E. E. WINKLEY.

CONVEYER FEEDING MECHANISM.

APPLICATION FILED FEB. 5, 1914.

1,181,090.

Patented Apr. 25, 1916.

4 SHEETS—SHEET 1.

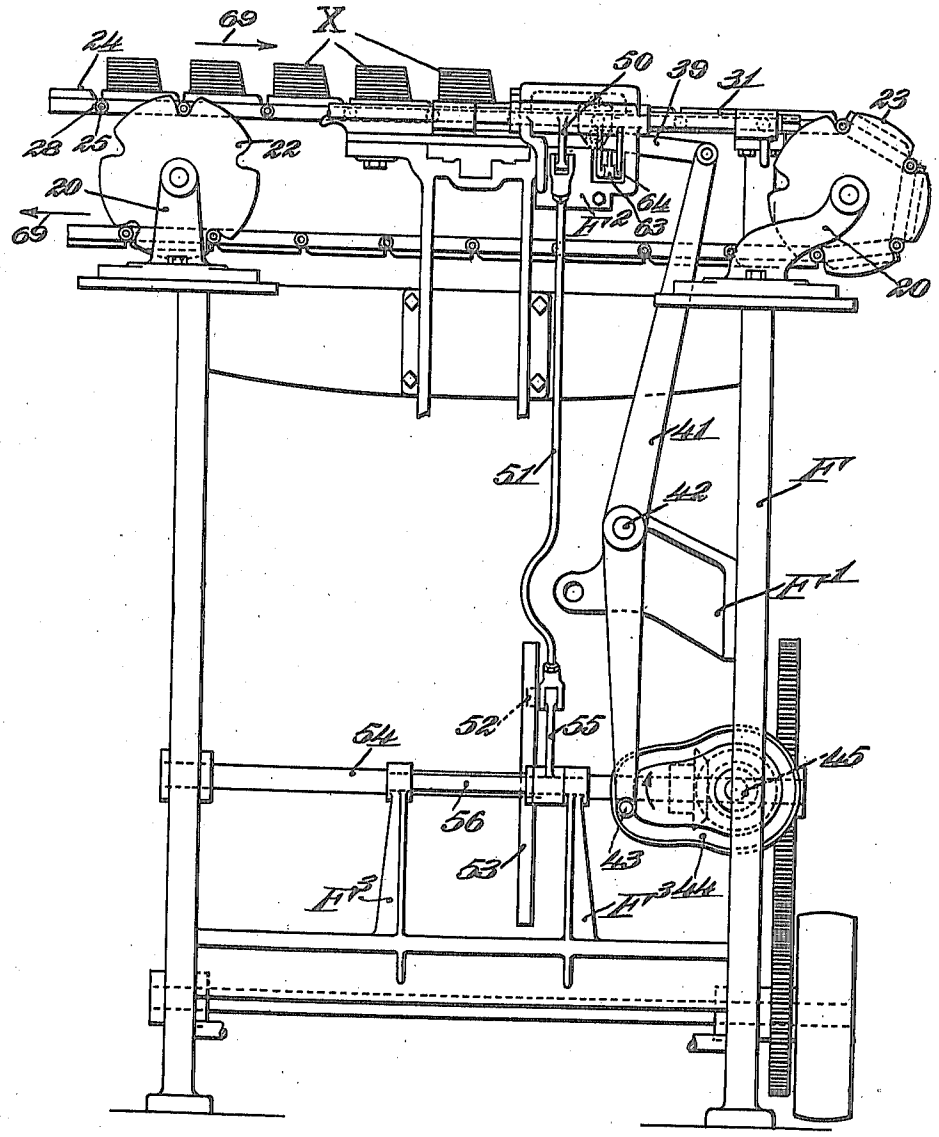


Fig. 1.

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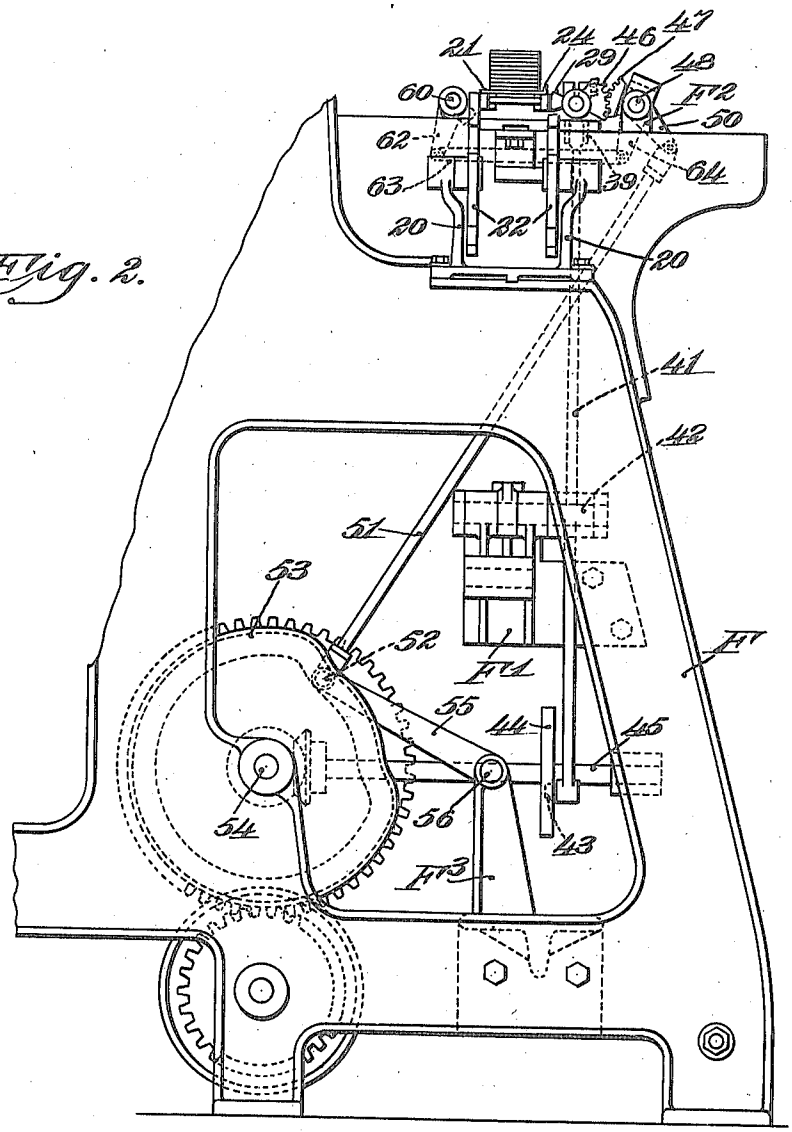
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4 SHEETS—SHEET 2.

Fig. 2.



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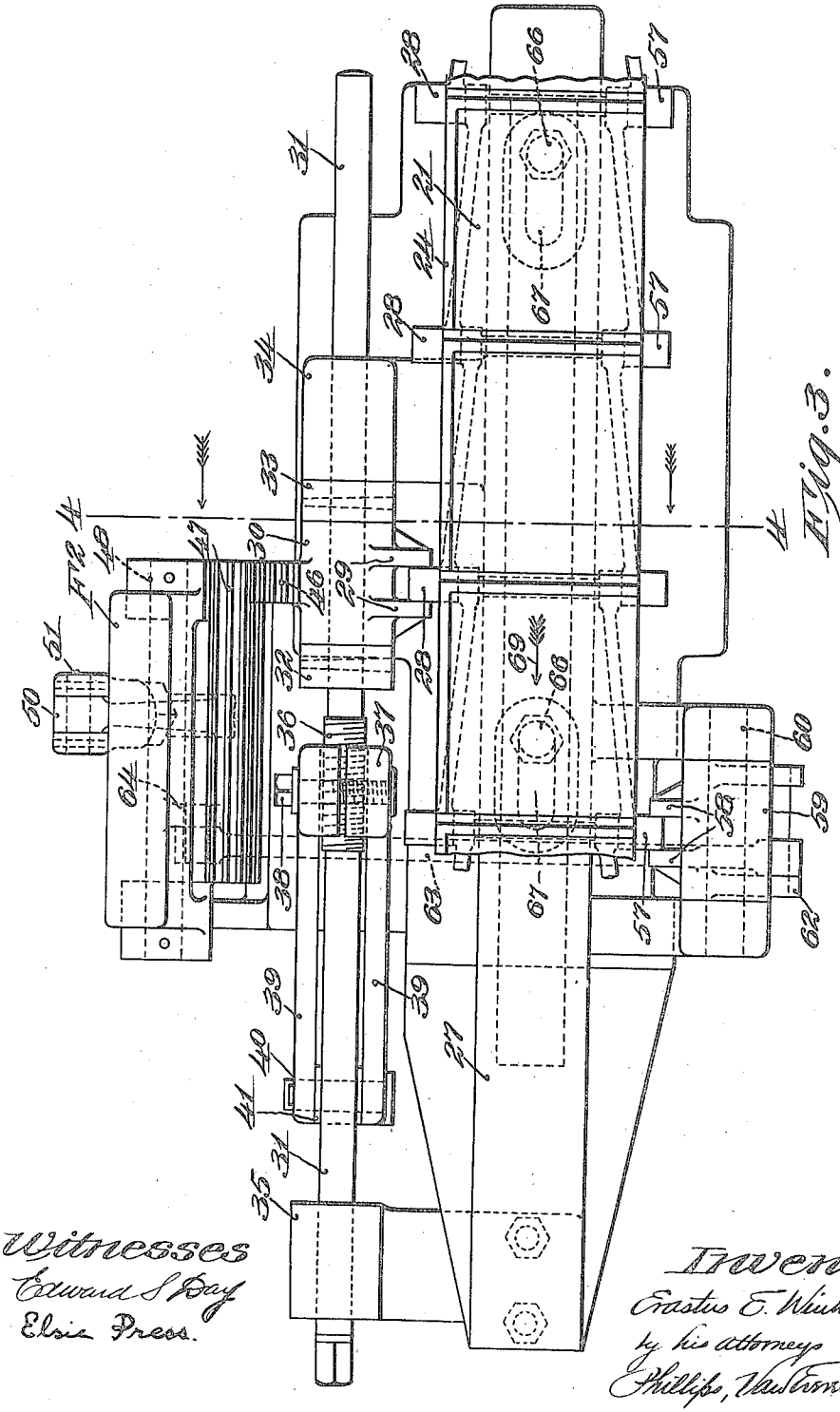


Fig. 3.

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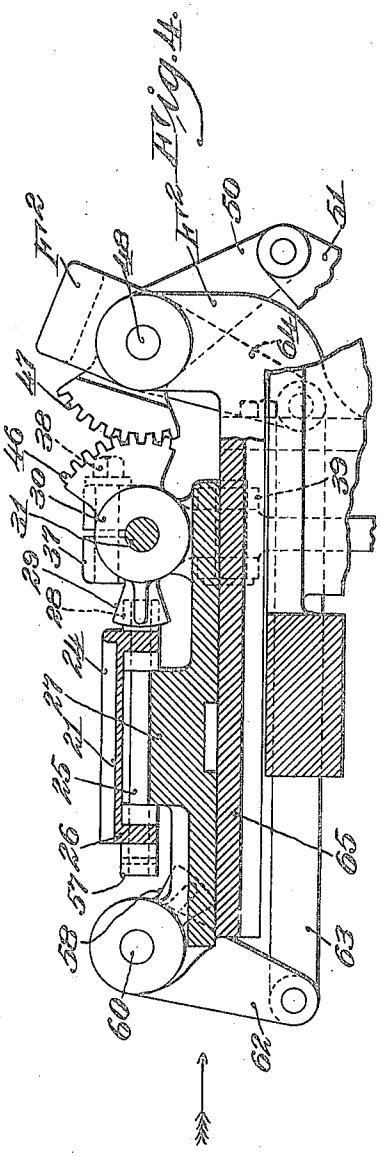


Fig. 4.

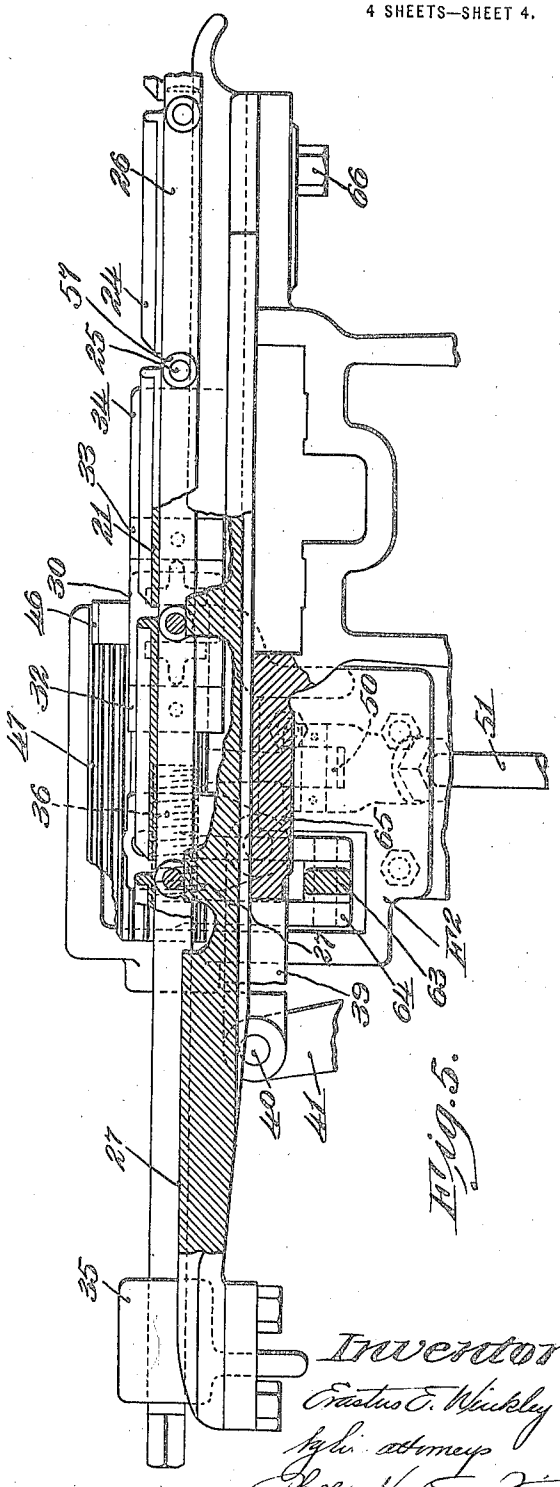


Fig. 5.

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UNITED STATES PATENT OFFICE.

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CONVEYER-FEEDING MECHANISM.

1,181,090. Specification of Letters Patent. Patented Apr. 25, 1916.

Original application filed August 26, 1910, Serial No. 579,110. Divided and this application filed February 5, 1914. Serial No. 816,724.

To all whom it may concern:

Be it known that I, ERASTUS E. WINKLEY, a citizen of the United States, residing at Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Conveyer-Feeding Mechanism; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to mechanism for imparting an intermittent feed movement to a conveyer or other movable member.

The object of the invention is to provide a simplified mechanism, adapted to either rectilinear or rotary movement of a conveyer, by which a step-by-step advance will be insured with a positive locking of the conveyer against backward movement during the pause between the feeding steps.

In accordance with this object an important characteristic of the invention is found in the construction and arrangement of the feeding and locking devices whereby such devices are mounted for angular movement across the plane of travel of the conveyer.

To the accomplishment of this object and such others as may hereinafter appear, as will be readily understood by those skilled in the art, the invention comprises the features and combinations of parts hereinafter described and particularly pointed out in the appended claims.

In the accompanying drawings the essential principles of the invention are shown as applied to the link conveyer utilized for feeding heels to the heel shaping machine illustrated and described in my co-pending application Serial No. 579,110, filed August 26, 1910, from which the present application has been divided.

In the accompanying drawings: Figure 1 is a side elevation of that portion of the frame of the heel shaping machine of my co-pending application which supports the link conveyer and its operating mechanism, together with such mechanism. Fig. 2 is an end elevation of the parts shown in Fig. 1. Fig. 3 is a plan, in detail, of a portion of the conveyer and its feeding and locking devices. Fig. 4 is a transverse section, in elevation, on the line 4—4 of Fig. 3, and Fig. 5 is a side elevation, partly broken away, of the parts shown in Fig. 3, this figure showing the side of the conveyer opposite to that shown in Fig. 1.

In the embodiment of the invention illustrated in the drawings the conveyer is shown as an endless chain extending indefinitely to the left, viewing Fig. 1, to any convenient point where it may be loaded with the articles to be conveyed, either by hand or automatically. The conveyer is supported and guided by sprocket-wheels 22 and 23 journaled in suitable bearings 20 mounted in the main frame F which supports the conveyer actuating mechanism.

The conveyer chain in the illustrated embodiment of the invention, comprises, as shown particularly in Figs. 1, 3 and 5, a series of links formed of flat plates 21, provided with upwardly-extending flanges 24 at one side and end, by which the heels, or other articles comprising the load, are confined upon the plates, as shown in Fig. 1, the heels there shown being indicated by the reference letter X.

Each chain-link is provided with downwardly extending flanges 26 which are pivotally connected, at the ends of the links, by transverse pivot-rods 25. When the conveyer is utilized in connection with a mechanism for transferring the load the portion of the conveyer-chain which is in operative relation with the transferring mechanism may conveniently be supported upon a guide 27 having an elongated raised central portion upon which the pivot-rods 25 rest, as shown in Figs. 4 and 5.

Means is provided for feeding the conveyer intermittently through the space of one link, and then locking it for a period of time, for example during the period required for the operation of a transferring mechanism, whereby the links are brought successively into and retained in a predetermined, fixed location. For the purpose of feeding the conveyer the pivot-rods 25 are extended, at one side of the conveyer, to afford bearings for rolls or feeding teeth 28. These rolls are adapted to be engaged and embraced by a feeding dog 29 comprising two spaced lugs (Figs. 3 and 4) extending from a sleeve 30, which is loosely journaled on a suitably mounted horizontal rod 31, arranged with its axis parallel to the path of movement of the conveyer. The sleeve 30 is free to rock on the rod to carry the feed-

ing dog across the plane of travel of the conveyer, but is constrained to move longitudinally therewith by means of two collars 32 and 33 (Fig. 3) engaging the ends of the sleeve and fixed to the rod. The rod slides longitudinally in lugs 34 and 35 mounted on the base-portion of the conveyer-guide 27. To impart longitudinal movements to the rod and the sleeve, the rod has a screw-threaded portion 36 which is engaged by a split nut 37 normally clamped in position by a screw 38. A depending lug on the nut (dotted lines Fig. 5) is pivotally connected with two links 39, which, in turn, are pivoted on a pin 40 in the upper end of a cam-lever 41 (Figs. 1, 2 and 5). The cam lever is loosely pivoted on a stud shaft 42 fixed in a bracket F′ on the frame F of the machine, and at the lower end of the cam-lever is a cam-roll 43 engaging a cam 44 carried by a cam-shaft 45 also journaled on the frame of the machine (see Fig. 1). When the dog 29 is in engagement with one of the rolls 28, the longitudinal movement of the slide-rod 31 and the sleeve 30, produced by a rotation of the cam 44, results in a corresponding forward movement of the upper portion of the conveyer, this movement being in the direction of the arrows 69 in Figs. 1 and 3.

During the return movement of the slide-rod 31 and the sleeve 30 it is necessary to disengage the dog 29 from the roll 28, which movement is accomplished by rocking the sleeve on the slide-rod. This rocking movement is produced by mechanism comprising a gear-segment 46 (Figs. 3 and 4) on the sleeve and an elongated gear-segment 47 engaged thereby. The gear-segment 47 is rotatably mounted on a rod 48, parallel to the rod 31, fixed in bearings in a bracket F^2 on the frame F of the machine. The gear-segment 47 is provided with a depending arm 50 pivoted to the upper end of a rod 51 (Figs. 1 and 2) which carries at its lower end a cam-roll 52 engaging a cam 53 on a cam-shaft 54. The cam-roll and the rod are guided by a distance-arm 55 which is pivoted at one end of the rod and at the other end upon a pivot-rod 56 mounted in bearings in brackets F^3 on the frame F of the machine. The mechanism just described operates, on a rotation of the cam 53, to rock the sleeve 30 at the end of the conveyer-feeding movement so as to disengage the dog 29 from the particular roll 28 with which it has been engaged. The slide-rod 31 and the sleeve are then moved longitudinally as before described, but in a reverse direction, so as to bring them into position to coöperate with the next feeding-tooth 28 on the conveyer. At the end of this longitudinal movement the sleeve 30 is rocked back to again engage the dog 29 with the conveyer.

To lock the conveyer against movement between the feeding movements, the pivot-rods 25 are extended at the opposite side of the conveyer to afford bearings for rolls or locking-teeth 57. The locking mechanism comprises a locking dog 58 comprising two spaced lugs like the feeding dog 29 (Figs. 3 and 4) adapted to engage and embrace one of the rolls 57. These lugs extend from a sleeve 59 journaled on a horizontal rod 60, parallel to the slide rod 31, suitably mounted on the conveyer-guide 27 (Fig. 3). The dog 58 is moved at the proper times across the plane of travel of the conveyer and into and out of engagement with the locking-teeth, by rocking the sleeve 59. This is accomplished by mechanism comprising an arm 62 depending from the sleeve 59, a connecting-rod 63 pivoted to one end of the arm, and an arm 64 depending from the gear-segment 47 to which the other end of the connecting-rod is pivoted. When the gear-segment 47 is rocked in one direction to disengage the feeding dog 29 from one of the feeding-teeth the connections just described operate to engage the locking dog 58 with one of the locking teeth, while the reverse movement of the gear-segment 47 produces an opposite result. The relative angular position of the dogs 29 and 58 is such that the conveyer is always under control of at least one of them.

The connection comprising the threaded portion 36 on the slide-rod 31 and the split nut 37 affords means by which the conveyer feeding mechanism may be adjusted to move the conveyer into positions in which the locking teeth will be accurately engaged by the locking dog.

As the longitudinal position in which the heels, or other articles comprising the load, are presented by the conveyer to the other portions of the machine of which the conveyer may form a part, depends upon the position in which the conveyer is brought to rest and locked, provision is made for adjusting the feeding and locking mechanism bodily in the direction of the movement of the conveyer, and to this end the conveyer-guide 27 is slidably supported upon a plate 65 (Figs. 1 and 4) constituting a fixed part of the frame of the machine. The guide is fixed to the plate by means of screws 66 threaded into the guide and engaging elongated openings 67 in the plate 65 (shown in dotted lines in Fig. 3). When the guide is longitudinally adjusted upon the plate it carries with it the portions of the feeding and locking mechanism which directly cooperate with the conveyer, since these parts, as already described, have bearings mounted upon the guide, and thus the parts are maintained in proper coöperative relation regardless of this adjustment.

As will be readily apparent to those skilled in the art the invention is not limited in its application to advancing a conveyer

in a rectilinear path. It should be further understood that the invention, while illustrating and describing a particular means, which is convenient and readily controlled for imparting an intermittent feed movement, is comprehensive in this respect, as defined in the appended claims, it being obvious that those skilled in the art may devise various mechanical devices to carry the invention into practical effect.

What is claimed as new, therefore, is:—

1. A series of connected members and mechanism for imparting an intermittent feed movement thereto comprising a set of feeding and locking teeth for each of said members, devices for alternately engaging said teeth to alternately feed said series of members and lock them from movement, and automatic means for operating said devices, substantially as described.

2. A series of connected members and mechanism for imparting an intermittent feed movement thereto comprising a set of feeding and locking teeth for each of said members, devices for alternately engaging said teeth to alternately feed said series of members and lock them from movement, and means permitting said devices to be bodily adjusted in the line of movement of said members, substantially as described.

3. A series of connected members and mechanism for imparting an intermittent feed movement thereto comprising a step-by-step feeding mechanism, a locking mechanism for holding said members from movement between the feeding steps, and means permitting the feeding mechanism to be adjusted to bring the parts of the locking mechanism into proper coöperative relation, substantially as described.

4. A movable member and mechanism for imparting an intermittent feed movement thereto comprising separate feeding and locking teeth on said member, a reciprocating rod, a sleeve carried thereby provided with a feeding dog arranged to cooperate with said feeding teeth, a second sleeve provided with a locking dog arranged to coöperate with said locking teeth, means for rocking said sleeve to cause the feeding and locking dogs to alternately coöperate with their respective feeding and locking teeth, and means for reciprocating said rod to feed said member when the feeding dog and teeth coöperate and to return the rod for another feeding step when the locking dog and teeth coöperate to hold said member from movement substantially as described.

5. A movable member and mechanism for imparting an intermittent feeding movement thereto comprising laterally projecting teeth on said member, a feeding device and a locking device for engaging said teeth, said devices mounted to swing across the plane of travel of said member to engage and disengage the teeth, mechanism for swinging said devices, and means for moving said feeding device in a direction to advance said member while in engagement with said teeth and then become disengaged and return to its initial position while said member is held from movement by said locking device, substantially as described.

6. A movable member and mechanism for imparting an intermittent feed movement thereto comprising laterally projecting feeding teeth on one side of said member, laterally projecting locking teeth on the other side of said member, a rocking member adjacent the movable member carrying a pair of spaced lugs projected toward said feeding teeth comprising a feeding dog, a second rocking member adjacent the movable member carrying a second pair of spaced lugs projected toward said locking teeth comprising a locking dog, a common actuating mechanism for said rocking members constructed and arranged to alternately engage and disengage said dogs with their respective teeth, and means for advancing the said first named rocking member in the line of feed when its dog is in engagement with a locking tooth, substantially as described.

7. A movable member and mechanism for imparting an intermittent feed movement thereto comprising laterally projecting teeth on said member, a reciprocating guide rod beside said member extending in the line of feed, a sleeve on said rod mounted to rock across the plane of travel of said member and constrained to reciprocate therewith, a feeding dog adapted to engage said teeth carried by said sleeve, a pivot pin beside said member, a second sleeve mounted on said pin to rock across the plane of travel of said member, a locking dog adapted to engage said teeth carried by said second sleeve, means to alternately rock said dogs into and out of engagement with said teeth, and means for moving said guide rod and feeding dog in the direction of feed when said dog and teeth are engaged and in a reverse direction when they are disengaged, substantially as described.

8. A movable member and mechanism for imparting an intermittent feed movement to said member comprising laterally projecting teeth on said member, a set of connected feeding and locking devices for engaging said teeth, a power shaft, and a single train of mechanism operated thereby for positively actuating said devices to cause them to alternately engage said teeth for alternately feeding said member and then locking it for movement, substantially as described.

9. A movable member and mechanism for imparting an intermittent feed movement thereto comprising laterally projecting teeth on said member, rotatable feeding and lock-

ing devices constructed and arranged so that one controls the movement of the other, means for rocking one of said devices across the plane of travel of said member into and out of engagement with said teeth whereby the other of said devices is alternately rocked out of and into engagement with said teeth, and means for moving said feeding device in the plane of travel of said member when in engagement with said teeth, and relatively to said locking device to advance said member, substantially as described.

10. A movable member and mechanism for imparting an intermittent rectilinear feed movement to said member comprising a series of feeding teeth on one side of said member and a series of locking teeth on the opposite side of said member, connected devices mounted on the opposite sides of said member for alternately and successively engaging the teeth of each series to alternately feed said member and lock it from movement, and means for automatically operating said devices.

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