

Nov. 17, 1925.

1,561,908

W. H. CANNARD ET AL

INTERFOLDING MACHINE

Filed Aug. 16, 1924

3 Sheets-Sheet 1

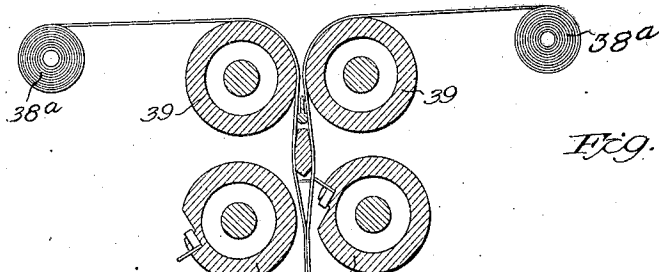


Fig. 1.

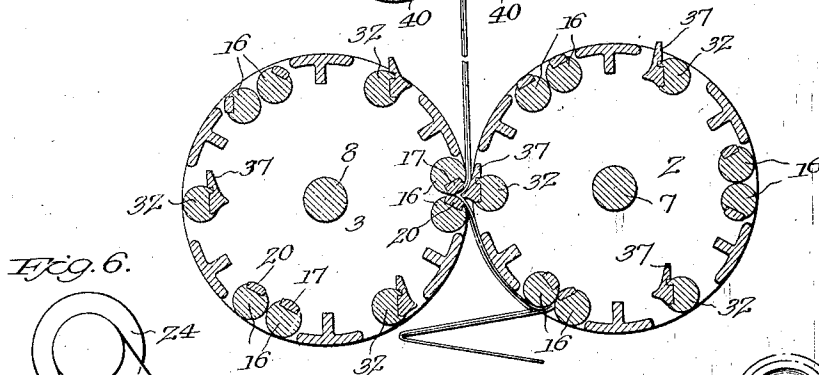


Fig. 6.

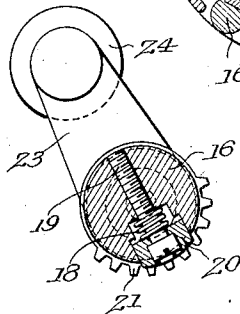


Fig. 5.

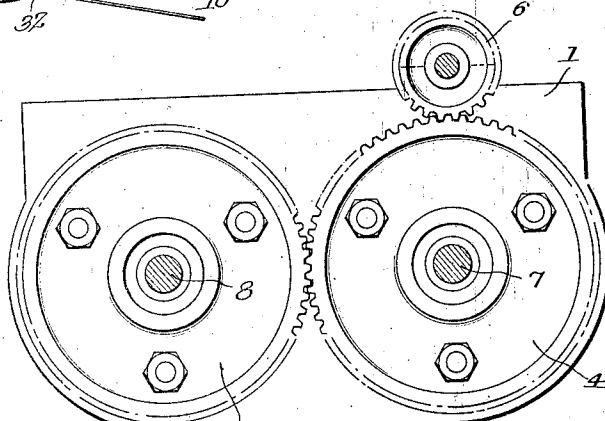
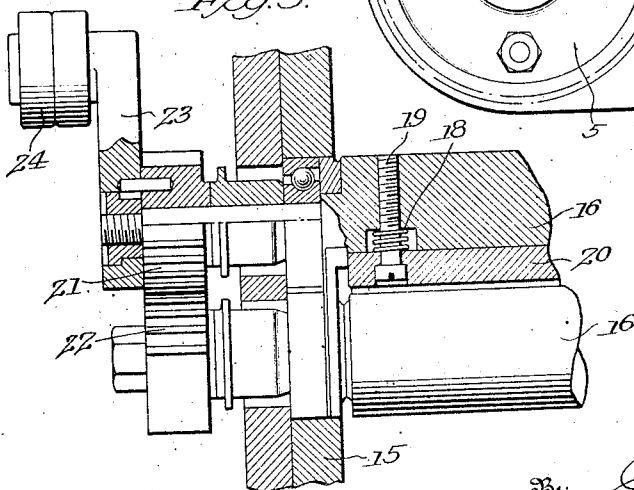


Fig. 4.



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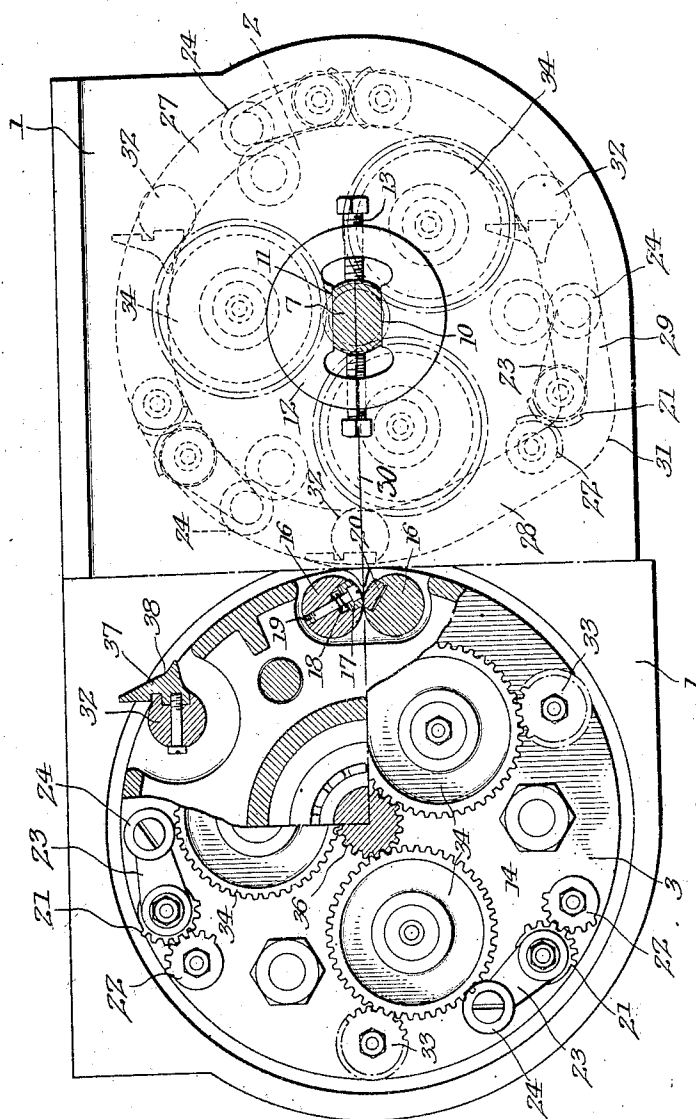
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3 Sheets-Sheet 2

Fig. 2.



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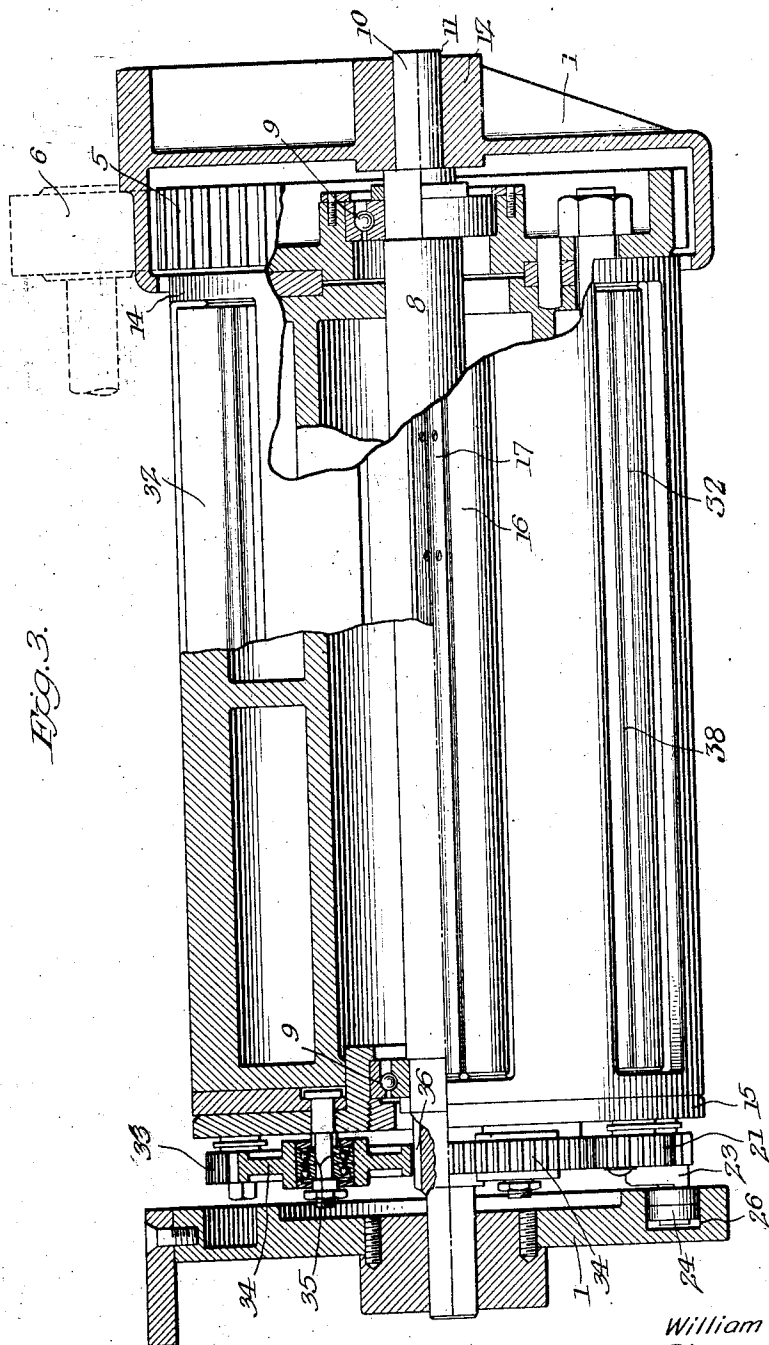
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INTERFOLDING MACHINE

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3 Sheets-Sheet 3



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# UNITED STATES PATENT OFFICE.

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## INTERFOLDING MACHINE.

Application filed August 16, 1924. Serial No. 732,422.

*To all whom it may concern:*

Be it known that WILLIAM H. CANNARD and GLENN A. SHAFFER, citizens of the United States and Canada, respectively, and residing at 130 So. Roosevelt Street, Green Bay, Wisconsin, and Green Bay, Wisconsin, respectively, in the county of Brown and State of Wisconsin, have invented certain new and useful Improvements in Interfolding Machines, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to interfolding machines and, particularly, to that type thereof known in the art as "rotary interfolders".

The present inventive-concept is, generally speaking, of the same type of machine as is disclosed in our earlier pending application, filed September 29, 1921, Serial No. 504,023, and involves certain (but not all) of the features of the structure of that case: For instance, in the earlier machine, there are two companion drums intergeared for their definite relative rotation to position tucker-bars on one drum successively in coative relation to pairs of pinch-members on the other drum, these tucker and pinch-members, on each drum, being in alternate arrangement; there also being means for rotating the drums, and means for actuating the pinch-members. The pinch-members, and means for controlling the movement of the tucker-members, in that structure, are in the form of rolls which are continuously rotated on their axes during the rotation of the drums; these rolls being rotated by means which also are common to the tucker-members and whereby, while the pinch-members are being rotated, the tucker members also are thereby rotated in order that the active portions of the tuckers on one drum may always have a definite and unchanging relation to the axis of the other drum, thus insuring accurate registering of the active portion of each tucker on one drum between its respective and coative pair of pinch-rolls on the other drum. In the structure of our present machine, however, the pinch-members are not continuously rotatable but have only a partial rotation—a sort of rocking on their axes—and the means for actuating the pinch-members is independent of, and of a type different from, that of the earlier

machine. As a consequence, the mode of operation of the two machines is, in certain aspects, different and the results produced thereby are, likewise, somewhat different. For certain purposes, the present construction may be found to have certain practical advantages and, especially, as the squeezing action of the pinch-members may be found to be more pronounced and certain. However that may be, the present embodiment is a development of our original conception and, so far as we are at present advised, is novel and a departure from certain fundamental principles of the earlier machine.

The object of this type of machine is to effect an interfolding of two or more strips or sheets of paper, or the like, for articles such as towels, toilet-paper, etc., and to effect such interfolding with great speed, whereby the capacity of the machine, in a day's run for instance, is exceedingly large and substantially profitable. In a practical working of our earlier machine, the daily production thereof far exceeded the capacity of any other type of interfolding machine known to us. This was due to the nicety of timed action of the parts of that machine, the coaction of certain of such parts, on the one revolving drum with those on the other; the certainty, always, of such coaction, and the consequent high speed at which the machine could normally be operated. In that respect, the characteristic advantages of that machine are present in the present machine and, perhaps, to a greater degree.

In order that the invention may be more readily ascertained, we have disclosed it, as a practical embodiment, in the accompanying drawings; but it is to be understood that these drawings are, and are intended to be, merely illustrative, that our inventive-concept is susceptible of other embodiments and utilizations, and that the illustrated embodiment is susceptible of a wide range of modification and variation without departing from the spirit of our invention or sacrificing any of the underlying principles or salient features thereof.

In these drawings:

Figure 1 is a fragmentary view, more or less diagrammatic, of intergeared drums, each carrying sets of pinch-members and tucker-members in alternate arrangement,

and showing one tucker-member on one drum in coating, tucking relation to a pair of pinch-members on the other drum, and whereby sheets of material—paper in this instance—are interfolded and released during the rotation of the drums; means also being shown for supplying two cut, associated sheets;

Fig. 2 is a view, in sectional elevation, and on a much larger scale, of the drums with the pinch and tucker members, and showing the means for respectively actuating and controlling these members;

Fig. 3 is a view in front elevation, partly in section, of one of the drums, and showing the manner of supporting and journalling it in the machine frame, the instrumentalities for actuating the pinch-members, and those for controlling the tucker members;

Fig. 4 is a fragmentary view, in end elevation, showing the intergearing of the drums, the driving means therefor, etc.;

Fig. 5 is a similar view, in sectional elevation, of a pair of pinch-members, the pinions by which they are intergeared, and a crank-arm carried by one of the pinions and by which the latter are actuated; and

Fig. 6 is a detached view, in end elevation, of the pinion and its attached crank-arm.

Referring to the drawings, the reference-character 1 designates, generally, the machine-frame or drum-support, and 2 and 3 rotatable interacting drums, carriers or frames journaled therein. These drums may be of any required dimensions—both longitudinal and diametral—and of any suitable material.

These drums carry intermeshing gears 4 and 5, with one of which meshes a drive-gear 6 which, in turn, is driven from any required source of power and which, in the present instance, may be regarded as the prime-mover of the drums to effect their rotation and the resultant action and coaction of mechanisms now to be described.

Extending centrally of the drums are stationary shafts 7 and 8, respectively, which carry ball-bearings 9, these being encompassed by the drive-gears, as shown in Fig. 3, and which bearings facilitate the rotation of the drums. The extremities of the shafts are reduced to present flat-surfaces 10 that extend through elongated slots in the bosses 12 outstanding from the walls of the drum-support 1 and constitute means for preventing turning of the shafts. Threaded through each boss is an adjusting-screw 13 bearing against the end of its respective shaft, and by which that shaft may be shifted toward the shaft of its companion drum in order that the drums, themselves, may be adjusted relatively to insure their required relative and functioning positions.

*Pinch-instrumentalities.*—Suitably journaled in the heads 14, 15 of each drum is a

plurality of sets of pinch-members, interfolders, or vice-instrumentalities 16, there preferably being a pair of these to a set. In this instance, there are three sets of these pinch-members shown; but the number may be increased or decreased, if desired or necessary for any reason. Each of these members is here shown as a round roll or rod; but it is understood that any other appropriate form may be utilized. One of the companion members mounts in its periphery a pinch-element or bar 17 which, by reason of the associated springs, (or equivalent rubber cushions) 18 and screws 19, has a controlled yielding action. The companion pinch-member likewise carries a pinch-bar or element 20 but this preferably is stationary. These two pinch-elements operate to engage the sheets during a rotative movement of the pinch members and constitute releasing means for effecting separation of the interfolded sheets from the pinch-members when the drums have rotated such a distance that the tucker and pinch members have been removed from a coating position.

Preferably and as shown, each set of the pinch-members is adapted to be oscillated rotatively but only for a partial revolution. To that end, means are provided to produce the required oscillatory movement; and, in this instance, such means comprise toothed elements—in this instance mutilated pinions 21 and 22 intermeshing so that the one derives its action from the other. Secured to the pinion 21 is a crank-arm 23 (Figs. 2, 3 and 5) carrying a roller 24. These instrumentalities constitute one—a movable—component of a mechanism for effecting the oscillatory movement of the pinch-members. The other stationary component of that mechanism comprises, in this instance, a cam-device 25, formed as a groove 26 (Fig. 3) in the inner wall of the drum-support or machine frame 1. It follows, therefore, that as the drum rotates, each of the roller-carrying cranks traverses the cam-groove and that it, at predetermined points therein, effects a swinging movement of the crank-arm and, thus, rotates the gear 21 and, thus, effects a partial, rotative movement of one pinch-member 16 in one direction and at the same time, transmits motion to the gear 22 and, therethrough, partial rotative movement of the companion pinch-member 16. By the clockwise and counter-clockwise movement of the companion pinch-members and by the coactions of the aforementioned pinch-bars, a squeezing action is effected thereby and for a purpose presently to be explained. The cam groove includes an elongated-circular path or section 27, and two angular sections 28 and 29, the section 28 extending downward from the center line which is in the plane of the horizontal axes of the drums and, then, at an approximate

right angle (at 31) merging into the section 29 which, in turn, leads into the section 27. It is to be understood that, as the roller 24 on the crank-arm on any of the sets of the pinch-members approaches the aforementioned center-line 30, the members will be in an "open" position, so to speak. However, as the roller continues its travel in the cam-groove and reaches the angular section 28, the latter (by reason of its straight-away form) becomes active on the crank arm to turn the mutilated gears and, thereby, the pinch-members, and this operation closes the pinch-elements and causes them yieldingly to grasp and squeeze the paper tucked and folded in between them, effecting more or less of a crease at the fold. While thus held between the pinch-members, the folded sheets are carried downwardly until the roller enters the groove-section 29 whereupon, by reason of its form, this section effects action on the roller to open the pinch-elements and release the folded sheets, as shown in Fig. 1, for instance; and, then, they are handled by a conveyor, in the manner (for example) explained in our aforementioned application, Serial No. 504,023. Manifestly, each set of pinch-members functions in the manner described; first, those on the one drum and, then, those on the other, alternatively, whereby, the folding of a plurality of sheets, and then, the interfolding of a series thereof, are effected.

*Tucker instrumentalities.*—Preferably and as shown, means are provided for effecting—in timed relation to the opening and closing of the pinch-instrumentalities, as just described—the tucking or pushing of the sheets of paper, or the like, between the pinch-members while they are in their "open" position, that is, when a set of these is at the center-line 30: In this instance, these means include a series of tucker-members mounted in each drum in alternate arrangement with the sets of pinch-members thereon. Each of these tuckers is journaled in the heads 14 and 15 of the drum and, at one end, carries a pinion 33 located to mesh with an idler-gear 34 supported on the head 15, and turning in a ball-bearing 35 (Fig. 3). The idler, in turn, meshes with a toothed section or shaft-pinion 36 on the drum-shaft 8. It will be obvious that, as the drum turns on its axis (the shaft 8), its toothed section 36, being stationary, sets the idlers in motion and these, in turn, actuate the tucker-pinions and the tuckers. The diameter of the several tucker-pinions, the teeth thereon, and their pitch, are the same as those of the shaft-pinion 36; hence the speed of rotation of those pinions is identical with that of the drum. In other words, the rotation of the tuckers is so synchronized with respect to that of the drum as to cause the tuckers, each of them, to be maintained, always, in

a fixed relation to the axis of the drum, so that, while they rotate on their own axes during the rotation of the drum by which they are carried; nevertheless, their position with respect to the drum's axis is relatively stationary. As a consequence, they constantly occupy a fixed relation to the center-line 30 connecting the horizontal axes of the two drums. The result is that, when any particular tucker is approaching that line, and, thus, about to assume a position to register with and tuck between the pinch-elements, as well as when it is actually at the registering position, and for all stages thereafter, the tucker is projecting in a direction exactly parallel to the plane of the center-line. Therefore, its registration with the pinch-instrumentalities, and its tucking action, are effected easily, accurately, and without any undesirable friction or drag, on the surfaces of the pinch-instrumentalities. In consequence, it functions to push or tuck the associated sheets between the pinch members and withdraws without pulling or disturbing the sheets, leaving these between the pinch-elements to be folded and creased by the combined rolling and pressing action effected by these members as they rock on their axes. It is an important desideratum in our structure to effect co-action between the pairs of pinch-instrumentalities, themselves, and then between them and the tucker, in a manner to insure smooth and accurate results. This is essential and yet is a difficult mechanical problem in a machine of this kind when running at high speed and operating on several hundred sets of sheets per minute. There necessarily must be—and in our machine is—a nicety of action and coaction of the various parts to accomplish the required results in such a high-speed structure.

Preferably and as shown, each tucker-member is provided with means for facilitating the action of the tucker and, in this instance, such means comprise a guide 37, outstanding from the periphery of the member—and having a sheet-engaging surface 38—adapted to lie alongside of the sheets of paper as they are being tucked in between the pinch-members and guide the leading ends of the sheets.

*Operation.*—The operation of the machine in its entirety, and the functioning of the various instrumentalities thereof, as above described, will now be more or less obvious. Assuming that two or more webs or strips of paper, say, have passed from the paper rolls 38<sup>a</sup>, 38<sup>b</sup>, and over the guide-rolls 39, 39, and between the cutters, 40, 40—which are of the same general type as disclosed in our Letters-Patent No. 1,449,264, granted, March 20, 1923 on a divisional application based on subject-matter revealed in our aforementioned application, Serial No. 504,023—the

1 sheets are fed between the drums 2 and 3 and subjected to the folding action, already set forth, during the cooperation of each of the tucker-members 32 with a set of pinch-members 16, after which the two or more folded sheets are released from those pinch-members and discharge out of the machine.

10 It will be observed that the rolls or rods of the pinch and tucker-members, 16 and 32, respectively, are of the same construction and that each is provided with an elongated slot—hence, these members may be economically produced as a unit of production.

15 From the foregoing, it will be perceived that we have devised an efficient high-speed interfolding machine, of the rotary type, and adapted to cut, interfold and discharge interfolded sheets of paper, or the like, for towels, etc.

20 This disclosure, while directed to specific forms of mechanisms and instrumentalities, is predicated upon a broad inventive-concept; hence, it is not to be regarded as indicating possible limits of modification or variation, nor as fixing upon the annexed claims any restrictions which are not specified in those claims, themselves.

What we claim is:

30 1. An interfolding machine including a plurality of intergeared drums, driving means associated therewith for effecting rotative movement of the drums in opposite directions, a plurality of sets of pinch-members on each drum, a plurality of rotatable tucker-members on each drum in alternate arrangement with respect to each set of pinch-members thereon, mechanism associated with and controlled by the driving means for rotating each tucker-member on its own axis and thereby maintain it in predetermined relation to the axis of the drum by which it is carried and thereby accurately position it in respect to the bight-space between a set of pinch-members on another of the drums as that set is, by rotation of the drum, brought into register with the tucker, and independent mechanism associated with and active on each set of pinch-members for actuating the members of the set simultaneously and in respect to each other.

55 2. An interfolding machine including a plurality of intergeared drums, driving means associated therewith for effecting rotative movement of the drums in opposite directions a plurality of sets of pinch-members on each drum, a plurality of rotatable tucker-members on each drum in alternate arrangement with respect to each set of pinch-members thereon, rotative mechanism associated with and controlled by the driving means for rotating each tucker-member on its own axis and thereby maintain it in predetermined relation to the axis of the drum by which it is carried

and thereby accurately position it in respect to the bight-space between a set of pinch-members, on another of the drums as that set is, by rotation of the drum, brought into register with the tucker, and independent mechanism associated with and active on each set of pinch-members for actuating the members of the set simultaneously and in respect to each other.

3. An interfolding machine including a plurality of intergeared drums, driving means associated therewith for effecting rotative movement of the drums in opposite directions, a plurality of sets of pinch-members on each drum, a plurality of rotatable tucker-members on each drum in alternate arrangement with respect to each set of pinch-members thereon, mechanism comprising a toothed member intermeshed and associated with and controlled by the driving means for rotating each tucker-member on its own axis and thereby maintain it in predetermined relation to the axis of the drum by which it is carried and thereby accurately position it in respect to the bight-space between a set of pinch-members on another of the drums as that set is, by rotation of the drum, brought into register with the tucker, and independent mechanism associated with and active on each set of pinch-members for actuating the members of the set simultaneously and in respect to each other.

4. An interfolding machine including a plurality of intergeared drums, driving means associated therewith for effecting rotative movement of the drums in opposite directions, a plurality of sets of rotative pinch-members on each drum, a plurality of rotatable tucker-members on each drum in alternate arrangement with respect to each set of pinch-members thereon, rotative mechanism comprising a toothed member intermeshed and associated with and controlled by the driving means for rotating each tucker-member on its own axis and thereby maintain it in predetermined relation to the axis of the drum by which it is carried and thereby accurately position it in respect to the bight-space between a set of pinch-members, on another of the drums as that set is, by rotation of the drum, brought into register with the tucker, and independent mechanism associated with and active on each set of pinch-members for rotatively actuating the members of the set simultaneously and in respect to each other.

5. An interfolding machine including a plurality of intergeared drums, driving means associated therewith for effecting rotative movement of the drums in opposite directions, a plurality of sets of rotative pinch-members on each drum, a plurality of rotatable tucker-members on each drum

in alternate arrangement with respect to each set of pinch-members thereon, rotative mechanism comprising a toothed member intermeshed and associated with and controlled by the driving means for rotating each tucker-member on its own axis and thereby maintain it in predetermined relation to the axis of the drum by which it is carried and thereby accurately position it in respect to the tight-space between a set of pinch-members, on another of the drums as that set, is by rotation of the drum, brought into register with the tucker, and independent mechanism associated with and active on each set of pinch-members for rotatively actuating the members of the set simultaneously and in respect to each other, and comprising intermeshed pinions carried by the pinch-members, a cam-device stationary relatively to the drums, and a roller-carrying element carried by one of the pinions and coacting with the cam-device during rotation of the drum to operate both pinch-members.

6. An interfolding machine including a pair of intergeared drums, driving means associated therewith for effecting relative rotation therebetween, a plurality of sets of pinch-members carried by each drum, a plurality of rotatable tucker-members also carried by each drum and in alternate arrangement with the sets of pinch-members thereon, mechanism controlled by the driving-means for effecting rotative movement of each tucker-member on its axis while the drum which carries it is rotating on its axis, and independent mechanism active on each set of pinch-members on one drum for oscillating the members of the set relatively as a tucker-member on the other drum is brought into tucking relation with that set.

7. An interfolding machine including a pair of intergeared drums, driving means associated therewith for effecting relative rotation therebetween, a plurality of sets of pinch-members carried by each drum, a plurality of rotatable tucker-members also carried by each drum and in alternate arrangement with the sets of pinch-members thereon, rotatable mechanism controlled by the driving means for effecting rotative movement of each tucker-member on its axis while the drum which carries it is rotating on its axis, and independent mechanism active on each set of pinch-members on one drum for oscillating the members of the set relatively as a tucker-member on the other drum is brought into tucking relation with that set.

8. An interfolding machine including a pair of intergeared drums, driving means associated therewith for effecting relative rotation therebetween, a plurality of sets of pinch-members carried by each drum, a plu-

ality of rotatable tucker-members also carried by each drum and in alternate arrangement with the sets of pinch-members thereon, mechanism comprising a toothed member intermeshed with and controlled by the driving means for effecting rotative movement of each tucker-member on its axis while the drum which carries it is rotating on its axis, and independent mechanism active on each set of pinch-members on one drum for oscillating the members of the set relatively as a tucker-member on the other drum is brought into tucking relation with that set.

9. An interfolding machine including a pair of intergeared drums, driving means associated therewith for effecting relative rotation therebetween, a plurality of sets of rotative pinch-members carried by each drum, a plurality of rotatable tucker-members also carried by each drum and in alternate arrangement with the sets of pinch-members thereon, mechanism controlled by the driving-means for effecting rotative movement of each tucker-member on its axis while the drum which carries it is rotating on its axis, and independent mechanism active on each set of pinch-members on one drum for oscillating the members of the set rotatively and relatively as a tucker-member on the other drum is brought into tucking relation with that set.

10. An interfolding machine including a pair of intergeared drums, driving means associated therewith for effecting relative rotation therebetween, a plurality of sets of rotative pinch-members carried by each drum, a plurality of rotatable tucker-members also carried by each drum and in alternate arrangement with the sets of pinch-members thereon, mechanism controlled by the driving-means for effecting rotative movement of each tucker-member on its axis while the drum which carries it is rotating on its axis, and independent mechanism active on each set of pinch-members on one drum for oscillating the members of the set rotatively and relatively as a tucker-member on the other drum is brought into tucking relation with that set, said independent mechanism comprising intermeshed pinions on each set of pinch-members, a roller-carrying crank-arm associated with one of the pinions, and a cam-device stationary relatively to the drums and co-acting with the arm to effect rotative movement of one of the pinch-members and, thereby, similar movement but in opposite direction of the other pinch-member.

11. An interfolding machine including a pair of intergeared drums, driving means associated therewith for effecting relative rotation therebetween, a plurality of sets of rotative pinch-members carried by each drum, a plurality of rotatable tucker-members also carried by each drum and in alter-



nate arrangement with the sets of pinch-members thereon, mechanism controlled by the driving-means for effecting rotative movement of each tucker-member on its axis while the drum which carries it is rotating on its axis, and independent mechanism active on each set of pinch-members on one drum for oscillating the members of the set rotatively and relatively as a tucker-member on the other drum is brought into tucking relation with that set, said independent mechanism comprising intermeshed pinions on each set of pinch-members, a roller-carrying crank-arm associated with one of the pinions, and a cam-device stationary relatively to the drums and co-acting with the arm to effect rotative movement of one of the pinch-members and, thereby, similar movement but in opposite direction of the other pinch-member, a yieldable element outstanding from the periphery of one pinch-member, and a co-acting pinch-element on the companion pinch-member.

12. An interfolding machine including a pair of intergeared drums, driving means associated therewith for effective relative rotation therebetween, a plurality of sets of rotative pinch-members carried by each drum, a plurality of rotatable tucker-members also carried by each drum and in alternate arrangement with the sets of pinch-members thereon, mechanism controlled by the driving-means for effecting rotative movement of each tucker-member on its axis, and independent mechanism active on each set of pinch-members on one drum for oscillating the members of the set rotatively and relatively as a tucker-member on the other drum is brought into tucking relation with that set, said independent mechanism comprising intermeshed pinions on each set of pinch-members, a roller-carrying crank-arm associated with one of the pinions, and a cam-device stationary relatively to the drums and co-acting with the arm to effect rotative movement of one of the pinch-members, and, thereby, similar movement but in opposite direction of the other pinch-member, a yieldable element outstanding from the periphery of one pinch-member, and a co-acting pinch-element on the companion pinch-member, and each tucker carrying a paper guide.

13. An interfolding machine including a pair of associated rotatable drums, driving means therefor comprising a gear on each drum in mesh with that on the companion drum, and a driving-gear meshed with one of the drum gears, a drive pinion at the end of each drum, sets of rotative pinch-members carried by each drum, a pinion on each pinch-member intermeshed with that on its companion member, a crank-arm connected to one of the pinions, a plurality of cam-devices, one for but independent of

each drum, and whereby the crank-arm for each set of pinch-members is actuated at a predetermined point in the rotation of the drums to effect a rotative movement of one of the pinch-members and, thereby, produce simultaneous movement of the companion pinch-member in the opposite direction, a plurality of tucker-members on each drum in alternate arrangement with the pinch-members thereon, and a tucker-pinion on each tucker-member, and an idler-pinion meshed with the tucker-pinion and with the drum pinion; said driving means effecting rotation of the drums in opposite directions to bring the respective tucker-members on one drum successively into tucking relation with the respective pinch-members on the other drum; said idler-pinion operating to effect rotative movement of the respective tucker-members on their axes on one drum in timed relation to the rotation of that drum whereby the effective portion of each tucker-member is maintained in a predetermined relation to the axis of the other drum; and said cam-devices operating to effect rotative, squeezing and releasing movements, successively, of each pair of pinch-members during and subsequent to the tucking action of each tucker-member.

14. An interfolding machine including a pair of associated rotatable drums, driving means therefor comprising a gear on each drum in mesh with that on the companion drum, and a driving-gear meshed with one of the drum gears, a drive pinion at the end of each drum, sets of rotative pinch-members carried by each drum, a pinion on each pinch-member intermeshed with that on its companion member, a crank-arm connected to one of the pinions, a plurality of cam-devices, one for but independent of each drum and whereby the crank-arm for each set of pinch-members is actuated at a predetermined point in the rotation of the drums to effect a rotative movement of one of the pinch-members and, thereby, produce simultaneous movement of the companion pinch-member in the opposite direction, a plurality of tucker-members on each drum in alternate arrangement with the pinch-members thereon, and a tucker-pinion on each tucker-member, and an idler-pinion meshed with the tucker-pinion and with the drum pinion; said driving means effecting rotation of the drums in opposite directions to bring the respective members on one drum successively into tucking relation with the respective pinch-members on the other drum; said idler pinions operating to effect rotative movement of the respective tucker-members on their axes on one drum in timed relation to the rotation of that drum whereby the effective portion of each tucker-member is maintained in a predetermined relation to the axis of the other drum; and

said cam-devices operating to effect rotative, squeezing and releasing movements, successively, of each pair of pinch-members during and subsequent to the tucking action of each tucker-member, and means associated with the axis of one of the drums for adjusting them relatively.

15. An interfolding machine including a drum-support, a pair of associated rotatable drums, driving means therefor comprising a gear on each drum in mesh with that on the companion drum, and a driving-gear meshed with one of the drum gears, a drive pinion at the end of each drum, sets of rotative pinch-members carried by each drum, a pinion on each pinch-member intermeshed with that on its companion member, a crank-arm connected to one of the pinions, a plurality of cam-devices in the drum support, one for but independent of each drum, and whereby the crank-arm for each set of pinch-members is actuated at a predetermined point in the rotation of the drums to effect a rotative movement of one of the pinch-members and, thereby, produce simultaneous movement of the companion pinch-member in the opposite direction, a plurality of tucker-members on each drum in alternate arrangement with the pinch-members thereon, and a tucker-pinion on each tucker-member, and an idler-pinion meshed with the tucker-pinion and with the drum pinion; said driving means effecting rotation of the drums in opposite directions to bring the respective members on one drum successively into tucking relation with the respective pinch-members on the other drum; said idler pinions operating to effect rotative movement of the respective tucker-members on their axes on one drum in timed relation to the rotation of that drum whereby the effective portion of each tucker-member is maintained in a predetermined relation to the axis of the other drum; and said cam-devices operating to effect rotation, squeezing and releasing movement, successively, of each pair of pinch-members during and subsequent to the tucking action of each tucker-member.

16. An interfolding machine including a pair of associated rotatable drums, driving means therefor comprising a gear on each drum in mesh with that on the companion drum, and a driving-gear meshed with one of the drum gears, a drive pinion at the end of each drum, sets of rotative pinch-members carried by each drum, a pinion on each pinch-member intermeshed with that on its companion member, a crank-arm connected to one of the pinions, a plurality of cam-devices, one for but independent of each drum, and whereby the crank-arm for each set of pinch-members is actuated at a predetermined point in the rotation of the drums to effect a rotative movement of one of the pinch-members and, thereby, produce simultaneous movement of the companion pinch-member in the opposite direction, a plurality of tucker-members on each drum in alternate arrangement with the pinch-members thereon, and a tucker-pinion on each tucker-member, and an idler-pinion meshed with the tucker-pinion and with the drum pinion; said driving means effecting rotation of the drums in opposite directions to bring the respective tucker-members on one drum successively into tucking relation with the respective pinch-members on the other drum; said idler-pinion operating to effect rotative movement of the respective tucker-members on their axes on one drum in timed relation to the rotation of that drum whereby the effective portion of each tucker-member is maintained in a predetermined relation to the axis of the other drum; and said cam-devices operating to effect rotative, squeezing and releasing movements, successively, of each pair of pinch-members during and subsequent to the tucking action of each tucker-member, and means for supplying a plurality of strips of pre-cut material between the drums for an interfolding action thereof by the tucker and pinch-members.

In testimony whereof we affix our signatures.

WILLIAM H. CANNARD.  
GLENN A. SHAFFER.