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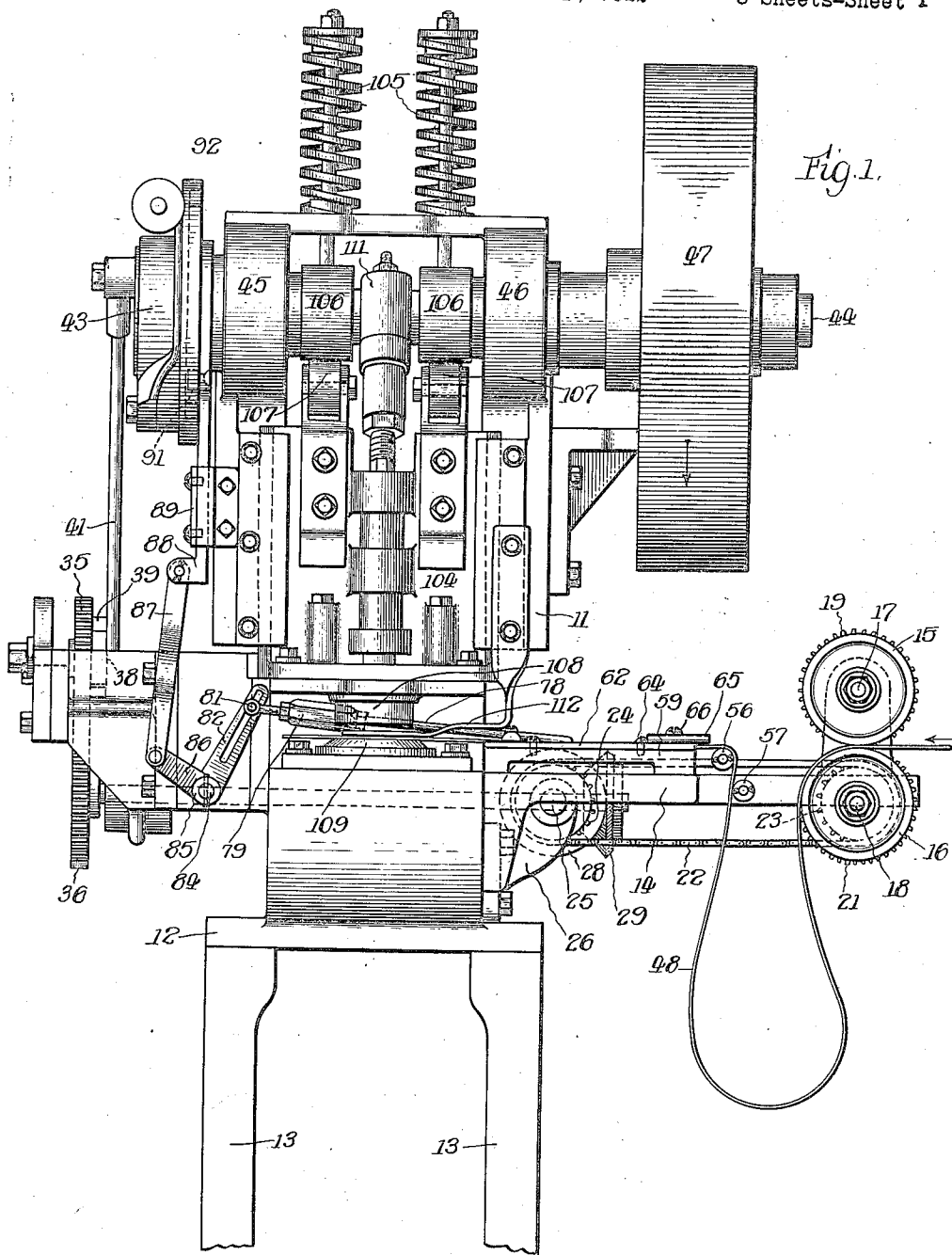
J. A. STOCK

1,481,332

FEEDING DEVICE

Filed June 21, 1922

3 Sheets-Sheet 1



Inventor
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Jan. 22, 1924.

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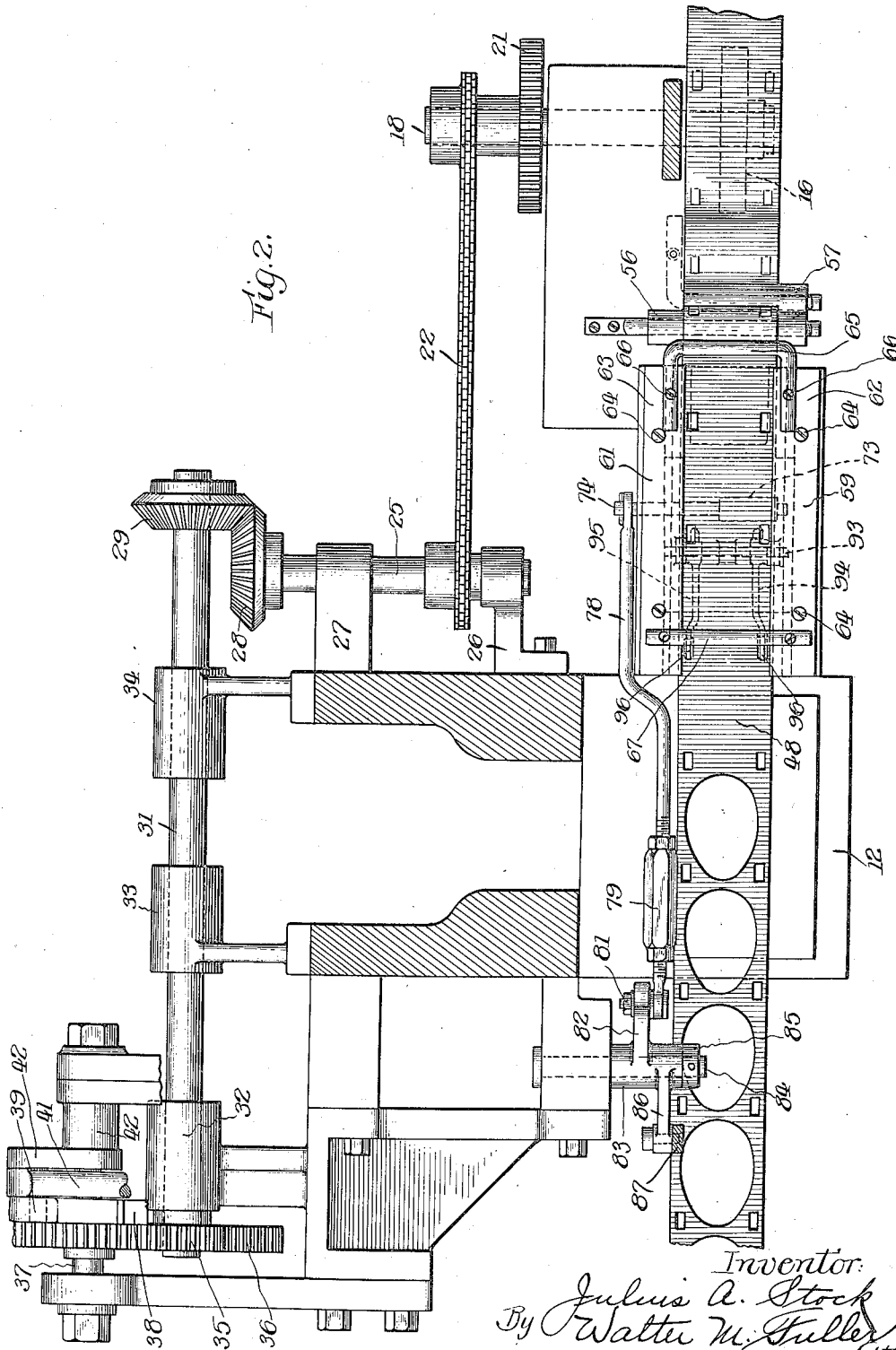
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Fig. 2.



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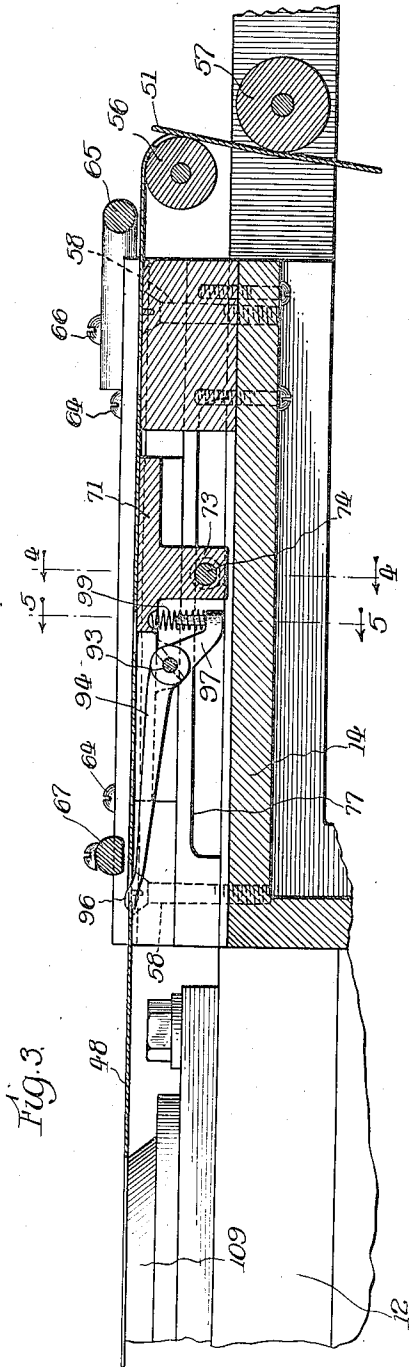
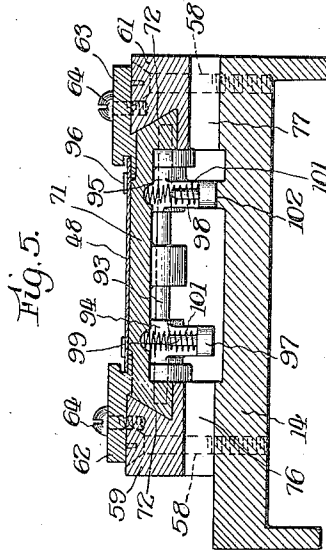
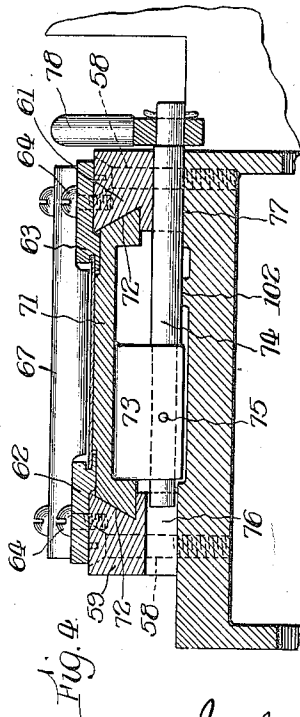
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3 Sheets-Sheet 3



UNITED STATES PATENT OFFICE.

JULIUS A. STOCK, OF CICERO, ILLINOIS, ASSIGNOR TO W. C. RITCHIE AND COMPANY,
OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

FEEDING DEVICE.

Application filed June 21, 1922. Serial No. 570,023.

To all whom it may concern:

Be it known that I, JULIUS A. STOCK, a citizen of the United States, residing in the town of Cicero, county of Cook, State of Illinois, have invented certain new and useful Improvements in Feeding Devices, of which the following is a specification.

My invention pertains to improved and novel appliances or mechanisms for feeding or advancing a strip of material with accuracy as to position to a punching or other machine which acts on the material forming such strip or supply band.

More specifically, the invention relates to mechanisms for advancing a strip of printed pasteboard, strawboard, cardboard or the like to a punching appliance for cutting out blanks in accurate register with printed sections of the supply band.

The machines embodying the invention are well adapted for feeding printed strips of pasteboard from which egg-shaped, oval, or other shaped printed blanks are to be punched out in succession and fashioned or formed with dies to supply them with marginal flanges or rims whereby they are adapted for use as the top and bottom elements of similarly shaped boxes, such, for example, as the well-known egg-shaped boxes containing insect destroying powder which is expelled from a suitable orifice in an end or edge of the box by pressure exerted on its opposite top and bottom walls.

This invention is of particular advantage in that it feeds the stock strip of material with great accuracy, thereby delivering or feeding the printed sections in precise register with the dies which cut out the blanks.

Any slight or minute inaccuracy in the operation of a feeding appliance attempting to do this work tends to become cumulative or continually increasing thus wholly destroying the required register with the dies unless means are provided to guard against such contingency.

The new appliance performs its work wholly satisfactorily with exact register and without the possibility of the existence of an accumulating inaccuracy.

To this end, the pasteboard or other strip, when it is provided with its series of printed sections, is also wholly or partially perforated outside of such sections and the strip when advanced to the dies is fed forward by means of appropriate novel mechanism

cooperating with the margins or end walls of such apertures which were supplied for this special feeding function.

To enable those skilled in this art to fully understand this invention and its several advantages, in the accompanying drawings I have illustrated a desirable and preferred embodiment of the invention and throughout the several views of such drawing I have employed like reference characters in connection with the same parts.

In these drawings:

Figure 1 is a front elevation of the mechanism;

Figure 2 is a horizontal section on an enlarged scale;

Figure 3 is a vertical section through the strip feeding mechanism on a still larger scale;

Figure 4 is a vertical cross-section on line 4-4, Figure 3;

Figure 5 is a similar cross-section on line 5-5 of Figure 3;

Figure 6 is a plan view of a fragment of the pasteboard strip to be fed by the mechanism shown in the other figures;

Figure 7 is a section through one of the completed box covers; and

Figure 8 is a face view of the same part.

Referring to these drawings, it will be perceived that the machine comprises a suitable frame or support 11 mounted on or forming part of an appropriate table 12 having the usual supporting legs or posts 13.

The frame carries an elongated, horizontal shelf or ledge 14 projecting to the right and near the outer end of this there are a pair of upper and lower coating stock-strip feeding-rollers 15 and 16 on suitably-mounted, revoluble, driven shafts 17 and 18 turned in unison and equally by intermeshing gears 19 and 21 fastened thereto.

Such lower shaft 18, by means of a sprocket-chain 22 and cooperating sprocket-wheels 23 and 24, is driven from a cross-shaft 25 revoluble in bearings in brackets 26 and 27 and fitted at one end with a bevel-gear 28 in mesh with a companion bevel-gear 29 on a back shaft 31 rotatable in bearings 32, 33, and 34 by means of a spur-gear 35 on one end in mesh with the teeth of a companion gear 36 on an appropriately-mounted, shorter, back shaft 37 supplied with a suitable ratchet-wheel 38 of ordinary construction.

All of these movable elements are inter-

mittently revoluble in single direction to effect the step by step feed of the pasteboard strip by means of a pawl or dog 39 of usual type cooperating with the ratchet-wheel and mounted on an arm 41 pivoted at its lower end to a crank arm on a sleeve 42 loose and rockable on shaft 37.

Such upwardly-extended arm or rod is connected at its top end to an eccentric 43 on the end of a main, upper drive-shaft 44 mounted in bearings 45 and 46 and rotated from any suitable source of power by means of a belt (not shown) encircling a pulley 47 on the shaft.

Thus this mechanism transforms the continuous rotation of the drive-shaft 44 into an interrupted rotation of the pair of strip-advancing feed-rollers 15 and 16 as is required by reason of the nature of the remainder of the machine about to be described.

The strip of pasteboard 48 (Figure 6) which these rollers feed has printed egg-shaped or other suitable sections 49 on its under face, as indicated by the dotted lines, and along its two marginal portions between such printed parts it has transversely-aligned sheared and scored ears or tabs 51, 51 each of which is fully cut from the body of the pasteboard band along its two, parallel sides or edges 52 and 53 and at one end 54, the other end being scored only along the line 55.

These ears or tabs are cut or provided in the body of the strip during the printing operation on the latter, but they are not completely severed therefrom or fully punched out of the strip to avoid their falling into and possibly injuring parts of the printing-press.

Adjacent to the feed-rollers, there are a pair of guide-rollers 56 and 57 over the former of which the pasteboard strip passes, the other roller guiding the strip thereto and causing it to pass up substantially vertically to the other roller, as shown, the pasteboard stock strip hanging in a compensating loop between the two pairs of rollers.

By means of screws 58, two, spaced guide-bars 59 and 61 are fastened to the top of the shelf or ledge and on top of these, two other longitudinally-grooved guide-plates 62 and 63 are secured by screws 64.

The pasteboard strip upon passing sharply around the roller 56 extends beneath a cross-bar 65 mounted by screws 66 on the top of elements 62 and 63 and beyond such bar the border portions of the strip are received in and guided by the inwardly-facing, opposed grooves or guideways of the two plates 62 and 63.

Extended across the top of the stock band at the other end of the guides 62 and 63, a supplemental cross-bar 67 is employed with a flat under-face as indicated in Figure 3.

To feed or advance the pasteboard stock ribbon along such guiding and directing members to the punch-press described hereinafter the following specified cooperating parts are employed.

A carriage 71 is mounted for reciprocation in the grooves or guideways 72, 72 of the elements 59 and 61 beneath the inwardly-protruding blank-supporting parts of the members 62 and 63, the carriage having a depending lug 73 on its under face in an aperture of which a cross-shaft 74 is pinned at 75, portions of the shaft being received or accommodated in slots 76, 77 of the guides 59 and 61 to permit reciprocation of the shaft with the carriage.

The rearwardly-protruding reduced-diameter end of the shaft has a bent rod or arm 78 rockingly mounted thereon, the length of the part 78 being capable of adjustment or lengthening or shortening by reason of a turn-buckle 79 connecting together its two parts or sections.

The other end of such rod or arm, by means of a pin and slot arrangement 81, is adjustably and rockingly connected to an arm 82 forming part of a hub 83 free to rock or oscillate on a stud-shaft 84 mounted in and projecting forwardly from the frame of the machine, such hub being held in place between the frame and a collar 85 pinned or otherwise fastened to the stationary shaft.

This hub has another arm 86 whose end, by means of a link 87, is operatively connected to a slide 88 mounted for reciprocation in a guide 89 secured to the frame, such slide carrying a roller 91 in a cam-groove in a cam 92 on shaft 44.

Thus, by this connecting mechanism, the carriage is reciprocated in unison and in proper timed relation to the operations of the other parts of the machine.

Carriage 71 also has a second rockingly-mounted shaft 93 to which is pinned two, spaced arms or fingers 94 and 95, each having a notched upper end 96 with a curved top surface, the other sections 97 and 98 respectively of each arm on the other side of the shaft having an upright pin 99 encircled by a coil-spring 101 bearing at its lower end against the lever and at its upper end against the underside of the carriage.

These feeder fingers are accommodated in slots of the carriage and in order to limit their upward movement one part 98 has a smooth under surface which rides or slides on the top face of a smooth track 102 forming an integral part of the ledge or shelf.

The punch-press mechanism may be of any usual and known type and consequently requires only a meager or outline description.

It is designed and arranged to cut out the egg-shaped or other form of blanks in succession or sequence as the strip is fed along and

after such severance each blank is pressed down through a suitable former to bend up its margin to provide the rim of the finished article.

5 Such body 103, as shown in Figures 7 and 8, is adapted to constitute or be used for either the top or bottom of a container of like shape frequently used in the trade in connection with insect powder.

10 The punch-press has a vertically-operating slide 104 lifted by coil-springs 105, 105 and pressed down by cams 106, 106 acting on rollers 107, 107 on the slide, the latter at its lower end carrying a punch 108 designed by
15 cooperation with a stationary lower die 109 to cut out the blanks.

Internally, and not shown, there is an inner plunger operated by an eccentric mechanism 111 which by coaction with a former
20 shapes the cut out blanks to provide them with their marginal or border flanges.

In addition, a suitable stripper 112 may be employed if found to be desirable or necessary.

25 To remove undue strain from the pivoted reciprocating, feeding fingers, and to provide suitable slack in the stock strip of material, the intermittently-actuated feed-rollers provide the hanging loop in such strip,
30 the latter before entering the machine having been moistened to facilitate the punching and flanging operations, the latter part of the mechanism being heated if desired to dry the shaped pasteboard to cause it to
35 more readily retain its finished form.

As the pasteboard ribbon or band passes sharply around the idle roller 56, the tabs or ears 51, formerly occupying the holes produced by their formation, are projected out
40 of the plane of the strip causing them to strike the cross-bar 65 and to be broken from the stock strip along their rear scored ends, thus leaving the holes completely open.

In traveling forwardly, the pair of
45 notched fingers, under the action of their springs, are projected upwardly a predetermined distance into the pair of registering or aligned holes and their notches engage the walls at the front edges of such holes
50 carrying or feeding the strip forward with them.

Then while the fingers are stationary and holding the pasteboard strip in place, the punching and forming operations are performed, whereupon the feed-finger carriage
55 retracts carrying the fingers with it, their curved top faces sliding on the under surface of the pasteboard strip, undue upward arching or bowing of the pasteboard being
60 prevented by the cross-bar 67.

Upon the next forward stroke of the fingers they enter the next pair of holes and advance the strip as before ready for the punching out and shaping of the next blank.
65 It is to be borne in mind that this in-

vention is not limited and restricted to the precise and exact details of construction shown and described because the invention is susceptible of a variety of embodiment differing more or less in mechanical construction but all incorporating the fundamental or underlying principles upon which the invention is based.

70 Stated somewhat otherwise, radical changes may be made in the structure shown without departure from the heart and essence of the invention and without the sacrifice of any of its substantial benefits and advantages.

I claim:

80 1. In a feeding appliance of the character described, the combination of a sliding carriage, means to reciprocate said carriage, a spring-pressed finger hinged on said carriage designed during its forward travel
85 strokes to engage in sequence the walls of spaced recesses previously cut in the stock strip of material to be fed and to yield during its backward strokes, whereby said finger intermittently advances said stock strip.

90 2. In a feeding appliance of the character described, the combination of a sliding carriage, means to reciprocate said carriage, and a pair of spring-pressed fingers hinged on said carriage designed during their forward travel strokes to engage in sequence the
95 walls of spaced recesses previously cut in the stock strip of material to be fed and to yield during their backward strokes, whereby said fingers intermittently advance said stock
100 strip.

3. In a feeding appliance of the character described, the combination of a sliding carriage, means to reciprocate said carriage, a shaft rockingly mounted on said carriage,
105 a pair of spaced spring-pressed fingers mounted on said shaft and designed during their forward travel strokes to engage in sequence the walls of spaced recesses previously cut in the stock strip of material to
110 be fed and to yield during their backward strokes, and a track with which one of said fingers cooperates to limit its turning movement in one direction.

4. In an appliance of the character described, the combination of a roller around
115 which a stock strip of material with partially severed spaced scored tabs is adapted to pass to bend the strip and project the tabs out of the plane thereof, a bar in the path of travel of and designed to be engaged by the
120 projecting tabs whereby the latter are wholly removed from the strip leaving spaced recesses, feeding means to engage the walls of said recesses in succession, and
125 means to operate said feeding means to advance the stock strip.

5. In an appliance of the character described, the combination of a roller around
130 which a stock strip of material with par-

tially severed spaced scored tabs is adapted to pass to bend the strip and project the tabs out of the plane thereof, a bar in the path of travel of and designed to be engaged by the projecting tabs whereby the latter are wholly removed from the strip leaving spaced recesses, a sliding carriage, means to reciprocate said carriage, and yielding means on said carriage to engage the walls of said spaced recesses in the stock strip of material to be fed, whereby the stock strip is advanced intermittently.

6. In an appliance of the character described, the combination of means to remove

partially severed tabs from a stock strip of material to be fed thereby providing open recesses therein, a sliding carriage, means to reciprocate said carriage, and a pair of spaced spring-pressed fingers hinged on said carriage designed during their forward travel strokes to engage in sequence the walls of said successive recesses in the stock strip of material to be fed and to yield during their backward strokes whereby said fingers intermittently advance said stock strip.

In witness whereof I have hereunto set my hand and seal.

JULIUS A. STOCK. [L.S.]