Feb. 24, 1953 R. C. LINE, JR 2,629,592

JOGGER

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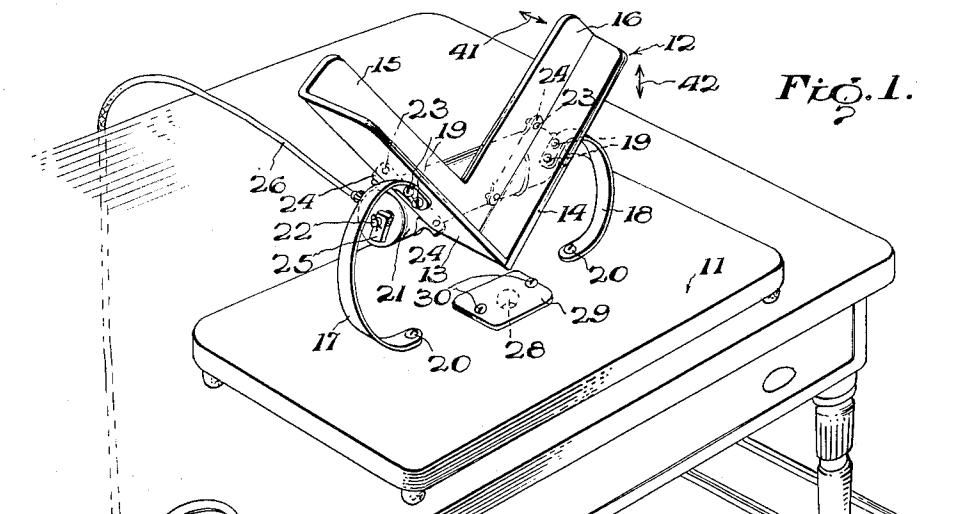

Fig. 1.

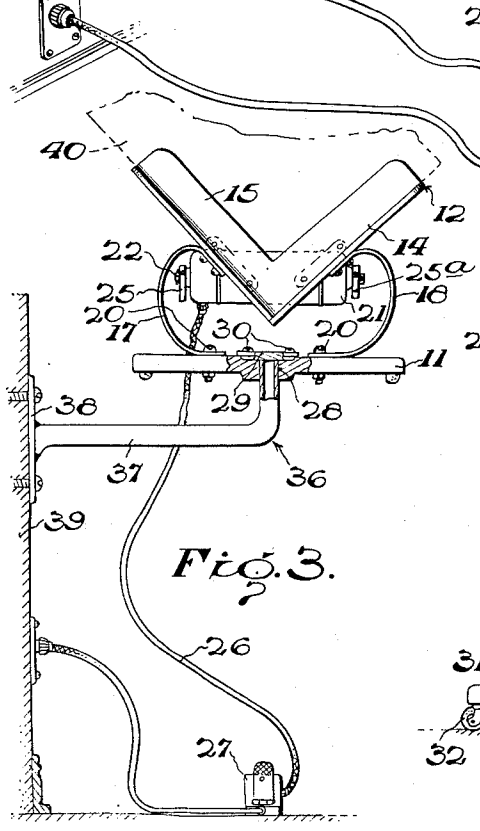

Fig. 3.

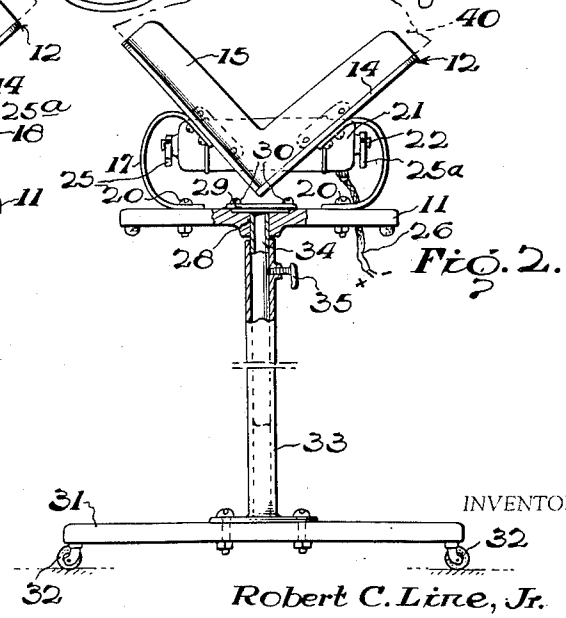

Fig. 2.

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4 Claims. (Cl. 271—89)

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This invention relates to joggers, the function of which is to bring into registry the edges of a group of sheets of material, such as paper sheets.

One of the objects of this invention is the provision of a jogger which is highly efficient in operation.

Another object is to provide a jogger which is simple in construction and inexpensive to manufacture.

A further object is to provide a jogger which can be removably carried on any one of a number of different supporting devices, such as a wall bracket, a table, or a portable floor stand.

A still further object is the provision of a jogger which comprises a vertically disposed V-shaped holder for the sheets, to which is directly attached an electric motor, the shaft of the motor having eccentric weights secured thereto, the holder with attached motor being supported entirely by springs on a portable base member.

These and other objects and advantages of the invention will be apparent from the following description considered together with the accompanying drawing.

In the drawing:

Fig. 1 is a perspective view of an embodiment of the invention supported on a table.

Fig. 2 is a front elevational view, partly in section, of the embodiment supported on a portable floor stand.

Fig. 3 is a front elevational view, partly in section, of the embodiment supported on a wall bracket.

Referring with more particularity to the drawing, in which like reference numerals designate like parts throughout the several views, the embodiment illustrated comprises a horizontal base member 11 of any suitable material, such as wood, metal or plastic, with rubber knobs at each corner for supporting it on a horizontal surface, such as the table illustrated in Fig. 1. The base member carries a V-shaped trough 12, the inclined walls 13 and 14 of which are disposed at an angle of 90° to each other and at an angle of 45° with the horizontal. Vertical flanges 15 and 16 project upward from the said walls on one side of the trough, substantially as shown. The trough is supported on the base member entirely by leaf springs 17 and 18, one end of each spring being secured by rivets 19 to one of the bottom walls 13 or 14 and the other end to the base member 11 by bolts 20. Any other suitable securing means may be used instead of the rivets 19 and bolts 20, these specific means being shown for illustrative purposes only.

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It is preferred that the leaf springs 17 and 18 be arched in opposing directions to stabilize the movements of the trough in actual operation and that they have substantially equal periods of vibration.

To the outer side of the flanges 15 and 16 there is secured an electric motor 21 having a shaft 22 disposed parallel to the said flanges and to the base member 11. The said motor may be secured to the flange by any suitable means, such as rivets 23 passing through the flanges and through mounting brackets or plates 24 of the motor casing. The motor shaft eccentrically carries two weights 25 and 25a on either end of the shaft. Each weight is adjustably held on the shaft by any suitable means, such as the set screws illustrated. The function of the weights is to create vibrations of the trough 12 of two different types, namely, (1) vibrations at right angles to the flanges 15 and 16 caused by the individual eccentric weights and (2) vibrations caused by the centrifugal couple of the two weights on the motor shaft. The amplitude of the various motions and particularly of the sideway motion is determined by the relative angular position of one weight to the other on the shaft. For example, in an extreme position where the eccentricity of one weight would be 180° from that of the other, the sideway motion would be greatest.

The power line 26 of the motor contains a switch, such as the foot or floor switch 27 for the convenience of the operator.

The center of the base member 11 is provided with an aperture 28 for the reception of the upper end of a vertical supporting column which may be either part of a portable floor stand or part of a wall bracket. The top of the aperture is covered with an abutment plate 29 which is secured to the base member by means of screws 30 or any other suitable means.

A preferred type of floor stand is shown in Fig. 2 and it comprises a base support 31, mounted on casters 32, to which is attached a hollow vertical stationary column 33 and which is open at the top. Within the column 33, a height adjustable post 34 is slidably mounted and fixed in desired positions relative to the stationary column by means of a set screw 35. The top of the post 34 fits into the aperture 28 and contacts the abutment plate 29, substantially as shown.

In Fig. 3 a preferred type of wall bracket is illustrated and it consists of an L-shaped bar 36, the horizontal part 37 having a vertical end flange 38 for securing it to a wall 39. The ver-

tical portion of the bar projects upward and is adapted to receive the aperture **28** and contact the abutment plate **29** for support, substantially as shown.

In operation, the base member is mounted at any location convenient to the operator, which is made possible by the plurality of supporting means provided. The sheets **40** to be jogged are placed in the trough **12** in the position shown in Fig. 2 and Fig. 3. The motor is then actuated by pressing the switch **27** causing vibration of the trough in the manner indicated above and illustrated by the arrows **41** and **42**. These combined motions render the device highly efficient permitting complete jogging to take place in a very short period. This will be understood from the fact that the motion induced in the trough by the motor causes the sheets to pass through a definite cycle: The paper is brought upward and sideways toward the operator until the highest point is reached. The trough then drops and leaves the sheets unsupported momentarily. Since the motion is circular, rather than rectilinear, the trough continues downward and also moves, first toward and then away from the operator, taking with it only some of the sheets and only for a part of the return distance of the trough. The downward movement of the trough is more rapid than that of the sheets which are falling under the force of gravity only. Consequently, as the trough moves upward again, it strikes the edges of the falling sheets urging them in alignment. The rapidity with which the sheets become aligned is made possible by the fact that the motions imparted to the sheets result in their becoming fluffed.

Three factors tend to fluff or separate each sheet from its adjacent sheet. Immediately after the sheets are struck from the bottom, the pack is struck from the back by the flanges **15** and **16** sending a shock wave through the sheets which first compresses the stack momentarily and then expands it in its free flight forward. The sheets toward the front move farther than the rear sheets under this action which is an additional factor tending to fluff the sheets. The trough in its downward travel, moving at the same time first toward and then away from the operator, draws with it the sheets nearest it under the action of a partial vacuum resulting from this movement. These three factors which separate the sheets, cause air to be drawn between them at the bottom. The resulting film of air between each adjacent pair of sheets acts as a lubricant and permits the sheets to slide over each other with ease. These air films also overcome or diminish the static electrical attraction between adjacent sheets and the sticking of fresh ink which often prevents sheets of printed paper from yielding to the action of other types of joggers. In actual operation, the air continues to flow between the sheets and can actually be detected as it is forced out at the upper edges of the sheets.

Having thus described my invention, I claim:

1. A jogger comprising a base member, a V-shaped trough having its apex directed downwardly or edgewisely supporting a stack of sheets, springs for supporting said trough in a vertical position on said base member for vibratory motion in all directions, said springs being the sole means of support for said trough on said base member, vertical flanges on one side of said trough, an electric motor attached to and supported by said trough, said motor having a powered shaft parallel to said flanges and an eccentric weight secured to said shaft for rotation therewith, whereby there will be imparted to sheets supported in said trough a horizontal fluffing motion perpendicular to the surface of the sheets as well as a jogging motion in the plane of the sheets.

2. A jogger as defined by claim 1 in which the the springs are C-shaped.

3. A jogger as defined by claim 1 in which the powered shaft is provided with a pair of eccentric weights in spaced relation longitudinally of the shaft.

4. A jogger as defined by claim 1 in which the powered shaft is provided with a pair of eccentric weights in spaced relation longitudinally of the shaft, and means for adjusting the eccentricity of one weight relative to the other on the shaft.

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