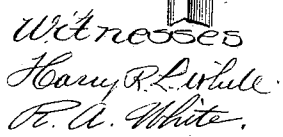


APPLICATION FILED MAY 28, 1908.

Patented Feb. 18, 1913.
5 SHEETS—SHEET 1.



Inventor:
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W. C. MARTIN.
CUE TIP MACHINE.
APPLICATION FILED MAY 28, 1908.

1,053,193.

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5 SHEETS—SHEET 3.

Fig. 5.

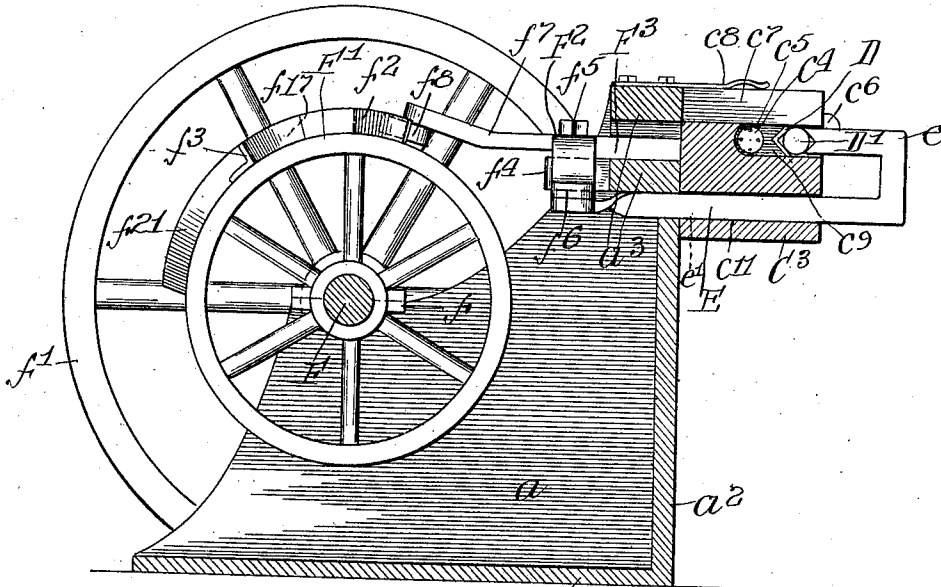
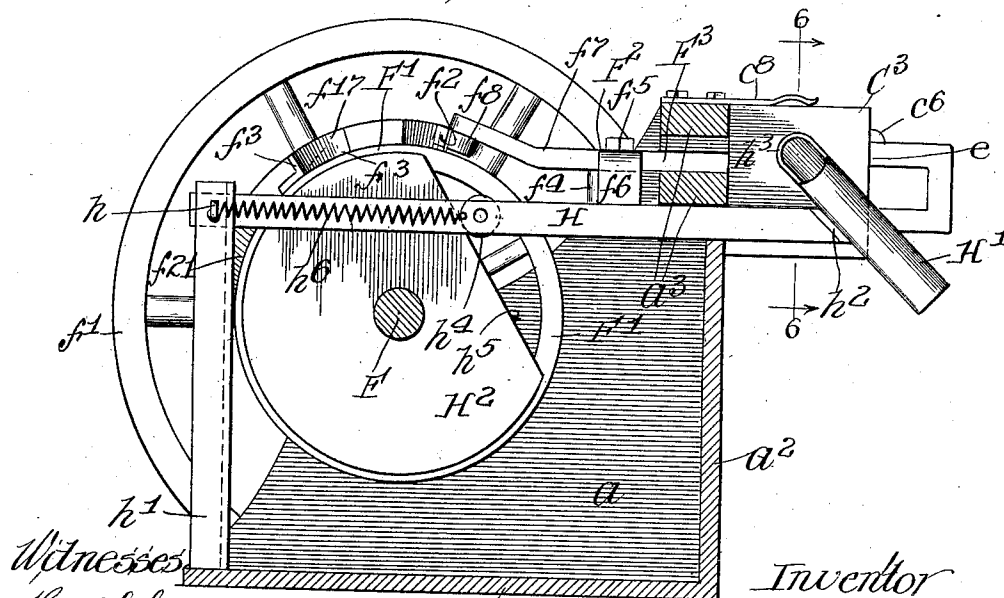


Fig. 4



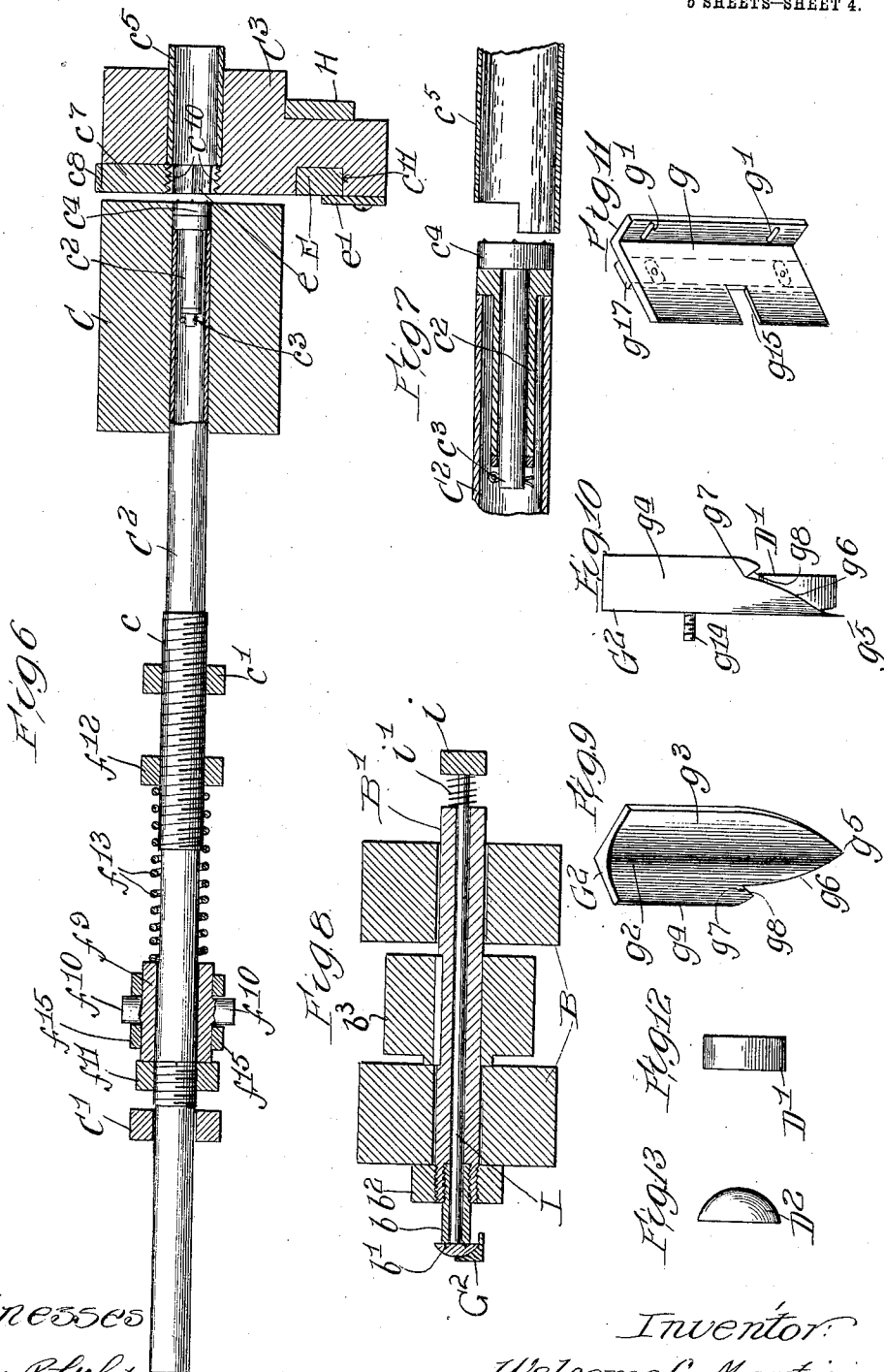
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5 SHEETS—SHEET 4.



Witnesses
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UNITED STATES PATENT OFFICE.

WELCOME C. MARTIN, OF CHICAGO, ILLINOIS.

CUE-TIP MACHINE.

1,053,193.

Specification of Letters Patent.

Patented Feb. 18, 1913.

Application filed May 28, 1908. Serial No. 435,568.

To all whom it may concern:

Be it known that I, WELCOME C. MARTIN, a citizen of the United States, and residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Cue-Tip Machines, of which the following is a complete specification.

This invention relates to improvements in cue tip machines and more particularly to a machine adapted to automatically feed the blanks to the cutting mechanism and to cut the tips from said blanks without necessitating manual labor during the operation.

In the manufacture of cue tips it has heretofore been necessary to perform a great deal of the labor by hand for the reason that no machine had been provided capable of automatically feeding the blanks thereinto and automatically cutting the tips from the blanks and discharging them from the machine in a finished state without requiring manual labor during some part of the operation. Furthermore it has heretofore been difficult in cutting the tips to prevent the fibers from shredding at the end of the cut and thereby leaving a ragged edge which must afterward be dressed off.

The object of this invention is to provide a cue tip machine in which the blanks are automatically fed to the cutting mechanism by which they are turned into the proper shape and completely finished at one operation without necessitating any handling or manual labor.

It is also an object of the invention to provide a yielding and self-adjusting mechanism adapted to feed the blanks to the main chuck so as to adjust itself to varying thicknesses of blanks without injury to any of the parts and also adapted to insure that the blanks are firmly attached to the spindle.

A still further object of the invention is to provide means adapted to cut the blanks without leaving a ragged edge at the end of the cut and for this purpose the blank is cut from both the front and rear sides simultaneously with a draw cut and the cut is finished at a point between the front and rear sides of the blank.

Another object of the invention is to provide a machine capable of being quickly and easily adjusted to cut tips of various sizes and for various thicknesses of leather.

The invention consists of the matters here-

inafter described in the specification and more fully pointed out and defined in the appended claims.

In the drawings: Figure 1 is a top plan view of a machine embodying my invention and showing the relative positions of the parts after the completion of the tip and after the tip is discharged from the cutting mechanism. Fig. 2 is an end elevation of the device. Fig. 3 is a section taken on line 3—3 of Fig. 1. Fig. 4 is a section taken on line 4—4 of Fig. 1. Fig. 5 is a section taken on line 5—5 of Fig. 1. Fig. 6 is a section, partly in elevation, taken on line 6—6 of Fig. 4 and with parts removed. Fig. 7 is an enlarged fragmentary section of the feed plunger shown in Fig. 6, and showing the rotatable spindle thereof in elevation. Fig. 8 is an enlarged, longitudinal section of the mandrel. Fig. 9 is a perspective view of the knife. Fig. 10 is a side elevation of the knife and partly turned blank. Fig. 11 is a perspective view of the knife bracket. Fig. 12 is a side elevation of one of the blanks. Fig. 13 is a side elevation of one of the completed cue tips. Fig. 14 is a fragmentary, front elevation of the machine. Fig. 15 is an enlarged horizontal section taken in a plane indicated by the line 15—15 of Fig. 16, said plane including the longitudinal axis of the feed plunger. Fig. 16 is an enlarged, fragmentary section taken on line 16—16 of Fig. 15.

As shown in said drawings: A indicates a frame of any preferred construction, but which, as shown, is provided with end members a and a' and a front member a^2 , having a longitudinal plate or beam a^3 on the top thereof and which, as shown more clearly in Figs. 3 to 5 inclusive, is slotted longitudinally.

Rigidly engaged on the front of the frame and near one end thereof is a head stock B in which is journaled a tubular mandrel B^1 , which projects from both sides of said stock and is both internally and externally screw threaded at its inner end. Removably engaged in the threaded end of said mandrel is the tubular chuck b , having brads b^1 thereon adapted to hold the blanks in position to be operated upon. On the inner end of said mandrel is the set nut b^2 adapted to take the longitudinal thrust thereon in one direction and a belt pulley b^3 is rigidly engaged on the mandrel and adapted to take the thrust

in the opposite direction and be driven by a belt b^4 leading from any suitable source of power.

Projecting from the front of the machine and rigidly supported thereon in any preferred manner, but as shown on the front of the beam a^3 , is a bearing head C, having a bore therethrough in axial alinement with the mandrel B, and at the end of the frame opposite from the head stock is a bearing arm C^1 having a bearing therein in alinement with the bearing in said head C. Slidably engaged in said head C and said arm C^1 is the feed plunger C^2 , which may be of any preferred construction but which, as shown more clearly in Fig. 6, is tubular and is provided with a threaded portion c on which is adjustably engaged a nut c^1 adapted to abut against the bearing head C and limit the inward travel of said plunger to prevent its being thrown against the chuck b . In the inner end of said plunger is rigidly engaged a bearing sleeve c^2 in which is journaled a chuck spindle c^3 having on its outer end a chuck c^4 which, when the plunger is at the outer limit of its movement, is flush with the face of the bearing C, as shown more clearly in Fig. 6.

Rigidly engaged on the front of the frame intermediate the head stock B and the bearing head C, and adjacent the latter, is a block C^3 or other supporting means through which extends a retarding tube c^5 in axial alinement with the feed plunger C^2 and mandrel B^1 , and through which the plunger is adapted to travel. The bore of said tube c^5 is of such size that the blanks fit closely therein so that when the blanks are forced therethrough by the feed plunger they become firmly attached to the head c^4 . Said block C^3 , as shown more clearly in Figs. 5 and 6, is cut away or recessed on its face adjacent the bearing C down to a point approximately level with the bottom of the tube c^5 , and rearwardly to the back of said tube, and hinged thereon by means of a hinge c^6 , and adapted to fold down into the space thus formed, is a bar c^7 , the bottom of which is approximately flush with the top of said tube. The rear end of said bar c^7 is adapted to abut against the beam a^3 when in its closed position and is normally held in such position by a spring c^8 secured on the beam, or by any other preferred means. Said recess beneath said bar provides a guide groove c^9 terminating in the tube c^5 , one side of which is cut away for that purpose as shown more clearly in Fig. 7, and the top and bottom of the groove are provided with longitudinal ridges c^{10} , as shown more clearly in Fig. 6, adapted to guide said blanks into said tube.

Supported in any preferred manner in front of the machine is the gravity feed tube D adapted to contain the blanks D^1 to be

operated upon, and the outlet end of which abuts against the block C^3 adjacent the groove c^9 and adapted to feed thereinto, as shown more clearly in Figs. 1 and 5. Said feed tube has a longitudinal slot in one side thereof through which projects a follower d adapted to engage behind the blanks and force them forwardly, and a weighted cord d^1 is attached to said follower and passes over a pulley d^2 at the discharge end of said tube and operates said follower.

Any preferred means may be provided for delivering the blanks D^1 from the feed tube D to the retarding tube c^5 into position for the feed plunger to feed them to the chuck b , but, as shown, the block C^3 is provided with a groove c^{11} in the side thereof below the groove c^9 , and slidably engaged therein is the delivery bar E which projects rearwardly beyond the beam a^3 and forwardly through the front of said block, and is provided with a delivery hook e on its forward end which projects into said groove c^9 , and when at the outer or forward limit of its movement, as shown in Fig. 5, is outwardly beyond the feed tube, in position to carry the blank rearwardly in the groove c^9 to the tube c^5 . Said bar may be secured in the block in any preferred manner, but, as shown in Fig. 6, a plate e^1 is engaged on the side of the block and overlaps said bar. Any preferred means may be provided for operating said feed plunger and delivery bar E, but, as shown, a shaft F is journaled in suitable bearings f in the end members of the frame A and is provided on one end thereof with a belt pulley f^1 by means of which it is driven. Rigidly engaged on said shaft adjacent the end member a is a cam wheel F^1 , having on its periphery, near its end opposite from said frame member, a cam f^2 , which extends rearwardly and laterally toward the frame member a for a distance and then turns rearwardly for a short distance, as shown more clearly in Fig. 1. Beginning at a point on the wheel F^1 located slightly to the rear of the cam f^2 and laterally thereof toward the end member a , is a cam f^3 , which extends rearwardly and laterally behind the cam f^2 .

Extending rearwardly from the bottom portion of the beam a^3 and integral therewith is a shelf f^4 , and pivoted thereon by means of a pin f^5 is a bell-crank lever F^2 , one arm f^6 of which is pivotally connected with the rear end of the bar E, and the other arm f^7 extends rearwardly over the cam wheel F^1 and is provided with a roller f^8 adapted to travel on the cams f^2 and f^3 , the former of which acts to move the delivery bar rearwardly and the latter of which acts to move said bar back to normal position.

Slidably engaged on the feed plunger C^2 is a collar f^9 having trunnions f^{10} thereon, and is limited in its movement in one di-

reaction by a nut f^{11} on said plunger. On the opposite side of said collar and at a distance therefrom is a nut f^{12} on said plunger, and between said nut and collar and engaging the same is a spring f^{13} acting as a buffer for said collar. A lever F^3 is pivoted on the shelf f^4 by means of a pin f^{14} and the forward end thereof is forked to provide arms f^{15} which extend above and below the collar f^9 and are slotted to receive the trunnions f^{10} . Said lever extends rearwardly over the cam wheel F^1 and is provided on its rear end with a roller f^{16} adapted to engage a cam f^{17} on said wheel which begins about the same point as the cam f^8 and extends rearwardly and oppositely therefrom. Said cam f^{17} is adjustably engaged to the wheel F^1 so as to adjust the throw of the lever F^3 to accommodate the feed plunger to varying thicknesses of blanks, and for this purpose the cam base is slotted to receive the attaching bolts f^{18} and a set screw f^{19} is carried in a bracket f^{20} on the wheel F^1 and engages the rear side of said cam. In adjusting the cam the bolts f^{18} are loosened and the cam turned to the proper angle and the set screw set up against it to form an abutment. The bolts f^{18} are then tightened to hold the cam rigidly in place.

Rigidly engaged on the cam wheel F^1 at the rear of the cam f^{17} is a cam f^{21} which commences at a point laterally of the rear end of the cam f^{17} and extends rearwardly and laterally in the opposite direction beneath the same. As shown more clearly in Fig. 1, the feed shaft is at the rearward limit of its movement, out of the path of the delivery hook e , and said hook is at the outer limit of its movement in position to receive a blank from the feed tube D . As the cam wheel F^1 revolves, the cam f^2 first engages the roller f^8 and causes the lever F^2 to move the delivery bar rearwardly and force a blank into the tube c^5 . When the cam f^2 has passed beyond the roller f^8 , the cam f^3 engages said roller and throws the lever F^2 oppositely, thereby returning the delivery bar to normal position. At the same time the cam f^{17} engages the roller f^{16} and operates the lever F^3 , causing it to force the feed shaft C^2 forwardly against the blank in said tube. Owing to the fact that the blank fits closely in the tube c^5 the pressure of the feed shaft thereagainst in forcing it through the tube causes the chuck c^4 to firmly engage said blank and carry it forwardly to the chuck b . The buffer spring f^{13} on said shaft permits the shaft to yield when the blank strikes the chuck b , so that varying thicknesses of blanks will not cause undue strain on the parts. As soon as the roller f^{16} has passed from the cam f^{17} it is engaged by the cam f^{21} which acts to throw the lever F^3 in the opposite direction and return the feed shaft to normal position, leaving the blank

on the chuck b in position to be operated on by the cutting mechanism.

Rigidly engaged on the front of the beam a^8 , intermediate the head stock B and the block C^3 , are the vertical guide-ways $G-G$, which are grooved on their adjacent faces and slidably engaged between the same is the reciprocating knife bar G^1 . Adjustably engaged on the outer or front face of said knife bar is a bracket g , which is provided with slots g^1 through which it is bolted to said bar, thereby permitting its adjustment to and from the chuck b . Adjustably engaged on said bracket, on the side adjacent said chuck b , is the knife G^2 , which, as shown more clearly in Fig. 9, is curved on the front face g^2 to conform to the curvature of the front face of the completed tip D^2 shown in Fig. 11, and the upper portion of which is approximately right angular on its rear face. The flange or side g^3 of said knife is so situated that it will pass downwardly in front of the chuck b , and the flange g^4 thereof will pass downwardly at the side of the chuck, as shown more clearly in Fig. 8. Said knife is provided on its lower end with a point g^5 located on the flange g^3 and curves upwardly therefrom in either direction, providing the cutting edge g^6 which terminates in a notch g^7 in the flange g^4 . The other side of said notch is formed by a cutting edge g^8 which extends downwardly and laterally toward the edge of the flange g^4 . Said knife may be secured to the bracket g in any preferred manner, but, as shown, it is provided on its back with a screw threaded stud g^{14} adapted to be inserted through a slot g^{15} in said bracket and secured therein by means of a nut g^{16} , shown in Fig. 1. On the back of said bracket is bolted an adjustable abutment g^{17} which is provided with elongated bolt apertures to permit its adjustment to and from the mandrel, and against which the knife is set. Any preferred means may be employed for operating said knife bar, but, as shown, a lever G^3 is pivoted on an arm g^9 engaged on the beam a^8 and extending rearwardly therefrom, and one end of said lever is slotted and pivoted between ears g^{10} on said knife bar. The other end of said lever extends downwardly and rearwardly over the shaft F and is provided with a roller g^{11} journaled on one side thereof in position to be engaged by a cam G^4 which is rigidly engaged on the shaft F . Said cam, as shown more clearly in Fig. 3, is provided with a point or projection g^{12} which is so positioned that, after the feed plunger C^2 has been retracted, it will engage said roller g^{11} and force the rear end of the knife lever upwardly, thereby forcing the knife downwardly, and will pass beyond said roller before the feed plunger is again operated. Said cam has its short-

est radius at the base g^{18} of the rear side of said projection and the radii gradually increase in length therefrom to the point of said projection, with the effect that the knife is gradually forced downwardly during the cut and raised quickly after the cut. Any preferred means may be employed for normally holding the knife bar in elevated position but, as shown, a spring g^{13} is engaged at one end to the rear end of the knife lever and at the other end to the bottom of the frame A and acts to normally force the rear end of said lever downwardly.

The shavings from the cut fall beneath the knife, and for the purpose of receiving the completed tips from the mandrel a bar H is slidably engaged at its forward end in the front frame member a^2 beneath the block C³ and at its rear end is slidably engaged in a post h^1 extending upwardly from the bottom of the frame at the rear of the shaft F. The forward end of said bar H is turned laterally toward the head stock B to provide an arm h^2 and on said arm is rigidly engaged a discharge tube H¹, which, as shown, is inclined downwardly and outwardly from the frame and when at the inner limit of its movement its rear end h^3 is positioned beneath the knife and in front of the chuck b in position to receive the tip therefrom. Said rear end h^3 , as shown more clearly in Figs. 3 and 4, is cut away on the side adjacent the chuck so that the tip may drop thereinto as it is forced off from the chuck.

Any preferred means may be provided for operating the bar H but, as shown, a cam wheel H² is rigidly engaged on the shaft F adjacent said bar and is adapted to engage a roller h^4 on said bar and cause the bar to move outwardly and carry the tube H¹ from beneath the knife. Said cam wheel H² is circular for the greater part of its circumference but is provided with one straight side h^5 , so that when the circular portion thereof is in engagement with the roller h^4 the bar is held at the outer limit of its movement, in which position it remains while the knife is operating. When, however, the straight side h^5 comes in contact with the roller the bar may be retracted to bring the discharge tube to receiving position adjacent the chuck b . For this purpose a coiled spring h^6 is engaged at one end to a lug h on said post and at its other end to the bar in front of the post and acts normally to hold the bar retracted.

For the purpose of ejecting the completed tip from the chuck b into the discharge tube H¹ a thrust rod I is slidably engaged in the mandrel B¹ and is provided on its outer end with a head i between which and the end of the mandrel is engaged a coiled spring i^1 which acts to normally hold the rod at the

outer limit of its movement. A lever I¹ is pivoted on an arm i^2 , carried on the end frame member a^1 and extends rearwardly and laterally to a point above the shaft F. A cam wheel I² is rigidly engaged on said shaft adjacent the rear end of the lever and is provided with a cam teat or projection i^3 thereon adapted to engage the rear end of the lever and force it outwardly, thereby forcing the front end of the lever against said thrust rod and causing the latter to force the tip from the chuck b . Said cam teat is so positioned on the wheel I² that it operates the thrust rod as soon as the discharge tube H¹ has reached its receiving position and permits said rod to be immediately retracted by its spring as soon as it has ejected the tip into said tube.

The operation is as follows: A feed tube D filled with blanks is supported adjacent the machine in any preferred manner with its discharge end opening into the groove c^9 and the weight forces a blank into said groove behind the delivery hook e . As the cam wheel F¹ rotates, the cam f^2 engages the lever F² and moves said hook rearwardly, thereby forcing the blank into the tube c^5 . The ridges c^{10} on the top and bottom of said groove act to guide the blank into said tube so that it will lie in a plane at right angles to the axis of the tube. As soon as the blank enters the tube c^5 the cam f^3 engages said lever and returns the delivery hook to normal position, and as the hook passes from in front of the feed tube another blank is forced into said groove. The cam f^{17} then engages the lever F³ and forces the feed plunger longitudinally, and as said plunger forces the blank through the retarding tube c^5 the blank is firmly attached to the chuck c^4 and is carried by said chuck and deposited on the chuck b . The latter chuck is continuously rotated, and inasmuch as the spindle c^3 of the chuck c^4 is journaled in the feed plunger it is able to take the motion of the chuck b while the blank is being deposited thereon. The yielding connection between the lever F³ and the feed plunger enables the plunger to yield in case a blank of greater thickness than that for which the machine is set should be fed into the machine. As soon as the blank has been deposited on the chuck b the cam f^{21} engages the lever F³ and retracts the feed plunger to normal position. The knife is normally held in elevated position by the spring g^{13} and as soon as the blank has been deposited on the chuck b the cam G⁴ acting on the lever G³ begins to lower the knife. The point g^5 of the knife, which stands parallel to the front of the blank, first engages the blank and as the knife descends the curved edge g^6 cuts the blank to the proper curvature. As the cut nears the rear of the blank the edge g^8 commences a cut from the

rear side of the blank which meets the cut made by the edge g^6 and by cutting from both directions the fibers are severed clean from the blank and no ragged edge is left.

5 When the projection g^{12} of the cam G^4 passes the roller g^{11} the rear end of the lever G^3 is forced downwardly by its spring and the knife is quickly raised. The delivery tube H^1 is normally held extended from beneath the knife by means of the circular surface of the cam H^2 engaging the roller h^4 . As soon, however, as the knife has been retracted after the cut the straight surface h^5 of said cam is brought adjacent the roller h^4 and the spring h^6 acting on the bar H causes the latter to move rearwardly and bring the discharge tube to receiving position beneath the knife. The cam i^3 then engages the lever I^1 which moves the thrust rod I through the mandrel and forces the completed tip from the chuck b into said discharge tube which guides the tip into any receptacle which may be placed beneath the same. The cam H^2 then returns the discharge tube to normal position and the operation is repeated.

Obviously a machine embodying my invention is capable of forming the tips with great rapidity and accuracy and with the entire elimination of manual labor. Obviously also many details of form and construction may be varied without departing from the principles of my invention.

I claim as my invention:

35 1. The combination with a supporting frame, a horizontally arranged chuck rotatively mounted in said frame, a feed tube mounted in said frame and in axial alignment with said chuck, a horizontally arranged blank containing tube parallel with said feed tube and having its discharge end adjacent the inlet end of said feed tube, a feed plunger in said blank containing tube, yielding pressure means acting on said plunger to advance the same in said tube, a transverse guideway for the blanks connecting the discharge and inlet ends of said blank containing tube and the feed tube, a reciprocating member adapted to move the blanks through said guideway, cam actuated means for giving movement to said reciprocating member, a horizontally arranged reciprocating plunger in axial alignment with said feed tube, adapted to pass through the same and carry the blanks to the chuck, cam actuated means for operating said plunger, a transversely arranged reciprocating knife, cam actuated means adapted to force said knife against the blank on the chuck after the plunger has been retracted, and cam actuated means for ejecting said blank after the same has been operated upon by said knife.

2. The combination with a chuck of means providing a retarding passage in axial alignment

therewith, blank containing means, reciprocating feed mechanism adapted to carry blanks from said containing means to said passage, a plunger, means for moving said plunger through the passage and carrying a blank to the chuck and retracting the plunger as soon as the blank is placed on the chuck, and cutting means adapted to operate on the blank when the plunger is retracted.

3. The combination with a chuck, of a retarding tube in axial alignment with said chuck and spaced a distance therefrom, a passage extending transversely of said tube and opening into the end of the tube opposite from the chuck, blank containing means opening into said passage, a reciprocating feed hook in said passage and adapted to carry blanks from the containing means to said tube, and a reciprocating plunger adapted to travel through said tube and carry the blanks to the chuck.

4. The combination with a frame, of a chuck thereon, a reciprocating plunger mounted on the frame in axial alignment with the chuck, blank retarding means interposed between said plunger and chuck, blank containing means supported adjacent said retarding means, a guide passage leading from said containing means to said retarding means, means adapted to carry blanks through said passage and deliver them to the retarding means in position for the plunger to carry them to the chuck, means for retracting the plunger when the blanks have been placed on the chuck, cutting mechanism adapted to operate on the blanks after the plunger is retracted, and means adapted to receive the completed blanks from the chuck.

5. In a device of the class described the combination with a frame of a rotative chuck thereon, a feed plunger slidably mounted on said frame in axial alignment with said chuck, reciprocating means adapted to automatically deliver a blank to said plunger, means adapted to operate the plunger and carry the blank to said chuck, a reciprocating knife mounted on said frame and adapted to pass downwardly in front of the blank after the plunger has been retracted, means for operating said knife, and means for delivering the completed blank from said chuck.

6. In a device of the class described the combination with a frame of a rotative chuck thereon, a retarding tube mounted on said frame in axial alignment with said chuck, a reciprocating feed plunger on said frame adapted to pass through said tube, means for automatically delivering blanks to said tube, means for operating the plunger and forcing the blanks through the tube onto said chuck, a knife adapted to cut the blanks on said chuck, means for operating

said knife and means adapted to move beneath the chuck and receive the completed blanks therefrom.

7. The combination with a frame of a 5 chuck journaled thereon, a retarding tube in axial alinement with said chuck, a feed plunger slidably mounted on the frame and adapted to travel through said tube, adjustable means on said plunger adapted to limit 10 its movement toward the chuck, means for operating said plunger, a guide groove leading into said tube, and means for forcing blanks through said groove to the tube.

8. The combination with a frame, of a 15 chuck thereon, a retarding tube in axial alinement with said chuck, a feed plunger slidably mounted on the frame and adapted to travel through the tube to and from the chuck, a guideway leading into said tube, a 20 feed tube opening into said guideway, feed mechanism in said tube adapted to deliver blanks to said guideway, a reciprocating member in said guideway adapted to move blanks along the guideway to said retarding 25 tube, means for operating said plunger and member, and cutting mechanism adjacent said chuck.

9. The combination with a frame of a 30 chuck thereon, means adapted to feed blanks to said chuck, a reciprocating knife mounted on the frame and adapted to pass downwardly past the end of the chuck and to cut the blank simultaneously from its front and rear margins, and means for operating 35 said knife.

10. In a device of the class described the combination with a frame of a rotative 40 chuck thereon, cutting means adjacent said chuck, a retarding tube in axial alinement with said chuck, means for automatically delivering blanks thereto, and means adapt-

ed to pass through said tube and feed blanks to said chuck.

11. In a device of the class described the combination with a frame of a main rotatable 45 chuck thereon, cutting mechanism adjacent said chuck, a retarding tube in axial alinement with said chuck, means adapted to deliver blanks to said tube, a feed plunger, a rotatable chuck thereon and means 50 adapted to force the feed plunger through said tube and carry the blanks to the main chuck.

12. The combination with a frame of a 55 chuck supported thereon, a retarding tube in axial alinement with said chuck, a feed tube removably supported on the frame and out of alinement with the retarding tube, feed mechanism adapted to transfer blanks 60 from the feed tube to the retarding tube, and a plunger adapted to carry the blanks through the retarding tube to the chuck.

13. The combination with a frame of a 65 chuck journaled thereon, a retarding tube in axial alinement with said chuck, a feed tube removably mounted on the frame, a guideway leading from the outlet end of the feed tube to the inlet end of the retarding 70 tube, reciprocating feed mechanism in said guideway, means adapted to automatically move blanks from the feed tube to the guideway, and a reciprocating plunger adapted to carry the blanks through the retarding tube to the chuck.

In testimony whereof I have hereunto 75 subscribed my name in the presence of two witnesses.

WELCOME C. MARTIN.

Witnesses:

W. W. WITHERBURY,
EUGENE BIVERT.