

C. WEISS.
SEWING MACHINE ATTACHMENT.
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1,301,528.

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Fig. 1

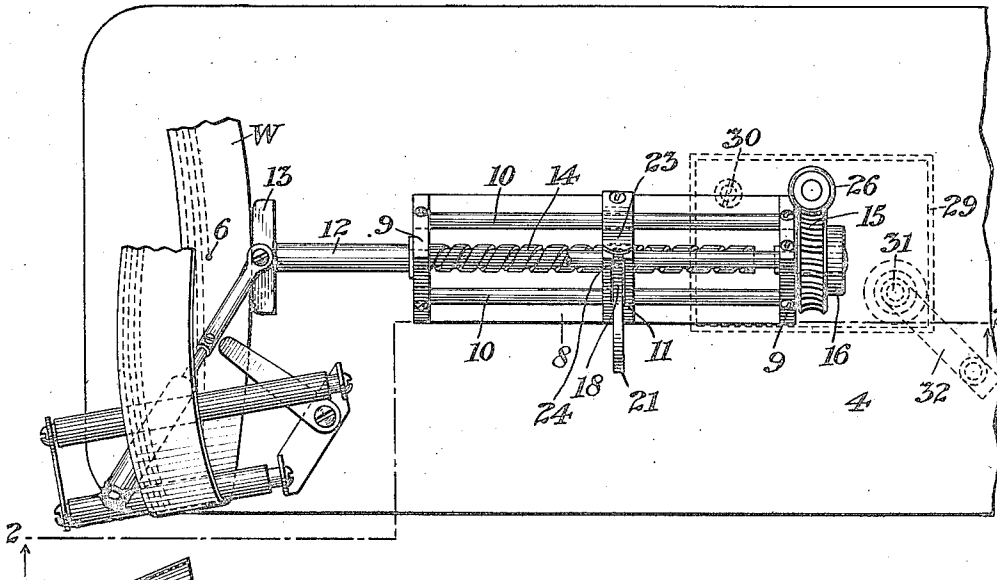


Fig. 2

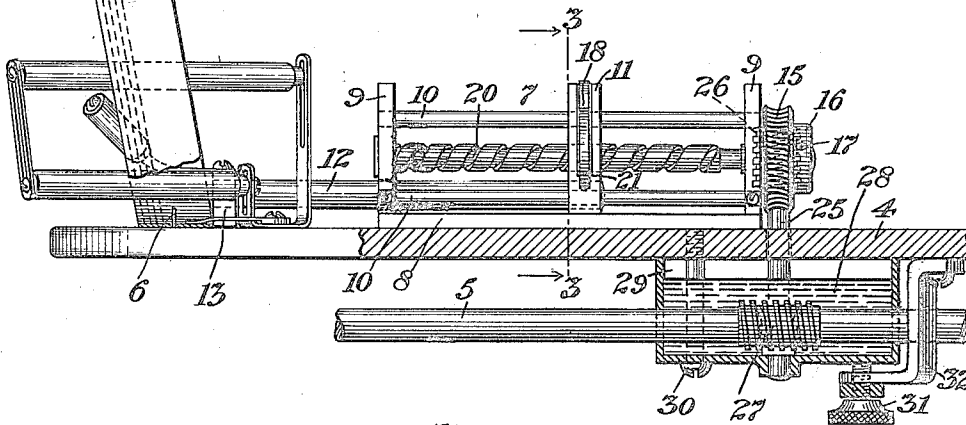
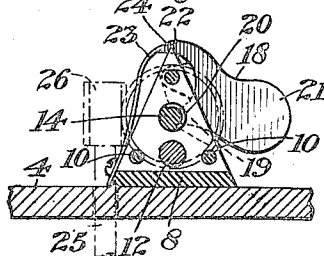


Fig. 3



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SEWING-MACHINE ATTACHMENT.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CORNELIUS WEISS, a citizen of the United States, residing in Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Sewing-Machine Attachments, of which the following is a specification.

My invention relates to an improvement in sewing machine attachments which are designed to feed the material to be sewed slowly to the sewing needle in a direction across the line of feed of the material when acted upon by the needle and the invention is particularly designed for use in connection with the attachment disclosed in my copending application Serial No. 784,303, filed August 12, 1913.

Devices of this class now in general use are usually driven from some shaft of the sewing machines above the top of the work-table in which position of the mechanism, the material worked upon is exposed to a lot of moving greasy machine parts which frequently damage the material. Further, these devices are cumbersome, require a number of shafts and numerous mountings therefor which mountings cannot be lubricated without danger to the material or requiring expensive parts to contain the lubricants.

Accordingly, one of the objects of my invention is to provide a simple type of material feed formed of a minimum number of actuating parts and to assemble the parts in position so that the least possible amount of mechanism will be presented to the work material on top of the work-table of the machine.

A still further object of the invention is to provide for an easy, silent drive for the several parts which will thereby be free of irregularities in feed or any jerky motion. A still further object of the invention is to provide an attachment in which different types of feed control may be mounted so that either a uniform spacing of the spiral sewing threads or some other character of spacing may be provided at will.

Various other objects and advantages of the invention will be in part obvious from an inspection of the accompanying drawings and in part will be more fully set forth in the following particular description of one form of mechanism embodying my inven-

tion, and the invention also consists in certain new and novel features of construction and combination of parts hereinafter set forth and claimed.

In the accompanying drawings:

Figure 1 is a plan view of a preferred embodiment of my invention mounted in position on the work-table of a sewing machine.

Fig. 2 is a side elevation of a portion of the attachment shown in Fig. 1 with certain portions in section taken on the line 2—2 of Fig. 1; and

Fig. 3 is a transverse sectional view taken on the line 3—3 of Fig. 2 looking in the direction indicated by the arrow.

In the following description and in the claims, parts will be identified by specific names for convenience of expression but they are intended to be as generic in their application to similar parts as the art will permit.

There is shown a portion of a conventional type of sewing machine including a work-table 4, a main high speed driving shaft 5 positioned below the table and operatively connected by mechanism (not shown) to drive the sewing needle 6, all as is usual with sewing machines now in general use.

The attachment particularly illustrating the subject matter of this invention broadly includes a portion mounted above the table and a portion mounted beneath the table. The upper portion includes a frame formed of a base plate 8 at opposite longitudinal ends of which are positioned upstanding triangular shaped end plates 9. Three guide rods 10 extend between and are supported by the end plates adjacent their apices, thereby to form a braced construction with two of the guide rods horizontally disposed adjacent the base plate and with the other rod positioned between and above the base rods as shown in Fig. 3. A triangular shaped carriage 11 is slidably mounted upon the base plate 8 and is guided on the rods 10. A round slide rod 12 has a sliding fit in the end plate 9 adjacent the needle 6 and extends parallel to and is positioned between the two lower rods 10. This slide rod constitutes part of the material feeding means indicated generally at 13 and has its rear end fixed to the lower portion of the carriage. A feed screw 14 is ro-

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tatably mounted centrally of the end plates and is preferably a square thread screw of large pitch.

This feed screw is arranged so that it may be readily demounted and a screw of a different pitch of thread substituted therefor when it is desired to change the character of advance for the material. In general the threads of the screw will have a uniform pitch from end to end, but in those cases where a circular member, such as the hat band illustrated, is being sewed it is desirable to have the convolutions of the sewing threads uniformly spaced, and to attain this result the feed screw thread must have an increasing pitch to compensate for the decrease in diameter of the sewing thread coil as the coil approaches the center of the coil should the machine be feeding in that direction or the reverse if the needle is traveling outwardly. The feed screw illustrated may be considered as having the thread of slightly increasing pitch from right to left or, where a peculiar type of convolution in the stitchings is desired on the work material for any reason, the character of the feed screw may be varied to give the desired rate of feed. It is obvious that sets of feed screws may be kept in stock and a particular screw used for each kind of work. A worm gear wheel 15 is keyed to the portion of the feed screw which projects beyond the rear end plate 9 and is demountably held in position by means of face plate 16 attached to the feed screw by means of some quickly demountable fastening means such as a pin 17. A clutch 18 in the form of a plate is supported edgewise in the carriage 11 and is pivotally mounted for rotary movement about the upper of the guide rods 10. The lower side of the clutch is provided with an extension 19 forming a blade designed to be inserted in the thread groove 20 of the feed screw so that the turning of the screw will advance the carriage. The clutch is provided with a forwardly extending finger piece 21 projecting beyond the carriage in position to be grasped conveniently by the operator so as to swing the blade 19 to and from engagement with the feed screw. The upper portion of the clutch is formed into a rearwardly curved finger 22 which is adapted to be engaged by a leaf spring 23 fixed to the carriage. The free end of the spring is designed to hold the clutch in its feed-screw engaging position, shown in Fig. 3 with the spring bearing on the relatively flat edge portion 24 to hold the clutch in engagement with the feed screw or to hold the clutch in an inoperative position when the clutch is moved away from the feed screw.

A short intermediate shaft 25 extends vertically through the work table 4 and is provided at its upper end with a worm 26 meshing with the gear 15 to drive the feed

screw. The shaft 25 has a worm and gear connection 27 with the main driving machine shaft 5. The driving connection 27 and the connection provided by the worm 26 and gear 15 are designed to reduce the high speed of the shaft 5 to a slow speed motion of the feed screw 14. The driving connection 27 is embedded in a body of lubricant 28, preferably a solid lubricant such as vaseline, contained within a box 29 demountably positioned beneath the worktable and held in position by means of screws 30 and a set screw 31 carried by a bracket 32 fixed to the under side of the table. This box also provides a convenient bearing for the lower end of the vertical shaft which bearing is continuously lubricated by the vaseline in the box.

In operation the proper type of feed screw is inserted in position in the attachment, the work W is mounted in its sewing position relative to the needle and the work feeding means brought up to the edge of the work. The clutch is then lowered to its locking position engaging whatever portion of the feed screw may be opposite the carriage when the work feeding mechanism is in its set position. The sewing machine is then started as is usual with these devices. Motion from the high speed driving shaft 5 of the machine is transmitted through the reduced speed gearing directly to the feed screw and from the screw to the carriage and rod 12 thereby to advance the work at a rate dependent upon the character of the feed screw used. At the end of the desired feed the machine is stopped, the work removed, another piece of work substituted and the operation is repeated. Should a different character of feed be desired, a feed screw having a different pitch or having a complicated character of thread thereon may be substituted for the uniform pitch thread feed screws. This removal of feed screw may be effected by removing pin 17 and slipping face plate 16 and gear wheel 15 off the right hand end of the feed screw. The feed screw is then free to be withdrawn longitudinally from the end plates 9 and another type of screw substituted therefor.

By means of a device of this character, any high speed driving parts are positioned below the table and out of the way of the work material on top of the table. Obviously the relatively slow speed worm 26 and gear 15 may be inclosed in any suitable casing which thus presents merely the feed screw itself to the work material. With this type of device there is really no necessity to have any lubrication on this feed screw for it turns slowly and there is but little friction with the clutch. All high speed parts, such as the main shaft and worm carried thereby are embedded in lubricant. Even

the lower supporting bearing for the vertical shaft is in the lubricant.

The frame described has certain structural advantages which not only provide a well braced structure formed of a minimum amount of material, but also insures easy steady feeding of the work engaging mechanism without chattering thus insuring a uniform spacing of the line of sewing threads. The triangular constructions of the end plate and of the carriage minimize any tendency of these members to turn on the guide rods and thus insures against any distortion of these rods. The projecting rod 12 is held steady by its close sliding fit in the forward end plate and by its braced position engaging the sliding bottom face of the carriage.

The lubrication box is removed simply by loosening the holding screws which permit the box to be lowered away from the vertical shaft and the parts of the shaft on opposite sides of the box drawn outwardly from the box leaving the worm element of the connection 27 within the box. The box may be charged with a fresh lubricant and remounted in place with the shaft reseated in its bearing within the box.

While I have shown and described, and have pointed out in the annexed claims, certain novel features of my invention, it will be understood that various omissions, substitutions and changes in the form and details of the device illustrated and in its operation may be made by those skilled in the art without departing from the spirit of the invention.

Having thus described my invention, I claim:

1. In a sewing machine, the combination with a supporting table and a machine shaft mounted for rotary movement beneath the table, of an attachment including a box demountably positioned beneath said table and designed to contain a lubricant, a vertically extending shaft having its lower end journaled in said lubrication box and extending upwardly through said table, a driving connection between the machine shaft and the vertical shaft, said connection positioned in said box so as to be embedded in the lubricant, a frame mounted on top of the table, material feeding means carried by said frame, a feed screw operatively connected to said means to advance the same and a driving connection between said vertical shaft and said feed screw.

2. An attachment for sewing machines, comprising a bottom plate, a pair of triangular shaped upstanding spaced apart end plates fixed thereto, three parallel guide rods extending between and supported by the end plates adjacent their apices, a carriage slidably mounted on said guide rods, material feeding means including a round rod having a sliding fit through one of said

end plates and fixed to said sliding carriage, a feed screw rotatably mounted in said end plates and positioned between the guide rods and a clutch supported by the carriage and designed to engage the feed screw.

3. In a sewing machine, the combination with a supporting table and a machine shaft mounted for rotary movement beneath the table, of an attachment including a journal box positioned beneath the table, a vertically extending shaft having its lower end journaled in said box and extending upwardly through said table, a driving connection between the machine shaft and the vertical shaft, material feeding means including a feed screw positioned on top of the table and a driving connection between the vertical shaft and said feed screw.

4. In a sewing machine, the combination of a supporting table, a journal box mounted beneath the table and adapted to contain a lubricant, a power shaft journaled in said box, a vertically extending driven shaft having its lower end journaled in said box and extending upwardly therefrom through said table, a driving gear connection between said shafts adapted to be contained in the lubricant in said box, a material feeding means positioned on top of the table and a driving connection between the upper portion of said vertically extending shaft and said feeding means.

5. In a device of the class described, a supporting frame, a material feeding means slidably mounted in said frame, a readily replaceable feed screw rotatably mounted in said frame, a driving gear fixed to said feed screw, a face plate for holding said gear removably in position and means for connecting said replaceable feed screw with said material feeding means.

6. In a device of the class described, the combination of a material feeding means, a feed screw with the thread at one portion having a different pitch from that at another portion thereof, a clutch for connecting any portion of the feed screw with said feeding means and a drive for said feed screw.

7. In a device of the class described, the combination of a material feeding means, a feed screw with the thread at one portion having a different pitch from the thread at another portion thereof, a clutch for connecting any portion of the feed screw with said feeding means and a drive for said feed screw.

8. In a device of the class described, the combination of a frame, a feed screw rotatably mounted in said frame, a carriage slidably mounted on said frame, material feeding means connected to said carriage, a clutch pivotally mounted on said carriage and designed to be moved to and from an operative engagement with said feed screw

and a spring engaging said clutch and designed to hold the same positively in both its operative and in an inoperative position, relative to said feed screw.

- 5 9. In a device of the class described, the combination of a base plate, upstanding end plates fixed thereto, a plurality of guiding rods connecting said plates, a sliding carriage resting on said base plate and guided
10 on said rods, a feed screw journaled in said end plates, means for driving said feed

screw, a material feeding rod slidably mounted in one of said end plates and attached to said carriage adjacent its engagement with the base plate and a connection 15 between said feed screw and said feeding rod.

Signed at New York city in the county of Kings and State of New York, this 8th day of October, A. D., 1915.

CORNELIUS WEISS.