

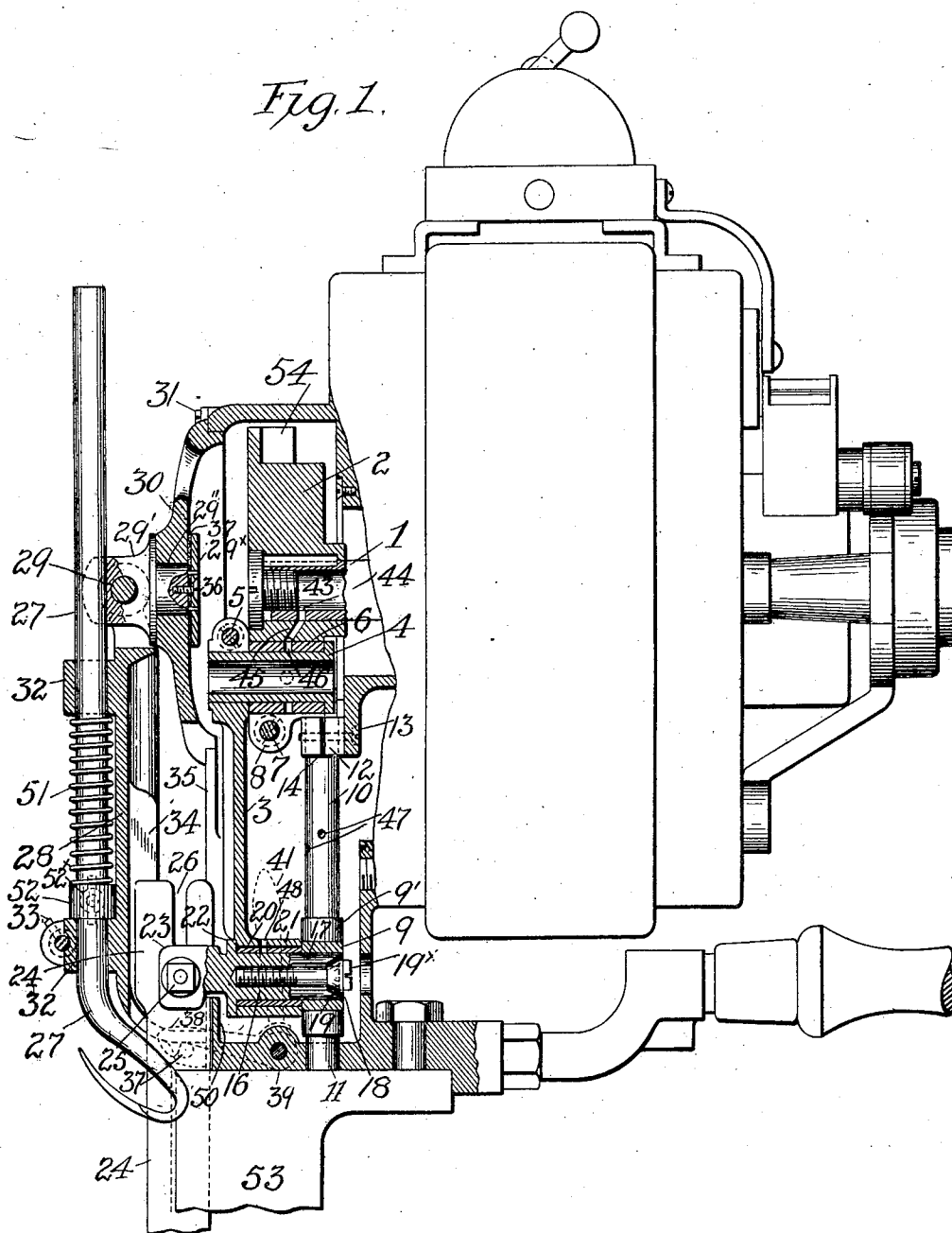
No. 861,793.

PATENTED JULY 30, 1907.

G. L. BALLARD.
CLOTH CUTTING MACHINE.

APPLICATION FILED FEB. 27, 1906.

2 SHEETS—SHEET 1.



Witnesses

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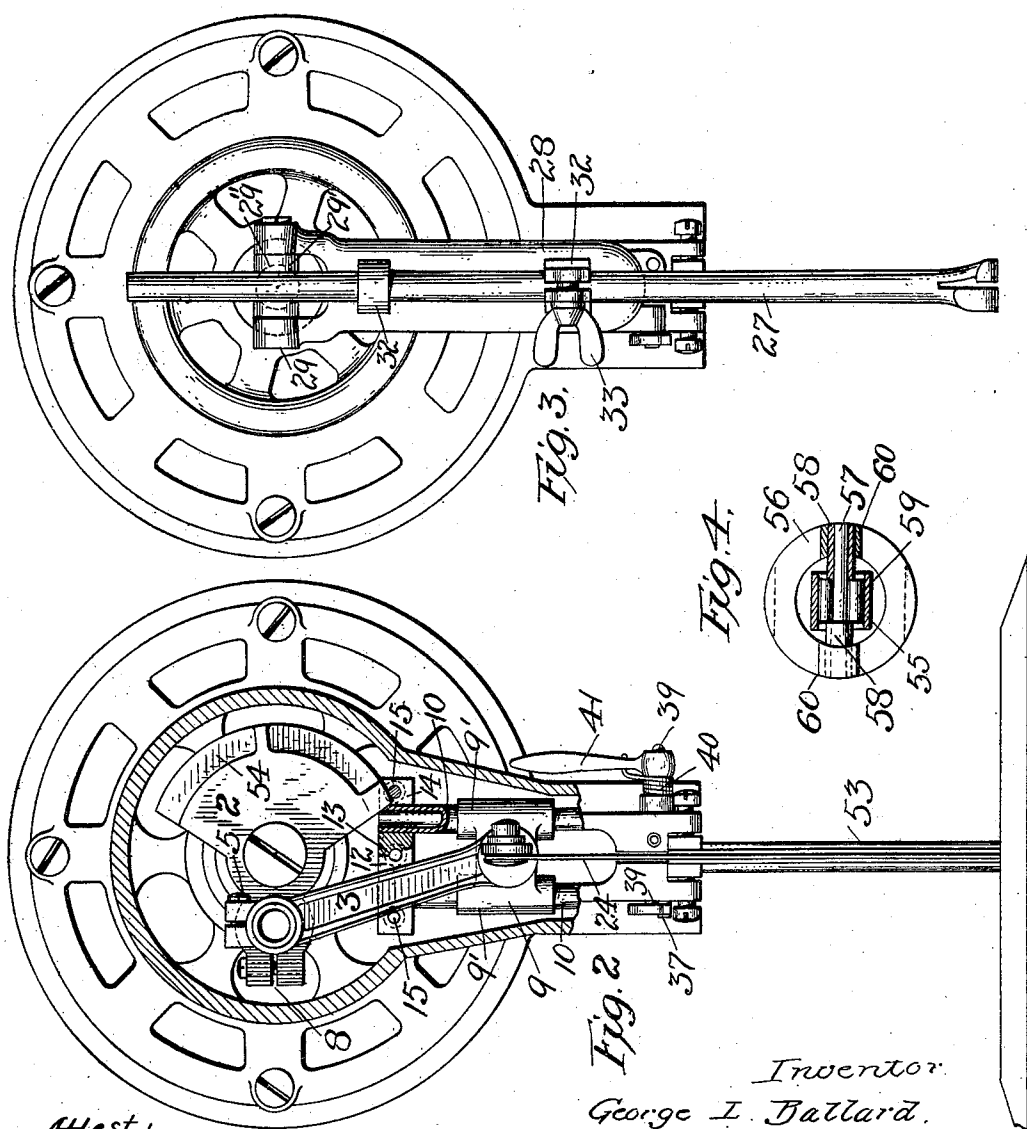
Attorneys

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2 SHEETS—SHEET 2.



Attest:

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UNITED STATES PATENT OFFICE.

GEORGE LAWSON BALLARD, OF NORRISTOWN, PENNSYLVANIA, ASSIGNOR TO WILDMAN MFG. CO., OF NORRISTOWN, PENNSYLVANIA.

CLOTH-CUTTING MACHINE.

No. 861,793.

Specification of Letters Patent.

Patented July 30, 1907.

Application filed February 27, 1906. Serial No. 303,188.

To all whom it may concern:

Be it known that I, GEORGE LAWSON BALLARD, a subject of the King of Great Britain, formerly of Rochester, New York, now residing at Norristown, Pennsylvania, have invented certain new and useful Improvements in Cloth-Cutting Machines, of which the following is a specification.

My invention relates to cloth cutting machines of the general type disclosed in Letters Patent of the United States granted to me Dec. 5, 1905, #806311.

My present invention is designed to improve the general operation of the machine, increase durability and effectiveness, rendering it possible to drive the machine at a high rate of speed, resulting in an increase in the production of the work.

The invention consists in the features, combination and arrangement of parts hereinafter described and particularly pointed out in the claims.

In the accompanying drawings,—Figure 1 is a sectional view through so much of the machine as includes my improvement, the other portions of the machine being shown in outline. Fig. 2 is a view looking from the left of Fig. 1, partly in section and partly in elevation with the presser foot and knife guard and guide removed. Fig. 3 is a view looking from the left of Fig. 1 with the knife guard and guide in place together with the presser foot. Fig. 4 is a detailed view of one of the rollers for supporting the base plate.

In these drawings, 1 indicates the front end of the armature shaft which has keyed thereto a crank arm or plate 2, to which is connected in a special manner a pitman 3, which connects with the cross head for driving the knife. The connection between this pitman or drive rod and the crank consists of a hollow pin 4, which is clamped within the upper split portion of the pitman rod, as shown in Fig. 1, the split portions of the said pitman being drawn together by a screw or nut 5.

The inner end of the crank pin 4 is flanged, and surrounding this crank pin a bushing 6 is arranged extending from the flange 4 to the inner side of the pitman or drive rod. This bushing is of the same diameter as the flange 4 and fits within an opening in the crank arm or disk wherein it is clamped by a screw or nut 7 which draws together the split portion 8 of the crank. This form of connection is of special importance as it is simply necessary in placing the parts in operative relation to insert the crank pin carrying the bushing within the opening in the crank arm and before the parts are thus assembled the crank pin can be accurately adjusted in position with relation to the pitman and to the bushing so that the bushing will be held properly though free to have relative movement in respect to the crank pin. This connection also enables wear to be readily taken

up and also renders it easy to renew the bushing. In taking up the wear the split portion of the pitman can be loosened and the crank pin adjusted longitudinally therein.

My present machine differs from the form shown in the patent above referred to in respect to the arrangement of the cross head in relation to the crank arm or disk. In the present case the pitman extends downwardly to the cross head which is arranged to reciprocate below the crank arm or disk instead of, as in the patented form, at a position above the crank arm. This cross head comprises a block 9 having tubular portions 9' arranged to slide on the cylindrical guides 10, which are held in the housing at their lower ends as indicated at 11, while at their upper ends the said guide tubes or ways are held in a block 12 secured to the frame of the machine by a screw 13. The ends of this block are split as indicated at 14 and the upper ends of the guide tubes fit in these split portions wherein they are firmly held by drawing the sides of the split portions together by means of the bolts or screws 15.

The connection between the pitman and the cross head or slide block consists of a wrist pin 16 having a split tubular inner end 17 fitting in an opening in the cross head or slide block wherein it is held by expanding the split tubular portion by means of a conical expanding block or piece 18 fitting against the conically socketed end 19 of the wrist pin, the said block or cone being pressed into place for the expanding and holding action by a screw 19' threaded into the wrist pin and having its head to bear on the conically expanding block. The wrist pin is surrounded by a bushing 20 and this lies within a boss or laterally extending portion 21 of the pitman. The wrist pin is flanged at 22 near its outer end and is provided with an extension 23 to which the knife or cutter 24 is attached at its upper end by means of the bolt 25 passing through the extension or head of the wrist pin and through an elongated opening or slot 26 in the knife blade, this connection allowing the knife to be adjusted.

An important feature of my invention relates to means for supporting the presser foot to provide for its removal from in front of the knife without disturbing its adjustment and also an important feature of my invention relates to a removable guide for the knife blade or head which may be swung aside or removed from its operative or effective position so as to allow access to the knife and to the operating parts. The presser foot 27 consists of a bar having its lower end suitably bent and shaped to press upon the cloth, the said presser foot being supported on a plate 28 extending down on the front side of the machine and pivotally

supported at its upper end at 29 to a boss 29' which is swiveled at 29'' to the frame or part 30 which is secured by screws 31 to the main frame or housing. The plate 28 has bosses 32 through which the presser foot bar passes and by which it is supported, the lower boss being split and being drawn against the presser foot bar to clamp the same by means of a wing nut 33. The plate 28 also provides a guide for the upper end of the knife or cutter blade, the said plate being provided with flanges 34 extending vertically of the plate and parallel with each other, and between which the upper portion of the knife is adapted to move to be guided thereby. In order to gain access to the knife or to the working parts, it is simply necessary to swing the plate 28 about the pivot 29 until the guide flanges 34 have been removed from the knife bar and then by swinging the said plate laterally on the swiveled connection 29'' the plate together with the presser foot will be positioned off to one side of the machine and access may then be had to the knife for sharpening the same or for cleaning purposes, and access may also be had to the cross head and other working parts through the open portion 35 of the main frame.

The swiveled connection 29'' consists simply of a cylindrical portion bearing in the frame part 30 and having secured at its inner end a plate 29X by a screw 36, packing material 37 being interposed between the plate 29X and the inner side of the frame part 30 to place the swiveled connection under frictional restraint so that at whatever angle the plate 28 is swung laterally of the machine, it will be maintained in this position while access is being had to the parts uncovered thereby.

The presser foot bar, it will be noticed is not disturbed in its relation to the guard and guide plate 28 when the latter is swung aside to permit access to the parts, and this is an important feature as the presser foot will again assume its proper position in relation to the knife upon swinging the guard plate back to its former position. For holding the guard plate in the position shown in Fig. 1, it is provided with a stud 37 on one side engaged by a catch 38 pivoted to the main frame or housing at 39, and a spring 40 tends to hold the latch in operative position and a finger lever 41 is employed to operate the latch, being connected therewith by the shaft or pin 39, which extends from one side of the frame upon which the handle is located to the other side upon which the catch is located.

It will be noticed that the knife is supported or guided both at its front and rear, the front guidance being provided by the guide 34 of the guard frame, and the rear guidance by the cross head slide on the guide ways 10. Further, it will be seen that the pitman connects with the wrist pin at a point between the knife and the cross head and the whole arrangement is such that vibration of the machine under the high rate of speed at which it is run is reduced to a minimum and all unnecessary strain on the parts is avoided.

In carrying out my invention I have had in mind the necessity of providing for lubricating the various parts, which under the excessive speed at which the machine runs are ordinarily liable to become dry in a short while. I have provided, however, a self-oiling arrangement which will permit the machine to run for a comparatively long time without attention in this respect. As

in my former patent, lubricant is introduced into the hollow armature shaft and reaching the space 43 in said shaft it passes out through a lateral opening 44 and through a lateral opening 45 in the crank arm to the bushing 6 and through an opening 46 in this bushing to the crank pin. The oil passing from this crank pin at the inner end around the flange 4 will be thrown by the high speed of the parts and will drop into the guide ways 10, which as before stated, are formed of hollow tubing, and these are open at their upper ends. From the interior of these guide tubes the oil passes through openings 47 to the exterior of said guide rods, thus oiling the cross head and the ways on which the same slides. Oil reaches the wrist pin through an opening 48 in the pitman, which opening is continued through the bushing to the exterior of the wrist pin. The housing is carried up at 50 so as to form an oil catch well which will retain any oil thrown from the moving part.

It will be seen that the guard plate 28 performs the function of a cover for the open side or face of the housing and prevents oil being thrown onto the goods being cut. Any oil thrown out through the open front of the housing or casing will be caught by the guard and directed downwardly to the top of the standard 53 in which the knife is guided in its vertical movement, the rear edge of the knife blade entering this standard in the usual manner. The oil thus works into the guide groove in the standard and lubricates the back of the knife. This feature of oiling the back of the knife in the manner stated is the outcome not only of the use of the automatic arrangements for supplying oil to the parts, but also to the use of the guard plate or cover arranged to direct the oil or lubricant to the top of the knife blade or to the top of the standard.

Should it be desired to provide a yielding presser foot, the wing nut 33 is loosened and then the spring 51 becomes effective, said spring bearing at one end against the boss 32 and at its other end against a collar 52 secured on the presser foot bar by the wing nut 52X. The presser foot bar, it will be noticed is stiff and solid.

In order to cool the apparatus, I provide a rotary fan. In doing this I have utilized the crank arm or disk as a means for carrying the fan blades, said blades being shown at 54 on the periphery of the crank arm or disk. These fan blades act to draw the air through the front of the crank casing which is provided with openings for this purpose and after traversing the operating parts the air is discharged at the other end of the machine.

As in my machine disclosed in the patent referred to, I employ rollers upon which the machine is adapted to run. These rollers are shown at 55 and are associated each with a ring 56 in which is supported the pin 57 forming a bearing for the roller. This ring as in the patent referred to is combined with a cushion forming a yielding support for the roller. The roller is in the form of a cylinder and has within it a series of rollers 59 surrounding the bearing pin and held endwise by fitting between the ends of sleeves or ferrules 58 arranged on the said bearing pin and held within the bosses or studs 60 on the ring. This ring is held in place by screws, which are screwed into the base plate of the machine and whose heads overlie a part of said ring, all as fully illustrated in the patent referred to. This combined roller bearing and cushion gives a free and easy movement to the machine, over the table surface.

I claim as my invention:

1. In combination in a machine of the class described, a frame, a knife, means for operating the knife, and a guard partly embracing the knife having a universal pivoted connection with the frame whereby it may be swung forwardly and thence laterally, substantially as described.
2. In combination in a machine of the class described, a frame, a knife, means for operating the knife, and a guard partly embracing the knife, a pivot for the guard and a swivel connection between said pivot and the frame, substantially as described.
3. In combination in a machine of the class described, a frame, a cutter, means for operating the cutter, a presser foot partly embracing the knife and a support therefor having a universal joint connection with the frame, whereby the presser foot may be first drawn forward from the knife edge and then moved aside, substantially as described.
4. In combination in a machine of the class described, a knife, operating means therefor, a guard for the knife having pivotal connection with the frame to swing away from the knife, and a presser foot having its stem mounted on the said guard, substantially as described.
5. In combination in a machine of the class described, a frame, a knife, a guard for the knife, a presser foot mounted adjustably on the said guard and a universal joint connection between the said guard and frame to permit the guard to be swung away from the knife and to one side of the machine, substantially as described.
6. In combination in a machine of the class described, a frame, a cutter, means for operating the cutter, a standard in which the cutter moves, and a guide for the front of the knife and a pivoted connection between the guide and the frame, substantially as described.
7. In combination in a machine of the class described, a frame, a cutter, means for operating the cutter, a guide member for the knife pivotally connected with the frame, and a presser foot carried by the said guide member and movable therewith, substantially as described.
8. In combination in a machine of the class described, a cutter, a crank and pitman for operating the same, a crank casing having an open front, a movable guard plate or front wall for said crank casing to cover said open front and pivotally supported, and a presser foot carried by said front wall, substantially as described.
9. In combination, the knife, means for operating the same, a plate or guard, a removable frame part or member to which said plate or guard is pivotally connected and a presser foot carried by said plate or guard, substantially as described.
10. In combination, the knife, means for operating the same, a presser foot, a support therefor, pivoted at its upper end, and a latch to hold said pivoted support in place at its lower part, substantially as described.
11. In combination in a machine of the class described, a knife, a cross head or slide block, a crank member, a pitman connected thereto for driving the knife, and a wrist pin connection between the cross head pitman and knife, said pitman lying between the cross head and knife, substantially as described.
12. In combination in a machine of the class described, a drive shaft, a knife, a pitman between the same and the drive shaft, a cross head on one side of the knife, a guide for the knife on the other side, a pin connecting the cross head and knife, said pin acting as a wrist pin for the pitman which connects therewith between the cross head and the knife, substantially as described.
13. In combination in a machine of the class described, a drive shaft, a knife, a cross head or slide block, a connection between said slide block and the knife, means for guiding the knife on the front edge thereof opposite the edge adjacent which the cross head is located and a pitman for operating the parts from the drive shaft, substantially as described.
14. In combination in a machine of the class described, a knife, a cross head, a crank member, a pitman and a wrist pin connection between the cross head and pitman having its end split and the screw having the cone portion thereon for spreading the wrist pin in the cross head, substantially as described.
15. In combination in a machine of the class described, the knife, a cross head, or slide block, a pitman and a wrist pin having one end split with a screw provided with a conical portion adapted to spread the said split portion to hold the same in the cross head, a flange 22 on said wrist pin on the outer side of the pitman, said wrist pin having an extension connected to the knife, substantially as described.
16. In combination in a machine of the class described, a knife, a cross head connected with the knife, means for driving the cross head, the ways on which the cross head moves, and the block or projection having the split portions for holding the upper ends of the guide ways, substantially as described.
17. In combination in a machine of the class described, a knife, a drive shaft, a crank and pitman connection between the knife and drive shaft, and a crank pin connection between the pitman and crank member, said pin being mounted in the pitman to be adjusted longitudinally therein and having a head or flange at its inner end with a bushing between it and the side of the pitman, said crank pin with its bushing fitting in the crank member from the front and being removable therefrom by drawing it to the front, substantially as described.
18. In combination in a machine of the class described, a knife, a drive shaft, a crank and pitman connection between the drive shaft and the knife, a crank pin clamped in a split part of the pitman and a bushing on the crank pin held in a split part of the crank, said bushing and crank pin being movable into and out of said crank from the front, substantially as described.
19. In combination in a machine of the class described, the combination of the hollow shaft, the crank and crank pin, the oil port leading from the hollow shaft to the crank pin, the cross head operating below the crank and having guideways receiving the oil therefrom, a knife, a connection between said knife and cross head, and a connection between the cross head and the crank, substantially as described.
20. In combination in a machine of the class described, the combination of the hollow shaft, the crank and crank pin, the cross head, the hollow guide way for the cross head to receive therein the oil thrown from the crank and having a port to allow the passage of the oil to the outside, and connecting means between the cross head and crank and the cross head and knife, substantially as described.
21. In combination in a machine of the class described, a knife, a standard in which the knife is guided, a drive shaft, operating connections between said shaft and the knife, a casing or housing in which said connections operate, and a cover plate for the open side of said housing to receive the oil thrown therethrough, said housing extending down to the top of the standard and upper part of the knife to direct the oil thereto, substantially as described.

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

GEORGE LAWSON BALLARD.

Witnesses:
MARGARET POTTER,
OWEN BALLARD.