W. C. JAEGLE.

RIBBON CUTTER.

APPLICATION FILED FEB. 21, 1908.

995,465.

Patented June 20, 1911.

2 SHEETS—SHEET 1.

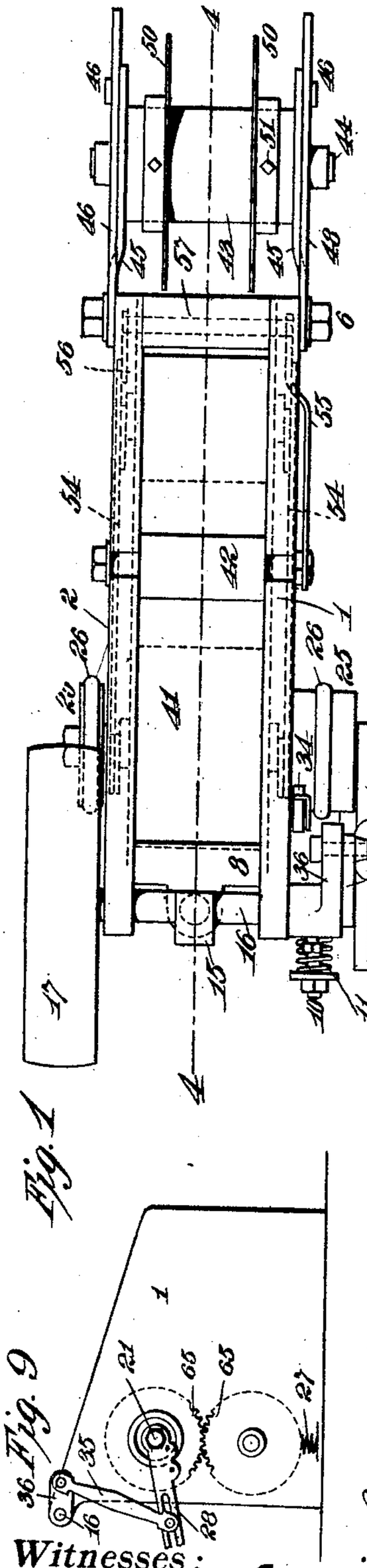

Fig. 1

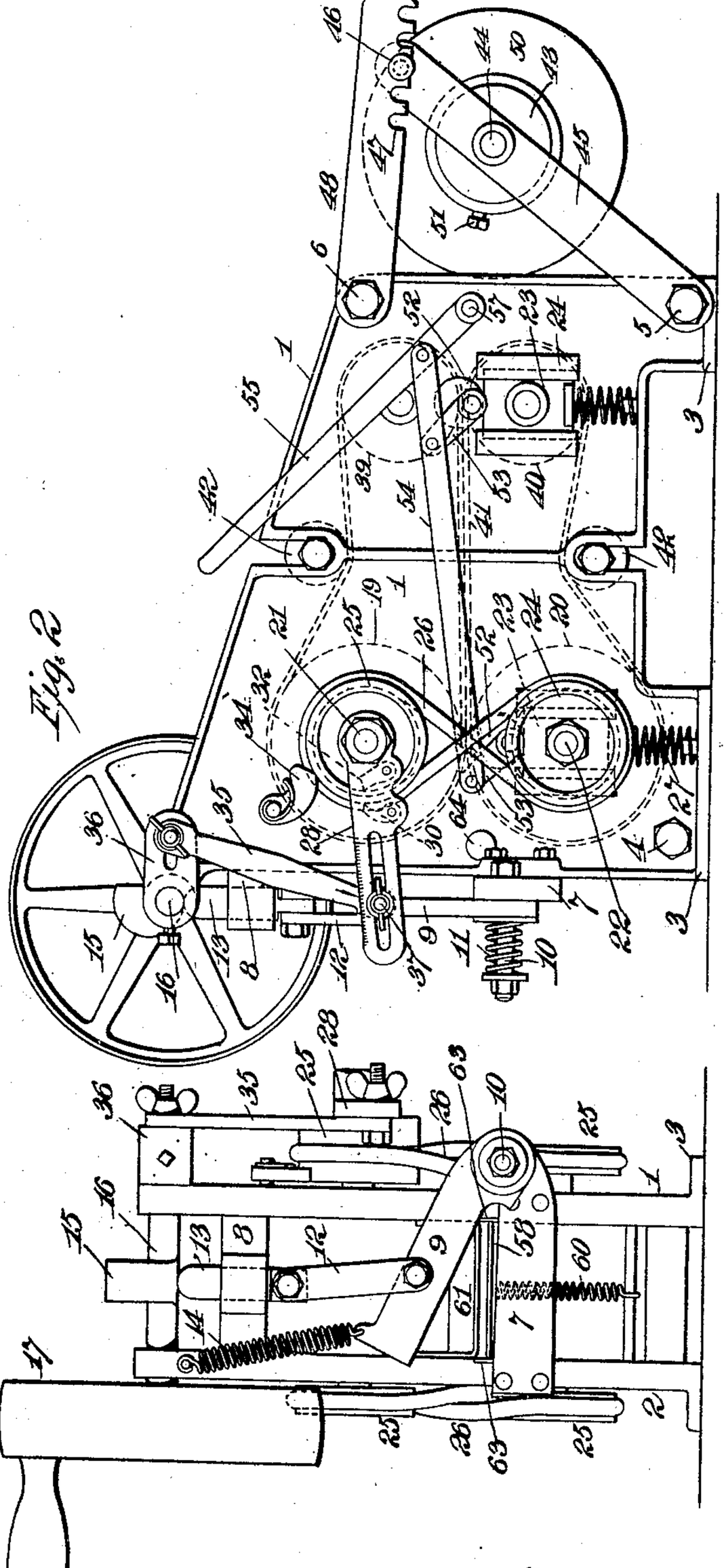

Fig. 2

Fig. 3

Fig. 4

Witnesses:

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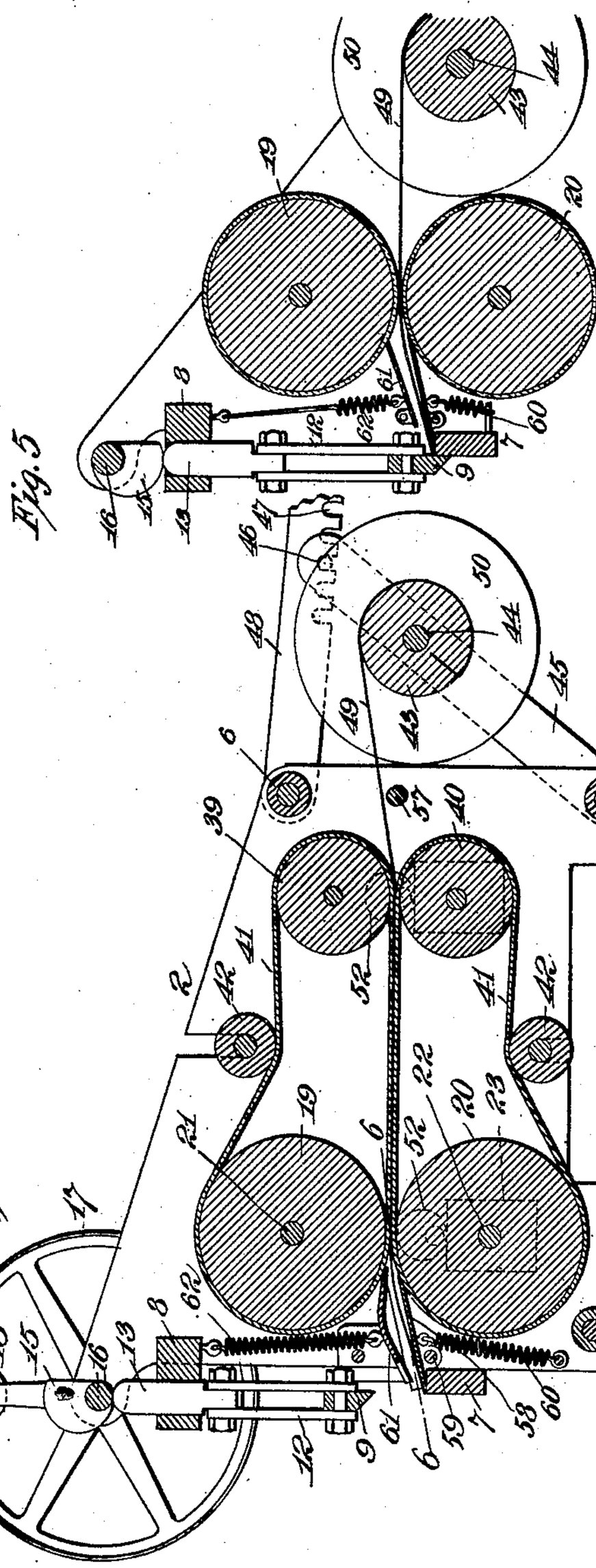

Fig. 5

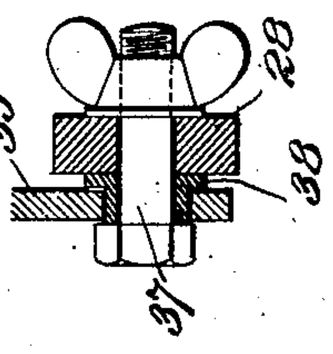

Fig. 8

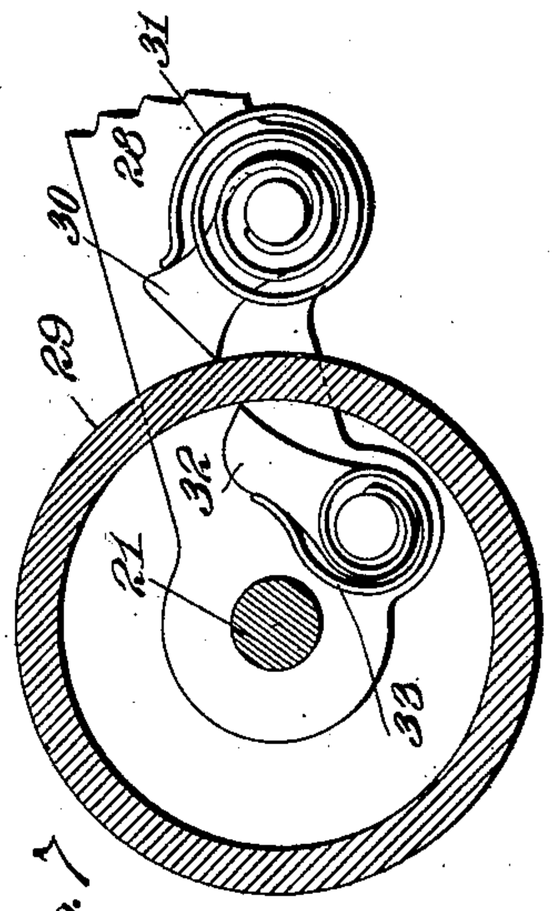

Fig. 7

Fig. 4

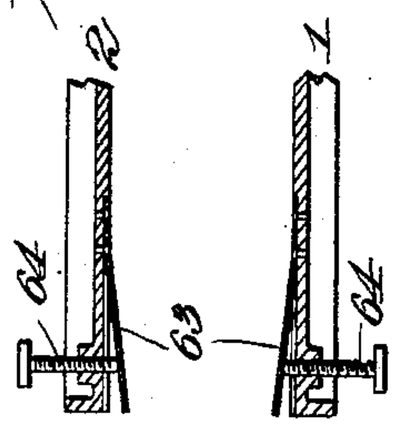

Fig. 6

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UNITED STATES PATENT OFFICE.

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RIBBON-CUTTER.

995,465. Specification of Letters Patent. Patented June 20, 1911.

Application filed February 21, 1908. Serial No. 416,961.

To all whom it may concern:

Be it known that I, WILLIAM C. JAEGLE, a citizen of the United States of America, residing in the borough of Manhattan, in the city, county, and State of New York, have invented a new and useful Ribbon-Cutter, of which the following is a specification.

The object I have in view is the production of a machine to be used in the gold, silver and other leaf art for dividing the ribbon into pieces of uniform length suitable for the mold. Heretofore, so far as I am aware, such work has been done by hand, the ribbon of definite weight being divided into a definite number of parts, such parts being measured by means of dividers and cut by shears. In the gold-beater's art it is of importance that the ribbon be of definite weight, and that all the pieces be of uniform size, so that each may be put into the mold and subjected to the hammering process, with the certain result that each leaf will be the same weight.

The object of my invention, therefore, is to produce a machine for doing what heretofore, so far as I am aware, has been accomplished by hand.

I seek to provide a machine which will accurately divide the ribbon into pieces of uniform length which may be adjusted for ribbons of different thicknesses and to cut pieces of different lengths, which will accurately and truly cut the pieces at right angles to the length of the ribbon, and which will operate very much faster and produce the cut-out sections of ribbon much quicker than has heretofore been possible by the hand operation.

These and other objects will more fully appear from the following specification and accompanying drawings considered together or separately.

In the drawings, Figure 1 is a plan view of a device embodying my invention. Fig. 2 is a side elevation of the same. Fig. 3 is an end elevation. Fig. 4 is a section taken on the line 4—4 of Fig. 1. Fig. 5 is a similar view of a modification, some parts being omitted. Fig. 6 is a sectional view on the line 6—6 of Fig. 4. Fig. 7 is a detail section, on an enlarged scale, of a portion of the driving mechanism. Fig. 8 is a detail of the driving lever connections; and Fig. 9 is a detail.

In all of the views like parts are designated by the same reference characters.

In carrying out my invention I provide a frame, which includes the side plates 1 and 2, such side plates being of the general quadrangular shape shown, and preferably being made of cast metal with a strengthening rib around the edge and across the middle, as shown in Fig. 2. The lower edges of the plates are provided with flanges 3, which constitute feet to give the frame a firm foundation. The two side plates are secured together by the bolts 4, 5 and 6, which bolts, as shown in Fig. 4, pass through spacing collars of such a length as to determine the distance of separation of the two sides plates. An additional means for connecting the two plates together are the cross pieces 7 and 8. These are suitably secured to the side plates. If desired, the side plates and cross pieces may be made of one single casting, but I prefer to make them separate, securing the cross-piece 7 to the edges of the side plates by rivets or bolts, as shown in Fig. 3. The cross-piece 7 constitutes one of the members of a pair of shears, the other member being formed by a knife 9, thus thereby constituting a cutting means for severing the ribbon into pieces. The cross-piece 7 extends beyond one side of the frame, as shown in Fig. 3, and forms a bearing for the bolt or pin 10, which constitutes an axle for the knife 9. A spring 11, coiled around the bolt or pin 10, serves as a means for engaging the knife and the cross-piece together with elastic pressure, so that when the knife is moved up and down its shearing edge will engage with one edge of the cross-piece 7, and will cut the ribbon which passes between the knife and cross-piece. This edge of the cross-piece 7 which engages with the knife should be properly shaped and formed of a material which will keep the proper edge and will withstand wear. The form of cutting mechanism illustrated may be changed as desired.

The knife 9 is reciprocated by means of mechanism which includes a pair of links 12, which are connected at one end to the knife at about its middle and at the other end to a pin or plunger 13, which passes

through a bearing formed in the cross-piece 8. The connections between the knife, links and plunger are through bolts, as shown, so that the plunger can move up and down in a strictly rectilinear path, and at the same time permit the knife to swing upon its pivot. The knife is normally elevated by means of a spring 14. The upper end of the plunger 13 is rounded, as shown, and is adapted to engage with a cam 15, such cam being carried upon a shaft 16, such shaft turning in bearings formed in the side plates 1 and 2. The shaft 16 is adapted to be constantly rotated when the machine is in operation by means of a pulley 17 or a crank 18. The pulley may be turned by means of a belt (not shown) operated by any suitable source of power. The shape of the cam 16 is shown in Fig. 4. It is best made of the shape of a mutilated circle, the center of the shaft being eccentric to the center of the circle. The pulley being rotated in the direction of the arrow (shown in Fig. 4) will slowly depress the knife against the tension of the spring 14 until the knife has come in contact with the edge of the cross-piece 7. The upper end of the plunger 13 engaging now with the flat face of the cam will be quickly elevated through the agency of the spring 14. During this period of movement, the feeding mechanism, about to be described, will be actuated.

The feeding mechanism includes the mutually engaging rolls 19 and 20. These rolls are carried respectively upon the shafts 21 and 22. The bearings of these shafts are carried in the side plates 1 and 2. The bearings of the shaft 21 are shown as unadjustable, but the bearings for the shaft 22 are adjustable toward and away from the roll 19. The means for obtaining this adjustability comprises the bearing boxes 23, which slide in recesses or ways formed in tracks 24, such tracks being attached to the outside of the side plates. These tracks are parallel, and the sides of the boxes 23 are also parallel. The shaft 22, therefore, is free to move up and down in accordance with a suitable mechanism which will be described. For the purpose of rotating the feed rolls the extremities of their supporting shafts are provided with grooved pulleys or sheaves 25. An endless belt 26, of preferably elastic material, connects the pulleys on the shafts 21 and 22. These belts are crossed, as shown, so that the rolls will be rotated in opposite directions. The bearing boxes 23 are elevated to cause the rolls 19 and 20 to engage together by means of springs 27, such springs as shown being on the outside of the side plates.

The rolls 19 and 20 are adapted to be intermittently rotated during the period of time when the cutting mechanism is at rest. This rotating mechanism is positive in its action and is capable of being adjusted so that the speed of rotation may vary in relation to the speed of rotation of the shaft 16, and in relation to the number of movements that the knife 9 may make. The rotating mechanism includes a lever 28, which is carried upon an extension of the shaft 21. The grooved pulley upon that side has an extended rim forming a cylinder or barrel 29, as shown in Fig. 7. The inner and outer surfaces of this barrel are smooth, and have no teeth or corrugations. The lever 28 carries a dog 30 pivoted to it and caused to engage with the outer surface of the barrel by means of a spring 31. A similar dog 32, also pivoted to the lever 28, engages with the inner surface of the barrel 29, and is kept in such engagement by means of a spring 33. The point of engagement of the two dogs with the outer and inner surfaces of the barrel is preferably at points opposite to one another, so that the barrel will be gripped in such a manner that there will be no lost motion between the lever 28 and the barrel. These dogs permit the lever 28 to be moved in one direction without rotating the barrel, or they will grip with the inner and outer surfaces of the barrel and impart rotary movement from the lever to the barrel when the former is moved in the opposite direction. A third dog 34, pivoted to one of the side plates of the frame, is engaged by means of a spring (as shown) with the barrel, and prevents it turning in the reverse direction during the idle movement of the lever 28.

The lever 28 is alternately elevated and lowered by means of a pitman or link 35, connected to it by a pivotal joint at one end, and connected at the other end through a pivotal joint to a crank or lever 36, which crank or lever 36 is carried by the shaft 16, and is rotated thereby. The crank 36 and the lever 28 are each provided with a slot, so as to adjust the effective lengths of each. The connection between the pitman 35 and the lever 28 is shown in Fig. 8. A bolt 37 passes through the opening in the end of the pitman and through the slot formed in the lever 28. For the purpose of rigidly connecting the bolt within a definite part of the length of the slot and at the same time to keep from jamming the joint between the lever and pitman, a flanged sleeve 38 surrounds the bolt 37, and lies within the opening in the pitman 35. The flange of this sleeve may be jammed against one side of the lever 28 by means of the nut on the bolt 37. The head of the bolt will engage with the body of the flange, which body is longer than the thickness of the pitman 35, as shown. The same arrangement may be used for connecting the pitman 35 to the crank 36. The lever 28 is

shown as provided with a scale, and the pitman is provided with a marker, as shown, for the purpose of indicating the effective length of the lever 28 accurately without the need of empirically trying the machine.

The two rollers 19 and 20 may be used together as shown in Fig. 5, but I prefer to employ additional rollers 39 and 40. These rollers are supported by the shafts similar to the shafts 21 and 22, and the lower of the two shafts may be mounted in an adjustable bearing similar to that described in connection with the shaft 22. The rollers may be adapted to engage with the ribbon for the purpose of feeding it to the knife, as shown in Fig. 5, or they may engage with the ribbon through the intermediary of endless belts 41—41, such belts being engaged together through the agency of the rollers 19, 20, 39 and 40. Additional rollers 42 may be employed for imparting tension to the belts. The shafts of these rollers pass through notches in the side plates, as shown in Fig. 4, and are adjusted in position by means of nuts, as shown in Figs. 1 and 2.

The work support includes a roller, drum or spool 43, which is supported upon a shaft 44. The shaft 44 is carried upon links 45, which are pivoted upon the bolt 5 near the bottom of the frame, the free ends of the links are provided with pins 46, which are adapted to be engaged within a notch 47, carried upon a lever 48. Two of these levers are provided one on each side of the spool 43, and adapted to engage with each of the links 45. The levers 48 are pivoted to the bolt 6, and the notch 47 rests in engagement with the pins 46, and is held in such position by the weight of the lever 48. A plurality of notches 47 is provided, so that the inclination of the links 45 may be varied and the position of the spool 43 can be changed in relation to the feed rollers. The ribbon 49 is adapted to be rolled upon the spool 43, the beginning being inserted in a notch or slot formed in the spool, as shown in Fig. 4. The spool is provided with flanges 50—50 (see Fig. 1), such flanges being adjustably mounted upon the spool and held in position by any suitable means, such as the set screws 51.

For the purpose of separating the feed rollers when the ribbon is being entered between them, I provide means for simultaneously moving the bearing boxes 23 on both sides of the shaft 22, and on both sides of the shaft which supports the roll 40. This means, as shown, consists for each end of each shaft of a cam or eccentric 52 carried in a fixed bearing on the outside of the side plates 1 and 2, and engaged with the bearing box. The bearing box is lifted by means of the spring 27 into engagement with such cam or eccentric. It is to be understood that there is an eccentric provided for each box. These eccentrics are simultaneously moved through the mechanism which includes the levers 53 and link 54. The link 54 is moved through the agency of a hand lever 55. This hand lever is upon one side only of the machine, the corresponding link 54 on the other side being actuated by means of a lever 56, the levers 55 and 56 being connected together through a shaft 57. This mechanism described is arranged outside of the side plates, so that the full available width of the frame inside is available for the passage of a ribbon of the maximum width.

For the purpose of guiding the ribbon from the feed rolls 19 and 20 to the cutting apparatus, I provide a table 58. This table is supported by the frame and rests upon the cross-piece 7 and comes in close engagement with the roller 20. The table is best supported upon a pivotal mounting 59 and is held in elastic engagement with the periphery of the roll 20 or with the belt 41 which surrounds it, by means of a spring 60. This table therefore serves the double purpose of a support for the ribbon for feeding it from the rollers to the knife and also for stripping or removing the ribbon from the rollers or belt to prevent it winding up on one of the rollers. For the purpose of stripping or removing the ribbon from the upper roller 19, a plate 61, similar to the table 58, may be employed, such plate being pivoted, as shown in Fig. 4, and elevated into elastic engagement with the roller or belt by means of a spring 62.

For the purpose of centering the ribbon when it happens to be of less width than the space between the side plates 1 and 2, I may employ the device illustrated in Fig. 6. This device comprises the two guides or spring plates 63, each secured at one end to the side plate 1 or 2 and free at the other end. They are moved toward one another by means of the adjusting screws 64. The free ends of the spring plates lie in juxtaposition to the knife and coincident to the discharge end of the table 58.

The operation of the device is as follows: The ribbon, of gold, silver, aluminum or other metal, preferably of known thickness and of uniform width, without creases or wrinkles, is wound upon the spool 43 to the requisite amount. The pins 46 are adjusted in one of the notches 47 so that the ribbon holder is at the proper distance from the feed roll. These rolls are now separated by means of the lever 55, and the ribbon fed between the rolls and between the belts a sufficient distance so that it will be gripped when the lever 55 is released, and the rolls pressed together by means of the springs 27. The effective length of the crank 36 and lever 28 having been adjusted by means of the scale and a table prepared for that purpose, the shaft 16 is caused to rotate and the

ribbon is fed by means of the feed rollers intermittently to be acted upon by the cutting mechanism.

As already described, the feeding rollers will be intermittently rotated by the elevation of the lever 28, engaging the dogs 30 and 32 with the barrel 29. This will take place when the cam 15 is in engagement at its idle or mutilated portion with the plunger 13. The dogs 30 and 32 will positively engage with the barrel 29 without slip or other lost motion, and the amount turned will be the same during every reciprocation of the lever 28. Therefore, exactly the same amount of ribbon will be fed to the cutting mechanism between each operation of the latter. The cutting mechanism when operated, as described, will cleanly and accurately cut the ribbon at right angles to its length. This is an important advantage over the hand-operated shears which heretofore, as I am aware, have been used, for by the latter, even though the lengths of the sections of ribbon have been accurately marked off by the dividers, there is a chance of the operator holding the shears at an angle to the ribbon and not cutting it square to its length. As the ribbon is fed into the machine and the diameter of the roll upon the spool 43 diminishes, the links 45 may be adjusted toward the feed rolls, so that the distance between the ribbon on the spool and the feed rolls may be made constant.

By the modification shown in Fig. 5, which is particularly useful for cutting ribbons of gold, it is desirable that the spool 43 be as close to the rolls as possible. In this structure, it is to be understood that the faces of the roll may be covered with a material which will grip but not injure the ribbon. The same is true of the belts 41, when such are used. When ribbon of less than the maximum width is used, the spring plates 63 may be adjusted, so that the ribbon will be passed through the center of the machine, and will be accurately cut by the knife.

By my device the ribbon is cut into accurate lengths, all of uniform width, without wrinkling or tearing the ribbon, and much more accurately and with much greater speed than has heretofore been the case with the manual operation, which I believe has been generally used before the invention of my machine.

Fig. 9 illustrates a modification in which spur gears 65—65 are used in place of the belt 26 and pulleys 24 and 25.

It is to be understood that if it is necessary or desirable to impart tension to the ribbon, the same can be secured by tightening the ends of the bolt 5, clamping the links 45 with varying degrees of pressure against the side plates 1 and 2. This will rest the links 45 against the ends of the spool 43, imparting the desired amount of tension to the ribbon.

In accordance with the provisions of the patent statutes, I have described the principle of my invention together with the apparatus which I now consider to represent the best embodiment thereof, but I desire to have it understood that the apparatus shown is merely illustrative and that the invention can be carried out in other ways.

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

1. A machine for dividing ribbon into pieces of uniform lengths, having in combination a frame, a plurality of feeding rolls, means engageable with a roll for stripping off the ribbon therefrom and means for cutting the ribbon.

2. A machine for dividing ribbon into pieces of uniform lengths, having in combination a frame, rolls within the frame, and adjustable means for causing the ribbon to be fed through such rolls on the center line thereof.

3. A machine for dividing ribbon into pieces of uniform lengths, having in combination means for cutting the ribbon, means for feeding the ribbon, and means for supporting a roll of ribbon, the said supporting means being carried upon links with a pivoted lever having notches adapted to engage with such links.

4. A machine for dividing ribbon into pieces of uniform lengths, having in combination cutting means, and feeding means, the said feeding means including a pawl connection, which includes a slotted lever and means connected with the lever, the said means being adjustable toward and away from the center of movement of the roller and a cam so co-acting with the feeding means as to actuate the cutting means during the idle movement of the pawl connection.

This specification signed and witnessed this 15th day of February 1908.

WILLIAM C. JAEGLE.

Witnesses:
LEONARD H. DYER,
JOHN L. LOTSCH.