April 5, 1949. P. H. VAN DEN HOVE, JR 2,466,516

GRAINING MACHINE HAVING A VIBRATORY TABLE

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Fig. 1.

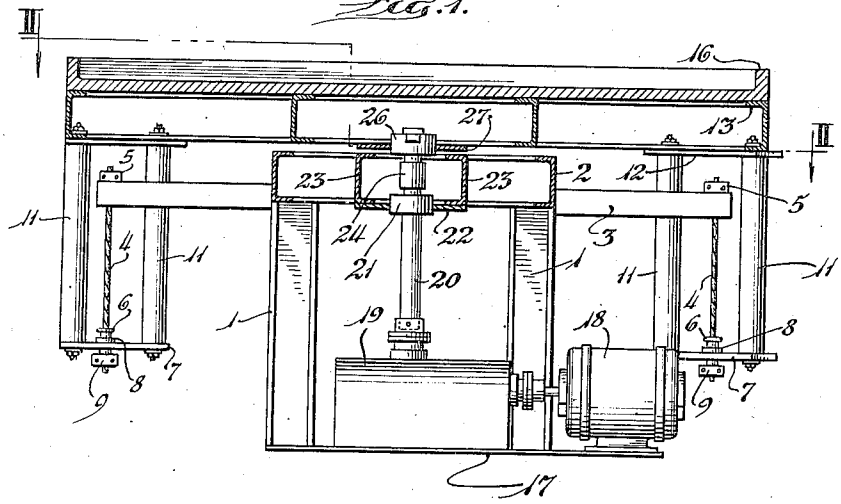
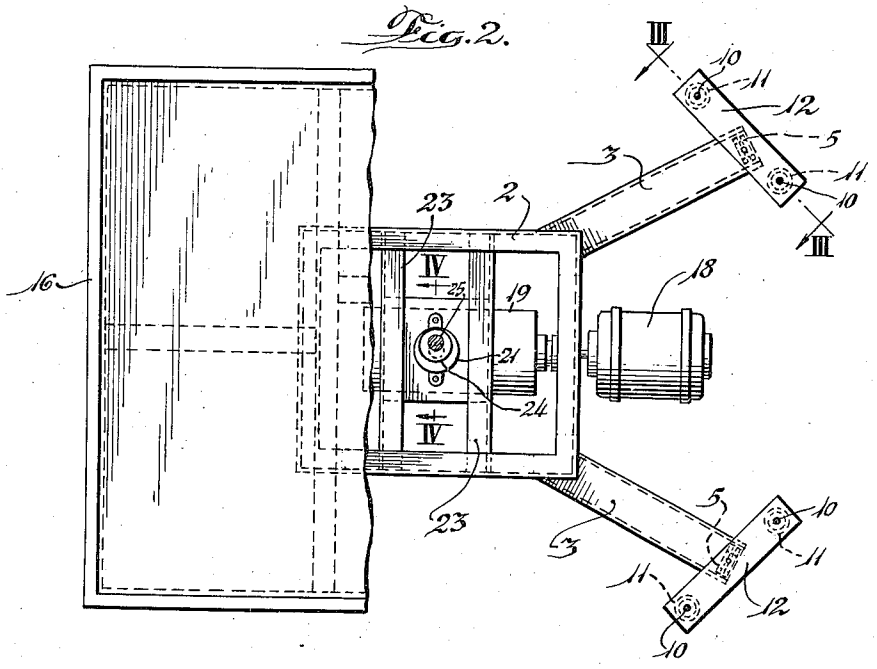


Fig. 2.



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Fig. 3.

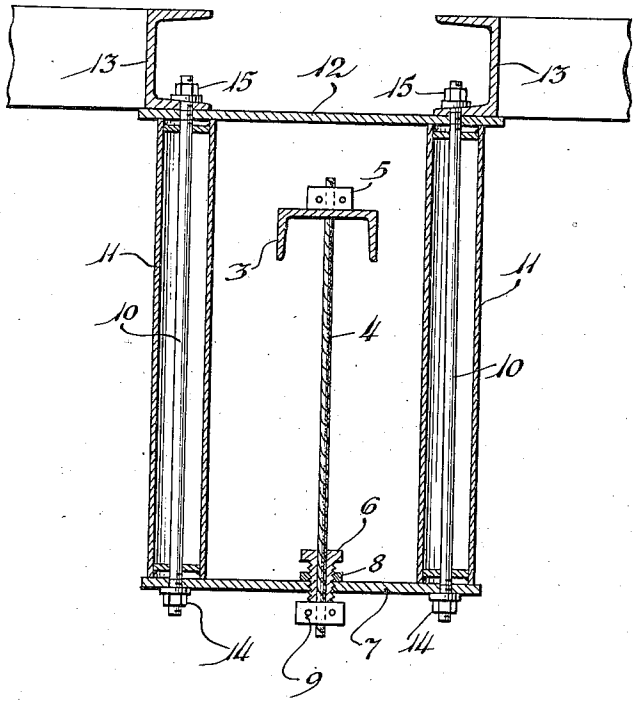
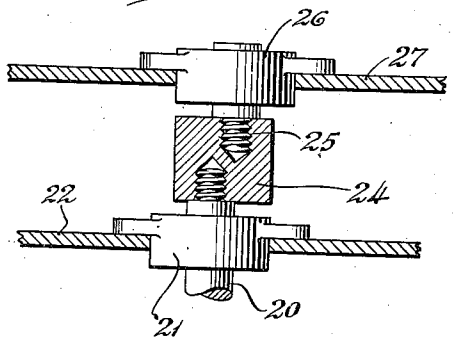


Fig. 4.



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GRAINING MACHINE HAVING A VIBRATORY TABLE

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4 Claims. (Cl. 51—6)

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The invention relates to a graining machine having a vibratory table and of the kind used for polishing zinc or aluminium plates in the printing trade. The invention more particularly relates to the means for supporting the table to enable the vibratory motion to be attained.

There are already known vibratory graining machines in which the vibratory table is suspended from the ceiling. Such machines are no longer in use, because it was found in actual practice that the cables or chains by means of which the table is suspended will cause trouble when large plates are introduced. The said machines, moreover, cannot be used everywhere, as there is not always provided a sufficiently strong roof or ceiling construction for absorbing the vibrations produced. If there is any possibility of the production of phenomena of resonance, suspension from the beams of the ceiling or the roof is entirely out of the question.

A machine frequently used nowadays is a machine of the type in which the table is supported by four steel balls running in cups made of tempered steel. The graining means mixed with water may penetrate into these cups, whereby the said cups will wear out much sooner. Because of this the cost of repairs and renewals will be very high.

These known machines, moreover, require two eccentrics.

In another machine the corners of the table are connected by tension springs to points of the stationary frame. In this case only one eccentric is used, but the table is also supported by means of balls, with all the disadvantages connected therewith.

According to the invention the drawbacks of the known machines are obviated by the fact that the table is movably suspended from a stationary frame located under the said table by means of cables, chains or similar means connecting the frame to portions of supports located underneath the said frame and attached to the said table.

The machine according to the invention still has another advantage in that it will take very little time to keep the same in good condition, since practically the only parts that may have to be renewed, i. e. the cables or the chains may be replaced in a very short time by an unskilled worker.

The invention will now be further explained by means of the drawing in which

Fig. 1 is a vertical sectional view in the median plane of the device;

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Fig. 2 is on the left hand side a plan view and on the right hand side a horizontal sectional view in the plane II—II in Fig. 1;

Fig. 3 is a section in the plane III—III in Fig. 2;

Fig. 4 is a section in the plane IV—IV of a detail in Fig. 2.

The support is formed by a stationary framework composed of channel-section metal members, which frame consists of four columns 1 by which a rectangular frame 2 is supported. This frame is provided at the four corners with beams 3 extending in the four diagonal directions. Each beam 3 is provided at each free end with a bore through which is passed a cable 4 on the end of which that extends above the said beam there is provided a clamping device 5 consisting of two clamping plates held together by means of bolts. At the lower end the cable is passed through a bush 6 which is externally screw-threaded.

The said bush 6 is screwed into an opening provided in a bar or strip 7 in which the bush is secured by means of a lock nut 8 fitted on the said bush.

On the end of the cable 4 protruding at the lower end of the bush 6 there is also provided a clamping device 9.

The bar or strip 7 is rigidly connected with a second strip 12 by means of tension bolts 10 and distance spacing tubes 11 passed through openings in the ends.

On the said strips 12 there is arranged a rectangular frame 13 made of channel section members connected to the bars 12, by passing the upper ends of the draw bolts 10 through openings in the lower flanges of the members of the frame 13, so that the nuts 14 and 15 on the end of the tension bolts 10 will connect the frame 13 rigidly to the bars 7.

The frame 13 serves as a supporting frame for the box 16 in which the plates to be grained are deposited.

It is evident that the frame 13 with the box 16 is able to rock to and fro or vibrate on account of the flexible connection to the beams 3 by means of the cables 4.

In order to effect this rocking or vibratory movement an electric motor 18 is provided on the base plate 17, which motor by means of a reduction driving gear enclosed in a gear case 19 will drive a vertical shaft 20 (see Fig. 4).

This shaft 20 is supported at its upper end in a ball bearing 21 attached to a plate 22 which is connected to the frame 2 by means of two transverse beams 23. On the threaded end of the shaft 20 there is screwed a crank block 24 into the upper

end of which there is screw threaded an eccentric pin **25**. This pin is passed into a ball bearing **26** which is attached to a plate **27** (Fig. 1) secured to the bottom of the vibratory frame **13**.

It is evident that the rotation of the shaft **20** will impart a vibratory motion in a horizontal direction to the frame **13** with the box **16** suspended on the cables **4**. By turning the bushes **6** the distance between the bars **7** and the frame **3** may be correctly adjusted.

In a preferred embodiment the frame is composed of pipes or tubes which are mutually connected and connected with the tubes **11** by welding, in which case the draw bolts may be omitted. The lower and/or the upper ends of the cables **4** may be secured in externally screw, threaded bushes passed through an opening in the bars **7** or in the beam **3** and secured by means of nuts screwed on the bushes on each side of the strips or bars **7** or beam **3**.

It may be finally observed that the action of the machine may be modified at will by making the length of the crank stroke variable.

I claim:

1. In a graining machine having a vibratory table and means for imparting a vibratory motion to the table, the combination of a stationary frame located under the table, depending means secured to the table and projecting below the top of said frame, and nonrigid means secured to said frame and to said depending means thereby movably suspending the table from said frame.

2. In a graining machine having a vibratory table and means for imparting a vibratory motion to the table, the combination of a stationary frame located under the table, horizontally disposed members projecting outwardly from said frame toward the periphery of the table, rigid members secured to and depending from said table adjacent each of said horizontally projecting members, and nonrigid means interconnecting each horizontally projecting member with the adjacent depending member thereby movably suspending the table from said frame.

3. In a graining machine having a vibratory table and means for imparting a vibratory motion to the table, the combination of a stationary frame located under the table, horizontally disposed members projecting outwardly from said frame toward the periphery of the table, rigid members secured to and depending from said table adjacent each of said horizontally projecting members, and nonrigid means interconnecting the outer end of each horizontally projecting member with the lower end of each adjacent depending member thereby movably suspending the table from said frame.

4. In a graining machine having a vibratory table and means for imparting a vibratory motion to the table, the combination of a stationary frame located under the table, horizontally disposed members projecting outwardly from said frame toward the periphery of the table, rigid members secured to and depending from said table adjacent each of said horizontally projecting members, and nonrigid means interconnecting each horizontally projecting member with the adjacent depending member thereby movably suspending the table from said frame, said interconnecting means including means for adjusting the distance between said frame and the table.

PIETER HENDRIK VAN DEN HOVE, JR.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
563,757	Estabrook	July 14, 1896
2,038,352	Fritsche	Apr. 21, 1936

FOREIGN PATENTS

Number	Country	Date
574,224	Germany	July 17, 1933