

[54] VIBRATING SANDER

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[56] References Cited

UNITED STATES PATENTS

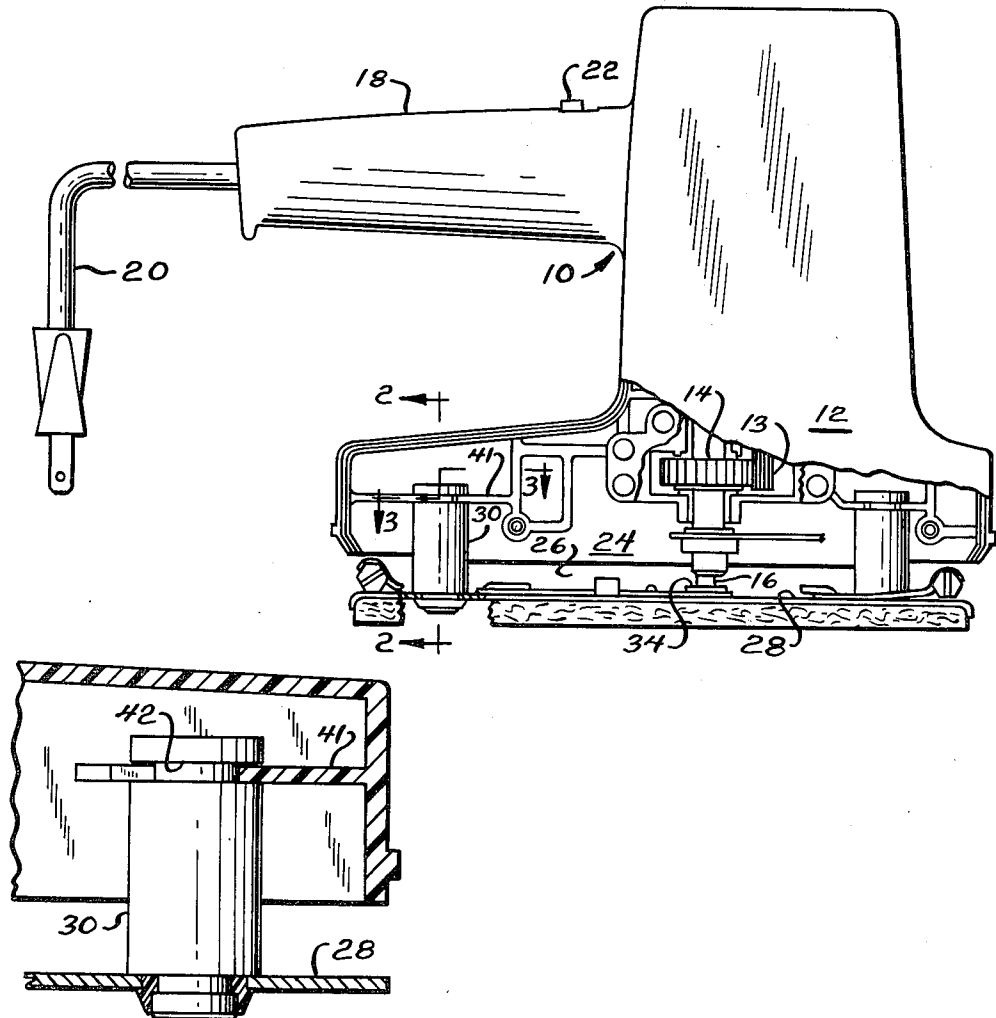
2,517,548	8/1950	Dobson.....	51/170 TL
2,775,076	12/1956	Roods.....	51/170 MT
2,885,833	5/1959	Neff.....	51/170 MT
3,200,694	8/1965	Rapata.....	24/214
3,551,963	1/1971	Mosker.....	24/213 CS

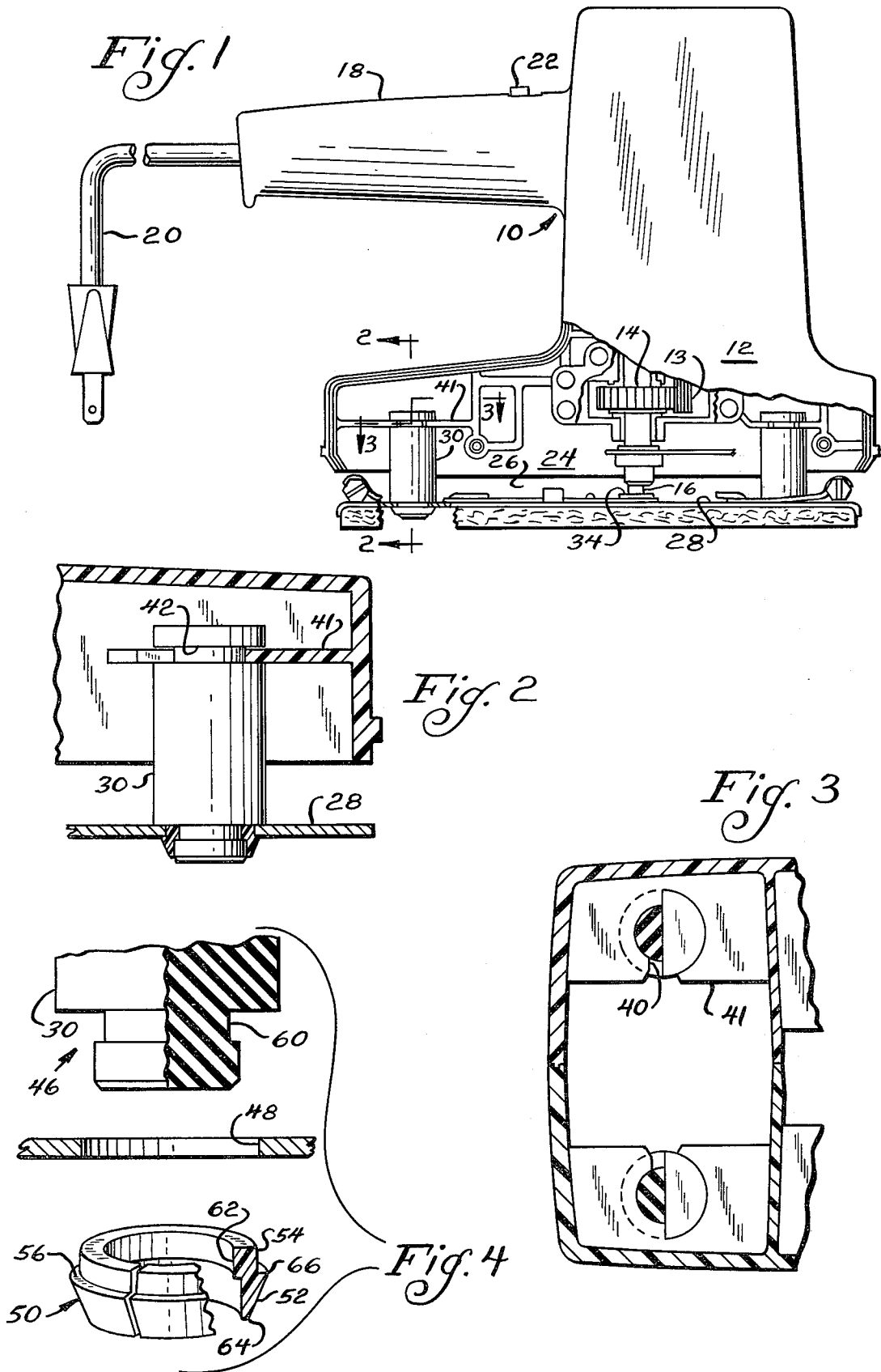
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[57] ABSTRACT

A vibrating sander having a housing and a platen supported from the housing by resilient posts, the invention being means for securing the posts relative to the housing and/or the platen, comprising each post being larger than an opening in the platen and/or housing except for a necked down end thereof which can fit freely through the opening, and a resilient although hard material split ring clamp that fits over the post end and means cooperating between the post and clamp to secure them together, the clamp having a tapered exterior face that can be wedged through the platen opening upon collapsing clamp deformation and the clamp further having a shoulder at the inward large end of the tapered face and a reduced diameter section inwardly adjacent the shoulder operable upon the tapered face clearing the platen opening to expand against the platen and physically lock the clamp and secured post relative to the platen.

5 Claims, 4 Drawing Figures





VIBRATING SANDER

In a typical vibrating sander, a platen is supported from a housing by means of flexible corner posts so that the platen can oscillate relative to the housing, and a power source, such as an electric motor mounted within the housing is connected by appropriate eccentric linkage or the like with the platen operable to oscillate the platen relative to the housing. The posts are typically formed of a molded rubber of sufficient resiliency and strength to support the work side surface of the platen firmly against the surface to be smoothed while yet accommodating the controlled forced platen oscillation.

This invention relates specifically to a reliable but economic means for removably connecting the resilient support posts between the housing and the platen.

A typical prior art manner of providing such a connection has been to integrally mold within the post a seat for a threaded bolt and to thereby connect the post to the housing or platen with this bolt connection. Although this is quite reliable in operation, the high cost of manufacturing the multiple component post and further of assembling the post in place makes this economically unattractive, particularly in a low end tool line. Another known manner of connection uses a movable slide instead of a bolt which can be secured to the platen for example and which has a cooperating key hole configuration opening for receiving and trapping a projected enlarged end of the post; but there again the post has imbedded within it the metallic component which forms the engaging seat against the slide member. These constructions are illustrated at the opposite ends of the posts shown in U.S. Pat. No. 2,775,076 issued to J. F. Roods.

The advantages and detailed construction of this invention will be clearly understood upon reviewing the accompanying drawing wherein:

FIG. 1 is a side elevational view of a typical vibrating sander incorporating a preferred embodiment of this invention;

FIG. 2 is an enlarged view showing only the cooperation of the posts as connected between the housing of the sander and the platen, as seen generally from line 2-2 in FIG. 1;

FIG. 3 is a sectional view as seen generally from line 3-3 in FIG. 1, and

FIG. 4 is an exploded view partly in perspective of the post and clamp components used in the subject invention.

In the drawing, an electric vibrating sander 10 illustrated has a housing 12 which encloses a motor with an output shaft 13 connected through a gear train 14 to an output eccentric pin 16. A housing handle 18 encloses an infeed power cord 20 connected to the tool motor through on-off switch 22 located in the handle. The housing 12 has continuous side walls 24 which terminate in an opening 26 and a platen 28 is supported by post 30 in generally aligned spaced relationship from the housing adjacent the opening 26. The posts are of molded rubber to be resilient to allow lateral flexure so that the platen can move relative to the housing generally in a direction parallel to the bottom edges of the side walls 24. The posts also are of sufficient cross section and strength to hold the platen in controlled spaced proximity to the housing while yet accommodating the forced rather high frequency platen oscillation

during normal tool operation. In practice, a 1 inch effective separation between the post mounting to the housing and platen operates satisfactory with four approximately inch outer diameter cylindrical posts, where each post has a diameter hardness of 65 plus or minus 5.

The eccentric pin 16 is mounted to rotate about an axis generally perpendicular to the platen, and the platen has a bearing 34 which complementarily receives the eccentric pin 16 and this provides a connection between the housing power unit and the platen. How the connection is made between the bearing and platen determines whether the platen movement is generally front to rear in the direction of the handle, in which case the unit is considered a straight line sander, or is randomly circular following generally the throw of the eccentric, in which case the unit is considered an orbital sander. Each type drive connection is rather well known in the art and varies typically on whether the bearing connection is rigid to or floats laterally only of the platen, and any suitable operating mechanism would be satisfactory.

The particular invention relates to the manner of the connection of the post 30 relative to the platen and/or housing. It is noted that each post is of a molded flexible or resilient rubber material only, thus being homogeneous or otherwise having no metallic or hard plastic parts molded therein that might form a seat for attachment of a screw or other locking device. Instead, the connection of each post to the housing and/or to the platen is provided only by means to be described now. The connection of each post to the housing is provided by the cooperation of a key-hole opening 40 formed in a housing web 41 receiving and holding a neck down post recess 42. The enlarged key hole opening is just about the same size as the necked down recess, but the neck of the opening is smaller than the post recess to require some post compression to have the post pass the neck.

The connection of the post to the platen is provided by having a necked down end 46 which would otherwise fit freely through an opening 48 in the platen and keying a separate locking split ring clamp 50 to the post end 46 which in effect then acts as part of the post. The clamp has a tapered nose 52 that can be fitted through the opening 48 from the housing side, and further has a smaller diameter cylindrical land area 54 that allows the clamp to expand against the periphery of the opening 48 where a radial shoulder 56 on the clamp then engages the work side face of the platen to unite the clamp to the platen. Specifically, the post end 46 has a recess 60 and the clamp 50 has an inwardly projecting ledge 62 of approximately the same width as the recess 60, which ledge fits into the recess to secure the clamp to the post when the clamp is positioned over the reduced post end. The clamp 50 itself is split and is formed of durable material such as nylon which has a certain degree of flexibility to allow the same to be positioned on the post, and when then so positioned the clamp ends are separated. The tapered clamp nose 52 is further such that end edge 64, even in the normal clamp open condition, is smaller than the platen opening 48 to be easily fitted into the opening; whereas nose edge 66, at the shoulder 56, is normally larger than the opening; but the clamp can be deformed to almost where the clamp ends abut to allow the clamp to be wedged through the opening 48.

When positioned on the post end the clamp resists deformation from its normal open position because of its resiliency as well as the required compression of the underlying post end. However, with the clamp positioned on the post, it can be biased under sufficient force axially of the post from the housing side of the platen into the opening 48, which cams the clamp smaller to allow nose edge 66 to slip past the periphery of the platen opening 48. In typical assembly of the sander, the posts are initially secured to the housing within the key hole openings and the plastic end clamps 50 are located on the free post ends 46. With the housing nested in an inverted position in a cradle or fixture, the platen 28 is then advanced toward the housing opening and the eccentric pin 16 brought in registry with the platen bearing 34 and the post nose portions 52 within the platen openings 48. Thereafter a sufficient closing movement of the platen toward the housing snaps the clamps past the platen and secures the platen to the housing, and in this regard a light mallet can be used to strike the platen to produce this required platen movement with little effort required of the assembler.

By manually squeezing each clamp until the shoulder 56 will clear the opening, the platen can be removed from the posts.

I claim:

1. In a vibrating sander having a housing and a platen and flexible posts secured therebetween movably supporting the platen, and power means carried in the housing operable to oscillate the platen relative to the housing, the improvement being the connection of the posts to the platen, comprising for each post being of resilient rubber only and the combination of the platen having a receiving opening and the post having a main portion of cross section larger than the opening and an end portion sized slightly smaller than the opening suited to be positioned completely through the opening and the end portion further having adjacent the post main portion a necked down recess portion of smallest cross section, and a split ring clamp adapted to be snapped over the post end portion and having an inwardly directed ledge which is received snugly in the necked down post recess portion to hold the clamp relative to the post, the clamp further having an exterior nose which substantially overlies the remainder of the post end portion and tapers from a nose end which is smaller than the platen opening to the opposite end which is larger than the platen opening but capable of

being deformed smaller upon and incident to axially wedging of the tapered nose into and through the opening from the housing side of the platen whereupon the post main portion abuts the platen, and the clamp still further having a reduced diameter section terminating at a shoulder facing away from and inwardly adjacent the larger nose end suited upon the larger clamp end being wedged through the platen opening to shift outwardly whereupon the shoulder abuts the workside platen face to physically lock the clamp and the underlying confined post relative to the platen.

2. A combination according to claim 1, wherein the post is flexible and is of a molded rubber having a diameter of approximately 65 plus or minus 5.

3. A combination according to claim 1, wherein further the post has an exterior dimension of the order of three-quarter inch in diameter and has an effective length of the order of 1 inch.

4. A combination according to claim 1, wherein the clamp is of plastic or other hard but flexible material.

5. In a vibrating sander having a housing and a platen and flexible posts secured therebetween movably supporting the platen, and power means carried in the housing operable to oscillate the platen relative to the housing, the improvement being the connection of the posts to the platen, comprising for each post the combination of the platen having a receiving opening and the post being of resilient rubber only and having an end portion sized slightly smaller than the opening suited to be positioned completely through the opening, a split ring clamp adapted to be snapped over the post end portion, means cooperating to hold the clamp relative to the post, the clamp having an exterior nose which substantially overlies the post end portion and tapers from a nose end which is smaller than the platen opening toward the opposite end which is larger than the platen opening but capable of being deformed smaller upon and incident to axially wedging the tapered nose into and through the opening, the clamp further having a reduced diameter section terminating at a shoulder facing away from and inwardly adjacent the larger nose end suited upon the enlarged clamp end portion being wedged through the platen opening to shift outwardly whereupon the shoulder abuts the platen to prevent withdrawal of the underlying confined post from the platen.

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