

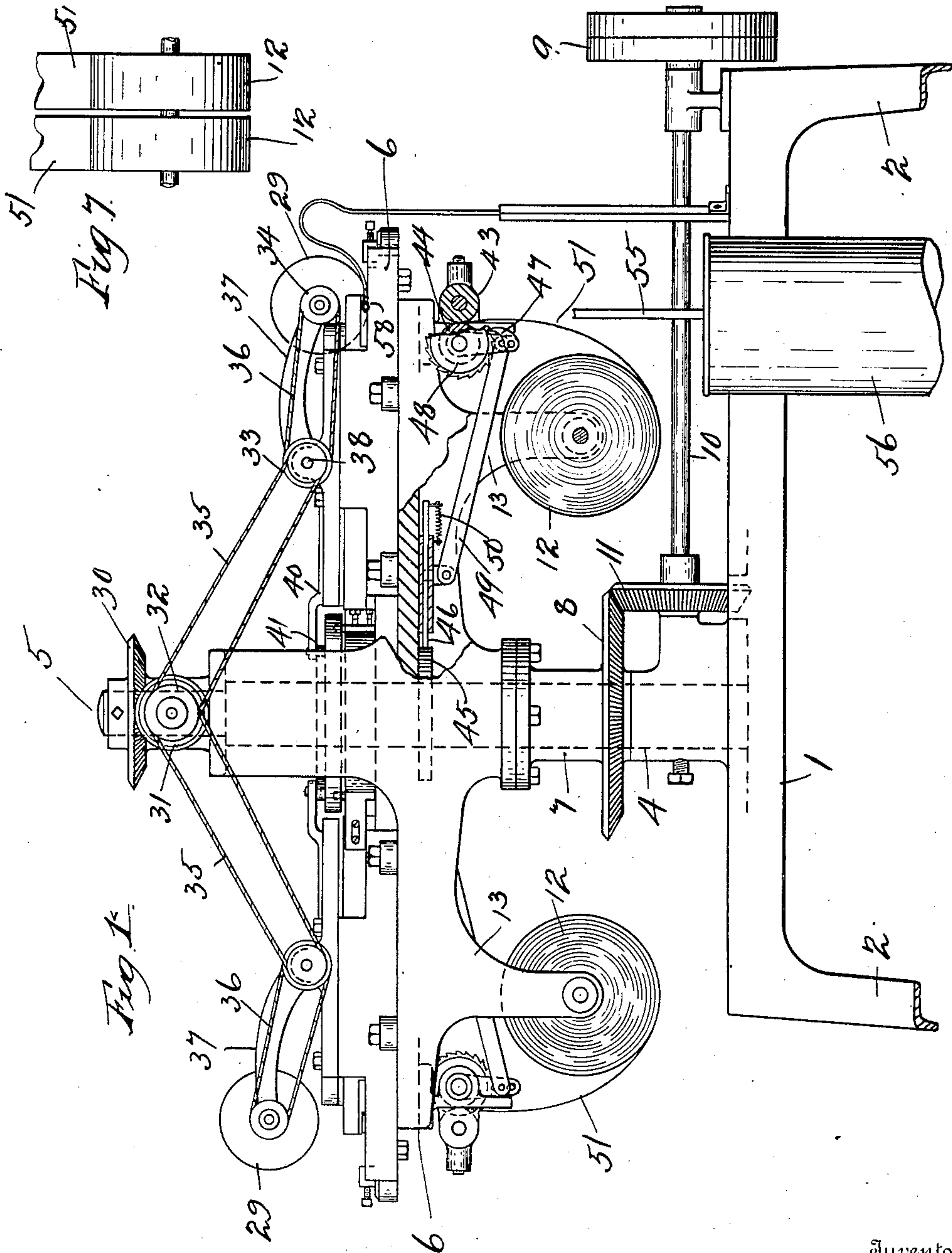
No. 835,309.

PATENTED NOV. 6, 1906.

G. F. McCahey.
MACHINE FOR TIPPING LACINGS.

APPLICATION FILED AUG. 9, 1906.

3 SHEETS—SHEET 1.



Witnesses

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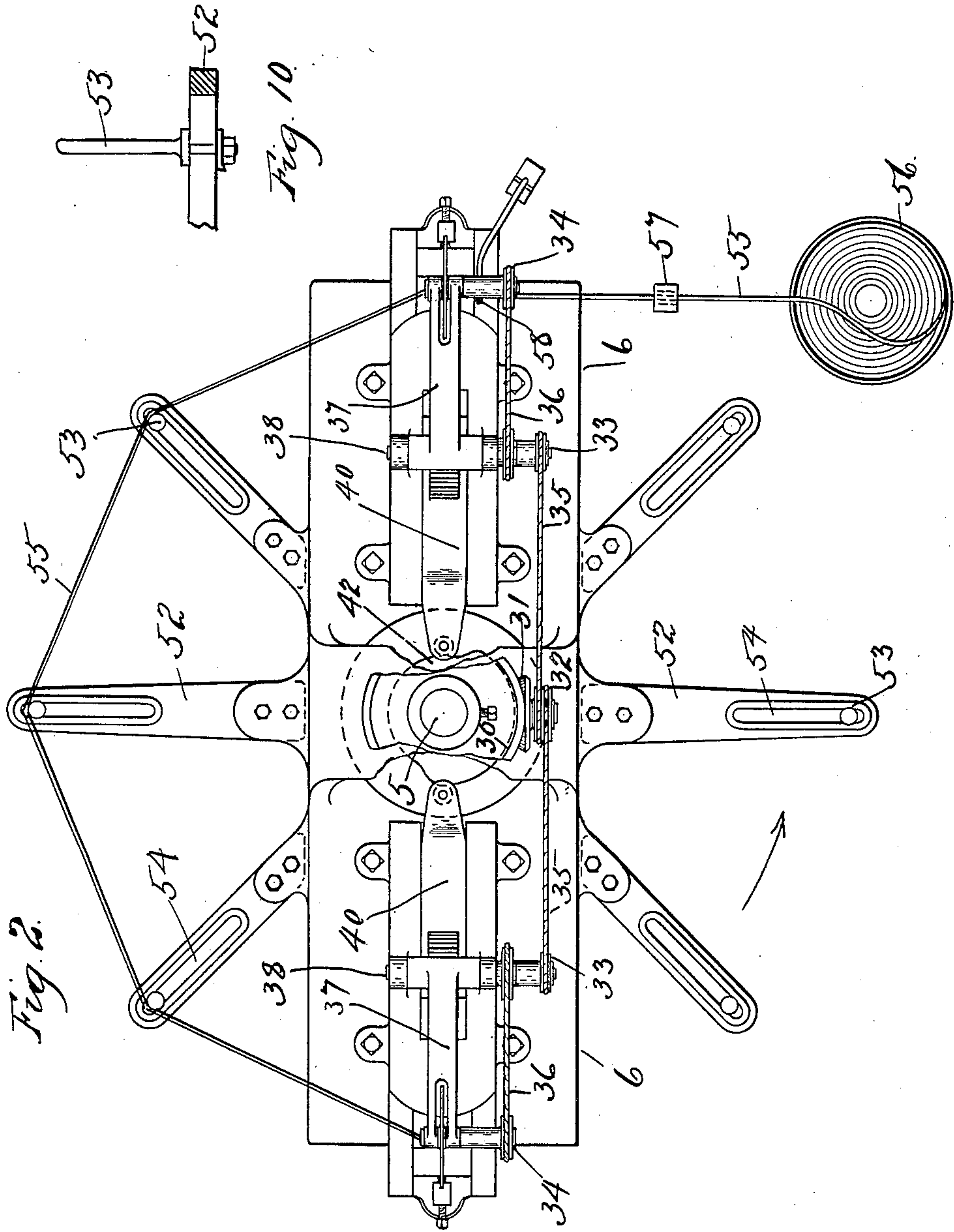
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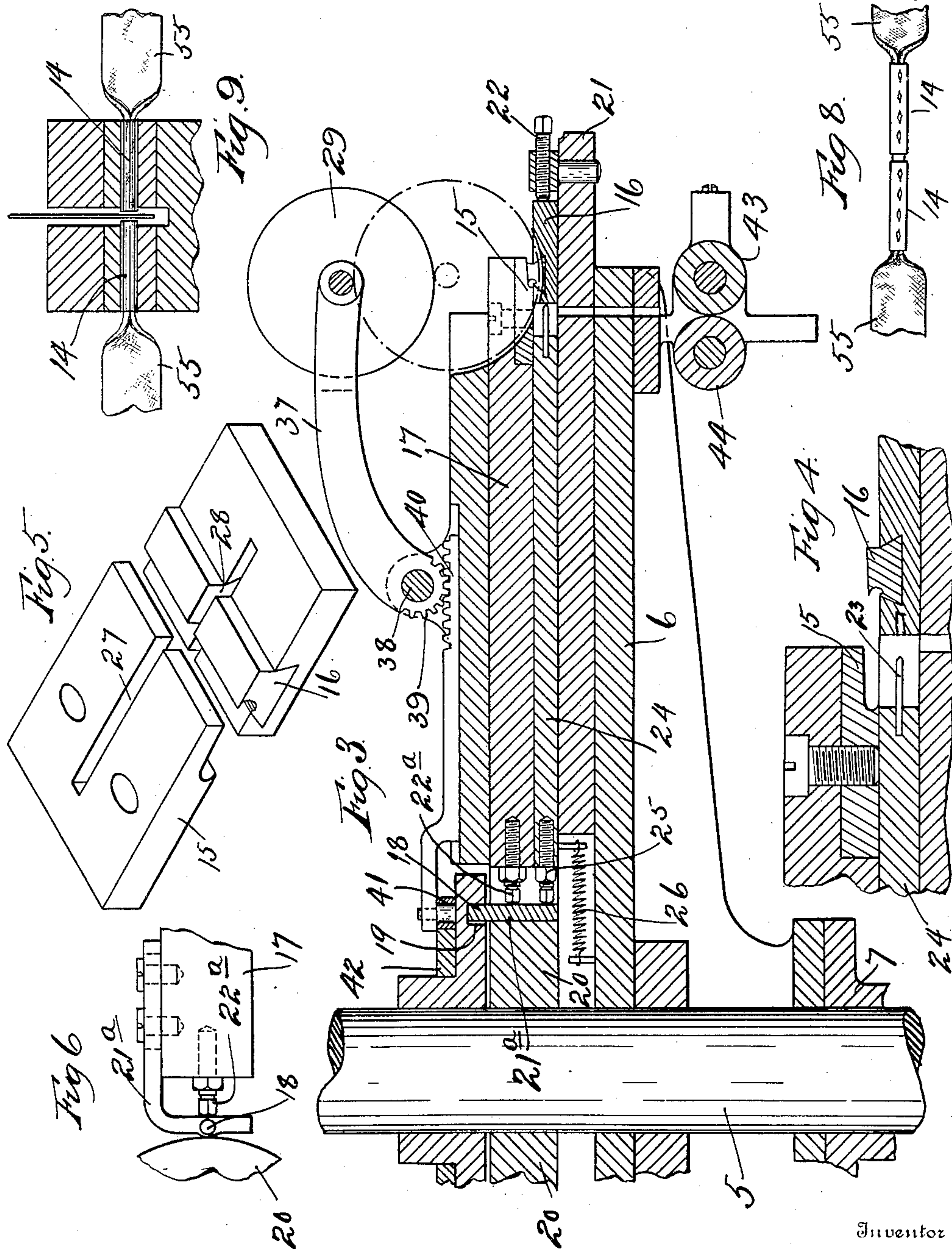
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UNITED STATES PATENT OFFICE.

GEORGE F. McCahey, OF PROVIDENCE, RHODE ISLAND.

MACHINE FOR TIPPING LACINGS.

No. 835,309.

Specification of Letters Patent.

Patented Nov. 6, 1906.

Application filed August 9, 1905. Serial No. 273,416.

To all whom it may concern:

Be it known that I, GEORGE F. McCahey, a citizen of the United States, residing at the city of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Machines for Tipping Lacings, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to machines for tipping lacings, and has for its object to provide means for forming the lacing-tip in a die and severing the tipped portion while in the die.

A further object of the invention is that said die shall travel, and in traveling it carries the severed tip from the point where it is formed to the point when it is dropped. At the same time it measures off the length of the lacing and gives the lacing material a continuous feeding motion.

A further object is to provide means for severing the tipped portion of the lacing and for overcoming the difficulties heretofore experienced in severing said tipped portion, due to the stretching of the lacing and the backlash of the mechanism when measuring off the lengths of the lacing.

A further object is to increase the speed of production.

In carrying out my invention two tipping-dies are employed, each being mounted in oppositely-extending arms mounted to rotate around a common center. The braid is fed to the first set of dies at the end of the arm, and the tip is formed therein and severed as said arm is traveling a half-revolution around said center. At the time this die is opened to deposit the finished lacing the second die in the opposite arm is receiving the braid to form another tip thereon, and so it continues, first one set of dies and then the other working on the braid as it is drawn in by the traveling arms. It will be seen that by this method the braid is drawn continuously, being gripped by the traveling dies, and the length of the lacing is controlled and determined by the positioning of the adjustable reel-pins around which the braid is drawn.

By causing the die to travel the tip is completely formed and severed while the length of the lacing is being measured off, thereby allowing ample time in which to perform the operation, avoiding the wear and

tear of quick reciprocation. The severing of the tipped portion at its center is thus assured, and the feed of braid is continuous, forming substantially a rotary process by which the production of the machine is greatly increased.

The invention consists of other novel features and parts and combinations of the same, as will be fully described hereinafter and then pointed out in the appended claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

In the accompanying drawings, Figure 1 is a side elevation of my device, partly in section, to better illustrate the actuating mechanism. Fig. 2 is a plan of the device, showing the two rotatable arms with the adjustable reel-pins. Fig. 3 is an enlarged elevation sectioned through one of the arms, showing the dies in the closed position and the cutter in full lines as raised and in dotted lines as having entered the die and severed the tip. Fig. 4 is an enlarged view showing the dies and perforator in the open position ready to receive the tipping metal. Fig. 5 shows a perspective view of the dies drawn apart and illustrating the same as being split or recessed to receive the cutter. Fig. 6 is a detail plan view of the inner end of the die slide-arm, illustrating the means for the endwise adjustment of the same. Fig. 7 shows a detail of the metal roll, illustrating the covering material as being split or wound in two separate rolls. Fig. 8 shows a lacing tipped with two separate pieces of metal, with a space between them where the same is to be severed. Fig. 9 illustrates a lacing in the die being severed by the cutter. Fig. 10 is a detail illustrating the construction of one of the adjustable reel-pins.

Referring to the drawings, at 1 is the bed of the machine, supported on the legs 2 2. On this bed is the boss 4, and extending from the same is the fixed upright shaft 5. The oppositely-extending arms 6 6 are arranged to rotate around this upright shaft and are supported from the boss 4 through the hub 7 of the gear 8, to which gear-hub said arms 6 6 are bolted. The rotary motion is imparted to said gear and arms from a source of power (not shown) through pulleys 9, shaft 10, and pinion 11.

As the mechanism on one end of the arm is an exact duplication of that on the opposite end, it will be necessary in the description to refer to one end only.

5 The covering for the tips 14 on the lacings may be of any desired material, but are preferably formed of thin sheet metal, that is fed to the dies from the roll 12, that is suspended beneath the arm 6 on the bracket 13.

10 The die in which the tips are covered and compressed is made in two parts 15 and 16. The portion 16 is fixed to the plate 21 on the arm and may be set up or adjusted endwise by the set-screw 22, and the portion 15 is 15 mounted in a longitudinally-sliding bar 17. On the inner end of this bar is an endwise-adjustable shoe 21^a, (see Fig. 6,) that may be set by the adjusting-screw 22^a to regulate the throw or positioning of the die 15.

20 The bar is carried inward by the engagement of the upwardly-extending lug or boss 18 with the cam-groove 19, and said bar is carried outward by contact with the edge of cam 20. Both of these cams 19 and 20 are 25 fixed to said upright shaft, and as the said die-bar is carried around the cams it is actuated to move inward to open the die and outward to close the same.

The metal covering-strip before it is formed 30 into the tip is perforated by pins 23, carried by a longitudinally-movable bar 24, whereby the tip is prevented from slipping off the lacing. This pin-bar has an endwise adjustment in the screw 25, the head of which rests 35 against the shoe 21^a, by the movement of which shoe the pin-bar is carried forward, the same being returned by the tension of spring 26.

An important feature of my invention is 40 the cutting of the tips while held in the die, to accomplish which the die is split or recessed at 27 and 28 for the purpose of receiving the cutter 29. This cutter may be made in any desired form; but I preferably use a 45 thin sharp-edged disk and rotate the same. The disk may be rotated through the fixed gear 30, pinion 31, (that is rotated by being carried around said gear,) pulleys 32, 33, and 34, and belts 35 and 36. The cutter is pref- 50 erably mounted on an arm 37, said arm being pivoted on the pin 38, and is raised and lowered by means of the teeth 39, that are cut on the under side of its hub, engaging those on the endwise-movable rack 40. (See Fig. 3.)

55 This rack 40 is actuated by contact of the roller 41 (pivoted in its end) with the edge of the fixed cam 42, and as this rack is carried around said cam by the travel of arm 6 the cutter is allowed to drop and perform its op- 60 eration and is raised again at its proper time through the movement of said rack.

In feeding the covering to the dies the two feed-rolls 43 and 44 are employed to grip the same and carry it forward. Roll 44 is actu- 65 ated to rotate at intervals through the me-

dium of the fixed cam 45, the cam-actuated sliding bar 46, the swinging depending pawl 47, the ratchet 48, and the connecting-rod 49. The cam-bar is pressed outward to actuate the feeding mechanism and is returned by 70 the action of the spring 50.

At 52 52 (see Fig. 2) are radiating members fixed to and carried by the arms 6. In the outer ends of these members are upwardly- 75 extending pins 53, and said pins are adjustable either toward or from the center in the radial slots 54 in said members. As the lacing is being drawn in by the rotating arm 6 the material naturally lies against said pins, and the length of the lacing is very readily 80 controlled by simply adjusting these pins either toward or from the center.

The operation of the machine may be further described as follows: Two oppositely- 85 extending arms are arranged to be rotated in a horizontal plane about a fixed upright shaft, one arm carrying a duplicate mechanism of the other arm. Automatic mechanism is arranged to feed a covering material 51 from a roll 12, carried by said arm. This 90 covering material is fed up to a die, is perforated to make the same adhere more closely to the fabric, and is cut off, wound around, and compressed onto the lacing material by means of the dies 15 and 16, which are con- 95 structed so as to coil the covering about the lacing and compress it upon the same as said dies are being brought together. After the covering has been applied and while that portion is still held in the die a cutter is actuated 100 to pass into the die and sever the covered portion. The feeding of the covering, perforating, and the operation of the die and cutter are all operated while the arms are in motion. The lacing material 55 is led from the 105 can 56 through the guide-eye 57 to the traveling dies 15 and 16. Any desired means may be employed to insure the material being led to and deposited in these dies. I have shown a spring-wire eye 58 for this purpose that is 110 arranged to be sprung back or withdrawn automatically as the die approaches and jump forward and deposit the material in the jaws of the die at the proper time. As the tip is being formed and severed it is being carried 115 from the feeding-point to the point of delivery at the opposite side of the machine, where the die is withdrawn and the tip released. Any suitable means may be employed to en- 120 gage the finished lacing at this point and convey it away or deposit it in any convenient place to be labeled or bundled.

The advantages of my invention will be at once apparent to those skilled in the art to which it appertains. It will be particularly 125 noted that I have provided means whereby the lacing may be tipped and the tipped portion severed while still held in the forming-dies. It will be further observed that I have provided means whereby the lacing is meas- 130

ured off simultaneously with the tipping operation and without interfering with the tipping operation. It will also be observed that I have overcome all difficulties incident to the stretching of the lacing and the backlash of the mechanism in the tipping, cutting, and measuring-off operations.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a machine for forming tips on lacings, means for forming tips on lacings and a cutter independent of said forming means arranged to enter the same and sever the tipped portion while held in said forming means.

2. A machine for forming tips on lacings comprising reciprocating dies in which the tips are formed, and means arranged to enter said dies to sever the tipped portion of the lace while the latter is held by said dies and subsequent to the tipping operation.

3. A machine for forming tips on lacings comprising reciprocating dies in which the tips are formed, a cutter, and means for causing said cutter to enter said dies to sever the tipped portion of the lace while the latter is held by said dies and subsequent to the tipping operation.

4. In a machine for forming tips on lacings, dies in which said tips are formed, a cutter independent of said dies, a slot or recess in said dies to receive said cutter, and means whereby said cutter may be actuated to enter said dies to sever the tipped portion of the lacing.

5. In a machine for forming tips on lacings, reciprocating dies, means for feeding a covering material to said dies, means whereby said dies will wrap said covering material about the lacing forming a tip thereon, and means for entering said dies and severing said tipped portion as it is held by said dies and subsequent to the tipping operation.

6. A machine for forming tips on lacings, comprising a fixed shaft, means for gripping the lacing material and forming the tip thereon, and means for causing said forming means to rotate around said shaft, whereby said lacing is measured off simultaneously with the tipping operation.

7. In a machine for forming tips on lacings, means in which the tips are formed on the lacing material, and means whereby said forming means may be made to move or travel to measure off a lacing while forming a tip thereon.

8. In a machine for forming tips on lacings, means in which the tips are formed on the lacing material, means for severing said tipped portion, and means whereby said forming means may move or travel to measure off a lacing while a tip is being formed thereon and severed.

9. In a machine for forming tips on lacings, dies for forming tips on the lacing ma-

terial, means for severing the tipped portion while held in said dies, and means whereby said dies and severing means may move or travel to measure off a lacing while a tip is being formed.

10. In a machine for forming tips on lacings, means for gripping a lacing and forming a tip thereon, and means whereby said tip-forming means may travel in a circle to measure off a length of lacing while said tip is being formed thereon.

11. In a machine for forming tips on lacings, a plurality of sets of dies, means whereby said sets of dies may be caused to engage the lacing material alternately and form tips thereon, means for moving said dies about a common center to measure off a length of lacing while the tip is being formed thereon.

12. In a machine for forming tips on lacings, a plurality of sets of dies, means whereby said sets of dies may be caused to engage the lacing material alternately and form tips thereon, means for severing said tip while held in said dies, means for moving said dies about a common center to measure off a length of lacing while the tip is being formed thereon, and means whereby the length of the lacings may be varied.

13. In a machine for forming tips on lacings, dies, means for feeding a covering material to said dies, means whereby said dies will apply said covering material to the lacing forming a tip thereon, means for severing said tipped portion as it is held in said dies, and means whereby said dies may move or travel to measure off a lacing while a tip is being formed thereon.

14. In a machine for forming tips on lacings, a plurality of sets of dies, means for feeding a covering material to said dies, means whereby said sets of dies will alternately apply said covering material to the lacing forming tips thereon, means for severing said tipped portion as it is held in said dies, means for moving said dies in a circle to measure off a length of lacing while a tip is being formed thereon.

15. A machine for forming tips on lacings, comprising means for forming the tips on the lacing material, means for measuring off the lacing material, and means for simultaneously operating said tip-forming means and said measuring means.

16. A machine for forming tips on lacings comprising a fixed shaft, dies for forming the tips on the lacing material, carriers for said dies, means for rotating said carriers around said shaft, and means carried by said shaft for actuating said dies during the rotation of said carriers.

17. A machine for forming tips on lacings comprising a fixed shaft, dies for forming the tips on the lacing material, carriers for said dies, means for rotating said carriers about said shaft, and means for severing the tipped

portion of the lacing while the same is held by said dies and subsequent to the tipping operation.

18. A machine for forming tips on lacings comprising a fixed shaft, dies for forming the tips on the lacing material, carriers for said dies, means for rotating said carriers about said shaft, and cams fixed to the said shaft for actuating said dies during the rotation of said carriers.

19. A machine for forming tips on lacings comprising means for gripping the lacing material and forming the tip thereon, and means for causing said tip-forming means to travel through the arc of a circle, whereby the lacing material is kept in continuous motion to measure off the same.

20. In a machine for forming tips on lacings, means for gripping the lacing and forming a tip thereon, means for severing the tipped portion while held in said tip-forming means, and means whereby said tip-forming means may travel in a circle to carry the severed end and give a continuous feeding motion to the lacing-forming material.

21. In a machine of the class described, in combination, a rotatable support or carrier, means to rotate it, means to secure one end of a continuous lace, cord or braid to said carrier, and instrumentalities carried by said support or carrier to form a metal blank from a metal strip or ribbon, wrap or fold the said blank about the lace, cord or braid, and cut the folded blank and lace to form a tipped lacing while the lace, cord or braid is maintained in continuous motion by the rotation of said support or carrier.

22. In a machine of the class described, in combination, a movable support or carrier, means to move it continuously in one direction, means to secure one end of a continu-

ous lace, cord or braid to said carrier, and instrumentalities carried by said support or carrier to form a metal blank from a metal strip or ribbon, wrap or fold the said blank about the lace, cord or braid, and cut the folded blank and lace to form a tipped lacing while the cord or braid is maintained in continuous motion.

23. In a machine of the class described, in combination, a rotatable carrier, means to rotate it, means to secure a lace thereto, mechanism carried by said carrier for feeding a strip or sheet of metal to said lace, dies carried by said carrier to form a tip-blank from said metal strip, fold said blank about the lace and cut said folded blank and the lace enveloped thereby, and means to operate said dies.

24. In a machine of the class described, in combination, a carrier for the lace movable continuously in one direction, means to move said carrier, a strip-feeding mechanism movable with said carrier, mechanism movable with said carrier to form a tip-blank from said strip, fold it about the lace, and cut the said folded blank and the lace enveloped thereby, and means cooperating with said mechanism to operate the same while the carrier and the lace are in motion.

25. In a machine of the class described, in combination, a movable support or carrier, means to move it, dies carried by said support or carrier to bend or fold a metal blank about a lace while said support or carrier is in motion, and means to operate said dies.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE F. McCAHEY.

Witnesses:

HOWARD E. BARLOW,
E. I. OGDEN.