May 23, 1933. H. J. BÜCKING 1,910,200

SEWING MACHINE

Filed Aug. 27, 1930 2 Sheets-Sheet 1

Fig. 1.

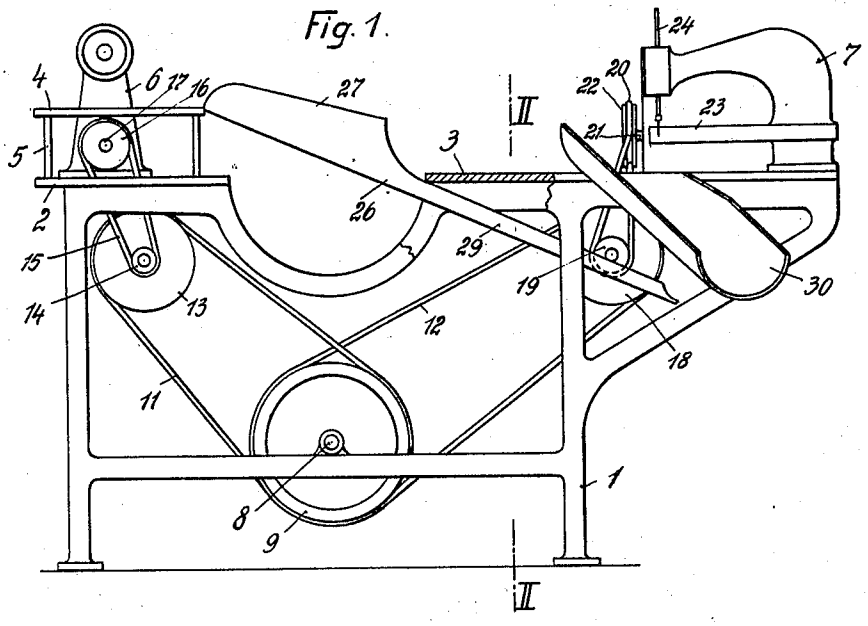
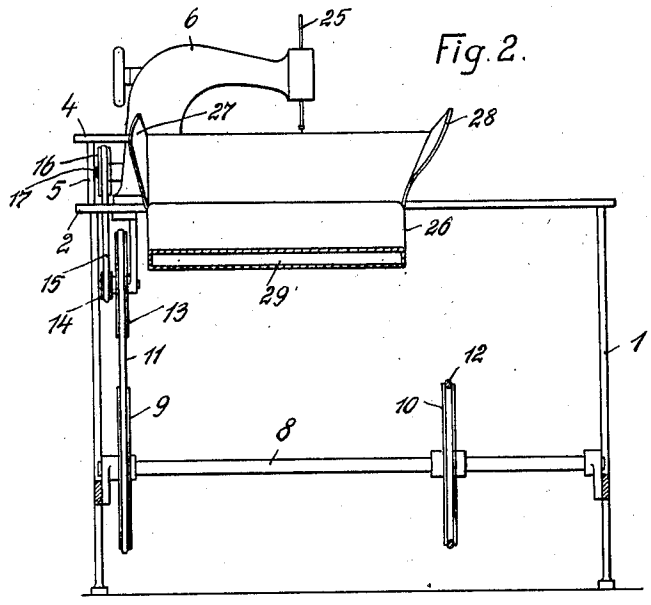


Fig. 2.



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Fig. 3.

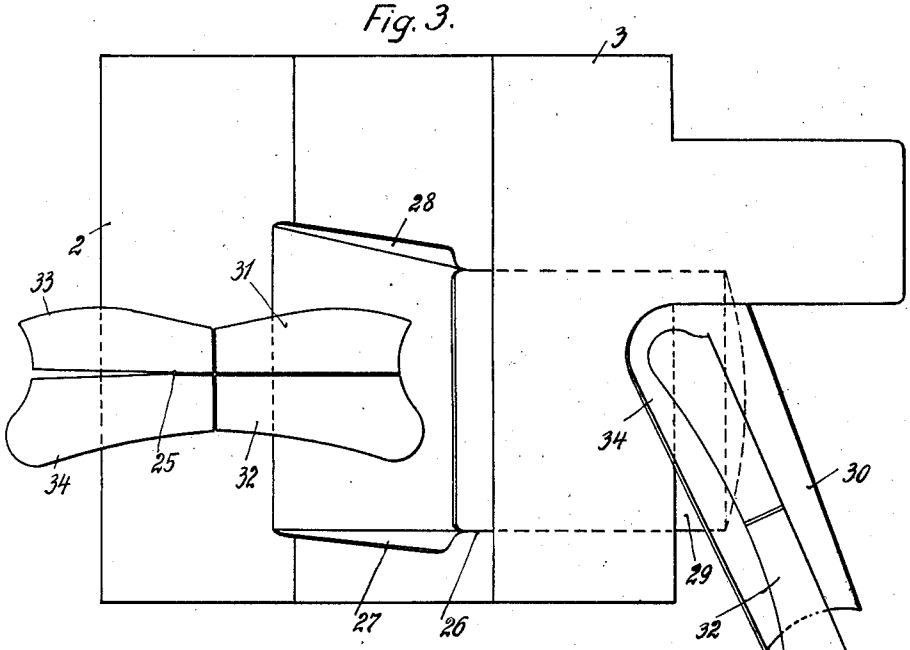


Fig. 4.

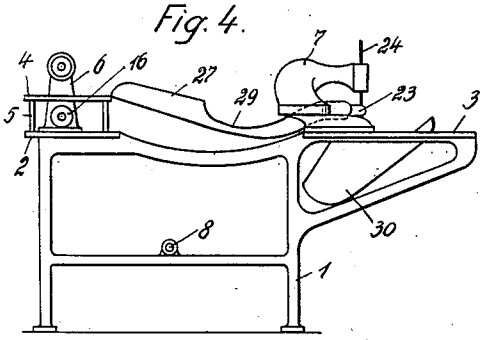


Fig. 6.

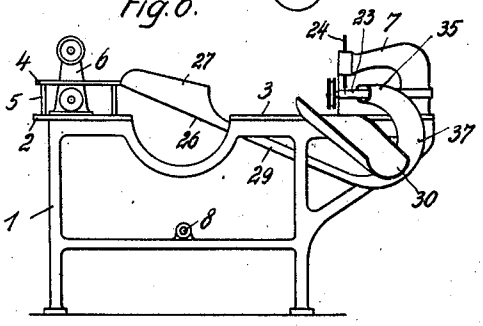


Fig. 5.

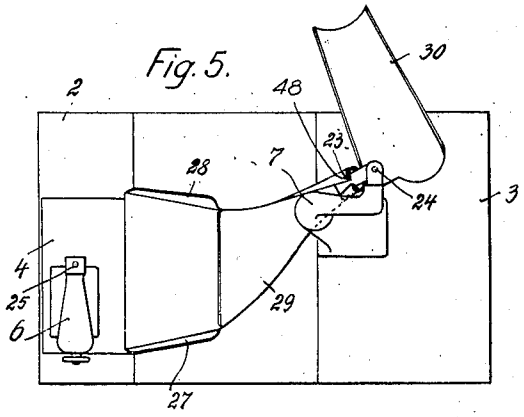
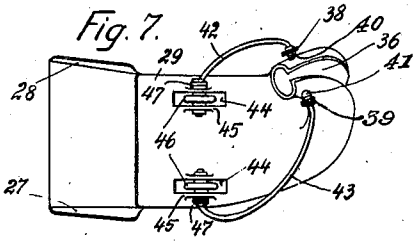


Fig. 7.



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UNITED STATES PATENT OFFICE

HANS JAKOB BÜCKING, OF ALSFELD, GERMANY

SEWING MACHINE

Application filed August 27, 1930. Serial No. 478,070.

My invention relates to sewing machines and more particularly to sewing machines in which several seams on the same article are sewn in succession on distinct sewing machine units.

It is an object of my invention to improve a machine of this kind with a view to rendering the operator's work more easy.

To this end I provide a chute or channel which extends from the first sewing machine unit to the second unit and is adapted to receive the articles from the first, and to conduct them toward the second unit. The operator of the second unit is supplied with the partly finished articles by the chute and is able to present the articles to this unit by a single handling.

Heretofore in sewing articles of any kind requiring several successive operations, the articles, for instance, sleeves, were piled up after having been finished on one of the units, and then delivered to the operator of the next unit who took them from the pile and presented them to the unit. This system is complicated and tedious. According to my invention the necessity of piling the partly finished articles and of transporting the piles to another unit is eliminated. The articles which have been finished on the first unit are delivered to the second unit on my chute, preferably under the action of the feed imparted to them by the first unit on which they have been provided with the first seam in the case of sleeves or similar articles and are provided with the second seam on the second unit.

Obviously the operation of a machine equipped with my chute is greatly facilitated and its output is increased in proportion.

In the drawings affixed to this specification and forming part thereof sewing machines equipped with my novel chute are illustrated diagrammatically by way of example.

In the drawings

Fig. 1 is an elevation of a machine equipped with a straight chute.

Fig. 2 is an end elevation of the machine, partly in section on the line 11—11 in Fig. 1,

Fig. 3 is a plan view of the machine, with its sewing-machine units omitted,

Fig. 4 is an elevation of a machine having a curved and partly tubular chute,

Fig. 5 is a plan view of the machine,

Fig. 6 is an elevation of a machine having a curved and partly tubular chute like the machine illustrated in Figs. 4 and 5 but with the end of the chute turned back at the second unit, and

Fig. 7 is a plan view of the chute for the machine illustrated in Fig. 6,

Referring now to the drawings, and first to Figs. 1–3, 1 is the frame of the machine, 2 and 3 are work benches, 4 is a table which is held above the work bench 2 by suitable stays 5, 6 is the first unit which is secured to the work bench 2, and 7 is the second unit which is secured to the work bench 3. 8 is the main driving shaft, 9 and 10 are pulleys on the main driving shaft, 11 and 12 are belts on the pulleys, 13 is a pulley below the work bench 2, 14 is a smaller pulley on the shaft of the pulley 13, 15 is a belt on this pulley and 16 is a pulley on the main shaft 17 of the unit 6 which is driven by the belt 15. 18 is a pulley below the work bench 3 of the second unit 7 which is driven by the belt 12, 19 is a pulley on the shaft of the pulley 18, 20 is a quarter turn belt on the pulley 19, and 21 is the main shaft of the second unit 7 which is driven from the belt 20 through the medium of a pulley 22. 23 is the work arm, and 24 is the needle bar of the second unit 7, the needle bar of the first unit being positioned at 25, Fig. 3.

26 is a chute or channel which extends from the table 4 of the first unit 6 to a point below the second unit 7 and is preferably inclined toward this unit so that the articles slide in the chute by gravity. The upper end of the chute is open and provided with lateral flanges 27 and 28 for the reception of the articles from the first unit. Substantially at the point where it enters below the work bench 3, the chute is tubular, being a flat tube 29 of rectangular section as best seen in Fig. 2. 30 is an open ejecting chute which extends from below the second unit 7 and is slightly inclined.

31, 32, Fig. 3, are the two halves of a preceding, and 33, 34 are the two halves of a succeeding sleeve. The halves 31, 32 have been sewn by the first unit 6 and are now delivered to the chute 26 while the halves 33, 34 are connected along their mating edges. The thread of the first unit is not severed for the succeeding sleeve so that all sleeves are connected with each other as they leave the first unit 6. From the first unit, each pair of halves which have been sewn on this unit are delivered to the open end of the chute 26 whereupon they enter the tube 29 and are extracted at the lower end of the tube. The inclination of the chute exerts a feeding action on the partly finished sleeves and facilitates their extraction from the tube. As the sleeves are connected by the thread the succeeding pair of halves 33, 34 is moved to the end of the tube 29 as the preceding pair of halves 31, 32 is extracted from the tube.

The operator now lifts the partly finished sleeves, wraps them into the substantially cylindrical form of the finished sleeve and places them on the work arm 23 of the second unit where their sides 33 and 34 are sewn together. From the unit 7, the finished sleeves are delivered to the chute 30, and finally ejected.

Referring now to Figs. 4 and 5, the frame 1 with its work benches 2 and 3, the table 4 and the units 6 and 7 are arranged substantially as described with reference to Figs. 1–3 but in this instance the unit 7 is arranged near the inner edge of the table or work bench 3, and not near its outer edge as shown in Figs. 1–3. This reduces the overall length of the machine, and the operator of the second unit is seated intermediate the work benches 2 and 3 instead of being seated at the outer end of the work bench 3, as in Figs. 1–3.

The chute or channel 26 is arranged with its front end at the level of the table 4, and is equipped with flanges 27 and 28, and the tube 29, as described. In this instance, however, the chute extends from the first unit directly to the second unit. The end of the tube 29 is substantially cylindrical and surrounds the arm 23 with its cylindrical portion. The chute 26, as described with reference to Figs. 1 to 3 has a tubular portion 29 of substantially rectangular section. This tubular portion in the machine illustrated in Figs. 4 and 5 is not straight at its outer end but curved into the cylinder surrounding the arm 23, and the articles are extracted from the substantially circular opening 48 at the end of the cylinder. In this manner the sleeve which issues from the end 48, is bent into a cylinder about the arm 23 so that all the operator has to do is to fold over the edges of the sleeve portion and to direct them to below the needle 24.

A chute 26 designed as described with reference to Figs 4 and 5 may also be adapted to a machine showing the general arrangement as in Figs. 1–3 and a chute of this type is illustrated in Figs. 6 and 7. The chute with its flanges 27 and 28, and the flat tubular portion 29 is arranged as in Figs. 1–3, and may be inclined at the same angle. The flat tubular portion 29 merges into a cylindrical portion 35 which is provided with a turned-back bend 37. This portion 35 is provided with a slot 36 extending to the end of the cylinder. The workarm 23 is adapted to project into the end of the cylinder below the slot 36, but it may be arranged at a distance from the end of the cylinder if desired.

Normally the feed of the articles is effected by their own weight, by the feeding movement imparted to them by the first unit 6 and by the pull exerted by the second unit 7.

However, it may occur under certain conditions, and particularly under the increased resistance opposed to the movement of the articles by the slot 48 in Figs. 4 and 5 and by the rebending of the cylindrical portion at the outlet end of the chute in Figs. 6 and 7, that this feed is not sufficient for pulling the articles through. In such cases, extra feeding means must be provided. An example is illustrated in Fig. 7 in combination with the turned-back chute illustrated in Fig. 6 but it is understood that feeding means of any kind may be adapted to any type of chute if required.

Referring now to Fig. 7, 38 and 39 are spur gears, friction pulleys, or any other parts adapted to be rotated which are supported in suitable brackets 40 and 41 on the cylinder 35. Rotation may be imparted to the members 38 and 39 by any suitable means, for instance by a connection to a rotary part of the unit 7. 42 and 43 are shafts connected to the members 38 and 39, respectively, which are here shown as flexible shafts. Such shafts eliminate bevel gearings and a plurality of shafts connected by them, but I am not limited to the adaptation of flexible shafts. 44 are slots in the top plate of the tube 29, 45 are bearings at the sides of the slots and 46 are friction discs which are seated on stud shafts connected to the shafts 42 and 43, and mounted in the bearings 45. The friction discs 46 project into the tube 29 through the slots 44, engage the sleeves in the tubes, and feed them toward the cylinder 35. The friction discs 46 are similar to the spur gears or the like 38, 39 and their edges, like those of the members 38, 39, may be toothed, knurled, or otherwise so designed as to facilitate their engagement with the articles to be fed. It may be desirable to vary the speed at which the several friction discs feed the articles. In this case the discs may be made with various diame-

ters or various speeds of rotation may be imparted to the shafts 42, 43. The speed of feeding may also be influenced by the pull exerted by the operator which may not be uniform throughout the articles. In order to prevent interference in cases of this kind, a yielding connection may be provided between the shafts 42, 43, and their friction discs.

By way of example I have shown friction clutches 47 for the shafts 42 and 43 in Fig. 7 by which the shafts are connected with the respective friction discs 46, but any other resilient means, or resilient shafts, may be provided.

I wish it to be understood that I do not desire to be limited to the exact details of construction shown and described for obvious modifications will occur to a person skilled in the art.

I claim:—

1. Sewing mechanism comprising two sewing-machine units and a channel which is open and flanged at the end adjacent said first unit, and tubular at the end adjacent said second unit, and is adapted to receive articles from the first unit and to supply them to the second unit.

2. Sewing mechanism comprising two sewing-machine units, a channel extending from the first to the second unit and adapted to receive articles from the first unit, a work arm on the second unit, and a tubular part on said chute surrounding said work arm at a clearance.

3. Sewing mechanism comprising two sewing-machine units, a channel extending from the first to the second unit and adapted to receive articles from the first unit, and means operatively connected to one of said units for feeding the articles in said channel.

4. Sewing mechanism comprising two sewing-machine units, a channel extending from the first to the second unit and adapted to receive articles from the first unit, and means including a friction disc for feeding the articles in said channel.

5. Sewing mechanism comprising two sewing-machine units, a channel extending from the first to the second unit and adapted to receive articles from the first unit, means for feeding the articles in said channel, and means including a yielding connection for operating said feeding means from one of said units.

6. Sewing mechanism comprising two sewing-machine units, a channel extending from the first to the second unit and adapted to receive articles from the first unit, a friction disc projecting into said channel, and means operatively connected to one of said units for rotating said friction disc.

7. Sewing mechanism comprising two sewing machine units, and a fixed fabric receiving guide extending from the first to the second unit and adapted to directly receive articles from the first unit, the major portion of the guide being disposed at an angle to the horizontal.

8. Sewing mechanism comprising two sewing machine units, and a folding guide extending from one unit to another and directly receiving the material operated on by one unit and adapted to change the configuration of the fabric during the passage of the same to the other unit.

9. Sewing mechanism comprising two sewing machine units, and a fabric receiving guide having a flat portion adjacent one unit, and a tapered cylindrical portion extending from the flat portion to the other unit for changing the configuration of the fabric during the passage of the same through the guide.

In testimony whereof I affix my signature.

HANS JAKOB BÜCKING.