(No Model.) 3 Sheets—Sheet 1.

J. HAAS & R. LINTZ.

SEWING MACHINE.

No. 523,522. Patented July 24, 1894.

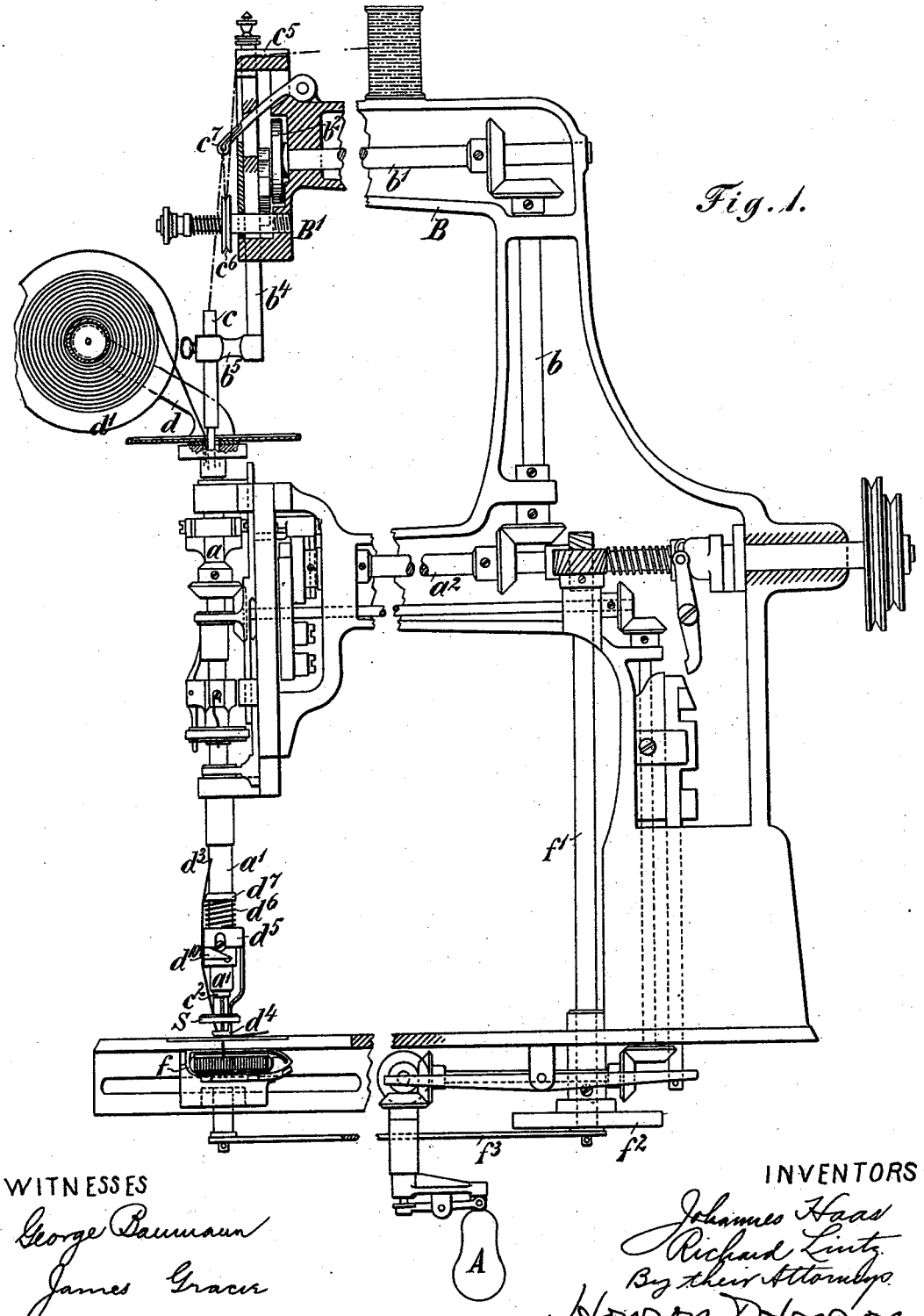

Fig. 1.

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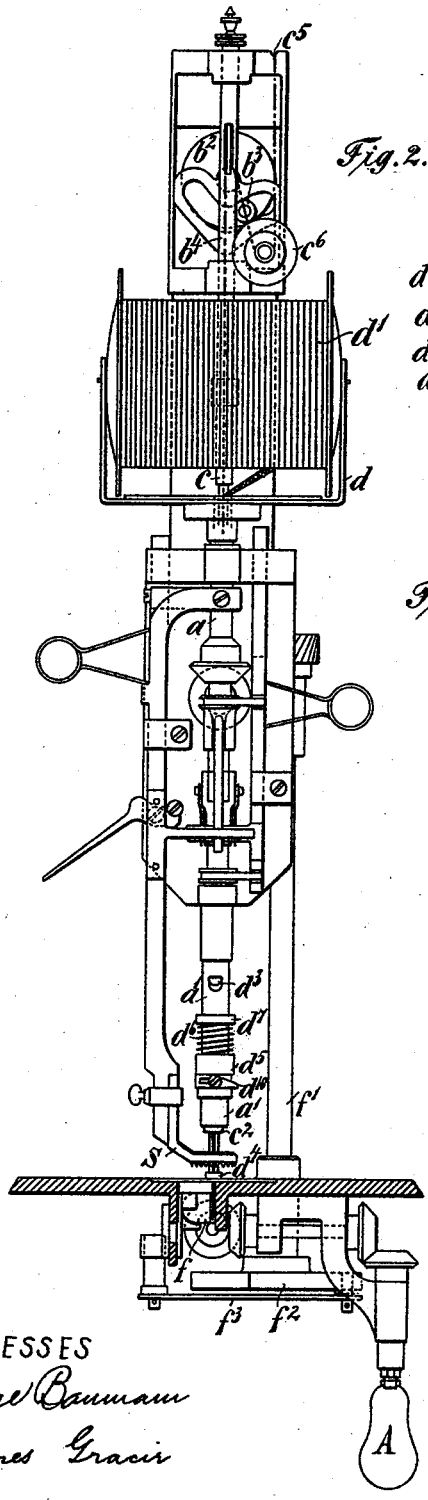

Fig. 2.

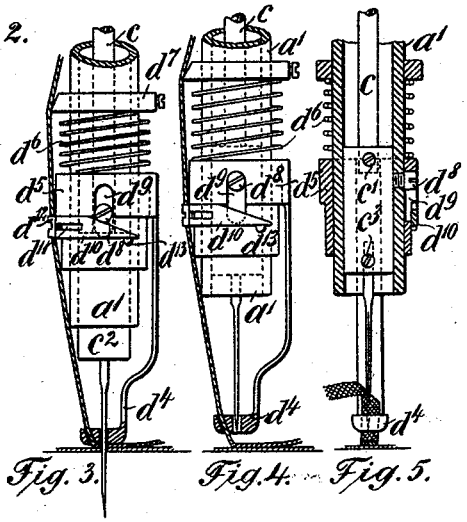

Fig. 3. Fig. 4. Fig. 5.

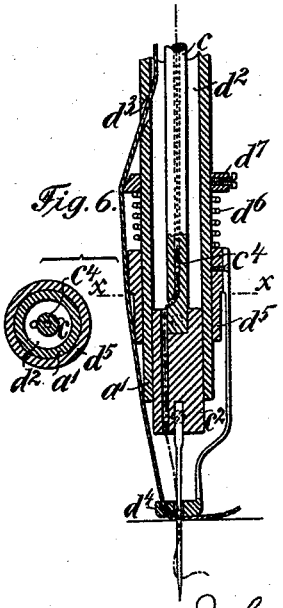

Fig. 6.

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Fig. 7.

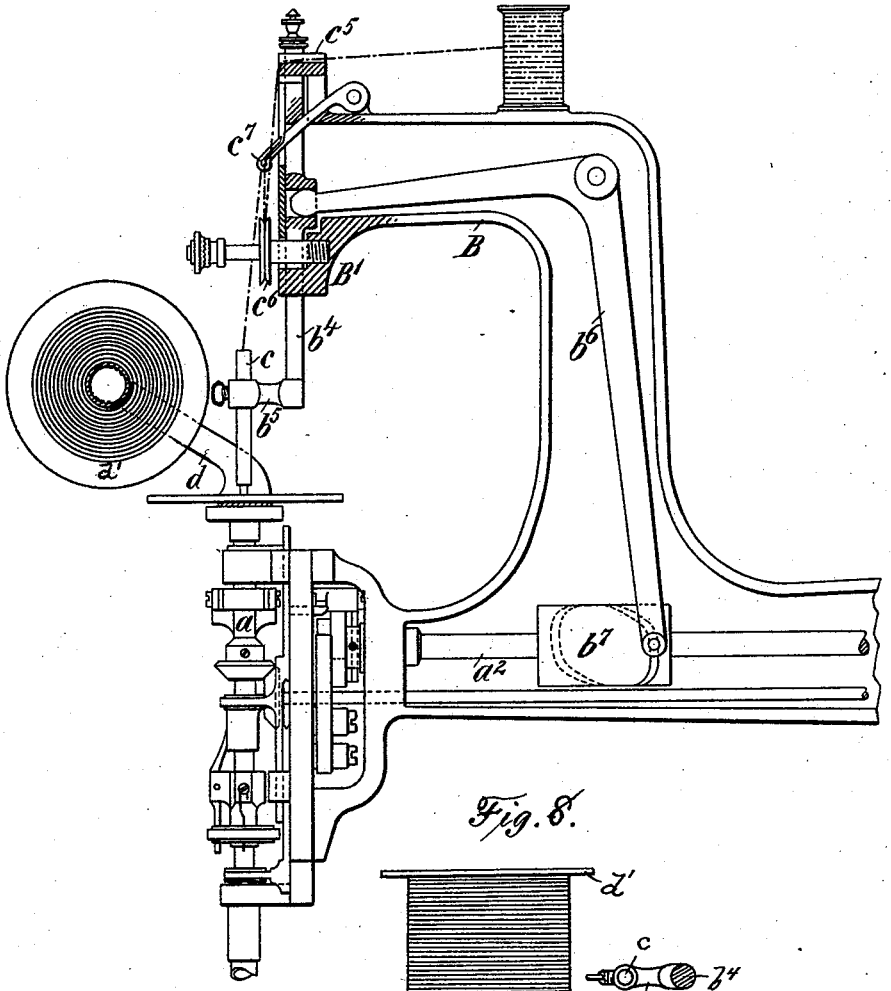

Fig. 8.

WITNESSES.

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UNITED STATES PATENT OFFICE.

JOHANNES HAAS, OF EIBENSTOCK, AND RICHARD LINTZ, OF BERLIN, GERMANY.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 523,522, dated July 24, 1894.

Application filed November 12, 1892. Serial No. 451,786. (No model.) Patented in Belgium July 7, 1892, No. 100,532; in Switzerlamd July 16,1892, No. 5,429, and in Italy September 30, 1892, XXVI, 32,334, LXIII, 344.

To all whom it may concern:

Be it known that we, JOHANNES HAAS, engineer, residing at No. 1 Postplatz, Eibenstock, and RICHARD LINTZ, residing at No. 109 Grüner Weg, Berlin, Germany, subjects of the German Emperor, have invented certain new and useful Improvements in and Relating to Sewing-Machines for Braiding and Cording, (for which we have obtained Letters Patent in Belgium, No. 100,532, dated July 7, 1892; in Italy, Vol. 26, No. 32,334, Vol. 63, No. 344, dated September 30, 1892, and in Switzerland, No. 5,429, dated July 16, 1892;) and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Our invention relates to sewing machines of that class which is especially adapted for braiding or cording, such as the Bonnaz machines, and one of the main characteristics of our improvement is that the feeding mechanism while acting in all directions works with a non-rotating needle bar, independent, as to its movement, of the feed mechanism. The mechanism for actuating the needle is thus rendered somewhat complicated, but the other parts of the machine are much simplified in consequence, and a simple shuttle or a hook may be employed for the purpose of forming a lock stitch, the machine being therefore especially suitable for sewing on cords or braid.

In the accompanying drawings, Figure 1 is a side elevation partly in section of a sewing machine constructed according to our invention. Fig. 2 is an end elevation, partly in section of the same, and Figs. 3 to 6 are views of details. Fig. 7 is a side elevation of a modification. Fig. 8 is a sectional plan view taken through line 1—2 of Fig. 1.

For the lower thread a shuttle moving to and fro, on Singer's system, is shown as an example, but it will be readily understood that a rotating shuttle or a hook may be employed equally well. The needle bar c moves freely in the main tube a of the usual feeding arrangement of a crank machine but is independent of and does not share in the rotation of the tube; on the contrary it is secured against any movement of rotation. For this purpose the upper end of the needle bar c, Fig. 1, is connected with a carrier b^4 by an arm b^5 and a set screw. The needle bar carrier may be arranged to be driven directly from the main shaft or spindle a^2 of the machine but I prefer to mount it as shown in the head B′ of the arm B over the main arm of the machine and to drive it from a spindle b' through the medium of the curved groove b^3 in the carrier and crank disk b^2 on the spindle b. The driving of the spindle b' is effected from the main spindle a^2 by means of bevel wheels and an intermediate spindle b. The shuttle f is actuated from the main spindle a^2 by means of the rod f^3, crank disk f^2 and shaft f'.

The great width of the tube a required for the arrangement for feeding in the cord (to be described hereinafter) renders it necessary that the needle bar should be guided below also, and it is therefore secured by a clamp screw c' (Fig. 5) inserted in a piston c^2 sliding in a piston tube a', which piston contains a seating for the needle which is to be secured in place by the clamp screw c^3 (Figs. 5 and 6).

For the purpose of guiding the upper thread, the needle bar c is provided with an axial perforation c^4 which opens laterally at the upper end of the piston, and runs along in the latter, Fig. 6. The upper thread is guided from the bobbin upon the arm B through a special loop or groove c^5 in the head B′ to the tension mechanism c^6, then upward through the eye of the thread lever c^7 and again downward through the perforation c^4 of the needle bar and the piston into the needle, Figs. 1, 2 and 6.

The feeder S may be driven by the usual means employed in the Bonnaz machine, which requires therefore no further description.

The stirrup d which carries the spool d' of braid moves with the main tube a around the needle bar c, as soon as the crank A is set in action.

The braid to be sewed on is guided downward from the spool d' into the annular space d^2 formed between the needle bar c and the main tube a or piston tube a', and then leaving the piston tube a', through the slot d^3 in the latter is guided through the braid guide d^4 under the needle.

Since the stroke of the main or piston tube a' is always of the same extent, but the thickness of the material to be worked upon varies, the piston tube a' must allow the braid guide, which acts at the same time as a presser-foot, and is set in motion by the piston tube, a certain amount of longitudinal play. This necessitates an arrangement which is shown in vertical sectional elevation and in horizontal section, drawn to a larger scale, in Figs. 3, 4, 5 and 6.

The braid guide d^4 is screwed firmly to a sleeve d^5, to which a certain amount of longitudinal motion upon the piston tube a' can be imparted, which motion is limited by a screw pin d^8 fixed in the piston tube and moving in a slot d^9 in the sleeve d^5. This longitudinal motion may also be lessened or increased by a wedge piece d^{10}, extending over the slot d^9 and adjustable on the sleeve by means of a slot d^{11} and clamping screw d^{12}, according as the presser-foot or braid guide has to be placed higher or lower to adapt it to the thickness of the material. The pin d^{13} serves to support the wedge piece in order to prevent the latter from turning upon the set screw d^{12}.

In the lowest position of the piston tube a' the latter presses the presser foot or braid guide d^4 down by means of the screw pin d^8, the wedge piece d^{10} and sleeve d^5, thus holding the material tight while the needle is driven through it, as illustrated by Fig. 3. As soon as the formation of the stitch is completed, the piston tube a' rises while the presser-foot or braid guide d^4 at first retains its position under the action of a spring d^6 situated between the sleeve d^5 and a ring or collar d^7, fixed on the piston tube a', until the pin d^8 comes into contact with the upper rim of the slot d^9 and lifts it from the material as illustrated in Figs. 4 and 5, whereupon the feeder S advances the material by the length of a stitch. The spring d^6 is only intended, as may easily be seen, to restore the connection between the piston tube a' and the presser foot or braid guide d^4 after this connection has been interrupted by the slot d^9.

Instead of driving the needle bar carrier b^4 by a separate spindle b, the main spindle or piston tube a^2 might be employed for this purpose, as shown in Fig. 7 in which the needle bar carrier b^4 is driven by the bell crank lever b^6 and the sleeve b^7 with eccentric groove, fixed on spindle a^2.

We claim as our invention—

1. A sewing machine for braiding, cording, &c., having a main head, and a feed mechanism adapted to feed in any direction, in combination with a non-rotating needle bar, a head over the main head, operating devices in the upper head to reciprocate the said needle bar, and a bobbin carrier adapted to revolve around the needle bar between the two heads, substantially as and for the purpose described.

2. A sewing machine for braiding, cording, &c., having a main head, a feed mechanism adapted to feed in any direction in combination with a non-rotating needle bar independent as to its movements of the feed mechanism, a reciprocating carrier for the needle bar, a head for the carrier over the main head of the machine, spindles and bearings for transmitting motion to the said carrier from the main spindle of the machine, and a bobbin carrier adapted to revolve around the needle bar between the two heads, all substantially as described.

3. In a sewing machine for braiding, cording, &c., a feed mechanism adapted to feed in any direction in combination with a main tube and a piston tube carried by the latter and with a non-rotating needle bar within the said tube, the said needle bar carrying at its lower end a piston guided in the piston tube, substantially as described.

4. In a sewing machine for braiding, cording, &c, a feed mechanism adapted to feed in any direction in combination with a main tube and a piston tube carried by the latter, and with a non-rotating needle bar within said tube, and a braid guide or presser foot carried by the piston tube and means for allowing a certain amount of longitudinal play of the said guide or presser foot in relation to the piston tube, all substantially as described.

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Witnesses:
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ROBERT MICHALSKY.