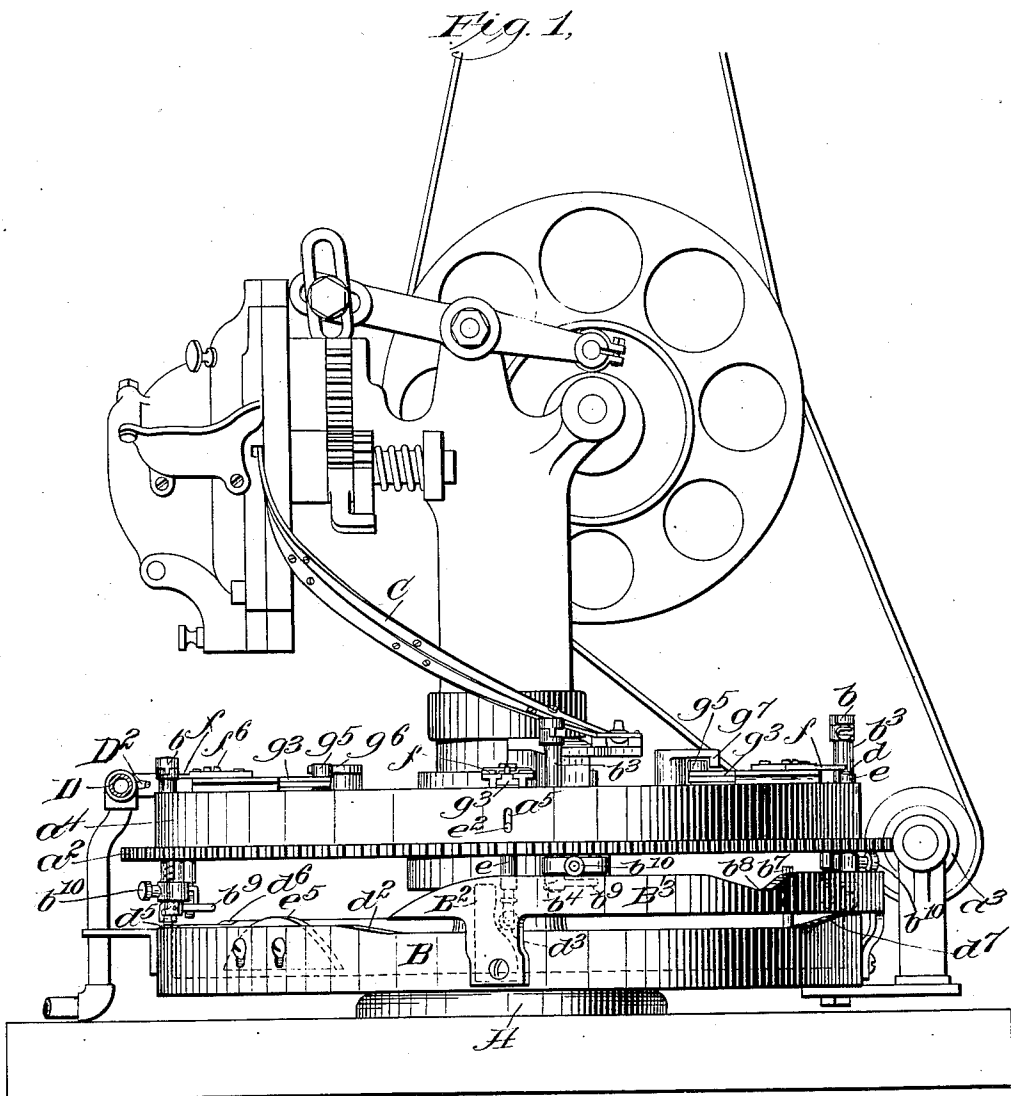


917,627.

4 SHEETS—SHEET 1.



Witnesses:
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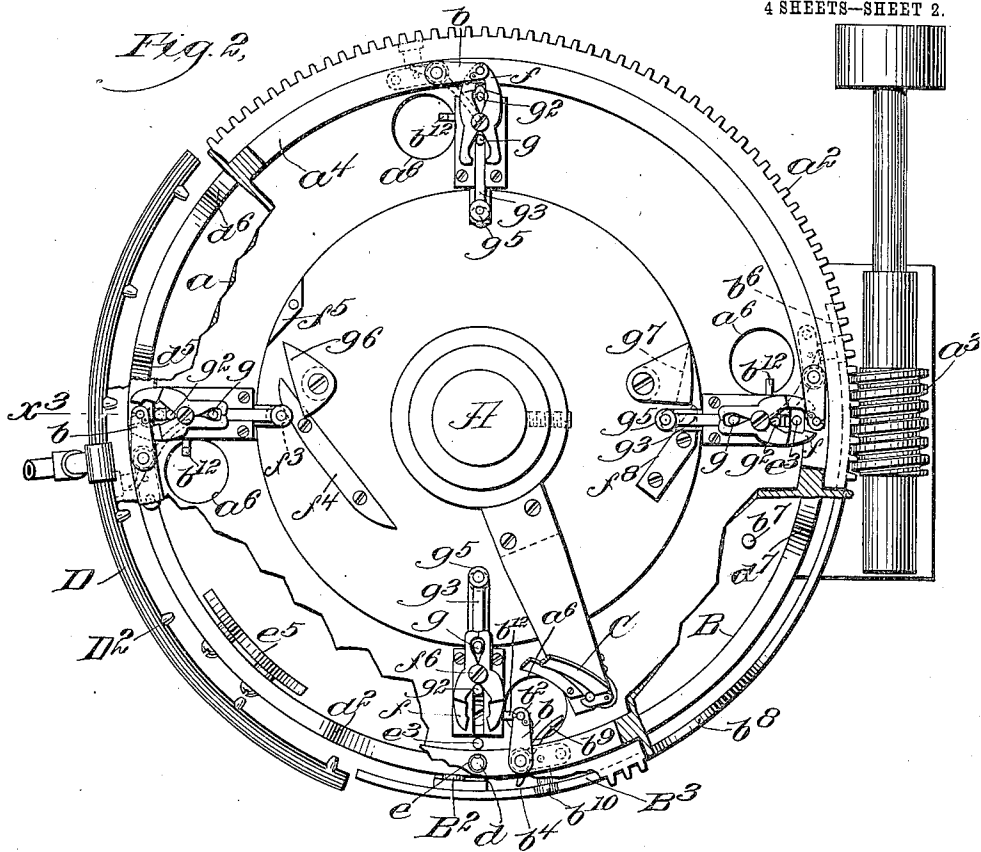
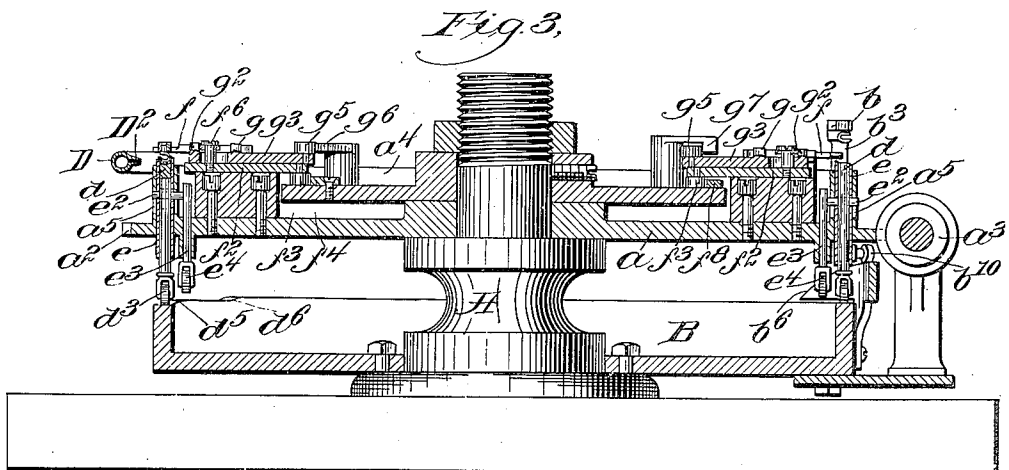
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J. LIZOTTE, DEC'D.
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MACHINE FOR COVERING STUDS.
APPLICATION FILED DEC. 24, 1904.

917,627.

Patented Apr. 6, 1909.

4 SHEETS—SHEET 2.

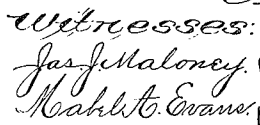


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917,627.

4 SHEETS—SHEET 3.



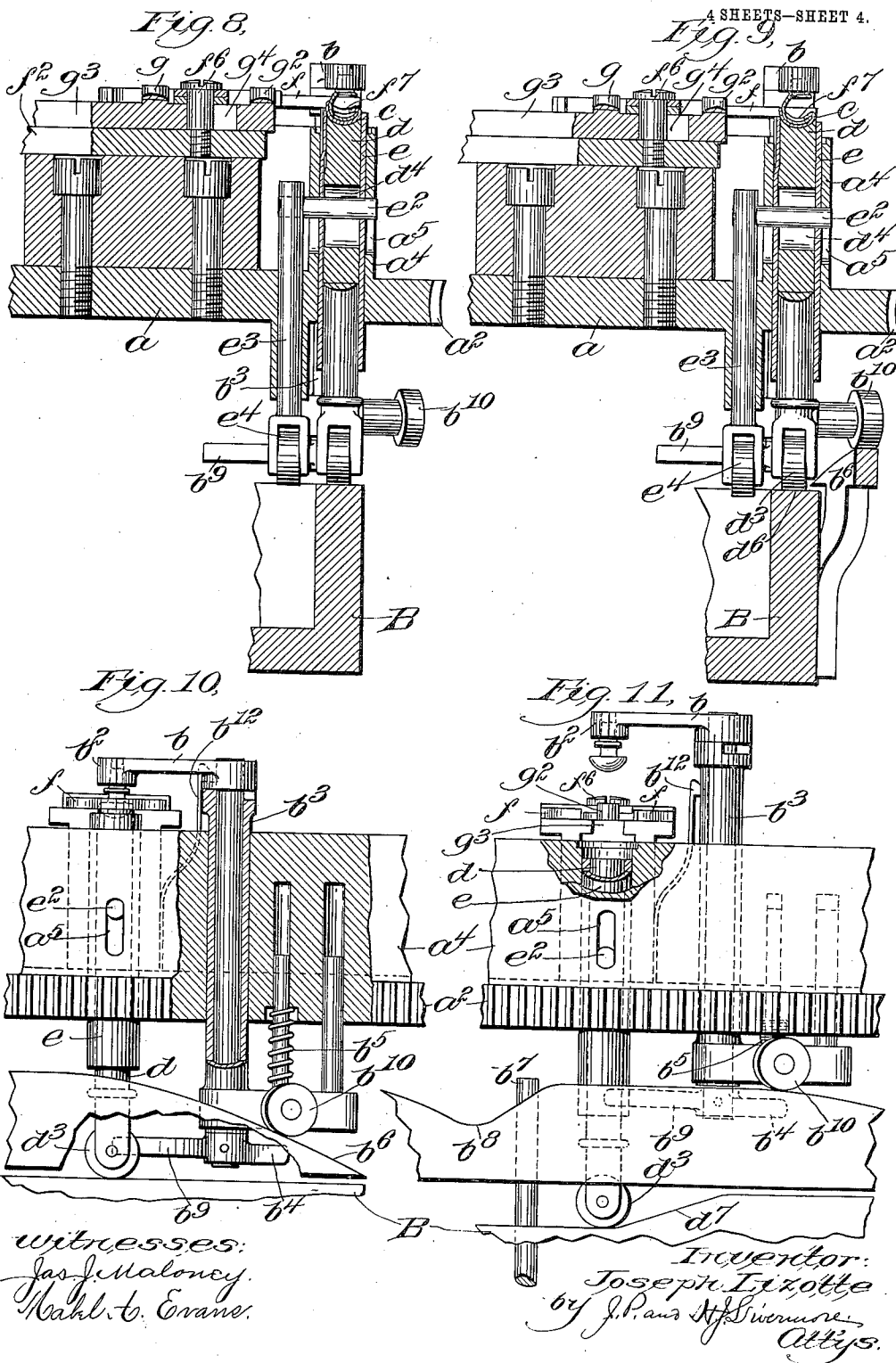
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4 SHEETS—SHEET 4.



UNITED STATES PATENT OFFICE.

JOSEPH LIZOTTE, OF QUINCY, MASSACHUSETTS; MARIE L. LIZOTTE ADMINISTRATRIX OF SAID JOSEPH LIZOTTE, DECEASED.

MACHINE FOR COVERING STUDS.

No. 917,627.

Specification of Letters Patent.

Patented April 6, 1909.

Application filed December 24, 1904. Serial No. 238,265.

To all whom it may concern:

Be it known that I, JOSEPH LIZOTTE, a citizen of the United States, residing in Quincy, county of Norfolk, and State of Massachusetts, have invented an Improvement in Machines for Covering Studs, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

The present invention relates to a machine for applying covering material to lacing studs and is embodied in a machine especially adapted for covering lacing studs or similar articles, such for example as eyelets, with sheet celluloid which has been previously cut into pieces of the right shape and size to form a covering for the stud or eyelet. With the understanding that the several instrumentalities employed in connection with the machine may be designed for various specific purposes, the invention is herein shown as embodied in a machine especially designed for covering lacing studs for shoes, and the machine so designed will be more or less specifically described in order clearly to illustrate the invention.

In accordance with the invention the machine is provided with a die or a plurality of dies; each adapted to support a piece of sheet celluloid and to conform the same, by pressure, to the surface of a stud, eyelet or analogous article; the die operating in conjunction with a suitable holding device for the stud or eyelet to be operated upon. This holding device may be arranged so as to receive a stud or eyelet from a suitable feeding device by an automatic operation and to present the stud to the die; the piece of celluloid having been previously fed to the die so as to be interposed between the same and the stud. The machine is so arranged that the sheet of celluloid thus held between the stud and the die will be heated to a degree sufficient to render the same pliable and then will be acted upon by the operative elements of the machine in such a manner as to be shaped to conform to the outer surface of the stud with its edge projecting beyond the edge of the stud; the said edge being subsequently acted upon so as to be wiped over the edge of the stud and brought into contact with the other surface thereof and thereby

held in position after the material has cooled and become hardened. In the construction shown as an embodiment of the invention the machine is provided with a traveling member having a plurality of operating devices for covering the studs, each of which is arranged to be acted upon in the movement of the said traveling member so that the operative members will perform the necessary operations consecutively during a single cycle of operations. Each operative element is complete in itself and is actuated by members which are stationary with relation to the traveling member which carries these parts, so that the machine may be provided with as many of said operative elements as may be desired, the only limitation to the number used being the ability to feed the covering material, and the articles to be covered, to the machine.

The machine embodying the invention is herein shown as comprising a traveling disk which is provided with a plurality of dies and an automatic feeding device for supplying each die with one of the articles to be operated upon; the covering material being previously supplied to the die in any suitable or usual way. Each of the dies is provided with a crimping device herein shown as a sleeve concentric with the die and longitudinally movable with relation thereto so that when the sheet of covering material is held between the stud and the die the longitudinal movement of said sleeve will push the edge of the covering material beyond the edge of the article to be covered so that it will stand substantially at a right angle thereto. The machine is further provided with means for wiping or folding in this projecting edge of the covering material; such means being herein shown as a pair of wipers arranged to move in a plane substantially parallel with the general plane of the surface to be covered, and to converge so as to draw or wipe in the projecting edge of the material previously bent and crimped by the sleeve aforesaid.

It is desirable, though not essential, that the member to be covered should be provided with a concave portion which affords a recess for the rough edges of the covering material, and the machine may further be provided with means for forcing the edges of

the material into such concave portion after the said edges have been turned or wiped over the edge of the stud.

Figure 1 is a front elevation of the machine embodying the invention; Fig. 2 is a horizontal section, showing the operative parts in plan view, with the parts above broken away; Fig. 3 is a vertical section taken on line X³ Fig. 2; Figs. 4, 5, 6, 7, 8 and 9 are enlarged sectional details of the operative parts, showing the successive positions of said parts in carrying out a complete cycle of operations; Fig. 10 is a sectional detail on a plane substantially at a right angle to that of Fig. 9, showing the parts in the same position as in Fig. 9; and Fig. 11 is a view similar to Fig. 10, but showing the parts further advanced in the movement of the traveling member.

While the machine embodying the invention may be adapted for use in covering any such articles as studs, eyelets, and the like, with sheet celluloid or other material, the machine for convenience in illustration is herein shown as especially adapted for covering with celluloid lacing studs for shoes; and the invention will be specifically described in this connection, with the understanding that the invention is not to be limited solely to a machine designed for this particular purpose.

In accordance with the invention the machine is provided with a traveling member *a*, herein shown as a horizontal disk having a bearing upon a stud or projection *A*, around which it travels with relation to a stationary member *B*, which is provided with instrumentalities capable of causing the consecutive operations of the instrumentalities carried by the disk *a*. As herein shown the disk *a* is provided with a gear *a*² which is arranged to coöperate with a worm *a*³ so that in the operation of the machine the disk *a* will continue to rotate and to carry the articles to be operated upon, together with the operating devices which produce the successive operations, causing these parts to travel with relation to the coöperating parts formed on the stationary member *B*. In the rotation of the disk *a*, the article to be covered, herein shown as a lacing stud, is received from a suitable feed-chute *C*, by a member *b* having a spring finger *b*² which catches the shank of the stud; the said member *b* having a bearing in a sleeve *b*³ so that it is capable of rotation therein. After the said member *b* has traveled past the chute *C* and has taken a stud therefrom, as best shown at the lower part of Fig. 2, the said member is turned upon its axis, that is to say, in the bearing sleeve *b*³ by the engagement of a tail or projection *b*⁴ with a member *B*² upon the stationary part *B*, so that the arm *b* is swung to the position shown, at the left, in Fig. 2, thus carrying the stud into

alinement with a die or plunger *d* carried by the disk *a*; the said plunger having a concave recess in the top substantially conforming in curvature to the convex surface of the stud. At this time, or prior to this time, the machine has been supplied with a disk of covering material such as sheet celluloid; the said piece of material having been placed upon or over the top of the die *d*. In the further movement of the disk *a* the arm *b* is lowered, the sleeve *b*³ which affords the bearing therefor being longitudinally movable with relation to the disk *a* and controlled in such movement, as best shown in Figs. 10 and 11, by means of a spring *b*⁵ together with its own gravity. The said sleeve *b*³, up to this period, is supported by means of a cam surface *B*³ upon the fixed portion of the machine, being provided, for this purpose, with a cam-roll *b*¹⁰; and as soon as the arm *b* has been turned so as to present the stud to the die it will be dropped by the disengagement of the roll *b*¹⁰ from the cam surface *B*³, and the piece of celluloid *c*, will be nipped between the stud and the die, as shown in Fig. 4. As the member *a* continues to travel carrying the instrumentalities described beyond this point, the stud and the die with the celluloid held between the two will come under the influence of heat, applied for example by means of a hot air pipe *D* provided with jets *D*², the heating being sufficient merely to soften the celluloid and render the same pliable without necessarily reducing it to a plastic condition. The die *d*, which is herein shown as a vertically movable rod having a cup shaped end to correspond to the shape of the stud, is pushed upward by means of a cam *d*² formed on the upper surface of the stationary member *B*; the die being shown as provided with a roll *d*³ at the bottom. This upward movement of the die is sufficient to bend the sheet of celluloid and to conform it to the surface of the stud as indicated in Fig. 5. The next step in the process is to bend or crimp the edge of the piece of celluloid so that it will stand substantially at a right angle to the edge of the stud as shown in Fig. 6. For this purpose the machine is provided with a crimping member *e* which is herein shown as a sleeve concentric with and surrounding the die *d* and capable of longitudinal movement with relation thereto. As herein shown the sleeve *e* is connected by means of a pin *e*² with a rod *e*³ having a cam roll *e*⁴ in the path of which is a cam *e*⁵ which is beyond the cam *d*²; this cam acting to lift the sleeve *e* with relation to the die, the said die being shown as provided with a slot *d*⁴ to receive the pin *e*², and admit of the necessary independent movements of the parts. As best shown in Figs. 4 to 9, inclusive, the sleeve *e* when designed for use in covering ordinary lacing studs, is provided

with an inward projection at one side, which serves to press the edge of the sheet of celluloid *c* snugly into contact with the back of the stud, which has a concave vertical recess.

5 After the edge of the celluloid has been crimped by the action of the sleeve, a further independent movement of the die and sleeve takes place so that the crimped edge will stand beyond the sleeve ready to be
10 acted upon by a pair of wipers *f*, the purpose of which is to wipe in or fold over the projecting edge of the celluloid until it has been turned past the edge of the stud. As herein shown the independent movement
15 above described is caused by giving the die *d*, a further upward movement; this being accomplished through the agency of a cam *d*⁵ so situated as to produce this movement prior to the operation of the wipers.

20 The wipers *f* are shown as consisting of a pair of jaws pivotally supported upon a slide *f*² which has a cam roll *f*³ arranged to be acted upon by cams *f*⁴ and *f*⁵ mounted upon a stationary part of the machine in the positions shown in Fig. 2. When the cam roll *f*³
25 engages the cam *f*⁴ the slide *f*² is pushed forward, the wiper jaws at this period being opened so as to travel past and beyond the stud as indicated in Fig. 7. The wiper jaws
30 are opened and closed respectively by means of pins *g* and *g*² which are mounted on a slide *g*³ which rests upon the slide *f*² and is capable of movement independently thereof, being shown as provided with a slot *g*⁴ which
35 embraces the pivot *f*⁶ upon which the jaws *f* have their bearing. The slide *g*³ is provided with a cam roll *g*⁵ which coöperates with a cam *g*⁶, after the jaws have been moved forward, the said cam *g*⁶ being in a different plane
40 from the cams *f*⁴ and *f*⁵ so as to produce no effect on the slide *f*². The action of the cam *g*⁶ is such as to push the slide *g*³ outward, thereby forcing the pin *g* into contact with inclined surfaces formed on the jaws behind
45 the pivot, thus spreading the rear ends of the jaws and bringing the jaws proper together beyond the end of the stud. With the jaws thus closed, the cam *f*⁵ acts to draw the slide *f*² backward so that the jaws *f* engage and
50 wipe in the projecting edge of the celluloid as shown in the Fig. 8. As herein shown the jaws are provided with convex surfaces *f*⁷ which, when the jaws are brought together, form a rounded portion of such shape as to
55 substantially fit or conform to the surface of the stud over which the crimped and turned-in edge lies. In order to force the said edge into close contact with the stud the die *d* is given a slight further upward movement
60 through the agency of a cam *d*⁶ thus pressing the stud up into close contact with the jaws *f* and forcing the edge of the celluloid to the position shown in Fig. 9.

The crimping-sleeve, with the inclosed die,
65 is supported in a tubular member *a*⁴ project-

ing from the traveling member *a*, and the said tubular member is provided with a slot *a*⁵ for the pin *e*² which connects the sleeve *e* with its operating rod *e*³. During the final
70 upward movements of the die to push the stud out of the crimping sleeve, so that the wipers can perform their functions, the pin *e*² engages the wall of the slot *a*⁵ at the upper end, and prevents the sleeve from being carried upward with the die.

75 The several operations, above described, take place during a little over a quarter of the rotation of the disk *a*, and during about a half of the rotation thereof, the die *d* and wipers *f* remain in the position last described
80 thereby holding the celluloid firmly in place until it has had time to cool and set. The wiper jaws *f* are then opened through the agency of the pin *g*² and the slide *g*³, the pin *g*² acting upon inclined surfaces formed on
85 the wiper jaws in front of the pivot *f*⁶. To accomplish this the cam roll *g*⁵ is acted upon by a cam surface *g*⁷ which produces a rearward movement of the slide *g*³ to open the jaws, thereby releasing the stud, which then
90 rests between the die *d* and the stud holding device *b*. The slide *f*² is then acted upon by a cam *f*⁸ which withdraws the entire wiper member to the position shown at the bottom
95 part of Fig. 2. In order to release the stud after the wipers have been thus withdrawn, and to deliver the same from the machine, the stud-holder is lifted from the position
100 shown in Fig. 10 to the position shown in Fig. 11, through the engagement of the cam surface *b*⁹ by the roll *b*¹⁰. The die is also lowered at about the same time, through the agency of the cam surface *d*⁷, and the stud is left in the stud-holder, free of the die and co-
105 operating parts, as shown in Fig. 11. In the further progress of the traveling member *a*, the stud-holder is turned on its axis by the engagement of the tail *b*⁹ with the stationary projection *b*⁷, so that it finally stands in the
110 position in which it is shown at the bottom of Fig. 2. In this position the stud holder is caused to dip and rise, by means of the cam surface *b*⁸, and in the dipping movement the stud latches past and is caught by a
115 spring finger *b*¹², so that in the rising movement it is pulled out of the holder and dropped from the machine through an opening *a*⁶ in the member *a*. In this position of the stud-holder *b*, the feed-chute is in the path of movement thereof, so that a stud is
120 picked out, after which the holder is swung over the die, as previously described.

For convenience in illustration, the traveling member *a* is shown as provided with only four sets of dies, wipers, etc., it being obvi-
125 ous that in practice a large number of sets of tools may be employed so that a large number of studs may be covered at each cycle of operations.

The pieces of sheet-celluloid may be fed by 130

hand or otherwise during the period when the die is in its normal downward position, the tubular member *a* in which the die *d* and crimper *e* are mounted being so shaped at the top as to engage and position the piece of celluloid.

While the construction herein described constitutes a practical embodiment of the invention, it is obvious that modifications may be made in the construction and arrangement of the instrumentalities, without departing from the invention, and it is therefore not intended to limit the invention to such specific construction and arrangement.

What I claim is:

1. In a machine for applying covering material to eyelets, means for bending the covering material over the edge of the flange of an eyelet, combined with means for forcing said bent-over material under the edge of the flange.

2. In a machine of the class described, means for bending covering material over the edge of the flange of an eyelet, and other means for thereafter forcing the covering material under the eyelet flange and into contact with the under surface of the flange.

3. In a machine for covering eyelets with plastic sheet material, means for applying the material to the upper surface of the flange of an eyelet and means for bending the material over the edge of the flange, combined with means for turning said bent-over material under the edge of the flange and into contact with the under surface of the flange.

4. In a machine of the class described, means for bending covering material over the edge of the flange of an eyelet and holding said covering material from reverse movement, combined with means for acting on the bent-over portion of covering material to force it under the flange.

5. In a machine of the class described, means for bending covering material over the edge of the flange of an eyelet, combined with means for acting on the bent-over portion of covering material to force it under the flange and into contact with the under surface of the flange, said mechanism having provision for holding the covering material from lateral spreading while it is being forced under the flange.

6. In a machine for covering eyelets with plastic sheet material, means for heating the plastic material, means for applying the material to the upper surface of the flange of an eyelet, and means for bending the material over the edge of the flange, combined with means for turning said bent-over material under the edge of the flange and into contact with the under surface of the flange.

7. In a machine for covering studs, the combination with a die for shaping the covering material to conform to the outer surface of the stud, of means for acting on the

projecting edge of the material to crimp and turn the same into contact with the inner surface of the stud, and means for producing consecutive operations of the die and the means for acting on the projecting edge of the material.

8. In a machine for covering studs with celluloid, a die to receive a disk of celluloid; means for holding a stud in contact with said disk adjacent to the end of the die; a crimping device for forcing the edge of said disk past the edge of the stud; and means for folding said edge over into contact with the stud beyond the edge thereof.

9. In a machine for covering studs, a die shaped to conform to the surface of the stud; a sleeve concentric with said die; means for imparting a longitudinal movement to said sleeve with relation to said die; wipers; and means for moving said wipers in a direction transverse to the direction of movement of said sleeve.

10. In a machine for covering studs, a traveling member; a die and a sleeve concentrically arranged and carried by said member; stationary cams to cooperate with said die and sleeve respectively in the travel of said member; a wiper also carried by said member; and stationary cams to operate said wiper.

11. In a machine for covering studs, a die; means for forcing the die toward the stud to shape the covering material thereon; a sleeve surrounding the die; means for moving said sleeve with relation to the die to press the edge of the covering material beyond the edge of the stud; and means for turning in the projecting edge.

12. In a machine for covering studs, a stud holder; and a die, a crimper, and a wiping in device, for shaping the covering material to one surface of the stud and bringing the edge thereof into contact with the other surface of the stud.

13. In a machine for covering studs, a holder for the stud; a die; means for producing a movement of one of said parts with relation to the other; a holder for the material between the die and the holder for the stud; a sleeve surrounding the die and shaped substantially to conform to the peripheral shape of the stud; means for moving said sleeve beyond the edge of the die; a wiping-in device movable substantially in the plane of the stud; and means for operating said device after the operation of the sleeve.

14. The combination with a stud holder, of a holder for the material; a die; a sleeve surrounding and concentric therewith, one of said parts being longitudinally movable with relation to the other; and cams cooperating respectively with said die and sleeve to produce successive independent movements thereof, substantially as described.

15. The combination with a traveling member, provided with a die, a crimper, and a wiper; of a stationary member provided with engaging portions to operate said parts respectively.

16. The combination with a continuously traveling carrier; of a stud holder mounted on said carrier; a support for stud-covering material also mounted on said carrier; devices supported on and traveling with said carrier to operate on the stud-covering material; and stationary members in the path of said carrier to operate said devices.

17. The combination with a continuously traveling carrier; of a die mounted thereon and traveling therewith; means for presenting a stud to said die; a support for covering material adjacent to said die and also mounted on and movable with said carrier; a source of heat located adjacent to the said carrier to heat the covering material as said material passes the source of heat during the travel of the carrier; means for operating said die after the material is heated to conform said material to one surface of the stud; devices for conforming the material to the opposite surface of the stud; and means for operating said devices subsequently to the operation of said die.

18. In a machine for covering articles with sheet celluloid, a support for the celluloid; a separate support for the article to be covered; a die; a source of heat adjacent to the support for the celluloid; means for bringing together the die and the support for the article for the purpose of shaping the celluloid between said die and said article; devices for crimping in the edge of the celluloid after the main portion thereof has been shaped by the die; and means for operating said devices subsequently to the operation of the die.

19. In a machine for covering studs with sheet celluloid, the combination with means for moderately heating the celluloid; of devices acting on the celluloid to conform it to the outer surface of the stud; devices acting on the celluloid to conform it to the inner surface of the stud; and means for operating the devices last named subsequently to the operation of the devices first named.

20. In a machine for covering studs with material capable of being rendered pliable by heat, the combination with means for holding the material in contact with one surface of the stud; of means for heating the material; means for pressing the heated material into intimate contact with said surface; and means subsequently operated to

act on the material around the edge of the stud to crimp in the material and cause it to overlie the other surface of the stud.

21. The combination with a die, of a crimping sleeve surrounding said die; an external support for said sleeve provided with a recess to receive a blank of covering material; a support for a stud; means for heating the covering material; means for operating the die to press the heated material against the surface of the stud; means for operating the crimping sleeve to bend the material past the edge of the stud; and a device for turning in the projecting edge of the material.

22. The combination with a die and a crimping member, of a stud support to hold the stud during the operation of said parts; a pair of wipers movable in a direction transverse to the axis of said members; and means for operating said wipers.

23. The combination with means for bending the edge of a piece of covering material past the edge of a stud; of a pair of pivotally supported wipers; means for opening and closing said wipers; and separate means for moving said wipers to wipe in the projecting edge of the covering material.

24. The combination with the die and crimping sleeve; of cams for moving said die and sleeve successively in substantially the manner described; a stud holder, and cams for operating the same; a pair of wipers movable in a plane transverse to the plane of movement of the die and sleeve; and cams for operating said wipers.

25. In a machine for covering studs, a stud-holder; means for raising and lowering said stud-holder; means for turning said stud-holder; a feed-chute; a die and crimping sleeve to operate on material applied to the stud in the holder; wipers to act on said material; means for operating said die, crimping sleeve and wipers; and means for discharging the finished stud from the stud-holder.

26. In a machine for covering eyelets, the combination with means for shaping covering material to conform to the upper surface of the eyelet; of means for acting on the projecting edge of the covering material to crimp and turn the same under the edge of the flange of the eyelet.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

JOSEPH LIZOTTE.

Witnesses:

HENRY J. LIVERMORE,
JAS. J. MALONEY.