E. E. WINKLEY.

STOCK CUTTING MACHINE.

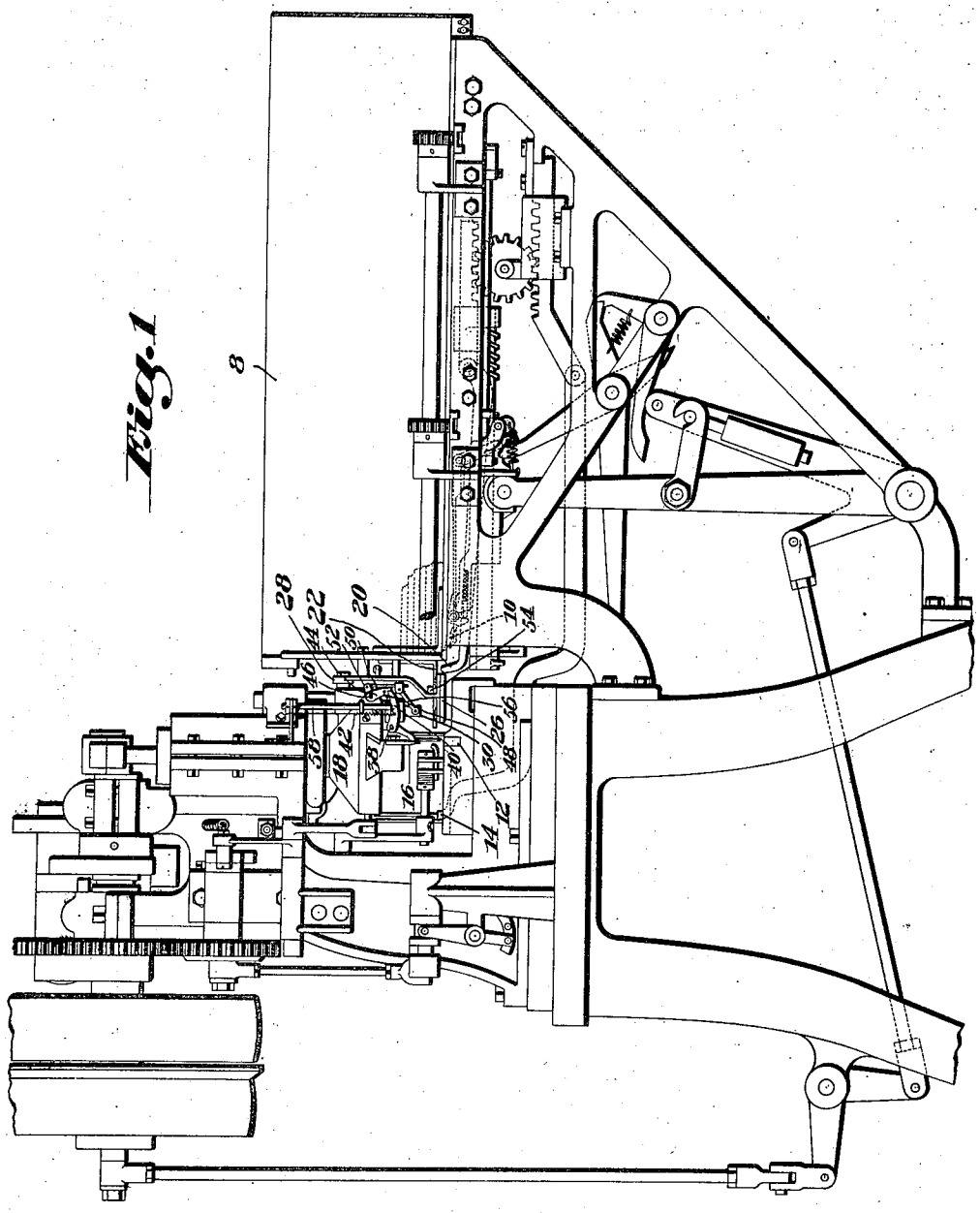
APPLICATION FILED MAR. 21, 1919.

1,429,310.

Patented Sept. 19, 1922.

2 SHEETS—SHEET 1.

Fig. 1



Witness

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2 SHEETS—SHEET 2.

Fig. 2

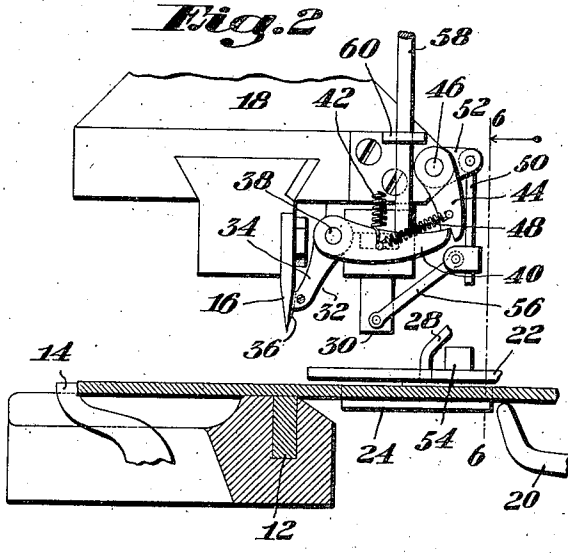


Fig. 3

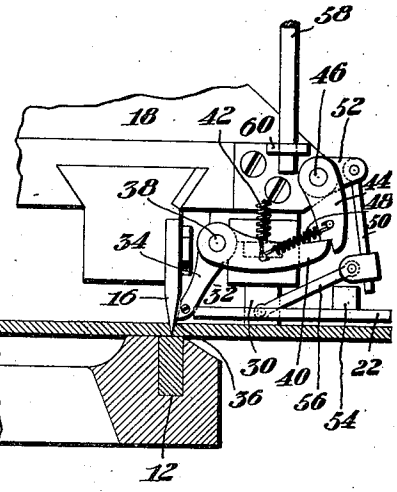


Fig. 4

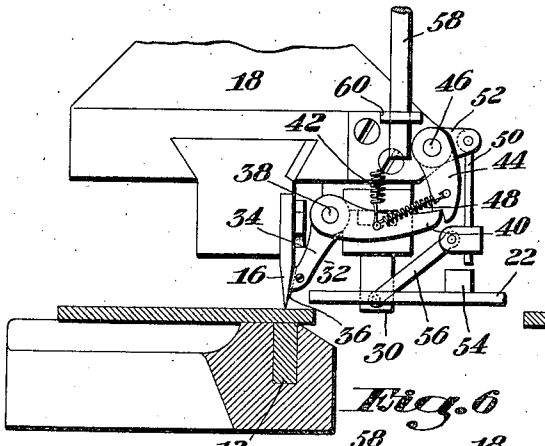


Fig. 5

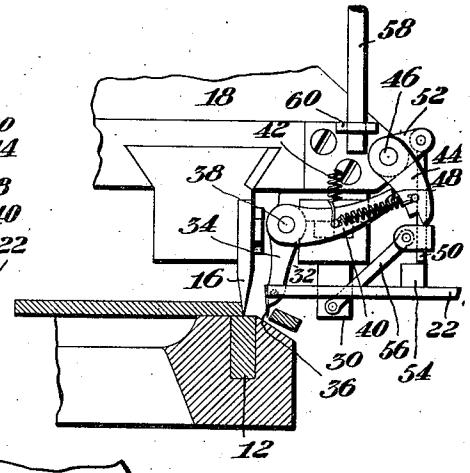
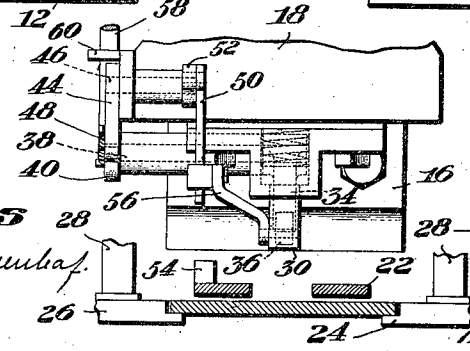


Fig. 6



Witness

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Patented Sept. 19, 1922. 1,429,310

UNITED STATES PATENT OFFICE.

ERASTUS E. WINKLEY, OF LYNN, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY CORPORATION, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

STOCK-CUTTING MACHINE.

Application filed March 21, 1919. Serial No. 284,170.

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 Stock-Cutting Machines; 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.

This invention relates to machines in which pieces are successively cut from strips or sheets of material which are fed to the cutting instrumentalities, and more particularly to means for ejecting from the line of feed, the portion or waste-end of each strip which remains after the last piece has been cut therefrom.

The main object of the invention is to provide positive and reliable means for insuring the removal of such waste-ends or remaining portions from the line of feed of the succeeding strip.

With this object in view the present invention contemplates the provision, in a stock cutting machine constructed and arranged to cut pieces or blanks successively from sheets of material, of means for displacing, in the plane of the sheet being operated upon, the waste portion remaining at the rear end of the sheet after the last full-sized piece has been cut therefrom. In its preferred form, the invention is embodied in a machine having a reciprocating knife, and comprises an ejector blade movable with the knife and constructed and arranged to be forced into the strip together with the knife, and controllable means operating only after the strip has been exhausted to a predetermined extent, to cause an actuation of the ejector at the completion of the succeeding cutting operation to remove the remaining waste-end from the line of feed.

The invention further consists in other novel features of construction and arrangement of parts which will be hereinafter described and defined in the appended claims.

The features of the invention will be readily understood from an inspection of the accompanying drawings and the following detailed description of the mechanism illustrated therein.

In the drawings, Figure 1 is a view in side elevation of a machine embodying the present invention in its preferred form; Fig. 2 is a detail view partly in side elevation and partly in section showing the waste-end ejector and the controlling devices therefor; Figs. 3, 4 and 5 are views similar to Fig. 2 showing different relative positions of the parts; Fig. 6 is a sectional elevation taken on the line 6—6 of Fig. 2.

With the exception of the waste-end ejector and the controlling devices therefor hereinafter described, the machine illustrated in Fig. 1 of the drawings is similar to the machine illustrated, described and claimed in the applicant's Letters Patent of the United States for a stock cutting machine No. 1,352,492, dated September 14, 1920. As described in said patent, the strips of sheet material which are contained in a magazine 8 are successively withdrawn therefrom and fed intermittently by means of a dog 10 across a cutting bed 12. The feed-dog 10 is yieldingly advanced and the feeding movement of the stock is arrested by means of a gage 14 which thus determines the length of each feeding movement of the strip. A reciprocating knife 16 that is mounted in a cutter head 18 cooperates with the cutting bed 12 to cut the strip into short pieces suitable for use as heel lifts and these pieces are automatically transferred from the cutting bed to a suitable receptacle not shown in the drawing. The gage 14 is adjustable toward and from the cutting bed to vary the length of the pieces cut from the strip.

When a strip which is being operated upon has become so far exhausted that the portion remaining after a piece has been severed by the knife is too short to produce another piece of the required length, this fact is detected by means of a feeler 20 which is located on the opposite side of the cutting bed from the gage 14 and at the same distance therefrom, and which controls the operation of the feed dog 10 in such a manner as to cause it to advance a fresh strip

from the magazine to the cutting bed. The feeler 20 is adjustable toward and from the cutting bed coincidently with the gage 14 in order that the distance between the feeler and the cutting bed may always be the same as the distance between the latter and the gage.

Prior to the feeding of each fresh strip, it is desirable that the waste-end of the preceding strip be removed from the line of feed, in order that it shall not obstruct the mechanism or interfere with the feeding of the succeeding strips. As described in the patent above mentioned, the following provision is made for this purpose. The strips are fed from the magazine beneath a plate 22 projecting from the front thereof, and in order that each strip may be supported when it has been exhausted to such an extent that it has advanced beyond the bottom of the magazine, two members in the form of plates 24 and 26 (Fig. 6) are employed, these plates having rabbeted inner edges forming guideways for the lateral edges of the strip. The plates 24 and 26 are supported on levers 28 (Fig. 1) which are so constructed and arranged, that at each downward movement of the cutter-head 18, the plates are moved away from each other so that the remaining portion of the strip is momentarily deprived of their support. During the normal operation of the machine, the strip is supported at the time the plates 24 and 26 are withdrawn therefrom, by means of the feeler 20. When the end of the strip has advanced beyond this feeler, however, the movement of the supporting plates just described, leaves the waste-end entirely unsupported for the purpose of permitting it to fall from the line of feed and thus be discharged from the machine.

In the machine of said patent, in addition to the above described provision for the escape of the waste-end, a spring pressed plunger is mounted on the cutter head and is adapted to descend through an opening in the plate 22 and to force the waste-end downwardly at the moment it is deprived of the support of the plates 24 and 26. This plunger is similar in construction to a plunger 30 which is mounted upon the cutter-head of the present machine and which performs a different function as will be hereinafter explained.

In the present machine, in order to insure against any possibility of the waste end portion adhering to the cutting bed, after the last full-sized piece has been cut from the strip, positive means is provided to act immediately after said last cutting operation to remove the remaining waste end from its position adjacent the knife and in the line of feed of the succeeding strip. This is accomplished by pushing the waste end away from the knife substantially in the plane of the strip and in a direction opposite to the direction of feed. Such an operation will effectively detach the severed edge of the waste-end from the groove in the cutting-bed if that edge has been pressed therein by the knife, and will move the waste-end clear of the cutting-bed at a time in the cycle of operations when the supporting plates 24 and 26 have been swung apart. The waste-end then being entirely unsupported will drop from the line of feed and be discharged from the machine.

The means for removing the waste-end, comprises an ejector 32, consisting of a finger 34, which is carried by the cutter head 18 and is provided at its free end with a thin flat blade 36 which normally lies closely adjacent the knife. The finger 34 is fixed to one end of a shaft 38 that is mounted to turn in a bearing on the cutter head so that the ejector blade may be swung away from the knife for the purpose of displacing the waste-end in the plane of the strip. At the opposite end of the shaft 38 is fixed an arm 40 which is acted upon by a spring 42 that tends to pull the arm upwardly to operate the ejector. The arm 40 is normally held depressed against the tension of the spring by means of a pawl 44, so that one face of the blade 36 is held in contact with the beveled face of the knife on the side toward the magazine 8. The arrangement is such that the bottom of the blade 36, which is sharpened to a knife edge, is positioned only slightly above the cutting edge of the knife. The pawl 44 is fixed to a shaft 46 that is mounted to turn in a bearing on the cutter head and is normally held in engagement with the arm 40 on the ejector shaft 38, by means of a spring 48 which connects the arm 40 and the pawl 44.

By means of the above construction and arrangement of the ejector, the blade 36 will be forced into the strip together with the knife at each downward movement of the cutter-head. Thus when the knife has descended and severed a piece from the strip, the ejector-blade is so positioned that if swung outwardly it will push the remaining portion of the strip away from the knife and off the surface of the cutting-bed. Provision is made, however, for thus operating the ejector only when the strip has become exhausted to a predetermined extent.

When it becomes time for the ejector to operate, the arm 40 is released from the pawl 44. The means for effecting the release of the arm 40 comprises a trip rod 50 which is pivotally suspended from a short arm 52 that is fixed to the pawl shaft 46. The trip rod 50 is adapted to be operated when the cutter head descends, by being brought into engagement with a block 54 which projects upwardly from the plate 22.

In order that the ejector may be operated

only at the proper time, the trip rod 50 is so controlled that it is normally rendered inoperative upon each downward movement of the cutter-head. When, however, the strip has become so far exhausted that the remaining portion is too short to produce another full sized piece, the trip-rod is then operated, on the succeeding downward movement of the cutter-head, to disengage the pawl 44 from the arm 40.

The means for thus controlling the trip-rod comprises the spring-pressed plunger 30, hereinbefore referred to, which is connected by means of a link 56 with the trip-rod. The link 56 causes the trip-rod 50 to be swung to one side whenever the plunger meets with an unyielding obstruction as it moves downwardly with the cutter head, so that the rod will not be in a position to engage the block 54.

When, on the downward movement of the cutter-head there is present beneath the plunger 30 a portion of a strip which is long enough to be supported by the feeler 20, the downward movement of the plunger will be arrested by the strip thus causing the trip-rod 50 to be swung into the inoperative position, shown in Fig. 3, and the pawl 44 remaining in engagement with the arm 40, the ejector will not be operated.

When, however, the strip has been so far exhausted, that it is no longer supported by the feeler 20, the remaining portion of the strip will fail to arrest the downward movement of the plunger, either because it is too short to extend beneath the plunger, or because, being unsupported at one end, it will yield readily thereunder. Upon the continued downward movement of the plunger, the trip-rod 50 which will then remain in line with the block 54, as shown in Fig. 4, will strike the block, and the pawl 44 will be swung out of engagement with the arm 40, thus permitting the spring 42 to operate the ejector, as shown in Fig. 5, to positively remove the waste-end from the line of feed.

On the succeeding upward movement of the cutter-head the ejector is restored to normal position by means of a rod 58, which depends from a fixed part of the frame of the machine and is maintained with its lower end in alignment with the arm 40 by means of a lug 60 on the cutter-head, through which it extends loosely. When the ejector is restored to normal position it is held therein by means of the pawl 44 which again swings into engagement with the ejector arm 40.

It will be seen that the mechanism which has been described is of simple construction and is unlikely to get out of order. Moreover it is positive in action and insures the removal of all waste-ends from the line of feed and their discharge from the machine.

The invention is not, in general, limited to the embodiment thereof hereinbefore described and illustrated in the accompanying drawings, but it may be embodied in various other forms within the scope of the appended claims.

Having thus explained the nature and scope of the invention and described in detail the preferred form thereof, that which is claimed as new is:—

1. A stock-cutting machine having, in combination, means for cutting pieces successively from a sheet of material, and means for displacing in the plane of the sheet being operated upon the portion remaining after the last piece has been cut from said sheet.

2. A stock-cutting machine having, in combination, means for cutting pieces successively from a sheet of material fed thereto, and means for displacing in a direction opposite to the direction of feed of the sheet the portion remaining after the last piece has been cut from the sheet.

3. A stock-cutting machine having, in combination, a reciprocating knife for cutting pieces successively from sheets of material, and means arranged to engage the severed edge of the portion remaining after the last cutting operation on each sheet and to be moved transversely to the plane of the knife to displace said portion.

4. A stock-cutting machine having, in combination, a reciprocating knife for cutting pieces successively from a sheet of material, an ejector movable with the knife and normally lying adjacent one face thereof so that it will enter the material with the knife during the cutting stroke of the latter and arranged to be moved away from the knife to displace the portion remaining after the last piece has been cut from the sheet.

5. A stock-cutting machine having, in combination, means for cutting pieces successively from sheets of material, and means acting upon exhaustion beyond a predetermined extent of the sheet being operated upon to displace substantially in the plane of said sheet the portion thereof remaining after the last cutting operation has been performed thereon.

6. A stock-cutting machine having, in combination, a knife for cutting pieces successively from sheets of material, a normally restrained spring actuated ejector, and automatic means dependent upon the occurrence of a predetermined condition for causing the operation of the ejector to remove a portion of the sheet which is being operated upon.

7. A stock-cutting machine having, in combination, means for cutting pieces successively from sheets of material, an ejector movable in a direction transverse to the severed edge of each sheet, and means acting

upon exhaustion beyond a predetermined extent of each sheet to cause the ejector to remove the remaining portion thereof.

8. A stock-cutting machine having, in combination, means for cutting a series of pieces from sheets of material successively fed thereto, means for detecting exhaustion beyond a predetermined extent of the sheet which is being operated upon, and means controlled by said detecting means and movable in the plane of the sheet for removing from the line of feed of a succeeding sheet the portion of the preceding sheet remaining after the last piece has been cut from said sheet.

9. A stock cutting machine having, in combination, a reciprocating knife for cutting pieces successively from a sheet of material, and normally inoperative means constructed and arranged to operate only after the last full-sized piece has been cut from the sheet to engage the remaining waste portion to remove it from the line of feed of a succeeding sheet.

10. A stock cutting machine having, in combination, means for cutting pieces successively from a sheet of material, intermittently operating feed mechanism for advancing the sheet to the cutting means, and means operative only when the last piece is cut and acting positively to remove the remaining waste end portion of the sheet from the path of the incoming sheet.

11. A stock cutting machine having, in combination, means for cutting blanks successively from a sheet of material, means for determining when the sheet of material has become so far exhausted that the remaining portion is too short to produce another full-sized blank, and means for displacing substantially in the plane of the sheet the remaining waste portion of the sheet.

12. A stock cutting machine having, in combination, a reciprocating knife for cutting a blank from a sheet of material, an ejector movable with the knife and normally lying adjacent one face thereof so that it will enter the material with the knife during the cutting operation of the latter and arranged to be moved away from the knife to displace the portion of the sheet remaining after the cutting operation.

13. A stock cutting machine having, in combination, means for cutting a series of blanks successively from a sheet of material, and normally restrained spring-actuated means rendered operative only when the last full-sized blank has been cut from the sheet for displacing the remaining waste portion from the line of feed of a succeeding sheet.

14. A stock cutting machine having, in combination, intermittently operating mechanism for feeding the stock in a series of equal steps, periodically operating cutting means for cutting pieces of equal sizes from the stock fed thereto, and means operating after the last full sized piece has been cut from the stock to eject the remaining waste portion thereof from the line of feed of a succeeding piece of stock.

15. A stock cutting machine having, in combination, means for severing pieces successively from sheet material, and means movable in the plane of the sheet for displacing the waste portion remaining after the last piece has been cut from the sheet.

16. A stock cutting machine having, in combination, means for severing pieces successively from sheet material, and means operating in the cut produced by said severing means for displacing the waste portion remaining after the last piece has been cut from the sheet.

17. A stock cutting machine having, in combination, means for severing pieces from a strip of sheet material by successive transverse cuts extending from edge to edge thereof, strip feeding means, means for insuring that the pieces be of equal length, and means operating in the path of feed for removing from said path the waste portion remaining after the feeding means has advanced the strip to such position that a piece of the required length cannot be produced.

18. A stock cutting machine having, in combination, means for intermittently feeding a strip of sheet material, a cutting bed, a knife cooperating therewith for severing pieces successively from the strip during the periods of rest, and means for forcibly detaching the waste portion remaining after the last piece has been cut from any engagement it may have with the groove formed in the cutting bed due to the operation of the knife.

19. A stock cutting machine having, in combination, means for severing pieces successively from a sheet of material intermittently fed thereto, means for detecting exhaustion of the sheet beyond a predetermined extent, waste end ejecting means adapted to be moved into ejecting engagement with the stock at each sheet cutting operation, and an actuating mechanism for said ejecting means, the operation of which is controlled by exhaustion of the stock as determined by said detecting means.

20. A stock cutting machine having, in combination, a reciprocating knife for severing pieces successively from a sheet of material, waste end ejecting means reciprocable into ejecting position with said knife, actuating means for said ejecting means normally restrained from operation, and means for releasing said actuating means after the last full-sized piece has been cut from the sheet.

21. A stock cutting machine having, in combination, means for cutting pieces successively from a sheet of material, intermittently operating feed mechanism for advancing the sheet to the cutting means, and means operating concurrently with the last cutting operation producing a full-sized piece, to engage and remove the remaining waste end portion of the shet from the line of feed.

22. A stock cutting machine having, in combination, intermittently operating mechanism for feeding the stock in a series of equal steps, periodically operating cutting means for cutting pieces of equal sizes from the stock fed thereto, and means operating after the last full-sized piece has been cut from the stock to engage the severed edge of the remaining waste end and remove it from the line of feed.

ERASTUS E. WINKLEY.