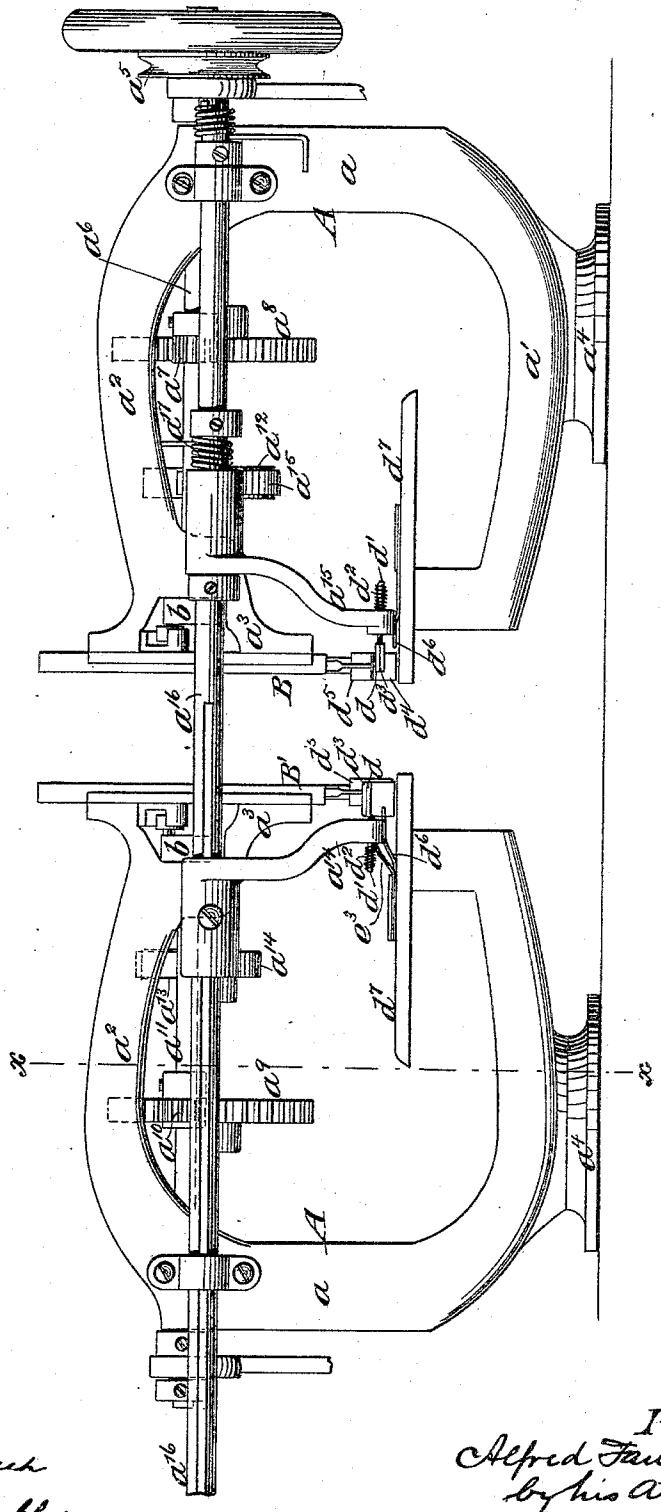
(No Model.) 2 Sheets—Sheet 1.

A. FAULKNER.

PLAITING ATTACHMENT FOR SEWING MACHINES.

No. 411,917. Patented Oct. 1, 1889.

Fig. 1.



Witnesses:
John Burke
Arthur F. Chamberlain

Inventor:
Alfred Faulkner
by his Attorneys
Brown & Griswold

N. PETERS, Photo-Lithographer, Washington, D. C.

(No Model.) 2 Sheets—Sheet 2.

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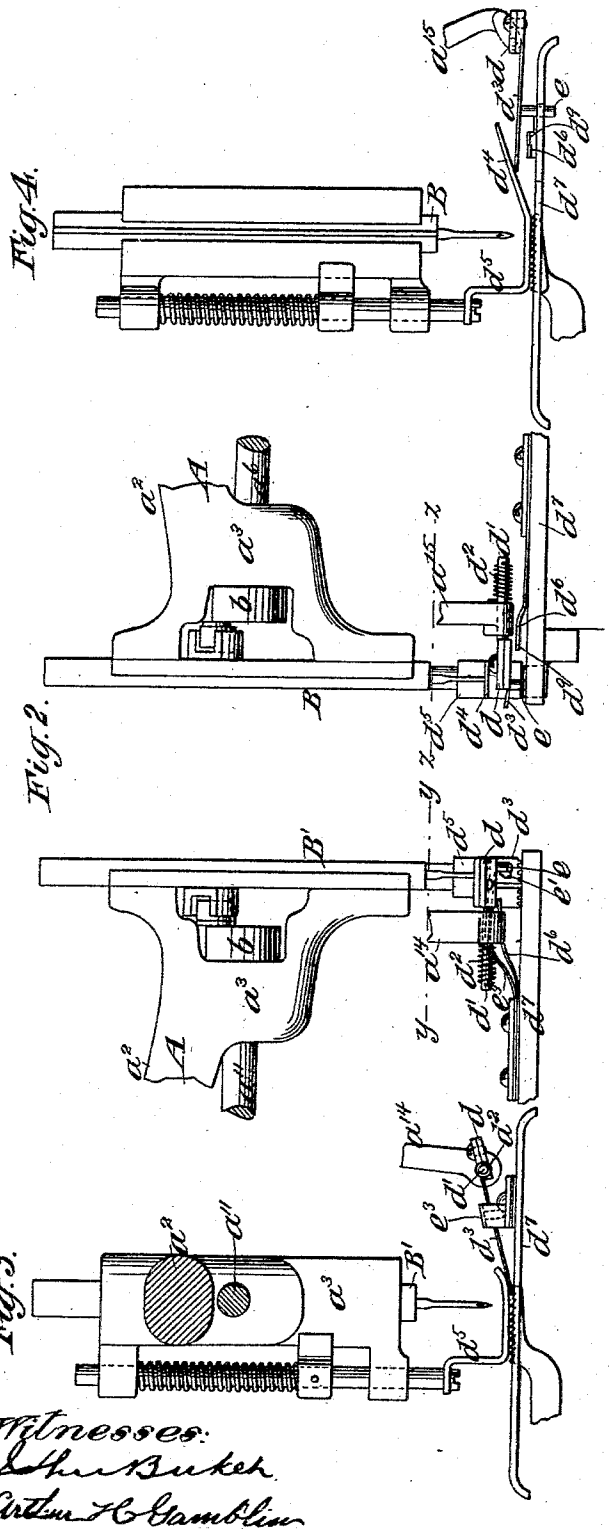


Fig. 4.

Fig. 2.

Fig. 3.

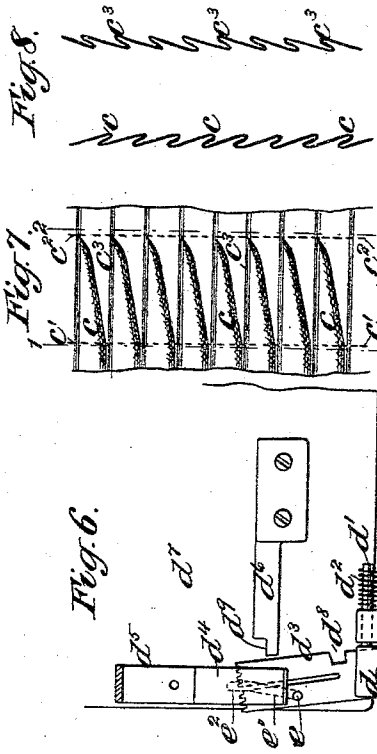


Fig. 8.

Fig. 7.

Fig. 6.

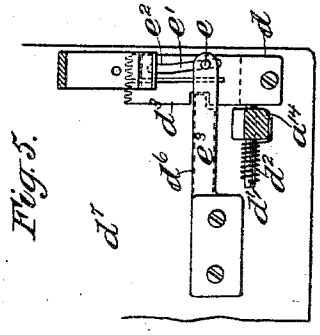


Fig. 5.

Witnesses:
Chas. Burkett
Arthur C. Gamblin

Inventor:
Alfred Faulkner
by his Attorneys
Brown & Griswold

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

ALFRED FAULKNER, OF JERSEY CITY, NEW JERSEY, ASSIGNOR TO ELI W. BROADBENT, OF NEW YORK, N. Y.

PLAITING ATTACHMENT FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 411,917, dated October 1, 1889.

Application filed January 10, 1889. Serial No. 295,964. (No model.)

To all whom it may concern:

Be it known that I, ALFRED FAULKNER, of Jersey City, in the county of Hudson and State of New Jersey, have invented a certain new and useful Improvement in Plaiting Attachments for Sewing-Machines, of which the following is a specification.

My improvement relates to plaiting attachments for sewing-machines, which attachments co-operate with two sewing-machines in order to form plaiting of a peculiar kind, hereinafter to be more particularly described.

I will describe in detail a plaiting attachment for sewing-machines, and then point out the novel features in claims.

In the accompanying drawings, Figure 1 is a side elevation of two sewing-machines on a reduced scale and showing part of the mechanism embodied in my improvement. Fig. 2 is a side elevation of the head portions of two sewing-machines, showing my improvement more in detail. Fig. 3 is a vertical section of the head portion of the machine to the left in Fig. 1 and taken on the plane of the dotted line $x\,x$ of said figure. Fig. 4 is a front elevation of the head portion of the machine shown at the right in Fig. 1. Fig. 5 is a horizontal section taken on the plane of the line $y\,y$ of the machine shown to the left in Fig. 2. Fig. 6 is a horizontal section taken on the plane $z\,z$ of the machine to the right in Fig. 2. Fig. 7 is a face view showing one side of plaiting done on the machine. Fig. 8 is a sectional view showing the form of the plaits as appearing upon opposite sides of the goods, the sections being taken on the lines 1 1 and 2 2 of Fig. 7.

Similar letters of reference designate corresponding parts in all the figures.

I have only illustrated such parts of a sewing-machine as are essential to an understanding of my invention.

A designates the frames of the machines. Each of these frames comprises an upright portion a, lower arms a', upper arms a^2, and heads a^3. The machines are supported upon base-pieces a^4. The heads of the machines extend toward each other. The machines are driven from a common source—namely, pulley a^5, mounted on a main shaft a^6, upon which is a pinion a^7, gearing with a gear-wheel a^8. The gear-wheel a^8 is mounted upon a shaft. (Not shown in the drawings, but extending throughout the length of both machines and journaled in suitable bearings upon the frames thereof.) Upon this shaft is mounted another gear-wheel a^9, meshing with a pinion a^{10}, mounted upon the main shaft a^{11} of the second machine. Upon the same shaft upon which are mounted the gear-wheels a^8 and a^9 are also mounted cams a^{12} a^{13}. With these cams contact bell-crank levers a^{14} a^{15}, from which the plaiting attachments are operated. The levers a^{14} a^{15} are mounted upon a rock-shaft a^{16}, journaled in suitable bearings on the frames of the machines. The lever a^{14} has a sliding connection with said shaft, but rotates therewith. The lever a^{15} is loosely mounted on said shaft, and a spring a^{17} operates to return it to one of its positions after it has been moved out of such positions by the cam a^{12}.

B B′ designate needle-bars deriving motion from cranks b upon the shafts a^6 a^{11}. The arrangement of these cranks is such that when one of the needle-bars is rising the other is moving downwardly, so that the machines form stitches alternately, although I have illustrated the needle-bars and needles in all the figures as occupying positions about midway in the lengths of their reciprocations. The arrangement and conformation of the cams a^{12} a^{13} is such that the levers a^{14} a^{15} are rocked alternately in the same direction, as shown.

These machines are designed to form plaiting such as is illustrated in Figs. 7 and 8—that is to say, folds c are formed upon one side of the goods between two rows of stitches c' c^2, which folds extend in the direction of the arrow, Fig. 7, and other folds c^3 are formed upon the same side of the goods, which extend in a direction contrary to that of the arrow. The result is that approximately wedge-shaped plaits appear upon the goods, which plaits are folded in opposite directions. In order to accomplish this it is necessary that the tuck should be made by one of the attachments from the upper side of the goods and by the attachment of the other machine from the lower side of the goods. This will be quite clear from examination of Fig. 8.

I will first describe the attachment adapted to operate upon the under side of the goods. This attachment is illustrated more clearly in Figs. 4 and 6. To the lever a^{15} is secured a plate d, which plate is provided with a stem d', extending loosely through an aperture in the lever a^{15}, so that it may rock therein. A spring d^2, connected at one end to the stem d' and at the other to the lever a^{15}, operates to rock the plate d in one direction. Pivotally connected to the plate d is a knife or tongue d^3, which knife or tongue is caused by the spring d^2 to bear at its outer or free end against the under side of an upwardly and angularly extending portion d^4 upon a presser-foot d^5. Adjacent to the knife or tongue and extending in approximately right angles thereto is a spring d^6, having its free end turned up somewhat. This spring is secured to a work-plate d^7. In the side edge of the knife or tongue d^3 adjacent to the spring d^6 is a notch d^8. When by the rocking of the bell-crank lever a^{15} the knife or tongue d^3 is being moved inwardly or toward the needle to its farthest position, the knife or tongue passes over the spring d^6, carrying with it the folded or tucked material, and is maintained by the spring d^2 against the incline d^4. When it has reached its farthest inward position, the knife or tongue has been moved downwardly until it lies approximately flat against the surface of the work-plate, and a lip or extension d^9 upon the spring d^6 will then be sprung upwardly by the spring through the notch d^8 in the knife or tongue. As the knife or tongue d^3 is moved backwardly now by the lever, the knife or tongue rides under the spring d^6 for a distance, while the spring bears directly upon the knife or tongue, thus preventing any drag of the knife or tongue upon the material which may tend to withdraw the latter from beneath the lever. During this operation the spring d^6 is of course acting against the resistance of the spring d^2. A precisely similar operation occurs with the attachment shown on the machine illustrated more particularly to the left of Fig. 2 and in Figs. 3 and 5, except that the action of the spring d^2 in this case is such as to force the knife or tongue d^3 downwardly against the work-plate. As this knife or tongue operates upon the upper side of the goods, it will of course form the fold or tuck in a reverse direction to that of the other knife or tongue. In this instance also the spring d^6 is arranged so that during the forward movement of the knife or tongue the same will pass under the spring; but during the rearward movement of the knife or tongue it passes over the spring.

It is desirable that the goods as fed to the needles should be stretched laterally in order to effect more perfect and even plaiting. For this purpose I cause the knives or tongues d^3 upon being fed forward to swing upon the plates d, so that their forward ends will be carried inwardly or away from the fronts of the machine as the forward progression of the knives or tongues takes place. In the machine illustrated to the right of Fig. 2, the attachment for which is illustrated more particularly in Fig. 6, the knife or tongue d^3 is provided upon its under side with a pin e, which pin extends into a slot e', formed in the work-plate. This slot extends inwardly at an angle for a distance from the front of the work-plate. Assuming that the knife or tongue is in the position as shown in Fig. 6, when the tongue or knife is moved inwardly the pin e, acting in the slot e', causes the knife or tongue to swing inwardly, and thus to stretch the goods toward the machine. The slot e' has a straight portion e^2 at its inner end, which, when the pin is traveling along, will cause a straightforward motion of the knife or tongue. The operation in the other machine is the same as that just described, except that the slot e' is formed in the knife or tongue and the pin e is mounted upon an arm e^3, in this instance above the spring d^6, and secured by the same means to the work-plate. The pins e and slots e' constitute guides for causing the oblique movements of the knives or tongues.

I prefer that the inner ends of the knives or tongues d^3 shall be provided with teeth, so that they will the more readily grasp the goods.

It will be observed that the knives or tongues d^3 when being fed forward or toward the needle have an oblique movement away from each other.

The under surface of the portion d^4 of the presser-foot, co-operating with the attachment shown in the machine to the right in Fig. 1, and the surface of the work-plate d^7, co-operating with the attachment shown to the left in Fig. 1, constitute in effect bearing-surfaces for the knives or tongues.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with two sewing-machines, of two knives or tongues, levers for operating said knives or tongues, mechanism, substantially such as described, for operating both said sewing-machines and said levers in unison, springs on the levers for forcing said knives or tongues in one direction, bearing-surfaces against which said knives or tongues are forced by said springs, and other springs adjacent to said knives or tongues adapted to bear directly thereon to force them away from the goods when moved in one direction and acting against the resistance of the springs first named, substantially as specified.

2. The combination, with two sewing-machines, of two reciprocating knives or tongues, levers for operating said knives or tongues and with which the latter have pivotal connections, bearing-surfaces, springs on the levers exerting pressure in opposite directions for forcing the knives or tongues against said bearing-surfaces, and other springs adjacent

to said knives or tongues and adapted to bear directly against the same to force the knives or tongues away from the goods when moving in one direction, the operation of said first-named springs being such that one of said knives will be forced downwardly while the other is being forced upwardly, and vice versa, substantially as specified.

3. The combination, with two sewing-machines, of two knives or tongues having oblique movements in contrary directions, guides for the knives or tongues guiding them in oblique direction, levers for operating said knives or tongues and with which the latter are pivotally connected, bearing-surfaces adjacent to each of said knives or tongues, springs on the levers for forcing said knives or tongues against the bearing-surfaces, and other springs adjacent to the knives or tongues and adapted to bear directly upon the same in order to move the knives or tongues away from said bearing-surfaces when moving in one direction, substantially as specified.

ALFRED FAULKNER.

Witnesses:
FREDK. HAYNES,
ARTHUR H. GAMBLIN.