

(No Model.)

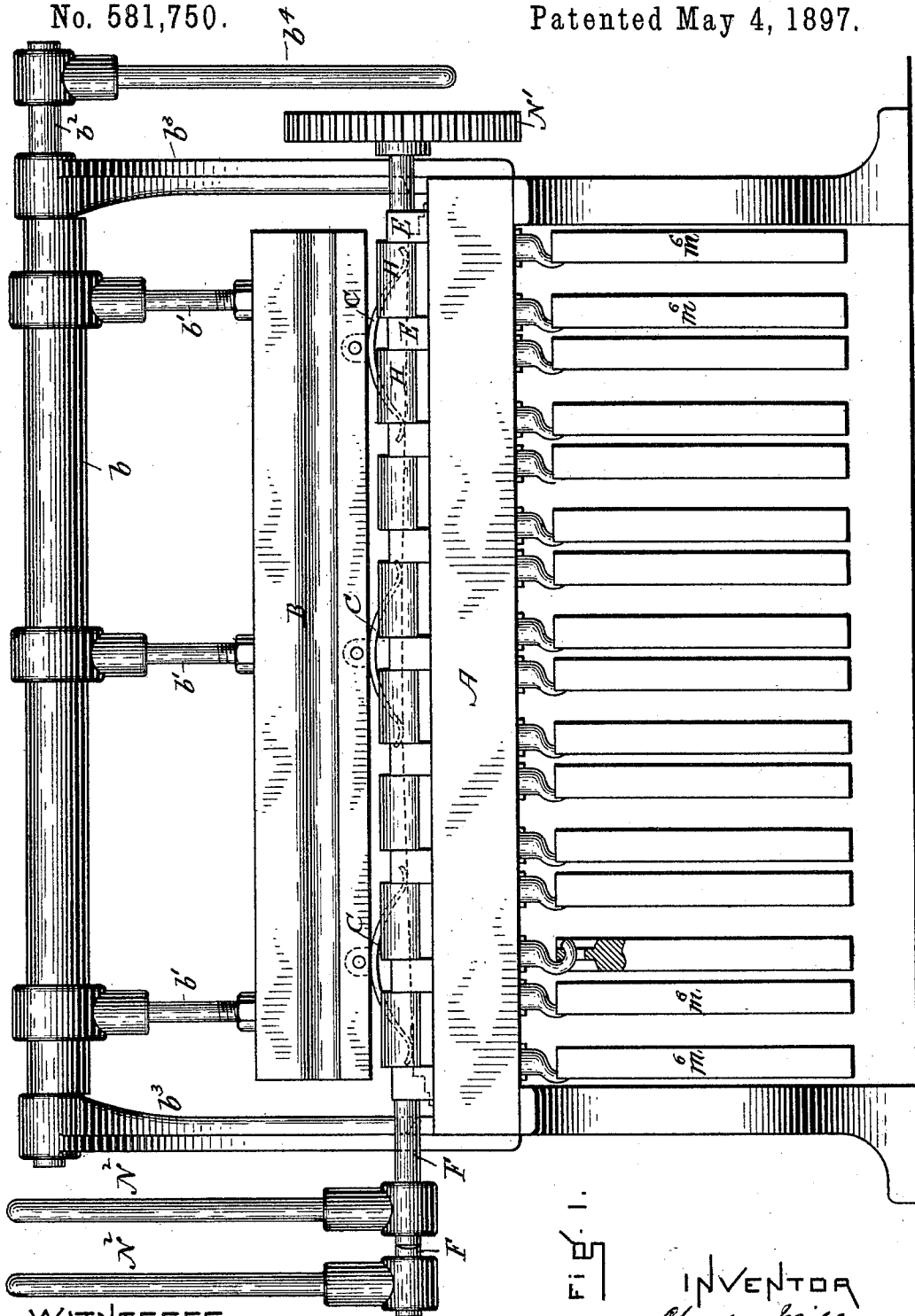
3 Sheets—Sheet 1.

C. MILLS.

MACHINE FOR FASTENING CARD CLOTHING TO FLATS.

No. 581,750.

Patented May 4, 1897.



WITNESSES

Chas. R. Town.
S. A. Thompson

INVENTOR
Charles Mills

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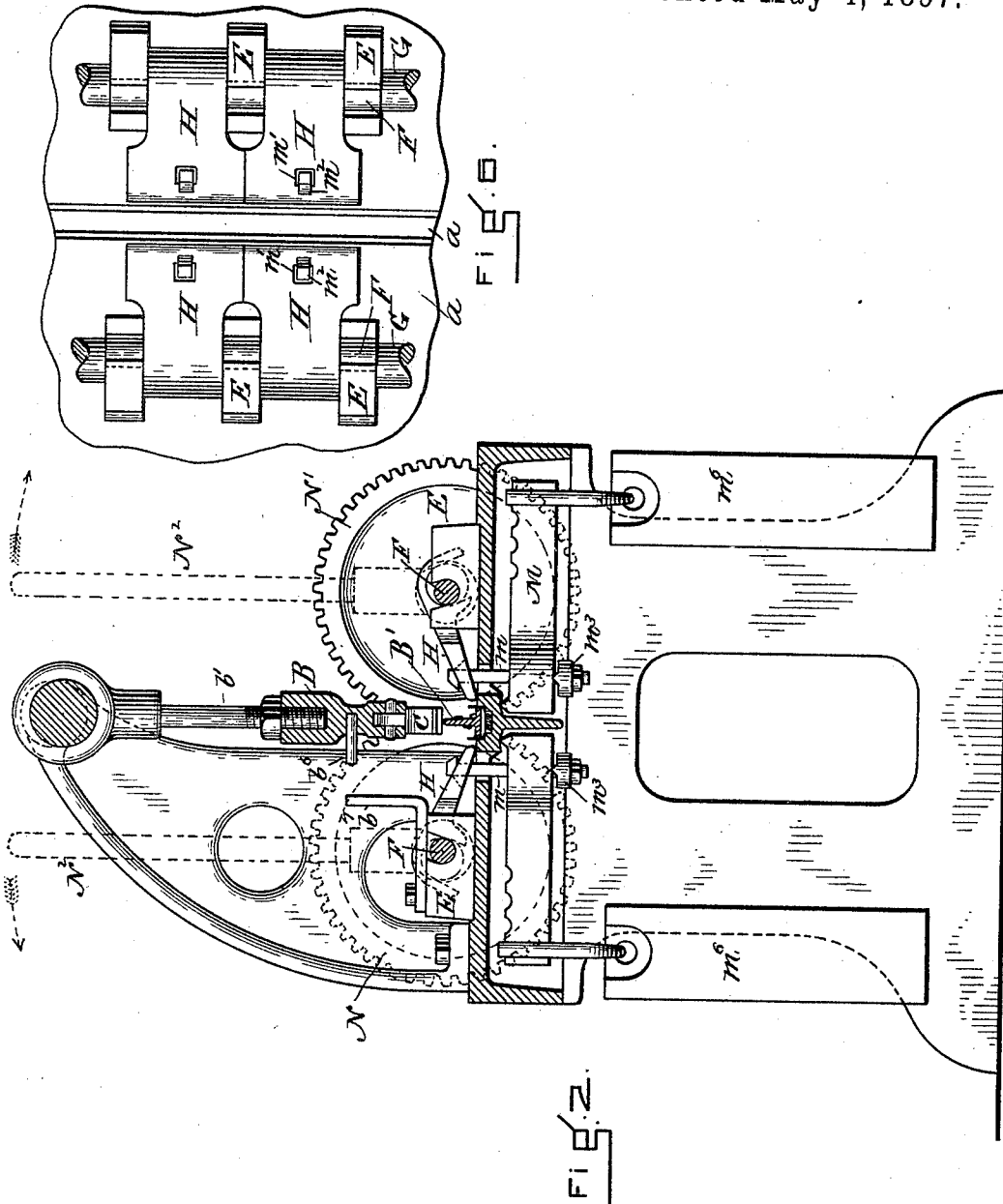
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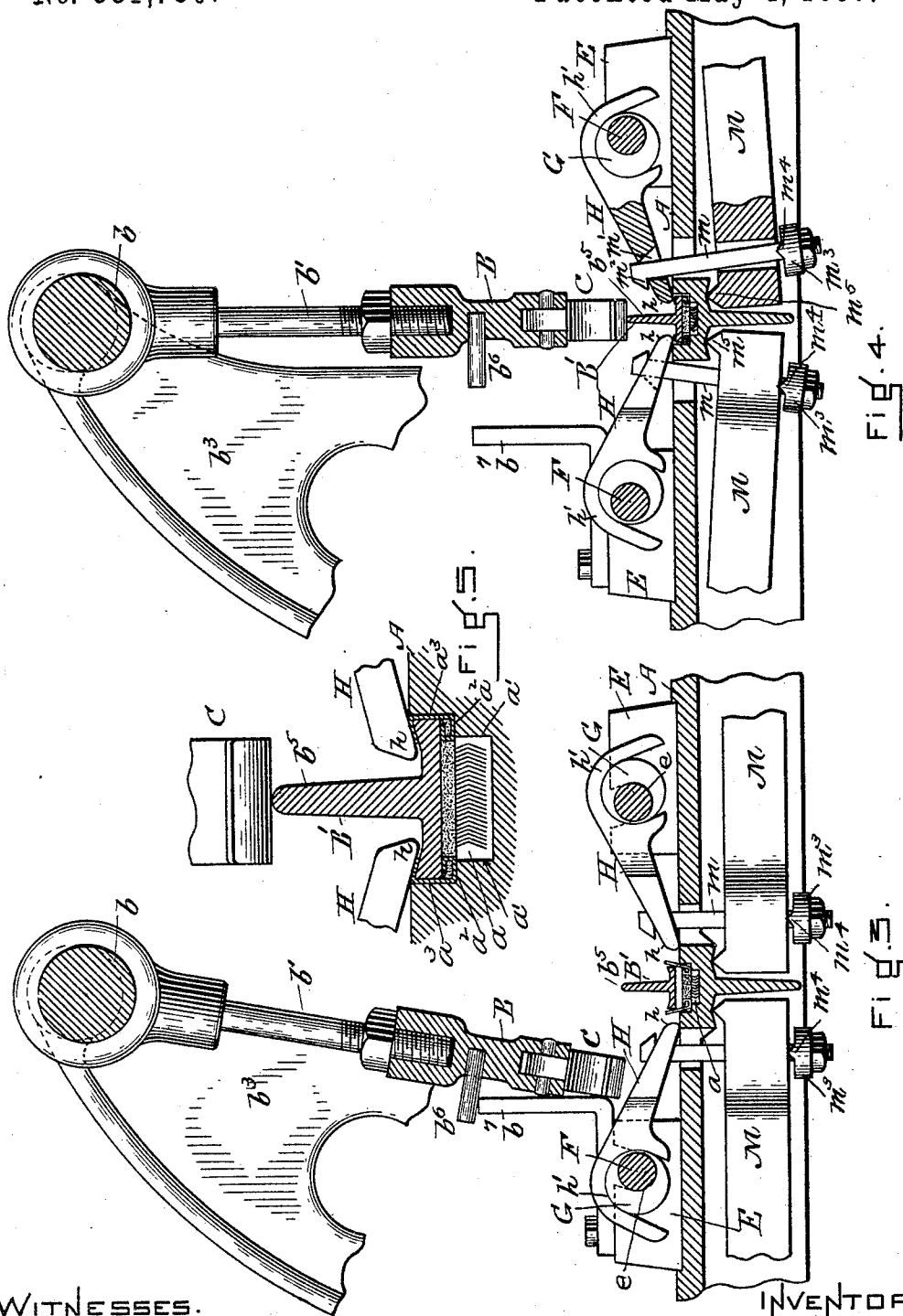
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UNITED STATES PATENT OFFICE.

CHARLES MILLS, OF NEWTON, MASSACHUSETTS, ASSIGNOR TO THE PETTEE MACHINE WORKS, OF SAME PLACE.

MACHINE FOR FASTENING CARD-CLOTHING TO FLATS.

SPECIFICATION forming part of Letters Patent No. 581,750, dated May 4, 1897.

Application filed June 16, 1896. Serial No. 595,767. (No model.)

To all whom it may concern:

Be it known that I, CHARLES MILLS, a subject of Victoria, Queen of Great Britain, residing at Newton, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Machines for Fastening Card-Clothing to Flats, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

The invention is adapted to attach to flats card-clothing to the edges of which fastening-clips of a peculiar type have previously been attached, the clips being in the form of long thin angular metallic strips united by prongs to the edges of the clothing and extending about the edges parallel with each other. The clothing, with the clips thus secured, is placed in a bed or holder of peculiar shape, and the flat is then forced between the clips, stretching the clothing. The upper edges of the clothing are then turned upon the under surface of the flat.

In describing the invention reference will be made to the drawings, wherein—

Figure 1 is a view in front elevation of a machine having the features of my invention. Fig. 2 is a view in vertical central section thereof. Fig. 3 is a detail view, enlarged, representing the clothing and its attached clips in their holding-recess in the bed of the machine and the flat placed between the clips, the flat-presser being removed to one side of the recess to permit the insertion therein of the clothing and clips and the placing of the flat between the clips. Fig. 4 is a view, enlarged, of the parts represented in Fig. 3, showing the flat as pressed downward by the flat-presser between the clips, spreading the clips and stretching the clothing, and also showing the pressers as moved inward, folding the upper sections of the clips upon the surface of the flat. Fig. 5 is a detail view, enlarged, to which reference is herein-after made; and Fig. 6 is a view in plan of one of the sections of the clip folder or presser.

The machine has a metal bed A, in which is arranged a recess a , having the walls a' , the shoulders or ledges a^2 , and the walls a^3 . The walls a' form a space of sufficient size to

receive the wires of the clothing. The walls a^3 form a recess of the width of a flat plus the thickness of the clips, and the ledges a^2 form supports for the edges of the clothing and their attached clips outside the wired section of the clothing. The ledges or supports are below the upper surface of the bed, the thickness of the flat, and the clothing. The clothing and clips are first placed in the recess, as represented in Fig. 3, the clothing then being unstretched and, with the clips, not quite filling the space between the walls a^3 . The flat is then placed between the clips and forced downward by means of the bar B, the bar having downward vertical movement imparted to it by the eccentrics b , which are connected with the bar by the rods b' . The eccentrics are formed on a shaft b^2 , having bearings at each end in the stands b^3 , and the shaft is turned by the lever or handle b^4 at one end. The downward movement of the bar forces the flat between the clips and against the clothing and brings the upper surface of the flat flush with the upper surface of the bed.

The bar B may have upon its under surface the springs C to bear against the top b^5 of the flat B', making a yielding connection between the eccentrics and the flat. These springs are preferably bow-springs, having ears at their top which extend into a long groove or recess in the under side of the bar and are secured to the bar by pivots, the springs being free to turn somewhat upon them.

Upon the bed A, on each side of the longitudinal recess therein, is a line of blocks E. These have bearings e , open at their top, and are adapted to receive and support sections of the shafts F, there being preferably one upon each side of the said longitudinal recess. These shafts have between the bearing-blocks eccentrics G, which engage the clip pressers or folders H and serve to move them upon the bed A forward and back in respect to the said longitudinal recess. It will be understood that the pressers are made up of a relatively large number of narrow sections shaped substantially as represented in Figs. 4 and 6, and that each of these sections is adapted to engage its actuating-eccentric by means of the open bearing h' in the outer end thereof.

The pressers are inclined downward from their eccentrics. (See Fig. 3.) The blocks E are separated sufficiently to receive the eccentrics G and the portions of the pressers which extend between them, but the pressers in front of the said blocks are widened and their folding edges *h* are practically continuous throughout the length of the clip which is folded or turned by them. Each presser is also drawn down by a yielding pressure, so that its pressing end is held against the bed, and I have represented as one means of providing them with this stress a hanger *m*, the upper end of which passes through a hole *m'* in the presser and hooks thereon at *m*², and the lower end of which carries the block *m*³, having a knife-edge *m*⁴, upon which the lever M bears. This lever is fulcrumed at *m*⁵ and carries at its outer end a weight *m*⁶, which is adjustable thereon. Each presser is separately weighted and its pressure is independent of all the others. I prefer to have the various sections of the pressers about five inches in length, but do not confine myself to that limit; neither do I confine myself to the especial means for creating a yielding downward draft upon their pressing ends. I prefer that the eccentric-shafts operating them be connected at one end by the gears N N', so that movement communicated to one eccentric-shaft to move the pressers connected therewith will also communicate movement to the other eccentric-shaft and cause it to be turned in an opposite direction and move the pressers connected therewith in a reverse direction to that of the first-named pressers, and each eccentric-shaft is represented as provided at one end with an operating-lever N². It will thus be seen that the sectional yielding pressers are provided with means by which they may be simultaneously moved inward and outward.

It will be understood that after the flat has been pressed by the bar B to the position represented in Fig. 2 between the clips the pressers are then moved inward against the projecting sections of the clips and, coming in contact therewith, fold them over upon the inner surface of the flat throughout the entire length of the clips and flats, (see Figs. 4 and 5,) the edges on both sides being simultaneously folded over. The bar B is then lifted and moved to one side to permit the removal of the finished flat and the placing of the unattached clothing and clips and flat. To hold the bar, I have represented it as provided with an arm *b*⁶, which extends laterally from it, and a support *b*⁷, upon the upper surface of which it is adapted to be moved when elevated and to which it is held by friction. (See Fig. 3.)

In operation the clothing, with the attached clips, is placed in the recess of the bed, as shown in Fig. 3. The flat is then placed between the clips, as therein shown, the flat-presser moved over the flat and then downward, pressing the flat between the clips and

into the recess (see Fig. 2) and spreading the clamps apart and stretching the clothing, and the extending sections of the clips are then by the inward movement of the folders or pressers caused to be turned upon the exposed surface of the flats. It will be seen that by providing the flat-presser with a movement to one side of the said recess the flat and clothing may be easily placed and removed. It will also be seen that the yielding flat-pressing bar conforms to the top of the flat, against which it bears, and distributes pressure thereon uniformly throughout its length. This yielding portion of the flat-presser may be above the bar instead of below it, or in any other suitable connection therewith. By making the clip pressers or folders in separable or independent sections the working edge of the entire line of folders or pressers is made conformable and adjustable, so that the clips are turned throughout their length uniformly and with the same pressure and direction upon the flat, and any error or inequality in one part does not affect the rest, a very vital consideration. It will also be seen that the clip pressers or folders are easily detachable, being provided with eccentric-straps which are open at one side, by which they are readily disengaged from their operating-eccentrics; also, that means for providing them with their downward yielding thrust are entirely below the upper surface of the bed, and thus do not interfere with the placing and removal of the card-clothing and flats.

It will be understood that as the clip pressers or folders are moved laterally the upper ends of the hangers connecting them with the levers M move with them (see Fig. 4) and that the connection between these rods and the lever is so made as to permit this to take place without friction. I prefer that both lines of clip pressers or folders be moved together, and while I have represented their actuating-shafts as joined by gearing to accomplish this purpose they may be separately actuated, if preferred.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a machine for attaching card-clothing to flats, the combination of a stationary bed having the recess *a*, the shoulders *a*² and the walls *a*³ all adapted to receive and hold the clothing and attached clips as specified, a vertically-movable flat-presser and a series of laterally-movable clip-folders, as and for the purposes set forth.

2. The combination in a machine of the character specified of a bed having the recess described for receiving the clothing and attached clips, with a line of independent folders or pressers laterally movable over the bed in relation to the flat.

3. In a machine of the character specified, the combination of the bed having a recess with a yielding pressing device to bear upon

the flat and press it into the recess between the clips, as and for the purposes described.

4. The combination in a machine of the character specified of the flat-pressing bar B and bearing-springs attached to the said bar and adapted to bear upon the upper or outer edge of the central rib of a flat, as and for the purposes set forth.

5. In a machine of the character specified, the flat-bearing bar B and springs C pivoted to the bar, as and for the purposes set forth.

6. In a machine of the character specified, the combination of a stationary bed adapted to receive and hold the card-clothing and its attached clips, with a flat-presser having a movement toward and from the bed and also a lateral movement in relation to the bed whereby it may be moved to one side of the bed to uncover it and permit the ready placing of the said card-clothing and attached clips in the bed-recess.

7. In a machine of the character specified having a bed provided with a recess for receiving the clothing and attached clips, a flat-presser and means for moving it out of line with the recess and for holding it in its removed position.

8. In a machine of the character specified, a flat-presser and means for supporting and actuating the same comprising the shaft *b'* having the eccentrics and eccentric straps and rods connecting the eccentric-straps with the presser.

9. In a machine of the character specified, the combination of a bed having the recess described for receiving the clothing and attached clips, with a vertically-movable flat-presser and means for adjusting the presser vertically.

10. In a machine of the character specified, the combination of a bed having a recess as described for receiving the clothing and attached clips, with two lines of laterally-movable sectional folders or pressers, one line on each side of the said recess, and means for actuating the same.

11. The combination in a machine of the character specified, of a bed having the recess described for receiving the clothing and attached clips, with two lines of separate or independent folders or pressers arranged upon each side of the said recess as specified, and means for simultaneously operating them.

12. In a machine of the character specified, the combination of a bed having the recess described for receiving the clothing and attached clips, with two lines of independent or separate pressers or folders arranged upon each side of the recess as specified, their operative devices and means connecting them whereby the movement of one operative device will cause the movement of the other, as and for the purposes described.

13. The combination in a machine of the character specified of a bed having the recess described for receiving the clothing and attached clips, a line of independent or sepa-

rate clip-pressers and a line of separate actuating devices for moving said pressers adapted to be operated by a common shaft, as and for the purposes described.

14. In a machine of the character specified, in combination with a bed having the recess described for receiving the clothing and attached clips, a line of separate pressers or folders inclined from their back downward to their forward ends, substantially as described.

15. In a machine of the character specified, in combination with a bed having a recess described for receiving the clothing and attached clips, a presser or folder having the open eccentric strap or bearing at its outer end and an eccentric to engage therewith, as and for the purposes described.

16. The combination in a machine of the character specified of a bed having the recess described for receiving the clothing and attached clips, with a line of folders or pressers adapted to be moved in relation to the recess as specified, and held down during such movement by a yielding pressure.

17. The combination in a machine for attaching card-clothing to flats of the stationary bed having means for receiving and holding the clothing and its attached clips, a series of clip turning or folding pressers adapted to be moved laterally over the recess in said bed, and means for providing their working edges with independent yielding adjustment, as and for the purposes described.

18. The combination in a machine of the character specified of the bed having a recess, a laterally-movable presser, the working edge of which is conformable to the surface upon which it moves, and means for holding the working edge in contact with said surface, comprising a lever M connected with the presser or folder as described, and a weight *m*⁶.

19. The combination in a machine of the character specified of a bed having the recess described for receiving the clothing and attached clips, the flat-presser, the blocks E carried by the bed furnishing bearings for the eccentric-shafts F, the said shafts and their eccentrics of separable pressers or folders H attached to said eccentrics as specified arranged in relation to the said recess as described, and the weights *m*⁶ connected with the pressers to coöperate therewith.

20. The combination in a machine of the character specified of the bed having the recess described for receiving the clothing and attached clips, a hanger passing through a hole in the bed and in the presser and engaging the presser as described, the lever M pivoted as specified and connected with the hanger as indicated and the weight *m*⁶ adjustable upon the lever M.

21. The combination in a machine for attaching card-clothing to flats of the bed having a recess for holding the flat and attached clips of the character specified, a laterally-movable presser or folder H movable over

said recess, the lever M attached to the presser or folder and having the fulcrum m^5 and the adjustable connection between the lever and the presser or folder.

5 22. The combination in a machine of the character specified of the presser or folder H, the lever M pivoted as described and the hanger connected with the lever as specified.

10 23. In a machine of the character specified, the combination of a bed with the recess de-

scribed for receiving the clothing and attached clips, with the laterally-movable sectional pressers or folders and independent or yielding hold-downs for each section, arranged below the upper surface of the bed; as and 15 for the purposes described.

CHARLES MILLS.

In presence of—

CHAS. R. BROWN,
S. A. THOMPSON.