Jan. 22, 1946. C. L. LEIFER 2,393,254

STACKING DELIVERY TABLE FOR PAPER COLLATING MACHINES

Filed May 20, 1944 2 Sheets-Sheet 1

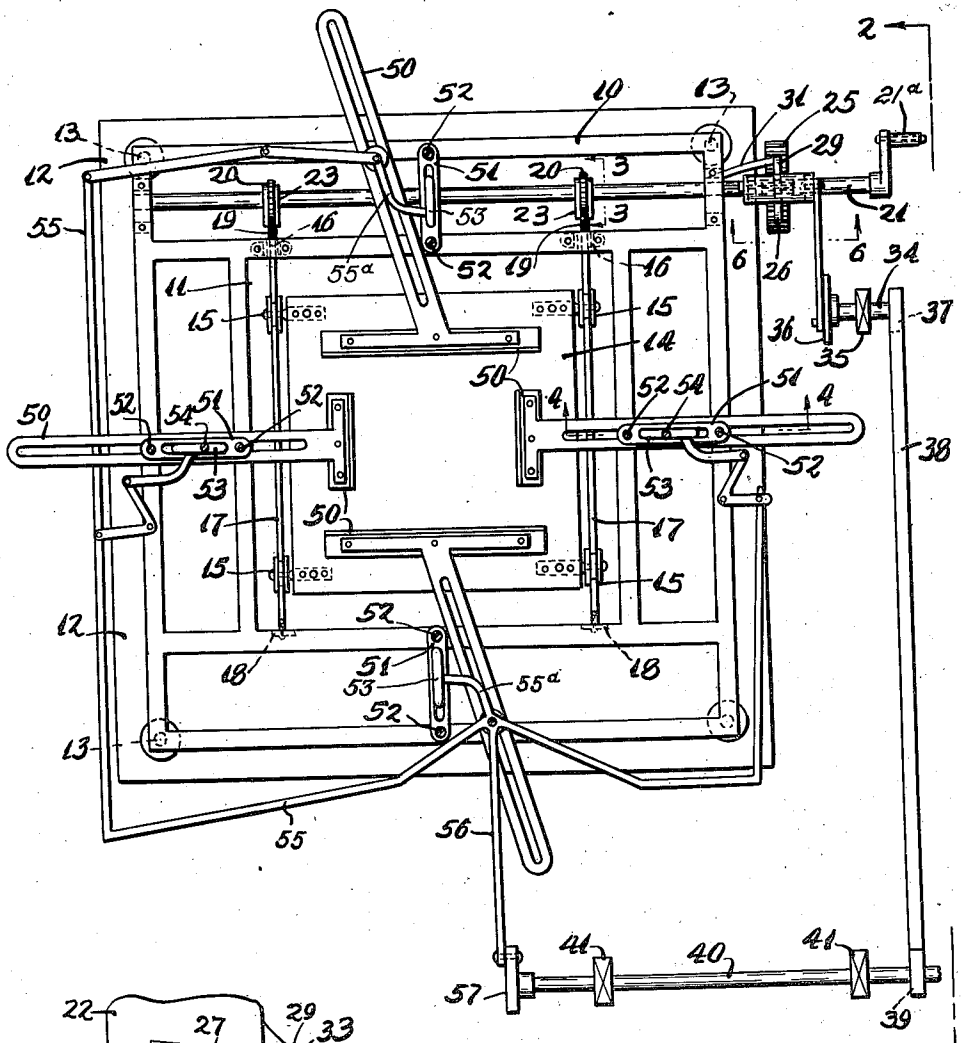


Fig. 1.

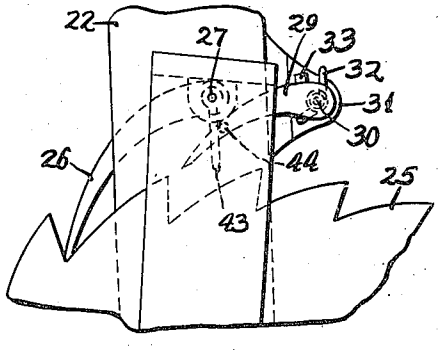


Fig. 7.

INVENTOR.
Charles L. Leifer
BY Zoltan A. Polachek
ATTORNEY

Jan. 22, 1946. C. L. LEIFER 2,393,254

STACKING DELIVERY TABLE FOR PAPER COLLATING MACHINES

Filed May 20, 1944 2 Sheets-Sheet 2

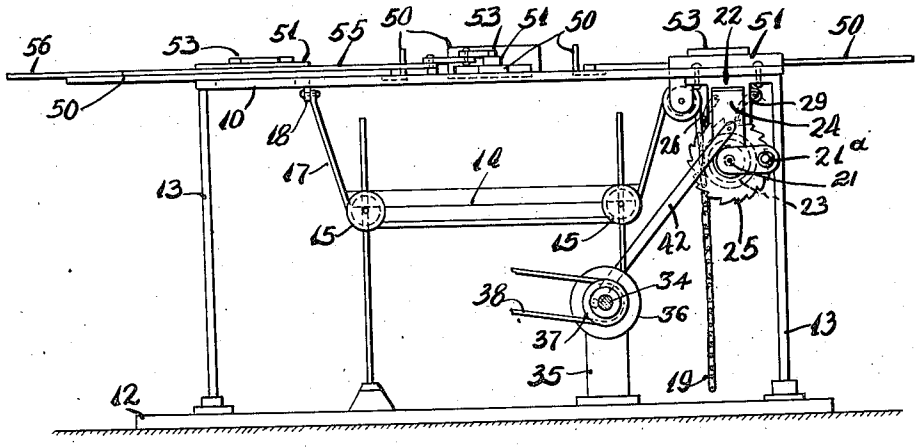


Fig. 2.

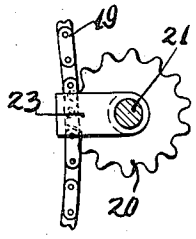


Fig. 3.

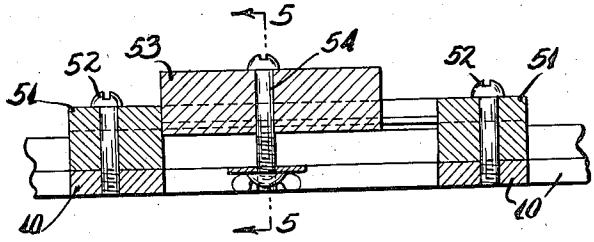


Fig. 4.

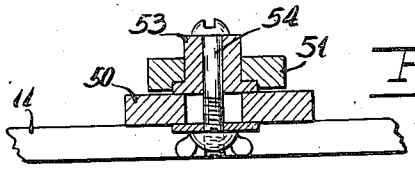


Fig. 5.

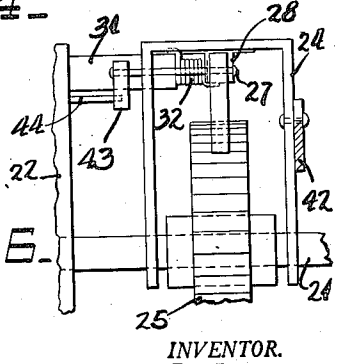


Fig. 6.

INVENTOR.
Charles L. Leifer
BY
Zoltan Polachek
ATTORNEY

Patented Jan. 22, 1946 2,393,254

UNITED STATES PATENT OFFICE

2,393,254

STACKING DELIVERY TABLE FOR PAPER COLLATING MACHINES

Charles L. Leifer, Forest Hills, N. Y.

Application May 20, 1944, Serial No. 536,469

5 Claims. (Cl. 271—88)

This invention relates to new and useful improvements in a delivery table for paper collating machines.

More specifically, the invention proposes the construction of a delivery table for paper collating machines arranged in a manner to include a platform for receiving the sheets of paper from a collating or other similar machine and which is capable of being lowered. It is proposed to arrange the lowering mechanism to be synchronized with the delivery of the collating machines in a manner to cause the platform to be lowered in direct proportion to the number of sheets delivered by the machine so that the top of the stack of sheets will always be at the same elevation.

Another object of the invention proposes the provision of stacking arms slidably mounted upon a frame which supports the platform and which are designed to act upon the topmost sheets of the stack of sheets on the platform. It is proposed that these stacking arms be used to properly align the sheets to form a uniform stack thereof on the platform.

While another object of the invention proposes the construction of a delivery table mechanism which may be operated from an independent source of power synchronized with the operation of the collating machine or other machines or which may be operated from a rotative shaft of the collating machine itself.

Still another object of the invention proposes the construction of a delivery table for paper collating machine which is simple and durable and which may be manufactured and sold at a reasonable cost.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawings forming a material part of this disclosure:

Fig. 1 is a plan view of a delivery table for paper collating machines constructed in accordance with this invention.

Fig. 2 is a side elevational view looking in the direction of the line 2—2 of Fig. 1.

Fig. 3 is a partial vertical sectional view taken on the line 3—3 of Fig. 1.

Fig. 4 is a partial vertical sectional view taken on the line 4—4 of Fig. 1.

Fig. 5 is a vertical sectional view taken on the line 5—5 of Fig. 4.

Fig. 6 is a vertical sectional view looking in the direction of the line 6—6 of Fig. 1.

Fig. 7 is an enlarged view similar to a portion of Fig. 2 but illustrating a shifted position of the parts.

The delivery table for paper collating machine, according to this invention, includes a table-like frame 10 having an open top 11. The frame 10 is supported in an elevated position above a base 12 by means of legs 13. A platform 14 is disposed within the confines of the open top 11 of the frame 10 and is provided to receive sets of papers coming from a collating machine or other similar machine.

Means is provided for lowering a platform 14 relative to the frame 10 as the height of the stack of papers on the platform 14 increases so that the topmost sheets of the stack will always be at substantially the same level. This means comprises rollers 15 mounted upon the corners of the platform 14 and complementary pulleys 16 mounted upon the frame 10. Straps 17 have one of their ends securely attached to lugs 18 formed on the frame 10 opposed to the side provided with the pulley 16. The free ends of the straps 17 engage beneath the rollers 15 and over the pulleys 16. Sprocket chains 19 continue from the free ends of the straps 17 and engage complementary sprocket wheels 20. These sprocket wheels 20 are fixedly attached to a rotative shaft 21 rotatively supported in brackets 22 extending from the frame 10. One end of the shaft 21 is provided with a handle 21^a by which the shaft may be manually rotated when desired.

U-shaped members 23 engage about the sprocket chains 19 and freely engage the shaft 21 and maintain the chains 19 in an engaged position with the teeth of the sprocket wheels 20.

A rocker arm 24 is freely mounted on an extended end of the shaft 21. The rocker arm 24 is of U-shape and extends about a ratchet wheel 25 fixedly mounted upon the shaft 21. The rocker arm 24 carries a pawl 26 which engages the ratchet wheel 25 for letting off some of the chains 19 from the sprocket wheels 20. The pawl 26 is fixedly attached to a pivot pin 27 rotatively supported in brackets 28 mounted upon the rocker arm 24. A second pawl 29 is pivotally supported on a pin 30 which is mounted on an extension bracket 31 projected from one of the brackets 22 which rotatively supports the shaft 21.

The pawl 26 normally retains an engaged position with the teeth of the ratchet wheel 25 while the pawl 29 is resiliently urged by means of a resilient spring 32 into an inoperative position

in which it is disengaged from the teeth of the ratchet 25. The spring 32 is limited in its operation by engaging the pawl 29 against a stop 33 projected from the extension bracket 31.

A means is provided for moving the first named pawl 26 one tooth of the ratchet wheel 25 to lower the platform 14 a distance equal to the number of sheets being delivered to the platform. This means comprises a shaft 34 rotatively supported in a bracket 35. One end of the shaft 34 carries a disc 36. The other end is provided with a pulley 37 over which a belt 38 extends. The opposite end of the belt 38 engages over a pulley 39 fixed to a driven shaft 40 rotatively supported in brackets 41. A lever 42 has one end pivotally attached to the rocker arm 24 and its other end eccentrically pivotally attached to the disc 36. This eccentric connection will cause the rocker arm 24 to be oscillated to and fro as the disc 36 is rotated.

Looking at Fig. 7 rearward motion of the rocker arm 24 will similarly move the pawl 26 and due to the load on the platform 14 the ratchet wheel 25 will move therewith. As the rocker arm moves rearwards the rear end of the pawl 26 will eventually strike the pawl 29 and pivot it downwards against the spring 32 engaging its free end behind a tooth of the ratchet wheel 25. This pawl 29 will then act to prevent the ratchet wheel 25 from slipping and dropping the platform 14. The pivot pin 27 of the pawl 26 extends from the side of the rocker arm 24 and carries a lever 43 which will strike a fixed pin 44 projecting from the bracket 22. This will cause the pin 27 to be pivoted to pivot the pawl 26 which is fixed thereto thus disengaging it from the tooth of the ratchet wheel 25 with which it was engaged. At this point the rocker arm 24 will then move in the opposite direction, more specifically forwards. This will cause the pawl 26 to drop in position behind the next adjacent tooth when the lever 43 is moved away from the pin 44. This movement will also free the pawl 29 which will be urged back to its inoperative position by the spring 32. This will free the ratchet wheel 25 to turn until the tooth thereof strikes the pawl 26. The return movement of the rocker arm 24 will be continued until the normal position is reached and then the ratchet wheel will have been advanced one tooth to lower the platform 14 a distance equal to the number of sheets delivered by the collating machine.

Stacking arms 50 are slidably mounted on the frame 10 and are adapted to bear against the edges of the topmost sheets delivered to the platform 14 for forming a uniform stack of these sheets.

Certain of the stacking arms 50 are slidably supported on members 51 fixedly attached to the frame 10 by means of screws 52. The members 51 slidably support slides 53 which are fixedly attached to the stacking arms 50 by means of screws 54. The slides 53 are connected with one another by means of arms 55 which extend between the slides 53 and each of the four stacking arms 50. Other of the stacking arms 50 are mounted directly on the arms 55 and extensions 55a, from the points of connection of these stacking arms 50 and the arms 55, connect with adjacent slides 53 limiting movement of the latter stacking arms 50 to the radial. One of the arms 55 has a projecting lever 56 which has its free end eccentrically connected to a disc 57 fixedly mounted upon the end of the driven shaft 40. This eccentric connection to the disc 57 will cause the stacking arms 50 to be moved radially in and out and bear against the edges of the sheets of the stack of sheets on the platform 14 to uniformly align them in a stacked position.

The driven shaft 40 might be driven by an independent source of power synchronized with the collating machine to cause the platform 14 to be lowered each time a set of sheets is delivered by the machine to the platform 14. The driven shaft 40 might also be a driven shaft of the collating machine itself in which case the operation of the means for lowering the platform 14 will be synchronized with the operation of the collating machine to cause the platform to be properly lowered each time a set of sheets is delivered to platform 14.

The operation of the invention is as follows:

The platform 14 is raised to a top position in which its top face will bear against the bottom face of the stacking arms 50. The collating machine is set in operation to deliver sets of sheets to the platform 14. Simultaneously the driven shaft 40 is rotated to cause the rocker arm 24 to be oscillated to and fro. Each time the rocker arm 24 makes a complete movement to and fro another set of sheets should be delivered by the collating machine. This rocking motion of the arm 24 will cause the platform 14 to be slightly lowered each time a new set of sheets reaches a position on the platform 14. Lowering the platform 14 will cause the top most sheets of the stack to always be at substantially the same elevation. Simultaneously with the lowering of the platform 14, stacking arms 50 will be moved radially in and out to bear against the edges of the topmost sheets and cause them to be uniformly stacked.

While I have illustrated and described the preferred embodiments of my invention, it is to be understood that I do not limit myself to the precise constructions herein disclosed and the right is reserved to all changes and modifications coming within the scope of the invention as defined in the appended claims.

Having thus described my invention, what I claim as new, and desire to secure by United States Letters Patent is:

1. A delivery table for paper collating machines comprising a table-like frame having an open top, a platform for receiving the sets of papers from a collating or other machine, rollers mounted on said platform, pulleys mounted on said frame, straps attached at one of their ends to said frame and engaging beneath said rollers and over said pulleys for supporting said platform, sprocket chains connected with the free ends of said straps, a shaft rotatively supported on said frame, sprocket wheels mounted on said shaft and engaging said chains for letting out or drawing said chains for lowering and lifting said platform, a rocker arm on said shaft, a ratchet wheel on said shaft, a pawl on said rocker arm engaging said ratchet wheel for letting off some of said chains from said sprocket wheels, an additional pawl for engaging said ratchet wheel to hold the load, and means for moving said first named pawl past one tooth of said ratchet wheel, said means comprising rotatively supported disc, and a lever having one end pivotally attached to said rocker arm and its other end pivotally eccentrically connected with said rotative disc.

2. A delivery table for paper collating machines, comprising a table-like frame having an

open top, a platform for receiving the sets of papers from a collating or other machine, rollers mounted on said platform, pulleys mounted on said frame, straps attached at one of their ends to said frame and engaging beneath said rollers and over said pulleys for supporting said platform, sprocket chains connected with the free ends of said straps, a shaft rotatively supported on said frame, sprocket wheels mounted on said shaft and engaging said chains for letting out or drawing said chains for lowering and lifting said platform, a rocker arm on said shaft, a ratchet wheel on said shaft, a pawl on said rocker arm engaging said ratchet wheel for letting off some of said chains from said sprocket wheels, an additional pawl for engaging said ratchet wheel to hold the load, and means for moving said first named pawl past one tooth of said ratchet wheel, said means comprising a rotatively supported disc, and a lever having one end pivotally attached to said rocker arm and its other end pivotally eccentrically connected with said rotative disc, and means for rotating said rotative disc at a rate of speed synchronized with the operation of said collating or other machine.

3. A delivery table for paper collating machines, comprising a table-like frame having an open top, a platform for receiving the sets of papers from a collating or other machine, rollers mounted on said platform, pulleys mounted on said frame, straps attached at one of their ends to said frame and engaging beneath said rollers and over said pulleys for supporting said platform, sprocket chains connected with the free ends of said straps, a shaft rotatively supported on said frame, sprocket wheels mounted on said shaft and engaging said chains for letting out or drawing said chains for lowering and lifting said platform, a rocker arm on said shaft, a ratchet wheel on said shaft, a pawl on said rocker arm engaging said ratchet wheel for letting off some of said chains from said sprocket wheels, an additional pawl for engaging said ratchet wheel to hold the load, and means for moving said first named pawl past one tooth of said ratchet wheel, said means comprising a rotatively supported disc, and a lever having one end pivotally attached to said rocker arm and its other end pivotally eccentrically connected with said rotative disc, and means for rotating said rotative disc at a rate of speed synchronized with the operation of said collating or other machine, said rocker arm being of U-shape and said shaft passing through openings in the ends of its side portions by which said rocker arm is pivotally mounted on said shaft.

4. A delivery table for paper collating machines, comprising a table-like frame having an open top, a platform for receiving the sets of papers from a collating or other machine, rollers mounted on said platform, pulleys mounted on said frame, straps attached at one of their ends to said frame and engaging beneath said rollers and over said pulleys for supporting said platform, sprocket chains connected with the free ends of said straps, a shaft rotatively supported on said frame, sprocket wheels mounted on said shaft and engaging said chains for letting out or drawing said chains for lowering and lifting said platform, a rocker arm on said shaft, a ratchet wheel on said shaft, a pawl on said rocker arm engaging said ratchet wheel for letting off some of said chains from said sprocket wheels, an additional pawl for engaging said ratchet wheel to hold the load, and means for moving said first named pawl past one tooth of said ratchet wheel, said means comprising a rotatively supported disc, and a lever having one end pivotally attached to said rocker arm and its other end pivotally eccentrically connected with said rotative disc, and means for rotating said rotative disc at a rate of speed synchronized with the operation of said collating or other machine, said rocker arm being of U-shape and said shaft passing through openings in the ends of its side portions by which said rocker arm is pivotally mounted on said shaft, and the side portions of said rocker arm being disposed to the sides of said ratchet wheel.

5. A delivery table for paper collating machines, comprising a table-like frame having an open top, a platform for receiving the sets of papers from a collating or other machine, rollers mounted on said platform, pulleys mounted on said frame, straps attached at one of their ends to said frame and engaging beneath said rollers and over said pulleys for supporting said platform, sprocket chains connected with the free ends of said straps, a shaft rotatively supported on said frame, sprocket wheels mounted on said shaft and engaging said chains for letting out or drawing said chains for lowering and lifting said platform, a rocker arm on said shaft, a ratchet wheel on said shaft, a pawl on said rocker arm engaging said ratchet wheel for letting off some of said chains from said sprocket wheels, an additional pawl for engaging said ratchet wheel to hold the load, and means for moving said first named pawl past one tooth of said ratchet wheel, said means comprising a rotatively supported disc, and a lever having one end pivotally attached to said rocker arm and its other end pivotally eccentrically connected with said rotative disc, and means for rotating said rotative disc at a rate of speed synchronized with the operation of said collating or other machine, said rocker arm being of U-shape and said shaft passing through openings in the ends of its side portions by which said rocker arm is pivotally mounted on said shaft, and the side portions of said rocker arm being disposed to the sides of said ratchet wheel, and said first named pawl being disposed between the side portions of said rocker arm.

CHARLES L. LEIFER.