No. 696,012. Patented Mar. 25, 1902.

G. H. DIMOND & W. F. DIAL.

SEWING MACHINE CLOTH PRESSER.

(Application filed Oct. 31, 1901.)

(No Model.)

Fig. 1.

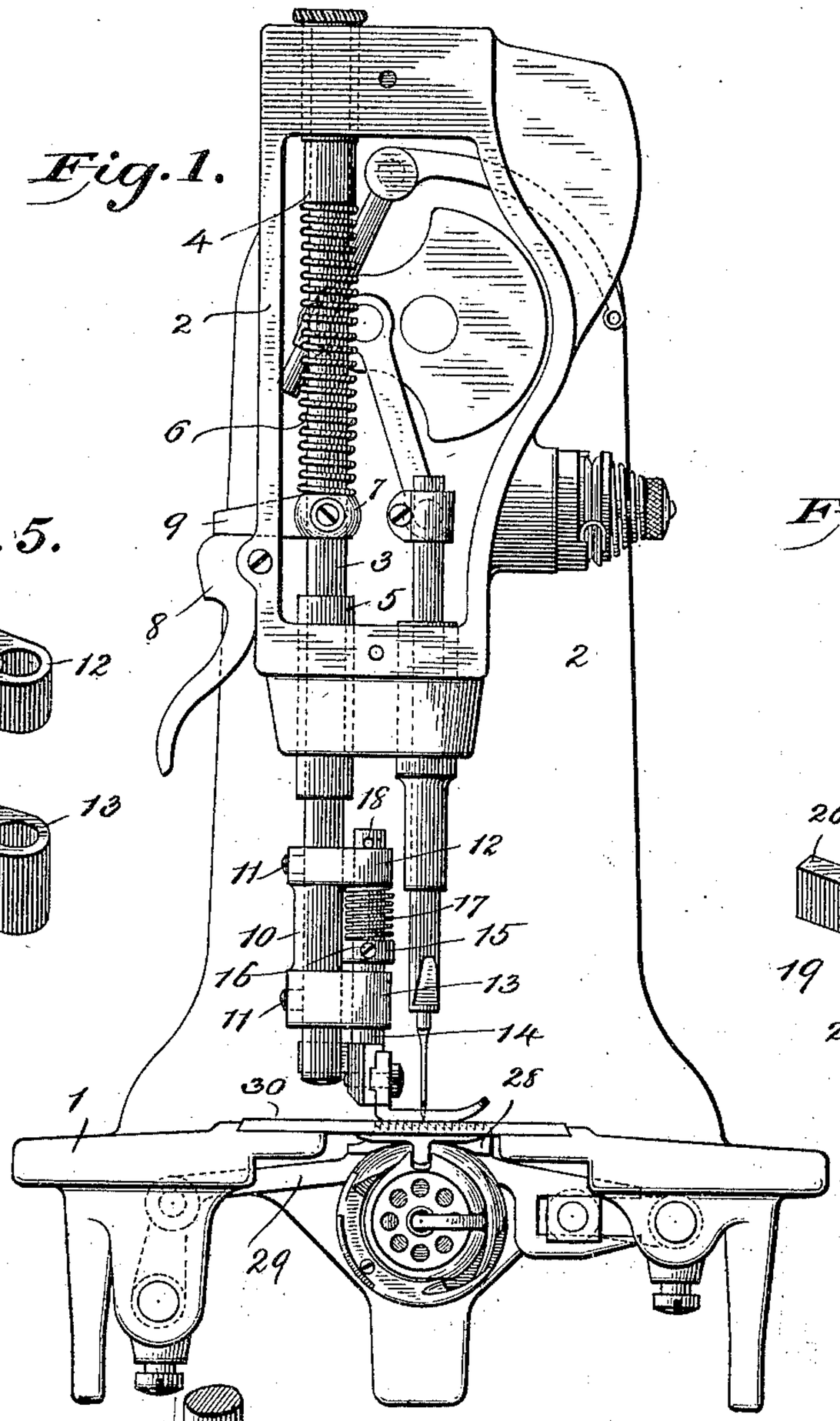


Fig. 5.

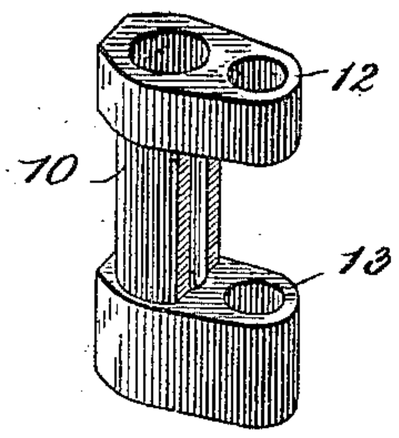


Fig. 4.

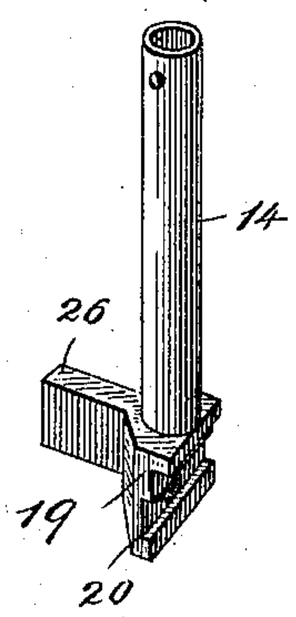


Fig. 2.

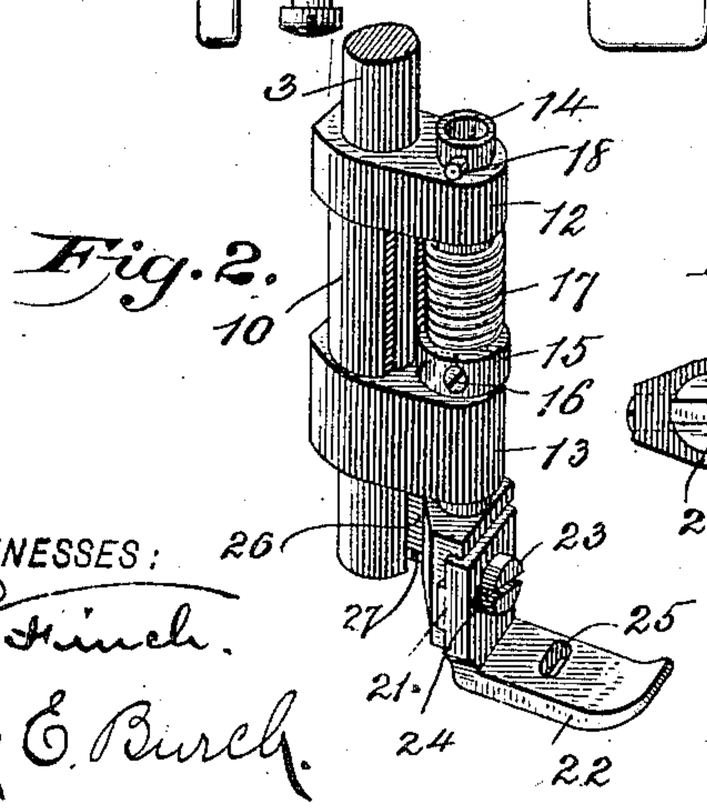
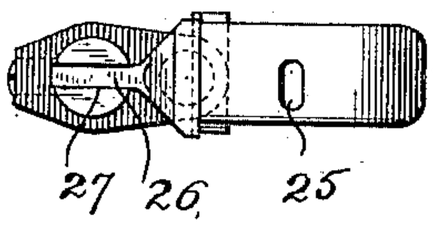


Fig. 3.



WITNESSES:

J. F. Finch.

John E. Burch.

INVENTORS

George H. Dimond

Wilbur F. Dial

BY

Wm. F. Finch

ATTORNEY

UNITED STATES PATENT OFFICE.

GEORGE H. DIMOND AND WILBUR F. DIAL, OF BRIDGEPORT, CONNECTICUT, ASSIGNORS TO WHEELER & WILSON MANUFACTURING COMPANY, OF BRIDGEPORT, CONNECTICUT, A CORPORATION OF CONNECTICUT.

SEWING-MACHINE CLOTH-PRESSER.

SPECIFICATION forming part of Letters Patent No. 696,012, dated March 25, 1902.

Application filed October 31, 1901. Serial No. 80,693. (No model.)

To all whom it may concern:

Be it known that we, GEORGE H. DIMOND and WILBUR F. DIAL, citizens of the United States, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented a certain new and useful Improvement in Sewing-Machine Cloth-Pressers, of which the following is a full, clear, and exact description.

This invention relates to improvements in sewing-machine cloth-pressers, and has for its special object to provide a duplex cloth-presser for use in connection with sewing-machines provided with a four-motion feed.

As is well understood, the operation of a four-motion feed requires a vertical movement of the cloth-presser for each feed movement, and the extent of the vertical movements of the cloth-presser corresponds substantially with the vertical movements of the feed-dog.

In the operation of high-speed sewing-machines the ordinary cloth-presser fails under certain circumstances to meet the desired requirements. For example, in the operation of sewing-machines capable of forming three thousand or more stitches a minute it is essential that the control of the pressure of the cloth-presser shall be distinctly different in passing over seams or substantially increased thicknesses, on the one hand, and in the seaming of the plain surface of the material and that change in such control of the pressure shall be automatically accomplished.

A spring-controlled vertically-arranged presser-bar provided at its lower end with the usual cloth-presser is common to sewing-machines generally, and it is also old to provide a presser-bar with two pressers capable of independent vertical movements, as in machines for hemstitching.

In high-speed work the spring-actuated presser-bar of ordinary construction fails to respond quickly enough without employing a spring-pressure so strong that great injury is done to the material by the pointed teeth of the feed-dog in rising and lifting the material against such pressure. On the other hand, should the spring-pressure be decreased to a degree where no injury would be wrought by the feed-dog to the material the feed of the latter would be unimpaired until a high rate of speed is attained; when by reason of the force with which the rising feed-dog strikes the under side of the presser-foot through the material the moderate spring-pressure actuating said foot is unable to overcome the momentum of the comparatively heavy bar until the forward movement of the feed-dog has been completed and said dog withdrawn beneath the throat-plate. The effect of this action of the feed-dog on the ordinary feed-bar and presser-foot is to keep the latter practically suspended in the air over the material, the successive shocks of the feed-dog against the bottom of the foot occurring so fast that the latter does not have time to fully recover from one blow before it receives another, and hence the material will simply remain stationary beneath the foot.

The present invention is designed to meet the conditions above mentioned which we believe to be advantageous in the operation of high-speed sewing-machines; and it consists, essentially, in an auxiliary presser-foot applied to a main presser-bar, each having its own independently-acting spring, so that in sewing plain surfaces or seams of usual thickness the auxiliary presser will suffice, and when sewing extraordinary thicknesses the spring of the auxiliary presser will be compressed substantially to its limit of resilience or activity and the spring of the main presser-bar will be brought into active operation until the extraordinary service is ended and the ordinary stitching resumed, all as we will proceed now more particularly to set forth and claim.

In the accompanying drawings, illustrating our invention, in the several figures of which like parts are similarly designated, Figure 1 is an end elevation of a Wheeler & Wilson high-speed sewing-machine with the face-plate removed and equipped with our improved cloth-presser. Fig. 2 is a perspective view of our improved cloth-presser and part of the presser-bar detached from the machine. Fig. 3 is a bottom view of our improved cloth-presser, illustrating particularly the means for holding the auxiliary

presser-bar against turning. Fig. 4 is a perspective view of the auxiliary presser-bar detached. Fig. 5 is a perspective view of the sleeve on which the auxiliary presser-bar is mounted.

1 is the usual sewing-machine bed-plate, surmounted by the overhanging arm 2.

3 is the main vertical presser-bar, mounted within said arm in the usual or any approved manner, in the present instance said bar being mounted in bushings 4 5 and having a coiled spring 6 interposed between the end of the bushing 4 and the presser-lifting collar 7, tight on said bar.

8 is the usual presser-lifter, pivoted beneath the presser-lifting collar 7 and adapted to coöperate with the protruding end 9 of the presser-lifting collar 7, which end extends through a vertically-disposed slot (not shown) in the rear wall of the overhanging arm in the usual manner, whereby the presser-bar 3 is restrained against turning.

10 is a sleeve secured to the lower end of the presser-bar 3, as by screws 11, and extending from said sleeve are ears 12 13, within which is slidably mounted an auxiliary presser-bar 14.

15 is a collar adjustably secured to the auxiliary presser-bar 14, as by a set-screw 16. Interposed between the under side of the ear 12 and the collar 15 is a coiled spring 17, which exerts a tendency to thrust said auxiliary presser-bar 14 downwardly.

18 is a pin driven through a hole in the upper end of the auxiliary presser-bar 14 above the ear 12, by means of which the downward movement of said auxiliary presser-bar is limited. The collar 15 is adjustable upon the auxiliary presser-bar by means of set-screw 16, so that the tension of the spring 17 may be altered to suit the requirements of various materials.

19 is a presser-foot holder secured rigidly upon or formed integral with the lower end of the auxiliary presser-bar 14. The front face of this holder 19 is grooved horizontally, as shown at 20, to receive the ribbed shank 21 of a presser-foot 22. Said presser-foot 22 is held in place by a headed set-screw 23, which passes through a horizontal slot 24 in the shank 21 of said presser-foot 22 and is tapped within the presser-foot holder 19.

25 is the needle-hole in the presser-foot, said hole being somewhat elongated in a direction at right angles to the line of the feed of the material for the purpose of permitting a lateral adjustment of the presser-foot.

The auxiliary presser-bar 14 is held against turning by a finger 26, which extends rearwardly from the presser-foot holder 19 and projects within a groove or slit 27, formed in the lower end of the presser-bar 3.

28 is a feed-dog mounted upon a feed-bar 29 and actuated in the usual or any approved manner, as in accordance with the well-known four-motion feed, to coöperate with the cloth-presser in feeding the material.

30 is the usual throat-plate.

The spring 6 of the main presser-bar is of somewhat greater strength than the spring 17 of the auxiliary presser, and hence a pressure sufficient to collapse the latter would have no effect upon the former, and it is the object of this invention to utilize the delicate sensitive quality of the spring 17 when running at an extremely high rate of speed upon the plain thin portions of garments and to automatically increase the pressure upon the material by bringing into action the more powerful spring 6 when passing over seams of extraordinary or greater thickness.

In the operation of our improved cloth-presser the sleeve 10 is adjusted on the presser-bar 3 so that the distance between the under side of the ear 13 and the upper edge of the presser-foot holder will be somewhat less than the greatest thickness of seams likely to be encountered, so that in passing over such thick or extraordinary seams the presser-foot 22 will be elevated against the tension of spring 17 or to the limit of its activity and sufficiently to close up the space between the upper edge of said presser-foot holder and the under side of the ear 13, and hence the presser-bar 3 will then yield, and thereby will be obtained the more powerful pressure of the spring 6, so that the feed will be uninterrupted. In this connection it will be observed that the upper edge of the presser-foot holder affords a stop or abutment to limit the independent upward movement of the auxiliary presser-bar. The downward movement of the auxiliary presser-bar 14 being limited by the pin 18, said auxiliary presser bar and foot will therefore be lifted clear of the throat-plate, &c., for the introduction of material to be sewed whenever the presser-bar 3 is raised by action of the presser-lifter 8.

By utilizing the collar 15 also as a stop to limit the downward movement of the auxiliary presser-bar, as is obvious, the stop-pin 18 might be dispensed with; but in this event the adjustment of the tension of the spring 17 would be interfered with and the device rendered less satisfactory.

Another advantage of great importance in machines to be run at a very high rate of speed is the extreme lightness of our construction, which is an essential feature in the successful operation of machines of this description when working upon fabrics of very delicate texture.

In order to further diminish the weight of the auxiliary presser-bar, we have made the same hollow, since every little weight which is dispensed with facilitates the operation of the device.

What we claim is—

1. In a sewing-machine, the combination of a main spring-pressed presser-bar, and a sleeve mounted thereon and having laterally-projecting ears, with an auxiliary spring-pressed presser-bar mounted in said ears and

having a presser-foot holder, and a presser-foot applied to said holder, the spring-pressure of the main presser-bar being in excess of the spring-pressure of said auxiliary presser-bar.

2. In a sewing-machine, the combination of a main presser-bar, with an auxiliary presser-bar, a presser-foot thereon, a sleeve carried by said main presser-bar and having ears in which the auxiliary presser-bar is mounted, means for limiting the vertical movements of said auxiliary presser-bar, and differential springs applied to the main presser-bar and the auxiliary presser-bar, whereby the pressure of the presser-foot upon the material is increased when thick portions of the work are encountered and decreased upon the plain thin surfaces of the work.

3. In a sewing-machine, the combination of a main spring-pressed presser-bar, with an auxiliary spring-pressed presser-bar, a horizontally-grooved presser-foot holder on said auxiliary bar, a presser-foot adjustable in said holder, a grooved sleeve rigid with the main presser-bar, and having ears in which the auxiliary presser-bar is mounted, and a finger on the holder engaging the groove in the sleeve for restraining said auxiliary presser-bar against turning.

4. In a sewing-machine, the combination of a main spring-pressed presser-bar, with an auxiliary spring-pressed presser-bar, a sleeve having a vertical groove or slit and rigid with the main presser-bar and having ears to receive the auxiliary presser-bar, a presser-foot holder on the auxiliary presser-bar having a horizontal groove, a laterally-adjustable presser-foot provided with a ribbed shank adapted to fit within said horizontal groove in said presser-foot holder, and a finger on the holder engaging the groove or slit in the sleeve to restrain the auxiliary presser-foot from turning.

In testimony whereof we have hereunto set our hands this 30th day of October, A. D. 1901.

GEORGE H. DIMOND.
WILBUR F. DIAL.

Witnesses:
ABBIE A. DONIHEE,
F. W. OSTROM.