Dec. 14, 1926. 1,610,402

G. P. WERN

FEEDING AND ALIGNING DEVICE

Filed Dec. 30, 1925 2 Sheets-Sheet 1

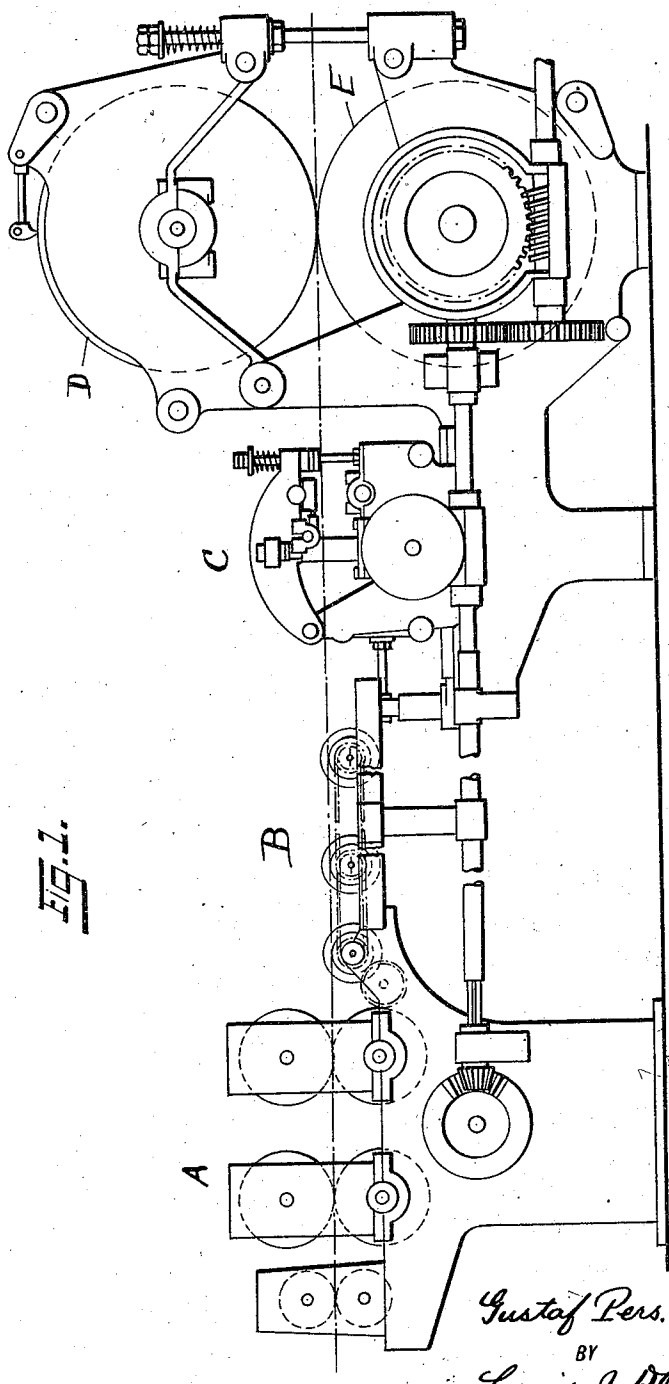


Fig. 1.

INVENTOR
Gustaf Pers. Wern,
BY
Lewis J. Doolittle
ATTORNEY

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Fig. 2.

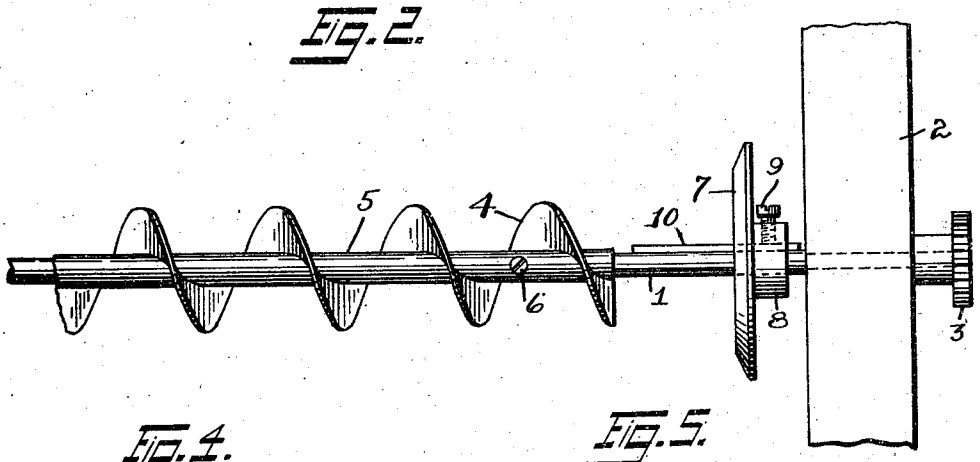


Fig. 4.

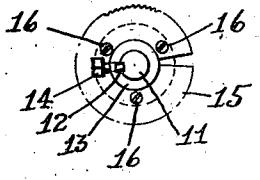


Fig. 5.

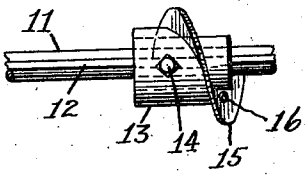
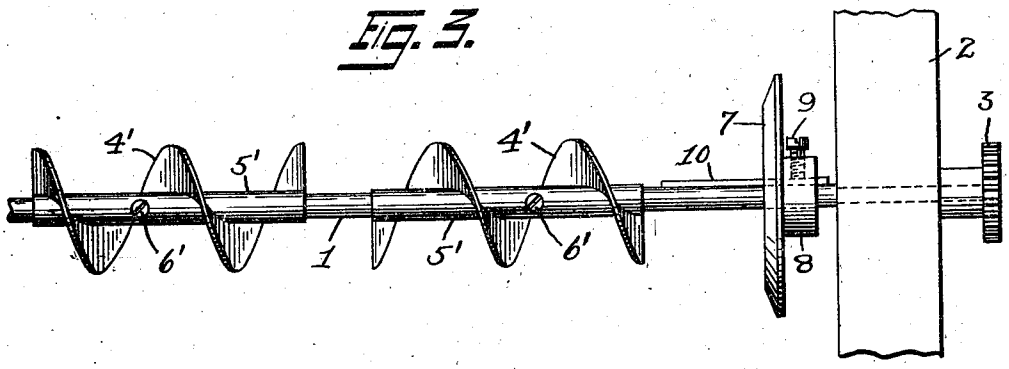


Fig. 3.



INVENTOR

Gustaf Pers Wern,

BY

Lewis J. Doolittle

ATTORNEY

Patented Dec. 14, 1926. 1,610,402

UNITED STATES PATENT OFFICE.

GUSTAF PERS. WERN, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO ARVEY CORPORATION, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

FEEDING AND ALIGNING DEVICE.

Application filed December 30, 1925. Serial No. 78,366.

This invention relates to a feeding and aligning device adapted for use with machines of various kinds where it is desired to feed or carry the material to another part of the machine in a definite and accurately positioned relation thereto, or to successively feed a number of pieces of material each in alignment with the preceding piece.

To accomplish the above results with an efficient mechanical arrangement, which may be adapted without material change for use with various machines, I provide a series of parallel shafts adapted to be revolved in unison in the same direction. On each of these shafts I provide a support with a helical edge extending spirally and longitudinally of the shaft. A guide or stop, in the form of a disk, is also mounted at or adjacent one end of this shaft, the end towards which the spirally extending support extends, or appears to move when rotated. The stops are preferably adjustably mounted so as to be movable longitudinally of the shaft and are of a somewhat larger diameter than the outside diameter of the spirally extending support.

The construction and operation of the device is illustrated in connection with a machine for mounting two sheets of paper on opposite sides of a sheet of cardboard, for lithograph purposes, etc. In the machine shown, the cardboard is first fed through a paste applying device where the paste is applied to both sides thereof. From this point the cardboard is fed on to the feeding and aligning device incorporating the present invention, where it is aligned into position and fed forward to the timing mechanism and paper applying device, where the sheets of paper are applied to both sides of the cardboard.

It will be apparent that the proper aligning of the cardboard is important, in order that the paper may be applied thereto in register therewith.

In the drawings I have illustrated a machine such as referred to and have shown several embodiments of my invention which may be used in connection therewith.

In the drawings:—Fig. 1 is a general side elevation of a machine such as decribed. Fig. 2 is a detail view of one of the carriers embodying one form of my invention. Fig. 3 is a detail view of a modification of Fig. 2. Figs. 4 and 5 are detail end and side views of another modification of my invention.

It will be understood that the construction of the machine illustrated in Fig. 1 is not a part of the present invention, which has to do only with the novel feeding and aligning device, which device is not only adapted for use with the particular machine designed for mounting sheets of paper on both sides of a sheet of cardboard but also in connection with other machines and mechanisms for the same or other purposes. Consequently, the detail construction of the mounting machine has not been shown but merely illustrated as showing one useful adaptation of the device embodying the present invention.

In the mounting machine shown in Fig. 1, the sheet of cardboard is fed in at the left hand side, as shown in the view, Fig. 1, and passes between paste applying rolls and mechanism, indicated generally at A, which apply the paste to both sides thereof.

From the paste applying rolls, A, the cardboard passes on to the feeding and aligning device, indicated at B, which will be described more fully hereinafter, as this device embodies the present invention. This device feeds the cardboard forward and positions it in a predetermined position and in alignment and passes it to the stop mechanism, indicated at C, which mechanism is designed to release the same at the proper time with relation to the rotation of the large rolls D and E, which latter rolls carry the sheets of paper which are applied to both sides of the cardboard as the same passes therebetween.

It will be apparent that the proper alignment of the cardboard sheets is an important feature in this as well as in any machine of this character and it is with this that the device of the present invention has to do.

In Fig. 2, one form for the feeding device is shown in detail. This comprises a shaft 1, mounted in suitable bearings in the side frames of the machine, one of which is shown at 2. At one end of the shaft 1 a pulley or sprocket wheel 3 is mounted, by means of which the shaft is rotated by a suitable chain driven from the operating mechanism of the machine, as indicated in Fig. 1, or

otherwise, it being obvious that the driving means may be adapted and designed to operate the device from the machine mechanism, as desired.

A supporting and feeding member, provided with a helical edge and extending spirally longitudinally of the shaft 1, is shown at 4, in the form of a metal strip mounted on a sleeve member 5, which is positioned and held on the shaft 1 by means of a set screw 6. In the form shown in Fig. 1, this supporting and feeding member extends substantially the length of the shaft. In some cases, however, it may be desirable to provide a number of these feeding members, instead of one on each shaft, and such an arrangement is shown in Fig. 3, in which the spiral supporting members are indicated at 4′ and their respective sleeves at 5′. Any desired number of these may be positioned on each shaft in the desired relation to each other, being adjustable on the shaft and held in the desired position by the set screw 6′, as will be readily understood from the drawings.

In the form shown, a guide member is mounted on the shaft 1, adjacent one end thereof. This guide member is preferably in the form of a disk 7, provided with a hub 8 and a set screw 9 for adjusting the position of the guide longitudinally on the shaft while a key 10 secures the same on the shaft for rotation therewith. This guide member also acts as a stop for the sheets of cardboard, etc., which are carried in a direction from the bottom toward the top of the drawing by the rotation of the supporting member 4 or 4′ and, at the same time, by the action of the helical edge of the spirally extending supporting member, the sheets are carried to the right until they encounter the member 7.

As this guide member is rotating at the same time, any tendency of the sheets to become turned out of position is avoided, on account of the fact that the portion of the disk against which the same impinge is moving forward in the same direction as the sheets, thus reducing the friction to a minimum and causing an alignment of the sheets to be effected with great accuracy, which is an important feature of devices of this nature.

It may be desirable, in some cases where a stationary stop or guide is preferred, to omit the guide disk just described and it will be obvious that this may be done without departing from the essential features of the spiral support and carrier.

In Figs. 4 and 5, I have shown a modification for the spiral support and carrier, which may be preferable in some cases and which presents some advantages, from the standpoint of manufacture, etc. In this form, I provide a plurality of separate supports on the shaft 11, which shaft is provided with a key 12 extending substantially its entire length.

These supports are each formed from a disk, which is cut radially on one side and separated so that its outer edge is in a helical form, as shown at 15. These disks are secured to a hub member 13, which is provided with a key slot to fit the key 12 on the shaft 11 and are held in position by a set screw 14. The disk 15 may be secured to the hub member 13 by means of screws 16, or by other suitable means. This provides for the positioning of the supporting disks in the same relative position, circumferentially, on the shaft, as well as for adjustment longitudinally, the purpose being to bring any variations in the diameter of the outer edge, due to the distortion of the disk to form the helical supporting edge, of all of the disks on the same shaft in the same relative position, causing the sheet of cardboard to be engaged at all times by all of the supports.

The foregoing description of the specific forms for the feeding and aligning device is not to be understood in a limiting sense but as illustrative of operative embodiments of the invention and in which various changes in the details of construction may be made without departing from the spirit of the invention, as defined in the appended claims.

What I claim is:—

1. A device of the class described, comprising a shaft, a support carried by said shaft and extending spirally and longitudinally thereof, a guide member mounted on said shaft adjacent one end thereof, and means for rotating said shaft.

2. A device of the class described, comprising a shaft, a support carried by said shaft and extending spirally and longitudinally thereof, a disk forming a guide mounted on said shaft adjacent one end thereof, and means for rotating said shaft.

3. A device of the class described, comprising a shaft, a support carried by said shaft and extending spirally and longitudinally thereof, a disk of larger diameter than the outside diameter of said spirally extending support mounted on said shaft adjacent one end thereof and means for rotating said shaft.

4. A device of the class described, comprising a shaft, a support carried by said shaft and extending spirally and longitudinally thereof, a guide member adjustably mounted on said shaft adjacent one end thereof, and means for rotating said shaft.

5. A device of the class described, comprising a shaft, a plurality of supports carried by said shaft and extending spirally and longitudinally thereof, a guide member mounted on said shaft adjacent one end

thereof, and means for rotating said shaft.

6. A device of the class described, comprising a shaft, a sheet supporting and feeding means carried by said shaft including a sleeve and a spiral extending longitudinally thereof, a rotatable guide member positioned adjacent one end of said support, and means for rotating said shaft and said guide member.

7. A device of the class described, comprising a shaft, a sheet supporting and feeding means carried by said shaft and extending spirally and longitudinally thereof, a movable guide member positioned adjacent one end of said support and adjustable with relation thereto, and means moving the effective part of said guide member in the feeding direction.

8. A device of the class described, comprising a shaft, a plurality of supports carried by said shaft, each of said supports comprising a disk formed with its outer edge in a helical form, means for positioning said supports in the same relative position circumferentially on said shaft, a guide member positioned adjacent one end of said shaft, and means for rotating said shaft.

9. A device of the class described, comprising a shaft, a plurality of supports carried by said shaft, each of said supports comprising a disk formed with its outer edge in a helical form, means for positioning said supports in the same relative position circumferentially on said shaft and adjusting the relative position thereof longitudinally, a guide member positioned adjacent one end of said shaft, and means for rotating said shaft.

Signed at New York, in the county of New York and State of New York, this 2nd day of December, A. D. 1925.

GUST. PERS. WERN.