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ADAPTER FOR RECIPROCATING HAMMER

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ABSTRACT OF THE DISCLOSURE

A scaling tool having a plurality of active elements or needles for removing paint and rust from a steel surface adapted for connection with a conventional reciprocating air or electric hammer for longitudinally impelling said needles against the surface to be cleaned.

The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

This invention relates to adapters and more particularly to an adapter for providing a coupling or driving connection between a reciprocating hammer and a needle scaling head.

Most conventional reciprocating hammers assume the form of a power source in combination with a reciprocating plunger or the like with the power source being drivingly connected to the reciprocating plunger and the plunger being carried within an elongated housing or barrel. The barrel in turn is provided with a tool receiving socket in the end thereof which is adapted to receive the elongated shank of a tool to be driven in a reciprocatory fashion by the plunger.

Such conventional hammers while providing an excellent driving arrangement for shank-type tool such as chisels or the like cannot be used as a power source for a needle scaling head inasmuch as the scaling head cannot be driving coupled to the plunger within the hammer. Some reciprocating hammers have been especially designed for use in combination with needle scaling heads to provide an operative needle scaling tool, but these hammers and heads in almost all instances are designed as one integral unit with a suitable coupling arrangement between the hammer and the head being incorporated as part of the unit. These especially designed hammers usually cannot be used interchangeably with other scaling heads or used as a driving means for conventional shank-type tools.

The adapter contemplated by the present invention significantly improves the prior art by affording a universal driving connection between a conventional reciprocating hammer and a needle scaling head. In addition to affording such a driving connection, the adapter also holds a reciprocating hammer and a needle scaling head in assembly and, when used in combination with a hammer and scaling head, yields an operative and readily usable needle scaling tool.

Such an adapter is basically comprised of a socket member which is dimensioned to be slidably and snugly carried on the end of the barrel of a hammer. A hollow axially extending stem is carried by the socket member with the stem also having pre-selected dimensions. A needle scaling head including an elongated housing is carried by the hollow stem with the stem extending into one end of the housing and the housing being rigidly clamped thereto. An actuator forming part of the adapter is slidably carried within the elongated housing and hollow stem and is provided with a piston member and an elongated shank portion, both of which also have preselected dimensions. The piston member is adapted to be slidably received within a spring biased needle retainer

which in turn is slidably carried within the elongated housing. The shank portion of the actuator is adapted to extend through the hollow stem and seat within the tool socket in the barrel of the hammer. As the plunger within the hammer barrel reciprocates, the movement thereof is transmitted by the shank portion of the actuator to the piston member which also reciprocates and impels the needles carried by the retainer axially outwardly of the housing into contact with a surface to be scaled or cleaned.

Accordingly, one object of the present invention is to provide an adapter which affords both an assemblage and a driving connection between a reciprocating hammer and a needle scaling head.

Another object of the invention is to provide an adapter which when used in combination with a reciprocating hammer and a needle scaling head provides a readily usable and operative needle scaling tool.

Still another object of the invention is to provide a needle scaling tool including a reciprocating hammer and a needle scaling head wherein the scaling head and hammer are slidably connected and can thus readily be detached one from the other.

These and other objects of the present invention will become readily apparent from the following detailed description of one specific embodiment thereof when taken in connection with the accompanying drawings, wherein:

FIG. 1 is a partial longitudinal section through a needle scaling tool incorporating the adapter of the present invention; and

FIG. 2 is an exploded perspective view of the adapter.

Referring more particularly to the drawings, FIG. 1 shows the end portion of a barrel member or barrel **12** of a reciprocating hammer or impact device **10**. A plunger means or plunger **14** is slidably carried within the end portion of barrel **12** and is adapted to be driven by a suitable motor or the like (not shown) in a reciprocating fashion substantially axially of the barrel. Hammer **10** may consist of any one of a number of conventional types of impact devices and may be powered either electrically or pneumatically or by any other suitable power source. The structural details of hammer **10** other than the end portion of the barrel **12** form no part of the present invention and for the sake of simplicity and brevity are not shown in the drawings and will not be discussed herein.

Barrel **12** in this one specific embodiment of the invention is substantially cylindrical in configuration and terminates at one end thereof in a square-shaped lug or projection **16**. Barrel **12** also includes a substantially axially extending tool-receiving socket **18** therein, socket **18** terminating at one end thereof in projection **16** and at its opposite end communicating with a chamber **20** within the barrel within which chamber plunger **14** is adapted to reciprocate.

A socket means or socket member **22** is slidably carried or supported on the end of barrel **12**. Socket member **22** is also substantially cylindrical in configuration and includes an end wall **24**, a side wall **26** and a bottom wall **28**. Bottom wall **28** is provided with a substantially square-shaped recess **30** therein which is adapted to receive or seat the substantially square-shaped projection **16** on the end of barrel **12**, the recess **30** and lug **16** in function preventing relative rotation between the socket member **22** and barrel **12** when the two are in assembly. Socket member **22** also carries a substantially axially extending stem means or stem **32** which in this one specific embodiment of the invention is formed integral with the body of the socket member. Stem **32** is provided with a substantially axially extending bore **34** therein which at its inner end terminates in the square shaped recess **30**.

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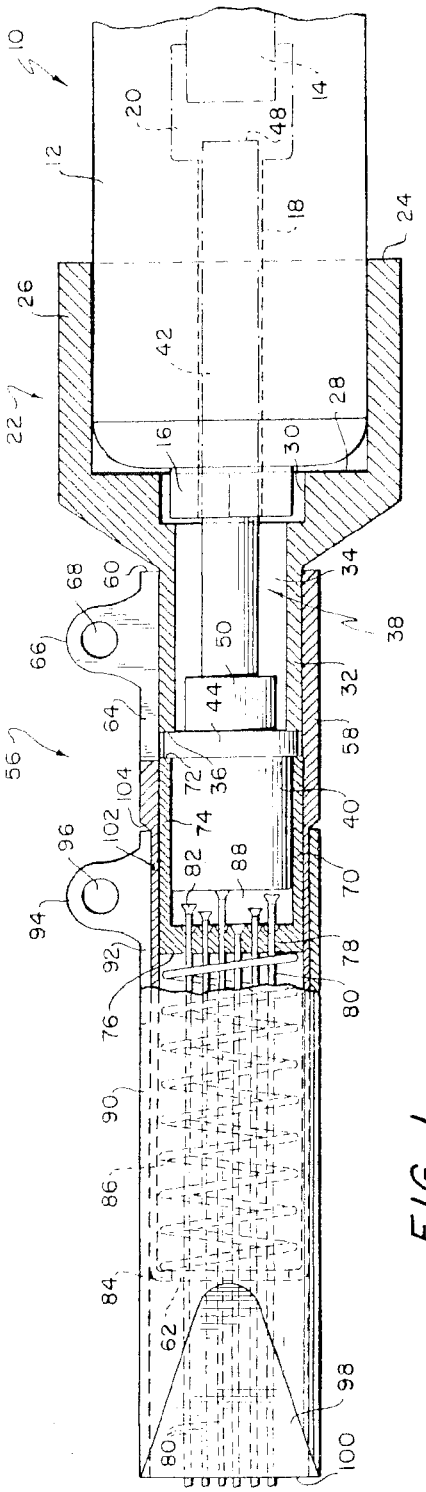

FIG. 1.

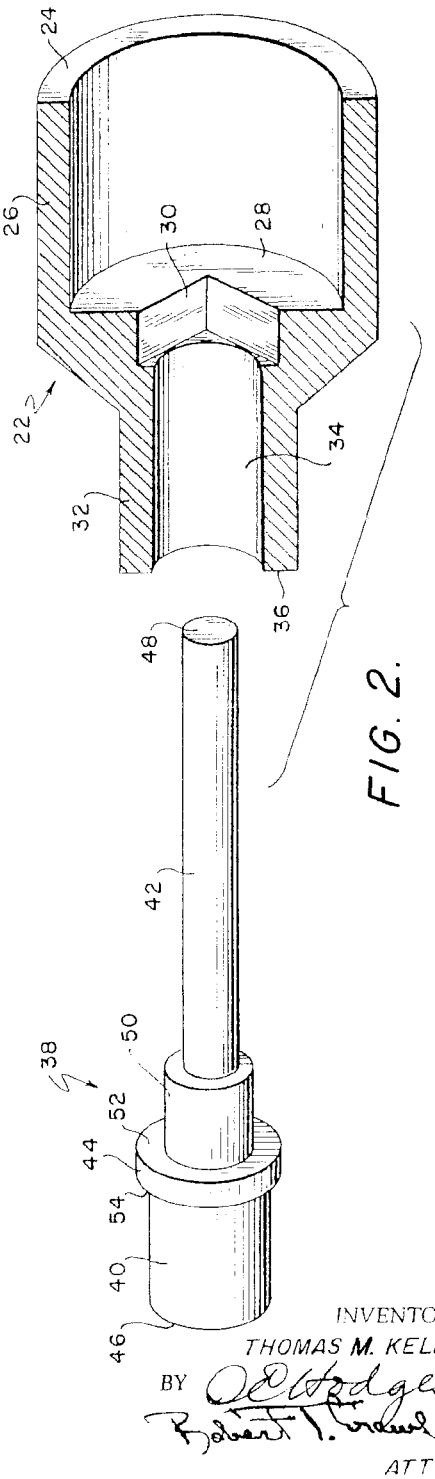

FIG. 2.

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Bore 34 thus provides a hollow stem on the socket member, which hollow stem communicates with the interior of the socket member. Stem 32 terminates at the free end thereof in an end wall 36. The dimensions of socket member 22 are pre-selected such that the internal diameter of the socket member will produce a snug fit between the socket member and the periphery of the hammer barrel 12 when the socket member is slipped onto the barrel. The length of socket member side wall 26 must also be of sufficient length such that the socket member 22 will easily be retained on barrel 12. The internal diameter of bore 34 as well as the length and external diameter of stem 32 are likewise important and must be pre-selected in order to insure proper cooperation with other elements and yield an operative adapter, as will be discussed and become more readily apparent hereinafter.

The adapter includes an actuator means or actuator generally designated by the reference numeral 38. Actuator 38 includes a piston member or piston 40, an elongated shank portion 42 and an annular flange 44 intermediate the ends thereof, which flange 44 intersects piston member 40 and shank portion 42. Piston member 40 terminates in a flat head 46 and shank portion 42 likewise terminates in a flat end portion or end wall 48. Flange 44 is substantially square-shouldered and is bound on one side by a wall 52 and on the opposite side by a wall 54. Shank portion 42 includes an enlarged diameter portion 50 on one end thereof which intersects flange wall 52, the enlarged diameter portion 50 in function adding structural strength and rigidity to the shank portion 42.

In assembly with hammer barrel 12, as best shown in FIG. 1, socket member 22 is adapted to snugly fit the peripheral surface of the hammer barrel with square shaped lug 16 being received in square shaped recess 30. Shank portion 42 of actuator 38 is received within the tool receiving socket 18 in the barrel member with the end of shank portion 42 extending onto barrel chamber 20 such that the end wall 48 of shank portion 42 is positioned in close proximity to reciprocating plunger 14. With the components so assembled, flange wall 52 is seated against the end wall 36 of stem 32. As can plainly be seen in FIG. 1, flange 44 has an external diameter slightly less than the external diameter of stem 32. It will also be apparent from FIG. 1 that the diameter of stem bore 34 must be preselected to provide adequate clearance between the surface of the bore and the periphery of enlarged diameter portion 50 of actuator shank 42.

In this one embodiment of the invention, the socket member 32 and actuator 38 are made of an aluminum alloy, although it will be apparent that both of these components could be made of any other suitable material such as steel. An aluminum alloy has been found to be a most satisfactory material and one which will permit operation of the actuator over an extended period of time without noticeable wear or damage thereto. An aluminum alloy has also been found to be most satisfactory because of its relatively low weight.

A needle scaling head generally designated by the reference numeral 56 is carried by the stem 32 of socket member 22 and, in this particular instance, takes the form of an elongated and substantially cylindrical housing 58 which is open-ended or provided with parts or openings 60 and 62 at opposite ends thereof. Stem 32 is adapted to be slidably received within the open end 60 of housing 58, and the housing 58 at this end is "split" or provided with a longitudinally extending slot 64 therein which affords a yieldable end portion on the housing, this "split" end portion facilitating the reception of stem 32 within the housing. Adjacent the slot 64, casing 58 is provided with a pair of upstanding ears or tabs 66 (only one shown) each of which has a port or hole 68 therein. Holes 68 in ears 66 are adapted to receive or carry a bolt or the like (not shown) which when a nut (not shown) is applied thereto affords a means for tightly affixing or clamping the casing 58 to stem 32.

A needle retainer means or retainer 70 is slidably carried within casing 58 and, in this particular instance, is substantially cup-shaped in configuration. Needle retainer 70 includes an end wall 72, a side wall 74 and a bottom wall 76, the bottom wall 76 being provided with a plurality of spaced ports or apertures 78 therein each of which extends substantially axially of the retainer. Each aperture 78 slidably carries or receives a needle or scaling member 80 each of which in turn is provided with a substantially frusto-conical shaped head thereon. Bottom wall 76 is countersunk or recessed at each aperture 78 therein to provide suitably shaped recesses in one face thereof to accommodate the frusto-conical shaped heads 82 on the needles in order that the needle heads may fit flush with the face of the bottom wall.

Housing 58 at open end 62 is turned inwardly or flanged at 84 to provide a seat for one end of a resilient means or compression spring 86 which is slidably carried within the housing. The opposite end of compression spring 86 is adapted to seat on the bottom wall 76 of needle retainer 70 and in function, the spring constantly urges spring retainer 70 in a direction towards the reciprocating hammer 10. Being so urged towards the hammer 10, the end wall 72 of needle retainer 70 will be constantly urged toward the flange 44 on the actuator 38 and, when the components of the adapter 22 and the scaling head 56 are in the positions shown in FIG. 1, the end wall 72 of the retainer will actually be seated on the wall 54 of actuator flange 44. When viewing the components as shown in FIG. 1, it will also be appreciated that spring 86 will constantly bias wall 52 of actuator flange 44 toward engagement with end wall 36 of stem 32 and will thus constantly bias the actuator shank portion 42 inwardly of the tool receiving socket 18 in a position to be struck by the reciprocating plunger 14.

Piston member 40 of actuator 38 has a preselected diameter, the diameter in this instance being slightly less than the internal diameter of cup-shaped needle retainer 70 so that the piston member is slidably and freely received within the needle retainer. Piston member 40 and side wall 74 of the needle retainer 70 likewise have preselected lengths such that, when the piston member and needle retainer assume the positions shown in FIG. 1, they define a space 88 of predetermined dimensions within the needle retainer between the head 46 of the piston member and the bottom wall 76 of the needle retainer.

A guide means or guide 90 is carried by the housing 58 and, in this particular instance, takes the form of an elongated substantially cylindrical sleeve. The end of sleeve 90 that is positioned on casing 58 is "split" or provided with a longitudinal the extending slot 92 therein and on both sides of slot 92 carries or is provided with a pair of upstanding ears or tabs 94 thereon (only one shown). Each ear 94 is provided with a hole or port 96 therein, the two holes 96 providing a passageway for a bolt or the like (not shown). The bolt is adapted to carry a nut (not shown) which when tightened on the bolt provides a means for rigidly connecting or clamping the guide sleeve 90 to the casing 58. The opposite end of the guide sleeve 90 is provided with a pair of opposed flattened portions 98 thereon (only one shown) which constrict the open end 100 of the guide sleeve, in this particular instance, into a substantially rectangular-shaped configuration (not shown). Open end 100 is constricted into the substantially rectangular shape in order that the ends of the needles projecting beyond the guide sleeve may be retained in a bundle-like assembly so that they may be effectively directed at a surface to be scaled or cleaned.

Since guide sleeve 90 is clamped on housing 58, the position thereof on housing 58 may be selectively varied. The guide sleeve is preferrably clamped on the housing in a position such that the end 100 of the guide sleeve is positioned approximately an inch and a half from the free

or working ends of the needles 80. Guide sleeve 90 is carried on a reduced diameter portion 102 of the housing 58 and, in the position thereof shown in FIG. 1, the end of guide sleeve 90 abuts a beveled shoulder 104 on the housing 58, the beveled shoulder 104 thus serving as a stop.

In assembly and operation, socket member 22 is first slipped onto the end of hammer barrel 12 to assume the position thereon as shown in FIG. 1. In this position, the square shaped lug 16 on the barrel 12 is received within the recess 30 in the socket member and the socket member is snugly retained on the periphery of the barrel 12. The shank portion 42 of actuator 38 is then inserted into hollow stem 32 and into tool receiving socket 18 in the hammer barrel. Shank portion 42 is inserted into tool socket 18 until wall 52 of actuator flange 44 abuts the end wall 36 of stem 32.

The open end 60 of scaling head housing 58 is then slipped onto stem 32 until the end wall 72 of needle retainer 70 is in abutment with wall 54 of actuator flange 44 or until the components of the adapter and the scaling head assume the positions shown in FIG. 1. The scaling head then is rigidly clamped or connected to the stem 32. With the reciprocating hammer, the adapter and the scaling head thus assembled, there is now provided an operative and usable scaling tool which is ready for use by an operator.

To use the scaling tool thus formed, the operator first grasps the socket member 22 with one hand and then grasps the other end of the hammer 10 with the other hand, at the same time pulling the socket member rearwardly or to the right as shown in FIG. 1. This rearward force applied to the socket member 22 will hold the socket member 22 firmly on the barrel 12 and will thus hold all of the components of the scaling tool in operative assembly. As power is supplied to the motor (not shown) of the hammer, the plunger 14 will of course reciprocate and deliver a series of hammer-like blows to the end 48 of actuator shank portion 42. These hammer like blows will be transmitted via the actuator shank portion 42 to the actuator flange 44 which in turn will transmit them to the needle retainer 70. The actuator 38 and needle retainer 70 will be moved to the left as shown in FIG. 1 with each successive blow of the reciprocating plunger 14 but, due to the bias of spring 86, then will constantly be urged to the right between each blow of the plunger. The actuator 38 and spring retainer 70 thus being acted on by the combined forces of the spring and movement of the reciprocating plunger will thus reciprocate in much the same fashion as the plunger 14.

If the needles 80 are not placed in contact with a surface to be cleaned they will not be struck by head 46 of piston member 40 and will thus not be driven axially outwardly of housing 58 and guide sleeve 90. If, however, the ends of the needles 80 are placed in contact with a surface to be cleaned, the heads of the needles will move rearwardly within space 88 and will thereby be placed in a position to be struck by the reciprocating piston member 40. The needles will thus cyclically and repeatedly be struck hammer-like blows by the head 46 of piston member 40 and will be individually impelled outwardly of the housing 58 into contact with a surface to be cleaned or scaled. When striking the surface to be scaled, the needles will loosen any material on such surface and at the same time will by a lateral whipping action remove the material from such surface. When striking the surface to be cleaned, the needles will also have a tendency to bounce rearwardly or axially toward the hammer and thus will be moved axially of the retainer 70 and will move into a position to be again struck by the reciprocating piston member 40. As piston member 40 reciprocates, therefore, the needles will be cyclically and repeatedly driven or impelled outwardly of the housing 58 and guide sleeve 90 into contact with a surface to be cleaned.

Because of the dimensions of piston member 40 and the side wall 74 of needle retainer 70, the length of stroke of the piston member 40 within the needle retainer 70 will be defined by the space 88 and the cleaning action of the needles will be derived solely from the kinetic energy of the needles. In other words, the head 46 of piston member 40 will not be in contact with the heads 82 of the needles as the needles strike the surface to be cleaned. This separation of the head 46 of the piston member 40 and the heads 82 of the needles will prevent the impact forces created by the ends of the needles striking the surface being cleaned from being transmitted through the actuator 38 to the reciprocating plunger 14 and to the motor of the reciprocating hammer. Space 88 thus provides a barrier which prevents the imposition of impact forces on the motor of the hammer.

As the needles become shortened or worn away in use, the position of the guide sleeve 90 on housing 58 can be selectively varied to maintain the desired spacing between the ends 100 of the guide sleeve and the working ends of the needles. When the needles become to short for use, they of course must be replaced and this can readily be done by merely removing the casing 58 from stem 32 which provides ready access to the interior of the needle retainer 70.

An adapter constructed in accordance with the present invention is especially advantageous in that it can readily be made for use with any convention reciprocating hammer by merely pre-selecting the internal diameter of the cup-shaped socket member which is adapted to slidably and snugly fit the barrel of the hammer and can readily be made for use with any needle scaling head by selectively varying the size of the actuator and the size of the hollow stem on the socket member.

It will also be appreciated that another outstanding attribute of the adapter resides in the fact that the cup-shaped socket member with the needles scaling head attached thereto can be readily removed as a unit from the barrel of a reciprocating hammer by merely slipping the unit from the end of the hammer. In other words, the adapter and needle scaling head are not bolted or otherwise rigidly connected to the barrel of the hammer. This feature of the invention is especially desirable in work situations where a surface to be cleaned requires the use of both a needle head and a chisel or the like. The ease with which the adapter and the needle head connected thereto can be removed from the end of a hammer will permit a workman to use both types of tools with a reciprocating hammer while losing very little time in changing from one tool to the other.

Having thus described the one specific embodiment of the invention, it will be appreciated and understood that numerous other structural modifications and adaptations may be resorted to without departing from the scope of the invention as defined by the appended claims.

What is claimed is:

1. An adapter for providing a driving connection and an assemblage between a reciprocating hammer including a barrel with a reciprocating plunger therein and a needle scaling head including an elongated housing with a spring biased needle retainer and needles therein, said adapter comprising:

a socket member slidably and snugly received on the end of the barrel of said hammer;

a hollow stem carried by said socket member; and

an actuator having a piston member thereon received within said needle retainer in said needle scaling head;

said actuator also having an extended shank thereon received within said hollow stem and extending into the barrel of said hammer in a position to be struck by said reciprocating plunger;

said elongated housing of said needle scaling head being rigidly connected to said stem on said socket member whereby the reciprocating movement of said plunger in said barrel is transmitted to said piston member and said piston member impels said needles in said

retainer outwardly of said elongated housing into contact with a surface to be scaled.

2. An adapter for providing a driving connection and an assemblage between an impact hammer having a barrel with a reciprocating plunger and a tool socket therein and a needle scaling head including an elongated housing, a substantially cup-shaped needle retainer slidably carried within said housing, a plurality of needles carried within said retainer and resilient means within said housing urging said retainer and said needles substantially axially of said housing, said adapter comprising:

a socket member slidably and snugly received on the end of the barrel of said hammer;

a hollow stem carried by said socket member extending substantially axially thereof and substantially axially of said tool receiving socket in said hammer; and

an actuator member associated with said socket member including a piston member, an extended shank portion and a flange thereon intermediate the ends thereof intersecting said piston member and said shank portion;

said flange on said piston member being adapted to seat against the end wall of said hollow stem on said socket member and said shank portion extending through said hollow stem and into said tool receiving socket in said hammer in a position to be struck by said reciprocating plunger;

said stem on said socket member being received within one end of said elongated housing of said needle scaling head and said elongated housing being rigidly connected to said stem;

said piston member on said actuator member being slidably received within said cup-shaped needle retainer with the flange on said actuator member being seated on the end wall of said cup-shaped retainer;

said piston member having a pre-selected length such that the head thereof and the bottom wall of said cup-shaped retainer define a space within said cup-shaped retainer of predetermined dimensions;

said piston member being operable on reciprocation of said plunger in said hammer to strike and impel said needles outwardly of said elongated housing into contact with a surface to be scaled;

said resilient means in said elongated housing being operable when acting through said needle retainer and said flange on said actuator member to constantly urge said actuator member in a direction toward said reciprocating plunger within said hammer.

3. An adapter as claimed in claim 2 wherein said socket member and said actuator member are made of aluminum.

4. An adapter as claimed in claim 2 wherein the bottom wall of said socket member is provided with a substantially square-shaped recess therein which accommodates the reception of a similarly shaped projection on the end of the barrel of said hammer, said recess and projection cooperating to prevent relative rotation between said hammer and said socket member.

5. An adapter for providing a driving connection and an assemblage between a reciprocating hammer including a barrel with a reciprocating plunger therein and a needle scaling head including an elongated housing with a spring biased needle retainer and needles therein, said adapter comprising:

a socket member slidably and snugly received on the end of the barrel of said hammer;

a hollow stem carried by said socket member; and

an actuator cooperable with said hollow stem and being operable to provide a driving connection between said hammer and said needles in said head;

said actuator including a piston member and a shank with said piston member being slidably received within said needle retainer and said shank being received within said hollow stem and extending into the barrel of said hammer into operative engagement with said plunger therein;

said elongated housing of said scaling head being received on and rigidly connected to said stem whereby the reciprocating movement of said plunger in said hammer is transmitted to said actuator and said piston member impels said needles outwardly of said housing into contact with a surface to be cleaned.

6. In a needle scaling tool including a reciprocating hammer having a barrel with a reciprocating plunger therein in combination with a needle scaling head including an elongated housing, a needle retainer slidably carried within said housing, needles slidably carried by said retainer and resilient means carried within said elongated housing urging said retainer toward said hammer, the improvement residing in an adapter for providing a universal driving connection and assemblage between said hammer and said scaling head, said adapter comprising:

a socket member carried on the end of said hammer barrel and having internal dimensions to be snugly received thereon;

a hollow stem of pre-selected dimensions carried by said socket member and extending substantially axially thereof and axially of said hammer;

said stem being received within said elongated housing and said housing being rigidly connected thereto; and

an actuator member having pre-selected dimensions slidably received within said hammer barrel, said hollow stem and said elongated housing for providing a driving connection between said reciprocating plunger in said barrel and the needles in said scaling head;

said actuator member including a piston member and a shank portion;

said piston member being slidably received within said needle retainer and said shank portion extending through said hollow stem into said barrel of said hammer in a position to be struck by said reciprocating plunger;

the reciprocating movement of said plunger being transmitted by said piston to said needles whereby said needles are repeatedly and cyclically impelled outwardly of said casing into contact with a surface to be scaled.

7. In a needle scaling tool including an impact device having a barrel with a reciprocating plunger and a tool socket therein in combination with a needle scaling head comprising an elongated housing, a substantially cup-shaped needle retainer slidably carried within said housing, a plurality of needles slidably carried within ports in the bottom wall of said cup-shaped retainer and resilient means carried within said elongated housing urging said retainer axially of said housing, the improvement residing in an adapter for providing a universal assemblage and driving connection between said impact device and said needle scaling head, said adapter comprising:

a socket member carried on the end of the barrel of said impact device;

said socket member being dimensioned to snugly fit the end of said barrel;

a hollow stem of pre-selected dimensions carried by said socket member and extending substantially axially thereof and axially of said barrel;

said needle head being rigidly connected to said hollow stem with said stem being received within one end of said elongated housing; and

an actuator of pre-selected dimensions slidably received within said barrel, said hollow stem and said elongated casing for providing a driving connection between said reciprocating plunger in said barrel and said needles in said scaling head;

said actuator including a piston member and a shank portion and having an annular, square shoulder flange thereon intermediate the ends thereof intersecting said piston member and said shank portion;

said piston member being slidably received within said cup-shaped needle retainer with one wall of angular flange being adapted to seat on the end wall of said

cup-shaped retainer and the opposite wall of said annular flange being adapted to seat on the end wall of said hollow stem;

said piston member having a predetermined length with said annular flange limiting the depth of insertion of said piston member into said cup-shaped retainer;

the head of said piston member and the bottom wall of said cup-shaped retainer defining a space of predetermined dimensions within said cup-shaped retainer;

said shank portion of said actuator extending through said hollow stem and being slidably received within said tool receiving socket within said barrel in close proximity to said reciprocating plunger;

said actuator being movable in one direction upon being struck by said reciprocating plunger and being movable in the opposite direction by said resilient means within said elongated housing;

said piston member being operable when driven by said reciprocating plunger to impel said needles axially outwardly of elongated housing into contact with a surface to be cleaned;

said defined space within said cup-shaped retainer permitting movement of said needles within said cup-shaped retainer axially outwardly of said housing beyond the head of said piston and thereby preventing the imposition of impact loads on said actuator and said plunger when said needles strike said surface to be cleaned.

8. In a needle scaling tool as claimed in claim **7** wherein said socket member and said actuator are made of aluminum.

9. In a needle scaling tool as claimed in claim **7** wherein the bottom wall of said socket member is provided with a substantially square-shaped recess therein which accommodates the reception of a similarly shaped projection on the end of the barrel of said hammer, said recess and projection cooperating to prevent relative rotation between said hammer and said socket member.

10. A scaling tool comprising a reciprocating hammer;

socket means slidably carried by said hammer;

housing means carried by said socket means;

needle retainer means slidably carried within said housing means;

needle means slidably carried by said retainer means;

resilient means carried within said housing urging said retainer means in one direction; and

actuator means slidably received within said hammer, said socket means and said housing means for drivingly connecting said hammer and said needles in said retainer means;

said actuator means being movable against the bias of said resilient means in the opposite direction and being operable to repeatedly and cyclically drive said needles into contact with a surface to be cleaned.

11. A scaling tool comprising a reciprocating hammer having a barrel with a reciprocating plunger therein;

a socket member slidably and snugly carried on the end of said hammer;

a hollow axially extending stem carried by said socket member;

an elongated open-ended housing carried by said hollow stem;

said stem extending into one end of said housing and said housing being rigidly connected to said stem;

a substantially cup-shaped needle retainer slidably carried within said elongated housing;

a plurality of needles slidably carried by said cup-shaped retainer;

resilient means carried within said elongated housing for urging said cup-shaped needle retainer toward said hammer; and

an actuator slidably received within said barrel, said hollow stem and said elongated housing for drivingly connecting said reciprocating plunger and said needles in said cup-shaped retainer;

said actuator including a piston member and a shank portion with said piston member being slidably received within said cup-shaped needle retainer and said shank portion extending through said hollow stem and being received within said barrel of said hammer in a position to be struck by said reciprocating plunger;

said actuator being operable upon reciprocating movement by said plunger to repeatedly and cyclically impel said needles outwardly of said elongated housing against the bias of said resilient means into contact with a surface to be cleaned.

12. A scaling tool comprising a reciprocating hammer having a barrel with a reciprocating plunger and a tool receiving socket therein;

a socket member slidably and snugly carried on the end of said hammer;

a hollow stem carried by said socket member and extending substantially axially thereof and substantially axially of said tool receiving socket in said barrel;

an elongated open-ended housing carried by said hollow stem;

said hollow stem extending into one end of said housing and said housing being rigidly connected to said stem;

a substantially cup-shaped needle retainer slidably carried within said elongated housing;

said cup-shaped retainer being provided with a bottom wall having a plurality of ports therein;

a plurality of needles slidably received within said ports in said bottom wall of said cup-shaped retainer;

a spring carried within said elongated housing for urging said cup-shaped retainer axially of said housing in a direction toward said hammer; and

an actuator slidably received within said tool receiving socket, said hollow stem and said elongated housing for drivingly connecting said reciprocating plunger in said hammer and said needles in said cup-shaped retainer;

said actuator including a piston member, an extended shank portion and a flange thereon intermediate the ends thereof intersecting said piston member and said shank portion;

said piston member being slidably received within said cup-shaped needle retainer with one wall of said flange on said actuator being seated on the end wall of said cup-shaped retainer;

the opposite wall of said flange on said actuator being adapted to seat against the end wall of said hollow stem with said shank portion of said actuator extending through said hollow stem and into said tool receiving socket in said hammer in a position to be struck by said reciprocating plunger;

said piston member having a pre-selected length such that the head thereof and the bottom wall of said cup-shaped retainer define a space within said cup-shaped retainer of predetermined dimensions;

said space within said cup-shaped retainer permitting movement of said needles within said retainer substantially axially thereof;

said piston member being operable upon reciprocation of said plunger in said hammer to repeatedly and cyclically strike and impel said needles outwardly of said elongated housing into contact with a surface to be cleaned;

said spring in said elongated housing being operable when acting through said needle retainer and said flange on said actuator to constantly urge said actuator in a direction toward said hammer.

13. An adapter as claimed in claim **12** wherein said socket member and said actuator are made of aluminum.

14. A needle scaling tool as claimed in claim 12 wherein the bottom wall of said socket member is provided with a substantially square shaped recess therein which accommodates the reception of a similarly shaped projection on the end of the barrel of said hammer, said recess and said projection cooperating to prevent relative rotation between said hammer and said socket member.

15. A needle scaling tool as claimed in claim 12 wherein a guide sleeve is slidably carried by said elongated housing:

said guide sleeve being axially adjustable relative to said elongated housing and being operable to hold said plurality of needles in a bundle-like assembly.

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