Jan. 6, 1953 W. R. PEUGNET 2,624,577

PAPER JOGGING MACHINE

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FIG. 1

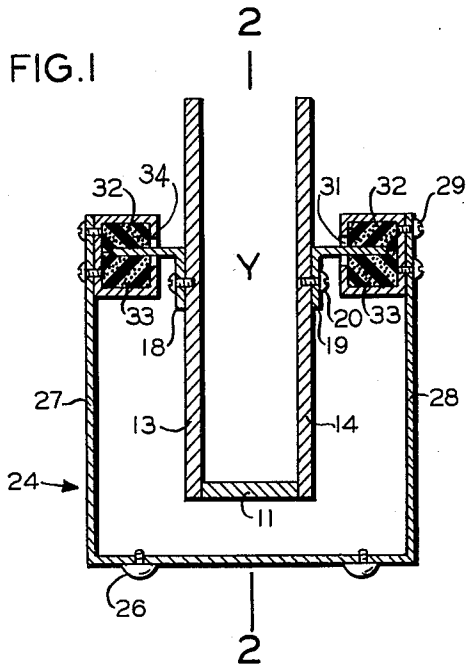


FIG. 3

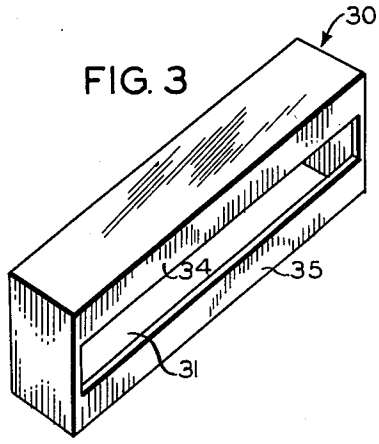
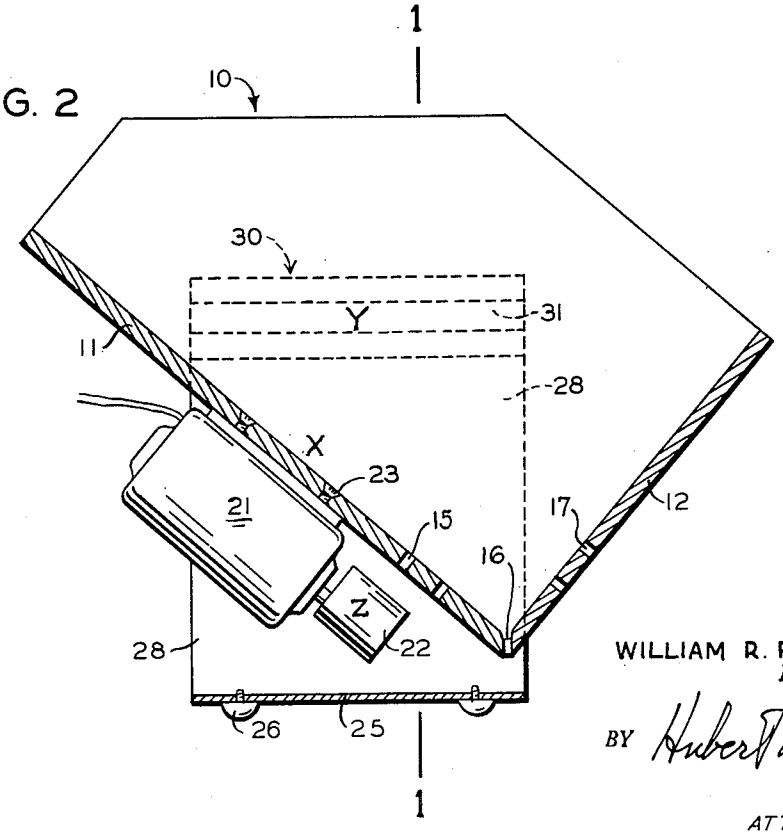


FIG. 2



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PAPER JOGGING MACHINE

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4 Claims. (Cl. 271—89)

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This invention relates to vibratory apparatus and more particularly to a mechanical jogger for receiving and quickly aligning the edges of a stack of like sized sheet stock, such as paper sheets.

While the general idea of paper jogging machines is not new, presently available machines have certain disadvantages which are eliminated by my machine.

One important object of my invention is to provide a jogger which holds the stack of paper being jogged, thus eliminating the present day requirements that the operator hold the paper and that the operator have considerable skill to do so properly.

Another object is to provide a jogger which is light in weight and easily portable as opposed to commonly available joggers weighing from 100 to 250 lbs., yet which will properly collate a given amount of paper sheets in less time than presently available joggers. This reduction in weight is made possible by isolating the vibrations in the paper holding cradle, thus eliminating the necessity of providing an extremely heavy base to absorb the vibrations.

A second object is to provide a jogger which is so constructed and designed as to impart extremely rapid extremely short vibratory and rocking motions to the paper holding cradle, primarily due to the type and relative location of the cradle suspension, and to the location of the vibratory power unit used.

Still another object is to provide a jogger which automatically ejects paper dust and cuttings from the cradle as it operates, thus eliminating the accumulation of such debris and its consequent interference with the proper jogging or collating of the paper sheets.

Another object is to provide a novel means of resiliently suspending the paper holding cradle to obtain more rapid spring back, or return of the cradle toward its normal at rest position during each vibratory cycle, without transmitting violent vibrations to the table, desk or other support on which the unit is operating.

General description

Generally my jogger includes a hollow paper holding cradle having a bottom wall and an end wall which meet at right angles, and two parallel upright side walls. A power operated vibrator is mounted exteriorly on the bottom wall of this cradle approximately midway between its ends, with the rotational axis of the vibrator substantially parallel to the bottom wall. The cradle and its attached vibrator form a cradle assembly

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which is resiliently suspended and supported in space between two upright sides of a rigid hanger, which is adapted to be supported on a desk or table. The suspension occurs along a substantially horizontal plane which passes through the cradle unit above its center of gravity, and which extends fore and aft of its center of gravity. When the cradle is properly suspended in accordance with this invention, its bottom wall is inclined with relation to the horizontal. The center of gravity of the cradle assembly, the center of vibratory forces created by the vibrator, and the center of cradle suspension lie in a common vertical longitudinal plane, and lines connecting them would form a triangle in that plane. The center of suspension lies in substantial vertical alignment with the center of vibratory forces, and both are spaced slightly forward or rearward from the center of gravity. Since the vibratory forces are created by a weight mounted eccentrically on one end of the shaft of an electric motor, the forces are lateral or transverse, as well as in a vertical plane.

As a result of the described cradle suspension and vibrator mounting, the vibratory motion imparted to the cradle varies at different points and is extremely effective in quickly aligning the edges of a large stack of paper sheets. The motion produced at the upper or aft end of the paper supporting bottom of the cradle is almost entirely a transverse or lateral reciprocating motion. The motion produced at the upper or forward end of the cradle end wall is almost entirely vertical reciprocating motion. The motion produced at the junction of the bottom and end walls is substantially circular, and in a plane which is substantially parallel to the inclined end wall of the cradle. It is therefore evident that this suspension permits motion of the cradle in three planes.

The invention will be more clearly understood when the following detailed description is read in connection with the accompanying drawing, in which:

Fig. 1 is a lateral sectional view through a jogger embodying my invention, and is taken along the line 1—1 of Fig. 2;

Fig. 2 is a longitudinal sectional view through the jogger, and is taken along the line 2—2 of Fig. 1;

Fig. 3 is an isometric view of a cradle supporting shelf which constitutes a part of the invention.

Details of construction

In the drawings numeral 10 designates a paper holding cradle as a whole. It includes an inclined

bottom wall 11, an inclined end wall 12 which meets the bottom wall at right angles, and two upright parallel side walls 13 and 14. Perforations 15, 16, and 17 are provided in the bottom and end wall to permit paper dust and fine cuttings to be ejected from the cradle during its vibration, thus preventing the accumulation of such debris from interfering with the proper aligning of the edges of the sheets. The cradle 10 is provided with a pair of oppositely disposed parallel elongated angle strips 18 and 19, which are secured to the respective side walls 13 and 14 by suitable means, such as screws 20. Each angle iron strip has one flange projecting outwardly in a horizontal plane, as shown in Fig. 1, the bottom 11 lying at an angle to this horizontal plane.

An electric motor 21 having an eccentric weight 22 attached to its shaft, is mounted on the exterior surface of the bottom 11 by means of screws 23. The motor is mounted so that its rotational axis lies at an angle to the horizontal flanges of the angle strips 18 and 19, and also lies in a fore and aft vertical plane which passes through the center of gravity of the cradle. It is also preferably positioned so that the weight 22 is located either forward or aft of a vertical line passing through the center of gravity of the cradle assembly, which includes the attached motor.

A hanger assembly, designated as a whole by the numeral 24, is provided for resiliently suspending the cradle assembly in space. The hanger proper may be of cast metal or may be of sheet stock, as shown. It includes a horizontal bottom 25 provided with suitably spaced rubber feet 26, and two spaced parallel upright side walls 27 and 28. These side walls are spaced apart a distance slightly greater than the distance between the outer parallel edges of the horizontal flanges of the angle strips 18 and 19.

A pair of inwardly projecting oppositely disposed parallel horizontal shelves are rigidly mounted along the upper edges of the side walls 27 and 28, one on each wall. Short metal screws 29 are used to secure the shelves in place, or they may be spot welded or otherwise secured. While these shelves may be in the form of simple angle strips, similar to the strips 18 and 19, but inverted, I prefer to make them in the form shown in Fig. 3. In this case each shelf is in the form of an elongated housing 30 which has a side opening 31 along its inner side wall, as clearly shown in cross section in Fig. 1.

As one means of resiliently suspending the cradle assembly from the hanger assembly to obtain the desired spring back or return of the cradle toward normal at rest position, two or more relatively thick elongated strips of sponge rubber 32—33, are cut to fit the interior of each shelf-housing 30, and are inserted through the openings 31 so that they lie in horizontal planes. The side wall portions 34 and 35 serve to firmly hold the sponge rubber strips against lateral movement with relation to the shelf proper.

The outwardly projecting flanges of the angles 18 and 19 are inserted between two adjacent sponge rubber strips on the respective shelves, and the cradle assembly is thus resiliently suspended in space.

With such suspension it will be noted that while one end of the lowermost rubber strips 33 are absorbing a downward vibratory thrust transmitted to the cradle, the opposite ends of the upper strips 32 are also absorbing and resisting this motion and tending to return the cradle to normal at rest position. Also that as the cradle is returned toward at rest position the respective opposite ends of the rubber strips above and below the angle flanges act to snub and reduce this return movement.

In Fig. 2 the center of gravity of the cradle assembly (including the attached vibrator unit) is approximately indicated by the letter X, the approximate center of cradle assembly suspension is indicated by the letter Y, and the approximate center of vibratory forces created by the vibrator 21 is indicated by the letter Z. The ceners Y and Z are located almost directly one above the other, both lie forward of the center of gravity X, and all three lie in a common vertical longitudinal plane.

Since the axis of rotation of the eccentrically mounted weight 22 lies at an angle to the horizontal, forces emanate therefrom in planes substantially parallel to the cradle end wall 12. As a result of the described relative locations of centers X, Y, and Z, movement of the cradle at the upper end of its bottom 11 is almost entirely a transverse or lateral reciprocating motion. Motion produced at the upper end of the cradle end wall 12 is almost entirely a reciprocating motion in a vertical plane, and motion produced at the junction of the bottom 11 and end wall 12 is substantially circular in a plane substantially parallel to end wall 12, resulting in both a lateral and vertical movement. These motions combine to jog a stack of paper sheets in a manner which separates the sheets slightly from each other, and quickly allows two edges of each sheet to assume positions along the bottom 11, and end wall 12, thus quickly aligning all four edges of like sized sheets. Paper dust and fine slivers from the edges of the cut sheets also gravitate toward the bottom 11 and end wall 12 during the jogging operation, and are ejected through the holes 15, 16, and 17, so that such debris never interferes with the proper aligning of the edges of the sheets.

Having described the invention with sufficient clarity to enable those familiar with this art to construct and use it, I claim:

1. A paper jogger comprising: a hanger having two spaced parallel upright side plates; an elongated rigid substantially horizontal shelf rigidly secured along the inner surface of each side plate and projecting inwardly toward each other in substantially a parallel relation; a paper cradle positioned between the hanger side plates in spaced relation thereto, and having a downwardly sloping bottom wall, and an upwardly sloping end wall normal to the bottom wall, and spaced upright side walls; a mass of resilient material secured on the upper surface of each shelf; brackets secured to the outside of each cradle side wall, said brackets having substantially horizontal flanges projecting outwardly therefrom at levels well above the center of gravity of the cradle, said flanges being embedded in said resilient material; and a power operated vibrator mounted exteriorly on said cradle.

2. A paper jogger comprising: a vertically disposed paper holding cradle having a downwardly sloping bottom, an end wall adjoining the lower end of the bottom and normal thereto, and two upright parallel side walls, said cradle being adapted to support and act on sheets of paper to align their respective edges when vibrated; a power operated vibrator mounted on the cradle; two elongated parallel angle section brackets, one

secured along and projecting outward from the outer surface of each cradle side wall in a substantially horizontal plane well above the center of gravity of the combined cradle and vibrator; a hanger having a horizontal base and spaced integral parallel upright side plates, one located alongside each of said brackets; two elongated horizontal cradle supporting shelves, one mounted along the inner surface of each side plate near its upper end, a portion of each shelf extending inward to partially underlie a respective one of said brackets substantially throughout its length; resilient cradle supporting means secured on the upper surface of each of said shelves, the outwardly projecting brackets being respectively anchored in the said resilient means intermediate their respective tops and bottoms whereby the cradle and its vibrator are resiliently suspended from the hanger side plates for movement about three axes perpendicular to each other.

3. A paper jogger comprising: a vertically disposed paper holding cradle having a downwardly inclined bottom, an end wall adjoining the lower end of the bottom and normal thereto, and two upright parallel side walls; a power operated vibrator mounted exteriorly on the cradle; a hanger having a horizontal base and spaced integral parallel upright side plates, one located alongside and substantially parallel to each cradle side wall; two elongated horizontal cradle supporting shelves, one mounted along the inner surface of each side plate near its upper end, a portion of each shelf throughout its length extending inward toward the respective adjacent cradle side wall; a mass of resilient material secured along the inwardly extending portion of each shelf; two elongated parallel angle section brackets, one secured along the outer surface of each cradle side wall, the two brackets lying in a horizontal plane well above the center of gravity of the combined cradle and vibrator, and each bracket being embedded in and supported by the resilient material on a respective one of said shelves.

4. A paper jogger comprising: a hanger having

an elongated horizontal base and two spaced parallel upright side plates of similar length affixed to the opposite side edges of said base; a pair of elongated hollow cradle supporting shelves, one mounted along the upper end of each hanger side plate parallel to the hanger base and projecting inwardly, the adjacent inner walls of said hollow shelves each having an elongated open slot also parallel to the hanger base and affording access to the interior of said shelves; a mass of resilient material substantially filling the interior of each of said shelves; an elongated paper holding cradle positioned between said shelves and the adjacent parallel walls of the hanger, said cradle having two parallel upright side walls, a bottom which slopes downwardly toward the base of the hanger, and an adjoining end wall which also slopes downwardly toward the bottom of the hanger, the side walls of the cradle being positioned parallel to the side plates of the hanger; a pair of elongated angle section cradle supporting brackets each having one flange secured along the exterior surface of each side wall of the cradle, and its other flange extending outwardly therefrom through the slots in said shelves and embedded in said resilient material; and a power operated vibrator mounted on the exterior surface of the bottom of said cradle for imparting rocking motion thereto.

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REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
1,236,892	Wilson	Aug. 14, 1917
1,279,493	Aylard et al.	Sept. 24, 1918
2,171,441	Barry	Aug. 29, 1939
2,269,245	Blessing	Jan. 6, 1942
2,277,511	Daneke	Mar. 24, 1942
2,396,822	Brisendine	Mar. 19, 1946