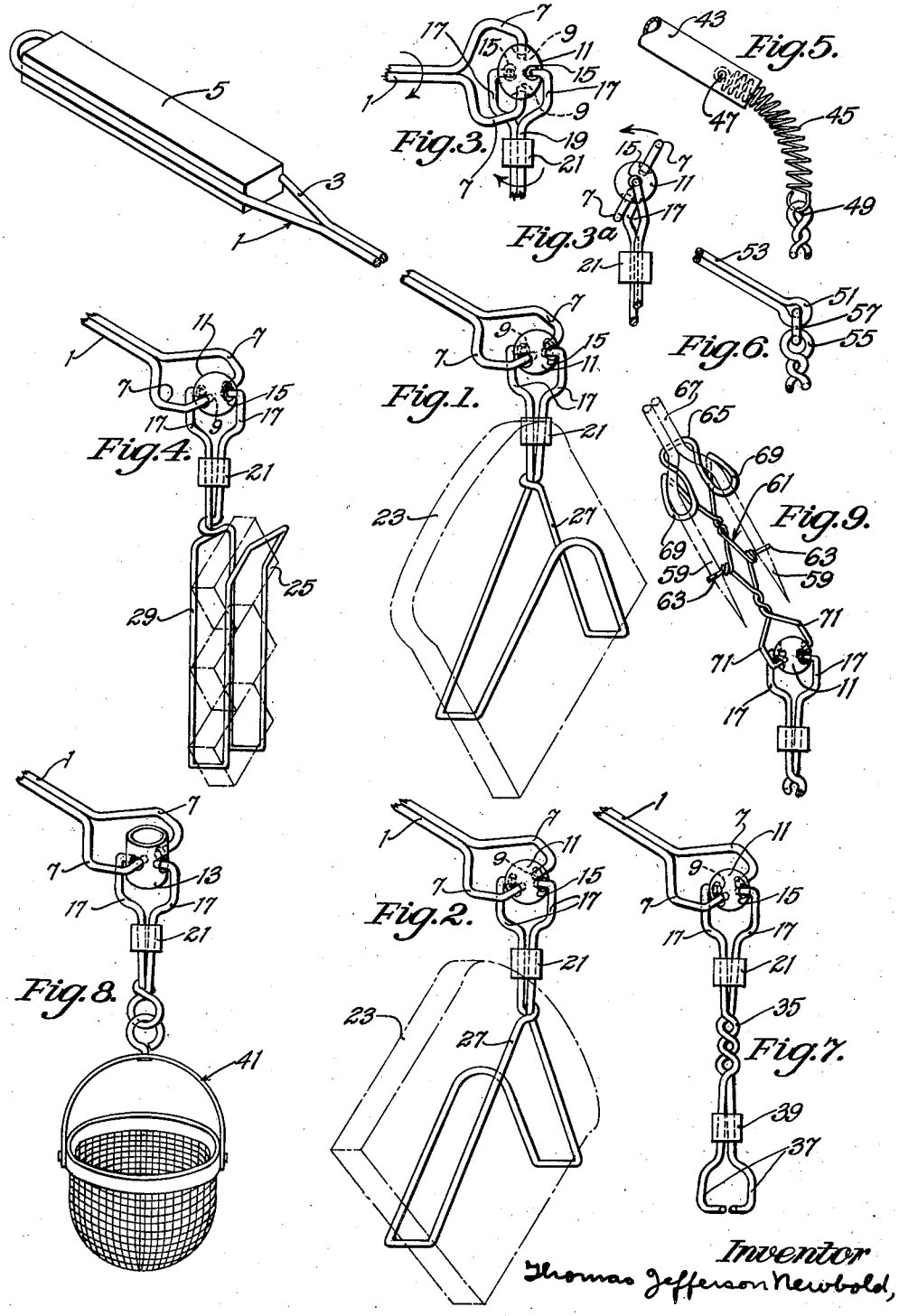
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HEAT-TREATING DEVICE

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HEAT-TREATING DEVICE

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2 Claims. (Cl. 53—5)

The present invention relates to heat-treating devices in general, and in particular to forks and holders for subjecting articles of food to the action of the heat of a fire or flame while held in the hand of the user at a point remote enough from the heat for comfort. It also relates to similar devices for use in heat-treating small metal parts, and other analogous uses.

One object of the invention is to provide a device of this nature which shall be capable of presenting the several surfaces of the article or material to be heated to the source of heat successively and uniformly without the necessity of removing it from the material-support or holder to turn it over or around, or without need to vary the angle of presentation of the holder or the position of the user in heat-treating the several surfaces or in inspecting the progress thereof. Another object of the invention is to provide a structure in which a plurality of end-portions providing different means of engaging and holding the article or material to be treated can be interchangeably employed with a single handle. A further object is to provide a device of this nature which can be cheaply and simply made, and can be used with ease and comfort. Still another object is to provide means for applying the invention principles to the ordinary existing types of toasting forks.

To these ends, the invention provides a handle and material-holding device connected therewith by means of a universally flexible joint, coupling, or connection, so that any desired side of the material-holder may be presented to the heat without change of the direction of extent of the axis of the handle. To provide for the successive use of a plurality of material-holding devices, the latter are attached to the joint in easily and quickly detachable relation. The device is contrived to permit its being made in the simplest manner of the cheapest component materials, and its manner of utilization is self-evident. An adapter is provided to fit over the tines of the common toasting fork, having a material-holder attached thereto by the flexible joint contemplated in the invention, whereby the existing structures may be quickly adapted to the practice of the invention.

Other aims of the invention, and the manner in which they are carried into effect, are as will be made plain hereinafter.

Illustrative embodiments of the invention are shown in the accompanying drawing, in which,

Fig. 1 is a view in perspective of the device of the invention when contrived for holding a slice of bread to be toasted before an open fire, the handle being of any desired length and being broken away for convenience in illustration.

Fig. 2 illustrates the position of the parts of Fig. 1 at the material-holding end of the device, when the handle has been rotated a half-turn about its axis from the position shown in Fig. 1.

Figs. 3 and 3*a* show the provision for preventing locking of the universal joint when the axes of the parts joined thereby are at right angles.

Fig. 4 shows the joint and a portion of the handle of previous figures with a different material-holding device in place thereon.

Fig. 5 shows an alternative form of flexible joint between the handle and the material-holder, formed of a coil spring.

Fig. 6 shows another alternative form of the flexible joint, comprising a simple link connecting eyes at one end of the handle and of the material-holder respectively.

Fig. 7 shows a clamp type of material-holding device, suitable for holding chops, sausages, or other foods and also for holding bolts and other metal parts during heat treatment.

Fig. 8 shows a basket-type of material-holding device for blueing, annealing, and otherwise heat-treating a plurality of small metal parts simultaneously, and also capable of being used if desired with food stuffs.

Fig. 9 shows the adapter for connecting the material-support or holder to the tines of a common toasting fork by means of a flexible joint.

According to the invention, the handle 1 may be of any desired type, construction or length, and will most suitably be straight in order to balance properly in the hand in its various positions of rotation about its longitudinal axis. The form shown herein is of very simple construction, comprising a single piece of wire or rod 3 doubled back upon itself around a block 5 of wood or other material constituting the grip, with the intermediate lengths of the wire brought into contiguous relation and either twisted or preferably spot-welded together at intervals. In the forms of Figs. 1 to 4, 7 and 8, employing the common form of universal joint, the end portions of the wire 3 are bent to spread widely apart and then to converge as indicated at 7 and finally to point endwise directly toward each other so that at least some portion of their extremities 9 lie in a common axis disposed at right angles to the axis of the handle 1. These portions or pintles 9 engage within appropriate aligned holes or bearings in the body 11, 13, which corresponds to the "cross" of a universal joint, and which may be

variously contrived as desired, either as a solid ball preferably made of brass as shown in Figs. 1 to 4 and 7, or may be merely a section of tube 14 as shown in Fig. 8.

A second pair of holes in the "cross" or body 11, 13, in alignment with each other on an axis at right angles to the first pair, receives the axially aligned extremities 15 of the material-holder, variously contrived as shown, and preferably made very simply out of bent wire or rod as in the case of the handle 1.

To provide for easy detachment and replacement in substituting one type of material-holder for another, the portions of the wire adjacent the extremities 15, after being spaced apart at 17 in substantially parallel relation are brought close together in parallel relation at 19 and encircled with a sliding sleeve 21 which can be slid manually along the parallel portions 19 away from the extremities 15 to permit the latter to be spread apart sufficiently to enter them in their proper holes in the body 11, the sleeve 21 being then pushed back toward extremities 15 to hold the latter in secure engagement within their bearings.

The characteristics of the device thus described are that the material-holder is connected to the handle by a flexible joint permitting continuous rotation of the material being treated on a vertical axis throughout 360° and beyond, simply by rotating the handle on its axis while the handle is held level or pointing downward at any convenient angle, thus permitting the material to be heated on its bottom and on all of its sides except the top by direct radiation from the source of heat without having to hold the material over the fire and thus usually in the hot gases or flame, and without the user having to put his hand over the fire, and also without having to remove the article and replace it in changed relation on the holder, as is necessary in the case of a fork or other rigid support. The center of gravity of the article being heat-treated is always directly under and pendent from the center of support on the end of the handle, and these two centers define the vertical axis on which the material rotates.

A feature of construction which is of importance in the case of material-holders such as those of Figs. 1 and 4 in which there are two main substantially plane and parallel sides of the article to be heated, the slice of bread 23 or the marshmallows 25, respectively, is that the bail comprised by the end-portions 17 which hook into the "cross" of the universal joint is disposed in a vertical plane at right angles to the planes of the two opposite sides of the slice of bread or the marshmallows. Thus, the lost motion, present in any universal joint as the two parts connected by the joint approach a right-angle relation and the axis of oscillation defined by the pair of journals of one part approaches alignment with the axis of rotation of the other part, is reduced to a minimum and presentation of the article flatwise to the fire is assured.

A further feature of construction which enables the joint to work so as to rotate the material-holder on a vertical axis when the handle is held level, and thus enables one part to rotate the other even when the two are at right angles, is illustrative in Figs. 3 and 3*a*. It is to be noted that the arms 17 are bent out of the vertical plane passing through the pintles 15 of the material-holder, and thus are successively engaged by the portions 7 of the handle 1 to start the material-holder rotating on its vertical axis before the universal joint can lock so as to tip the axis of oscillation of the material-holder, defined by the pintles 15, out of its intended horizontal plane with resultant undesired tipping of the material-holder out of its intended vertical relation. Thus, rotation of the handle in the direction indicated by the arrows in Figs. 3 and 3*a* will result in the desired rotation of the material-holder on its vertical axis in the direction indicated by the arrows even though the two parts stand in right-angle relation to each other.

The various material-holders shown are illustrative merely of the variety of holders which can be employed. That of Figs. 1 and 2, indicated at 27, comprises a single piece of wire bent into an inverted Y with doubled legs spaced apart to receive a slice of bread 23 inserted diagonally as shown, whereby its center of gravity is so low and the angle of the side edges such that it cannot slide or roll out from the holder. A half-turn of handle 1 on its axis turns the holder and the bread held therein from the position shown in Fig. 1 to that of Fig. 2. It is to be noted that all six surfaces of the slice of bread 23 can be presented to the heat radiated from an open fire built on level ground without needing to shift the position of the bread in the holder. The holder 29 of Fig. 4 is designed for use in toasting marshmallows, and possesses the same advantages just described regarding the toaster 27, and in addition permits a plurality of marshmallows to be toasted at once. The device 35 of Fig. 7 can be clamped around a sausage, or in the case of heat-treating metal parts around a bolt or the like, the jaws 37 being drawn together to grasp the article by a sliding sleeve 39 working in identical manner with the sleeve 21 described. The basket-type holder 41 of Fig. 8, is of obvious construction, and can hold a large number of small parts to be heat treated in a flame.

Since the invention contemplates the employment of any type of flexible joint between the handle and the material-holder, illustrative embodiments of the two of these other types are shown in Figs. 5 and 6, in the first of which the handle 43 is formed of a tube, and a flexible coil spring 45 has one of its ends received within the end of the handle that is away from the grip and secured therein by pin 47. The other end of the spring is simply hooked into an eye 49 formed by twisting a reverse bend of the component wire forming the upper end of the material-holder, which may have any of the forms shown or may be made as preferred, there being no necessity for separating the two arms at the top of the material-holder to embrace the "cross" of the universal joint, as the spring takes the place of such universal joint in the present instance. In the form of Fig. 6, an eye 51 in the extremity of the handle 53 is connected with an eye 55 in the upper end of a material-holder similar to that described in connection with Fig. 5, by a small link 57, the eyes and the connecting link being just large enough to permit free pivotal movement at the two points where the link engages the two eyes, so as to cut down lost motion as the handle 53 is rotated on its axis to impart rotation to the material-holder on a vertical axis. The features of operation of these forms are as described hereinbefore, the advantage of these forms lying in their cheapness of construction.

The device shown in Fig. 9 enables the features of the invention to be applied to the existing common type of toasting fork having two or

more tines 59. In this case, a device 61 formed of bent wire is provided having two eyes 63 to encircle the tines 59 a fair distance back from their points, a bend 65 to embrace the back and sides of the handle 67, and adjacent bends 69 to overlie the tines 59 at their shoulders, being bent to fit these shoulders whether disposed in the plane of the handle-portion 67 or offset from such plane as is more commonly the case. The end of the adapter 61 which extends beyond the points has recurved spaced end-portions 71 which terminate in axially aligned inwardly pointing portions corresponding to the pintles 9 of Fig. 3, which engage within aligned bearings in the "cross" or body 11, which together with the rest of the material-holder is or may be as previously described in connection with Figs. 1 to 4, 7 and 8. This device is installed by slipping the tines 59 through eyes 63, sliding the device along the tines away from the points thereof until bends 69 can be brought above the plane of the tines, and then drawing the device toward the points of the tines, whereupon bends 69 will overlie the shoulders of the tines and bend 65 will engage the handle-portion 67 just above the shoulders, to prevent the device from sliding off from the tines. Thereafter the entire assembly is employed just as described in connection with Fig. 1.

While I have illustrated and described certain forms in which the invention may be embodied, I am aware that many modifications may be made therein by any person skilled in the art, without departing from the scope of the invention as expressed in the claims. Therefore, I do not wish to be limited to the particular forms shown, or to the details of construction thereof, but what I do claim is:

1. In a heat-treating device, in combination, a handle, spaced aligned pintles thereon, a member having bearings in which the pintles are received, a material-holder having spaced aligned pintles, additional bearings in the said member to receive the pintles on the material-holder with their axis at right angles to that of the first-named pintles, from which additional bearings the holder and its burden of material hang in pendent relation with their combined center of gravity below and in a vertical line with the center of support defined by the said additional bearings, and about which vertical line as an axis they are rotated upon rotation of the handle about its longitudinal axis.

2. An attachment for toasting forks comprising means detachably engaging the fork back of the points thereof, a support for the material to be toasted, and a flexible coupling connecting the support to the detachable engaging means and thus to the fork.

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