Feb. 5, 1946. C. J. HUEBER ET AL 2,394,385

PERFORATING DEVICE

Filed March 9, 1944 2 Sheets-Sheet 1

Fig. 1.

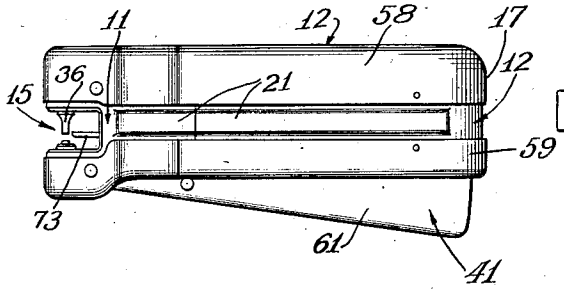


Fig. 2.

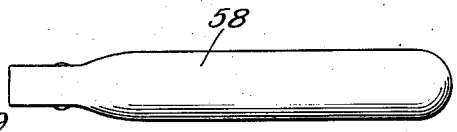


Fig. 3.

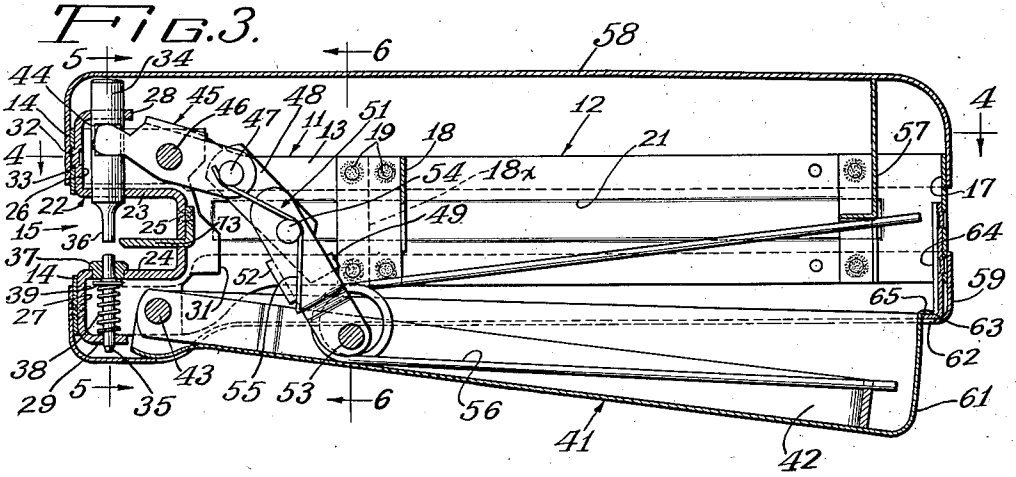


Fig. 4.

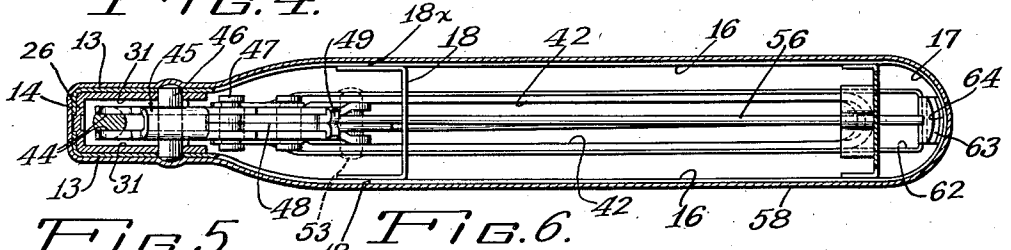


Fig. 5.

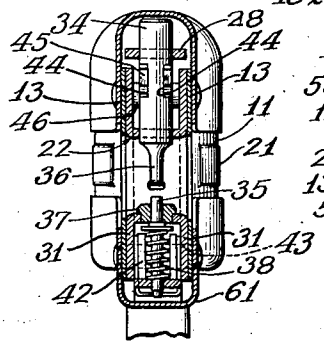
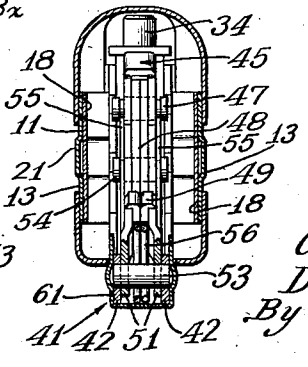


Fig. 6.



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PERFORATING DEVICE

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FIG. 9.

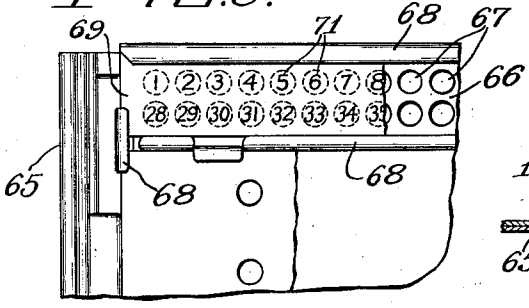


FIG. 7.

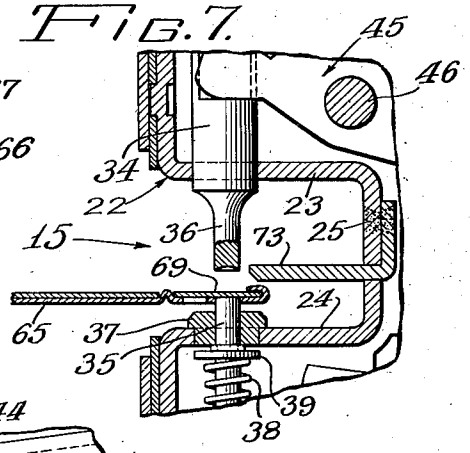


FIG. 8.

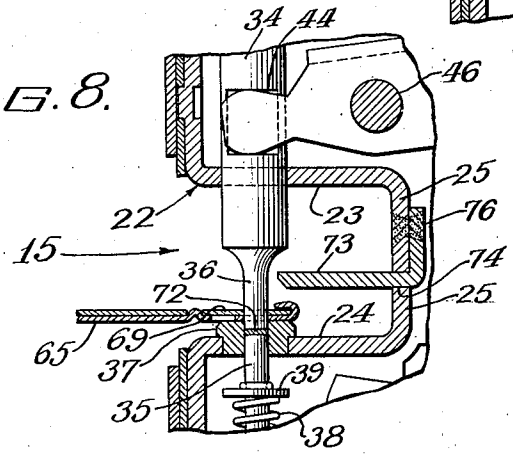


FIG. 10.

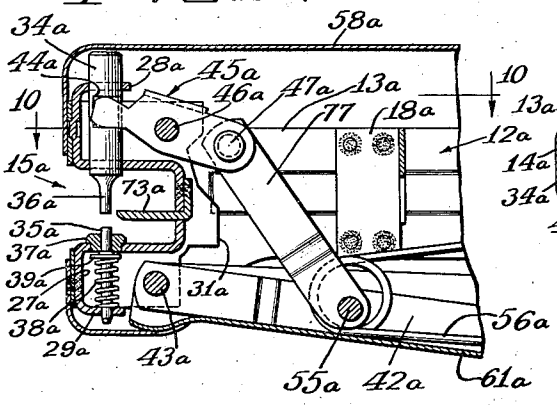
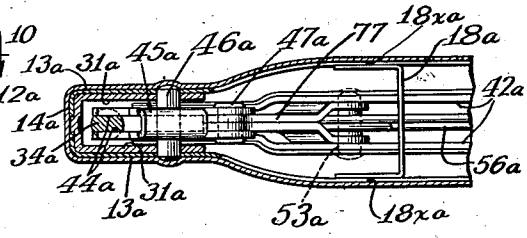


FIG. 11.



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UNITED STATES PATENT OFFICE

2,394,385

PERFORATING DEVICE

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Application March 9, 1944, Serial No. 525,712

10 Claims. (Cl. 164—120)

This invention relates to perforating devices of the character that may be hand carried and operated to form perforations in cards, sheets or the like.

Many machines are operated under control of cards or other devices bearing perforations at selected ones of a plurality of predetermined positions that are, in many instances, produced in the cards or like devices through the intermediary of keyboard operated perforating or punching means. There are, however, many instances where it is advantageous or even necessary that perforations of the aforesaid character be produced by means of a hand carried and operated punch.

For example, among the devices which are employed in business machines to control or determine operation thereof are printing and control devices of, for example, the character to which Gollwitzer Patent No. 2,132,412, patented October 11, 1938, relates and of the character disclosed in the copending application of Carl J. Hueber, Serial No. 596,991, filed June 1, 1945. Such printing and control devices comprise a carrier on which one or more cards are removably secured, the carrier and cards having aligned perforations at predetermined positions. During the passage of such printing and control devices through the machines in which they are utilized, means in the machines cooperate with at least one selected perforation to control or determine functioning of the machine. While such aligned perforations may be and are formed in the devices by keyboard controlled perforating devices, there are many instances where it is convenient, or even necessary, that one or more perforations be produced manually and apart from keyboard operated devices. Hence, a primary object of our invention is to provide a novel and efficient device that may be used for such purposes.

Printing and control devices of the aforesaid character which have cards or the like removably secured thereon are usually so arranged that the cards afford fields or areas in which the control perforations may be formed and, in some instances, selected ones of these fields are adapted to have perforations formed therein to be representative of numerical or like data, and other of the fields are arranged to have perforations formed therein at selected ones of predetermined positions so that operation of determined mechanisms in the machines through which the devices are passed may be brought about or suppressed. Printing and control devices of the character disclosed in the aforesaid copending application of Carl J. Hueber are so arranged that a field of the aforesaid character is afforded along one of the edges thereof and these devices are so arranged that perforations are provided at predetermined positions in the portion of the carrier that underlies the card. Furthermore, the printing and control devices disclosed in Gollwitzer Patent No. 2,134,212 may also have perforations formed in the portion of the carrier underlying the card defining the field whereat data representing perforations may be formed.

The perforating device to which the present invention relates is particularly adapted for use with printing and control devices of the character disclosed in Gollwitzer Patent No. 2,132,412 and in the aforesaid copending application of Carl J. Hueber, which is to say, the perforating device of the present invention is particularly adapted for use with a device embodying a carrier having perforations formed therein at predetermined positions and wherein a card or the like overlies such perforations so that a control perforation may be afforded in the printing and control device by forming a perforation in the card or the like in alignment with a perforation in the underlying portion of the carrier on which the card is removably retained.

In such instances, it is essential that the perforation, which is formed in the card in alignment with an underlying perforation in the frame or carrier, be accurately oriented with the perforation in the frame or carrier and, therefore, among the important objects of our invention is to so arrange a perforating device that the punch or perforating element thereof may be accurately positioned so as to insure accurate orientation of a perforation formed thereby in a card or the like relative to an underlying perforation in the carrier on which the card is removably secured.

Yet another object of the invention is to so arrange a perforating device adapted to produce a perforation in a card or the like retained on the carrier therefor that the perforation in the carrier, with which the perforation in the card is to be aligned, will serve as the die in the card perforating operation, to align the punch or perforating element of a perforating device with a guide in the device that may be inserted into a perforation in the carrier to thereby orient the punch relative to the perforation in the carrier and hence insure that the punch will perforate a card or the like overlying the perforation in the carrier in alignment with such perforation in the carrier; to so arrange the guide in the perforating device that it will be retracted from the

perforation in the carrier as an incident to the perforating of a card overlying such perforation by the punch or perforating element of the perforating device; and to yieldingly urge the guide into a projecting position and thereby enable retraction thereof as aforesaid in a perforating operation and yet insure return thereof to its projecting position upon retraction of the punch or perforating element.

In instances where a perforation is to be formed in a card or the like in alignment with a perforation in a carrier for the card or the like, the carrier is usually made of material different from and stronger than that of which the card or the like is made and in such instances it is advantageous to so arrange the perforating device that the punch or perforating element will not perforate the carrier in a perforating operation thereof and to enable this to be realized is yet another object of this invention. Objects related to the foregoing are to so arrange the perforating element of a perforating device that movement thereof in perforating direction will be arrested when such element is engaged with a material stronger than that which the device is intended to perforate; to interpose a yieldable mechanism between the perforating element and the force applying element of a perforating device and to so arrange such mechanism that it will yield and cease to advance the perforating element, notwithstanding movement of the force applying element, when the perforating element encounters more than predetermined resistance in the course of a perforating operation thereof; and to so arrange a yieldable mechanism of the aforesaid character that it will restore to perforating element advancing condition upon retraction of the perforating element from engagement with material which offers more than predetermined resistance to the advancing of the element in a perforating direction.

Further objects are to provide a perforating device of the aforesaid character that is light in weight and completely encased so as to enable its being used extensively without injury to the user; and to provide a perforating device of simple and economical construction and which will be efficient and durable in use.

Other and further objects of the present invention will be apparent from the following description and claims and are illustrated in the accompanying drawings which, by way of illustration, show preferred embodiments and the principle thereof and which are now considered to be the best modes in which I have contemplated applying that principle. Other embodiments of the invention embodying the same or equivalent principle may be used and structural changes may be made as desired by those skilled in the art without departing from the present invention and the purview of the appended claims.

In the drawings:

Fig. 1 is a side elevational view of a hand punch embodying the present invention;

Fig. 2 is a top plan view of the punch shown in Fig. 1;

Fig. 3 is a longitudinal sectional view of the punch;

Fig. 4 is a horizontal sectional view, taken substantially on line 4—4 on Fig. 3;

Fig. 5 is a vertical sectional view of the punch head taken substantially on line 5—5 on Fig. 3;

Fig. 6 is a vertical sectional view taken substantially along line 6—6 on Fig. 3;

Fig. 7 is a fragmentary enlarged vertical sectional view of the punch head, showing a device positioned therein prior to perforating a hole in a card carried by the device;

Fig. 8 is a view similar to Fig. 7, showing the parts in a position occupied at the completion of a punching operation;

Fig. 9 is a view showing a fragment of a device bearing a card that may be perforated by the punch of the present invention;

Fig. 10 is a fragmentary longitudinal sectional view of a punch embodying a modified form of construction; and

Fig. 11 is a horizontal sectional view of the punch head taken substantially on line 11—11 on Fig. 10.

The perforating device embodying the present invention that is illustrated in Figs. 1 to 8, inclusive, of the accompanying drawings is of a size to be conveniently operated by hand and includes a central frame consisting of a front or head portion 11 and an elongated body portion 12. The head portion 11 is fashioned to be substantially U-shaped in configuration in plan from a strap of sheet material and includes spaced side walls 13 and a connecting front end wall 14. The front end wall 14 and the front marginal sections of the side walls 13 are divided into vertically spaced apart portions by the removal of an intermediate portion of the material of the head portion 11 so as to provide a jaw opening as at 15. The body portion 12 of the central frame consists of parallel spaced side walls 16 and a curved connecting end wall 17. The free ends of the side walls 16 are disposed in abutment with the free ends of the side walls 13 of the head portion 11, as indicated at 18x, Figs. 3 and 4, and the two portions are firmly interconnected by a U-shaped transversely extending strap 18 which has its leg portions overlying the abutment 18a, these leg portions being secured to the adjacent portions of the abutted pairs of side walls 13 and 16 as indicated at 19 by welding or the like. Rigidity of the frame may be increased considerably by forming a longitudinal reinforcing rib 21 in each of the side walls 13 and 16.

A reinforcing element 22 is arranged in the jaw 15 and includes a U-shaped intermediate part having parallel upper and lower walls 23 and 24 respectively, and a vertical connecting back wall 25. The forward edges of the upper and lower walls 23 and 24 terminate in oppositely extending aligned vertical portions 26 and 27 respectively, which are disposed one against the inside face of each of the spaced portions of the front end wall 14. The upper margin 28 of the vertical portion 26 extends rearwardly parallel to the upper wall 23 and the lower margin 29 of the vertical portion 27 extends rearwardly parallel to the lower wall 24. The reinforcing element 22 is strengthened by side walls 31 which extend rearwardly and lie one against the inside face of each side wall 13 of the head portion 11. The one-piece reinforcing element 22 is accurately located within the jaw opening 15 in the head portion 11 by engaging a spot upset 32 therein in a hole 33 in the adjacent portion of the front wall 14 and the element is secured firmly in place preferably by welding or the like at suitable positions.

As best illustrated in Figs. 3 and 5, a punch 34, which may be fashioned from a rod, has the shank thereof mounted for free sliding movement in aligned guide holes provided in the upper wall 23 and parallel margin wall 28 of the re-

inforcing element 22. The lower end of the punch 34, which depends into the jaw opening 15, is sized, as at 36, to be of the diameter required to perforate holes of the desired size.

An opening is formed in the lower wall 24 of the reinforcing element 22 in alignment with the openings in which the punch 34 is mounted and a guide bushing 37 is firmly secured in this opening. The bushing has a central opening therein through which the upper end of a guide or plunger 35 is extended to be mounted in axial alignment with the punch 34. The lower end of the plunger 35 has a sliding fit through a hole in the rearwardly turned margin 29 of the reinforcing element 22 and a spring 38, surrounding said plunger with one of its ends bearing against the margin 29 and its other end bearing against a flange 39 on said plunger, normally urges the plunger upwardly to dispose the free end thereof in the extended position illustrated in Fig. 3 in which circumstances the flange 39 bears against the bushing 37 to limit upward movement of the plunger. To assemble, the plunger 35 and spring 38 are inserted through the opening in the bottom wall 24 of the jaw and the bushing 37 then is inserted and secured in said opening with the plunger 35 passed through the central opening therein.

In use, the punch 34, which normally remains in the elevated position shown in Fig. 3, is reciprocated in the guide openings therefor to cause the end 36 thereof to penetrate material inserted into the jaw 15 above the plunger 35. Such reciprocable movement of the punch tool is effectively accomplished upon manipulation of a lever generally indicated at 41, which is moved relative to the central frame 11—12 described hereinabove. The lever 41 includes an elongated U-shaped frame fashioned from a strap of sheet material and has substantially parallel side walls 42. The free ends of the side walls 42 are extended beneath the bottom wall 24 of the jaw reinforcing element 22 between the rearwardly extending spaced walls 31 thereof and are pivotally secured to said walls 31 by a transverse pin 43.

A toggle connection is provided to operatively connect the lever 41 with the punch 34, the purpose and function of such a connection being explained presently. As best shown in Figs. 3 and 5, the punch shank has diametrically opposed flattened portions 44 intermediate its ends, each to receive an end of each of the spaced side walls of a rocker arm 45 pivotally mounted intermediate its ends on a transverse pin 46 which has its ends journalled in the rearwardly spaced walls 31 of the jaw reinforcing element 22. The other end of the rocker arm 45 is connected by a pivot pin 47 to the adjacent end of an intermediate link 48 preferably formed of two thicknesses of a strap material. The other end of the intermediate link 48 carries a pair of integral ears 49 which extend transversely in opposite directions for a purpose to be explained presently. Another link 51, consisting of spaced apart sides joined along their bottom edge by an integral connecting bridge 52, has one end of its spaced sides offset outwardly transversely and extended between the spaced walls 42 of the lever frame and is pivotally secured thereto by a pin 53. The other end of the link 51 embraces the free end portion of the intermediate link 48 and is pivotally secured to the medial portion of said intermediate link by a pin 54.

The intermediate link 48 and the link 51 coact to constitute a toggle-link connection between the lever 41 and the rocker arm 45. Normally, this toggle link functions as though it were fashioned in one piece so that when the lever 41 is moved toward the central frame 11—12 the rocker arm 45 is moved about its pivot 46 to force the punch 34 downwardly into the jaw 15. Unit actuation of the two links 48 and 51 is best effected by providing a wire spring 55 which is substantially U-shaped and has its intermediate portion extended transversely beneath the link 51 and its two leg portions laid over the projecting grooved ends of pin 54 and engaged beneath the grooved end portions of the pin 47. The spring 55 is of sufficient tension to prevent buckling of the toggle under normal operating conditions. However, should the descending punch 34 encounter excessive resistance, as will be explained presently, the tension of the spring 55 is overcome and the toggle breaks whereupon further movement of the lever may be effected without further descent of the punch 34. The ears 49 on the intermediate link 48 overlie the upper edges of the companion link 51 to prevent the toggle from buckling in a reverse direction under the tension of spring 55.

The central frame 11—12 and the lever 41 normally are retained in spaced apart or open position by a spring 56 which has one or more turns disposed around the pin 53 and which has the free end of one of its elongated arms rested in a notch provided therefor in the upper edge of the rear end wall 42a of the lever 41 and the other elongated arm of the spring 56 bears against the bottom of a transverse reinforcing wall 57 in the body portion 12 of the central frame.

A pleasing streamlined appearance is imparted to the device by enclosing the mechanisms described hereinabove within a suitable casing. Thus, a casing element 58 encloses the upper portion of the central frame and a second casing element 59 encloses the bottom portion of such frame. A casing element 61 encloses the bottom, sides and rear end of the lever 41. Free movement of the lever 41 and its attached casing 61 from the open position shown in Figs. 1 and 3, into its closed or punching position is made possible by providing a longitudinal slot 62 in the bottom wall of the handle casing element 59 through which the free edges of the walls of the lever casing 61 are telescoped. A lip 63 is provided on the end wall of the lever casing 61 to engage a stop formed on the lower end of a strap 64 welded or otherwise secured to the body portion 12 of the central frame so as to limit outward or spreading movement of the lever under tension of spring 56. Thus, it will be seen that the entire mechanism is enclosed within a casing and the device is devoid of any openings, other than the jaw opening 15, which might become an annoyance or even cause injury to the user.

A perforating device of the above described character is particularly useful for perforating cards or the like of the kind mounted on carriers or frames primarily because the perforating device of the present invention utilizes a previously formed perforation as the die in a perforating operation of the perforating element or punch 34. A typical device with which a perforating device of the present invention is adapted to be used is fragmentally illustrated in elevation in Fig. 9 of the accompanying drawings,

this particular device being of the character to which the aforesaid copending application of Carl J. Hueber relates. The printing and control device that is illustrated in Fig. 9 includes a carrier or frame 65 desirably formed from sheet metal or a plastic material, and one or more cards as 69 are retained on one face of the sheet metal frame by suitable retaining device as 68, whereby a field or area is defined on the carrier or frame 65. Perforations may be formed in the card 69, which in this instance is retained along one edge of the frame 65, to control operation of at least one predetermined mechanism included in the machine through which devices of the character shown in Fig. 9 are sequentially passed. Hence, perforations formed in the field defined by the card 69 will constitute what are known as selection controlling perforations in that the presence or absence of a perforation in the card 69 at one or more predetermined positions will bring about or suppress the operation of at least one mechanism in the machine through which such printing and control devices are sequentially passed.

The positions whereat such function controlling perforations may be selectably located are determined by the positions of perforations or openings 67 in the portion 66 of the frame 65 which underlies the card 69, the retaining devices as 68 retaining the card 69 in predetermined relation with respect to the perforation 67. It has been found to be advantageous to print numerical designations as 71 on the card at the positions whereat perforations may be formed therein in alignment with the perforations 67. Thus when a card 69 is accurately located in the retaining devices 68, the numerical designation 71 will be respectively aligned with perforations 67, and such numerical designations serve to identify the different positions whereat perforations may be formed in the card 69 in alignment with perforation 67.

The formed portion or punching part 36 of the punch 34 of the hereinabove described perforating device is desirably related in size to the diameter of perforations or openings as 67 in the device bearing the card in which perforations are to be formed by such punching part 36, the relation being such that the punching part 36 will neatly fit into a perforation as 67. Moreover, the carrier or frame 65 is desirably formed of a material that is stronger than the card or the like 69 in which perforations are to be formed by the part 36, the card 69 desirably being made of heavy paper, cardboard or plastic material. In any event, however, the material of which the carrier or frame 65 is made will be stronger than the material of which the card as 69 is made, and the material of which the carrier or frame 65 is made will be of sufficient strength to enable a perforation as 67 to serve as a die in cooperation with the part 36.

Furthermore, the plunger or guide 35 is also related in size to the diameter of perforations or openings as 67. Hence, when a perforation is to be formed in the card 69 at one of the positions designated by a numerical designation 71, the carrier or frame 65 is inserted into the jaw opening 15 of the perforating device and the plunger or guide 35 is caused to pass into the perforation 67 underlying the numerical designation 71 whereat a perforation is to be formed in the card 69. Inasmuch as the plunger 35 and the punch part 36 are aligned one with the other, the insertion of the plunger or guide 35 into an opening 67 insures that the punch part 36 will be aligned with the portion of the card in which a perforation is to be formed, the parts being shown in such relation in Fig. 7. Hence when the casing element 61, and therefore the lever 42, are moved toward the body portion 12 of the central frame, the punch part 36 is advanced toward the portion of the card aligned with the perforation 67 in which the guide 35 is disposed. As the punch part 36 advances from the position thereof shown in Fig. 7 into the position thereof shown in Fig. 8, a slug 72 is punched from the card 69, the edge of the perforation 67 serving as the die in this punching operation. Once the punching operation is complete, the pressure on the casing 61 is relieved and thereupon the spring 56 returns the casing 61 and the lever 42 to the position thereof shown in Fig. 3, and in this operation the punch 34 is retracted into the position shown thereof in Fig. 7.

In the course of advancing of the punch part 36 from the position thereof shown in Fig. 7 into the position thereof shown in Fig. 8, the punch part 36 is effective to force the guide or plunger 35 from the projected position thereof shown in Fig. 7 into the retracted position thereof shown in Fig. 8 whereat the guide 35 is forced out of the opening 67 in which it has been disposed. When, however, pressure on the casing 61 is relieved and the punch 34 restores to the position thereof shown in Figs. 3 and 7, the spring 38 is effective on the plunger or guide 35 to return the same from the retracted position thereof shown in Fig. 8 into the projected position thereof shown in Fig. 7, and in the course of the return of the plunger 35 to the projecting position thereof shown in Fig. 7, this plunger is effective to eject the slug 72. Desirably at the time pressure is relieved on the casing 61, the frame or carrier 65 is moved upwardly away from the guide bushing 37 so that as the plunger 35 ejects the slug 72 the carrier or frame 65 will be disposed above the guide bushing 37 wherefore the slug 72 may fall from the perforating device.

In order to insure stripping of the punch part 36 from the perforation formed in the card 69 and from the perforation 67 in the carrier or frame 65, a stripper plate 73 is disposed in a jaw opening 15. This stripper plate is desirably substantially L-shaped in configuration and the stem thereof is passed through an opening 74 in the vertical wall 25 of the reinforcing element 22 to dispose the foot portion of the L-shaped stripper plate in engagement with the inwardly disposed face of the vertical wall 25 and these abutting portions are joined by welding as 76 or in other suitable manner. The forward edge of the stem of the strip or plate 73 is disposed above the inwardly disposed portion of the bushing 37 but out of alignment with the path of travel of the punch part 36, and this arrangement insures that the portion of the carrier or frame 65 will be disposed beneath the stripper plate 73 when the guide or plunger 35 is inserted into one of the perforations 67. Therefore, if the carrier or frame 65 tends to move upwardly with the punch part 36 in the course of retracting movement of this part from the position thereof shown in Fig. 8 into the position thereof shown in Fig. 7, the portion of the carrier 65 disposed beneath the stripper plate 73 will move into engagement with this stripper plate and thereby upward movement of the carrier 65 with the punch part 36 is arrested wherefore, under the action of the spring

66, the part 36 will move out of the perforation 67 and the perforation formed in the aligned part of the card 69 so as to thereby enable the carrier 65 to be freely retracted from the jaw opening 15.

The toggle arrangement including intermediate link 51 and the spring 55 is so arranged that if for any reason the punch part 36 engages a part of the carrier 65 in the course of the advancing movement of the punch part 36 from the position thereof shown in Fig. 7 into the position thereof shown in Fig. 8, the toggle arrangement will yield or break so that further advancing movement will not be imparted to the punch 34 notwithstanding continued application of pressure on the casing 61. Thus the toggle arrangement is related to the strength of the material that the punch part 36 is intended to perforate, and the relation is such that when the punch part 36 engages a material stronger than the material said punch is intended to perforate, the toggle will yield or break, this relation primarily being determined by the strength of the spring 55.

While the provision of a toggle arrangement of the above described character intermediate the lever 42 and the punch 34 is advantageous, it is not essential that such an arrangement be included in a perforating device of the present invention. Thus, for example, if the carrier or frame is formed of a ferrous material while the card as 69 is formed of heavy paper or cardboard, there will be such a difference in the relative strengths of these two materials that it will require the application of considerably more pressure on the casing 61 to form a perforation in the carrier as 65 than in a card as 69 and in such instances a positive interconnection may be interposed between the lever as 42 and the punch as 34. When resort is had to such an arrangement and the punch part 36 is engaged with the material of a carrier as 65, the increased resistance to advancing of the punch 34 will be sensed by the user who may therefore shift the perforating device so as to align the punch part 36 with the perforation as 67, which alignment will not be realized in those instances where the punch part 36 engages the material of a carrier as 65 and such an arrangement will in most instances insure against injury to either the perforating device or a carrier as 65.

A perforating device including a positive interconnection rather than a toggle interconnection between the actuating lever and the punch thereof is illustrated in Figs. 10 and 11. The perforating device illustrated in Figs. 10 and 11 is identical in all respects with that described hereinabove except insofar as the interconnection between the actuating lever and the punch is concerned. Therefore, reference characters are applied to the various elements as these appear in Figs. 10 and 11 which are identical with the reference characters applied to these elements as these appear in Figs. 1 to 8, inclusive, except that the suffix "*a*" is added to these reference characters where they are applied in Figs. 10 and 11. In the form of perforating device illustrated in Figs. 10 and 11 in place of the hereinabove described toggle connection, a link 77 is interposed between the rocker arm 45*a* of the actuating lever 42*a*, one end of the link 77 being connected to the rocker arm 45 by a pin 47*a* and the other end of the link 77 being connected to the lever 42*a* by a pin 55*a*.

It will be understood that the punch 34*a* of the perforating device shown in Figs. 10 and 11 is operated in the same manner as the punch 34 in the form of the perforating device shown in Figs. 1 to 8, which is to say, application of pressure to the casing 61*a* is effective through the link 77 and the rocker arm 45*a* to cause the punch 34*a* to advance the punch part 36*a* thereof toward the guide or plunger 35*a* in the manner described hereinabove with reference to the form of perforating device shown in Figs. 1 to 8, inclusive.

The forms of the novel perforating device of this invention hereinabove described enable the above set forth and related objects of this invention to be realized, and it is, therefore, to be understood that while we have illustrated and described selected embodiments of our invention, these are capable of variation and modification and we therefore do not wish to be limited to the precise details set forth but desire to avail ourselves of such changes and alterations as fall within the purview of the following claims.

We claim:

1. A punch of the kind to perforate a card mounted on a frame having a perforation therein, a handle, a jaw at one end of said handle to receive said frame, a resiliently depressible guide plunger extending into said jaw, said plunger being engageable in a frame perforation, a punch tool reciprocably mounted in said handle above and in axial alignment with said plunger, means to advance said punch tool into the jaw, said punch tool coacting with the frame perforation to perform a hole in the card of the same size as and in register with said perforation, and a stripper in said jaw to strip the perforated card and frame from the punch tool when the latter returns to its initial position.

2. A punch of the kind to perforate a card mounted on a frame having a perforation therein, a handle, a jaw at one end of said handle to receive said frame, a resiliently depressible guide plunger extending into said jaw, said plunger being engageable in a frame perforation, a punch tool reciprocably mounted in said handle in axial alignment with said plunger, means to advance said punch tool into the jaw, said punch tool coacting with the frame perforation to perform a hole in the card of the same size as and in register with said perforation, and a stripper in said jaw to strip the perforated card and said frame from the punch tool when the latter returns to its initial position, said resiliently depressible guide plunger ejecting the punched slug when the tool is withdrawn.

3. In a punch, an elongated handle including an enclosure casing, an elongated lever pivotally connected at one end to one end of the handle, a spring normally retaining the lever in an extended position, a casing on said lever, said casing telescoping into the enclosure casing on the handle, a jaw at the connected end of said handle, a resiliently depressible guide plunger in said jaw adapted to receive thereover an article to be perforated, a punch tool in said jaw in axial alignment with said plunger, a rocker arm operatively engaging said punch tool, and a toggle link connecting said rocker arm with the lever whereby upon movement of the lever towards the handle the punch tool is moved to penetrate the article and depress said plunger.

4. In a punch, a handle, a lever pivotally connected at one end to one end of the handle, a jaw at one end of said handle, a reinforcing frame in said jaw, a resiliently supported guide plunger carried in said frame adapted to receive thereover an article to be perforated, a punch tool guided in said reinforcing frame in axial align-

ment with said plunger, and a link connection between said tool and said lever whereby upon movement of the lever relative to the handle the tool is moved to penetrate the article and depress said plunger.

5. In a punch, a handle, a lever pivotally connected at one end to one end of the handle, a jaw at one end of said handle, a resiliently supported guide plunger in said jaw adapted to receive thereover an article to be perforated, a punching tool in said jaw in axial alignment with said plunger, and means connecting said tool with the lever whereby upon movement of the lever relative to the handle the tool is moved to penetrate the article and depress said plunger.

6. A punch for perforating sheets comprising a frame having a sheet receiving jaw at one end, a handle at the end opposite the jaw, a die in said jaw, a punch tool movable in said jaw above said die, a lever movable relative to the handle, an operating connection between said lever and punch tool, said connection being collapsible, and means resisting the collapse of said connection until a predetermined force is applied between the lever and punch.

7. A punch for perforating sheets comprising a frame having a sheet receiving jaw at one end, a handle at the end opposite the jaw, a die in said jaw, a punch tool movable in said jaw above said die, a lever movable relative to the handle, a toggle connection between said lever and punch tool, and means transforming said toggle into a unitary link when the force applied between the lever and punch tool is below a predetermined minimum value.

8. A punch for perforating one of a pair of superimposed sheets, the other of said pair having perforations at least one of which is aligned with the region in said one of said sheets to be perforated, said punch comprising a handle, a jaw at one end of said handle, a punch tool carried by the handle and reciprocable into the jaw, a lever pivotally mounted on said handle, collapsible means for connecting the lever to the punch, and resilient means for resisting collapse of said means, said resilient means being effective to resist collapse when said one sheet is perforated through a perforation in the other sheet, but ineffective to prevent collapse when it is attempted to perforate both sheets.

9. A punch for perforating one of a pair of superimposed sheets, the other of said pair having perforations at least one of which is aligned with the region in said one of said sheets to be perforated, said punch comprising a handle, a jaw at one end of said handle, a punch tool carried by the handle and reciprocable into the jaw, a lever pivotally mounted on said handle, toggle means connecting the lever to the punch, resilient means tending to expand the toggle, and means limiting the expansion of the toggle, said resilient means being effective to resist contraction of the toggle when said one sheet is perforated through a perforation in the other sheet, but ineffective to prevent contraction when it is attempted to perforate both sheets.

10. A punch for perforating sheets comprising a frame having a sheet receiving jaw at one end, a handle at the end opposite the jaw, a die in said jaw, a punch tool movable in said jaw above said die, a lever movable relative to the handle, a link pivotally connected to the lever, a lever connected to the punch, a link connected to the punch lever, a pin connecting the links to form a toggle thereof, resilient means urging the links into alignment with one another, and a tab on one link adapted to contact the other link to limit the aligning movement, such that said links constitute a unitary force-transmitting member for the force required to effect a perforation of a sheet, but said links will collapse and pivot about the pin when a force is applied to said links substantially in excess of the force required to effect such perforation.

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