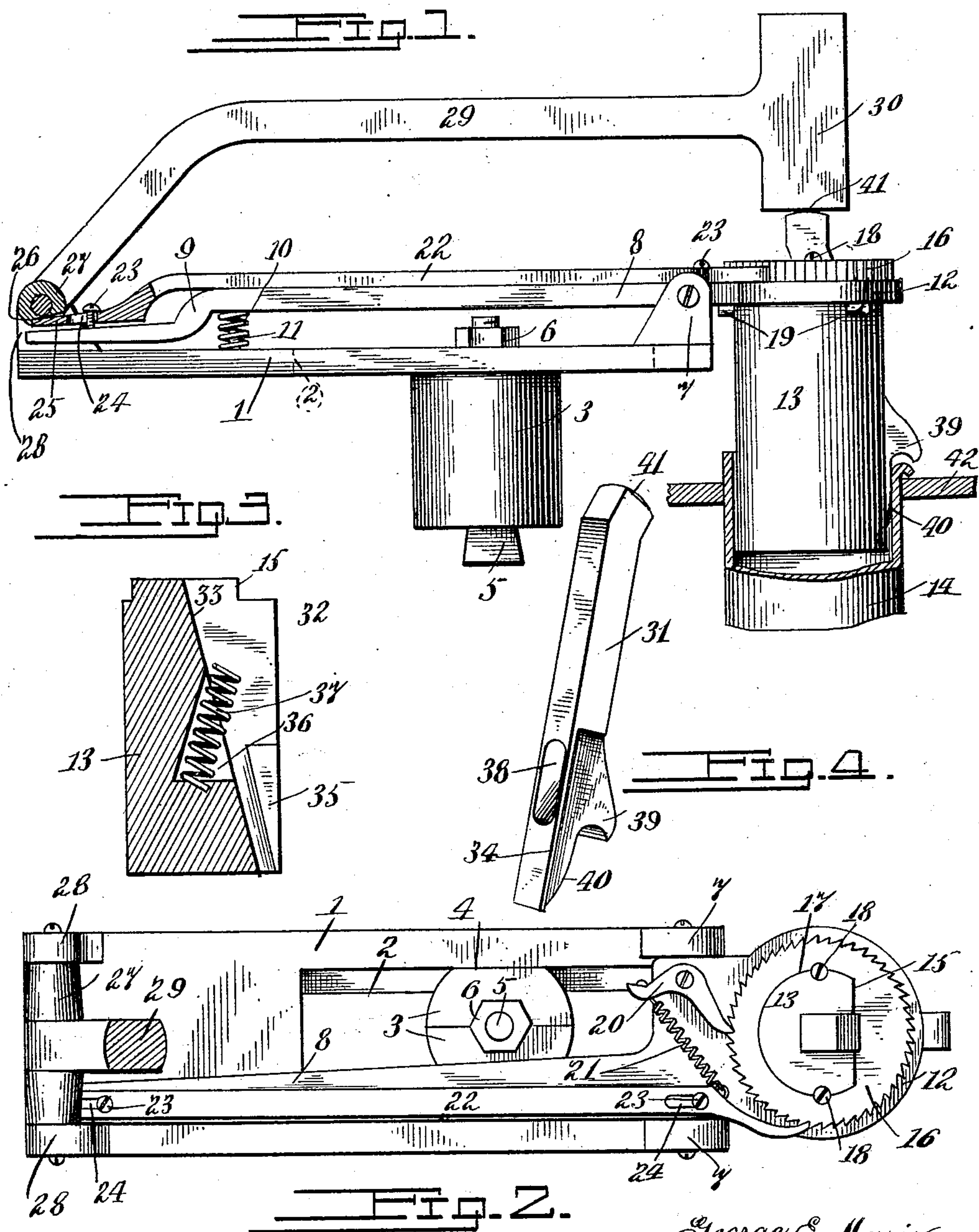


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PATENTED MAY 5, 1908.

G. E. MORRIS.
BEADING IMPLEMENT.
APPLICATION FILED AUG. 26, 1907.



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BEADING IMPLEMENT.

No. 886,394.

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To all whom it may concern:

Be it known that I, GEORGE EDWARD MORRIS, a subject of the King of Great Britain, residing at Regina, in the Province of Saskatchewan, Canada, have invented certain new and useful Improvements in Beading Implements; and I do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to tube expanding and beading tools.

The object of my invention is to provide a tool which will properly expand the end of a tube and form a bead thereon in one movement, and which will be rotated by the operation of an impacting element.

A more specific object is to provide a pivotally mounted supporting plate with a rotatable head carrying a suitable tool; and, further, to provide means on the head for normally maintaining the tool in raised position in the path of movement of the impacting element, and for guiding the tool so that the tube operated on is expanded by a blow almost at right angles to the plate to which the tube is being attached. The advantage sought to be attained by this construction is that more or less unskilled operators may use the tool and produce proper work.

A further object is to provide means for slidably supporting a base plate, so that the tool may be adjusted to the work.

My invention consists of the construction, combination and arrangement of parts, as herein illustrated, described and claimed.

In the accompanying drawings, forming part of this application, I have illustrated one form of embodiment of my invention, in which drawings similar reference characters designate corresponding parts, and in which:

Figure 1 is a side elevation, partly broken away to show the construction, and showing the application of the tool to a boiler tube; Fig. 2 is a plan view of the tool, with the hammer arm broken away; Fig. 3 is a vertical section through the head; and, Fig. 4 is a perspective of the beading and expanding tool.

Referring to the drawings, 1 designates a base plate provided with a longitudinal slot 2,

having inwardly inclined side walls. A two-part holding member 3 is provided with flanges 4, coinciding in shape and disposed to bear against the inclined side walls of the slot 2. A taper bolt 5 is disposed vertically through the holding member 3, and has a lock nut 6 on its upper end, so that the holding member 3 may be expanded to lock the same in the slot 2. The holding member 3 may be attached in any suitable way to any common form of support, and forms the base supporting means.

The base plate 1 is provided on its forward end with bearing shoulders 7, between which shoulders is pivoted a supporting plate 8, which projects beyond the forward end of the implement, and which projects to the rear end of the implement and is provided with an offset rear end 9. A coiled spring 10 is disposed under the rear end of the supporting plate 8, and is adapted to normally maintain the rear end thereof elevated, but is further adapted to be compressed to take up the shock on the forward end of the plate, due to the operation of the implement. The spring 10 is maintained in position by means of a stud 11 on the base plate 1. The forward end of the supporting plate 8 is provided with an expanded portion 12, through which is disposed a rotatable removable head 13 of a size to work into a tube 14.

The upper end of the head 13 is provided with a squared shoulder 15, to which is secured an actuating ratchet 16. The ratchet is preferably secured to the head so as to be easily removable by having in the ratchet an opening 17 of a shape coinciding to the shoulder 15 of the head, so that screws 18 will hold the parts together. The head 13 is maintained against upward vertical movement, but is left free to rotate with relation to the supporting plate 8 by means of pins 19 disposed transversely therethrough and working against the under surface of the supporting plate 8.

A locking pawl 20 is pivoted on the supporting plate 8 in a position to engage the ratchet 16 to prevent reverse movement of the head 13. A suitable spring 21 has one end connected to the pawl 20 so as to maintain it in engagement with the ratchet, and has its opposite end secured to the forward

end of a reciprocable actuating pawl 22, which is adapted to engage the ratchet 16 to cause rotation thereof in one direction. The spring 21 therefore performs a double function in maintaining the pawl 20 in engagement with the ratchet 16, and in maintaining the actuating pawl 22 normally out of engagement with the ratchet 16 in its retracted position.

10 The actuating pawl 22 is disposed on the upper surface of the supporting plate 8, and is reciprocally mounted by means of pins or screws 23 disposed through slots 24 therein, and working into the supporting plate 8.
 15 The rear end of the actuating pawl 22 is bent downward as at 25, and extends in the path of movement of a shoulder 26 formed on a hub 27, which hub 27 is rockably supported between shoulders 28 formed integral with the supporting base plate 1 at its rear end.
 20 Carried by the hub 27 is a bent arm 29, carrying a hammer or impacting element 30. This arm 29 may be operated by any suitable mechanism, and when it is operated to rock the hub 27 on its pivotal support, the shoulder 26 works against the rear end of the actuating pawl 22, and causes its forward end to engage the ratchet 16 to cause rotation thereof in the direction indicated by the arrow in
 30 Fig. 2.

A rectangular tool 31 is reciprocally disposed in a slot 32 formed in one side of the rotatable head 13. The slot 32 is provided with a rear inclined guide wall 33. The tool
 35 31 being forced downward, rides on the guide wall 33, so that the movement of the outer end of the tube is almost at a right angle to the plate or sheet of metal to which the tube is being attached. Guide flanges 34 are formed
 40 on the sides of the tool 31, and work behind or inside of guide lugs 35 formed on the side walls of the slot 32, and this construction forms a retaining means for the tool 31.

The rotatable head 13 is provided with a
 45 recess 36 extending inward from the inclined guide face 33, and seated in said recess is a spring 37, the upper end of which thrusts into a recess 38 formed in the inner face of the tool 31, and serves as a means for normally maintaining the tool 31 in elevated position, in the path of movement of the impacting element 30. Extending from the front face of the tool 31, is a hooked beading
 50 lug 39, and from the beading lug 39 to the lower end of the tool there is formed a curved expanding face 40, so that the impact against the upper end of the tool is directed directly against the tube at a point opposite the edge of the opening through the plate 42 to which
 60 the tube is being attached. The upper end of the tool 31 is provided with an offset head 41, so that the full force of the impact may be directly transmitted as described.

In the operation of the invention, the head 13 is inserted in a tube 14 after the implement has been properly set, and is held in position by its supporting means 3. The impacting element 30 is operated, and the shoulder 26 bearing against the actuating pawl 22 causes the head 13 to be rotated, and the entire end of the tube 14 to be flanged as described.

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

1. A beading implement comprising the combination of a base, a head, means for rotatably supporting the head on the base, a reciprocable tool carried by the head, means for guiding the tool at an angle to the axis of the head, and means for delivering an impact against the tool.

2. A beading implement comprising the combination of a base, a head, means for rotatably supporting the head on the base, a reciprocable tool carried by the head, means for normally maintaining the tool elevated, and means for delivering an impact against the tool.

3. A beading implement comprising the combination of a base provided with a slot, a supporting member slidably disposed in the slot, a head support on the base, a head rotatably disposed on the head support, a tool carried by the head, and means for delivering an impact against the tool and for rotating the head.

4. A beading implement comprising the combination of a base provided with a slot having inwardly inclined walls, a two-part supporting member provided with flanges arranged to bear against said walls, a taper bolt disposed between the parts of the supporting member, locking means on the upper end of the bolt, a rotatable head, means for rotatably maintaining the head adjacent the base, a tool carried by the head, and means for delivering an impact against the tool.

5. A beading implement comprising the combination of a base, a supporting member, means for adjustably locking the supporting member on the base, a rotatable head operatively connected with the base, a tool carried by the rotatable head, means for rotating the head, and means for delivering an impact against the tool.

6. A beading implement comprising the combination of a base, pivotally supported head carrying means on the base, a rotatable head carried by said carrying means, means for absorbing shocks to the pivoted head carrying means, a tool carried by the head, and means for delivering impacts to the tool.

7. A beading implement comprising the combination of a base, pivoted head sup-

porting means on the base, resilient means for maintaining the supporting means in one position, a rotatable head carried by the supporting means, a reciprocable tool carried by the head, and means for delivering impacts against the tool.

8. A beading implement comprising the combination of a base, a stud on the base, a spring disposed on the stud, a pivoted member on the base arranged to lie over the spring, a rotatable head carried by the pivoted member, and a tool carried by the head.

9. A beading implement comprising the combination of a base having shoulders at one end, a supporting plate pivoted to the shoulders, a rotatable head carried by the supporting plate, a tool carried by the head, and means for delivering an impact against the tool.

10. A beading implement comprising the combination of a supporting plate, a rotatable head carried by the plate, means for rotating the head, a tool carried by the head, and means for delivering an impact against the tool.

11. A beading implement comprising the combination of a supporting plate, a rotatable head carried by the plate, means for rotating the head, means for preventing reverse rotation of the head, a tool carried by the head, and means for delivering an impact against the tool.

12. A beading implement comprising the combination of a supporting plate, a rotatable head carried by the plate, means for rotating the head, means cooperating with a part of the rotating means for preventing displacement of the head from the plate, a tool carried by the head, and means for delivering an impact against the tool.

13. A beading implement comprising the combination of a supporting plate, a rotatable head carried by the plate, means for rotating the head, pins disposed through the head beneath the supporting plate, a tool carried by the head, and means for delivering an impact against the tool.

14. A beading implement comprising the combination of a supporting plate, a head rotatably disposed through the plate, a ratchet on the head, means arranged to engage the ratchet for locking the head against reverse rotation, means for engaging the ratchet to rotate the head in one direction, a tool carried by the head, and means for delivering an impact against the tool.

15. A beading implement comprising the combination of a supporting plate, a head rotatably disposed through the plate, a ratchet on the head, means arranged to engage the ratchet for locking the head against reverse rotation, means for engaging the ratchet to rotate the head in one direction, a

tool carried by the head, means for delivering an impact against the tool, and means for moving the ratchet moving means.

16. A beading implement comprising the combination of a supporting plate, a head rotatably disposed through the plate, a ratchet on the head, means arranged to engage the ratchet for locking the head against reverse rotation, means for engaging the ratchet to rotate the head in one direction, a tool carried by the head, means for delivering an impact against the tool, and means for moving the ratchet moving means when the impact delivery means is raised.

17. A beading implement comprising the combination of a supporting plate, a head rotatably disposed through the plate, a ratchet provided with an opening adapted to receive a squared shoulder on the head, means for securing the ratchet to the head, means for rotating the ratchet, means for locking the ratchet against reverse rotation, a tool carried by the head, and means for delivering an impact against the tool.

18. A beading implement comprising the combination of a supporting plate, a ratchet disposed on the supporting plate, a head secured to the ratchet and rotatably disposed through the supporting plate, a slotted pawl disposed on the supporting plate, guide pins disposed through the slotted pawl, a tool carried by the head, means for moving the pawl, and means for delivering an impact on the tool.

19. A beading implement comprising a base provided with shoulders, a hub rockably pivoted between the shoulders and provided with an actuating shoulder, a pawl arranged in the path of movement of the actuating shoulder, a ratchet in the path of movement of the pawl, a head carried by the ratchet, a tool carried by the head, and impacting means carried by the hub.

20. A beading implement comprising a rockably supported member, a pawl adapted to be moved by said member, a ratchet in the path of movement of the pawl, a head carried by the ratchet, a tool carried by the head, and impacting means carried by the rockably supported member.

21. In a beading implement, a rotatable head, a reciprocable member for rotating the head in one direction, a tool carried by the head, and means for delivering an impact against the tool and for moving the reciprocable member in one direction.

22. A beading tool comprising a rectangular body having a projecting lug, and a curved surface on one side having a recess in its opposite side, and having flanges formed on its body.

23. A beading implement comprising the combination of a rotatable head and means

for rotating the same, a reciprocable tool disposed through the head and provided at its upper end with an offset portion and at its lower end with a beading lug and a curved
5 face, which ends project respectively above and from the side of the head, and means for delivering an impact against the head of the tool, which means is arranged to rotate the

head when said impact delivery means is operated.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

GEORGE EDWARD MORRIS.

Witnesses:

JAS. BALFOUR,
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