Oct. 5, 1937. A. W. RODLER 2,094,620

BELT LOADING MACHINE

Filed March 13, 1936 4 Sheets-Sheet 1

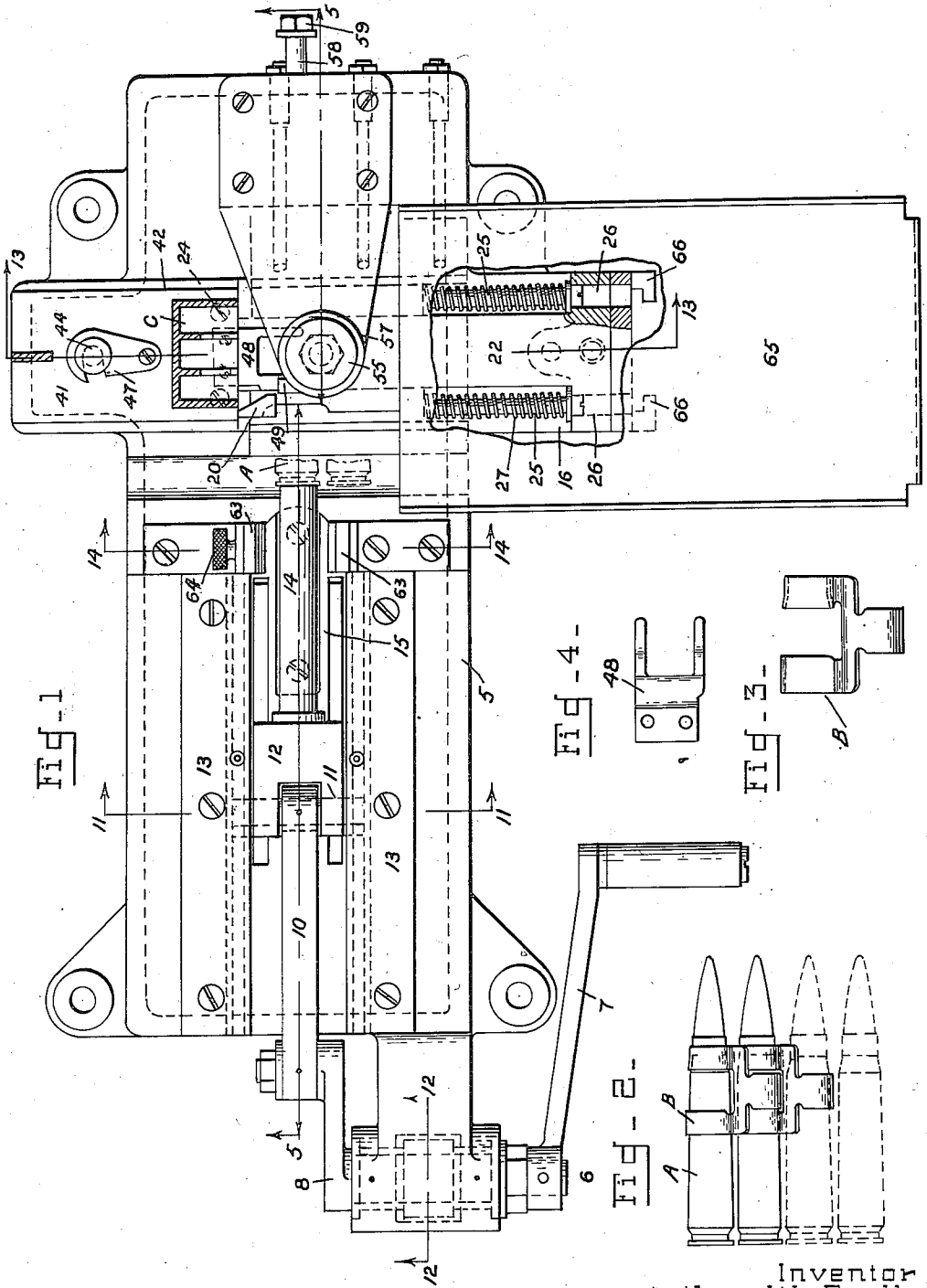


Fig-1

Fig-4

Fig-3

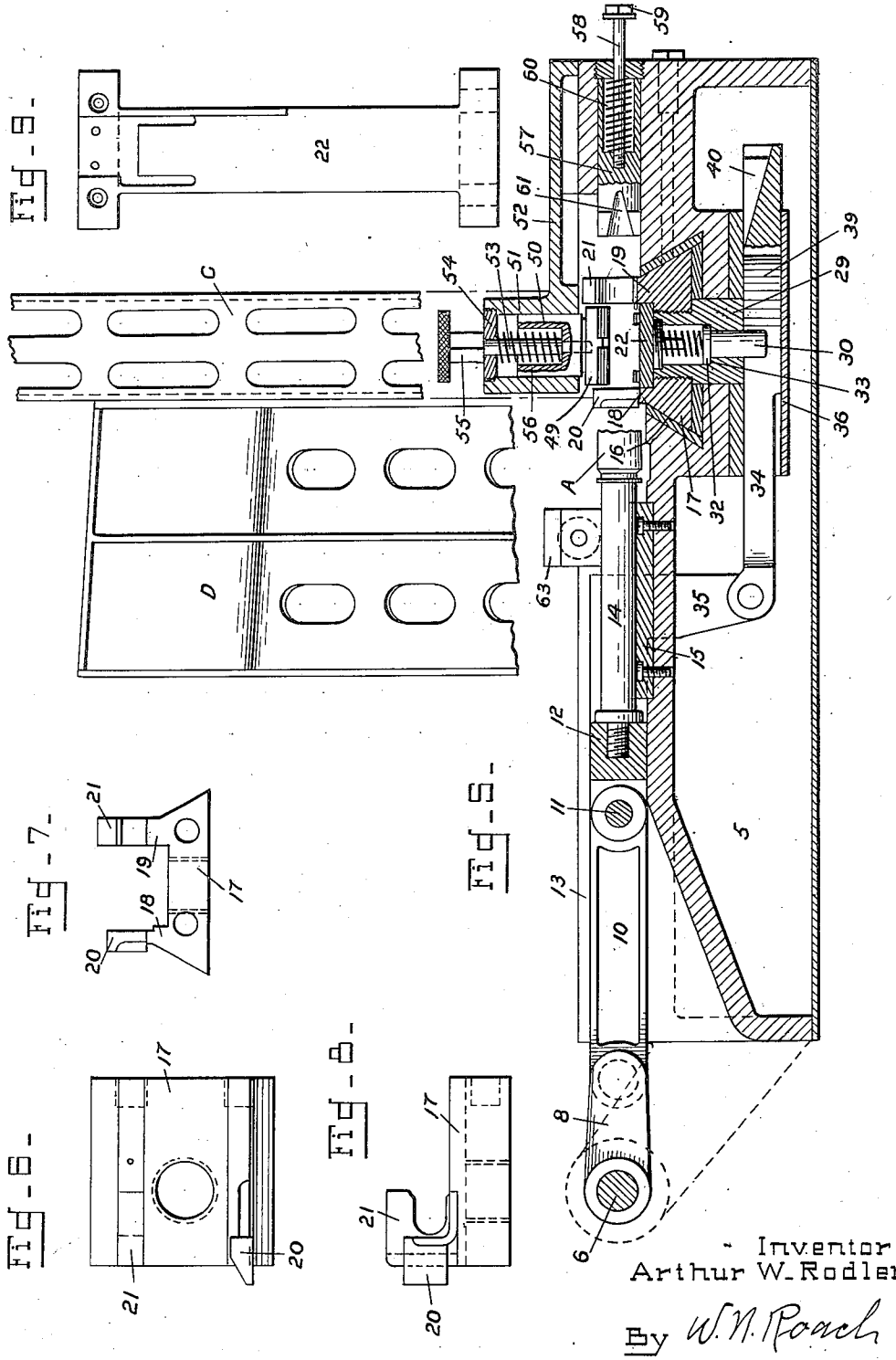
Fig-2

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Filed March 13, 1936 4 Sheets-Sheet 2



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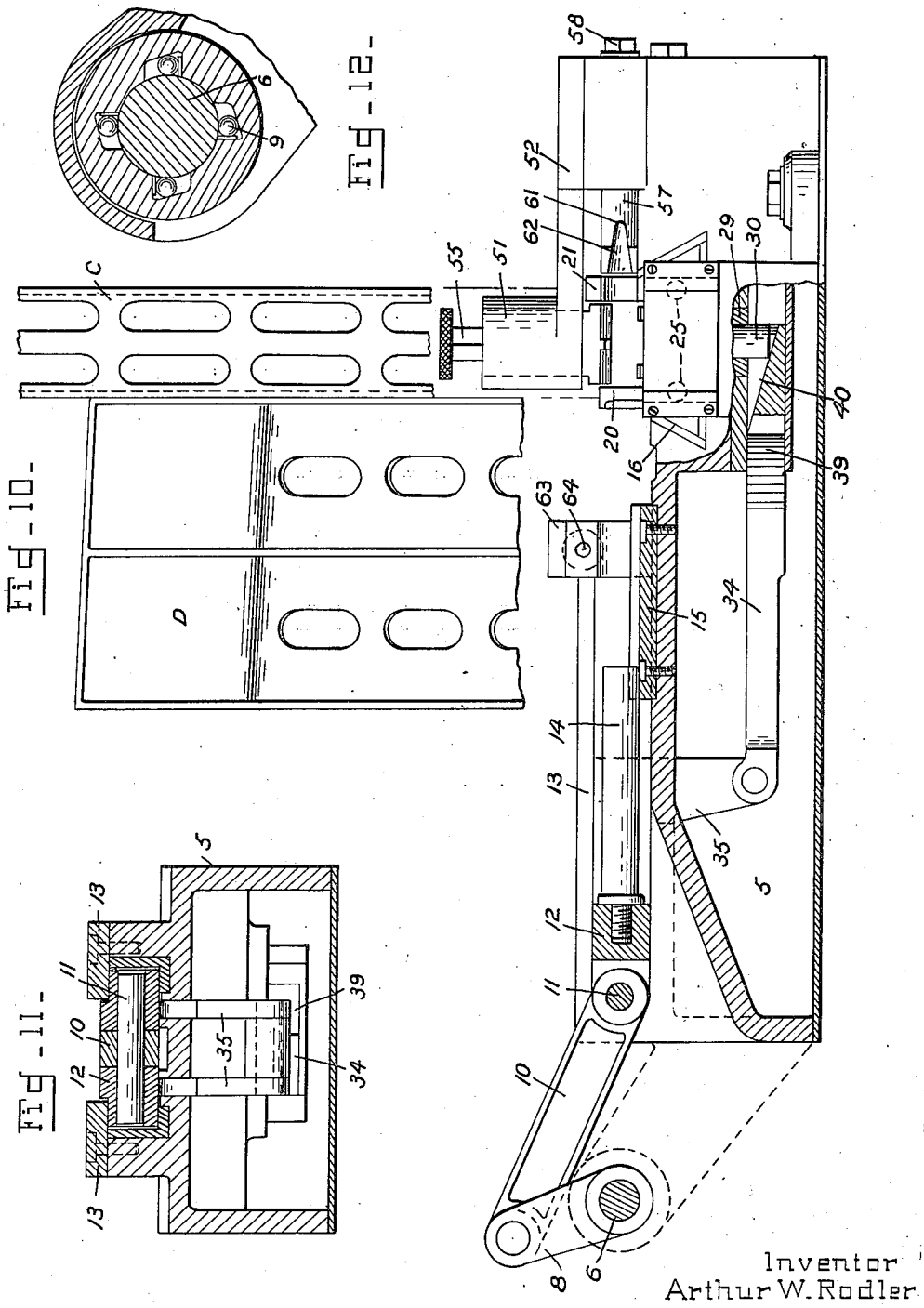
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BELT LOADING MACHINE

Filed March 13, 1936 4 Sheets-Sheet 3



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BELT LOADING MACHINE

Filed March 13, 1936 4 Sheets-Sheet 4

Fig. 13.

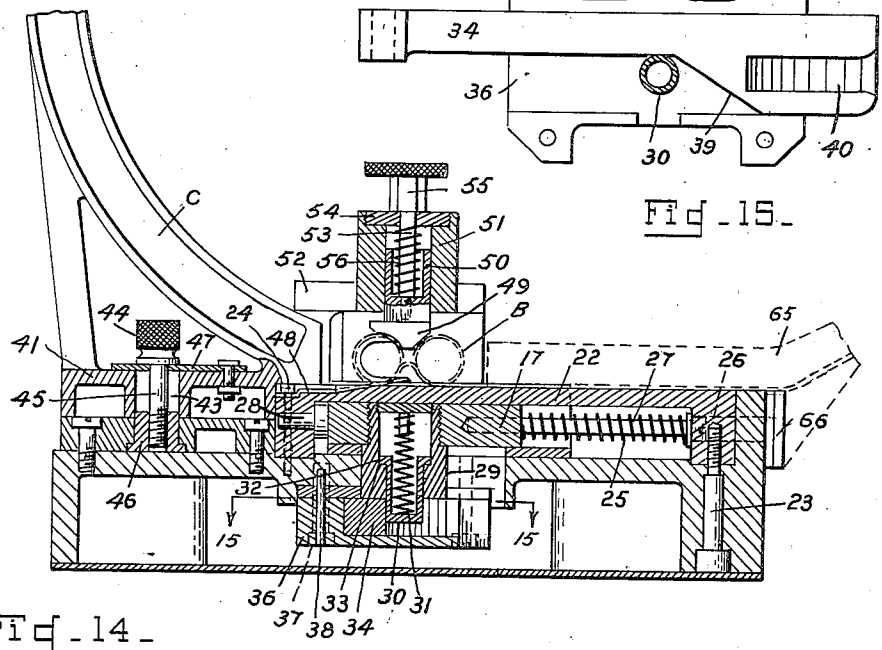


Fig. 14.

Fig. 15.

Fig. 16.

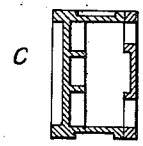
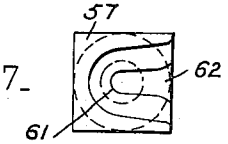


Fig. 17.



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2,094,620

BELT LOADING MACHINE

Arthur W. Rodler, Davenport, Iowa

Application March 13, 1936, Serial No. 68,747

3 Claims. (Cl. 86—48)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

The invention described herein may be manufactured and used by or for the Government for governmental purposes, without the payment to me of any royalty thereon.

This invention relates to a belt loading machine, intended for loading cartridges into interfitted links to form a cartridge belt of the disintegrating link type.

The purpose of the invention is to provide an efficient and reliable belt loading machine in which cartridges and links are supplied vertically to the machine in which the links are positively held in position to receive the cartridges, and in which the loaded portion of the belt is intermittently advanced in a horizontal direction.

To these and other ends, the invention consists in the construction, arrangement and combination of elements described hereinafter and pointed out in the claims forming a part of this specification.

A practical embodiment of the invention is illustrated in the accompanying drawings, wherein:

Fig. 1 is a plan view, with parts in section, of a belt-loading machine constructed in accordance with the invention.

Fig. 2 is a view of a portion of a loaded belt.

Fig. 3 is a plan view of a link.

Fig. 4 is a plan view of the spring on which a link rests.

Fig. 5 is a sectional view on the line 5—5 of Fig. 1.

Figs. 6, 7, and 8 are detail views of the slide respectively in plan, in end elevation and in side elevation.

Fig. 9 is a detail view of the bed plate.

Fig. 10 is a view in side elevation with parts in section to show the rammer on its forward stroke.

Figs. 11–14 are sectional views on the corresponding lines of Fig. 1.

Fig. 15 is a sectional view on the line 15—15 of Fig. 13.

Fig. 16 is a sectional view on the line 16—16 of Fig. 14.

Fig. 17 is a view in front elevation of the cartridge stop.

The machine comprises a housing 5 having an extension on one end for mounting a crank shaft 6 having a handle 7 on one end and an arm 8 on the other end. The crank shaft is intended to be moved in one direction and to this end it is associated with a ball ratchet 9 (Fig. 12). A connecting rod 10 on the arm is mounted on the pin 11 of a cross head 12 which is slidably mounted between spaced guide rails 13—13 on the upper side of the housing. The crosshead carries a rammer 14 which rides in the trough of a cartridge guide plate 15 and is adapted to move a cartridge A along the guide plate.

A passage 16 (Fig. 5) is provided in the housing and is arranged transversely of the rammer. A horizontally movable slide 17 mounted in the passage has a pair of spaced rails 18 and 19 provided respectively with upright fingers 20 and 21 adapted to engage a cartridge. A bed plate 22 fixed to the housing by means of screws 23 and 24 (Fig. 13) is disposed above the slide and between the rails 18 and 19 (Fig. 5). A pair of rods 25—25 (Figs. 1 and 13) carried by the slide are guided in apertures 26—26 in one end of the bed plate 22 and each rod is surrounded by a helical spring 27 confined between the slide and bed plate. The springs normally maintain the slide in a predetermined position with respect to the rammer and this position is determined by a stop pin 28 press fitted in the housing.

A casing 29 (Figs. 5 and 13) threaded in the slide 17 from the under side carries a plunger 30 which is normally extruded by a spring 31, the movement of the plunger being limited when a flange 32 on its upper end engages an annular shoulder 33 formed in the casing 29.

A bar 34 carried by depending arms 35—35 (Figs. 10, 11, and 15) on the crosshead 12 extends underneath the slide 17 and rides in a guide 36 which is fixed to the upper wall of the housing by screws 37 and a dowel pin 38. The bar is formed with a cam surface 39 on one side and has a groove 40 on its upper face the bottom of which constitutes a ramp leading from the free end of the bar.

When the slide is in normal position of rest, its plunger 30 is disposed in the path of the groove 40 so that when the rammer is moved in the loading operation the plunger is first elevated by the floor of the groove and then depressed by its spring when it is cleared by the upper edge of the cam surface 39 of the bar. As seen in Fig. 5 when the rammer is in full loading position the plunger is in rear of the cam surface 39. Upon retraction of the rammer the cam surface 39 displaces the plunger 30 and the slide 17 by which it is carried. When the bar 34 clears the plunger, the springs 27 restore the slide and plunger to normal position and the latter is again positioned in the path of the groove 40 of the bar (Fig. 10).

The bed plate 22 is of sufficient width to accommodate links B (Figs. 2 and 3) into which the cartridge A is pushed by the rammer. The links are of the well known disintegrating belt type

having single and double loops, the single loop of one link and the double loop of an adjoining link connected by a cartridge which upon withdrawal disconnects the links. The links B are supplied by gravity from a chute C which has a foot 41 fitting in a socket 42 (Figs. 1 and 14) in the housing. An opening 43 (Fig. 13) in the foot receives the head 44 of a bolt 45 that is threaded in a nut 46 carried by the housing. A hook 47 pivotally carried by the foot 41 is movable underneath the head of the bolt which when screwed down firmly attaches the chute C in place.

The exit of the chute is positioned adjacent the bed plate 22 and a link emerging from the chute onto a spring 48 carried by the bed plate is engaged by a stop member 49 (Fig. 13) formed on the lower end of a plunger 50. The plunger is mounted in a tubular casing 51 formed on a plate 52 fixed to the housing, and a bolt 53 threaded to the plunger passes through the cover 54 of the casing 51. The bolt is formed with a head 55 which engages the cover 54 to limit downward movement of the plunger under the influence of a spring 56.

A plunger 57 (Fig. 5) mounted in the housing underneath the plate 52 carries a bolt 58 whose head 59 engages the housing to limit movement of the plunger under the influence of a spring 60. The inner end of the plunger is disposed in line with the rammer and in the path of the bullet of the cartridge. It is formed with a socket 61 (Fig. 17) for receiving the bullet and has a lateral opening 62 to permit exit of the bullet.

An ammunition hopper or chute D mounted on the housing over the guide plate 15 is inserted between the guide rails 13—13 and between guides 63—63 (Fig. 14). It is held in place by a set screw 64. A tray 65 is mounted on brackets 66—66 in the housing by a tongue and groove arrangement, in position to receive the loaded belt as it is advanced by the slide 17.

When the chutes C and D are supplied respectively with links B and cartridges A, the lowermost link B will fall by gravity until it is engaged by the stop member 49 and the lowermost cartridge will fall onto the guide plate 15. The links are presented with the single loop foremost but as the single loop of the first link cannot be used the column of links is advanced either by pressing on the column or raising the plunger 50 until interfitted loops of the first and second link are placed in line with the rammer.

If the handle 7 is now turned, the rammer 14 will be reciprocated and on its forward stroke it will feed the cartridge through the interfitted loops of the first and second links. The cartridge being loaded into the links is arrested by the links and by the plunger 57.

On the rearward stroke of the rammer, the cam surface 39 on the bar 34 acting on the plunger 30 advances the slide 17 against the action of the springs 27. The loaded cartridge being engaged by the fingers 20 and 21 of the slide is thereby moved out of the path of the rammer and towards the tray 65, while the column of links in the chute is advanced a corresponding amount. The loaded cartridge during this movement raises the stop member 49 and when the cartridge clears the stop member, the latter is immediately depressed by the plunger spring 56 to engage the double loop of the trailing link and thereby limit the loaded links to a step-by-step movement.

As soon as the bar 34 clears the plunger 30, the slide is restored to its normal position for loading by means of the springs 27, and in this position the plunger 30 is placed in front of the groove 40 of the bar 34. On the next forward stroke of the rammer and the bar 34 the ramp constituted by the groove 40 causes the plunger 30 to be elevated and as the bar terminates its forward stroke and clears the plunger, the latter is forced downwardly by its spring into position behind the cam surface 39.

I claim:

1. In a machine for loading a link belt, a housing, a reciprocally mounted rammer carried by the housing, means for supplying cartridges to the rammer, a horizontally movable slide mounted for movement transversely of the rammer, fingers on the slide, a bed plate overlying the slide and disposed between the fingers of the slide, springs seated on the bed plate and acting on the slide to normally hold it in loading position, means whereby the slide is moved against the action of the springs on the rearward stroke of the rammer, means for supplying links to the bed plate between the fingers of the slide, a plunger carried by the housing and arranged to hold the links in the path of movement of the rammer, and a plunger carried by the housing and arranged to arrest a cartridge moved into the links by the rammer.

2. In a machine for loading link belt, a housing, a reciprocally mounted rammer carried by the housing, means for supplying cartridges to the rammer, a horizontally movable slide mounted for movement transversely to the rammer, fingers on the slide, a bed plate overlying the slide and disposed between the fingers of the slide, springs seated on the bed plate and acting on the slide to normally hold it in loading position, means whereby the slide is moved against the action of the springs on the rearward stroke of the rammer, means for supplying links to the bed plate between the fingers of the slide, and means for releasably holding the links in the path of movement of the rammer.

3. In a machine for loading a link belt, a housing, a slide carried by the housing, cartridge-engaging members on the upper side of the slide, a plunger on the under side of the slide, a rammer for feeding a cartridge into the path of the cartridge-engaging member of the slide, and a cam member associated with the rammer and acting on the plunger to advance the slide.

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