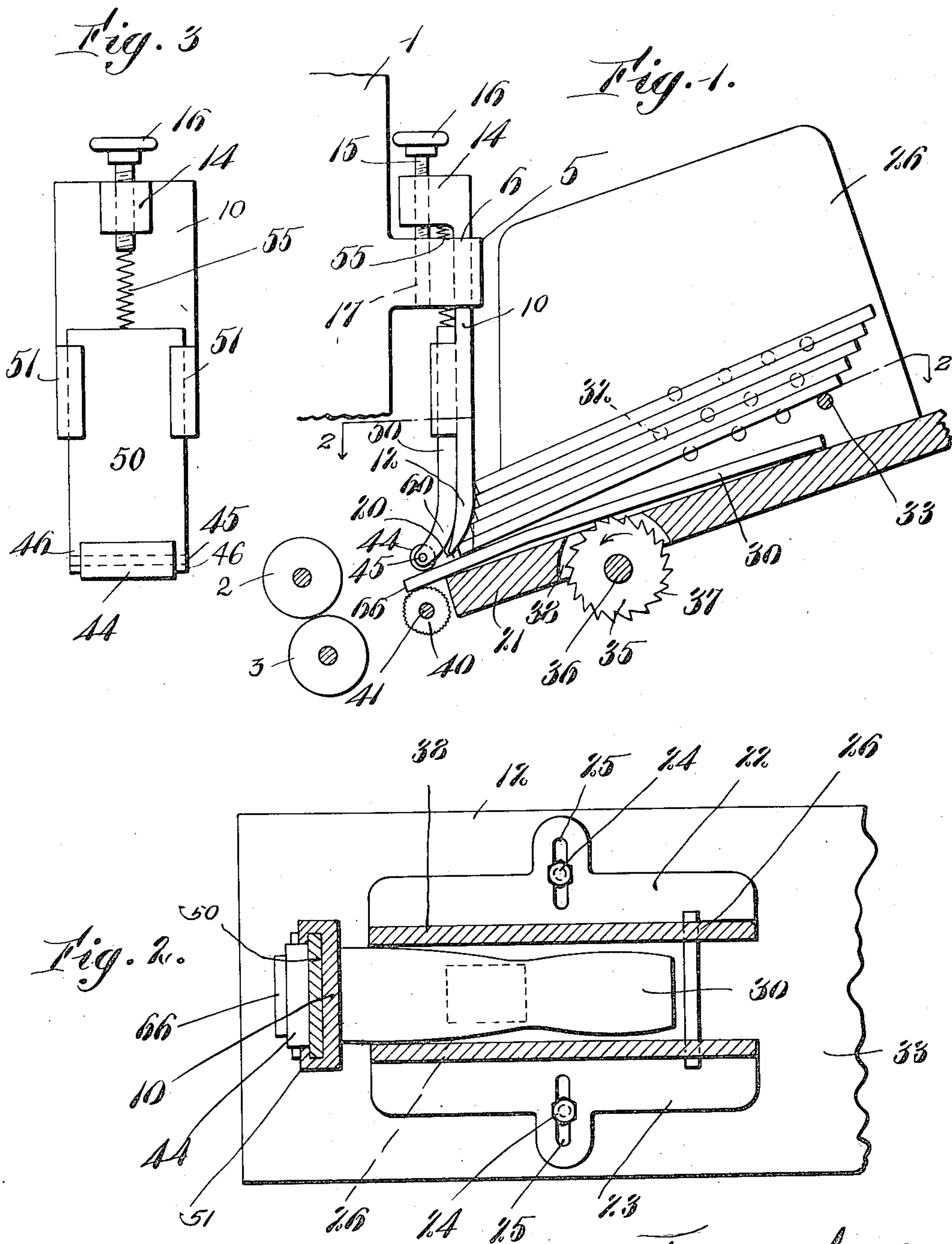


Nov. 18, 1924.

1,515,986

W. C. WRIGHT ET AL
AUTOMATIC FEEDING APPARATUS

Filed Jan. 3, 1921



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Patented Nov. 18, 1924.

1,515,986

UNITED STATES PATENT OFFICE.

WALLACE C. WRIGHT, OF BROOKFIELD, NEW HAMPSHIRE, AND FRANK W. MERRICK, OF BOSTON, MASSACHUSETTS, ASSIGNORS, BY DIRECT AND MESNE ASSIGNMENTS, TO AMERICAN SHOE MACHINERY COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

AUTOMATIC FEEDING APPARATUS.

Application filed January 3, 1921. Serial No. 434,756.

To all whom it may concern:

Be it known that we, WALLACE C. WRIGHT, a citizen of the United States, and resident of Brookfield, in the county of Carroll and State of New Hampshire, and FRANK W. MERRICK, a citizen of the United States, and resident of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Automatic Feeding Apparatus, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

Our present invention is an improved and novel apparatus for the automatic feeding of blanks, such as leather blanks, from a pile, mass or stack to and into a machine. The object of the invention is to enable a stack, mass or bunch of blanks, whether of uneven thicknesses, lengths, or otherwise, to be accurately and automatically separated one by one and positively fed into the receiving part of the machine. While our automatic feeding device is intended primarily for use in connection with the handling of leather blanks, soles, taps, heels, etc., it may be utilized for other purposes, and the feeding apparatus may be attached to any desired machine intended to act on the blanks thus fed into the machine. The feeding apparatus herein illustrated is designed especially for use with leather tempering machines of the type illustrated in U. S. Patent No. 1,313,510, issued August 19, 1919. In the handling of blanks of uneven thicknesses and lengths, it is extremely difficult to provide means which will effectually and uniformly separate the blank intended to be fed into the machine and prevent the same or the superimposed blanks from catching and sticking, thus jamming the operation of the feeding instrumentalities. In the case of feeding sole blanks, particularly, from a mass or pile, wherein it is necessary to select and feed forward the lowermost blank of the pile, through a throat or opening which latter must be adjusted to a space slightly greater than the thickest blank of the entire stack, great difficulty is experienced in so arranging and adjusting the same and the cooperating devices to have an accurate automatic and uniform feeding apparatus. Frequently, also,

such mass of soles have ridges and are warped or turned up at ends and throughout their length, giving additional difficulties to the automatic handling of such blanks. We have discovered that by providing means which will slightly elevate the mass of the soles at the outermost end portion of the stack, thus depressing and inclining the soles forwardly toward the feeding throat, thereby relieving the major portion of the weight of the stack from the sole to be fed, i. e., the lowermost one, while impinging the weight at the feeding in or throat portion, that an entire stack of soles, irrespective of the weight, or number, may be handled with ease and facility. An important feature, therefore, of this invention, consists in the provision of means, preferably adjustable as to length and height, which will lift the major portion of the weight of the stack from the blank being fed and consequently from the feeding in roll, picker, belt or the like, and impinge the weight at the feeding in throat, thus holding downwardly the blank at this point.

A further feature consists in the provision of automatic separating means. This consists in a beveled face at the feeding in throat, that cooperates with the outward separating device which also lifts the major portion of the weight of the stack from the lowermost sole when separated and when fed forwardly. This feature is most important, as the preliminary separation of the lowermost sole is effected automatically and instantly as soon as the preceding blank is fed forwardly by the next lowermost blank dropping downwardly from the throat end—where the weight of the upper part of the stack forces it down, and slightly forward—this latter forward movement or the first feeding action of the roll, picker or the like, removing the outward end of the blank from the supporting means, allowing it to drop downwardly and be free at its rear portion of the friction and weight of the rest of the stock, thus facilitating feeding action.

A still further feature consists in the provision of means, preferably yielding, to impart a nip or grip on the endmost portion of the blank to be fed into the machine, thus insuring its being positively fed into the machine and to be withdrawn from the stack

irrespective of the friction at the throat and occasioned by the impinging of the rest of the stack, as previously explained.

In carrying out this last named feature, we provide a sliding member in close proximity to the beveled face of the guard forming the throat. In fact we utilize the adjustable guard, preferably with a beveled face to aid in the separation of the blanks as above explained, as a means determining the width of the throat opening, and the cooperating yielding means to afford a nip or grip on the end of the blank as soon as it projects through the throat, thereafter feeding and pulling the blank through the throat and out from under the stack. Preferably also a separate feeding roll or other means is supplied approximately midway of the feeding table or blank.

We believe that the provision of an automatic feeding apparatus, wherein the preliminary separation of the lowermost blank to be fed is effected by a lifting of the outermost end of the stack, freeing the weight of the stack from the blank being fed, is distinctly new, and we wish to claim the same herein broadly. We also believe that the provision of a relatively fixed—although adjustable—member to determine the width of the throat opening in combination with a yielding member immediately adjacent thereto, to aid in feeding forwardly the lowermost blank, is broadly novel. Also the combination of these instrumentalities, and the arrangement, whereby the lifting of the stack at the outermost end impinges the weight on the throat end of the blank being fed, while simultaneously effecting a preliminary supporting of the blanks, through this outermost lifting member and preferably also through the beveling of the fixed throat members.

Other details of construction, novel combinations of parts and advantages will be hereinafter more fully pointed out and claimed.

Referring to the drawings illustrating a preferred embodiment of our invention,—

Fig. 1 is a view, partly in cross-section of the automatic feeding apparatus as applied adjacent a machine;

Fig. 2 is a plan view, partially in cross-section and taken on the line 2—2 of Fig. 1; and

Fig. 3 is an end view of the fixed and adjustable throat members.

Referring to the drawings we have illustrated, in approximate position, a portion 1 of the frame of the leather tempering machine such as the type illustrated in said prior patent, together with the first pair of rolls 2 and 3 in said machine to which the leather blanks are fed for subsequent conveyance into and operation upon by the devices of the tempering machine. On the

frame 1 is a lug 5 having guideways 6, 6, thereon to hold and receive a sliding guard 10. This guard 10 has its lowermost portion 12 preferably beveled, inclined or slightly rounded, as clearly shown in Fig. 1. The uppermost portion 14 may be threaded to receive the corresponding threaded shank 15 of an adjusting screw 16, the end of the latter fitting into a recess 17 in the lug 5 so that manipulation of the adjusting screw 16 will act to raise or lower the guard 10 and adjust the width of opening at the throat 20. A work supporting table 21 is fitted and held in any convenient manner to the machine, which table is preferably inclined and may extend slightly under the guard 10 to constitute the fixed portion of the throat 20. A pair of adjustable side guards 22 and 23 are secured to the work table 21 by bolts 24, 24, passing through enlarged slots 25 to permit adjustment of width of the guards 22, 23, which guards have upstanding flanges 26 of suitable height to receive the blanks intended to be handled. A plurality of such blanks are indicated resting on rod 33, together with a blank 30 in the position of being fed into the machine for further gripping and feeding by the machine rolls 2 and 3. In the vertical flanges 26 are provided a plurality of perforations 32, 32, preferably in a series of rows, as well as varying in height and position. Adapted to fit within these perforations at any predetermined pair for height and different front and rear locations, is a bar 33. This bar is fitted through the opposite pairs of perforations, depending on the length of the blanks being fed and also varying somewhat in height to impart to the entire stack a support at the outermost end, thus automatically producing a preliminary supporting action through the tilting or inclination of the stack or bunch of blanks as they are positioned or dropped in between the flanges 26. This roll 33 allows the innermost end portions adjacent the beveled face 12 of the guard 10 to rest downwardly upon the work table 21 and allows the entire stack adjacent the beveled face 12 to be partially supported, substantially as shown in Fig. 1. A feed wheel 35 is mounted on an axle 36 which latter may be rotated in any desired manner and at any suitable speed, the wheel 35 having serrated edges 37 and is adapted to extend upwardly through appropriate recess 38 in the approximate middle portion of the work table 21, to allow the wheel 35 to project slightly above the surface of the work table 21 and engage the lower face of the lowermost blank in the stack. Rotation of the wheel 35 in the direction of the arrow, Fig. 1, thus acts to further separate the lowermost sole from the bank, feed it forwardly under the throat 10, and the first

feeding action pulls the outermost end of the blank from the roll 33, thereupon allowing the blank to drop downwardly and thus free itself from contact with and friction of the rest of the stack throughout its entire length, excepting only at the point of the throat 20. At this point the weight of the other blanks, if any, tends to hold the blank 30 downwardly into desired feeding position, where it is projected under the guard 10 and onward to the feeding rolls 2 and 3 in the machine. The beveled face 12 of the guard still further facilitates and accentuates this action, and if no additional blanks are on top of the particular blank being fed, then the beveled face 12 will act to guide and force the blank into and through the throat opening. Our improved and novel automatic feeding apparatus, as thus far described, is capable of use and will accurately and uniformly handle successive sole blanks. However, in order to still further insure the positive and rapid feeding of the blank, effecting a pull and positive grip and feed in addition to the action of the wheel 35, we provide further positive means which will secure a predetermined grip or nip on the edge of the sole, pull it out from under the stack, and prevent its sticking and insuring its being accurately and positively conducted to the rolls 2 and 3. Furthermore our additional feeding devices to be described, enable very short blanks, such as taps, heel pieces, etc., to be fed where the distance from the roll 35 to the feed rolls 2 and 3 of the machine is greater than the length of articles being handled. These additional devices consists in a serrated roller 40 mounted on an axle 41 substantially underneath the throat 20. This roll 40 is intended to be positively rotated and at a surface speed equal to or greater than that of the roll 35. Acting in cooperation with this roll 40 is an upper roller 44 mounted on an axle 45 in the arms 46, 46, of a slide 50. This slide preferably extends upwardly and is slidingly held by a pair of projecting lugs 51, 51, carried by the guard 10. This slide may rely upon its weight for action or a spring 55 may be fitted if desired. The slide 50 normally extends downwardly with its curved portion 60 resting on the front part of the beveled face 12 of the guard 10, which latter guard has been adjusted for proper spacing of the throat 20. This still allows a slight space between the roll 44 and the work table 21 and feeding roll 40, sufficient to allow the ready entry of the foremost edge 66 of the sole blank 30, when the sole has passed through the throat 20. Thereupon the blank lifts the roll 44, slide 50, and raises same in cooperation with the spring 55 if the latter is in position. This action affords a nip or grip for the inner feeding wheel 40 which is constantly rotating in a direction to feed

forwardly the blank, and draw it out from under the feeding apparatus and direct the same into the machine rolls 2 and 3.

We prefer to use the combination of the pair of feed rolls 35 and 40 in handling certain kinds of blanks, particularly sole blanks, as the throat 20 can then be adjusted with greater accuracy and the positive withdrawal and feeding of the lowermost blank 30 is always insured, than otherwise. It will be noted that the roll 35 is enabled to exert a feeding action on the blanks 30 and thus assist the feed roll 40 because of the fact that the weight of the front portion of the stack holds the lower blank 30 in engagement with the teeth 37. This gives a cooperating force to enable the roll 35 to function properly. A similar and more positive gripping effect, however, is secured by the second feeding roll 40 and the slide 50 with its roll 44, as above explained.

Our invention is further described and defined in the form of claims as follows:

1. Apparatus of the kind described, comprising a blank holding receptacle, an adjustable guard to predetermine a throat to which the lowermost blank is intended to be fed, feeding means to act upon the blank, and an adjustable support cooperating with said blanks and the guard positioned and arranged to effect a preliminary separating action between the blank to be fed and the remaining blanks in the apparatus.

2. Apparatus of the kind described, comprising a blank holding receptacle, and adjustable guard to predetermine a throat to which the lowermost blank is intended to be fed, feeding means to act upon the blank, and an adjustable support cooperating with said blanks and the guard positioned and arranged to effect a preliminary separating action between the blank to be fed and the remaining blanks in the apparatus, in combination with yielding blank engaging means adjacent the end of the guard, producing a feeding grip on the blank being fed.

3. Apparatus of the kind described, adapted to receive and hold a plurality of blanks, means to feed the lowermost blank from said plurality, and means to effect a separation of the lowermost blank from the rest of the blanks.

4. Apparatus of the kind described, adapted to receive and hold a plurality of blanks, means to feed the lowermost blank from said plurality and means to effect a separation of the lowermost blank from the rest of the blanks, said separating means being adjustable vertically and longitudinally relatively with the blanks.

5. Apparatus of the kind described, adapted to receive and hold a plurality of blanks, means to feed the lowermost blank from said plurality and means to effect a

separation of the lowermost blank from the rest of the blanks, said separating means acting upon the entire stack to effect a preliminary separation of the blanks.

5 6. Apparatus of the kind described, adapted to receive and hold a plurality of blanks, means to feed the lowermost blank from said plurality and means to effect a separation of the lowermost blank from
10 the rest of the blanks, said separating means acting upon the entire stack to force the weight of the stack to impinge upon the blank to be fed at the feeding out point.

7. Automatic feeding apparatus of the
15 kind described, comprising means to receive and hold a plurality of blanks and to support and to feed the lowermost blank of the stack successively, comprising a throat through which said blanks are fed
20 one at a time, blank engaging means acting only upon the lowermost blank until the same is forced through said throat, and means to support the rest of the stack free from the influence of said blank feeding
25 means.

8. Automatic feeding apparatus of the kind described, comprising means to receive and hold a plurality of blanks and to support and to feed the lowermost blank of
30 the stack successively, comprising a throat through which said blanks are fed one at a time, blank engaging means acting only upon the lowermost blank until the same is forced through said throat, and means to
35 support the rest of the stack free from the influence of said blank feeding means, said stack supporting means simultaneously releasing the end of the blank being fed and separating the blank from the weight and
40 friction of the rest of the stack.

9. Automatic feeding apparatus of the kind described, comprising means to receive and hold a plurality of blanks and to support and to feed the lowermost blank of
45 the stack successively, comprising a throat through which said blanks are fed one at a time, blank engaging means acting only upon the lowermost blank until the same is forced through said throat, and means to

support the rest of the stack free from the
50 influence of said blank feeding means, said stack supporting means simultaneously releasing the end of the blank being fed and separating the blank from the weight and
55 friction of the rest of the stack, excepting only a temporary supporting action at the throat of the apparatus.

10. Automatic feeding apparatus of the kind described, adapted for assembling at
60 the feeding in end of a machine, comprising means to receive and hold a plurality of blanks to be fed to said machine, means to separate the blanks prior to feeding, and as fed from said apparatus to the machine, including blank engaging feeding devices
65 to remove a blank from the apparatus in combination with additional feeding and guiding members between the blank feeding devices and the operating parts of said
70 machine.

11. Automatic feeding apparatus of the kind described, comprising a blank supporting table, a recess through said table, a rotating blank engaging picker wheel operating through the recess in said table, adjustable side walls to retain the blanks in feeding position, said side walls having a plurality of recesses and an adjustable blank supporting member fitted in said recesses from
75 wall to wall, and acting to incline the blanks in predetermined position.
80

12. Automatic feeding apparatus of the kind described, comprising a blank supporting table, a recess through said table, a rotating blank engaging picker wheel operating through the recess in said table, adjustable side walls to retain the blanks in feeding position, said side walls having a plurality of recesses and an adjustable blank supporting member fitted in said recesses from wall to wall, and acting to incline the blanks toward the feeding out
85 end of the apparatus.
90

In testimony whereof, we have signed our names to this specification.

WALLACE C. WRIGHT,
FRANK W. MERRICK.