

(No Model.)

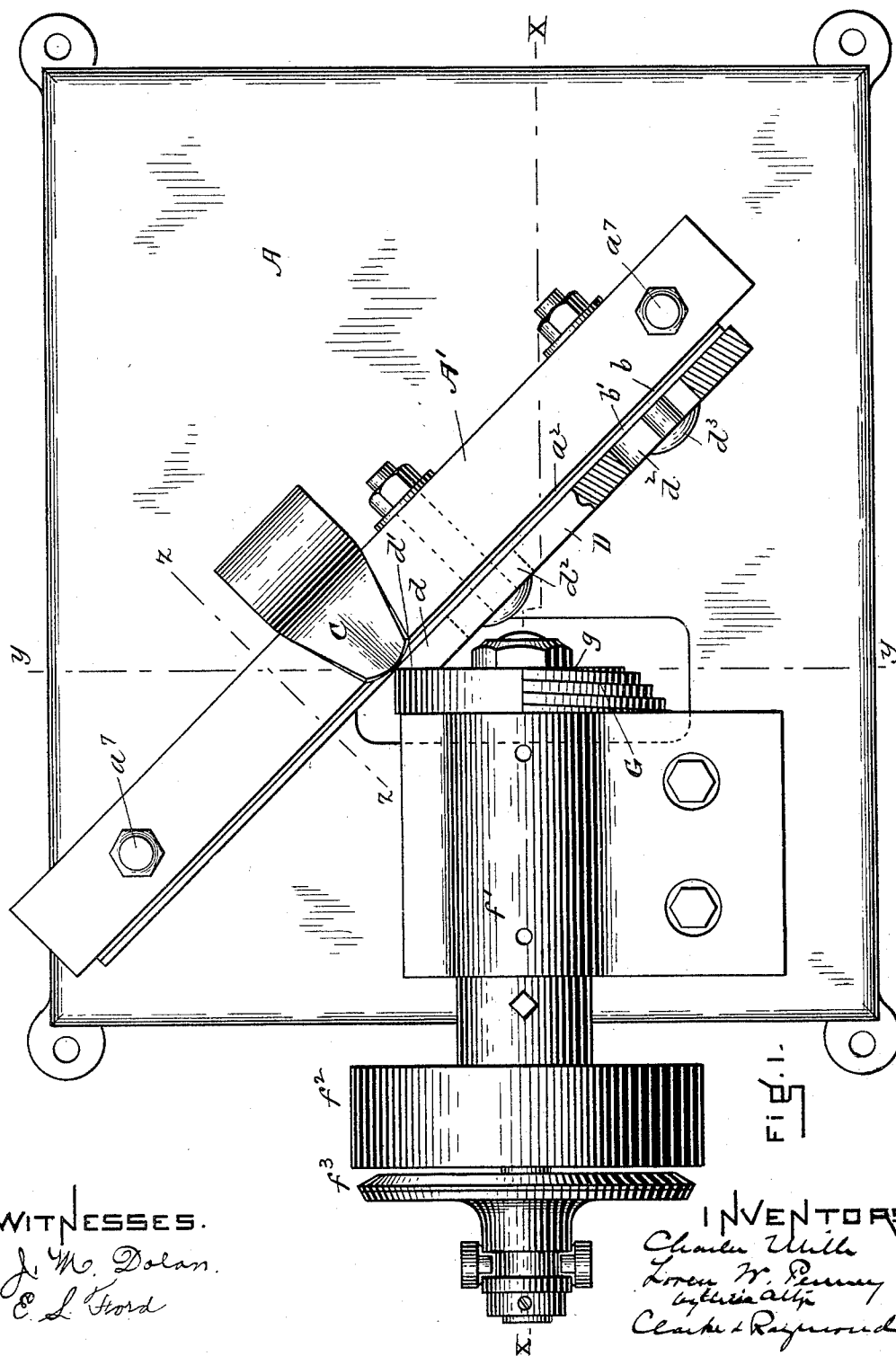
4 Sheets—Sheet 1.

C. MILLS & L. W. PENNEY.

MACHINE FOR MAKING FLAT FASTENING CLIPS FOR CARD CLOTHING.

No. 581,753.

Patented May 4, 1897.

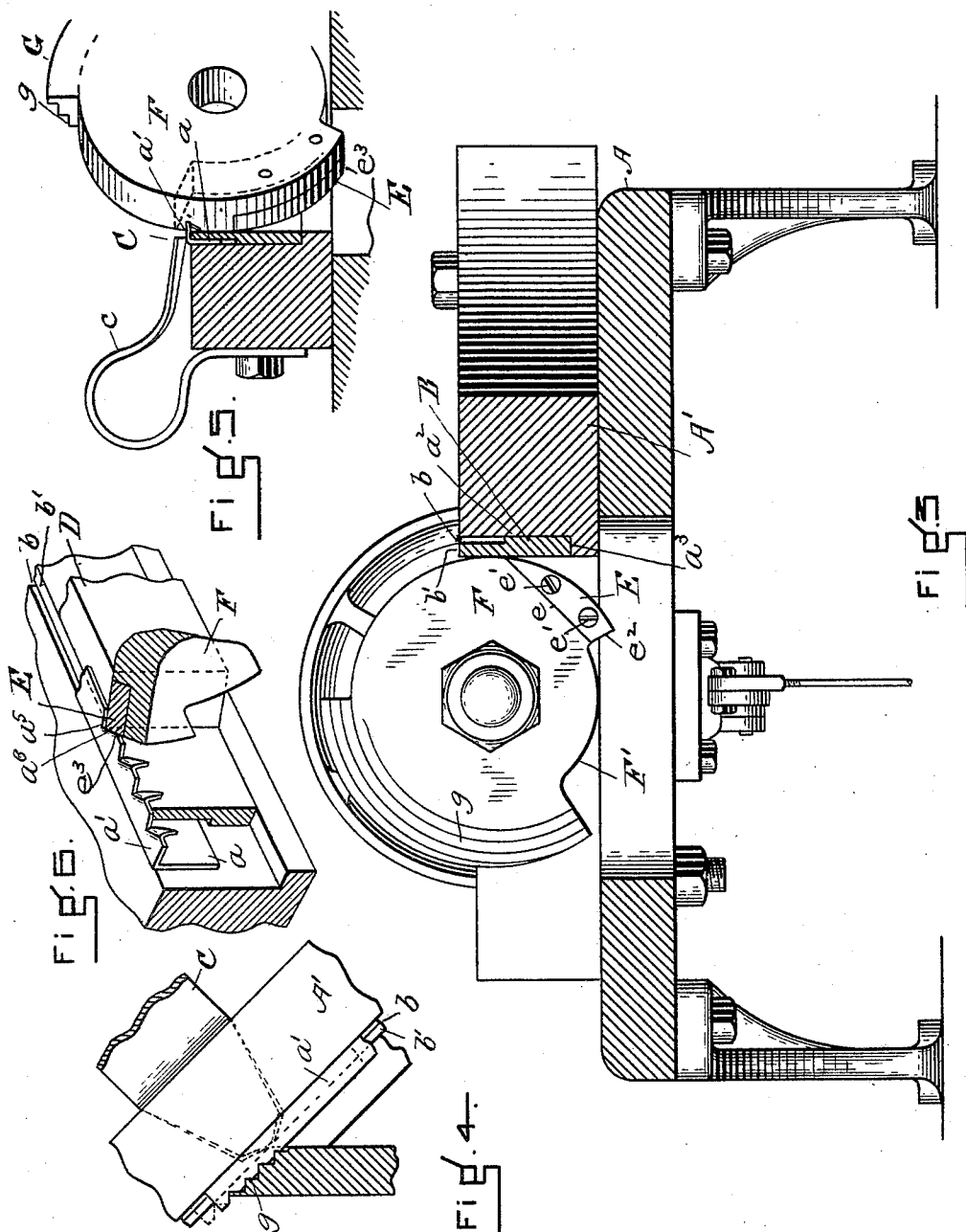


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J. M. Dolan.
C. L. Ford

INVENTORS
Charles Mills
Loren W. Penney
by *Charles Raymond*

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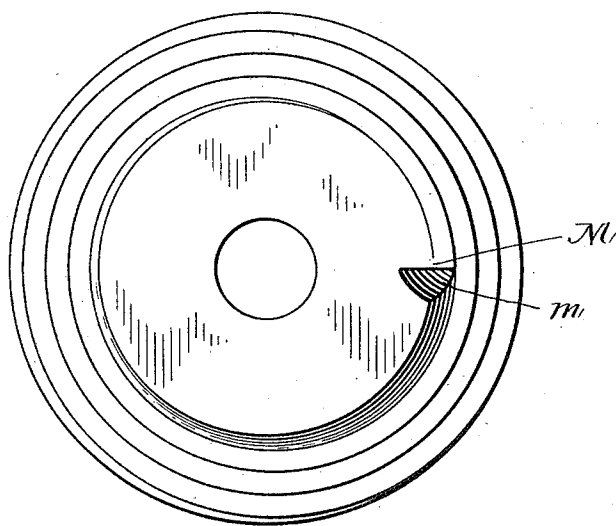


FIG. 9.

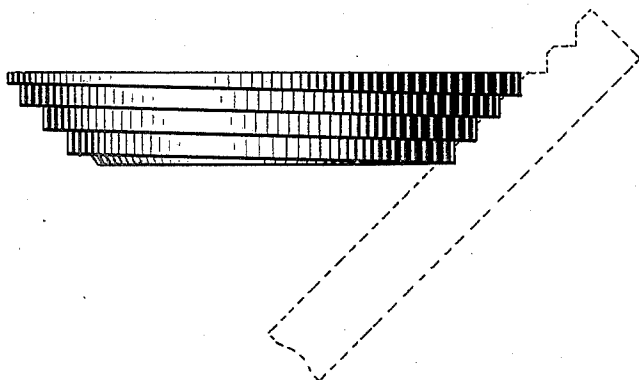


FIG. 10.

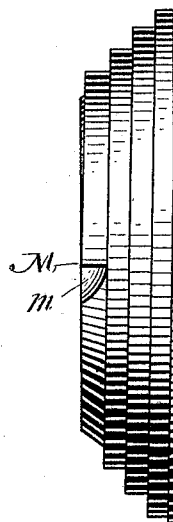


FIG. 11.

WITNESSES

J. W. Dolan.
C. L. Ford

INVENTORS.

Charles Mills
Loren W. Penney
by their atty.
Clark & Raymond

UNITED STATES PATENT OFFICE.

CHARLES MILLS AND LOREN W. PENNEY, OF NEWTON, MASSACHUSETTS,
ASSIGNORS TO THE PETTEE MACHINE WORKS, OF SAME PLACE.

MACHINE FOR MAKING FLAT FASTENING-CLIPS FOR CARD-CLOTHING.

SPECIFICATION forming part of Letters Patent No. 581,753, dated May 4, 1897.

Application filed July 24, 1895. Serial No. 556,990. (No model.)

To all whom it may concern:

Be it known that we, CHARLES MILLS, a subject of Victoria, Queen of Great Britain, and LOREN W. PENNEY, a citizen of the United States, residing in Newton, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Machines for Making Flat Fastening-Clips for Card-Clothing, 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 designed to make or partially make the clip or strip for attaching or securing card-clothing to flats. The clip is made of a long strip of flat metal bent to an angular shape and having a narrow side and a wide side, the narrow side having angular prongs extending from it, formed by folding or bending cut sections of the edge to an angular relation to the wide side, and the wide side being adapted to extend about the edge of the flat and upon its back to fasten the clothing thereto, it being understood that the prongs or starts of the narrow side engage the edge of the clothing; and this invention comprises means for providing the narrow edge of a clip of the character specified with the said angular prongs or starts, and it comprises a feedway for the angular strip, a bed or support at one side of the feedway narrower than the exposed edge of the clip or strip which it supports, a die or support adjacent to the bed for supporting the clip or strip edge during the forming therein of a cut or slit, and preferably, although not necessarily, having an oblique end, upon which the cut or slit is made, a downhold or device, preferably yielding, to bear upon the strip while it is being operated upon and fed, a cutter or slitter to form in the exposed edge of the strip slits or cuts, which are preferably diagonal or oblique, but not necessarily so, and a folder or turner to fold or turn the cut or slit sections at an angle to the narrow section of the strip or clip, and means for automatically feeding the strip or clip adapted to engage the notches formed in the edge of the strip by the turning or making of the prongs.

The invention is illustrated as carried into effect by an organization which combines in one instrumentality or upon one rotating block the slitting or cutting device, the prong folding or bending device, and the strip-feeding mechanism.

In the drawings, Figure 1 is a view in plan of the machine. Fig. 2 is a view in horizontal section upon the dotted line xx of Fig. 1. Fig. 3 is a view in horizontal section upon the dotted line yy of Fig. 1. Fig. 4 is a detail view to illustrate the feeding of the clip, to which reference is hereinafter made. Fig. 5 is a detail view, in vertical, section upon the dotted line zz of Fig. 1 and showing in elevation parts back of that line. Fig. 6 is a detail view in perspective, enlarged, to show the relation between the feedway, bed, die-piece, and cutter and folder and the construction and operation of the cutter and folder. Fig. 7 is a view of the angular strip or clip before the prongs or starts are formed in one of the sides, and Fig. 8 shows in perspective the strip or clip provided with the prongs or starts. Figs. 9, 10, and 11 show a modification of the cutter, bender, and feeder.

In Fig. 7 we have represented the metal strip from which the clip is made as partially formed—that is, it is reduced to an angular shape, having a wide side a and a narrow side a' . This strip is of thin metal, preferably of steel or iron and of a quality to be formed by pressure; and the complete strip provided with angular prongs is represented in Fig. 8. It is used in attaching card-clothing to flats in the manner shown and described in said application. The machine the subject-matter of this invention is adapted to form in the narrow side of the angular strip a series or line of prongs or projections, which are made by cuts preferably diagonal, although not necessarily so, extending from the edge of the said section inward any desired depth, and by folding the cut section on a line from the end of each cut to the edge of the said strip-section to a position parallel to the wide section of the strip and so as to have an angular relation thereto. (See Fig. 8.) To accomplish this purpose, the machine has a feedway adapted to receive the wide section of

the strip, a bed alongside the feedway extending to the cutting or slitting device which supports the narrow side of the angular piece, a die-piece the end of which bears operative relation to the tool which forms the cut or slit and which serves to support the material of the narrow side of the strip during the action of the cutter, a downhold for holding the strip upon the bed and die-block while it is being slit, a prong folding or bending device, and a strip-feeding mechanism; and the strip cutting or slitting device and the strip-feeding mechanism are represented as peculiarly combined, the slitting mechanism being shown as rotary and set at an oblique angle to the line of the feedway and bed and operating to first form an oblique slit, while its accompanying folder or bender practically simultaneously bends downward the point or corner to form the angular prong; and inasmuch as it is convenient to carry the strip-feeding mechanism or devices upon the same rotary support which carries the cutter and bender we have so represented them, and they comprise one or more spiral threads which rotate into the notch or notches partially formed by the prong-making operation, and which threads act to advance or feed the strip to bring new or uncut sections under the cutter and prong-folder.

In the drawings, A represents a base mounted on legs or supports, and across which there extends a long block A', which is bolted to the base by the bolts a^7 . This block is provided on its face a^2 with a shoulder a^3 , upon which rests a metal bed B, which is bolted to the side of the block A', the bed being recessed or rabbeted upon its inner side to form a way b of sufficient depth to receive the side a of the strip from which the clip is formed. The upper surface b' of the bed supports the narrow side a' of this strip, and is somewhat narrower than it, so that the strip extends beyond it and laps upon the upper surface of the die-block D. (See Fig. 6.) The strip is held in the feedway and upon the bed and die-block during the various operations of the devices hereinafter described by a down presser or hold C, which is represented as provided by the end of a thin metal plate, shaped to permit an upward spring or yielding action, and which is attached to the outer side of the block A' by a screw or bolt, and at a place opposite the point where the cutter engages the edge of the strip. The upper surface d of the die-block is flush with the surface of the bed, and the end d' of said block is oblique to the side of the bed and in line with the face of the cutter E. The die-block is made adjustable upon the block A' in order that its said end d' may be set and maintained in proper relation to the cutter by means of the slots d^2 and locking-bolts d^3 . (See Fig. 1.) This arrangement of bed, die-block, and presser permits the strip to be so presented and fed to the cutter that its edge extending by the end of the die-block is

brought into line with the said cutter E and also with the folding and feeding devices hereinafter described.

The cutter E is formed upon or attached to the disk or roll F. For some reasons we prefer that it be made separate, and it is so shown in Figs. 3 and 6, and is there represented as mounted in a recess e , formed in the side of said disk or roll F, and is secured to the said disk by the screws e' . The outer surface of the cutter is curved from its cutting or slitting edge e^2 , and the prong folding or turning surface e^3 is adjacent to or back of this cutting edge.

The disk or roll F supporting the cutter is carried at the end of the shaft f , which has bearings in a box f' , secured to the bed-plate or table of the machine, and at the opposite end of the shaft is a loose pulley f^2 , which takes a driving-belt, and also a clutch f^3 , attached to the shaft to rotate with it and having a sliding movement by which it is moved into and out of contact with the pulley, the face of which receives the clutch and forms a member of the clutch. The shaft is so located that the disk or roll is set at an oblique angle to the strip-feedway and so that the slitting-knife makes a cut at an oblique angle in the narrower side of the strip and across the oblique end of the die-block, and this slitting action of the knife is immediately succeeded by the bending downward of the slit section.

a^5 represents the slit in the strip edge, a^6 the section which is thus bent or folded, and a^4 the completed prong. The rotation of the cutter and folder not only brings them into action with the edge of the strip, but also removes them from action and permits the strip-feed G to be brought into action. This feed comprises one or more spiral threads g , formed, preferably, in a segmental piece adapted to be attached to the edge of the disk or roll, and each one of the threads is adapted to engage a notch in the edge of the strip or clip formed by the bending of a prong and upon its rotation feed the strip the width of the notch or any other desired distance, according to the pitch of the teeth. As the roll is oblique to the feedway, the teeth are of different diameters, and the one having the shortest engages the last notch formed by the cutter and folder, the second tooth engages the second notch, and the third the third notch. By using more than one tooth the strip is more uniformly fed and spaced. There is a space or recess in the edge F' in the disk or roll between the end of the feeding-threads and the cutter. (See Fig. 3.)

In operation the angular strip is mounted in the feedway and advanced by the hand to the action of the cutter, and a prong is formed by the making of the oblique cut and the folding at an oblique angle to the wider section of the cut portion, and the subsequent action of the machine is entirely automatic, the first feeding-thread engaging the notch made in

forming the prong and advancing the strip any desired distance.

While we have represented the cutter and folder and feed as rotating and mounted on one block or disk for the purpose of simplicity and cheapness, we would not be understood as limiting ourselves to a machine in which the action of these parts is rotary or combined, as the slitting or folding device or devices may be reciprocated instead of being rotary and the feed may be separated from them and be rotary or reciprocating, as desired, but we prefer the form in which the invention is represented as organized and which we have above described.

It will be seen that in making the prongs we do not remove any of the stock of the strip, but that they are formed by cutting in a straight edge diagonal or oblique cuts and by folding the cut sections in either direction from the strip and so as to stand from it; and we would also say that while we would prefer a prong that is formed by an oblique angle, as it is sharper and longer, yet for some purposes the angle of the cut may be practically a right angle and the same result be secured. We would further say that while we have described this machine as adapted to form prongs in the edge of a card-clothing strip we do not confine ourselves to such use of it.

In Figs. 9, 10, and 11 we show a slightly-modified form of the cutting, turning, and feeding mechanism. It is in the form of a spiral thread. Beginning at the cutting-point, which is lettered M, a notch *m* is formed in the front of the cutting-point, and from this cutting-point the spiral feeding-thread continues uninterrupted. This cutting-point serves to form or cut and turn the prong and the continuous spiral thread to feed the strip, and we prefer to make the thread upon the edge of a conical disk.

Having thus fully described our invention,

we claim and desire to secure by Letters Patent of the United States—

1. In a machine for the manufacture of card-clips of the character specified, the combination of a strip-feeding mechanism, a bed upon which a section of the strip bears, a die-block and a rotary cutter and folder cooperating with said die-block and bed as specified, as and for the purposes described.

2. In a machine of the character specified, the combination of a bed, a die-block adjacent thereto, a presser for holding the strip upon the bed and a rotary prong cutter and folder, as and for the purposes described.

3. The combination in a machine of the character specified of a bed for supporting the strip, a die-block, a rotary prong cutting and folding device and a rotary feeding device to feed the strip by its engagement with the notches formed therein by the cutting and folding device.

4. In a machine of the character specified a rotary feed comprising one or more teeth or threads adapted to engage the notched edge of a strip to feed it, as and for the purposes described.

5. In a machine of the character specified the combination of a rotary strip-feed comprising a spiral thread or tooth mounted upon a rotary support and a tooth folder or turner, as and for the purposes described.

6. The combination in a machine of the character specified of a bed, a die-block, a rotating prong-cutter, a rotating prong-turner and a rotating prong-feeder, the said die-block, prong cutter, turner and feeder bearing an oblique relation to the bed, as and for the purposes described.

CHARLES MILLS.

LOREN W. PENNEY.

In presence of—

ALEXR. RANKEILLOR,
HERBERT E. CHILD.