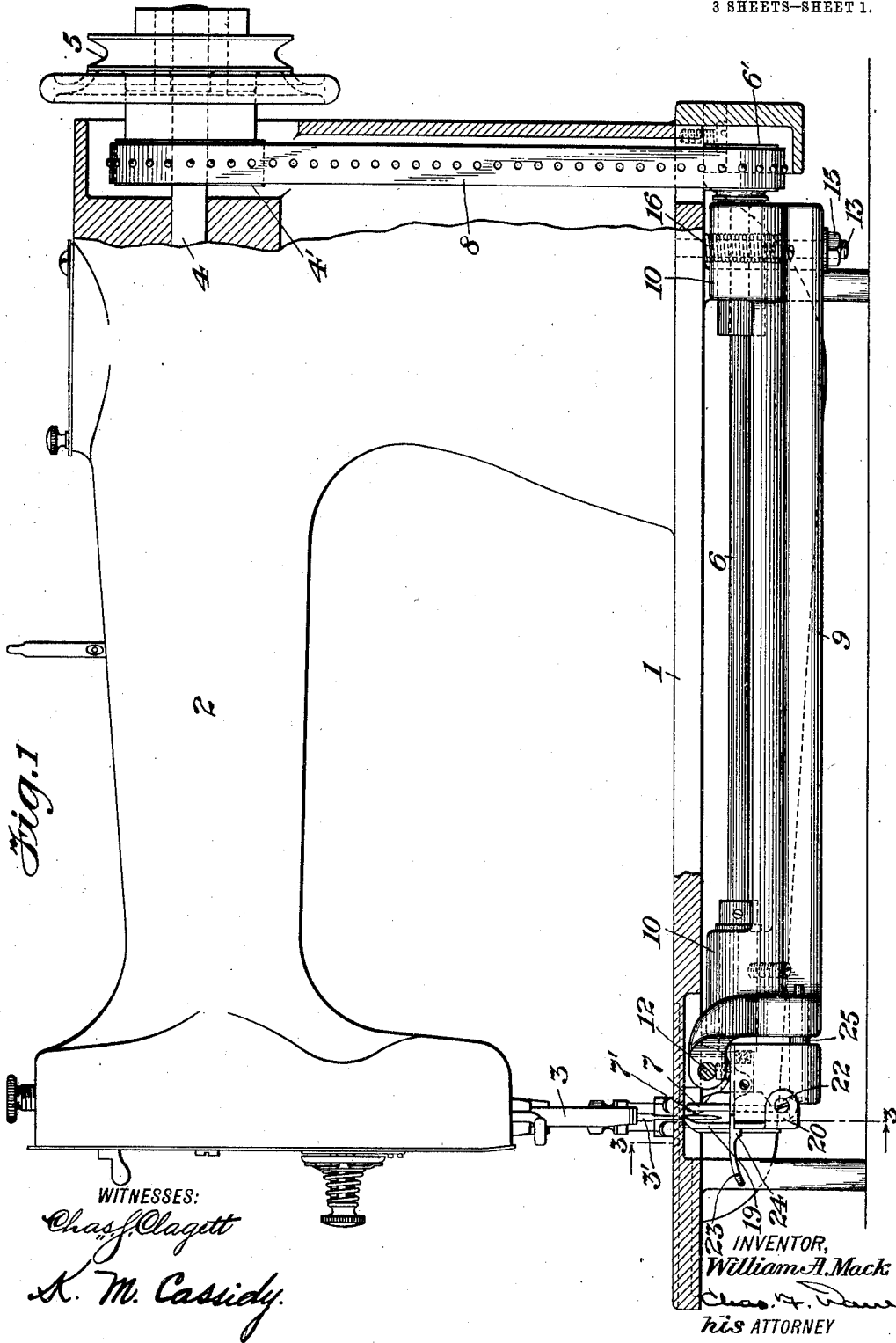


W. A. MACK.
SEWING MACHINE.
APPLICATION FILED APR. 25, 1910.

1,005,250.

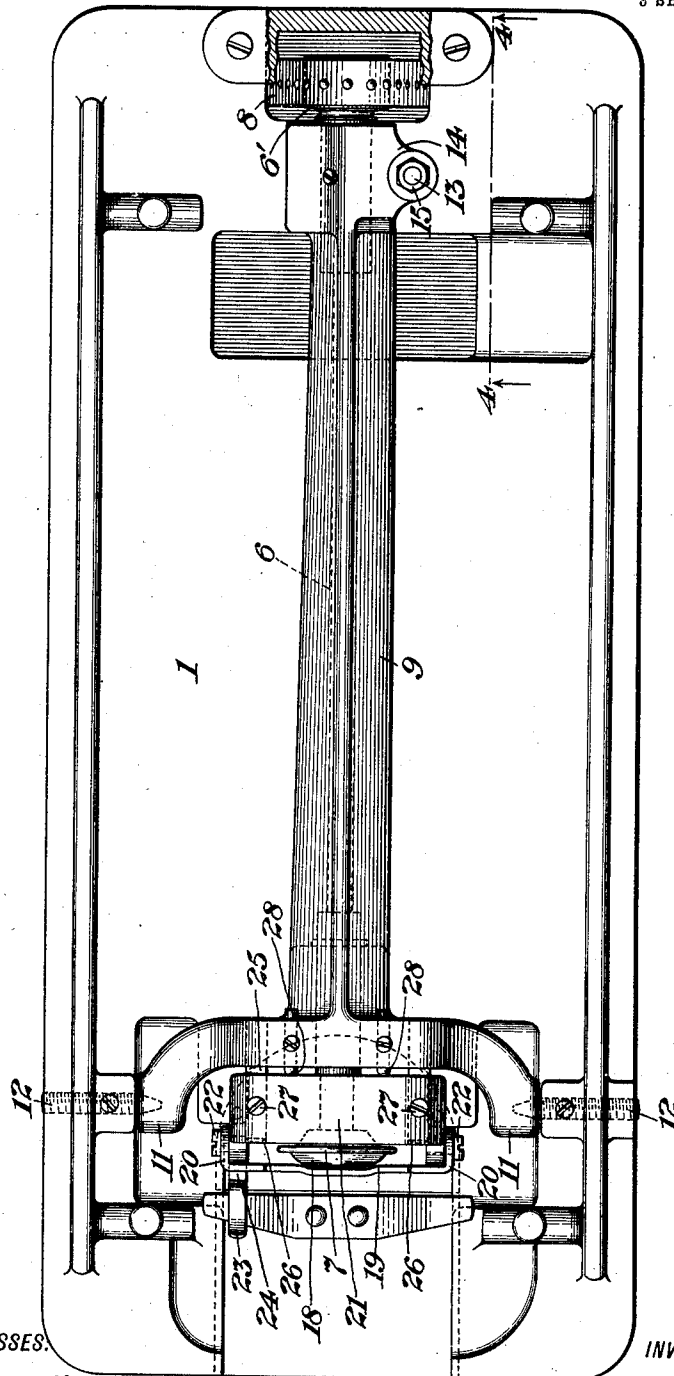
Patented Oct. 10, 1911.

3 SHEETS-SHEET 1.



1,005,250.

3 SHEETS—SHEET 2.



WITNESSES:

Chas. Clagett
K. M. Cassidy

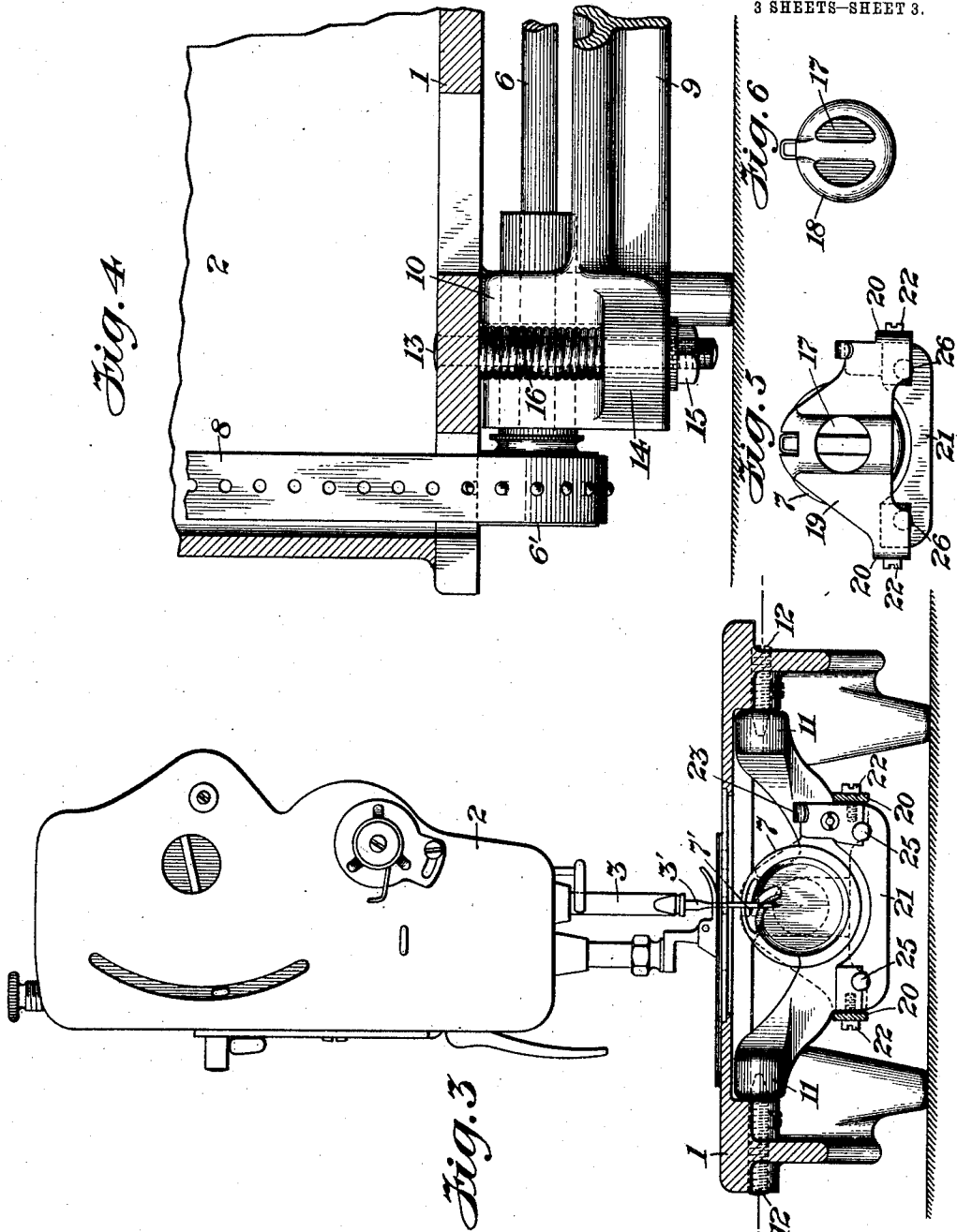
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3 SHEETS—SHEET 3.



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WILLIAM A. MACK, OF CLEVELAND, OHIO, ASSIGNOR TO THE STANDARD SEWING MACHINE COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

SEWING-MACHINE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM A. MACK, citizen of the United States, and resident of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a specification.

My invention relates to improvements in that class of sewing machines in which a rotary hook or loop-taker is carried by a shaft that is driven from a driving shaft through the medium of a belt or similar flexible connection; the principal object of the invention being to provide a simple and effective means for taking up and controlling the slack in said belt or flexible connection without disturbing the timing or other operative relation between the cooperating parts of the stitch-forming mechanism.

To this end the invention consists in supporting the loop-taker shaft in adjustable connection with the bed-plate of the machine in a manner whereby the position of the shaft at its rear or belt-connecting end may be adjusted relatively to the driving shaft for the purpose of controlling the slack in the belt without materially altering the position of the loop-taker at the front end of the shaft relatively to the cooperating needle. This is preferably effected by supporting the loop-taker shaft in a frame made separate from the bed-plate of the machine and adjustably connecting said frame to the bed-plate by means including a pivotal support of the frame at the loop-taker end of the shaft with its axis in substantially the same horizontal plane with the eye of the needle at that time in the movement of the latter when the loop-taker is taking the thread loop therefrom.

My invention also comprises other improvements not hereinbefore referred to but which will be hereinafter referred to and described in the detailed description of the invention which follows.

Referring now to the accompanying drawings forming part of this specification,—Figure 1 is a side elevation of a machine embodying my invention, with the frame partly broken away and the feeding mechanism omitted to more clearly show the in-

vention. Fig. 2 is a bottom plan of the same. Fig. 3 is a front end elevation, partly in section and with the bobbin and bobbin-case removed, the section being taken on line 3—3 of Fig. 1. Fig. 4 is an enlarged detail showing the adjustable connection of the loop-taker shaft frame with the bed-plate at the rear or belt connecting end of the shaft. Fig. 5 is a front end elevation of the loop-taker, bobbin, bobbin-case, bobbin-case latch, and bobbin-case latch supporting frame, in associated relation, removed from their connection with the machine. Fig. 6 is a front elevation of the bobbin and bobbin-case removed from the loop-taker.

The sewing machine shown in the drawings as embodying my invention, comprises a frame including the usual bed-plate 1 and overhanging bracket arm 2, a vertically reciprocating needle-bar 3 mounted in the front end of said bracket arm, a horizontally arranged driving shaft 4 mounted in bearings in the upper part of said bracket arm and having operative connection at one end with the needle-bar and at its opposite end having a drive pulley 5, a loop-taker shaft 6 at the under side of the bed-plate having attached thereto at its front end a loop-taker 7, and a drive belt 8 operatively connecting the shafts 4 and 6 by engagement with sprocket wheels 4' and 6' respectively, attached to said shafts.

In accordance with my invention as hereinbefore referred to, the loop-taker shaft 6 is supported in a frame which is adjustably connected to the bed-plate 1. This frame, which may be of any suitable or desired construction, is shown in the present case as comprising an elongated casting 9 having at its opposite ends lugs 10, 10, provided with journal bearings for the shaft 6 at its opposite ends, and being forked at its front end or that end nearest the loop-taker to provide two arms 11, 11, for pivotal connection with the bed-plate by means of pivot-screws 12, 12, as shown. At its rear end, or that end nearest the drive belt 8, said frame or casting is connected to the bed-plate for adjustment in a vertical direction toward or from the upper driving shaft 4, by means of a threaded stud or bolt 13 connected to the bed-plate and extending downwardly through an opening in a lug 14 on said

frame and having a nut 15 thereon engaging said lug at its under side, and a spring 16 interposed between the bed-plate and the lug and operating to hold the latter against said nut 15. By such described means, any undue slack in the drive belt may be readily and conveniently taken up by merely turning the nut 15 in a direction to lower its position on the stud 13 and thereby permit the spring 16, under its expansive force, to lower the frame and supported shaft accordingly until the distance between the shafts has been increased sufficiently to take up the desired amount of slack in the belt; it being understood of course that the movement of the frame and supported shaft necessary for such purpose is but very slight. This movement or adjustment of the frame in a vertical direction is effected without causing rotary movement of the loop-taker shaft such as would disturb the timing of the loop-taker relatively to the needle, and by pivotally supporting the frame at its front end with its pivotal point or axis in substantially the same horizontal plane with the eye of the needle at that time in the movement of the latter when the loop-taker is taking the thread loop therefrom, as indicated in Fig. 3, the said adjustment of the frame and loop-taker shaft is also effected without causing an appreciable change in position of the loop-taker, or such a change as would disturb the operative relation of the loop-taker to the cooperating needle.

The loop-taker 7 is of substantially usual construction, the same being in the form of a cup-shaped disk to provide an open chamber in its face side for the bobbin and bobbin-case, and having at its periphery a loop-seizing hook 7'. The bobbin and bobbin-case, indicated at 17 and 18 respectively, are adapted to be removably retained in operative position within the said open chamber of the loop-taker by means of a suitable latch 19. This bobbin-case latch, which may be of any suitable construction and be supported in any suitable manner, is here shown in the form of a plate for engagement with the bobbin-case at its face side, and having two ears 20, 20, pivoted to a supporting frame 21 by pivot screws 22, 22, to permit the latch being swung outwardly from the face of the loop-taker for the insertion or removal of the bobbin and bobbin-case to or from their position within the loop-taker. When the latch is swung to closed position subsequent to the insertion of the bobbin and bobbin-case into their position within the loop-taker, it is held in such position by a suitable latch device, here shown in the form of a pivoted lever 23, having a latch engaging shoulder 24, as clearly shown in Fig. 1.

The supporting frame 21 for the bobbin-case latch may also be supported in any

suitable or desired manner, the same in the present case being connected to the shaft frame 9 by means of two horizontally arranged pins 25, 25, projecting from the front end of said shaft frame and entering corresponding openings 26, 26, in the latch frame, whereby the latter may be slidingly adjusted on said pins to adjust the position of the latch relatively to the loop-taker and bobbin-case. Set screws 27, 27, carried in the latch frame for engagement with the pins 25, 25, and adjustable stop or positioning pins 28, 28, carried in the shaft frame for engagement with the rear side of said latch frame, serve as a means for firmly securing the latter in adjusted position.

As the several parts of the under thread mechanism, including the loop-taker and its shaft, the bobbin, the bobbin-case, and the bobbin-case latch, are all connected to and supported by the shaft frame 9, and as said shaft frame is separate and detachable from the bed-plate of the machine, all of said parts may therefore be assembled before connection with the bed-plate, the advantage of which will be obvious.

When the frame 9 is connected to the bed-plate, its front or pivoted end may be adjusted in a direction transversely of the bed-plate by means of the adjustable pivot screws 12, 12, to thereby adjust and properly position the supported loop-taker relatively to the path of movement of the needle.

While I have shown and described one particular embodiment of my invention, it will be obvious that many changes may be made within the skill of the mechanic without departing from my invention, and as all such mechanical departures are obviously within the purview of the invention, I do not limit myself to any of the details of construction herein illustrated for the purpose of disclosing the invention, except so far as I am limited by the prior art to which this invention belongs.

What I claim is:—

1. In a sewing machine, the combination with a reciprocating needle, a driving shaft therefor, a rotary loop-taker shaft having a loop-taker attached thereto, and a flexible drive connection between said shafts, of means for adjusting the position of one of said shafts relatively to the other to control the slack of their said flexible connection without disturbing the operative relation between the loop-taker and the needle.

2. In a sewing machine, the combination with a reciprocating needle, a driving shaft therefor, a rotary loop-taker shaft having a loop-taker attached thereto, and a flexible drive connection between said shafts, of means for adjusting the position of the loop-taker shaft relatively to the needle driving shaft to control the slack of their

said flexible connection without disturbing the operative relation between the loop-taker and the needle.

3. In a sewing machine, the combination
5 with the frame thereof comprising the usual bed-plate and overhanging bracket-arm, a loop-taker shaft supported in bearings at the under side of the bed-plate and having a loop-taker attached thereto at its
10 front end, a driving shaft supported in bearings in the said bracket-arm, a reciprocating needle operated from said driving shaft, and a flexible drive connection between said shafts connecting with the loop-
15 taker shaft at its rear end, of means for adjusting the loop-taker shaft relatively to the driving shaft by imparting a greater movement thereto at its rear end than at its front end, for the purpose set forth.

20 4. In a sewing machine, the combination with the frame thereof comprising the usual bed-plate and overhanging bracket-arm, a loop-taker shaft supported in bearings at the under side of the bed-plate and having
25 a loop-taker attached thereto at its front end, a driving shaft supported in bearings in the said bracket-arm, a reciprocating needle operated from said driving shaft, and a flexible drive connection between said
30 shafts connecting with the loop-taker shaft at its rear end, of means including a pivotal support for adjusting the loop-taker shaft relatively to the driving shaft by imparting a greater movement thereto at its rear end
35 than at its front end, for the purpose set forth.

5. In a sewing machine, the combination with the frame thereof comprising the usual bed-plate and overhanging bracket-arm, a
40 rotary loop-taker shaft supported in bearings at the under side of the bed-plate, a driving shaft supported in bearings in the said bracket arm, and a flexible drive connection between said shafts, of means for
45 adjusting the position of one of said shafts relatively to the other to thereby control the slack of their said flexible connection; said means including a pivotal support for the adjustable shaft.

50 6. In a sewing machine, the combination with the frame thereof comprising the usual bed-plate and overhanging bracket-arm, a rotary loop-taker shaft supported in bearings at the under side of the bed-
55 plate and having a loop-taker attached thereto, a driving shaft supported in bearings in the said bracket arm, and a flexible drive connection between said shafts, of means for adjusting the position of the
60 loop-taker shaft relatively to the driving shaft to thereby control the slack of their said flexible connection; said means including an adjustable support for the loop-taker shaft adjacent the loop-taker end
65 thereof.

7. In a sewing machine, the combination with the frame thereof comprising the usual bed-plate and overhanging bracket-arm, a rotary loop-taker shaft supported in bearings at the under side of the bed-plate, a
70 driving shaft supported in bearings in the said bracket arm, and a flexible drive connection between said shafts, of means for adjusting the position of the loop-taker shaft relatively to the driving shaft to
75 thereby control the slack of their said flexible connection; said means including a pivotal support for the loop-taker shaft.

8. In a sewing machine, the combination with a rotary loop-taker shaft, a driving
80 shaft therefor, and a flexible drive connection between said shafts, of a pivoted frame supporting one of said shafts and being adjustable therewith to control the slack of the said flexible connection between the shafts,
85 and means for adjusting said frame.

9. In a sewing machine, the combination with a rotary loop-taker shaft, a driving
shaft therefor, and a flexible drive connection between said shafts, of a pivoted frame
90 supporting said loop-taker shaft and being adjustable therewith to control the slack of the said flexible connection between the shafts, and means for adjusting said frame.

10. In a sewing machine, the combination
95 with a rotary loop-taker shaft, a driving shaft therefor, and a flexible drive connection between said shafts, of a pivoted frame supporting one of said shafts and being adjustable therewith to control the slack of the
100 said flexible connection between the shafts, and means for adjusting said frame.

11. In a sewing machine, the combination with a rotary loop-taker shaft, a driving
shaft therefor, and a flexible drive connection
105 between said shafts, of a pivoted frame supporting said loop-taker shaft and being adjustable therewith to control the slack of the said flexible connection between the shafts, and means for adjusting said frame.
110

12. In a sewing machine, the combination with a rotary loop-taker, a shaft carrying
said loop-taker at one end thereof, a driving shaft, and a flexible drive connection be-
115 tween said shafts, of a frame supporting said loop-taker shaft and being pivotally supported adjacent the loop-taker end thereof, and means for adjusting said frame and its supported shaft relatively to the driving
120 shaft to control the slack of the said flexible connection between the shafts.

13. In a sewing machine, the combination with the reciprocating needle, a rotary loop-
taker, a shaft carrying said loop-taker at one end thereof, a driving shaft, and a flex-
125 ible drive connection between said shafts, of a frame supporting said loop-taker shaft and being pivotally supported with its axis in substantially the same horizontal plane with the eye of the needle at the time the
130

loop-taker is taking the thread loop therefrom, and means for adjusting said frame and its supported shaft relatively to the driving shaft to control the slack of the said flexible connection between the shafts.

14. In a sewing machine, the combination with the reciprocating needle, a rotary loop-taker, a shaft carrying said loop-taker at one end thereof, a driving shaft, and a flexible drive connection between said shafts, of a frame supporting said loop-taker shaft and being pivotally supported at the loop-taker end thereof with its axis in substantially the same horizontal plane with the eye of the needle at the time the loop-taker is taking the thread loop therefrom, and means for adjusting said frame and its supported shaft relatively to the driving shaft to control the slack of the said flexible connection between the shafts.

15. In a sewing machine, the combination with the frame thereof including its bed-plate, a rotary loop-taker, a shaft carrying said loop-taker at one end thereof, a driving shaft, and a flexible drive connection between said shafts, of a frame supporting said loop-taker shaft and being pivoted at the loop-taker end thereof to the bed-plate, and means for adjusting said frame and its supported shaft relatively to the driving shaft to control the slack of the said flexible connection between the shafts.

16. In a sewing machine, the combination with the frame thereof including its bed-plate, the reciprocating needle, a rotary loop-taker, a shaft carrying said loop-taker at one end thereof, a driving shaft, and a flexible drive connection between said shafts, of a frame supporting said loop-taker shaft and being pivoted at the loop-taker end thereof to the bed-plate with its axis in substantially the same horizontal plane with the eye of the needle at the time the loop-taker is taking the thread loop therefrom, and means for adjusting said frame and its supported shaft relatively to the driving shaft to control the slack of the said flexible connection between the shafts.

17. In a sewing machine, the combination with the frame thereof including its bed-plate, the reciprocating needle, a rotary loop-taker, a shaft carrying said loop-taker at one end thereof, a driving shaft, and a flexible drive connection between said shafts, of a frame supporting said loop-taker shaft and being pivoted at the front or loop-taker end thereof to the bed-plate with its axis in substantially the same horizontal plane with the eye of the needle at the time the loop-taker is taking the thread loop therefrom, and means engaging said pivoted frame at its rear end for adjusting the same and its supported shaft relatively to the driving shaft to control the slack of the said flexible connection between the shafts.

18. In a sewing machine, the combination with the frame thereof including its bed-plate, the reciprocating needle, a rotary loop-taker, a shaft carrying said loop-taker at one end thereof, a driving shaft, and a flexible drive connection between said shafts, of a frame supporting said loop-taker shaft and being pivoted at the front or loop-taker end thereof to the bed-plate with its axis in substantially the same horizontal plane with the eye of the needle at the time the loop-taker is taking the thread loop therefrom, and means including an adjusting screw and a cooperating spring engaging said pivoted frame at its rear end for adjusting the same and its supported shaft relatively to the driving shaft to control the slack of the said flexible connection between the shafts.

19. In a sewing machine, the combination with the frame thereof including its bed-plate and overhanging bracket-arm, the reciprocating needle, a rotary loop-taker, a shaft carrying said loop-taker at one end thereof, a driving shaft supported in the bracket arm, and a sprocket and belt connection between said shafts, of a frame supporting said loop-taker shaft and being pivoted at the front or loop-taker end thereof to the bed-plate with its axis in substantially the same horizontal plane with the eye of the needle at the time the loop-taker is taking the thread loop therefrom, and means engaging said pivoted frame at its rear end for adjusting the same and its supported shaft in a vertical direction relatively to the driving shaft to control the slack of the said belt connection between the shafts.

20. In a sewing machine, the combination with the frame thereof including its bed-plate, the reciprocating needle, a rotary loop-taker, a shaft carrying said loop-taker at one end thereof, a driving shaft, and a flexible drive connection between said shafts, of an elongated frame supporting said loop-taker shaft and being forked at its front or loop-taker end with the arms thereof pivoted to the bed-plate at a point in substantially the same horizontal plane with the eye of the needle at the time the loop-taker is taking the thread loop therefrom, and means engaging said pivoted frame at its rear end for adjusting the same and its supported shaft relatively to the driving shaft to control the slack of the said flexible connection between the shafts.

21. In a sewing machine, the combination with the bed-plate, of a frame detachably connected thereto, and a loop-taker, a driving shaft therefor, a bobbin, a bobbin-case, a bobbin-case latch, and a bobbin-case latch support, all supported by said frame; the said latch support being adjustable on the frame to permit adjustment of the latch relatively to the loop-taker in the direction of the axis of the latter.

22. In a sewing machine, the combination with a bed-plate, of a frame adjustably connected thereto, and a loop-taker, a driving shaft therefor, a bobbin, a bobbin-case, a bobbin-case latch, and a bobbin-case latch support, all supported by said frame; the said latch support being adjustable on the frame to permit adjustment of the latch relatively to the loop-taker in the direction of the axis of the latter.

23. In a sewing machine, the combination with the bed-plate, of a frame detachably and adjustably connected thereto, and a loop-taker, a driving shaft therefor, a bobbin, a bobbin-case, a bobbin-case latch, and a bobbin-case latch support, all supported by said frame; the said latch support being adjustable on the frame to permit adjustment of the latch relatively to the loop-taker in the direction of the axis of the latter.

24. In a sewing machine, the combination with the bed-plate and the reciprocating needle, of a frame adjustably connected to said bed-plate, means for adjusting said frame in a transverse direction relatively to the path of the needle, and a loop-taker, a driving shaft therefor, a bobbin, a bobbin-case, a bobbin-case latch, and a bobbin-case latch support, all supported by said frame; the said latch support being adjustable on the frame to permit adjustment of the latch relatively to the loop-taker in the direction of the axis of the latter.

Signed at Cleveland, in the county of Cuyahoga, and State of Ohio this 20th day of April, A. D. 1910.

WILLIAM A. MACK.

Witnesses:

CHAS. C. EMMONS,
S. K. BRINEY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."