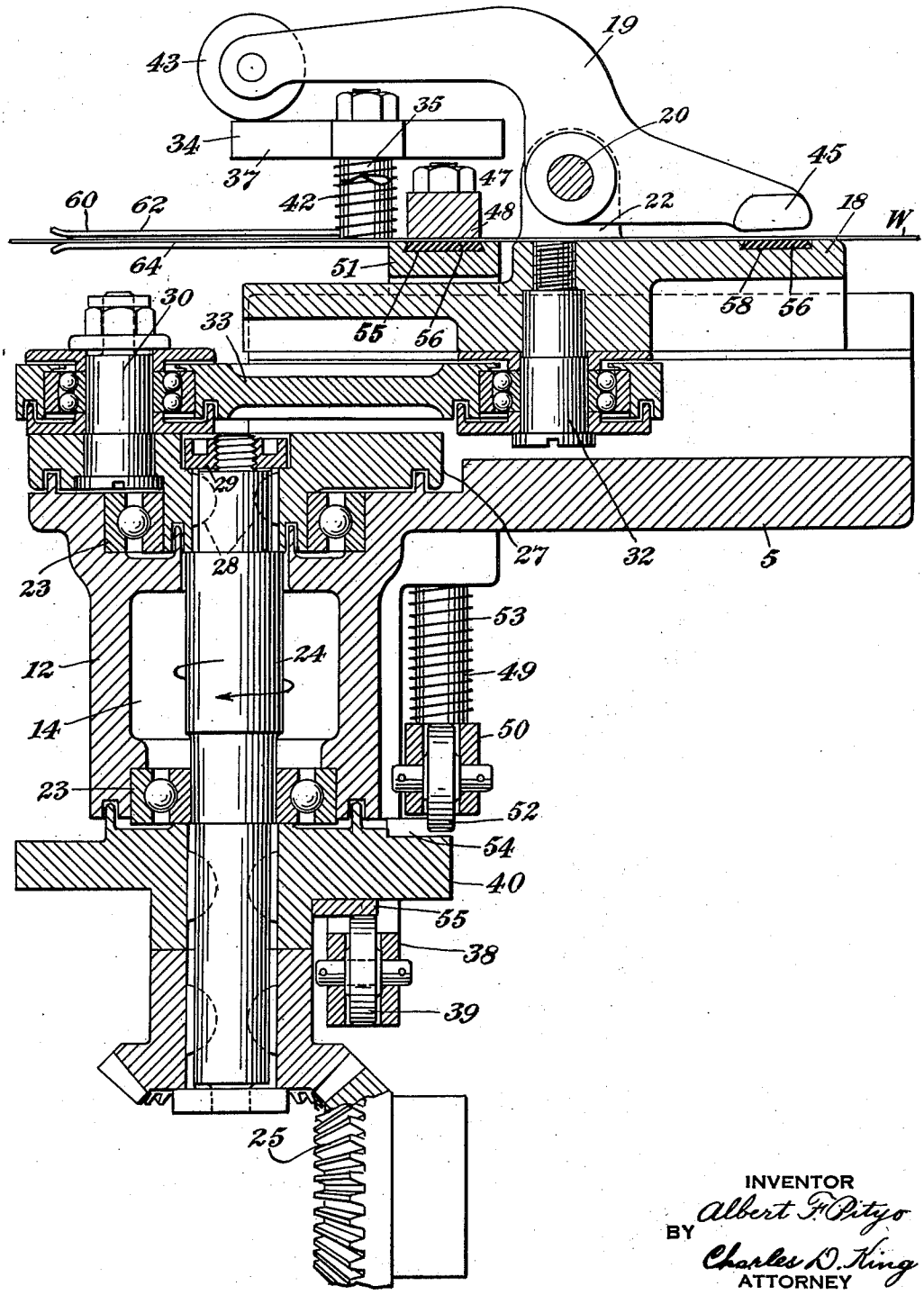
Sept. 6, 1938. A. F. PITYO 2,128,964

WEB FEEDING MECHANISM

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Fig. 1



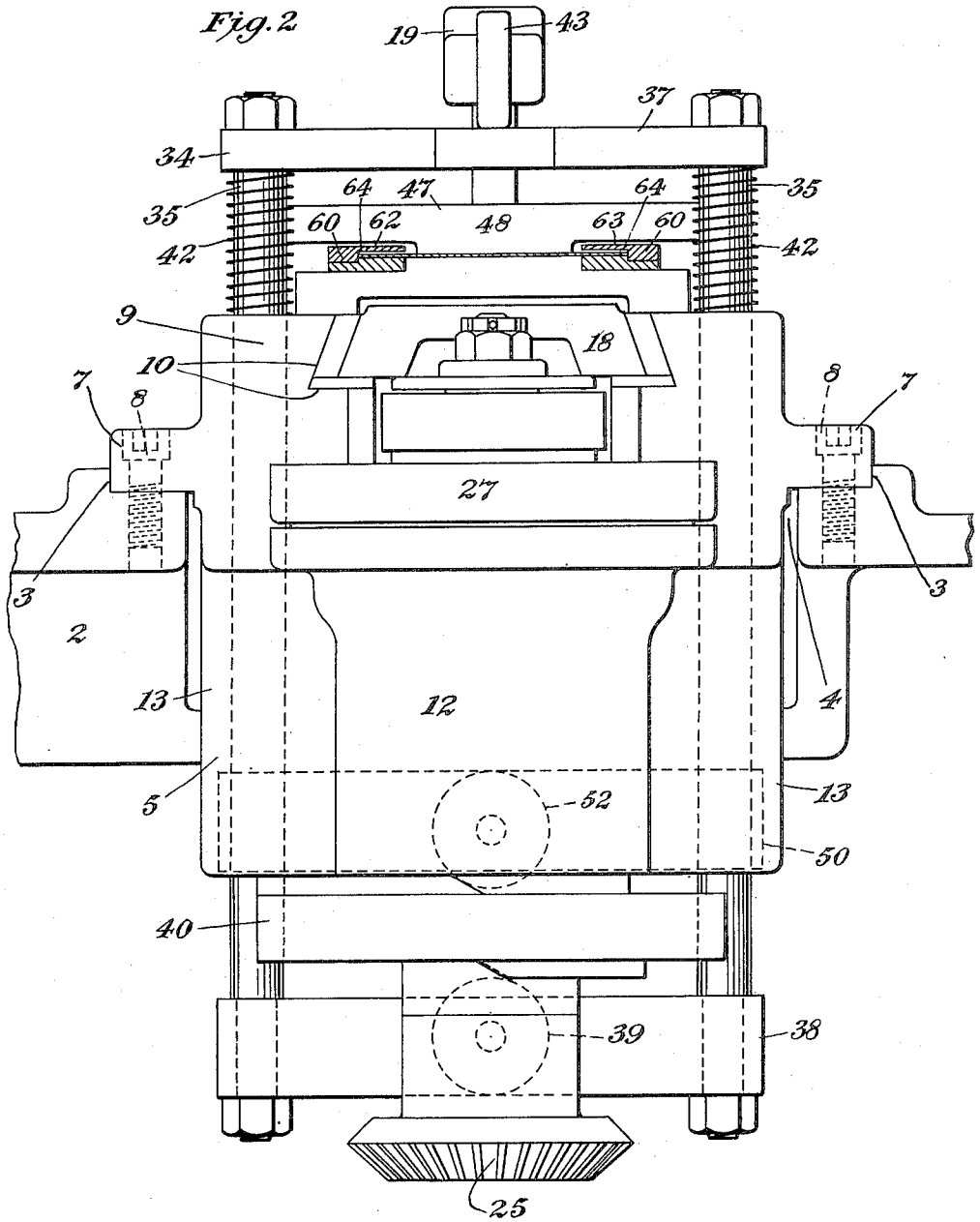
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Fig. 2



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Fig. 3

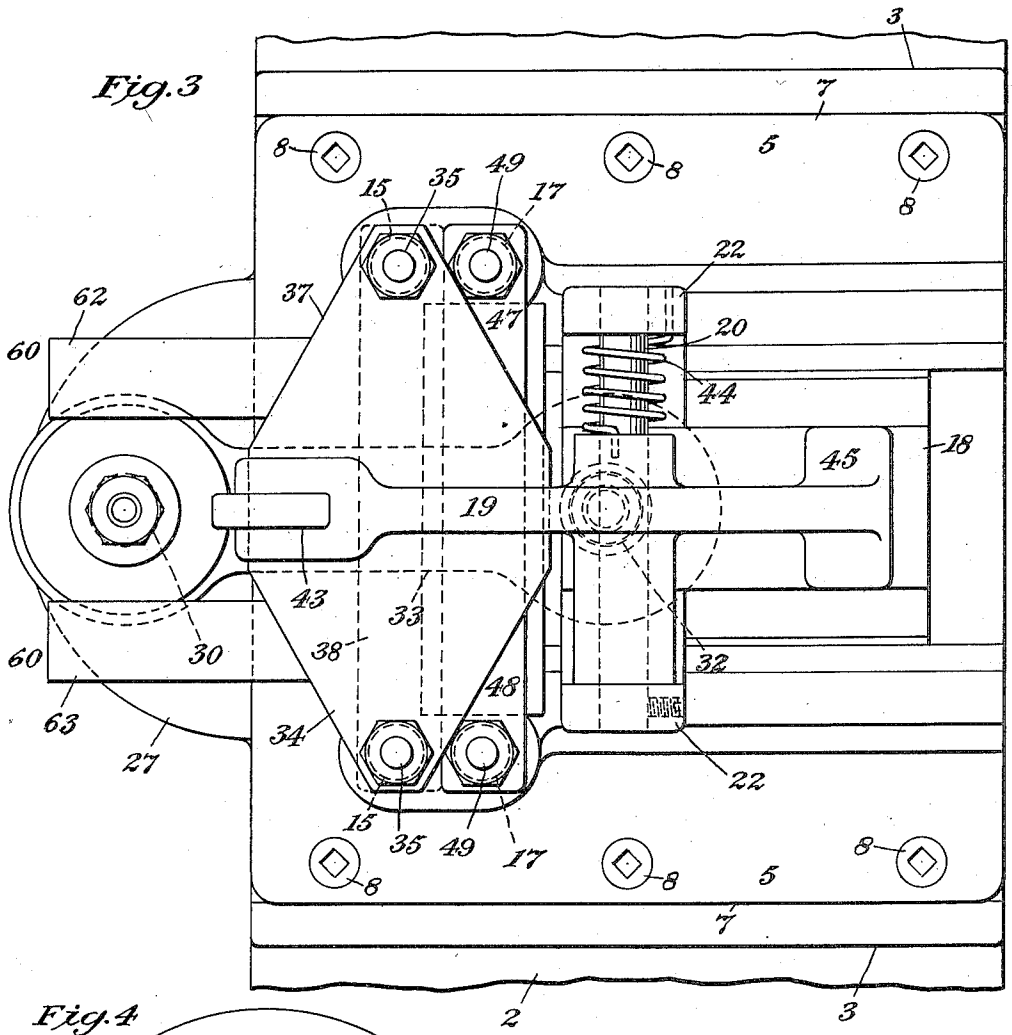
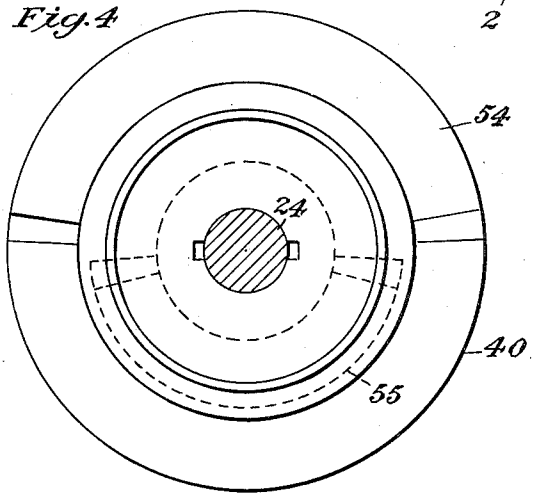


Fig. 4



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WEB FEEDING MECHANISM

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Application September 18, 1935, Serial No. 41,052

15 Claims. (Cl. 271—2.5)

This invention relates to web feeding mechanism and particularly to mechanism for feeding paper stock and the like in webs or sheets adapted for the manufacture of paper articles and the like such as blanks for containers, container covers and articles of sheet material.

One of the principal objects of the invention is to provide a mechanism of this class which is adapted for more positive and accurate feeding of such material than those now commonly employed for this purpose. Another object is to provide mechanism of this type in which slippage of the stock is reduced to a minimum. Another object is to provide mechanism in which the stock is accurately and readily set in the initial position. And a further object is to provide mechanism for alternately holding and feeding the sheet material more positively and accurately and thus reduce the tendency of skewing or feeding such stock otherwise than in a predetermined path.

The means I employ for accomplishing the above objects together with other advantageous and novel features of my improved web feeding mechanism, are illustrated in the drawings accompanying and forming part of this specification, and in which—

Figure 1 is a longitudinal vertical section of one embodiment of my invention.

Fig. 2 is a front elevation of the same.

Fig. 3 is a plan of the same, and

Fig. 4 is a plan of the cam member 40.

In the drawings, the numeral 2 denotes the frame of the machine on which the feed mechanism is mounted, 3, 3, are ways formed in said frame, and 4 is a gap in which the slide bed 5 is placed and secured by its side flanges 7 to the ways 3, by means of cap screws 8.

The bed 5 is provided with a channeled part 9 in which are guides 10, and at the feed end there is a hub 12 and adjacent to and joining it are ribs 13 which connect it more intimately to the channeled part 9. The hub 12 has a bore 14 and at each side of the hub in the ribs 13 are borings 15, 15, and 17, 17.

Mounted on the guides 10 is a to-and-fro-moving member or slide 18 on which an irregular shaped gripper or gripping lever 19 is pivoted at 20 in the ears 22 carried on the slide 18.

In the bore 14 of the hub 12 are two bearings 23 in which a short shaft 24 is journaled, said shaft being ordinarily driven by gearing such as 25 connected with suitable driving means (not shown). At the upper end of the shaft 24 is a disk 27 secured thereon by keys 28 and a nut 29. Secured to the disk 27 is a crank pin 30 and secured to the slide 18 is a wrist pin 32. There is a connecting rod or pitman 33 which joins the crank pin 30 and the wrist pin 32 so that when the shaft 24 is rotated the slide 18 is given to-and-fro or reciprocating movement.

There is a sheet clamping yoke 34 which is composed of two uprights rods 35 slidable in the borings 15, 15, connected above by a rhomboidal plate 37 and below by a bar 38. The bar 38 has an anti-friction roller 39 which is held against the lower side of the cam member 40 by means of the coil springs 42 interposed between the plate 37 and the top of the adjacent part of the side bed 5.

The gripping lever 19 has an anti-friction roller 43 which bears on the plate 37, being held against it by the action of the coil spring 44 on the pin 20, so that the gripping part 45 of said lever 19 is normally held open but is caused to close when the yoke 34 rises by the action of the cam member 40.

There is a holding yoke 47 composed of the gripping bar 48, the upright rods 49 connected at their upper ends to the bar 48, and a bar 50 below and joining the lower ends of the bars 49. The bar 50 has an anti-friction roller 52 which is held against the upper side of the cam member 40 by means of the coil springs 53 interposed between the bar 50 and the adjacent under side of the slide bed 5.

The cam member 40 is preferably constructed with a body portion of cast metal and two hardened steel crescents 54 and 55 secured to the former, the crescent 54 on the upper side of the body portion and the crescent 55 on the lower side thereof. Thus the hard wear comes on the hardened steel members but this action being intermittent, the crescents are made to extend only part way round.

Directly under the gripping bar 48 is a fixed bar or holding element 51 which is secured to the slide bed 5. The upper part of the bar 51 has a channel 55 which is filled with suitable soft material such as soft rubber 56. At the forward end of the slide 18, directly under the gripping part 45 of the lever 19 is a similar groove 58 also filled with soft material preferably soft rubber 56.

There is a sheet guide 60 secured to the upper part of the slide bed 5 and it consists of right and left hand parts 62 and 63 each having a groove 64 which is flared at the feed end. These grooves serve as guides to the side edges of the web or sheet.

The yoke 34 is hereinafter also referred to as a web gripping yoke and also together with the fixed bar 55 and part 56 therein as a web grip

device. The lever 19 and part 56 on the slide 18 are also mentioned as a web grip device for their functions in connection with the web W.

The operation of my improved web feeding mechanism is as follows:

Power being applied to the gearing 25, the shaft 24 is caused to revolve, together with the disk 27, crank pin 30, and cam member 40, the crank pin 30 causing the pitman 33 to move the slide 18 to and fro. The rotation of the cam member 40 causes the yoke 47 to reciprocate in the bores 17, 17, and the bar 48 of the yoke to alternately clamp and unclamp the web W from the rubber cushion 56 in the groove 55.

The cam member 40 also reciprocates the yoke 34, causing springs 42 to alternately raise the roller 43 and lever 19 against the tension of the spring 44 and on lowering, to allow said spring to cause the lever and roller to return to their initial position thus causing the gripping portion 45 to alternately clamp and unclamp the web W.

The clamping movements of the yokes 34 and 47 alternate with each other so that as the slide 18 is in the extreme left hand position, the yoke 34 effects the clamping of the web W, and at the same time the yoke 47 unclamps it.

The slide 18 then moves to the right to the end of its stroke and the yoke 34 then unclamps the web and the yoke 47 immediately clamps it. The slide 18 then starts on its movement to the left and the web remains clamped by the yoke 47 and consequently stationary, until the slide 18 completes its movement to the left. The parts then go through similar movements as long as it is desired to feed the web. The clamping and unclamping is adapted to take place within two and one half degrees of the angular movement of the crank pin at each end of the slide movement and this angular movement is distributed equally each side of the center line of the slide thus causing only an unappreciable amount of slippage.

What I claim is:—

1. Web feeding mechanism comprising a reciprocating slide, a gripper movable on and with the slide, means for reciprocating the slide, a yoke surrounding the slide and movable transversely to the slide and web for moving said gripper, a fixed web holding element, a movable web holding yoke cooperative therewith surrounding the slide and movable transversely to the slide and web, and cam means for operating both of said yokes.

2. Web feeding mechanism comprising a slide, means for reciprocating the slide, a gripping lever movable on and with the slide, a rectangular yoke for operating said lever and movable transversely to the slide and web, a fixed rectangular web holding element, a web holding yoke movable transversely to the slide and web, cooperative with and having a grip bar parallel with said fixed web holding element, and means for operating said yokes.

3. Web feeding mechanism comprising a separate frame having slide guides and yoke guides and a hub transverse to the slide guides, a reciprocating slide in the slide guides, means for reciprocating the slide including a shaft in said hub, a gripper on and movable with the slide, a slide gripper yoke surrounding the slide and movable transversely to the slide and web for moving said gripper to grip and release the web, a fixed web holding element, a gripping yoke cooperative therewith surrounding the slide and movable transversely to the slide and web, and means carried by said frame and shaft for operating said yokes.

4. Web feeding mechanism comprising a frame having slide guides, a slide reciprocative in said guides, a web gripper on and operative over the slide, means to reciprocate the slide, a device surrounding the slide and movable transversely thereto for actuating the slide web gripper, a web holding device surrounding the slide and having parts movable transversely thereto, and a two part actuating member to move the transversely movable devices.

5. Web feeding mechanism comprising a frame having a pair of slide guides, a slide reciprocative in said guides, a web gripping member on the slide having an actuating contact and movable with the slide, means including a crank pin to reciprocate the slide, a device surrounding and movable transversely to the slide and including a member to engage said contact for moving the gripping member, a pair of rods joined transversely to said second-mentioned member at their upper parts, a member connecting their lower parts having a contact element intermediate said rods and rotary means effective to reciprocate the device adjacent the dead centers of the crank pin movements and cocperative means surrounding the slide and web to hold the web when the slide is moved in one direction and to release it when the slide is moved in the opposite direction, said means including a fixed holding element adjacent the slide, a clamping member over the fixed element, two rods secured to said member transverse to the slide, and a member joining the lower parts of said rods and having a contact element engaging said rotary means and operating adjacent the dead centers of the crank movements.

6. Web feeding mechanism comprising a reciprocating slide, means including a crank pin, for reciprocating the slide, web gripping means including a grip member on and movable with the slide, a grip member actuating device surrounding and movable transversely to the slide, a fixed web gripping element adjacent the slide, a clamping device surrounding and movable transversely to the slide and web and having a grip bar cooperative with said fixed web gripping element, and means including a two part cam to intermittently move said transversely movable devices adjacent the dead centers of the crank pin movements, said grip member actuating device and said clamping device each including a pair of bars by which the device is guided.

7. Web feeding mechanism comprising a slide, means including a crank pin to move the slide to and fro, a grip lever on and movable with the slide for moving the web forward, grip lever actuating means to cause gripping and releasing of said grip lever including a plate parallel to the web, structure connected to the plate to move the same transversely to the slide and web and together with the plate surrounding the slide and web, a grip device to hold the web stationary during the backward movement of the slide, and a common device rotatable with the crank pin to operate the grip lever actuating means and the last-mentioned grip device.

8. Web feeding mechanism embodying a frame, web holding means, web feeding means, both mounted in the frame and operating on the web alternately and each including a reciprocating yoke having two spaced vertical guide elements slidable in the frame transversely of the web and between which the web can pass.

9. Web feeding mechanism embodying a reciprocating slide, means to reciprocate the slide, gripping means on and movable with the slide and including a two part lever which embodies a gripping part and an actuating part, a plate movable against said actuating part transversely to the web, said gripping means effective to grip the web during the forward movement of the slide and to release it during the backward movement thereof, a fixed web holding element, a gripping yoke effective for gripping the web against said fixed web holding element during the backward movement of the slide and for releasing it during the forward movement, and means for actuating said yoke.

10. Web feeding mechanism comprising a reciprocating slide having a gripping element fixed thereto and located under the web, pivoting means on the slide above the web, a grip lever pivoted by said pivoting means and having a gripping part at one side of the pivoting means and a part provided with an actuating roller at the opposite side thereof, a yoke under the last-mentioned lever part reciprocative transversely to the web and including a plate bearing against the actuating roller, a driving shaft below the slide, means connected to said shaft to reciprocate the slide, means also connected to said shaft to reciprocate the yoke, and means fixed relatively to the slide and including a reciprocating yoke surrounding the web and means connected to the driving shaft to reciprocate said yoke and effective to hold the web stationary during the backward movement of the slide and to release the web during the forward movement of the slide.

11. In combination, in a web feeding mechanism, a reciprocating slide, means for reciprocating the slide, web clamping means carried thereby, a clamp actuating arm pivotally carried by said slide, a movable actuating member for said arm mounted independently of the slide, and means for operating said member in timed relation with the slide to hold said clamp in effective position during an appropriate period of reciprocation of said slide.

12. An intermittent web feeding mechanism comprising a reciprocatory slide, means for reciprocating the slide, web clamping means carried thereby, a clamp actuating arm pivotally carried by said slide, a movable actuating member for said arm mounted independently of said slide, means for operating said member in timed relation with said slide to hold said clamp in effective position during an appropriate period of the reciprocation of said slide, a relatively stationary web clamp, and means for actuating the last-mentioned clamp in timed relation to the clamping means of the slide.

13. Web feeding mechanism comprising a reciprocatory slide, web clamping means carried thereby, means for reciprocating said slide, a plate mounted independently of said slide and clamping means but adapted to be shifted transversely of said clamping means and thereby to maintain engagement therewith for holding said clamping means effective during movement of said slide, means operated mechanically in timed relation to said slide for shifting said plate, a relatively stationary web clamp, and means for operating the last mentioned clamp in timed relation to the web clamping means of the slide.

14. A mechanism for intermittent feeding of webbing comprising a reciprocatory slide, means for reciprocating said slide, a web advancing clamp carried thereby, a relatively stationary web clamp, a rotary cam means operated in timed relation with said slide, a first cam actuated member adapted to engage said cam means and means for maintaining connections therefrom to said advancing clamp to hold it effective during movement of said slide in one direction, and a second cam actuated member adapted to engage said cam means and connections therefrom to render said stationary clamp effective upon the opposite movement of said slide.

15. A mechanism for intermittent feeding of webbing, comprising a horizontally reciprocatory slide, a vertically mounted drive shaft, a crank connection therefrom for reciprocating said slide, a web advancing clamp mounted on said slide to reciprocate therewith, a relatively stationary web clamp, cam means mounted on said shaft to rotate therewith, a first actuating means adapted to engage said cam means and connected to operate said advancing clamp, and a second actuating means adapted to engage said cam means and connected to operate said relatively stationary clamp.

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