March 24, 1942. D. DANEKE 2,277,511

JOGGING MACHINE

Filed April 27, 1940 3 Sheets-Sheet 1

Fig. 1.

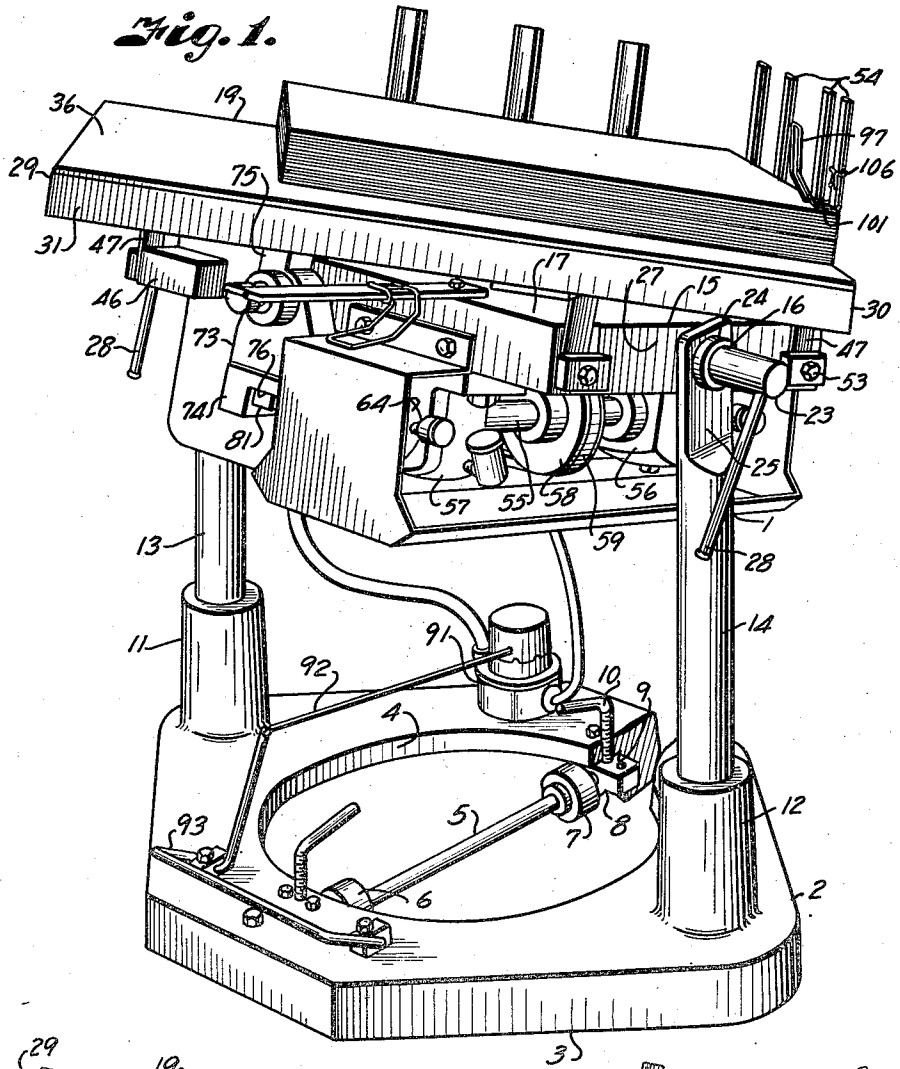
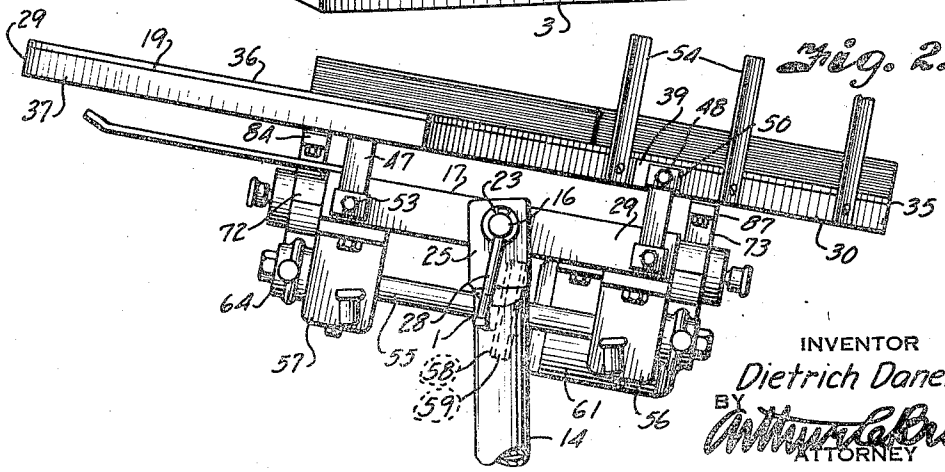


Fig. 2.



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Fig. 3.

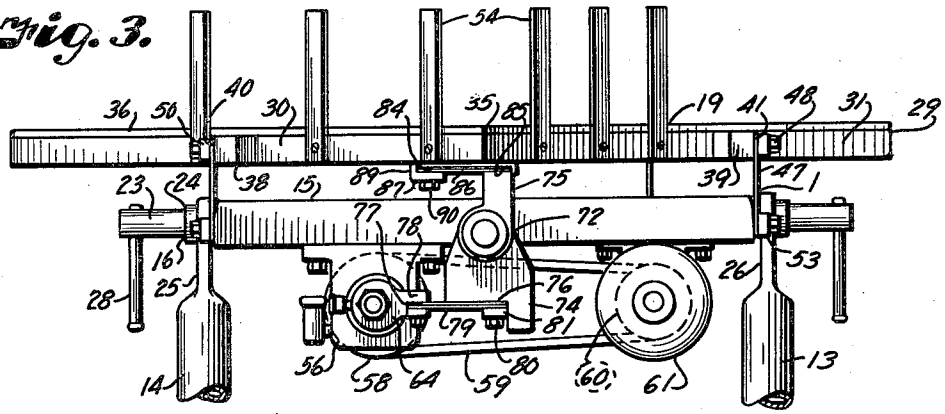


Fig. 4.

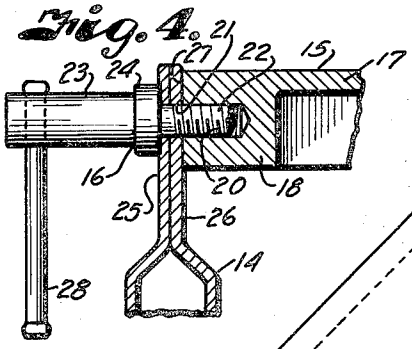


Fig. 5.

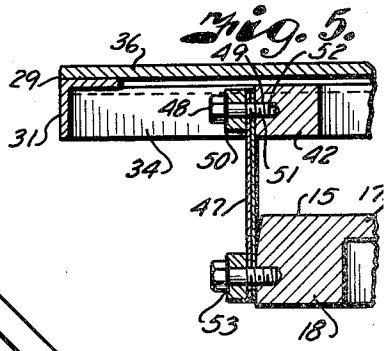


Fig. 6.

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Fig. 7.

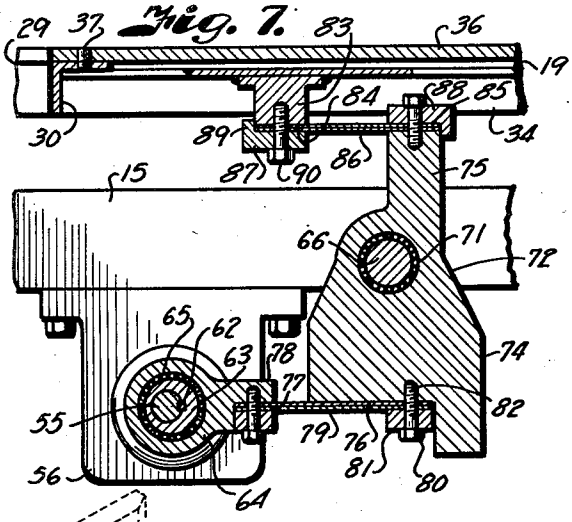


Fig. 8.

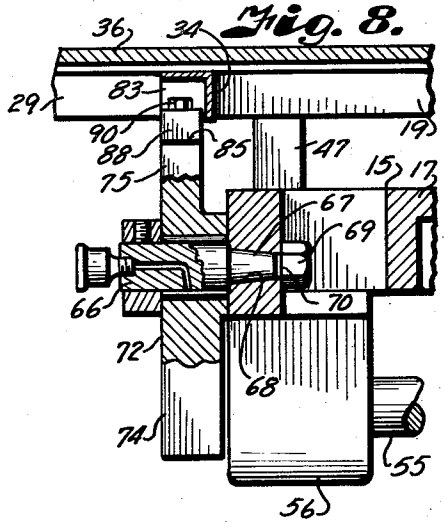


Fig. 9.

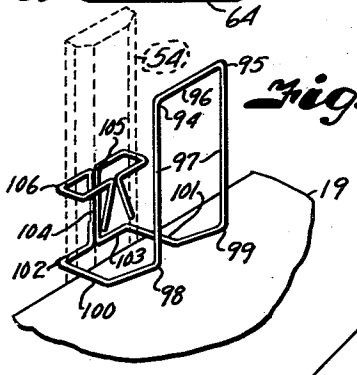


Fig. 10.

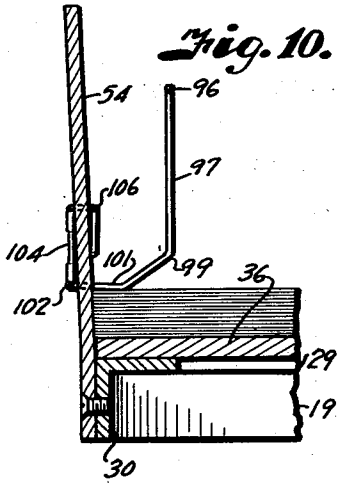
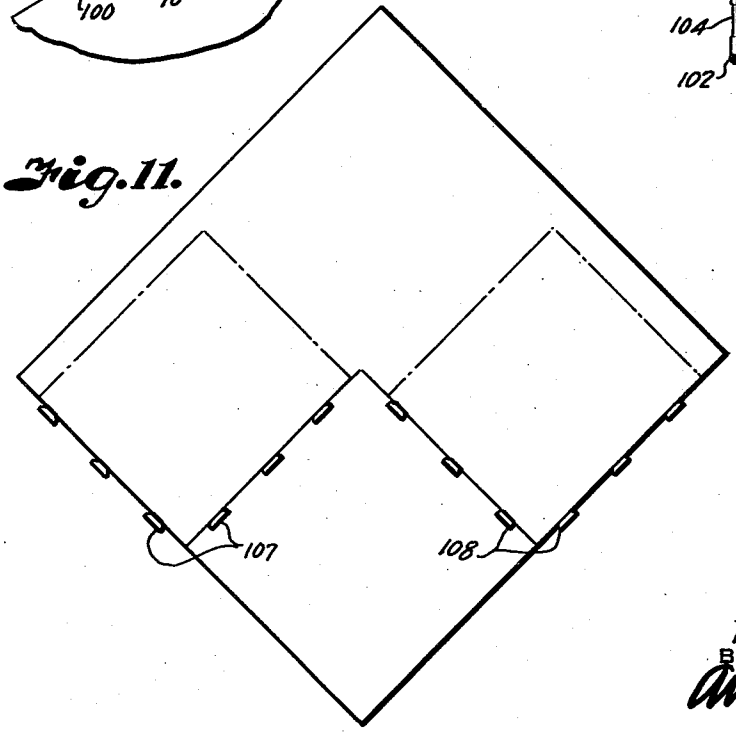


Fig. 11.



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UNITED STATES PATENT OFFICE

2,277,511

JOGGING MACHINE

Dietrich Daneke, Topeka, Kans., assignor to Fred M. Brackett, Topeka, Kans.

Application April 27, 1940, Serial No. 331,994

14 Claims. (Cl. 271—89)

This invention relates to a jogging machine for straightening sheets in a stack with the edges thereof in registry with each other, and has for its principal object to provide a machine of this character which is of simple construction and efficiently brings the guide edges of the sheets into precise registry.

Other objects of the invention are to provide a jogging machine with a vibratory table mounted on its supporting frame so that the vibrations are not transmitted through the frame to the building structure in which the machine is housed; to provide a machine wherein the mechanical connections between the actuator and the jogging table are constructed for silent operation and to further reduce objectionable transmission of the vibrating forces; and to provide a jogging table particularly adapted for jogging light weight stock such as india, manifold tissue, carbon and onion-skin papers without frilling or curling of the edges.

It is a further object of the invention to provide a jogging table capable of simultaneously jogging a plurality of piles of sheets.

In accomplishing these and other objects of the invention, I have provided improved details of structure, the preferred form of which is illustrated in the accompanying drawings, wherein:

Fig. 1 is a perspective view of a jogging machine embodying the features of the present invention.

Fig. 2 is a side elevational view of the jogging table and its actuating mechanism.

Fig. 3 is a similar but end elevational view.

Fig. 4 is a detail section through one of the clamp supports for adjusting tilt of the jogging table.

Fig. 5 is a detail section through one of the springs for carrying the jogging table on the supporting frame, the section being taken on the line 5—5 of Fig. 6.

Fig. 6 is a plan view of the machine, with the top of the table and parts of the carrying frame broken away to better illustrate the construction.

Fig. 7 is an enlarged section through the jogging table and one of the vibratory connections thereof with the actuator shaft.

Fig. 8 is a similar section taken at right angles to the section shown in Fig. 7.

Fig. 9 is a perspective view of one of the clamps for holding down the guide edges of the sheets.

Fig. 10 is a section through the jogging table and one of the guide stakes, particularly illustrating mounting of one of the hold-down clamps.

Fig. 11 is a plan view of a modified form of jogging table wherein a plurality of piles of sheets are jogged simultaneously.

Referring more in detail to the drawings:

1 designates a jogging machine constructed in accordance with the present invention, and which includes a relatively rigid base having sufficient weight in the body thereof so as to provide a stable support for the machine, and so that the inertia thereof is sufficiently great to avoid transmission of vibrations to the building in which the machine is housed.

The base of the machine includes a plate-like body 2, having a footing flange 3 whereby the base is adapted for stable support on a floor. The center of the plate portion is preferably provided with an opening 4, and extending transversely thereof is an axle shaft 5 carrying wheels 6 and 7. The ends of the axle are carried in bearing brackets 8 adapted for vertical movement within guide sockets 9 upon manipulation of jack-screws 10 so that the base may be moved relatively to the wheels 6 and 7 to raise the base from the floor and facilitate movement thereof when the machine is to be moved from one location to another.

Extending upwardly from the base are sockets 11 and 12, rigidly receiving the ends of posts 13 and 14 for supporting the jogging table, later described. The upper ends of the posts are preferably flat and adapted to be clamped to a supporting frame 15 by clamp screws 16.

The frame 15 is of substantially rectangular form and includes a top 17 having a substantially rigid rim 18 depending therefrom, whereby the frame is of substantially rigid construction and free from any flexure incidental to vibration of the jogging table 19. The opposite sides of the frame are provided, substantially on the longitudinal median line thereof, with internally threaded sockets 20 which register with openings 21 in the flat ends of the posts to pass threaded shanks 22 of the clamping screws 16. The clamping screws have head portions 23 provided with collars 24 to engage the outer faces 25 of the posts and to cause clamping engagement of the inner faces 26 of the posts with the side faces 27 of the frame when the shanks 22 are threaded into the sockets. The heads 23 of the clamping screws are provided with levers 28 whereby the screws may be readily manipulated to clamp the supporting frame at a selected angle between the posts, as clearly shown in Fig. 2.

The jogging table 19 includes a rectangular frame 29 having side bars 30 connected by end

bars 31 and an intermediate cross-bar 32 which is offset slightly to one side of the transverse median line of the table. Extending across the frame, substantially diagonal from the respective ends of the intermediate bar 32 to the end rails 31, are parallel bars 33 and 34 spaced apart a distance slightly greater than the width of the supporting frame and which extend parallel with the sides thereof so that one of the corners 35 of the jogging table is positioned so a bisector thereof extends at substantially right angles to the tilting axis of the supporting frame, as shown in Fig. 6. The frame is provided with a top board 36 that is rigidly secured thereto by suitable fastening devices as indicated at 37. Secured to the side and end rails forming the corner 35, and projecting outwardly therefrom, are brackets 38 and 39 having flat faces 40 and 41 respectively registering with the ends of the supporting frame as shown in Fig. 6. Carried by the diagonal bar 34 is a similar bracket 42 located in alignment with the bracket 38 at the opposite corner of the supporting frame. The corner at the opposite end of the supporting frame is cut away, as indicated at 43 so as not to project beyond the side wall 30. Extending from the table, adjacent the juncture of the diagonal 34 and the intermediate rail 32, is a similar bracket 44 having a side face 45 thereof registering with the side face of a similar bracket 46 projecting from the side of the supporting frame.

Connected with the side faces of the brackets thus described are spring leaves 47, spacingly retaining the table in spaced parallel relation with the supporting frame, the upper ends of the leaves being secured to the respective brackets by fastening devices 48, having the shanks 49 thereof extending through clamping blocks 50, through openings 51 in the leaves, and into threaded sockets 52 of the brackets, whereby, when the fastening devices are tightened, the heads rigidly clamp the blocks against the spring leaves and the spring leaves against the flat faces of the brackets. The lower ends of the spring leaves are secured to the frame by similar fastening devices 53. The table is thus resiliently supported by the spring leaves, and since the spring leaves are arranged in planes extending transversely of the pivotal axis of the supporting frame, the table is adapted to vibrate with respect to the supporting frame with the bisector of the corner 35 shifting relatively to the tilting axis.

Carried by the side and end rails forming the corner 35 are a plurality of guide stakes 54 for engaging the guide edges of the sheets to be jogged, as later described. Depending from the sides of the supporting frame and offset from the bisector of the corner 35 is a parallel shaft 55, having its ends suitably journalled in bearing brackets 56 and 57 depending from opposite sides of the supporting frame. Mounted on the shaft is a pulley 58 that is driven by a belt 59 operating over the drive pulley 60 of a motor 61 which is suspended below the supporting frame, as shown in Fig. 3. Also fixed on the shaft, adjacent the supporting brackets, preferably by keys 62, are eccentrics 63 journalling eccentric straps 64 on needle bearings 65. Carried by the sides of the supporting frame are stub shafts 66, the stub shafts being preferably provided with reduced tapered shanks 67 engaged in tapered sockets 68 of the frame and which are drawn tightly therein by nuts 69 mounted on threaded ends 70 of the tapered shanks. Carried on the stub shafts by needle bearings 71 are rocker arms 72 and 73 having weighted ends 74 and upwardly extending arms 75 offset with respect to the axis of the stub shafts as shown in Fig. 7. The weighted ends 74 are notched substantially in alignment with the horizontal plane extending through the axis of the rotating shaft to form seating faces 76 cooperating with similar faces 77 on lugs 78 of the eccentric straps to attach spring leaf connectors 79, the leaf connectors being rigidly secured to the respective faces by fastening devices 80 having the threaded shanks thereof extending through clamping blocks 81, through the ends of the leaves, and into threaded sockets 82 as clearly shown in Fig. 7.

Secured to the under side of the jogging table, in alignment with the rocker arms, are brackets 83 having the lower faces 84 thereof substantially registering with the upper faces 85 of the arms 75 to be connected by spring leaves 86, the spring leaves 86 being retained by clamping plates 87 and 88, having flanges 89 engaging over the ends of the leaves and lapping the opposite faces of the brackets 83 and arms 75 respectively. The clamping plates are rigidly secured in position by fastening devices such as cap-screws 90, having their threaded shanks extending through openings in the plates, through registering openings in the ends of the spring leaves and into threaded sockets as shown in Fig. 7.

Rotation of the eccentrics incidental to actuation of the shaft oscillates the rocker arms and effects vibration of the jogging table, whereby sheets placed in a stack on the table, as indicated in Fig. 1, are caused to shift against the stakes at one side when the table moves in one direction, and then against edges of the stakes at the other side when the table moves in the opposite direction, resulting in alignment of the stake-engaging edges of the sheet.

The motor for actuating the eccentric shaft is energized through a switch 91 mounted on the base and having an operative connection through a link 92 with a foot treadle 93.

In order to prevent the guide edges of the sheets from curling and climbing up the stakes, selected stakes are provided with hold-down clips as shown in Fig. 9, which clips float freely on the stakes and bear upon the margins of the sheets as the sheets settle thereunder incidental to vibration of the table. The clips are preferably formed of a single piece of wire bent at spaced points 94 and 95 intermediate the ends thereof to form a cross bar and vertical leg portions 96 and 97, the lower ends of which are bent on an angle, as at 98 and 99, to form throats or guides whereby an applied sheet settles under the arms 100 and 101 which bear on the sheet. The arms are of sufficient length to extend to the rear of the stakes and terminate in inwardly directed portions 102 and 103 connected with vertical portions 104 and 105, the ends of which are bent to form a loop 106 loosely engaging the stake whereby the portion 100 and 101 bear upon the sheet with the projecting portion, including the legs 96 and 97, acting as a weight. As shown in Fig. 10, the stakes are inclined outwardly at a slight angle relatively to the table so as to avoid tendency for light weight stock, such as onion-skin sheets, from turning downwardly. The incline gives a slight tendency for the sheets to curl upwardly, but the clips avoid this tendency and hold the edges of the sheets in registry.

In using the device constructed and assembled as described, the operator adjusts the support at the desired angle, which angle varies with weight

and character of the stock being jogged. This is effected by lossening the clamps and tilting the frame, after which the clamps are retightened. The operator then places his foot on the treadle to effect energization of the motor for rotating the eccentric shaft. Rotation of the shaft vibrates the table through the rocker arms and spring leaf connections so that the table moves relative to the frame on the spring leaf supports 47, the table oscillating with sufficient rapidity so that when a sheet is placed on the table it will settle into the angle-shaped pockets formed by the corner 35 with the side edges engaging the stakes. As succeeding sheets of paper are fed onto the table, the guide edges thereof will be automatically moved to registry with the edges of the first sheet to produce a stack with all of the edges in precise registry. The weight portion of the rocker arms balance the moving parts of the table so as to dampen vibrations tending to cause the entire machine to vibrate, thereby avoiding the objection and noise incidental to jogging devices with which I am familiar.

From the foregoing it is obvious that I have provided a jogging device which is of simple construction and which efficiently registers the edges of loose sheets.

Fig. 11 shows a different stake arrangement. In this arrangement two sets of stakes 107 and 108 are mounted on the table so that two piles of sheets may be jogged simultaneously. Otherwise the machine is constructed in the same manner as the one above described.

What I claim and desire to secure by Letters Patent is:

1. A machine of the character described including a support, a jogging table, means resiliently mounting the jogging table on the support, a shaft rotatable on the support, an eccentric on the shaft, a needle bearing on the eccentric, an eccentric strap engaging the needle bearing, a rocker arm pivoted on the support, a resilient connector between the eccentric strap and the rocker arm and having rigid connection therewith, a resilient connector between the rocker arm and the jogging table and having rigid connections therewith, and means for rotating the shaft.

2. A machine of the character described including a support, a jogging table, means resiliently mounting the jogging table on the support, a shaft rotatable on the support, an eccentric on the shaft, a needle bearing on the eccentric, an eccentric strap engaging the needle bearing, a rocker arm pivoted on the support, a resilient connector between the eccentric strap and the rocker arm and having rigid connection therewith, a resilient connector between the rocker arm and the jogging table and having rigid connections therewith, means for rotating the shaft, and means on said rocker arm for balancing movement of the jogging table.

3. A machine of the character described, including a support, a frame, means for adjustably mounting the frame on the support at a selected angle of inclination, a substantially rectangular jogging table, means resiliently supporting the jogging table on said frame with a corner thereof positioned in the direction of inclination of the frame whereby one corner of said table is positioned below the other corners thereof, guide means on slides of the table defining said lowermost corner, and vibrating means arranged substantially parallel with a bisector of said corner for vibrating the table on the frame laterally with respect to said corner.

4. A machine of the character described, including a base, spaced posts on the base, a frame adjustably trunnioned between said posts for a selected angle of inclination, a jogging table, substantially flat spring leaf supports each having one end fixed to the jogging table and its other end to the support and with their flat portions arranged in substantially parallel planes for vibration in one direction, and means for vibrating the jogging table.

5. A machine of the character described, including a base, spaced posts on the base, a frame adjustably trunnioned between said posts for a selected angle of inclination, a jogging table, substantially flat spring leaf supports carrying the jogging table on the support with the flat sides thereof arranged in parallel planes whereby vibration of the table is limited to one direction, and means for vibrating the jogging table, said table having an angle-shaped pocket arranged whereby a line bisecting said angle is transversely of the direction of vibration.

6. A machine of the character described, including a base, spaced posts on the base, a frame adjustably trunnioned between said posts, a jogging table, substantially flat spring leaf supports carrying the jogging table on the frame at an inclined angle selected through adjustment of the frame, said spring leaf supports having fixed lengths for maintaining said angle of inclination, means for vibrating the jogging table, said table having an angle-shaped pocket arranged whereby a line bisecting said angle is transversely of the direction of vibration, and stakes forming sides of said pocket.

7. A machine of the character described, including an angular-shaped pocket for receiving sheets to be jogged, means resiliently supporting said pocket at an angle of inclination sloping downwardly in the direction of the apex of said pocket, said means being disposed on the respective sides of said pocket and having resiliency only in a direction transversely of said angle of inclination, means for vibrating said pocket in said direction transversely of the direction of inclination, stakes forming sides of said pocket providing guides for registering sheets inserted in said pocket, and hold-down members movable on selected stakes for weighting marginal edges of said sheets.

8. A machine of the character described, including an angular-shaped pocket for receiving sheets to be jogged, means resiliently supporting said pocket with the bottom thereof at an angle of inclination sloping downwardly in the direction of the apex of said pocket, means for vibrating said pocket in a direction transversely of the direction of inclination, and stakes for the sides of said pocket forming an obtuse angle with the bottom of said pocket to prevent downcurl of the edges of said sheets.

9. A machine of the character described, including an angular-shaped pocket having an inclined bottom for receiving sheets to be jogged, means resiliently supporting said pocket for movement in the direction transversely of the direction of inclination of said bottom, stakes for the sides of said pocket and arranged at an obtuse angle with respect to the bottom of said pocket to prevent down-curl of the edges of said sheets, and hold-down members slidable on selected stakes to prevent upcurl of the edges of said sheets.

10. A machine of the character described including, a support, a jogging table, means resiliently mounting the jogging table on the support, a shaft rotatable on the support, an eccentric on the shaft, an eccentric strap encircling the eccentric, a rocker arm pivoted on the support, a resilient connector between the eccentric strap and the rocker arm and having rigid connection therewith, a resilient connector between the rocker arm and the jogging table and having rigid connections therewith, and means for rotating said shaft.

11. A machine of the character described including, a support, a jogging table, means resiliently mounting the jogging table on the support, a shaft rotatable on the support, an eccentric on the shaft, an eccentric strap encircling the eccentric, a rocker arm pivoted on the support, a resilient connector between the eccentric strap and the rocker arm and having rigid connection therewith, a resilient connector between the rocker arm and the jogging table and having rigid connections therewith, means for rotating said shaft, and means on said rocker arm for balancing movement of the jogging table.

12. A machine of the character described including, a support, a substantially rectangular jogging table having an angular pocket at a corner thereof, resilient means on the support at opposite sides of a bisector extending through said corner of the table forming said pocket and connected with the table to support said table in substantially parallel relation with the support, means tiltably carrying the support to position the table at an inclined angle, a shaft rotatable on the support with the axis thereof extending substantially parallel with the bisector of said angular pocket, an eccentric on the shaft, an eccentric strap encircling the eccentric, a rocker arm pivoted to the support, a resilient connector between the eccentric strap and the rocker arm and having rigid connection therewith, a resilient connector between the rocker arm and the jogging table and having rigid connections therewith, and means for rotating the shaft for effecting vibration of the table transversely of said bisector.

13. A machine of the character described including, a support, a substantially rectangular jogging table having an angular pocket at a corner thereof, resilient means on the support at opposite sides of a bisector extending through said corner of the table forming said pocket and connected with the table to support said table in substantially parallel relation with the support, means tiltably carrying the support to position the table at an inclined angle, a shaft rotatable on the support with the axis thereof extending substantially parallel with the bisector of said angular pocket, an eccentric on the shaft, an eccentric strap encircling the eccentric, a rocker arm pivoted to the support, a resilient connector between the eccentric strap and the rocker arm and having rigid connection therewith, a resilient connector between the rocker arm and the jogging table and having rigid connections therewith, means for rotating the shaft for effecting vibration of the table transversely of said bisector, and means on the support for balancing movement of the jogging table.

14. A sheet jogging machine including, a table, means on the table forming an angle-shaped pocket and to engage adjacent side edges at the common corners of sheets to be jogged, a support, means mounting the table on the support in an inclined position and sloping in the direction of the pocket, said mounting means being resilient only in a direction transversely of a plane bisecting the angle of said pocket and non-compressible under weight and shift of the load on the table when the machine is in operation, and vibratory means connected with the table to impart alternating thrusts transversely of said plane whereby sheets inserted into the pocket are caused to move first against one side and then the other of said pocket to effect settling of the sheets into the pocket so that said adjacent sides come to rest in contact with the respective sides of the pocket.

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