

Feb. 20, 1951

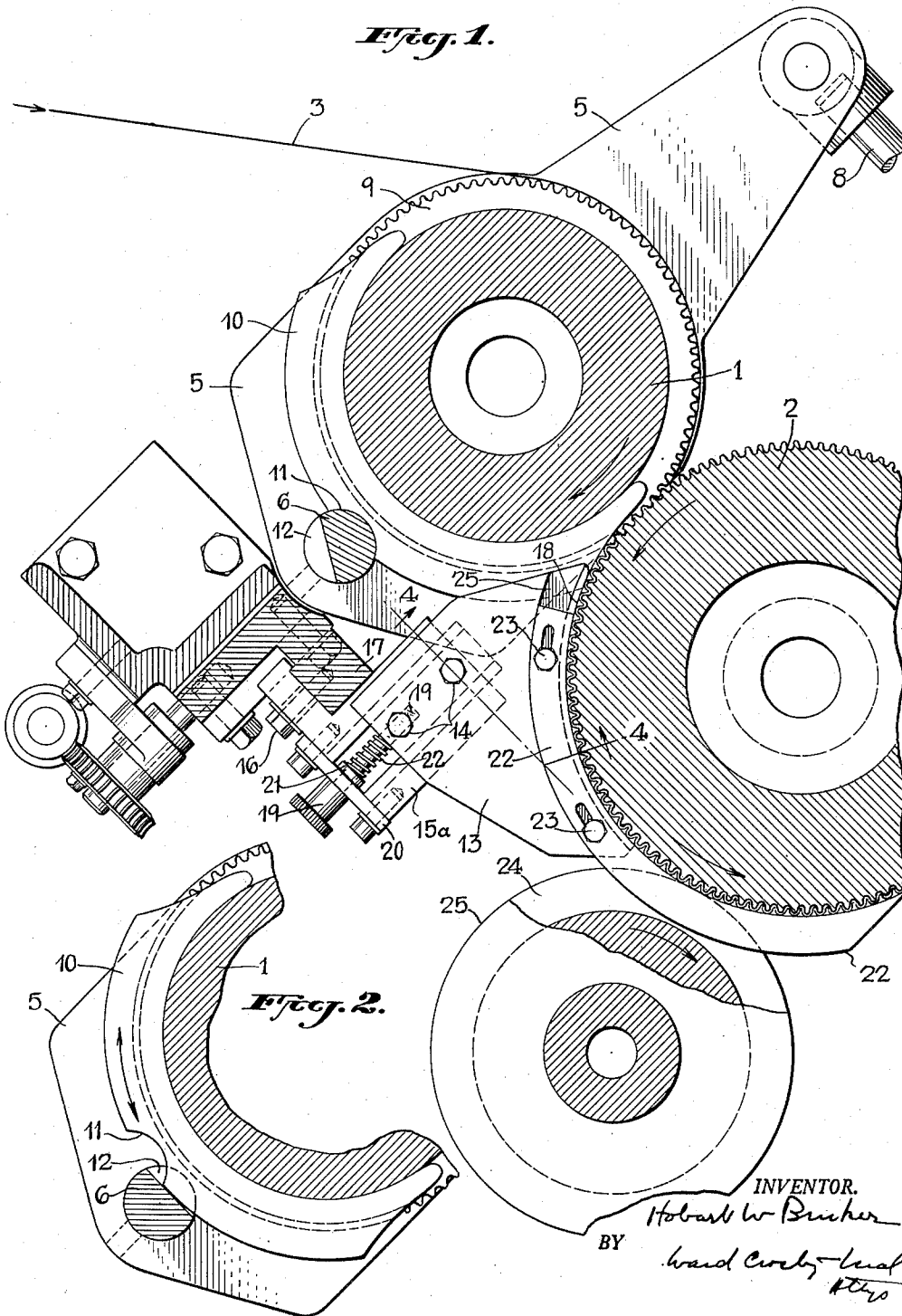
H. W. BRUKER
CORRUGATING MACHINE GUIDE STRUCTURE

2,542,230

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2 Sheets-Sheet 1

Fig. 1.



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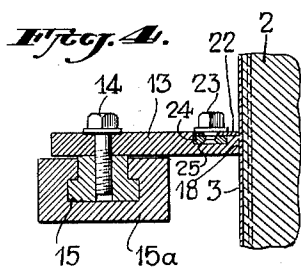
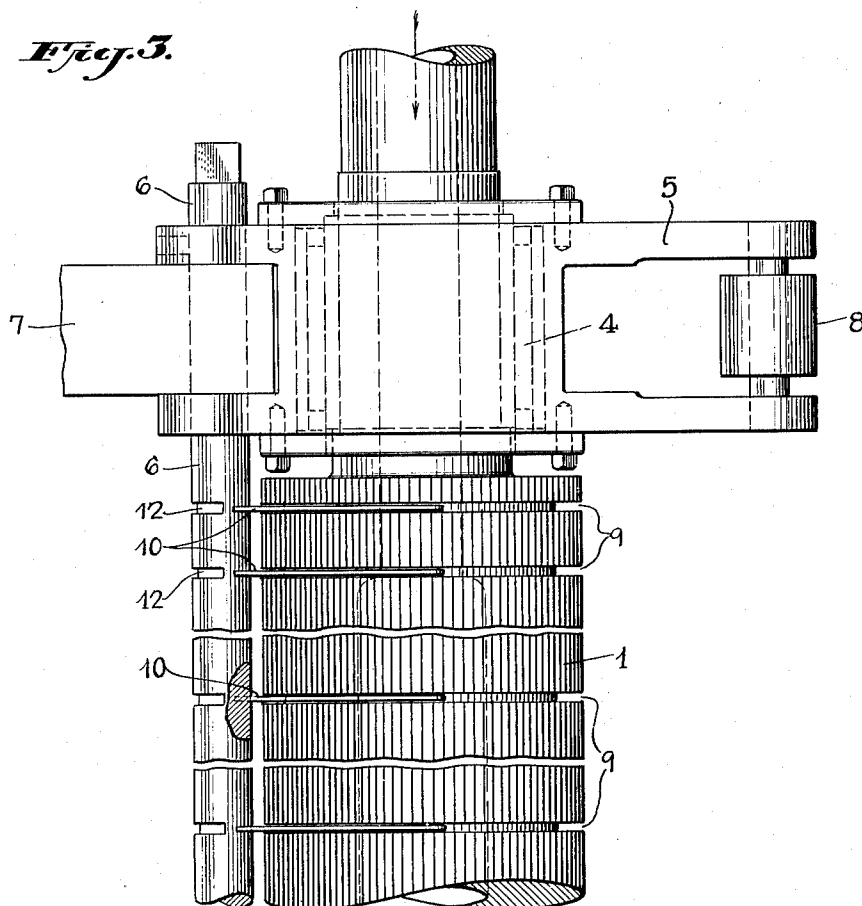
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2 Sheets-Sheet 2



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CORRUGATING MACHINE GUIDE
STRUCTURE

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8 Claims. (Cl. 154—30)

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The invention relates to corrugating machines used in the manufacture of corrugated paper and corrugated paperboard, having fluted rolls between which the web to be corrugated is passed, and stripper members and guide members which separate the web from the first corrugating roll, and guide it partially around the second corrugating roll in proper relation to the fluted periphery thereof. In machinery of the above character, the curtailment of shut down time due to necessary adjustment, cleaning, repair or replacement of the web stripping and guiding members is of prime importance and the invention aims primarily to provide a web stripping and guiding structure of the above character wherein the web stripping members will be effectively held in operating position and yet enabled without attention by the operators to accommodate their positions to varying operating conditions such as temperature changes in the first corrugating roll and changes in the position of the first corrugating roll with respect to the second corrugating roll; and which will afford ready removal and insertion of the stripper members into and out of operating position; also to provide such a web stripping and guiding structure wherein forces or movements applied to the stripping members will not react upon the web guiding members to strain or distort or wear the latter, or vice versa. Further objects and advantages of the invention will be in part obvious and in part specifically mentioned in the description hereinafter contained which, taken in conjunction with the accompanying drawings discloses a corrugating machine guide structure constructed to operate in accordance with the invention. From the standpoint of the invention in its broader aspects the disclosure should be regarded as merely illustrative of the principles thereof. In the drawings—

Fig. 1 is a longitudinal vertical sectional view taken through the parts of a corrugating machine with which the present invention is primarily concerned.

Fig. 2 is a fragmentary sectional view illustrative of the operation of removing a stripper blade from operative position, or inserting it into such position.

Fig. 3 is a view looking downwardly from the upper left hand part of Fig. 1 toward the first corrugating roll, and showing the stripper blades and immediately associated parts.

Fig. 4 is a detail section on the broken line 4—4 of Fig. 1, looking in the direction of the arrows.

Referring first more particularly to Figs. 1 and 3, the invention is disclosed as applied to a cor-

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rugating machine having a first fluted corrugating roll 1 meshing with a second corrugating roll 2, between which a paper web 3 to be corrugated is passed. The first corrugating roll 1 is provided with appropriate bearings 4 (Fig. 3) at its opposite ends, and the roll 1 is adjustable toward and from roll 2 at both its ends, in order that the flutes of roll 1 throughout its length, will penetrate to an equal and proper extent into the flutes of roll 2. In the form shown, the bearings 4 at each end of roll 1 are mounted within angularity adjustable arms 5 which are pivotally mounted to swing about a bar 6 extending across the machine and supported by parts 7 of the main frame of the machine. Rods 8 (Fig. 1) may be connected to the outer ends of the arms 5, and acted upon by suitable springs (not shown) to urge the roll 1 yieldingly toward roll 2.

The roll 1 is shown as provided with a series of peripheral grooves 9, within which stripper blades 10 are positioned to insure that the web 3 to be corrugated, separates from roll 1 after passing between the meshing flutes of rolls 1 and 2 to form the corrugations in web 3, and insure that the corrugated web thus formed will travel around peripherally with roll 2, with the corrugations of the web in proper relation to the flutes of roll 2.

The rolls 1 and 2 will be understood as heated in accordance with usual practice in the art, and as previously mentioned the invention includes certain features to the end that the stripper blades 10 will be enabled to accommodate themselves properly to longitudinal expansion and contraction of roll 1, and also to movements of roll 1 toward or from roll 2 at either end of roll 1, without imposing consequent strains or otherwise affecting the hereinafter mentioned web guiding members associated with roll 2. The stripper blades 10 are so held in position in grooves 9 that they automatically adjust their positions transversely of the machine in response to longitudinal contraction or expansion of roll 1, and also move proportionately toward or from roll 2 in response to movements of roll 1 toward or from roll 2 at either or both of the ends of roll 1. In the illustrated embodiment of the invention the stripper blades 10 are held in operating position in grooves 9 by the cylindrical periphery of cross bar 6, the stripper blades being shown as provided with arcuate notches 11 engaging the bar. Thus as the roll 1 contracts or expands, each stripper blade 10 may slide freely along bar 6 while still being held in position in its groove. Furthermore, the bar 6 being coaxial

with arms 5, if the roll 1 moves toward or from roll 2 at either or both of its ends, each stripper blade 14 will shift angularly about the center of bar 6 as an axis, an amount proportional to the movement of its corresponding part of the roll, without straining or distorting the stripper blades or the stripper blade holding member 6 which they engage.

When it is desired to remove one or more of the stripper blades for cleaning, substitution or repair, the bar 6 may be moved angularly as indicated in Fig. 2 until notches 12 therein register respectively with the notches 11 of the stripper blades, whereupon the stripper blades may be readily removed from or inserted into operative position by movement thereof in an arcuate direction around roll 1. As the parts appear in Fig. 2 the blade 10 may be removed by such arcuate movement in a clockwise direction until clear of bar 6. The illustrated form of stripper blade is double-ended, i. e. when the lower end of the blade as shown in Fig. 2 becomes worn, the blade may be taken out and reinserted after turning it upside down.

The web guiding members 13 are shown in the form of relatively thick plates, each of which is secured by bolts 14 to a block 15 (Fig. 4) which is slidably mounted in a bracket 15a, the latter being in turn adjustably clamped by a bolt 16 to a cross piece 17 similar to the part designated 13 in U. S. Patent No. 2,232,365 issued to me on February 13, 1941. The parts immediately above and to the left of this cross piece 17, as the latter appears in Fig. 1, may be understood as similar in construction and mode of operation to the corresponding parts appearing above and to the left of the member designated 13 in Fig. 2 of the above mentioned patent, and accordingly such parts will not be described in detail herein. It should be noted however that in the present structure, the blades 13 and their supporting parts are entirely independent of the stripper blades 10 and their supporting parts, hence any movements of or forces applied to the stripper blades 10 will in nowise affect or involve the guide members 13, which materially reduces strain and wear.

The guide members 13 have curved faces 18 (Fig. 4) which hold the corrugated web 3 in proper relation to the flutes of corrugating roll 2 as the corrugated web travels partially around such roll, after the web has passed beyond the influence of the stripper blades 10. Each of the stripper members 13 may be individually adjusted toward or from the fluted periphery of roll 2 as may be needed to suit particular operating conditions. In the form shown, a hand screw 19 extends through a plate 20 attached to the outside face of the block 15 and is rotatably held in position with respect to plate 20 by a collar 21 on screw 19. This screw 19 threadedly engages within the slide block 15 and thus rotation of screw 19 adjusts the position of guide member 13 with respect to the periphery of roll 2, a compression spring 22 preferably being interposed between collar 21 and the block 15. Adjustments of the guide members 13 do not affect the stripper members 10, which is of advantage since adjustments of the guide members 13 toward and from roll 2 normally should not be accompanied by corresponding adjustments of stripper blades 10 with respect to roll 1.

Arcuate supplemental guide fingers 22 extending further around the periphery of roll 2, are preferably detached clamped to the guide mem-

bers 13, as by bolts 23. These supplemental guide fingers as shown in Fig. 4 may be made much thinner than the guide members 13 above mentioned, and as indicated in Fig. 1, they may extend through and beyond the corresponding narrow peripheral grooves 24 of an adhesive applying roll 25 such as is customarily used in machinery of this character. The guide members 13 preferably are of hardened steel, and are rugged and long lived. The thinner supplemental blades 22 may be readily and economically detached and replaced when worn, and are firmly supported by the plates 13 while in service. The adjustable screws 19 likewise control the spacing of the supplemental guide fingers 22 from the fluted periphery of roll 2.

While the invention has been disclosed as applied to a web stripping and guiding structure of the above described specific form, it should be understood that changes may be made therein without departing from the invention in its broader aspects, within the scope of the appended claims.

I claim:

1. A corrugating machine of the character described including a first corrugating roll having a series of peripheral grooves therein, a second corrugating roll meshing therewith, stripper blades extending into the grooves of said first corrugating roll, a stripper blade holding structure extending transversely of the machine adjacent said first corrugating roll, said holding structure and blades having parts engaging to hold said blades in operating positions respectively in said grooves but said parts being slidably engaged in a direction longitudinally of the first corrugating roll to afford movement of said blades longitudinally of said first corrugating roll while retained in said grooves in response to relative longitudinal shifting of the first corrugating roll with respect to the blade holding member.

2. A corrugating machine of the character described including a first corrugating roll having a series of peripheral grooves therein, a second corrugating roll meshing therewith, bearing members at the opposite ends of said first corrugating roll which are each mounted to afford movement thereof and of the first corrugating roll toward and from said second corrugating roll, stripper blades extending into the grooves of said first corrugating roll and extending partially around the latter, a stripper blade holding structure extending transversely of the machine adjacent said first corrugating roll, said holding structure and blades having parts engaging to hold said blades in operating position in said grooves but said parts being relatively movable in response to movements of the first corrugating roll toward and from the second corrugating roll, to conform to the positions of the several stripper blades to their respectively adjacent portions of the first corrugating roll while maintaining said stripper blades in their respective peripheral grooves.

3. A corrugating machine of the character described including a first corrugating roll, having a series of peripheral grooves therein, a second corrugating roll meshing therewith, pivotally mounted arms carrying the opposite ends of said first corrugating roll to afford movement thereof toward and from said second corrugating roll, stripper blades extending into the grooves of said first corrugating roll and extending partially around the latter, a stripper blade holding structure extending transversely of the machine and positioned substantially coaxially with re-

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spect to said arms, said stripper blades being slidably engaged with said holding structure in a direction longitudinally of the first corrugating roll to afford movement of said blades longitudinally of said first corrugating roll while retained in said grooves in response to relative longitudinal shifting of the first corrugating roll with respect to the blade holding member, said blade holding structure and stripper blades also having engaging parts which are relatively angularly moving substantially concentrically with respect to said pivoted arms to conform the positions of the several stripper members to their respective portions of the first corrugating roll, upon movement of the first corrugating roll toward and from the second corrugating roll.

4. A corrugating machine of the character described including a first corrugating roll having a series of peripheral grooves therein, a second corrugating roll meshing therewith, a stripper blade holding structure extending across the machine adjacent said first corrugating roll, arcuate stripper blades interposed between said holding structure and said first corrugating roll and extending partially around the latter, said blade holding structure and blades having parts interengageable to hold said blades in operating position in said grooves but said parts being adjustable to relative positions affording removal of said blades by arcuate movement thereof around said first corrugating roll until clear of said blade holding structure.

5. A corrugating machine of the character described including a first corrugating roll having a series of peripheral grooves therein, a second corrugating roll meshing therewith, a stripper blade holding member extending across the machine adjacent said first corrugating roll, arcuate stripper blades interposed between said holding member and said first corrugating roll and extending partially around the latter, said blade holding member and blades having parts interengageable to hold said blades in operating position in said grooves but said parts being adjustable by angular movement of said blade holding member, into relative positions affording removal of said blades by arcuate movement thereof around said first corrugating roll until clear of said blade holding member.

6. A corrugating machine of the character described including a first corrugating roll having a series of peripheral grooves therein, a second corrugating roll meshing therewith, stripper blades extending into the grooves of said first corrugating roll, a stripper blade holding member extending transversely of the machine adjacent said corrugating roll, said holding member and blades having parts engaging to hold said blades in operating positions respectively in said grooves but said parts being slidably engaged in a direction longitudinally of the first corrugating roll to afford movement of said blades longitudinally of said first corrugating roll while retained in said grooves in response to relative longitudinal shift-

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ing of the first corrugating roll with respect to the blade holding member, a fixed supporting member extending across the machine adjacent said corrugating rolls and web guiding members supported thereby to guide the web partially around said second corrugating roll, mechanism being provided to adjust the position of said guiding members toward and from said second corrugating roll independently of said stripper blades and their aforesaid holding member.

7. A corrugating machine of the character described including a first corrugating roll having a series of peripheral grooves therein, a second corrugating roll meshing therewith, stripper blades extending into the grooves of said first corrugating roll, supporting structure for said stripper blades holding the latter in their respective grooves aforesaid but affording relative movement, longitudinally of said first mentioned corrugating roll, between said stripper blades and their supporting structure while retained in their grooves, in response to relative longitudinal shifting of said first corrugating roll with respect to said supporting structure, web guiding members positioned to guide the web partially around said second corrugating roll, and mechanism acting independently of the aforesaid stripper blades and their supporting structure for adjusting the positions of said guiding members toward and from said second corrugating roll, thereby to afford said last mentioned adjustments of the guiding members independently of the position of the stripper blades.

8. A corrugating machine of the character described including a first corrugating roll, having a series of peripheral grooves therein, a second corrugating roll meshing therewith, pivotally mounted arms carrying the opposite ends of said first corrugating roll to afford movement thereof toward and from said second corrugating roll, stripper blades extending into the grooves of said first corrugating roll and extending partially around the latter, a stripper blade holding bar positioned coaxially with respect to said arms, said stripper blades having notched portions slidably engaged with said holding bar in a direction longitudinally of the first corrugating roll, said bar having notched portions movable by angular movement of said bar about the axis of said arms, into positions adjacent the notched portions of said stripper blades, thereby to afford removal of said blades by arcuate movement thereof around said first corrugating roll until clear of said blade holding bar.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,232,365	Brucker	Feb. 18, 1941