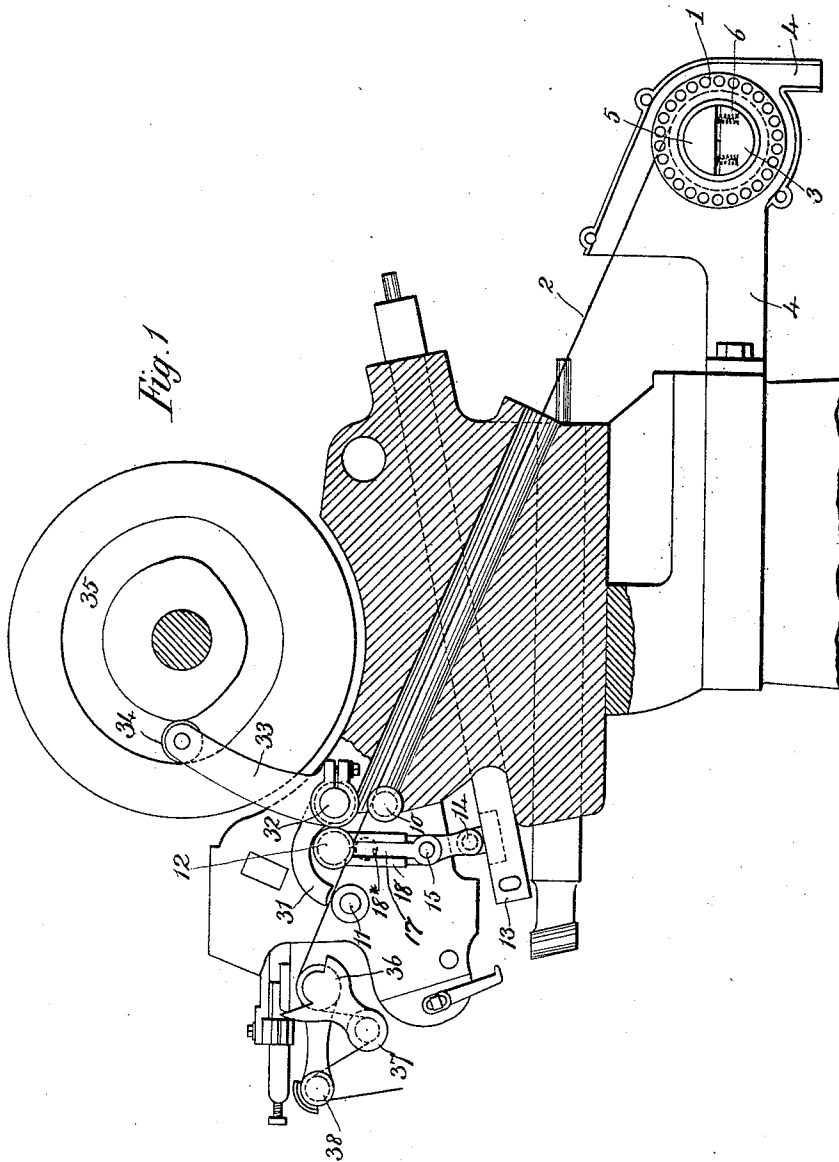


A. WARD & A. S. GENT.
MACHINE FOR SEWING BOOTS AND SHOES.
APPLICATION FILED OCT. 24, 1911.

1,064,406.

Patented June 10, 1913.

3 SHEETS—SHEET 1.



Witnesses:-

Henry B. Thome.
Hyperion Barry.

Inventors:-

Arthur Ward
Albert Samuel Gent
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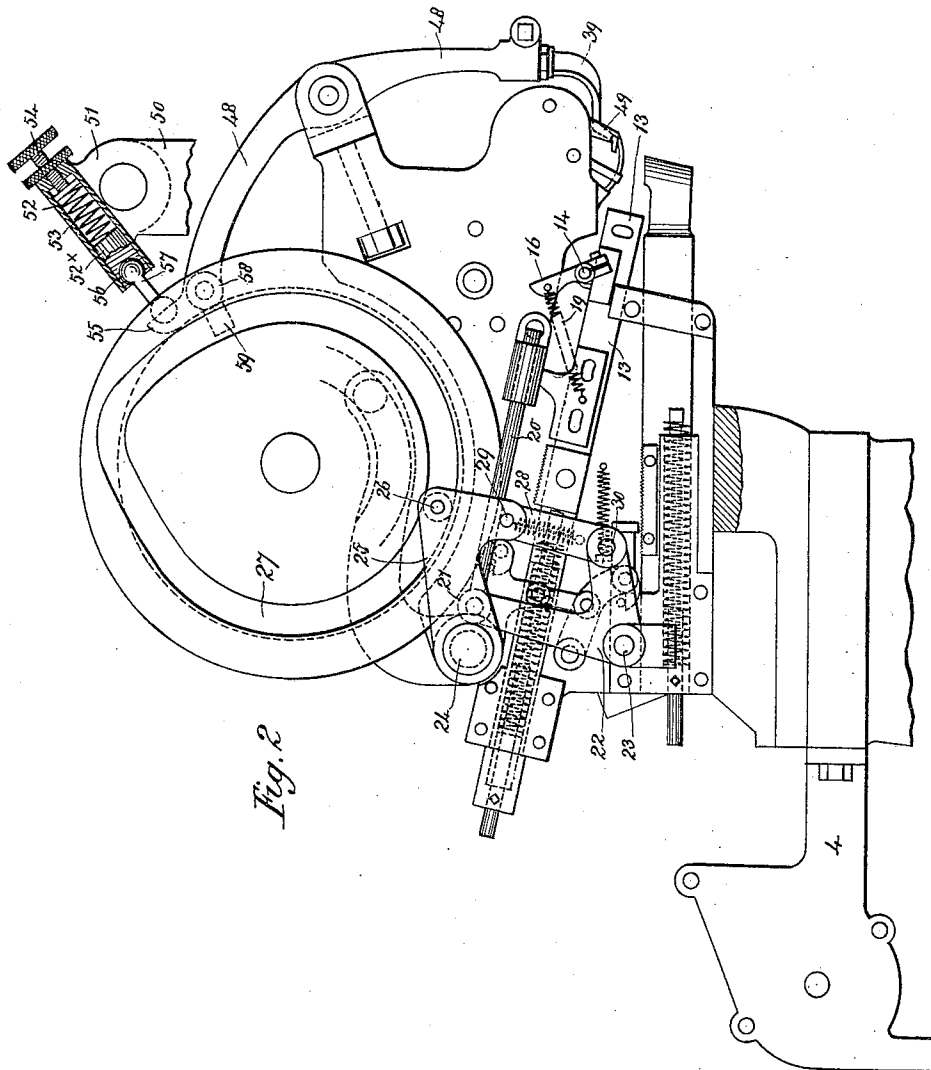


Fig. 2

Witnesses:
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3 SHEETS—SHEET 3.

Fig. 3

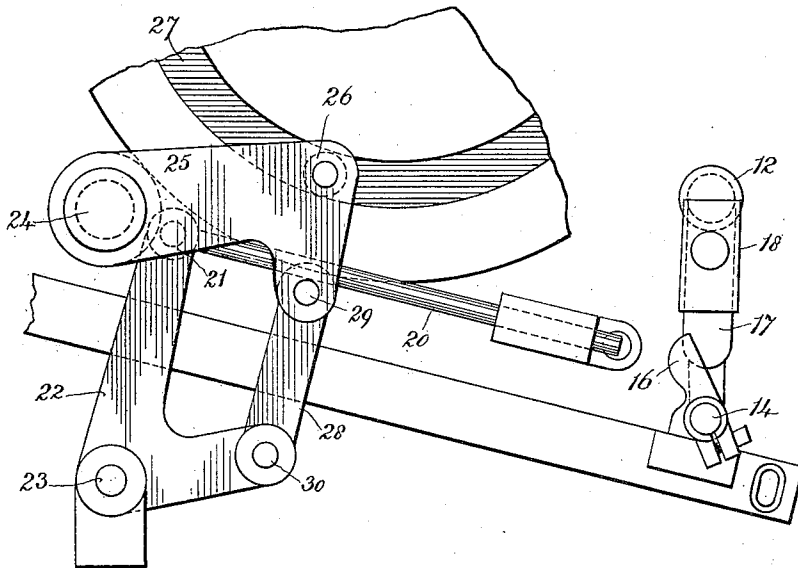


Fig. 4

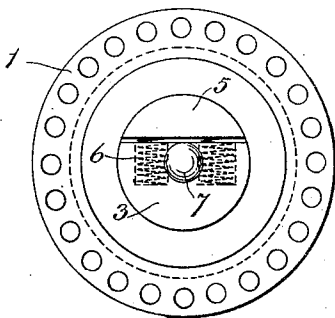
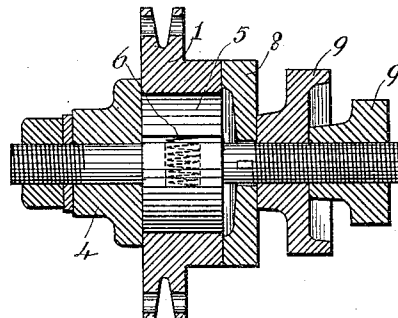


Fig. 5



Witnesses:-
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UNITED STATES PATENT OFFICE.

ARTHUR WARD AND ALBERT SAMUEL GENT, OF NORTHAMPTON, ENGLAND, ASSIGN-
ORS TO THE UNIVERSAL SHOE MACHINERY COMPANY LIMITED, OF NORTHAMP-
TON, ENGLAND.

MACHINE FOR SEWING BOOTS AND SHOES.

1,064,406.

Specification of Letters Patent.

Patented June 10, 1913.

Application filed October 24, 1911. Serial No. 656,536.

To all whom it may concern:

Be it known that we, ARTHUR WARD and
ALBERT SAMUEL GENT, formerly of 27 York
road, Northampton, England, both subjects
5 of the King of Great Britain, and residents
of Cleveland Works, Cleveland Road, North-
ampton, England, have invented new and
useful Improvements in Machines for Sew-
ing Boots and Shoes, of which the follow-
10 ing is a specification.

The present invention has reference to
chain stitch machines for sewing welted
boots and shoes and turnshoes and the ob-
ject of the invention is to improve the con-
15 struction of such machines so that they will
work at an improved rate of speed.

In rapidly driven sewing machines for
the above purpose difficulties are found to
arise in connection with the thread measur-
20 ing mechanism which is apt to put an undue
strain upon and break the thread.

The present invention is directed to the
improvement of the machine so that the
thread shall be properly measured and laid
25 in the needle, and the stitches tightened.

The improvements will now be described
and the points of novelty hereinafter point-
ed out in the claims.

In the accompanying drawings, Figure 1
30 shows a side elevation partly in section, of
part of a welt sewing machine embodying
our improvements. Fig. 2 is a side elevation
of the opposite side of the machine. Fig.
3 shows detachably the striker and its con-
35 nections and the tappet, and Figs. 4 and 5
are enlarged front and sectional elevations
of the brake wheel.

Referring to Figs. 1, 4 and 5:—1 is the
brake wheel over which the thread 2 passes
40 from the wax pot (not shown in the draw-
ings, being of usual construction). This
brake wheel 1 which occupies the position in
the machine usually occupied by the tension-
wheel, differs therefrom in that it is mount-
45 ed to turn freely upon a boss 3 bolted to the
framework 4 of the machine. This boss 3
is formed with a loose segmental portion
5 and between the two parts 3 and 5, and
resting in recesses formed in the part 3,
50 are springs 6 tending to force the two parts
3 and 5 apart, and against the inside of the
brake wheel 1 mounted thereon. The boss
3 is also provided with an outer threaded
portion 7 upon which is mounted a non-rev-
55 oluble washer 8 and nuts 9, for holding the

brake wheel 1 in position. This arrange-
ment allows a free movement of the brake
wheel 1 and at the same time owing to the
spring boss bearing upon the inside thereof,
puts a slight friction thereon, sufficient to 60
prevent the wheel overrunning when the
thread is being intermittently drawn off. It
also allows of a very free movement of the
thread when drawn upon by the measuring
65 mechanism to be presently described. The
thread passes from the brake wheel 1 to a
thread measuring device, for measuring off
the desired quantity of thread required for
each stitch according to the thickness of the
70 work (seam substance) being sewn. At-
tached to the framework of the machine and
in a line with the path of thread 2 are two
pulley wheels 10 and 11, and intermediate
between the two pulley wheels 10 and 11,
75 and on the opposite side of the thread 2 is
situate a vertically movable pulley wheel
12. Upon the welt guide slide 13, which may
be of the usual construction, is mounted in
suitable bearings a short horizontal shaft 14
80 carrying at one end a crank pin 15, and at
the other end a tappet, or pivoted lever 16
see Figs. 2 and 3. The crank pin 15 is con-
nected to a slide 17 upon which is mounted
the pulley wheel 12 above mentioned. The
85 slide 17 is guided in its movements by the
guiding piece 18 which is pivotally mounted
in the framework of the machine as at 18*,
see Figs. 1 and 3. The tappet 16 is held in
its normal position by means of the spring
90 19 attached thereto and to the welt guide
slide 13. The tappet 16 is operated by a
striker 20 which has at its back end a boss 21
which is pivoted on a stud fixed in a bell
crank lever 22 which is pivoted on a stud 23
95 fixed in a convenient position on the main
frame. Also fixed conveniently on the main
frame is a stud 24 on which is mounted a
cam lever 25 which engages by means of a
cam roll 26 with the cam 27. This cam lever
25 is connected to the bell crank lever 22 by 100
means of a link 28 connected at either end by
studs 29 and 30. It will thus be seen that at
each revolution of the cam 27 the striker 20
will be given a thrust due to the cam lever
25 actuating the bell crank lever 22, thus 105
striking the tappet 16. This in turn rocks
the crank pin 15 and draws down the slide
17 carrying the pulley wheel 12. In order
to enable the desired quantity of thread to
be drawn from the wax pot it is clamped in 110

advance of the pulley wheel 12 by means of the clamping device 31. This device 31 is actuated by a rocking shaft 32, cam lever 33, cam roll 34 and cam 35. Thus it will be seen that the clamping device when rocked bears on the roll 11 and holds the thread securely during the downward movement of the pulley wheel 12.

It will be noted that the distance between the forward point of the striker 20 in its normal position, and the tappet 16, is a variable one according to the thickness of the work being sewn and that therefore the range of movement of the pulley wheel 12 will also be a variable one; in consequence it will draw a longer or shorter length of thread from the wax pot as circumstances require. After passing the measuring device the thread 2 then passes to a fixed pulley wheel 36 and around the spring-actuated auxiliary take-up 37 to the usual take-up 38, and thence through the looper 39 to the work as usual.

In Fig. 2, 48 is the lever supporting the looper 39, and 49 is the thread finger. Mounted upon the arm 50 of the machine, which arm carries the usual cam levers, is a bracket 51. This bracket 51 is provided with a cylindrical portion 52 containing a plunger 52*, a compression spring 53, and an adjusting screw 54. The upper end of the looper lever 48 has upon its outer side a cup-shaped socket 55 situated approximately opposite a similar cup shaped socket 56 formed in the end of the plunger 52*. The two cup shaped sockets 55 and 56 are connected by a double ball connection 57, in such a manner that the spring 53 tends to force the looper lever roll 58 against the surface of its cam while at the same time it allows the looper lever to swing freely under the action of its roll 59 when operated by its cam groove. This method of mounting the spring for keeping the looper lever rolls 58 and 59 against their respective cam surfaces, insures the said rolls accurately following the paths of the said cams, and obviates the jumping of the rolls, so frequently a source of defective action of the machine when running at a high rate of speed and also allows of a new spring being rapidly and easily inserted if desired without dismantling other parts of the machine.

The operation of the machine is as follows:—To start sewing the work is held in position against the boot rest guide and the thread passed around the thread finger as usual. The pricker then enters the work, the boot rest guide is unlocked, and the welt guide slide 13 is also unlocked and

pushed back by its cam lever. The pricker then feeds the work and causes it to come in direct line with the needle. The welt guide slide 13 is then allowed by its cam lever to come back to the work and together with the boot rest guide is then locked. The pricker is now withdrawn and the needle enters the work. At this moment, the thread clamping device 31 is applied to the pulley wheel 11 and the pulley wheel 12 is then operated by means of the striker 20 and tappet 16 to measure a length of thread for the next stitch. When the awl is right back, the thread-finger again takes the thread and the looper 39 with the thread circles the needle. At the same time the channel guide and the pricker are moved back for a fresh feed. The needle then retires carrying the loop through the work. The pricker again enters and feeds the work for the next stitch. The needle again enters the work, through the loop already around it, to take a fresh loop from the looper 39. The take-up 38 and auxiliary take-up 37 take up the slack thread and tighten the aforesaid loop around the needle and so "set the stitch." The new loop is then drawn through the work by the needle and the above cycle of operations repeated.

What we claim and desire to secure by Letters Patent of the United States is:—

1. In a chain stitch machine for sewing welted boots and shoes and turnshoes, a thread measuring device and means for regulating the same, comprising a welt guide slide, a tappet carried by the welt guide slide for operating the said measuring device and a striker for operating the tappet, the arrangement being such that the distance of the tappet from the striker may be varied automatically by the thickness of the work, substantially as described.

2. In a chain stitch machine for the purpose specified, a thread measuring device comprising two fixed pulley wheels, a movable pulley wheel acting intermediate of the fixed pulley wheels, a clamping device for the thread, a welt guide slide, a tappet mounted on the welt guide slide for operating the movable pulley wheel, a striker for operating the tappet and means for operating the striker, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

ARTHUR WARD.

ALBERT SAMUEL GENT.

Witnesses:

C. R. LIDDON,

R. WILLIAMS.