DEVICES FOR SEPARATING AND SORTING MANIFOLD SETS

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This invention relates to machines for separating carbons from the leaves of manifold sets and, more particularly, to means for effecting adjustability for various sizes of sets and effecting ease of operation.

In my prior U.S. Patents #2,289,161 and #2,673,612, there are disclosed various machines and devices for readily effecting separation of carbon sheets from writing sheets in manifold sets. Additional disclosures for such machines are found in my copending applications, S.N. 541,348 filed October 19, 1955; and S.N. 585,636, filed May 18, 1956. In all of these prior inventions means are provided for adjusting the spacing between a pair of stationary jaws and a pair of sliding jaws, or otherwise movable jaws, so that the jaws will grip the margins of a plurality of manifold sets at the superimposed tops and bottoms to forcibly pull the carbon sheets therefrom.

The present invention relates to means for simplifying the adjusting elements and also to means for providing a smoother action for the sliding jaw and, further, to means for considerably extending the spacing between the jaws so that the machine has utility with manifold sets of considerable length without, however, actually extending the length of the machine base.

It is an object of the invention, therefore, to provide a device of the class described having a pair of jaws and means for limiting the motion of one of said jaws with respect to the other of said jaws in an approaching direction for any desired length of sheets of a practically infinite choice of lengths within the range of the machine.

It is another object of the invention to provide the sliding jaw with carriage means to effectively minimize the manual effort required for moving the jaw.

It is still another object of the invention to provide means whereby the slideable jaw may be moved a considerable distance away from the fixed jaw without, however, requiring extension of the machine base.

Briefly, my invention comprises a base having a slot in which an abutment member may be secured at any one of a large plurality of points corresponding to the tooth spacing of rack means extending the length of the slot for coarse adjustment and wherein the abutment means has a threaded member which can be rotated for fine adjustment. Thus, the sliding jaw engages the abutment at a predetermined distance from the fixed jaw.

Further, my present invention provides a ball bearing suspension carriage for the sliding jaw, having telescopic co-action with the machine base in such a way that the carriage may actually be moved beyond the outer end of the base to thereby extend the distance between the moving and fixed jaws to accommodate sheets of considerable length.

A detailed description of my invention will now be given in conjunction with the appended drawing in which:

Fig. 1 is a plan view of a machine incorporating the novel features of the present invention.

Fig. 2 is a fragmentary elevation thereof.

Fig. 3 is an elevation in section through 3—3 of Fig. 2.

Fig. 4 is a view through 4—4 of Fig. 3 showing the ball bearing suspension and a portion of the trackway arrangement, commencing at the inner end of the trackway and showing a stop member for limiting the inward travel of the carriage and movable jaw 15.

Fig. 5 is a view corresponding to Fig. 4, but showing the continuation of the length of the track to an outer stop member.

Fig. 6 shows separately the several elements which comprise the ball bearing suspension with a moving jaw, in perspective.

Fig. 7 is a section through 7—7 of Fig. 1.

Referring now to Figs. 1 and 2, a fixed jaw 10 and a sliding jaw 15 are illustrated without detailed structure being shown for the reason that these jaws are substantially the same as those shown in detail in my prior Patent #2,673,612 and prior applications, and particularly in S.N. 541,348. The invention herein resides in providing a base 20 of ribbed formation, thus, as shown in Figs. 3 and 7, having the ribs 24, 26, 28, and 32 extending substantially perpendicular to the base wherein the ribs 24 and 32 form outer walls thereof. The ribs and walls form elongated compartments 33, an end wall 35 having cut out 35a closing each compartment. A cover plate 36 is provided having elongated slots 44 and 46 disposed medially of the elongated compartments 33 and extending to the very end of the cover plate. Cover plate 38 may be fastened in any desired manner to the base 20 as by screws (not shown), and has a large central opening 39 to the very end.

Each compartment 33 accommodates a ball bearing suspension comprising a base channel 50, which may be bolted to the base 20 as by one or more bolts 54, a rolling channel 58 having apertures 60 which rotatively secure ball bearings 62, and a carriage channel 70 which may be bolted as by one or more bolts 74 to feet 75 of the movable jaw 15. It will be apparent from consideration of Figs. 3 and 5 that the rolling channel 58 is capable of securing four ball bearings such as 62 and that such ball bearings are maintained intermediate elongated curved tracks of respective channels 50 and 70 in a well known manner.

Fixed channel 50 is provided with an inner stop abutment 78 and an outer stop abutment 82. Thus, ball carrier channel 58 will have an edge 58a capable of abutting limit stop 78 and an edge 58b capable of abutting limit stop 82 to limit its outer movement. A pin 86 is carried at the inner end of the carriage channel 10 so as to make it apparent that the pin extends outwardly of the channel on each side to a sufficient distance so as to be able to abut the edges of the flanges 58c and 58d to thus limit outer movement of the carriage. In other words, when channel 58 has arrived at its extreme outer position by abutment with limit stop 82 travel of the carriage can carry channel 70 and attached jaw 15 beyond the edge of base 20 until pin 86 strikes the inner edges 58c and 58d of the flanges of ball bearing carrier 58. This extreme outer position is indicated in dashed lines in Fig. 5. Feet 75 can ride beyond plate 38 because slots 44 and 46 are open ended as described above.

It will be apparent from the description that jaw 15 may thus be carried beyond the confines of the end of the base 20 thereby considerably extending the distance between itself and the fixed jaw 10 so as to make the machine usable with manifold sets of considerable length.

For purposes of providing a limit stop to predetermine the spacing between the jaws for any length of set, the base 20 is provided with a central slot 90 in which is slidably arranged a stop member 92 in the form of an angle which, as will be seen by comparing Figs. 1 and 2, has a base 92a through which a bolt 98 passes and which bolt is threadedly received in a toothed member 102.
which can lock on each side of the slot 90 with racks such as 106 formed of teeth adjacent the slot 90 on both sides thereof. Thus, by loosening the bolt 98 from above, the clamp element 102 will drop out of engagement with the racks 106 whereupon the stop member 92 may be slid in either direction in the slot 90 for a selected length of manifold sheet and the bolt member 98 then tightened to effect locking engagement of clamp 102 with the racks.

To provide for fine adjustment, member 92 is provided with a bolt and nut arrangement 110 threadedly carried in the upright portion 920 and it will be understood that bolt 110 can rotate so as to bring the bolt head to any desired position relative flange 926. Thus, an infinity of adjustments are possible by virtue of the racks 106 and the bolt 110.

Jaw 15 is provided with a depending tongue 114 carried with a rubber button 118 attached to the outer end of bolt 110 so as to provide a cushioning action in limiting the inward motion of carriage 15.

Having thus described my invention, it will be apparent that I have provided a construction wherein the movable jaw can ride easily in either direction, can be stopped at any point in an infinite series of points with respect to the fixed jaw, and can be moved beyond the end of the base to accommodate manifold sets which are longer than the base.

I am aware that various changes may be made without departing from the spirit of my invention and accordingly I do not seek to be limited to the precise illustration herein given except as set forth in the appended claims.

I claim:

1. In a machine of the class described, a base of fixed length, a fixed clamp disposed at an end thereof for gripping a stack of manifold sets at one margin, a movable clamp carried by said base for gripping said stack at an opposite margin, and positionable at selective distances from said fixed clamp, means for carrying said movable clamp, means being extensible beyond the opposite end of said base whereby said movable clamp may be spaced from said fixed clamp beyond the fixed length of said base, including a slot extending through a wall of said base, rack means extending along said slot, and a stop means having a toothed element engageable with said rack means for selective positioning with respect to said fixed clamp, and being engageable by said movable clamp to limit motion thereof towards said fixed clamp, said stop means including an element passing through said slot for securing said toothed element in engagement with said rack.

2. In a machine of the class described, a base of fixed length, a fixed clamp disposed at an end thereof for gripping a stack of manifold sets at one margin, a movable clamp carried by said base for gripping said stack at an opposite margin and positionable at selective distances from said fixed clamp, means for carrying said movable clamp, means being extensible beyond the opposite end of said base whereby said movable clamp may be spaced from said fixed clamp beyond the fixed length of said base, said base having elongated compartment means, said extensible means having a telecopsically movable means in said compartment means, said movable clamp being carried by said telecopsically movable means, said movable clamp having foot means secured to said telecopsically movable means, a cover plate for said base, slot means in said cover plate extending to the edge thereof, said foot means being movable in said slot means beyond said cover plate.

3. In a machine of the class described, a base of fixed length, a fixed clamp disposed at an end thereof, a movable clamp carried by said base, and positionable at selective distances from said fixed clamp, means for carrying said movable clamp, means being extensible beyond the opposite end of said base whereby said movable clamp may be spaced from said fixed clamp beyond the fixed length of said base, said base having elongated compartment means, said extensible means having a telecopsically movable means in said compartment means, said movable clamp being carried by said telecopsically movable means, said movable clamp having foot means secured to said telecopsically movable means, a cover plate for said base, slot means in said cover plate extending to the edge thereof, said foot means being movable in said slot means beyond said cover plate.

4. In a machine of the class described, a base of fixed length, a fixed clamp disposed at an end thereof, a movable clamp carried by said base, and positionable at selective distances from said fixed clamp, means for carrying said movable clamp, means being extensible beyond the opposite end of said base whereby said movable clamp may be spaced from said fixed clamp beyond the fixed length of said base, including a slot extending through a wall of said base, rack means extending along said slot, and a stop means having a toothed element engageable with said rack means for selective positioning with respect to said fixed clamp, and being engageable by said movable clamp to limit motion thereof towards said fixed clamp, said stop means including an element passing through said slot for securing said toothed element in engagement with said rack, said stop means comprising a threaded member adjustable in the direction of said slot to effect precisely located stop positions, said movable clamp being engageable therewith.

5. In a machine of the class described, a base having an elongated slot, a fixed clamp at one end of said base, a movable clamp carried by said base, said movable clamp being positionable with respect to said fixed clamp in the direction of said slot, a stop means adjustable positionable in said slot, rack means extending along said slot, said stop means having a toothed element co-acting with said rack means for securing said stop means in selected positions, and a fastening element passing through said slot securing said stop means and toothed element integrally clamped to said wall of said base.

References Cited in the file of this patent

UNITED STATES PATENTS

912,543 Cobb ........................ Feb. 16, 1909
1,005,055 Miller ........................ Oct. 3, 1911
1,045,523 Tilton .................................. Jan. 9, 1917
1,213,598 Jertson ................................. Apr. 29, 1919
2,594,653 Kurtz .................................. Aug. 14, 1951
2,673,612 Zalkind ................................ Mar. 30, 1954
2,730,174 Weinstein ............................. Jan. 10, 1956
2,760,555 Mertz ................................. Aug. 28, 1956

2,931,552