

April 30, 1968

F. G. CHAMP

3,380,140

MACHINE FOR ATTACHING INSULATOR PODS TO ELECTRICAL CONNECTORS

Filed Dec. 1, 1965

2 Sheets-Sheet 1

Fig. 1.

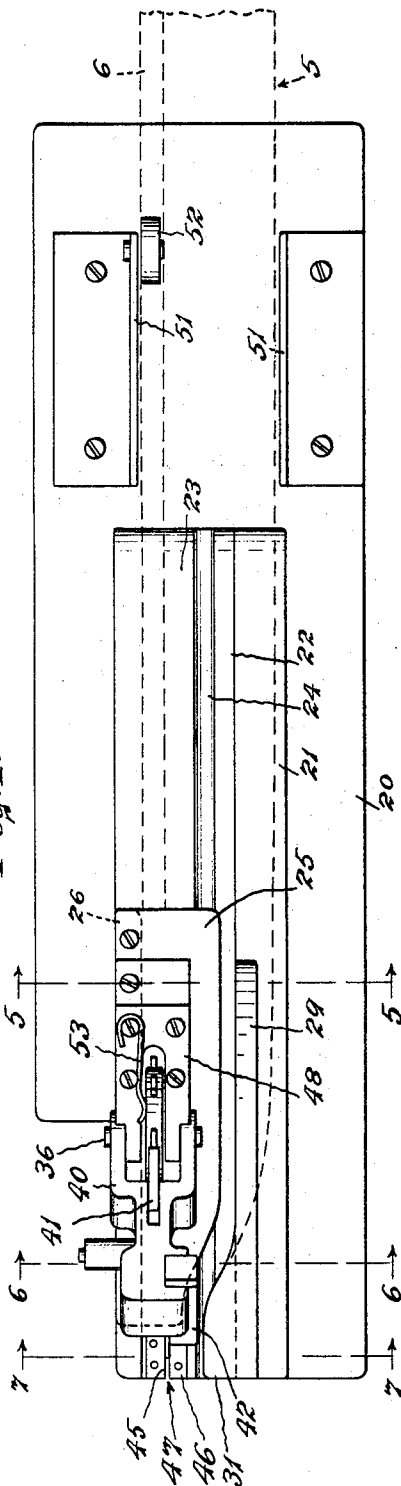
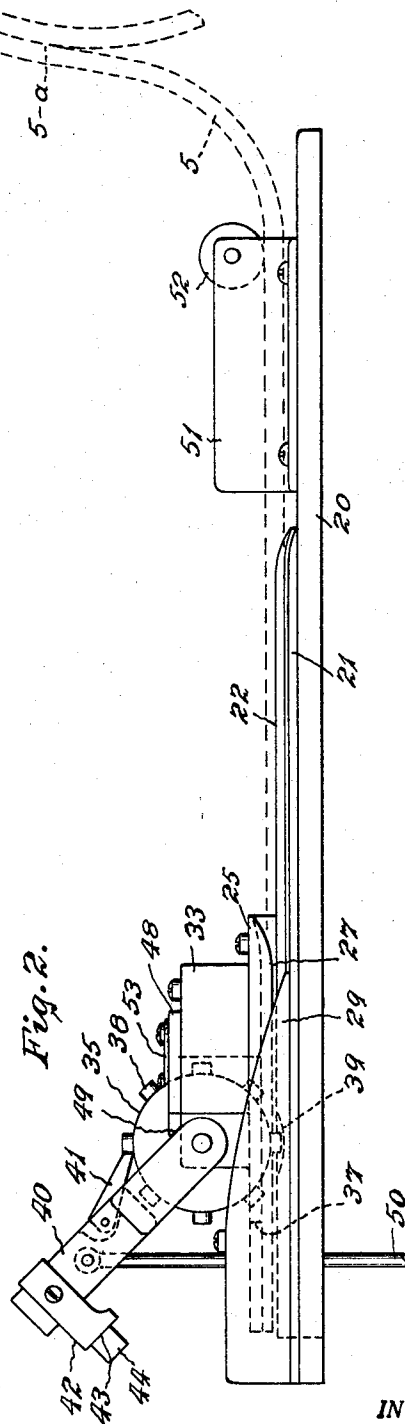


Fig. 2.



INVENTOR.
FRANK G. CHAMP.
BY
Louis V. Lucia

April 30, 1968

F. G. CHAMP

3,380,140

MACHINE FOR ATTACHING INSULATOR PODS TO ELECTRICAL CONNECTORS

Filed Dec. 1, 1965

2 Sheets-Sheet 2

Fig. 3.

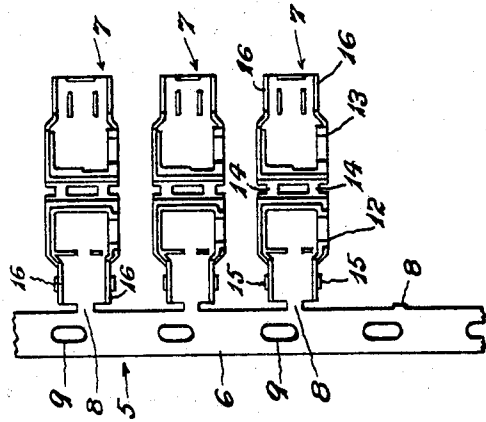


Fig. 4.



Fig. 10. Fig. 11.

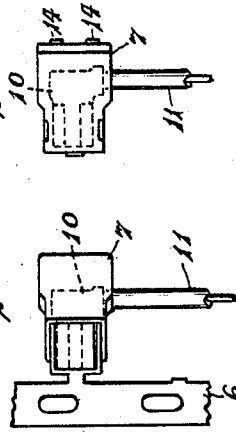


Fig. 9.



Fig. 5.

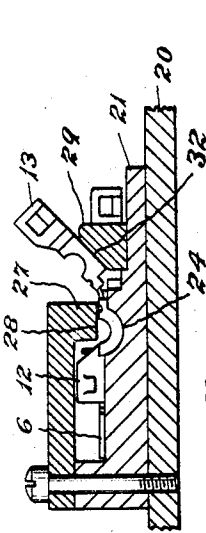


Fig. 6.

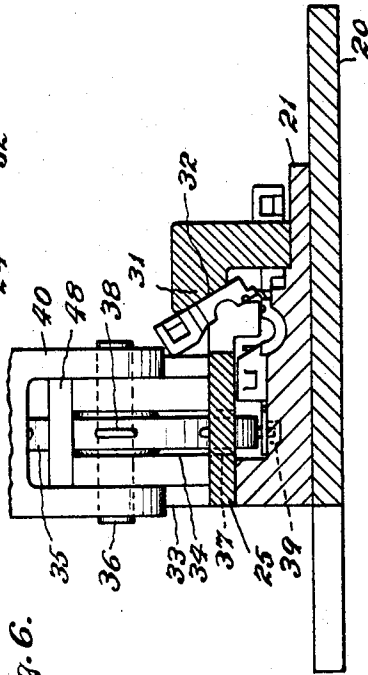


Fig. 7.

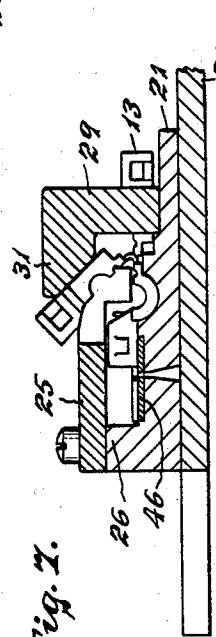
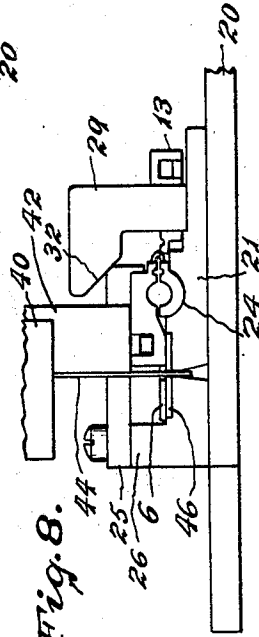


Fig. 8.



INVENTOR.
FRANK G. CHAMP.

BY *Louis V. Lucia*

1

3,380,140

MACHINE FOR ATTACHING INSULATOR PODS TO ELECTRICAL CONNECTORS

Frank G. Champ, Wethersfield, Conn., assignor to The Seeburg Corporation, Chicago, Ill., a corporation of Delaware

Filed Dec. 1, 1965, Ser. No. 510,899
7 Claims. (Cl. 29-203)

ABSTRACT OF THE DISCLOSURE

A machine for attaching to electrical connectors insulator pods which are integrally contained on a strip in the form of pairs of opposed halves that are folded over a connector, pressed together into interlocking engagement and severed from the strip.

Heretofore, such insulating pods have been first detached from the strip and then each clasped onto the connector by a separate operation.

An object of this invention is to provide a machine for folding such pods over the connector, clasping the pod onto the connector, severing the pod from the strip and feeding the strip forward in the machine, all in a single operation.

FIG. 1 is a plan view of a machine embodying the present invention.

FIG. 2 is an elevational side view thereof.

FIG. 3 is a fragmental plan view of a portion of a strip of insulator pods for which said machine is particularly intended.

FIG. 4 is an elevational front end view of said strip.

FIG. 5 is a sectional front view on line 5-5 of FIG. 1.

FIG. 6 is a similar view on line 6-6 of FIG. 1.

FIG. 7 is a similar view on line 7-7 of FIG. 1.

FIG. 8 is an elevational front view of said machine and strip illustrating the final step in the operation thereof.

FIG. 9 is an elevational side view of an electrical connector of the type for which said insulator pods are intended.

FIG. 10 is a plan view illustrating said connector placed within a pod while in the partly folded position shown in FIG. 7.

FIG. 11 is a side view of said insulator pod fully folded, clasped onto said connector and detached from said strip.

As illustrated in the drawings, the numeral 5 denotes a strip of identical insulator pods which is usually molded of a bendable electrical insulating plastic material and includes a tape 6 integrally containing thereon a succession of pods 7 in open position and each connected to said tape by a stem portion 8. The said pods are equally spaced in said strip and a perforation 9 is provided in the tape 6 for each of the pods.

As clearly shown in FIGS. 3 and 4, the said pods are of a form specially designed to receive an electrical connector 10 on an insulating electrical wire 11 of the type illustrated in FIG. 9, but may also be of designs adapted for other types of connectors.

Each of the pods 7 comprises a pair of halves 12 and 13 connected by means of bendable hinge portions 14-14, upon which said halves are foldable over the connector 10, and having laterally projecting bevelled locking teeth 15-15 on one of said halves and on the other half outwardly bendable side walls 16-16 each with an opening 17 therein to receive said teeth and lock the two halves of the pod in closed position over the connector 10 as shown in FIG. 11.

As illustrated, the machine of the present invention includes a base 20 upon which is mounted a bed plate 21

2

having an elongated raised portion 22 with a pod supporting top surface 23 and a groove 24 running lengthwise in said surface to receive a projecting rounded portion 12-a of the pod half 12.

Above the said bed plate 21 there is mounted a holding plate 25 which is spaced from the bed plate by a vertical guide wall 26 at one side thereof and has along its free side a downwardly projecting rib portion 27 with a bottom surface 28 adapted to slideably engage and hold down the pod half 12 upon the top surface 23 of the bed plate. Adjacent the said free side of the bed plate there is mounted a folding bar 29 having an overhanging portion 31 and a folding surface 32 thereon which is progressively and increasingly angled onto said portion to fold the half 13 of each pod over the half 12 as the strip 5 is advanced through the machine in the manner to be hereinafter described.

Upon the holding plate 25 there is mounted a bearing block 33 having a slot 34 in the forward portion thereof and a feed wheel 35 is rotatably mounted in said slot on a shaft 36 which extends through bearings in the block 33 at the opposite sides of the slot. The said feed wheel extends through a slot 37 in the holding plate 25 and has a series of teeth 38 around its periphery which pass through a notch 39 in the top surface 23 of the bed plate.

An operating lever 40 is pivotally mounted by one end upon the shaft 36 and has a pawl 41 engageable with the teeth 38 to cause rotation of the feed wheel. The opposite end of said operating lever carries a pressing block 42 having a surface 43 which engages the pods and a severing punch 44 that enters a slot 45 in a die 46 mounted in the forward end of the bed plate 21.

It will be noted that the forward end of the holding plate 25 and the guide wall 26 terminate short of the front end of the bed plate whereby an open space 47 is provided on said bed plate which contains the die 46 and supports the insulating pod in position to receive the electrical connector 10 and for the final step in the operation of the machine. A stop plate 48 is mounted upon the bearing block 33 and has an abutment 49 which limits the upward swing of the lever 40 and thereby controls the operation of the feed wheel 35 by the pawl 41 to locate the foremost pod of the strip 5 upon said space 47. The lever 40 is preferably operated by a pull bar 50 which may be actuated by a motor on other means, not shown; said lever being returnable to its normal position, shown in FIG. 2, after each operation thereof.

The operation of my above described machine is as follows:

A roll 5-a of the strip 5 is first mounted upon a suitable support, not shown, and said strip is then passed between guides 51-51 on the base 20 and under a hold down roller 52. The forward end of the strip is then pushed along the top surface 23 and under the holding plate 25 with the tape 6 against the guide wall 26 and under the feed wheel 35. The teeth 38 of said wheel are then inserted into the respective perforations 9 in the said tape, and the lever 40 is operated to rotate the feed wheel until the foremost pod of the strip 5 is located upon the space 47.

As the said strip 5 is pushed through the machine, or fed forward by the normal operation of the feed wheel, the halves 13 of the successive pods in the strip will ride over the folding surface portion 30 of the bar 29, as shown in FIG. 5, and the said surface will then start to fold the half 13 about the hinge portions 14-14 and in the direction of the half 12. Upon further step-by-step forward movement of said strip, the half 13 will pass under the overhanging portion 31 and against the surface 32 thereof and be thereby further folded until the respective pod reaches the position, shown in FIG. 7, wherein the half 12 is disposed in the open space 47 and the half 13 is

held in folded position over said half 12, but spaced therefrom, by the forward end of the overhanging portion 31.

When the foremost pod is in a partly open condition, in the position shown in FIG. 7, and the machine is in its normal position shown in FIG. 1, a connector 10 may be easily inserted into the pod, as illustrated in FIG. 10, and held in that position by the wire 11 while the machine is operated: Whereupon the lever 40 will swing downwardly, causing the surface 43 of the pressing block 42 to force the half 13 downwardly over the half 12 and cause locking engagement between the teeth 15—15 and the side walls 16—16 and thereby securely lock said pod onto the connector 10. At the same time that the pod is forced into locking position by the operation of the lever 40, the severing punch 44, which is also carried by said lever, will enter the die 46 and sever the stem 8 of the respective pod, whereupon the said pod, together with the connector 10 to which it is locked, may be withdrawn from the machine, in the condition shown in FIG. 11, while the lever 40 is returned towards its normal position and causes the pawl to rotate the feed wheel 35 and feed the strip 5 forward until the said lever is stopped in its normal position shown in FIG. 1; at which time the next pod on the strip is served in the position shown in FIG. 7 and ready to receive a connector while the machine is in its normal position.

In order to prevent backlash of the feed wheel, upon downward movement of the lever 40, there is provided a spring member 53 which is in frictional engagement with the side of said feed wheel.

It will be understood from the above description that by simply placing a connector into the partly open pod conveniently served in the open space in the front of the machine and initiating an operation, the said machine will close the said pod over the connector, securely lock the pod to the connector, sever the pod with the connector locked therein from the strip, and then feed the strip forwardly and serve the next pod at said open space of the machine while returning the machine to its normal position.

I claim:

1. A machine for folding and clasp ing insulator pods onto other members from a strip including a tape having a recurring pattern of perforations and a plurality of said pods, each pod comprising a pair of opposed halves each having locking means for interlocking said halves together and each pair being integrally connected by a stem portion to and extending substantially at right angles from said tape and associated with one of said perforations; said machine including a supporting surface for said strip, a holding plate adjacent said supporting surface for holding one half of each of said pairs upon said supporting surface, a folding bar along a side of said holding plate and having a folding surface running at a progressively increasing angle along said bar for folding the other half of each of said pairs over the half on said supporting surface upon said strip being advanced through said machine, said folding bar having an overhanging portion with said folding surface continuing thereunder, a feed wheel having teeth adapted to mesh with said perforations, mechanism for intermittently rotating said feed wheel to advance said strip one pod at a time, said overhanging portion of the folding bar having an end portion extending forwardly of the holding plate for holding said other half of the pod over the half on the supporting surface and the pod in partly open position upon said supporting surface to receive a separate member therebetween, means for pressing said halves together to close the pod over said separate member, and means

operable with said pressing means for severing the said stem portion of the closed pod to detach it from said strip.

2. A machine as set forth in claim 1 for folding and clasp ing insulator pods onto electrical connectors wherein said feeding means advance the strip to place the foremost pod thereon in a forward position upon the supporting surface forwardly of the holding plate and wherein the forwardly extending end portion of the folding bar holds the other half of the pod in said forward position over the half upon said supporting surface and the pod in partly open position to receive said connector, and the said pressing means presses said other half of the pod into interlocking engagement with the half on the supporting surface and thereby clasps the pod onto the connector.

3. A machine as set forth in claim 1 wherein said pressing means includes a pivotally mounted lever, a pressing block carried by said lever for pressing a partly open pod into closed position upon said separate member, and the severing means are also carried by said lever.

4. A machine as set forth in claim 1 for folding and clasp ing insulator pods onto electrical connectors wherein the supporting surface is on a bed plate, a guide wall is provided along one side of said bed plate and is engageable by the tape for guiding the strip through the machine, the holding plate is mounted by one side thereof upon said guide wall and extends over said supporting surface to hold one half of each pod upon said surface, the front end of the holding plate is spaced rearwardly of the front end of the supporting surface, the folding bar is disposed along the opposite side of the holding plate and spaced therefrom, the said pressing means include a block carried upon one end of a lever which is pivotally mounted by its other end upon said holding plate, a punch is also carried upon said lever adjacent said pressing block and is moveable therewith to sever said stem portion and a pawl is carried by said lever and engageable with the teeth of the feed wheel upon return of the lever towards normal position for rotating the feed wheel to feed said strip forwardly one pod at a time through said machine.

5. The subject matter set forth in claim 4 wherein the said wheel extends through a slot in the holding plate and the supporting surface has a groove into which the teeth of said wheel extend.

6. The subject matter set forth in claim 4 including means for frictionally preventing reverse rotation of said feed wheel.

7. The subject matter set forth in claim 4; wherein said feed wheel is rotatably mounted on a shaft in a mounting block upon the holding plate and extends through a slot therein, said lever is pivotally mounted one end upon said shaft, said severing means includes a punch carried on said lever adjacent said pressing block and movable therewith, a die is provided in said bed plate to receive said punch and thereby sever said stem portion and detach the closed pod from the tape, and a friction member is in frictional engagement with the feed wheel to prevent reverse rotation thereof upon movement of said lever from its normal position.

References Cited

UNITED STATES PATENTS

3,102,332	9/1963	Porcelli.	
3,245,135	4/1966	Netta et al.	29—630
3,264,860	8/1966	Herb	72—457

70 THOMAS H. EAGER, *Primary Examiner.*