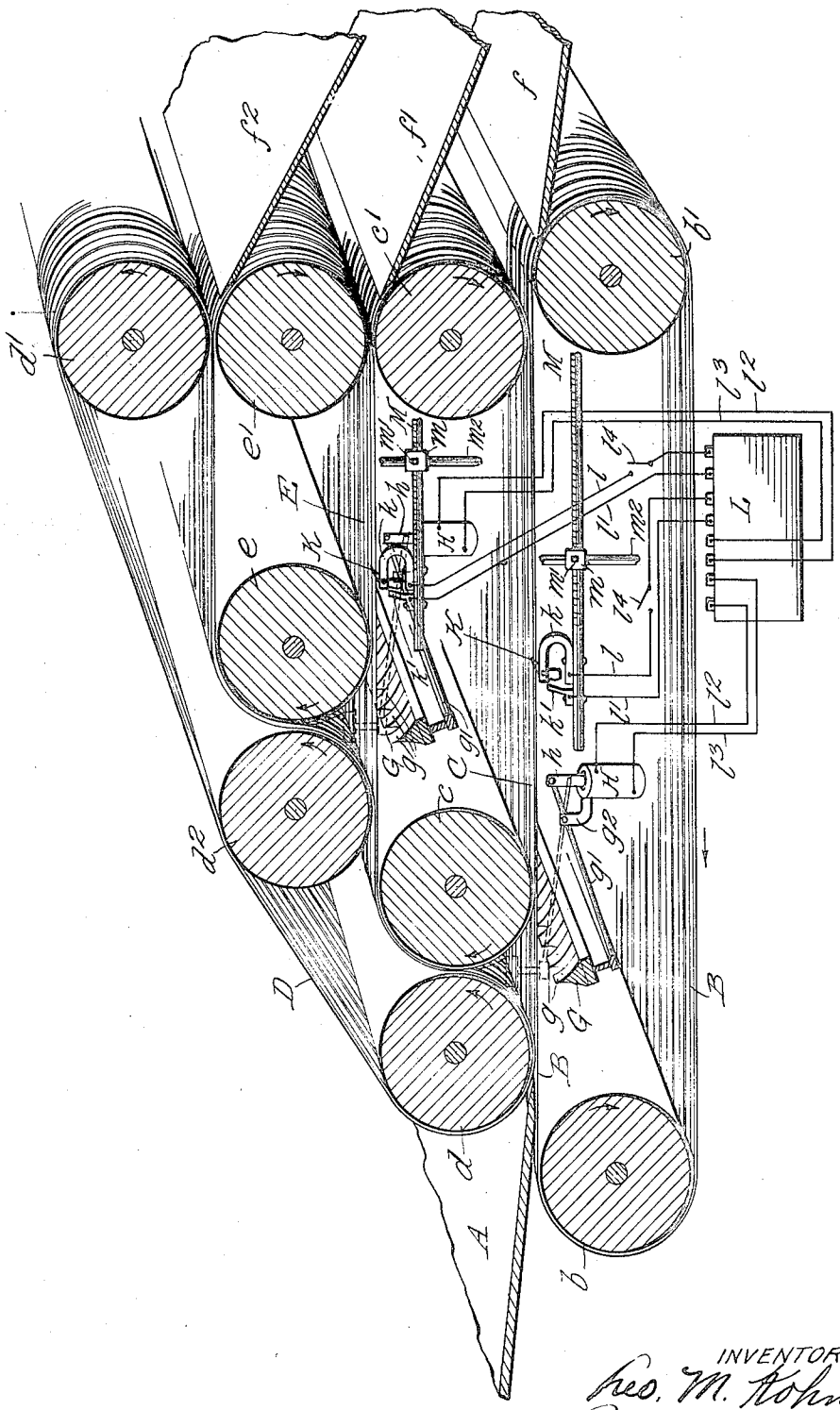
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L. M. KOHN

FOLDING MACHINE

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UNITED STATES PATENT OFFICE.

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FOLDING MACHINE.

Application filed February 16, 1920. Serial No. 358,916.

To all whom it may concern:

Be it known that I, LEO M. KOHN, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Folding Machines, of which the following is a specification.

This invention relates to machines for folding sheets of material at predetermined distances from one end thereof.

The objects of the invention are to provide a machine of this kind, which is so constructed as to operate successfully on woven or textile fabrics of various kinds as well as on stiffer materials; also to provide a machine of this kind with electrical folder-actuating mechanism which is sufficiently sensitive to enable the machine to operate on any kind of textile material; also to improve the construction of machines of this kind in other respects hereinafter specified.

The accompanying drawing shows a perspective sectional view of the machine embodying the invention.

The folding machine shown in the accompanying drawing and embodying the invention includes a plurality of endless tapes or conveyers running over rollers and so placed with regard to each other that the material can be fed by means of a feeding device, which engages the part of the material which is to be folded, between two rollers arranged in close proximity to each other to effect the folding of the material. In the construction shown for this purpose, the material to be folded is fed to the machine from a table or support A and then passes upon the upper run of a conveyer or series of tapes B which pass over rollers b and b'. At the proper time the material to be folded is fed upwardly between two series of tapes or conveyers C and D, the tapes C passing over two rollers c and c', and the tapes D passing over rollers d and d' and an idler roller d^2. The rollers c and d are arranged in close proximity so that the material fed between these two rollers will be folded between the tapes C and D. If a second folding operation is desired, a conveyer or set of tapes E is provided which passes over rollers e and e', the rollers e being arranged in close proximity to the idler roller d^2 so that the article to be folded for the second time can be fed between the rollers d^2 and e and will be carried between the tapes D and E. In case an article passes through the machine without being folded, it is received at the discharge end of the machine upon a table or support f. If an article is folded only once it will be discharged by the tapes C upon a table f', and if it has been folded twice it will be discharged from the tapes E to a table f^2. It will be obvious that any desired number of folds can be effected by simply increasing the number of tapes, as may be desired. The conveyers or tapes and rollers may be arranged in any other desired manner to make it possible to feed an article from a conveyer or carrier of any desired kind between two rollers to effect the folding of the article.

In order to effect the folding of the articles by feeding them between two adjacent rollers, a feed member G is preferably provided, which in the construction shown has a plurality of heads or parts adapted to project between the tapes. These heads may be mounted on the end of a lever g', which is suitably pivoted at g^2 on the frame or other fixed part of the machine. The heads of the feed member may be actuated to effect the folding of the articles in any desired manner. In the construction shown the other end of the lever is secured to a core h of a solenoid or electro-magnet H. Consequently, when the coil of the solenoid or electro-magnet is energized the core h will be drawn into the same, thus swinging the lever g' about its pivot and causing the heads or parts g to pass between the tapes and pick up the article along the line at which the article is to be folded and move the same into the space or bite between the two rollers of the folding device. Any other means for swinging the lever G about its pivot may be provided.

In order to control the actuation of the feeding device G, an electric actuating or controlling device is preferably provided which is actuated by the front edge of the article to be folded. In the device shown in the drawings, the controlling or actuating device includes a pivoted contact member K pivoted upon a suitable supporting member k of the controlling device and having a part adapted to be engaged by the article to be folded, and which in the construction shown extends between adjacent tapes, and a part which is adapted to swing or move into contact with a fixed contact member k' of the device. The pivoted contact mem-

ber K is preferably made light in weight so that it can be easily swung by the front edge of the article which is to be folded into engagement with the stationary contact member k'. The engagement of the pivoted and stationary contact members closes a circuit including two conductors l and l', which in the construction shown, leads to a suitable relay device or source of power (not shown), which is represented as arranged in a housing or container L, and by means of which current will be transmitted to the magnet H through another pair of conductors l^2 and l^3. A switch l^4 is preferably inserted in the circuit closed by the controlling device so that in case it is desired to render any desired folding mechanism inoperative, the corresponding switch l^4 can be opened. The relay device is not herein described since it may be of any usual or suitable form permitting the use of a relatively weak electric current in the actuating device, and energizing the magnet H by means of a stronger electric current when the circuit through the controlling device is closed. If desired, no relay device of any kind need be used and the current flowing through the contacts k and k' may be directly transmitted to the coil H to energize the same. The controlling and feeding devices for effecting the first and second fold are, in the construction shown, exactly alike, and are preferably entirely independent of each other.

In order to adjust the device for making folds in articles at different distances from the ends thereof, means of any suitable construction may be employed for changing the position of the controlling device with reference to the feeding member G. Any suitable means may be provided for this purpose, those shown including a graduated rod M which is slidable in a bearing or clamp m in which it may be held in the desired position by means of a set screw m'. The clamp m is preferably mounted on a part m^2 which may be rigidly secured to the frame of the machine. By means of the graduations an operator can quickly set the actuating device to make a fold of any desired width. Any other means for adjusting the controlling device relatively to the folding member may be provided.

In the operation of the folding machine shown in the drawing, an article to be folded is moved along the table A into engagement with the tapes B which feed the article forwardly past the feeding member until the front edge of the article engages the movable contact device K, whereupon the folding member G is actuated to carry the article between the rollers c and d by means of which the article which has been once folded will be carried by the tapes C into operative relation to the second feeding device which is actuated when the folded edge of the article strikes the movable contact member of the controlling device, whereupon the article will be fed forwardly by means of the feeding member G for the second fold, which feeds the article between the rollers d^2 and e. The article is then carried by means of the tapes or conveyers E to the discharge table f^2. If it is desired to actuate only the first feeding device G, then the switch l^4 controlling the flow of current to the controlling device for the second feeding member can be opened and the article will be discharged by the tapes C to the discharge table f'.

The machine described has the advantage that the controlling members can, if desired, be made so sensitive that the machine can be used to fold the finest kind of gauze or other fabric, for example for folding surgical bandages. The machine is simple in construction and reliable in operation, and can be readily changed to make folds of different sizes.

I claim as my invention:

1. In a folding machine, the combination of a conveyer for carrying the article to be folded and including a plurality of tapes spaced apart, folding means arranged adjacent to the conveyer, and a controlling device having a part extending between a pair of tapes adapted to be engaged by the article as the same passes into the desired relation to the folding means without interrupting the movement of the article, said controlling device controlling the action of said folding device.

2. In a folding machine, the combination of a conveyer for carrying the article to be folded, folding means arranged adjacent to the conveyer, a controlling device adapted to be engaged by the article as the same passes into the desired relation to the folding means without interrupting the movement of the article, and electrical connections between said controlling device and said folding means to effect the folding of an article when the article engages said controlling device.

3. In a folding machine, the combination of folding means, means for moving an article to be folded into operative relation to said folding means, and an electrical actuating device for said folding means, including an electrical contact device engaged by the front end of the article while the same is in operative relation to said folding means for energizing said actuating device to cause the folding means to effect the folding of the article.

4. In a folding machine, the combination of folding means including folding devices and a feeding member which feeds the article to be folded to said folding devices, means for moving an article to be folded into operative relation to said folding means,

an electrical controlling device adapted to be actuated by said article when in operative relation to said folding means, and electrically operated means energized by said controlling device for actuating said feeding member.

5. In a folding machine, the combination of means for folding an article, means for carrying the article into operative relation to said folding means, and a controlling device actuated by the front edge of the article when the same is approximately in operative relation to said folding means, said controlling device comprising an electrical contact device having a part which extends into the path of movement of said article and which may be moved out of said path of movement by an article and a part adapted to engage a stationary contact member when said first mentioned part is engaged by an article, and electrical connections between said contact members and said folding means for causing the actuation of said folding means when said contact device is actuated by an article.

6. In a folding machine, the combination of means for folding an article, means for carrying the article into operative relation to said folding means, and a controlling device actuated by the front edge of the article when the same is approximately in operative relation to said folding means, said controlling device comprising a pivoted member having a part which extends into the path of movement of the article and which may be moved out of said path of movement by an article, a stationary contact member, and a movable contact member connected with said pivoted member and adapted to engage said stationary contact member when said pivoted member is swung about its pivot by an article, and electrical connections between said controlling device and said folding means for causing the instantaneous actuation of said folding means when said contact members are in engagement.

7. In a folding machine, the combination of means for folding an article, means for carrying the article continuously in one direction until the article is engaged by said folding means, a controlling device which controls the operation of said folding means and which is actuated by the front edge of the article when the same is approximately in operative relation to said folding means, extensible connections between said folding means and said controlling device and means for adjusting the position of said controlling device relatively to said folding means to vary the distance at which the articles are folded from the ends thereof.

8. In a folding machine, the combination of means for folding an article, means for carrying the article in a continuous movement into operative relation to said folding means, a controlling device actuated by the front edge of the article when the same is approximately in operative relation to said folding means, to cause said folding means to engage the article while the same is in motion, an adjustable member on which said controlling device is mounted, and means for holding said adjustable member in different positions relatively to said folding means to vary the distance at which the articles are folded from the ends thereof.

9. In a folding machine, the combination of folding means including folding devices and a feeding member which feeds the article to be folded to said folding devices, means for moving an article to be folded into operative relation to said folding means, an electrical controlling device adapted to be actuated by said article when in operative relation to said folding means, electrically operated means for actuating said feeding member, and means for adjusting said folding means and controlling device relative to each other.

10. In a folding machine, the combination of a plurality of folding means adapted to operate successively on an article to effect the folding thereof, means for carrying the articles into operative relation to said folding means, a controlling member for each folding means adapted to be actuated by an article when in operative relation to the corresponding folding means, extensible connections between said folding means and said controlling means and means for adjusting said controlling members relatively to said folding means and independently of each other to vary the folding of the articles.

11. In a folding machine, the combination of a conveyer for the articles to be folded, said conveyer including a plurality of tapes spaced apart and engaging the opposite sides of the articles, and a folding device arranged adjacent to the conveyor and having a part extending between said tapes and adapted to be engaged by the articles as the same pass into operative relation to said folding device without interrupting the movement of the articles, said tapes holding the article taut to enable the same to actuate said part of said folding device.

Witness my hand this 11th day of February, 1920.

LEO M. KOHN.

Witnesses:
L. R. LONG,
FRANK J. KOHN.