Feb. 16, 1943. C. CITO 2,311,368

MEANS FOR TRANSFORMING A ROTARY TO A RECIPROCATORY MOTION AS APPLIED TO CUTTING MACHINES

Filed March 22, 1941 2 Sheets-Sheet 1

Fig. 1.

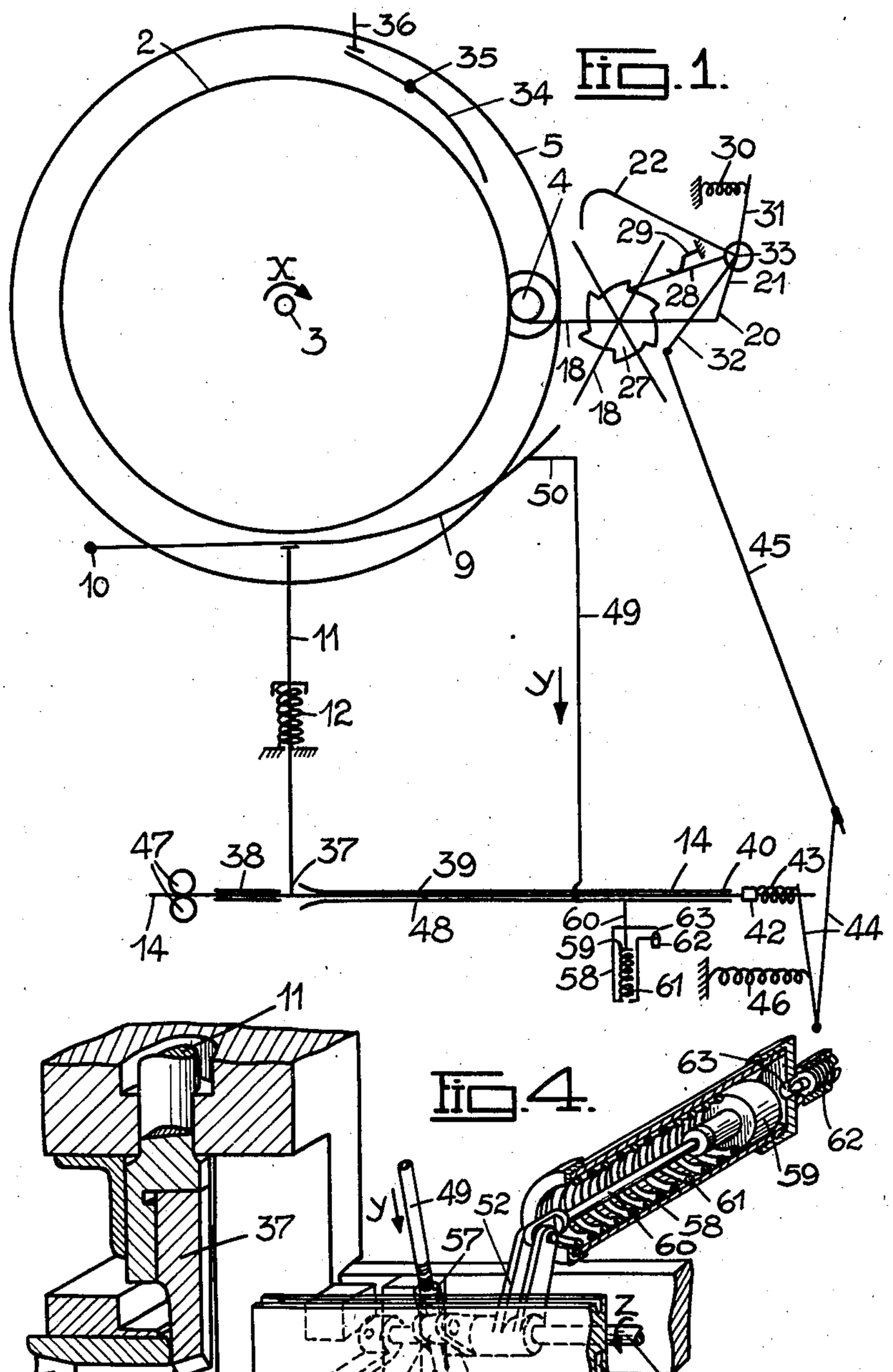


Fig. 4.

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Fig. 2.

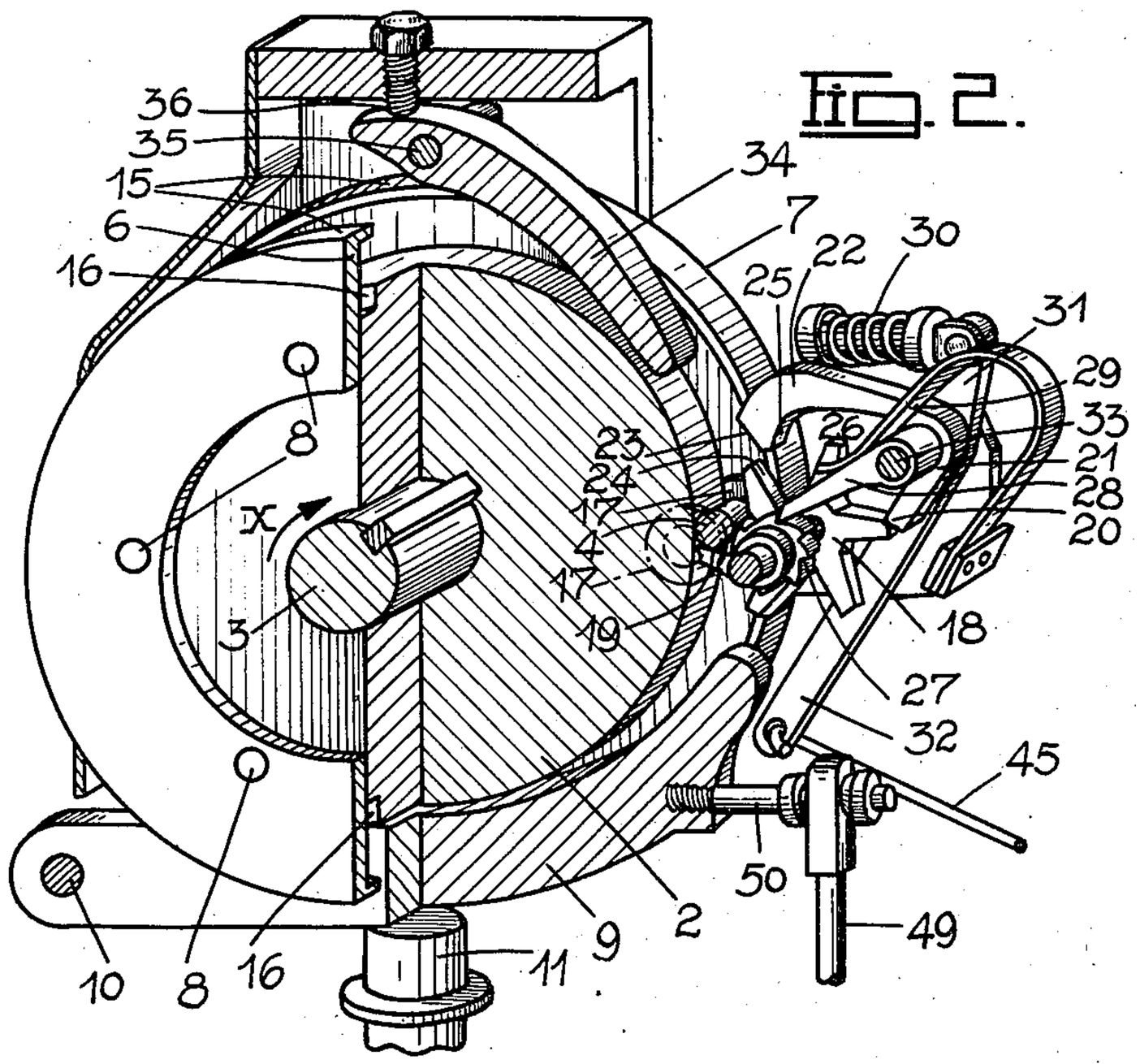
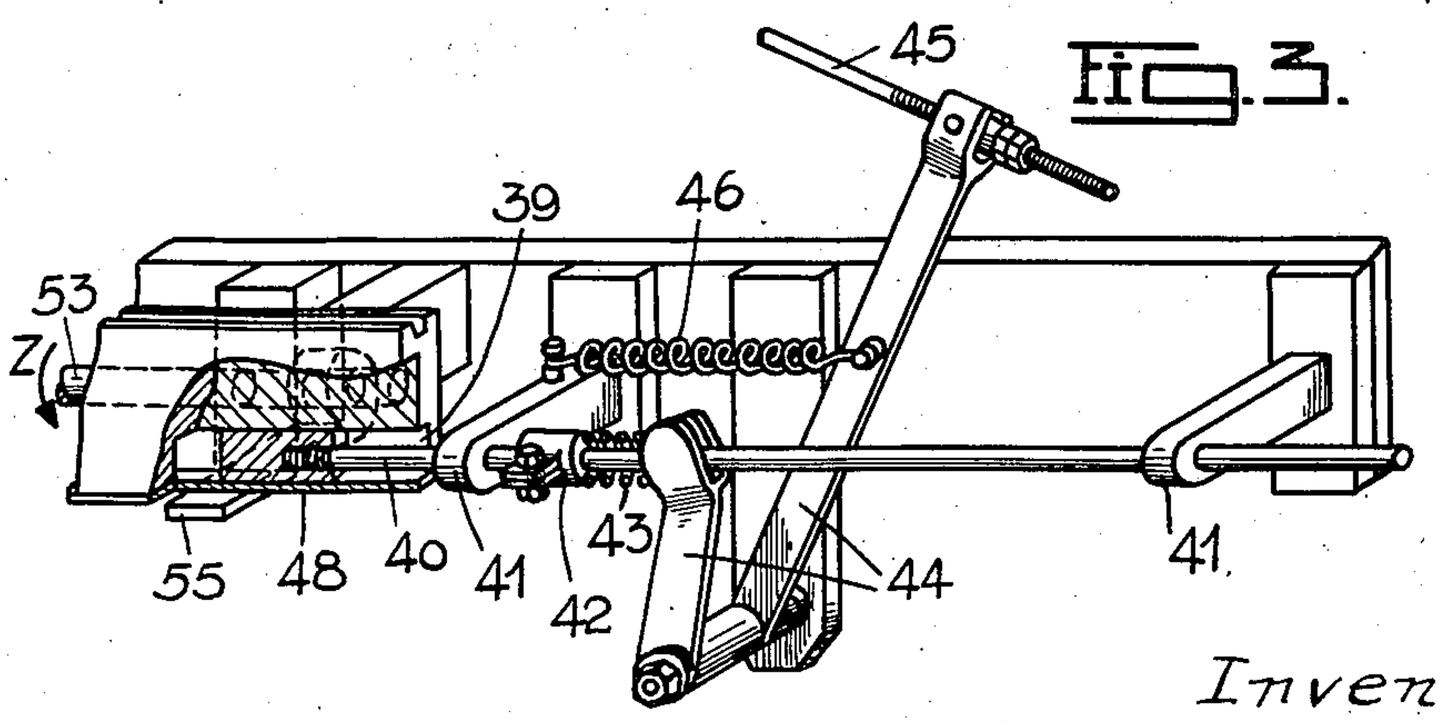


Fig. 3.



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UNITED STATES PATENT OFFICE

2,311,368

MEANS FOR TRANSFORMING ROTARY TO RECIPROCATORY MOTION AS APPLIED TO CUTTING MACHINES

Camillo Cito, Uccle-Brussels, Belgium; vested in the Alien Property Custodian

Application March 22, 1941, Serial No. 384,768
In Belgium April 4, 1940

20 Claims. (Cl. 164—47)

The present invention relates to guillotine shears embodying a mechanism for transforming a continuous movement off rotation into an alternating movement of translation, in which a rolling member is interposed between a rotating disc and the tool holder with an alternating movement which is permanently urged to occupy a position from which it is pushed back in consequence of the rotation of the disc.

Mechanisms of this kind are known in which a roller is carried by the piece to be moved and receives the push of the disc which is excentrically mounted relatively to its axis of rotation or is provided with a cam at its periphery.

In the known mechanisms the shaft of the roller, the dimensions of which are relatively small, has to sustain the impact due to the engagement of the disc with the roller which results in relatively rapid damage of this shaft.

The primary object of the present invention is to provide a mechanism which does not present this disadvantage.

According to the invention, said rolling member is freely mounted between the periphery of the disc and a guide concentric to the latter, in the median part of which the tool holder to be moved with an alternating movement penetrates, said rolling member pushing back said holder when it is carried round between said holder and the disc, and means being provided for restoring the rolling member to normal position after each actuation of the tool holder.

According to an advantageous embodiment, the speed of rotation of the disc is sufficient to impart to the rolling member a speed such that after having pushed back the tool holder, it may roll back into a position wherein it may again be forced away by the disc between the latter and the tool holder. In this case, the speed of rotation constitutes the means for restoring the rolling member to its working position every time after it has pushed back the reciprocatory tool holder.

Other objects of the invention and mechanisms for acheiving them will now be described and claimed.

The drawings accompanying the present specification show schematically and by way of example only, shears according to the invention comprising the aforesaid mechanism for transforming a continuous movement of rotation into an alternating movement of translation.

Figure 1 shows by means of some schematic lines a shearing machine according to the invention.

Figure 2 shows in perspective, in vertical section, the upper part of the shearing machines shown in Figure 1.

Figure 3 is a perspective view, with breaking away of some parts, of the lower part of the shearing machine shown in Figure 1.

Figure 4 is a view on an enlarged scale and partly in section of a portion of Figure 1.

In these various figures, the same references apply to identical elements.

The shears shown in Figure 1, comprise a disc **2** keyed on an horizontal shaft **3** which rotates in the direction of the arrow X, at great speed, for example at approximately 3000 revolutions per minute. A roller **4** is freely mounted between the periphery of this disc and a guide **5** concentrical to the latter. This guide **5** is constituted by two flanges **6** and **7** (Figures 2) which are secured to the disc **2** by securing means diagrammatically shown at **8**.

Between the flanges **6** and **7** penetrates an arm **9** pivoting at **10** and surmounting a rod **11** carrying the tool, this rod being permanently urged by a spring **12** (Figure 1) to occupy a position in which the pivoting arm **9** is in the path of the roller **4** when the latter is carried around between the disc **2** and the concentric guide **5**.

When during this displacement of the roller **4**, the latter comes in contact with the pivoting arm **9**, if the angle that the latter makes with the disc is sufficiently small, it pushes back this arm against the spring **12**. This angle depends on the coefficient of friction between the bodies in contact.

For machined pieces in steel, the angle adopted is, for example, 6° if the disc **2** has a diameter of 150 millimeters and the roller **4** a diameter of 12 millimeters.

As soon as the roller **4** is beyond the position overlying the rod **11**, the latter goes up under the action of spring **12**. If the rod **11** holds a cutter **37**, during its lowering, it shears a piece to be sheared such as a wire **14** disposed under this cutter.

When the rolling member constituted by the roller **4** has passed the part of the pivoting arm **9** against which it is pushed by the disc **2**, it is necessary, to render possible a new shearing, that said rolling member be brought back into a position in which it is ready to work, such as the position in which it is shown.

The two flanges **6** and **7** secured to the disc **2** have inwardly facing edges **15**. The peripheral part of the disc possesses moreover two grooves symmetrically situated relatively to the median

plane of the disc. One of these grooves is shown at 16. Owing to these grooves, said flanges are thus mounted in such a manner as to form between them and the peripheral part of the disc lodgings for peripheral flanges 17 at the extremities of the roller 4. These peripheral flanges serve to suitably guide the roller during its displacement.

In order that each shearing operation may be controlled at will, there is provided a device for stopping the roller 4 on the path followed by the latter, in advance of the plates where the pivoting arm 9 is situated on said path, this stopping device being so mounted that it may liberate the roller 4 at the desired moment.

The stopping device shown is situated at the level of the axis of rotation of the disc 2. It is constituted by a rotatable star 18 one branch 19 of which is maintained across the path of the rolling member when a movable stop 20 is in a position which prevents the star from rotating. The various branches of the latter are angularly spaced one from the other by an angle such that when the star rotates for permitting the roller 4 to pass, another branch immediately comes across the path of the roller in order to stop the latter after the disc has forced it to make a revolution.

The movable stop 20 is constituted by one of the arms of a crank lever 21, a second arm 22 of which is so disposed that when the pivoting movement which causes the liberation of the star is continued, this second arm obliges said star to rotate after its liberation, by a face 23 on the arm 22 striking against the rear face 24 of one of the branches of the star. In the position that it then occupies the arm 22 stops the movement of rotation of the star that it has produced, its face serving as abutment against the front face 26 of the following branch.

The second arm 22 of the crank lever 21 is at such an angle to the first arm 20 that when the crank lever 21 is brought back to its initial position, it does not leave the star branch whose front face 23 is in abutment with it, until the first arm 20 is again in a position in which it prevents rotation of the star.

In order to prevent a movement of rotation of the star 18 in the direction opposite to that which releases the roller 4, this star is secured to a ratchet wheel 27 which cooperates with a pawl 28 permanently maintained engaged by a spring 29. The movable stop 20 is permanently urged towards the position for which it stops the star 18 under the action of a spring 30 acting on an arm 31 of a lever 32 fixed on the pivot 33 of the crank lever 21.

In order to prevent a too violent shock of the roller 4 on the branch of the star 18 which retains this roller when it is brought back into the position shown, there is provided a device for braking this roller constituted by an arm 34 oscillating around a pivot 35. This arm is permanently urged under the action of its weight to occupy a position in the path of the roller. It is however maintained somewhat spaced from the rotatable disc 2 by an abutment 36. The position occupied by the arm 34 has moreover the effect of preventing the roller 4 from rebounding from the branch 19 of the star to the position it occupied on leaving the pivoting arm 9.

The shears shown in Figure 1 are constructed in such a manner that they automatically shear the wire 14 as soon as the latter has passed over the desired length beyond the tool or cutter 37 (Figure 4) which is mounted at the lower extremity of the rod 11. The wire to be sheared is introduced into a guide 38 serving as counter tool. After having passed beyond the tool 37, the wire continues to be guided in a guide 39. When the desired length extends beyond the guide 38, the end of the wire 14 comes in contact with a rod 40 (Figures 1 and 3) guided in bearings 41. This rod carries a catch 42 adjustable thereon. A spring 43 is interposed between said catch and an arm of a crank lever 44 connected to a rod 45 which at its other end is connected to the lever 32.

The lever 44 and consequently the rod 40 are permanently urged by a spring 46 towards a position for which the movable stop 20 stops the star 18 in the position for which it retains the roller 4. The spring 43 possesses a stiffness such that it is not compressed when its maximum load is equal to the passive resistance of all the part of the mechanism comprised between it and the device for stopping the roller. This spring however undergoes compression if, after the crank lever 21 has completed its pivotal movement, the wire to be sheared continues to advance. Such a spring can be useful when the advancement of the wire 14 is continuous manner, for example, by drive rollers 47 (Figure 1).

It is however to be noted that when disc 2 rotates at great speed, the shearing is practically instantaneous from the moment the movable stop 20 liberates the star 18.

In order that the portion to be sheared from the wire 14 shall come in contact with the extremity of the rod 40, even when the wire is of small diameter, the guide 39 possesses a bottom 48 (Figures 1, 3 and 4). But at the moment when the shearing is effected, the sheared portion must be instantaneously evacuated in order to immediately permit the introduction of another wire length into the guide 39. For this reason the bottom 48 is movably mounted. The removal of this bottom is caused during the shearing movement by the displacement of the pivoting arm 9 which is displaced at the same time as the rod 11 holding the tool 37. The mechanical connection provided between the bottom 48 and the pivoting arm 9 comprises, for example, a rod 49 (Figures 1, 2 and 4) connected, on the one hand, to a projection 50 of the arm 9 and, on the other hand, to one arm 51 of a crank lever 52 keyed on a shaft 53. On the latter, are keyed two bars 54 (Figure 4) and 55 (Figure 3) on which the bottom 48 is secured.

As may be easily seen on Figures 1 and 4, the lowering of arm 9 at the moment of the shearing of the wire 14 causes the displacement of the rod 49 in the direction of the arrow Y and, consequently, the pivoting of the crank lever 52 and of the shaft 53 in the direction of the arrow Z. This pivotal movement removes the bottom 48 away from the guide 39 and, consequently, causes the fall of the wire portions just sheared.

In order to prevent the bottom 48 from returning too rapidly against the guide 39 under the action of the sudden raising of the pivoting arm 9 caused by the spring 12, the rod 49 is not rigidly connected to the arm 51 of the crank lever 52. The rod 49 freely slides in an aperture provided in a sleeve 56 which pivots at the extremity of the arm 51. A nut 57 of adjustable position on the rod 49 abuts against the exterior face of this sleeve in order to oblige the lever 52 to tilt in the direction of arrow Z when the rod 49 is moved in the direction of arrow Y. But, when the rod 49 is

moved in the reverse direction, it freely slides in the sleeve 56 without causing the bottom 48 to approach the guide 39.

This approach is effected by a mechanism put under tension during the shearing and acting more slowly on the bottom than the rod 11 carrying the tool 39 would have done it when rising under the action of spring 12. This mechanism is constituted by a dash-pot comprising a cylinder 58 (Figures 1 and 4) in which is mounted a piston 59, the rod of which is connected to the crank lever 52 (Figure 4.)

When the crank lever 52 pivots in the direction of the arrow Z, a spring 61 is compressed the elongation of which causes the closing of the bottom 48. The elongation speed of this spring is adjusted by the position of a screw 62 whose point engages an orifice 63 through which the air contained in the cylinder 58 behind the piston 59 escapes during the closing of the bottom.

It is evident that the invention is not exclusively limited to the embodiment shown.

What I claim is:

1. Guillotine shears, comprising a rotating disc, a guide concentric to said rotating disc, a rolling member freely mounted between the periphery of the disc and the guide, a tool holder penetrating into said guide sufficiently close to the periphery of the disc to be reciprocated by the rolling member when the latter is carried round by the disc, and means for permanently urging said tool holder towards said disc, the speed of rotation of the disc being sufficient to impart to the rolling member a speed such that after having actuated said tool holder, it returns to a position to repeat the actuation.

2. Guillotine shears, comprising a rotating disc, flanges secured to the latter at its periphery and having edges directed one towards the other, a rolling member freely mounted between the periphery of the disc and said edges, a tool holder penetrating between said edges sufficiently close to the periphery of the disc to be reciprocated by the rolling member when the latter is carried round by the disc between the same and said holder, means for permanently urging said tool holder towards said disc, and means for returning the rolling member to normal position after it has actuated said tool holder.

3. Guillotine shears, comprising a rotating disc with a horizontal axis of rotation, flanges secured to said disc at its periphery and having edges directed one towards the other, said disc having grooves parallel to its median plane and between the periphery of the disc and the flanges, a roller freely mounted between the periphery of the disc and said edges with its axis of rotation parallel to the axis of rotation of the disc said roller having peripheral flanges engaged in said grooves, a tool holder penetrating between said edges sufficiently close to the periphery of the disc to be reciprocated by the roller when the latter is carried round by the disc between the same and said holder, means for permanently urging said holder towards said disc, and means for restoring the rolling member to normal position after it has actuated said tool holder.

4. Guillotine shears, comprising a rotating disc, a guide concentric to said rotating disc, a rolling member freely mounted between the periphery of the disc and the guide, a tool holder penetrating into said guide sufficieintly close to the periphery of the disc to be reciprocated by the rolling member when the latter is carried round by the disc between the same and said holder, means for permanently urging said holder towards said disc, means for restoring the rolling member to normal position after it has actuated said tool holder, a rotating star with several branches movable into the path of the rolling member when the star rotates said branches being spaced by an angle such that when the star rotates to release the rolling member another branch immediately comes into the path of the rolling member to stop the latter after it has completed a revolution, and a movable stop for stopping said star with one of its branches in the path of the rolling member.

5. Guillotine shears, comprising a rotating disc, a guide concentric to said rotating disc, a rolling member freely mounted between the periphery of the disc and the guide, a tool holder penetrating into said guide sufficiently close to the periphery of the disc to be reciprocated by the rolling member when the latter is carried round by the disc between the same and said holder, means for permanently urging said holder towards said disc, means for restoring the rolling member to normal position after it has actuated said holder, a rotating star with several branches movable into the path of the rolling member when the star rotates said branches being spaced by an angle such that when the star rotates to release the rolling member another branch immediately comes into the path of the rolling member to stop the latter after it has completed a revolution, a movable stop for stopping said star with one of its branches in the path of the rolling member, and a crank lever having one arm serving as abutment for one of the branches of the star and a second arm operative to further rotate the star upon continued rotation of the crank lever after said release and then to stop the rotation of the star by engaging the front face of the following branch.

6. Guillotine shears, comprising a rotating disc, a guide concentric to said rotating disc, a rolling member freely mounted between the periphery of the disc and the guide, a tool holder penetrating into said guide sufficiently close to the periphery of the disc to be reciprocated by the rolling member when the latter is carried round by the disc between said disc and said holder, means for permanently urging said holder towards said disc, means for restoring the rolling member to normal position after it has actuated said holder, a rotating star with several branches movable into the path of the rolling member when the star rotates and spaced by an angle such that when the star rotates to release the rolling member, another branch immediately comes into the path of the rolling member to stop the latter after it has completed a revolution, a movable stop for stopping said star with one of its branches in the path of the rolling member, and a crank lever having one arm serving as abutment for one of the branches of the star and a second arm operative to further rotate the star upon continued rotation of the crank lever after said release and then to stop the rotation of the star by engaging the front face of the following branch, the second arm of this crank lever being at such an angle to the first one that when the crank lever returns to initial position, it remains engaged with the front face of one branch of the star until the first arm of the same crank lever returns to a position wherein it prevents rotation of the star.

7. Guillotine shears, comprising a rotating disc, a guide concentric to said rotating disc, a rolling

member freely mounted between the periphery of the disc and the guide, a tool holder penetrating into said guide sufficiently close to the periphery of the disc to be reciprocated by the rolling member when the latter is carried round by the disc between said disc and said holder, means for permanently urging said holder towards said disc, means for restoring the rolling member to normal position after it has actuated said holder, a rotating star with several branches movable into the path of the rolling member when the star rotates and spaced by an angle such that when the star rotates to release the rolling member another branch immediately comes into the path of the rolling member to stop the latter after it has completed a revolution, a movable stop for stopping said star with one of its branches in the path of the rolling member, a ratchet wheel secured to said star, and a pawl cooperating with said ratchet wheel in order to prevent back turning of the star.

8. Guillotine shears, comprising a rotating disc, a guide concentric to said rotating disc, a rolling member freely mounted between the periphery of the disc and the guide, a tool holder penetrating into said guide sufficiently close to the periphery of the disc to be reciprocated by the rolling member when the latter is carried around by the disc between said disc and said holder, means for permanently urging said holder towards said disc, means for restoring the rolling member to its normal position after it has actuated said holder, a rotating star with several branches movable into the path of the rolling member when the star rotates and spaced by an angle such that when the star rotates to release the rolling member another branch immediately comes into the path of the rolling member to stop the latter after it has completed a revolution, a movable stop for stopping said star with one of its branches in the path of the rolling member, and means for permanently urging said movable stop towards star arresting position.

9. Guillotine shears, comprising a rotating disc, a guide concentric to said rotating disc, a rolling member freely mounted between the periphery of the disc and the guide, a tool holder penetrating into said guide sufficiently close to the periphery of the disc to be reciprocated by the rolling member when the latter is carried round by the disc between said disc and said holder, means for permanently urging said holder towards said disc, means for restoring the rolling member to normal position after it has actuated said holder, means for arresting the rolling member in its path in advance of the place of encounter with said tool holder, said means being adapted to release the rolling member, and means for braking the rolling member in advance of the arresting means.

10. Guillotine shears, comprising a rotating disc, a guide concentric to said rotating disc, a rolling member freely mounted between the periphery of the disc and the guide, a tool holder penetrating into said guide sufficiently close to the periphery of the disc to be reciprocated by the rolling member when the latter is carried round by the disc between said disc and said holder, means for permanently urging said holder towards said disc, means for restoring the rolling member to normal position after it has actuated said holder, means for arresting the rolling member in its path in advance of the place of encounter with said tool holder, said means being adapted to release the rolling member, an oscillating arm disposed on the path of the rolling member in advance of the arresting means, means for permanently urging said oscillating arm towards said path, and means for maintaining said oscillating arm at a short distance from the rotating disc.

11. Guillotine shears, comprising a rotating disc, a guide concentric to said disc, a rolling member freely mounted between the periphery of the disc and the guide, a tool holder penetrating into said guide sufficiently close to the periphery of the disc to be reciprocated by the rolling member when the latter is carried round by the disc between said disc and said tool holder, means for permanently urging said tool holder towards said disc, means for restoring the rolling member to normal position after it has actuated said tool holder, means for arresting the rolling member in its path in advance of the place of encounter with the tool holder said means being adapted to release the rolling member, a stop arranged to be pushed back by the object to be sheared when the latter extends beyond the tool for the desired length, and means for releasing the rolling member between said stop and said arresting means, said release means being actuated by said stop.

12. Guillotine shears, comprising a rotating disc, a guide concentric to said disc, a rolling member freely mounted between the periphery of the disc and the guide, a tool holder penetrating into said guide sufficiently close to the periphery of the disc to be reciprocated by the rolling member when the latter is carried round by the disc between said disc and said tool holder, means for permanently urging said tool holder towards said disc, means for restoring the rolling member to normal position after it has actuated said tool holder, means for arresting the rolling member in its path, in advance of the place of encounter with the tool holder, said arresting means being adapted to release the rolling member, a stop arranged to be pushed back by the object to be sheared when the latter extends beyond the tool for the desired length, and a mechanical connection between said stop and said arresting means such that when said stop is pushed back by the object to be sheared it produces the release of the rolling member.

13. Guillotine shears, comprising a rotating disc, a guide concentric to said disc, a rolling member freely mounted between the periphery of the disc and the guide, a tool holder penetrating into said guide sufficiently close to the periphery of the disc to be reciprocated by the rolling member when the latter is carried round by the disc between said disc and said tool holder, means for permanently urging said tool holder towards said disc, means for restoring the rolling member to normal position after it has actuated said tool holder, means for arresting the rolling member in its path in advance of the place of encounter with the tool holder, said means being adapted to release the rolling member, a stop arranged to be pushed back by the object to be sheared when the latter extends beyond the tool for the desired length, means between said stop and said stopping device such that when said stop is pushed back by the object to be sheared it produces release of the rolling member, and a device for adjusting the instant of release of the rolling member in relation to the position of the stop, interposed between the latter and the means for arresting the rolling member.

14. Guillotine shears, comprising a rotating disc, a guide concentric to said disc, a rolling member freely mounted between the periphery of the disc and the guide, a tool holder penetrating into said guide sufficiently close to the periphery of the disc to be reciprocated by the rolling member when the latter is carried round by the disc between said disc and said tool holder, means for permanently urging said tool holder towards said disc, means for restoring the rolling member to normal position after it has actuated said tool holder, means for arresting the rolling member in its path in advance of the place of encounter with the tool holder, said means being adapted to release the rolling member, a rod arranged to be pushed back by the object to be sheared when the latter extends beyond the tool for a desired length, a catch of adjustable position on said rod, and a mechanical connection between said catch and said arresting means such that when said catch is pushed back with said rod by the object to be sheared it produces release of the rolling member.

15. Guillotine shears, comprising a rotating disc, a guide concentric to said disc, a rolling member freely mounted between the periphery of the disc and the guide, a tool holder penetrating into said guide sufficiently close to the periphery of the disc to be reciprocated by the rolling member when the latter is carried round by the disc between said disc and said tool holder, means for permanently urging said tool holder towards said disc, means for restoring the rolling member to normal position after it has actuated said tool holder, means for arresting the rolling member in its path in advance of the place of encounter with the tool holder, said means being adapted to release the rolling member, a stop arranged to be pushed back by the object to be sheared when the latter extends beyond the tool for the desired length, means between said stop and said arresting means such that when said stop is pushed back by the object to be sheared it produces release of the rolling member, and means for permanently urging said stop towards a position in which it leaves said arresting means in arresting position.

16. Guillotine shears, comprising a rotating disc, a guide concentric to said disc, a rolling member freely mounted between the periphery of the disc and the guide, a tool holder penetrating into said guide sufficiently close to the periphery of the disc to be reciprocated by the rolling member when the latter is carried round by the disc between said disc and said tool holder, means for permanently urging said tool holder towards said disc, means for restoring the rolling member to normal position after it has actuated said tool holder, means for arresting the rolling member in its path in advance of the place of encounter with the tool holder said means being adapted to release the rolling member, a stop arranged to be pushed back by the object to be sheared when the latter extends beyond the tool for the desired length, means between said stop and said arresting means such that when said stop is pushed back by the object to be sheared it produces release of the rolling member, a guide for the piece to be sheared beyond the tool, a removable bottom for said guide, and means for removing said bottom after a shearing operation said means being controlled by said operation.

17. Guillotine shears, comprising a rotating disc, a guide concentric to said disc, a rolling member freely mounted between the periphery of the disc and the guide, a tool holder penetrating into said guide sufficiently close to the periphery of the disc to be reciprocated by the rolling member when the latter is carried round by the disc between said disc and said tool holder, means for permanently urging said tool holder towards said disc, means for restoring the rolling member to normal position after it has actuated said tool holder, means for arresting the rolling member in its path in advance of the place of encounter with the tool holder, said means being adapted to release the rolling member, a stop arranged to be pushed back by the object to be sheared when the latter extends beyond the tool for the desired length, means between said stop and said arresting means such that when said stop is pushed back by the object to be sheared it produces release of the rolling member, a guide for the piece to be sheared beyond the tool, a removable bottom for said guide, a mechanical connection between said bottom and said tool holder whereby the bottom is removed during the shearing operation.

18. Guillotine shears, comprising a rotating disc, a guide concentric to said disc, a rolling member freely mounted between the periphery of the disc and the guide, a tool holder penetrating into said guide sufficiently close to the periphery of the disc to be reciprocated by the rolling member when the latter is carried round by the disc between said disc and said tool holder, means for permanently urging said tool holder towards said disc, means for restoring the rolling member to normal position after it has actuated said tool holder, means for arresting the rolling member in its path in advance of the place of encounter with the tool holder, said means being adapted to release the rolling member, a stop arranged to be pushed back by the object to be sheared when the latter extends beyond the tool for the desired length, means between said stop and said arresting means such that when said stop is pushed back by the object to be sheared it produces release of the rolling member, a guide for the object to be sheared beyond the tool, a removable bottom for said guide, a mechanical connection between said tool holder and said bottom for positively opening said bottom during the shearing operation, means enabling said mechanical connection to effect its return stroke during the return stroke of the tool holder without closing the bottom, and a mechanism put under tension during the shearing operation for closing the bottom more slowly than said mechanical connection.

19. Guillotine shears, comprising a rotating disc, a guide concentric to said disc, a rolling member freely mounted between the periphery of the disc and the guide, a tool holder penetrating into said guide sufficiently close to the periphery of the disc to be reciprocated by the rolling member when the latter is carried round by the disc between said disc and said tool holder, means for permanently urging said tool holder towards said disc, means for restoring the rolling member to normal position after it has actuated said tool holder, means for arresting the rolling member in its path in advance of the place of encounter with the tool holder, said means being adapted to release the rolling member, a stop arranged to be pushed back by the object to be sheared when the latter extends beyond the tool for the desired length, means between said stop and said arresting means such that when said stop is pushed back by the object to be sheared it produces release of the rolling member, a guide for the object

to be sheared beyond the tool, a removable bottom for said guide, a mechanical connection between said tool holder and said bottom for positively opening said bottom during the shearing operation, means enabling said mechanical connection to effect its return stroke during the return stroke of the tool holder without closing the bottom, a dash-pot, an air escape vent and with a spring put under tension during the shearing for closing the bottom more slowly than said mechanical connection, and means for adjusting said vent during the closing of the bottom.

20. Guillotine shears, comprising a rotating disc, a guide concentric to said disc, a rolling member freely mounted between the periphery of the disc and the guide, a tool holder penetrating into said guide sufficiently close to the periphery of the disc to be reciprocated by the rolling member when the latter is carried round by the disc between said disc and said tool holder, means for permanently urging said tool holder towards said disc, means for restoring the rolling member to normal position after it has actuated said tool holder, means for arresting the rolling member in its path in advance of the place of encounter with the tool holder, said means being adapted to release the rolling member, a continuous feeding device for material to be sheared, a stop arranged to be pushed back by said material when the latter extends beyond the tool for a desired length, rolling member release means located between said stop and said arresting means said release means being operated by said stop, and a spring between said stop and said last mentioned means sufficiently stiff not to be compressed by a force equal to the passive resistance of the members put in motion for causing release of the rolling member.

CAMILLO CITO.