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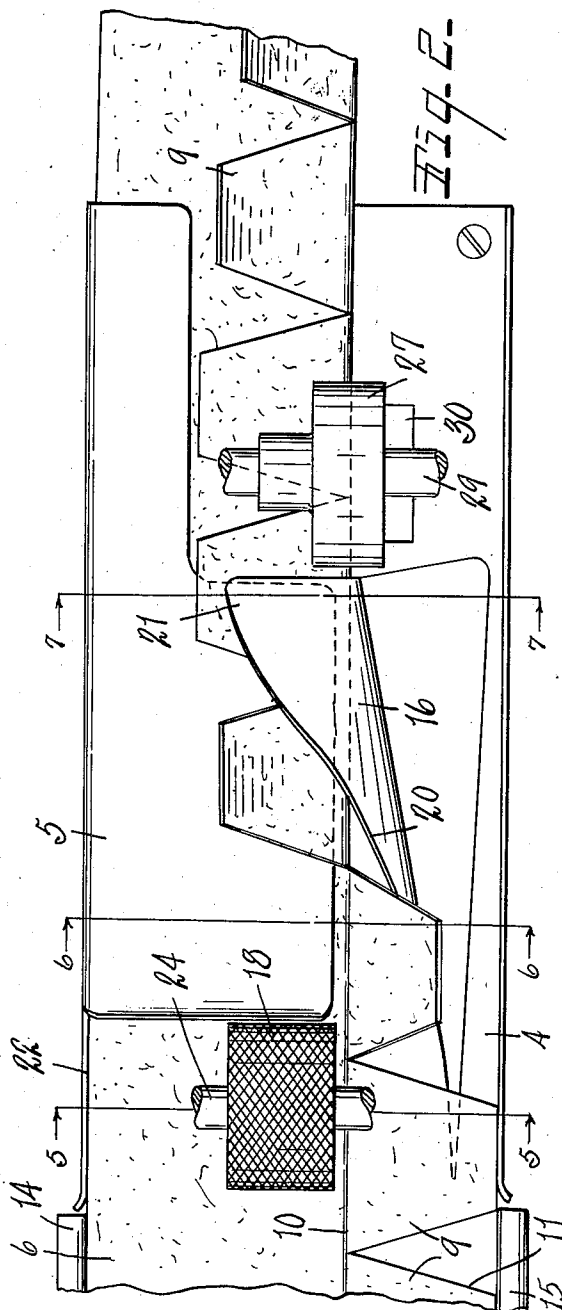
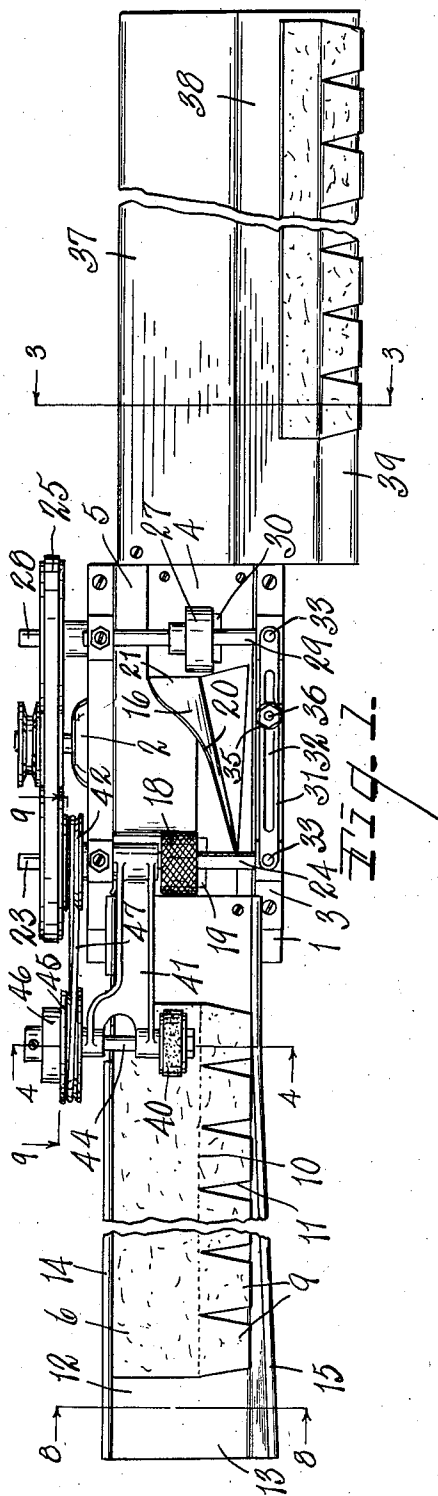
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FOLDING MACHINE FOR BASKET FRINGE OR TRIM STRIPS AND THE LIKE

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FOLDING MACHINE FOR BASKET FRINGE
OR TRIM STRIPS AND THE LIKE

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11 Claims. (Cl. 270-93)

In the packing of fruit and vegetables in baskets and containers it is common practice to use fringe or trim strips which consists of a band-like strip having a series of tapered tabs on one edge with longitudinal scoring at the base of the tabs. These tabs are bent to an angular position relative to the body of the strip when the strip is applied to the basket or container and so far as applicant is aware has been commonly done by hand which is a tedious and laborious operation. Attempts have been made to use devices similar to breakers used by tinsmiths and sheet metal workers but these have not proved satisfactory or adopted in commercial practice so far as applicant is aware. It has not been found practical to shape the trim strips at the factory on account of storage, shipping and transportation factors.

The main objects of this invention are:

First, to provide a machine by means of which the trim strips or similar work may be effectively, rapidly, and economically folded or conformed to shape for use.

Second, to provide a machine having these advantages which is automatic in operation.

Third, to provide a machine of the character described which is comparatively simple and economical in its parts and in the assembly thereof.

Objects relating to details and economies of the invention will appear from the description to follow. The invention is defined and pointed out in the claims.

A preferred embodiment of the invention is illustrated in the accompanying drawings, in which:

Fig. 1 is a fragmentary plan view of a structure embodying the features of this invention, work being shown on the feed table and the treated work being shown on the receiving table or holder.

Fig. 2 is an enlarged fragmentary view of the folder portion illustrating work passing there-through.

Fig. 3 is an enlarged transverse section through the receiving or delivery table on line 3-3 of Fig. 1.

Fig. 4 is an enlarged transverse section through the feed table on a line corresponding to line 4-4 of Fig. 1, parts being shown in full lines.

Fig. 5 is a transverse section through the folder bed on line corresponding to line 5-5 of Fig. 2 showing the relation of the feed rollers thereto and to the work.

Fig. 6 is a transverse section on a line corre-

sponding to line 6-6 of Fig. 2 showing the relation of the work to the folder members.

Fig. 7 is a transverse section on line 7-7 of Fig. 2 showing further details of the folding mechanism in relation to the work.

Fig. 8 is a transverse section on line 8-8 of Fig. 1 showing details of the feed table.

Fig. 9 is a fragmentary elevation showing details of the drive means for the auxiliary feed roller.

In the embodiment of my invention illustrated, the frame designated generally by the numeral 1 is so designed as to support the parts and is preferably portable although it is evident that it could be built upon a permanent support or foundation. The motor 2 is, in this embodiment, mounted within the frame 1.

The frame is provided with pedestals 3 for supporting shafting and other parts including the folder bed 4. This folder bed 4 is formed of sheet metal and has a folder plate 5 disposed in spaced relation thereto, this folder plate being preferably formed integrally with the bed, being turned forwardly from its rear edge.

The work 6, in this case fringe or trim strips for baskets and containers, is provided with a plurality of tabs 9 on one edge and longitudinal scoring 10 at the base of the tabs. These tabs are formed by cutting uniformly spaced V-shaped notches 11 in one edge of a strip of suitable cardboard or container material. The tabs are used in packing fruit, vegetables, and the like, the body of the strips being arranged within the container or basket and the tabs positioned in overlying relation to the contents. This not only serves as an ornamental feature but protects the contents of the basket when the covers are applied. It will be understood that the covers are applied over the trim strips.

In the embodiment illustrated, a stack of trim strips are laid upon the trough-like feed table 12 which is provided with an inclined portion 13 at its outer end and with an upstanding flange 14 at its rear edge so that the stack of trim strips may be easily positioned on the table with their rear edges in engagement with the flange 6. An outwardly inclined flange 15 is provided at the front edge of the table to further facilitate the positioning of the trim strips. The inner end of the table is, however, positioned to deliver the work to the folder bed 4.

The work is fed across the folder bed under the folder plate 5 and to the folder member 16 operatively associated with the folder bed and plate by means of a pair of coacting feed rollers

17 and 28, the folder bed having an opening 19 therein in advance of the folder plate 5 to permit the nip of the rollers to engage the work as illustrated in Fig. 5.

5 The folder member 16 is preferably formed integrally with the folder plate, being cut therefrom and struck upwardly into a moldboard-like shape to provide a spirally disposed folded edge 20, the folder member 16 terminating in a rear 10 portion 21 disposed horizontally above and spaced relative to the folder plate to receive the folded tabs of the work.

The folder bed is provided with an upstanding flange 22 in advance of the folder plate to 15 guide the work as it is advanced by the feed rollers.

The shaft 23 of the lower feed roller is disposed transversely below the bed while the shaft 24 of the upper feed roller is disposed transversely 20 above the bed. The shaft 23 is provided with a pulley 24 having driving connection with the motor, the driving belt being shown at 25.

At the rear of the folder bed is a pair of co-acting press rollers 26 and 27, the shaft 28 of 25 the lower press roller being a driven shaft. The upper roller 27 is provided with a shaft 29 disposed transversely of the bed. The bed has an opening 30 to permit the press rollers engaging the work. As shown in Fig. 7, the press rollers 30 engage and press the fold of the work.

To secure the desired pressure on the upper feed roller and the upper press roller, I provide a pressure bar 31 having a longitudinal slot 32 35 therein, this bar being provided with depending portions 33 at its ends which engage the bearings indicated at 34 for the upper shafts.

A spring 35 carried by the rod 36 adjustable longitudinally of the slot serves to apply regulatable pressure to the feed rollers and the press 40 rollers and by sliding the member 36 along in the slot, the member being adjustably carried by the frame, the amount of pressure applied to the feed rollers and the press rollers can be regulated.

45 The work is delivered from the press roller to the laterally inclined delivery table 37 which has a more abruptly inclined portion 38 terminating in a trough-like holder 39 at the bottom thereof, the work sliding by gravity from the 50 table into the trough and automatically stacking therein as indicated in Fig. 3.

I preferably provide an automatic feeding means which in the embodiment illustrated consists of the auxiliary feed roller 40 disposed above 55 the feed table and floatingly supported by means of the arm 41 which is pivoted on the shaft 24. This feed roller resting upon the upper trim strip of a stack feeds it forwardly to a position to be engaged by the feed rollers which advance it 60 through the folders.

The roller 40 in the embodiment illustrated is driven from a pulley 42 on the shaft 23, the shaft 44 of the auxiliary feed roller being provided with a pulley 45 which is provided with an 65 overrunning clutch indicated generally by the numeral 46. The belt 47 is crossed so that the roller 45 is driven in the same direction as the feed rollers.

The auxiliary feed roller is driven at a somewhat less speed than the main feed roller so that 70 the work is delivered one by one to the folders and owing to the fact that the auxiliary feed roller or its periphery travels at a less speed than that of the main rollers, the overrunning clutch 75 permits the work being advanced by the main

feed rollers without any frictional or sliding action of the auxiliary feed roller on the work. In other words, the work is advanced by the auxiliary feed roller until it is engaged by the main 5 feed roller when the auxiliary feed roller becomes an idler owing to the overrunning clutch drive connection until the piece of work passing thereunder has cleared when the auxiliary feed roller will engage the next piece of work and advance 10 it to the main feed roller.

My machine or apparatus is highly efficient, the trim or fringe being effectively folded and delivered into a stack in a form for use. The machine is entirely automatic except in the matter 15 of placing a bundle of work on the feed table and removing the stacked finished work. While the machine illustrated is especially designed for use in the folding of basket or container fringe or trim strips, certain features thereof are adaptable for folding other work. 20

I have illustrated and described my improvements in a very practical embodiment thereof. I have not attempted to illustrate or describe other embodiments or adaptations as it is believed that this disclosure will enable those skilled 25 in the art to embody or adapt my invention as may be desired.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a machine for folding work such as container fringe or trim strips having a series of outwardly tapered tabs on one edge and being longitudinally scored at the base of the tabs, the combination with a feed table, of a folder bed 35 positioned to receive work from said feed table, a folder plate integral with and extending forwardly from the rear edge of said bed and spaced therefrom to receive work therebetween, a moldboard-shaped folder member struck up from said folder bed and conformed to provide a spirally 40 positioned folding edge and a rear portion overhanging said folder plate and spaced therefrom to permit the passage of the folded portions of the work therebetween, a driven folder feed roller 45 shaft disposed transversely below said bed, a driven folder feed roller on said shaft, said bed having an opening above said feed folder, a coacting pressure feed roller, a shaft therefor disposed above said bed, a driving press roller shaft disposed below said bed, a second press roller shaft 50 disposed above said bed, a pair of coacting fold press rollers on said last named shafts disposed at the rear of said folder, and a pressure bar coacting with the shafts of said folder feed pressure roller and with the second of the shafts of said pair of press rollers, said bar being provided with adjustable pressure means adjustable longitudinally of said bar.

2. In a machine for folding work such as container fringe or trim strips having a series of outwardly tapered tabs on one edge and being longitudinally scored at the base of the tabs, the combination with a feed table, a folder bed 65 positioned to receive work from said feed table, a folder plate integral with and extending forwardly from the rear edge of said bed and spaced therefrom to receive work therebetween, a moldboard-shaped folder member struck up from said folder bed and conformed to provide a spirally 70 positioned folding edge and a rear portion overhanging said folder plate and spaced therefrom to permit the passage of the folded portion of the work therebetween, a driven folder feed roller shaft disposed transversely below said bed, a 75

driven folder feed roller on said shaft, said bed having an opening above said feed folder, a co-acting pressure feed roller, a driving press roller shaft disposed below said bed, a second press roller shaft disposed above said bed, and a pair of coacting fold press rollers on said shafts disposed at the rear of said folder.

3. In a machine for folding work such as container fringe or trim strips having a series of outwardly tapered tabs on one edge and being longitudinally scored at the base of the tabs, the combination with a trough-like feed table having a laterally inclined portion facilitating the positioning of the work therein, a folder bed positioned to receive work from said feed table, a folder plate spaced from said bed to receive work therebetween, a folder member having a spirally positioned folding edge and a rear portion overhanging said folder plate and spaced therefrom to permit the passage of the folded portion of the work therebetween, a driven folder feed roller, said bed having an opening above said feed folder, a coacting pressure feed roller, and co-acting fold press rollers disposed at the rear of said folder.

4. In a machine for folding work such as container fringe or trim strips having a series of outwardly tapered tabs on one edge and being longitudinally scored at the base of the tabs, the combination with a folder bed, a folder plate spaced from said bed to receive work therebetween, a coacting tab turning folder member having a rear portion overhanging said folder plate and spaced therefrom to permit the passage of the folded portion of the work therebetween, a driven folder feed roller shaft disposed transversely below said bed, a driven folder feed roller on said shaft, said bed having an opening above said feed folder, a coating pressure feed roller, a shaft therefor disposed above said bed, a driving press roller shaft disposed below said bed, a second press roller shaft disposed above said bed a pair of coacting fold press rollers on said shafts disposed at the rear of said folder, and a pressure bar coacting with the shafts of said folder feed pressure roller and with the second of the shafts of said pair of press rollers, said bar being provided with adjustable pressure means adjustable longitudinally of said bar.

5. In a machine of the class described, the combination of a feed table, a folder bed positioned to receive work from said feed table, a folder plate member integral with and extending forwardly from the rear edge of said bed and spaced therefrom to receive work therebetween, a moldboard-shaped folder member struck up from said folder bed and conformed to provide a spirally positioned folding edge and a rear portion overhanging said folder plate and spaced therefrom to permit the passage of the tabs of the work therebetween, coacting feed rollers disposed in advance of said folder members, an endless auxiliary feed member operatively associated with the work on said feed table, driving means for said auxiliary feed member comprising an overrunning clutch, and coacting fold pressing rollers disposed at the rear of said folder.

6. In a machine of the class described, the combination of a folder bed positioned to receive work from said feed table, a folder plate member integral with and extending forwardly from the rear edge of said bed and spaced therefrom to receive work therebetween, a moldboard-shaped folder member struck up from said folder bed

and conformed to provide a spirally positioned folding edge and a rear portion overhanging said folder plate and spaced therefrom to permit the passage of the tabs of the work therebetween, coacting feed rollers disposed in advance of said folder members, and coacting fold pressing rollers disposed at the rear of said folder.

7. In a machine of the class described, the combination of a folder bed, a folder plate member integral with and extending forwardly from the rear edge of said bed and spaced therefrom to receive work therebetween, a moldboard-shaped folder member struck up from said folder bed and conformed to provide a spirally positioned folding edge and a rear portion overhanging said folder plate and spaced therefrom to permit the passage of the tabs of the work therebetween, and means for feeding the work.

8. In a machine of the class described, the combination of a folder bed, a folder plate member spaced from said bed to receive work therebetween, a folder member conformed to provide a spirally positioned folding edge and a rear portion overhanging said folder plate and spaced therefrom to permit the passage of the folder portion of the work therebetween, and coacting feed rollers disposed in advance of the folder members.

9. In a machine of the class described, the combination of a feed table, a folder bed positioned to receive work from said feed table, a folder plate member conformed to provide a spirally positioned folding edge and a rear portion overhanging said folder plate and spaced therefrom to permit the passage of the folder portion of the work therebetween, coacting feed rollers disposed in advance of the folder members, an auxiliary feed roller operatively associated with said feed table, and driving means for said auxiliary feed member including an overrunning clutch.

10. In a folding machine of the type described, a folder bed, means disposed thereon for progressively folding an elongated strip of material fed over the bed, means for feeding the strip to the folding means comprising a pair of vertically spaced main feed rollers engageable with opposite sides of the strip and means for rotating said rollers, an auxiliary feeding roller frictionally engageable with the strips to advance the same to said feeding means, means for driving said auxiliary roller including an overrunning clutch, and means for rotating said auxiliary roller through the clutch at a surface speed less than that of the main feed rollers to feed the strip into position for engagement by the same, said overrunning clutch thereafter permitting the auxiliary roller to roll on the surface of the thus fed strip.

11. In a folding machine of the type described, a support, means disposed thereon for progressively folding material, means for feeding the material to the folding means, an auxiliary feeding roller frictionally engageable with the material to advance the same to said feeding means, means for driving said auxiliary roller including an overrunning clutch, and means for rotating said auxiliary roller through the clutch at a surface speed less than that of the first named feed means to feed the material into position for engagement by the same, said overrunning clutch thereafter permitting the auxiliary roller to roll on the surface of the thus fed material.