

L. A. STRAUBEL.
CUTTING MECHANISM FOR INTERFOLDING MACHINES.
APPLICATION FILED FEB. 16, 1917.

1,249,550.

Patented Dec. 11, 1917.

3 SHEETS—SHEET 1.

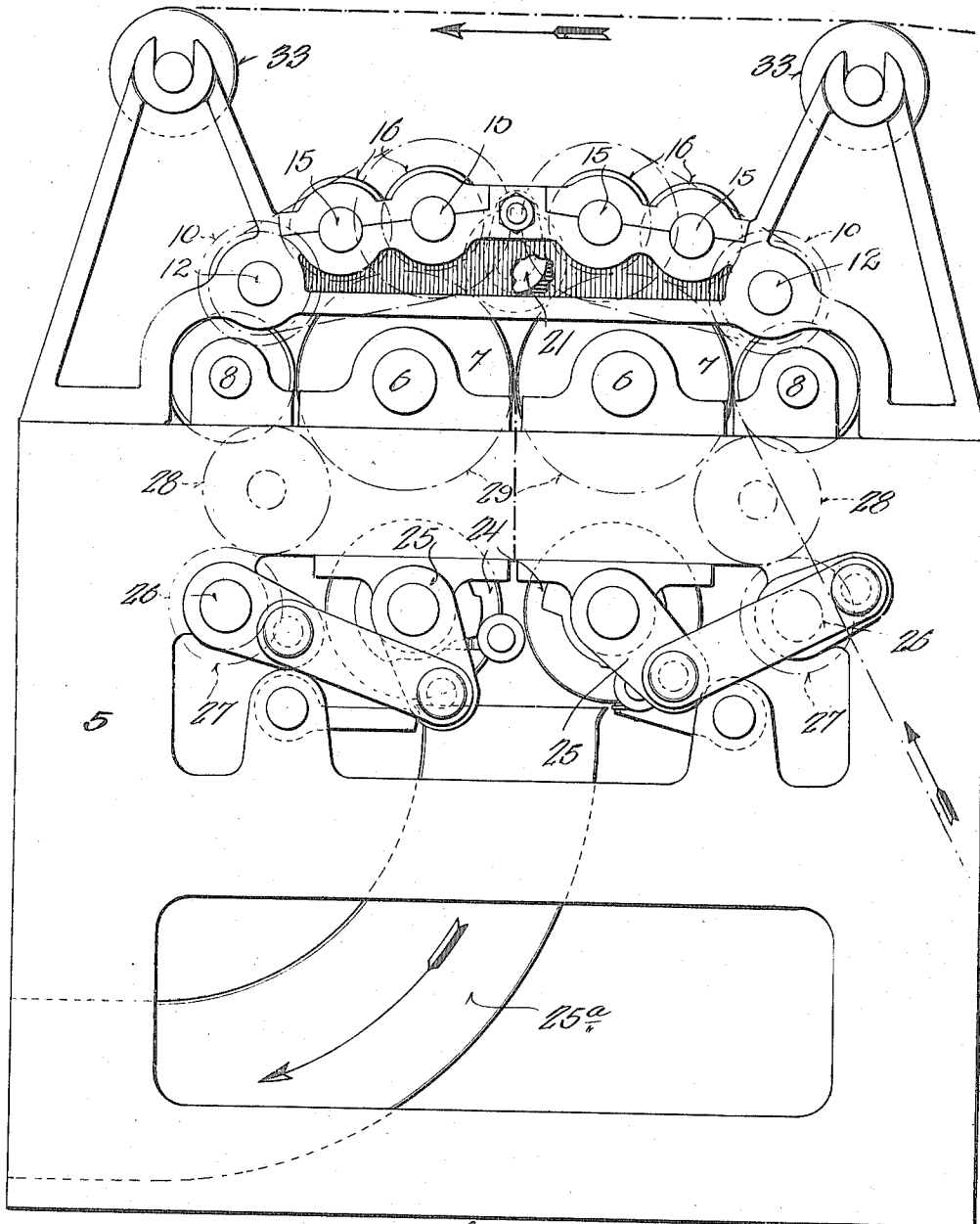


Fig. 1.

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Fig. 2.

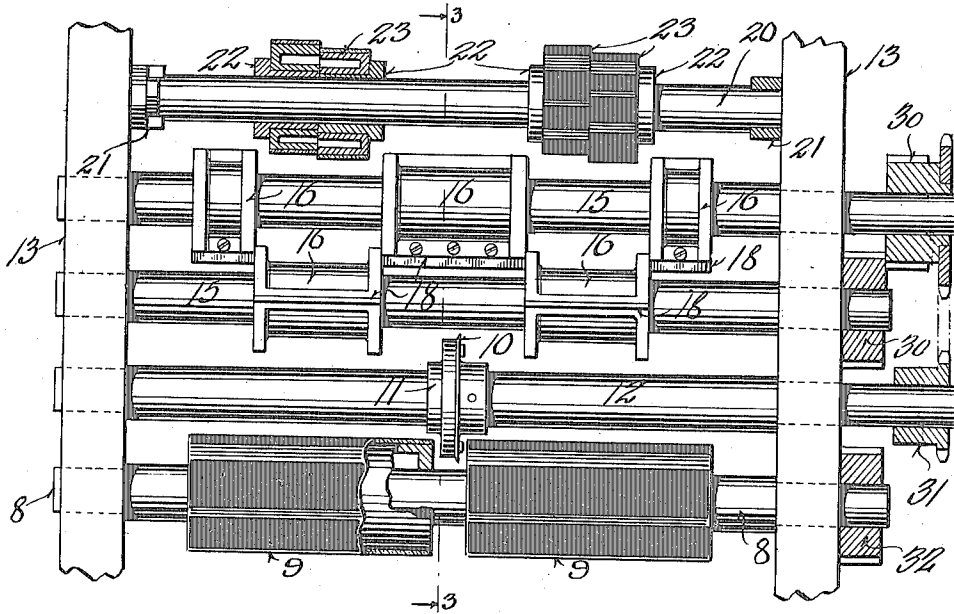
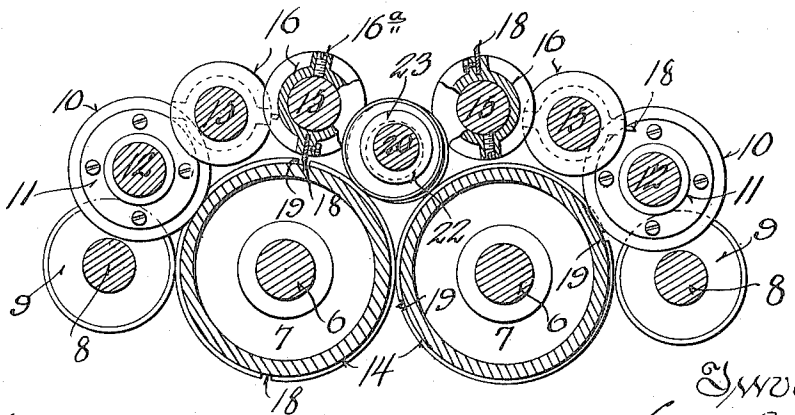


Fig. 3.



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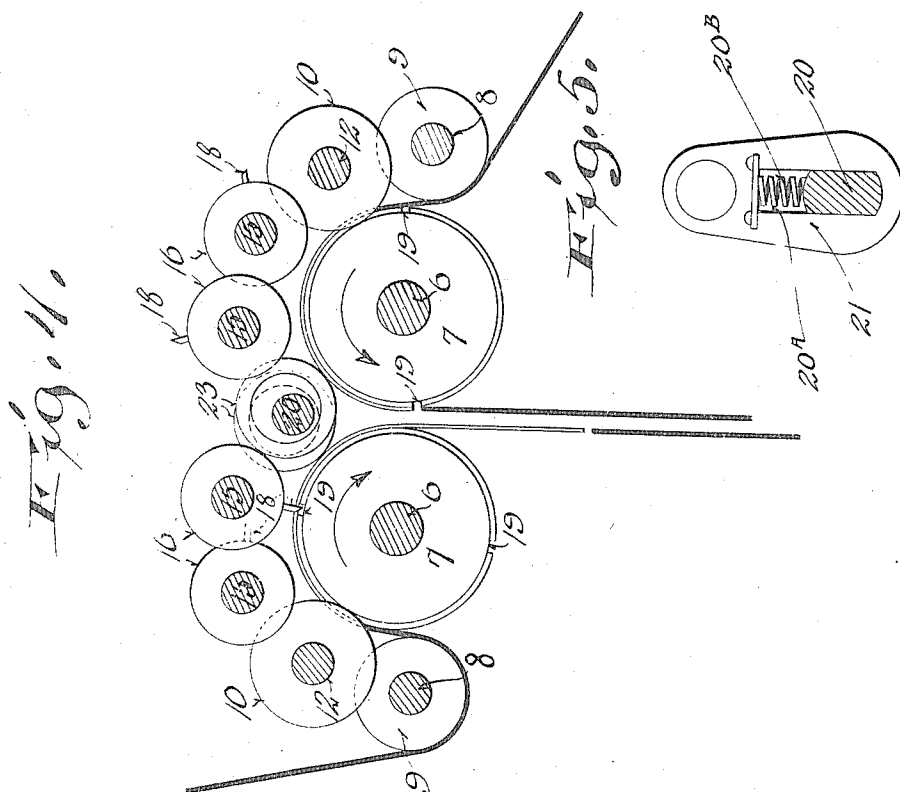
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UNITED STATES PATENT OFFICE.

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CUTTING MECHANISM FOR INTERFOLDING-MACHINES.

1,249,550.

Specification of Letters Patent. Patented Dec. 11, 1917.

Application filed February 16, 1917. Serial No. 148,962.

To all whom it may concern:

Be it known that I, LOUIS A. STRAUBEL, a citizen of the United States, and resident of Green Bay, in the county of Brown and State of Wisconsin, have invented certain new and useful Improvements in Cutting Mechanism for Interfolding-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to new and useful improvements in mechanisms for cutting a plurality of webs of paper longitudinally and transversely to form a continuous web of overlapped sheets, and is adapted for use more particularly in connection with interfolding machines of the type set forth in my co-pending application for patent filed Aug. 19, 1916, Serial No. 115773.

It is primarily the object of my invention to provide an arrangement for automatically "threading" or initially inserting the web of paper between the various knife members and guide rollers, and a further object which is partly encompassed in the automatic threading arrangement, resides in the provision of means for preventing the work material from turning up and following the transverse cutting means which extends entirely across the slit webs.

With the above and other objects and advantages in view, the invention resides more particularly in the novel combination, formation and arrangement of parts hereinafter described and pointed out in the appended claims.

In the drawings:

Figure 1 is an elevational view of my improved cutting mechanism embodied in an interfolding machine.

Fig. 2 is a plan view of one side of the cutting mechanism.

Fig. 3 is a transverse sectional view through the entire cutting mechanism on the plane indicated by the line 3—3 of Fig. 2.

Fig. 4 is a diagrammatic view taken on the transverse section through the cutting mechanism and showing the relation of the cut sheets.

Fig. 5 is a detail sectional view of the means for mounting the guide roller shaft.

Referring now more particularly to the accompanying drawings, 5 designates the body frame of an interfolding machine, and my improved cutting mechanism is disposed at the top thereof and comprises a longitudinally journaled pair of shafts 6 on which

are mounted the body rolls 7 about which the various feeding and cutting rolls are grouped, and between which the mutually overlapped sheets are frictionally engaged and pass downwardly to the folding mechanism.

Disposed at the sides of the shafts 6 are shafts 8 each carrying a pair of preferably rubber faced feed rolls 9 in frictional engagement with the corresponding body roll, the feed rolls of each shaft being spaced apart sufficiently to provide clearance for an annular blade 10 carried by a collar 11 mounted on a longitudinal shaft 12 which is journaled at its ends in bearing brackets 13 upstanding at the ends of the frame. These slitting blades engage in an annular groove 14 in the bed rolls, and thus the webs of paper are continuously longitudinally slit in moving therepast.

Journaled also in the bearing brackets 13 and disposed above each feed roll is a pair of cutting shafts 15 on alternate portions of which are mounted a series of sleeves 16 having overlapping flanges at their ends and adapted to register with a longitudinal recess 19 in the bed roll. The operation of these knives 18 is such that they act successively to produce a single transverse cut in the work material, and by so dividing the transverse cutting operation of the sheet, the peripheral portions of the slitting knives and the peripheral portions of guide rollers 23, later described, may be disposed in overlapping relation with the peripheral portions of adjacent sets of transverse cutting portions and the tendency of the sheets to turn up immediately subsequent or prior to their cutting operation is thus avoided without the necessity of providing a vacuum or other additional means for holding the sheets on the bed roll.

In common with the other machines of this nature the action of the transverse cutting means of each bed roll is so timed that the sheets pass between the bed rolls in mutually overlapped relation forming a continuous web of material to be acted on by the following means. The knife carrying sleeves 16 are held against rotation on the shafts 15 by set screws 16^a and thus the sleeves may be readily adjusted to individually adjust the position of the knives of each set.

To guide the sheets after passing the transverse cutting blades, for proper move-

ment between the bed rolls, a shaft 20 has its squared ends slidable in vertical slots 20^A in pivotally suspended hanger arms 21 carried by the bearing brackets 13 the shaft being preferably urged toward the bed rolls by springs 20^B although a spring means for urging the shaft is not at all times essential. Mounted on each side portion of the shaft are a pair of cam sleeves 22 on which are rotatably mounted suitable guide rolls 23. A single general support for guide rollers associated with both of the bed rolls, is thus provided and by the provision of the cam sleeves 22, the rollers 23 may be readily adjusted for proper engagement with the corresponding bed rolls, it being noted that the shaft 20 is fixedly connected with the hanger arms 21, and that the cam sleeves are held against movement on the shaft either frictionally as in the present instance or by any other means.

It is noted that the guide rolls 23 at each side of the shaft 20 are off-set in opposite directions whereby the outer side of each roll is disposed in lapped relation with adjacent sleeves 16 which carry the transverse cutting knives 18 whereby to prevent the possibility of paper turning up and following the cutting knives.

The folding mechanism embodied in the present machine comprises a pair of oscillatory folding members 24 operated by lateral cranks 25 connected with the crank arms of a pair of shafts 26 disposed at the sides of the machine, these folding members discharging into a chute 25^A thereunder which is curvilinearly extended to the side of the machine farthest from the bed rolls.

Power is initially imparted preferably to one of the shafts 26 of the machine, and conventionally designated gear wheels 27 are mounted on the ends of the shafts 26 and mesh with idle gears 28 meshing in turn with gears 29 of the bed roll shafts 6. Thus a continuous drive is provided across the machine. The gear wheel 29 of each bed roll shaft is in mesh with gears 30 on the adjacent ends of the corresponding pair of transverse cutter shafts 15, these gears being laterally spaced on the shafts by reason of their proximity, and the gear 29 being consequently of double width. Each of the slitter shafts 12 is driven by a sprocket connection 31 with the corresponding cutter shaft, and the feed roll shafts 8 are driven by gears 32 thereon meshing with the corresponding bed roll gears.

The machine is supplied with work material from a pair of supply or "parent" rolls (not shown) at one side of the machine, and the material from the lower roll passes directly between the adjacent bed roll 7 and feed roll sections 9 while the material from the upper parent roll passes over a pair of guide rolls 33 at the upper corners of the

machine and then downwardly and about the other feed roll sections 9 into the machine. Thus one side of the machine is entirely open and the chute 27 has its lower end directed laterally to discharge on to a suitable table at said side of the machine. In machines wherein the material is slit into three or more portions, access to the top of the machine cannot be had by reason of the web of work material thereover and the webs of material are threaded through the machine automatically by reason of the overlapping relation of the various feeding, slitting and transverse cutting means on the body rolls.

While my improved mechanism has been described as particularly adapted for use in forming a continuous web of over-lapped sheets, it is obvious that one side of the mechanism forms a complete unit for slitting, transversely cutting and delivering single sheets of material.

What is claimed:

1. In a machine of the class described, the combination of a bed roll, a driven feed roll in engagement therewith, a rotatable slitting knife engageable with material on the bed roll, a rotatable transverse cutting means engaging with material on the bed roll, and said feed roll and transverse cutting means having peripheral portions overlapped whereby to guide work material between them and the bed roll.

2. In a machine of the class described the combination of a bed roll, a feed roll in engagement with one side of the bed roll, and including spaced sections, a rotary slitting knife engageable with material on the bed roll and extending between the sections of the feed rolls, a transverse cutting means engageable with material on the bed roll and a guide roll adjacent the side of the bed roll, opposite that side in engagement with the feed roll.

3. In a machine of the class described, the combination with a pair of bed rolls, of transverse cutting means associated with said rolls, a shaft disposed centrally between and above the rolls, a pair of eccentric sleeves on the shaft and guide rolls rotatably mounted on the eccentric sleeves for coöperation with corresponding bed rolls.

4. In a machine of the class described, the combination with a pair of bed rolls of transverse cutting means associated with said rolls, a shaft disposed centrally between and above the rolls, eccentric portions on the shaft and guide rolls rotatably mounted on said eccentric portions for coaction each with a corresponding bed roll.

5. In a machine of the class described, the combination with a pair of bed rolls, of transverse cutting means associated with said rolls, a shaft disposed centrally between and above the rolls, eccentric portions on the

shaft and guide rolls rotatably mounted on said eccentric portions for coaction each with a corresponding bed roll and said shaft being pivotally suspended to permit movement in a direction transversely of the bed rolls.

In testimony that I claim the foregoing I

have hereunto set my hand at Green Bay, in the county of Brown and State of Wisconsin, in the presence of two witnesses.

LOUIS A. STRAUBEL.

Witnesses:

O. H. FRIEDEL,
WM. BOWRING.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."