



US006849837B2

(12) **United States Patent**  
Riess et al.

(10) **Patent No.:** US 6,849,837 B2  
(45) **Date of Patent:** \*Feb. 1, 2005

(54) **METHOD OF ADHESIVE BONDING BY INDUCTION HEATING**  
  
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(\* ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **10/661,655**

(22) Filed: **Sep. 12, 2003**

(65) **Prior Publication Data**

US 2004/0050839 A1 Mar. 18, 2004

**Related U.S. Application Data**

(60) Continuation of application No. 10/302,158, filed on Nov. 22, 2002, now Pat. No. 6,639,197, and a continuation of application No. 10/302,692, filed on Nov. 22, 2002, now Pat. No. 6,710,314, which is a division of application No. 09/705,282, filed on Nov. 2, 2000, now Pat. No. 6,509,555.

(60) Provisional application No. 60/163,301, filed on Nov. 3, 1999.

(51) **Int. Cl.**<sup>7</sup> ..... **H05B 6/10**

(52) **U.S. Cl.** ..... **219/634**; 219/633; 219/645

(58) **Field of Search** ..... 219/600-603, 219/618, 633-635, 645; 156/272.2, 272.4, 275.1, 275.3; 428/516-519, 521, 523

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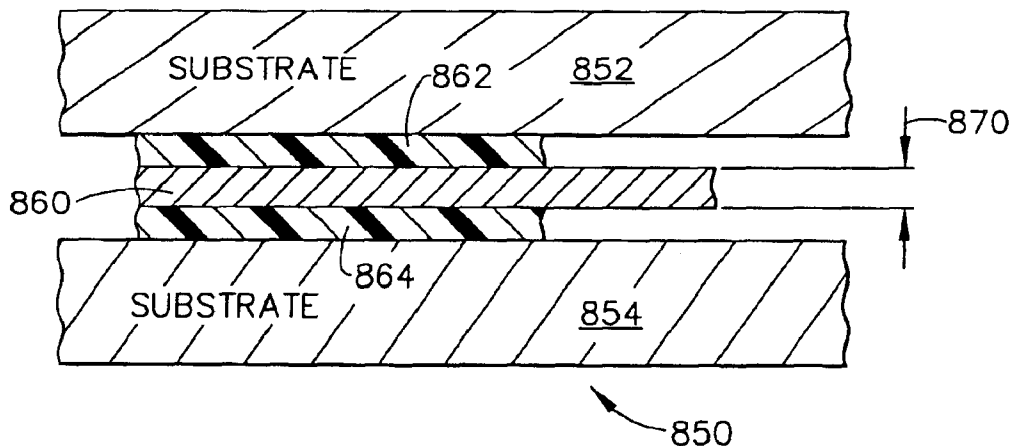
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(57) **ABSTRACT**

A method for using magnetic fields to heat magnetically susceptible materials within and/or adjacent to adhesives, so as to bond, bind, or fasten solid materials to one another. The system uses alternating magnetic fields that induce eddy currents and generate heat within susceptors. An induction heating tool is used to emit the magnetic field at its work coil, and an electronic controller measures the energy being used by a power converter that generates the alternating current driving the work coil which creates the magnetic field. The heating tool is used in a method of adhesive bonding in which the thickness of the conductive layer of the susceptor is in the range of 0.01-3.0 mils, or the heating event time interval is in the range of 0.05-10.0 seconds, or the average power density of the magnetic field at the susceptor is in the range of 10-5000 Watts per square inch.

**20 Claims, 26 Drawing Sheets**



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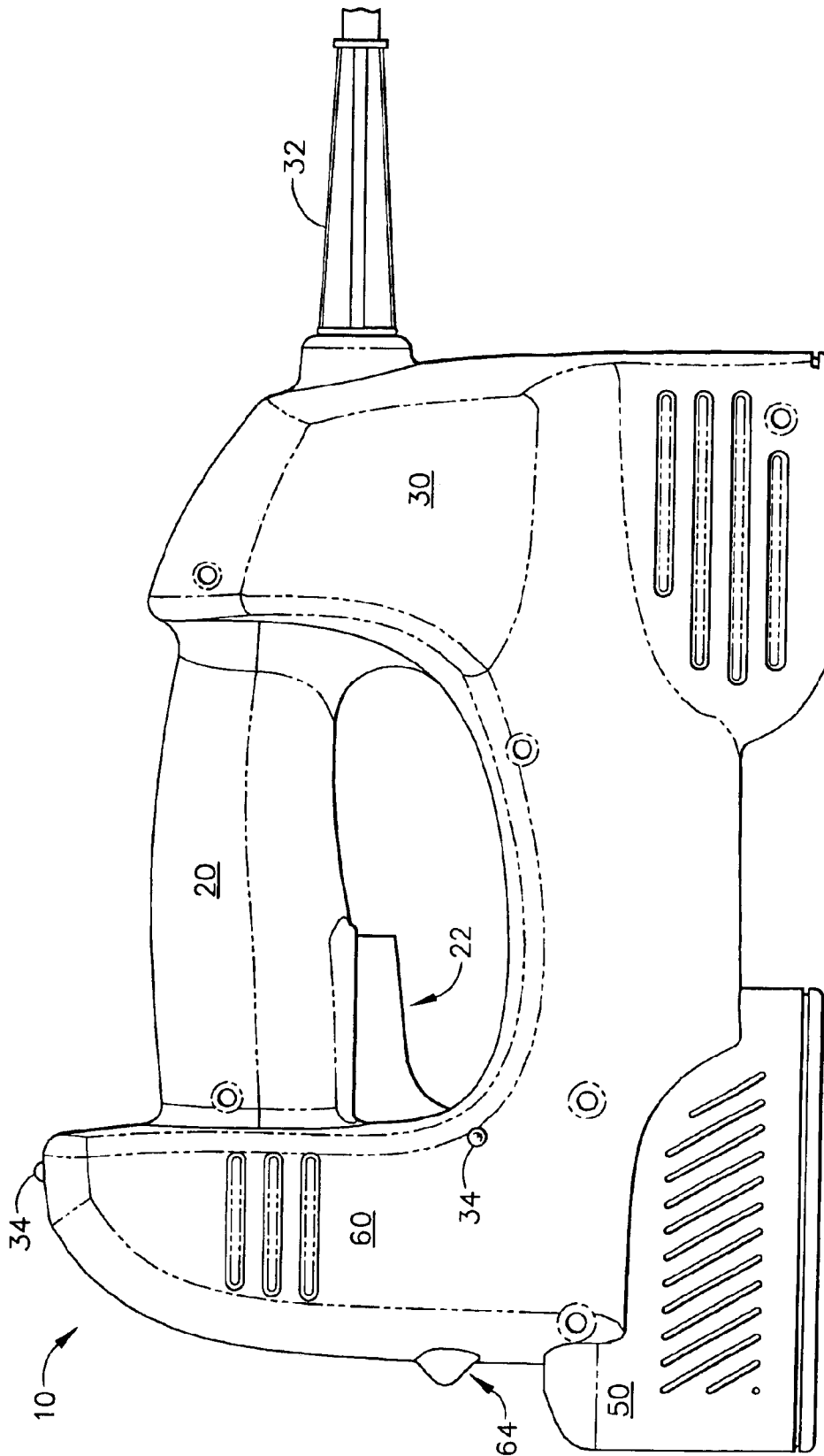


FIG. 1

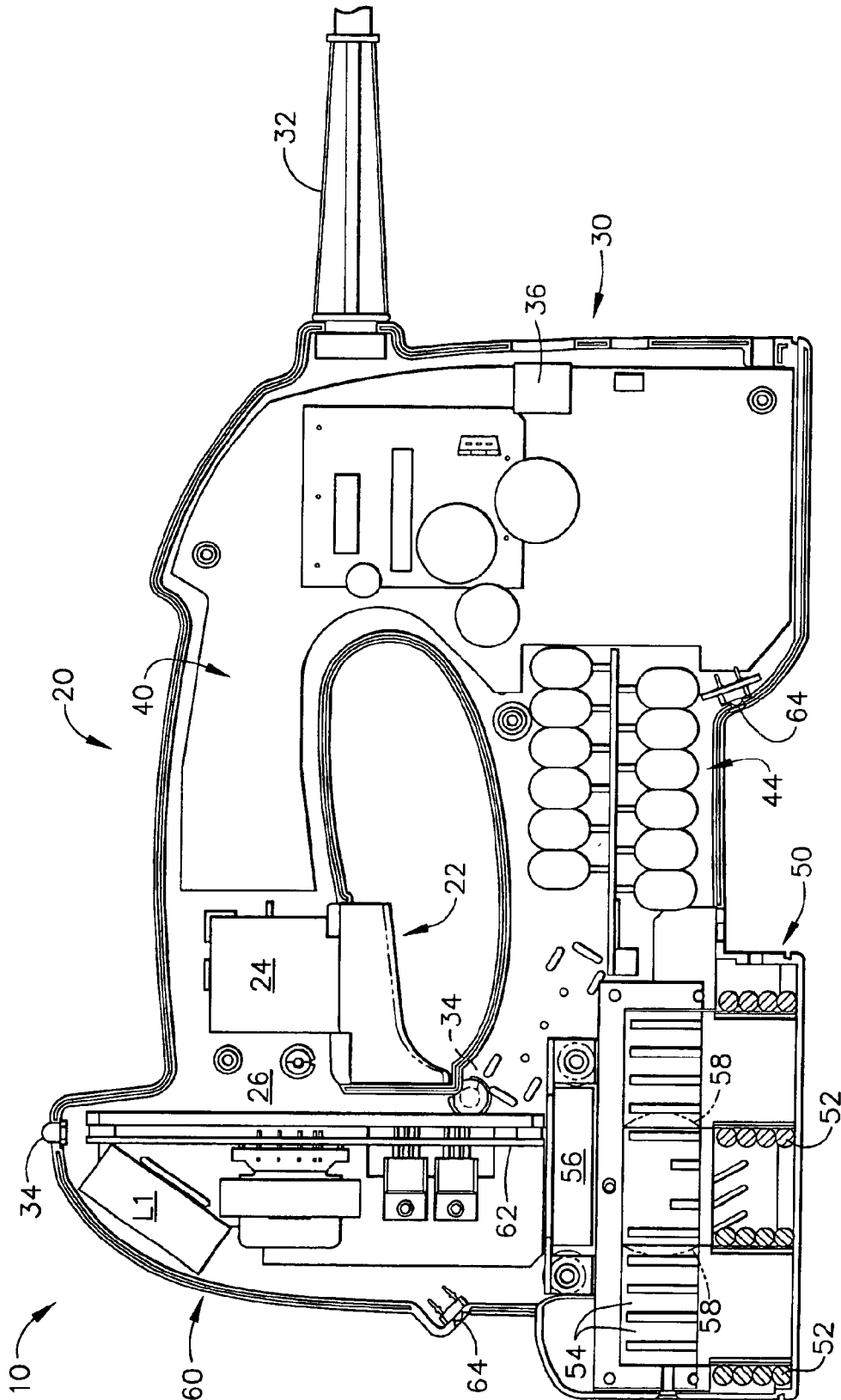


FIG. 2

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