

Oct. 6, 1931.

G. S. ROBINSON

1,826,257

COMBINED PUNCH AND SLITTING DEVICE

Filed Sept. 17, 1930

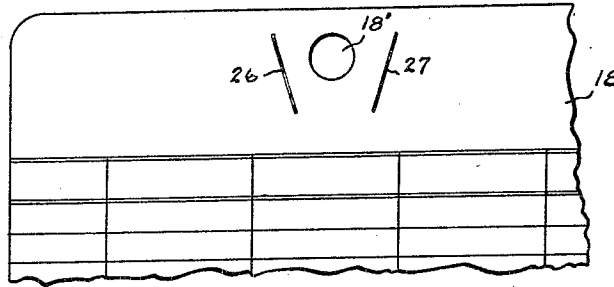


Fig. 5.

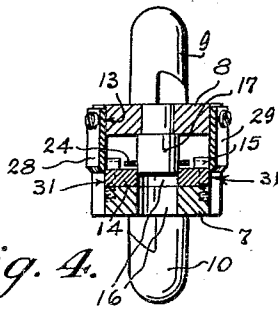


Fig. 4.

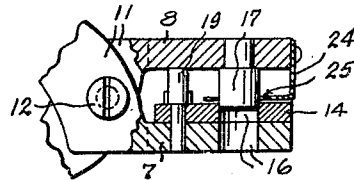


Fig. 3.

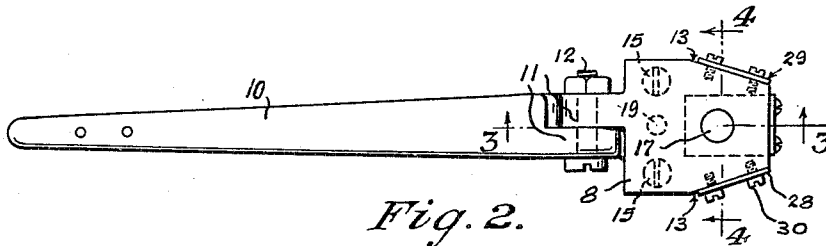


Fig. 2.

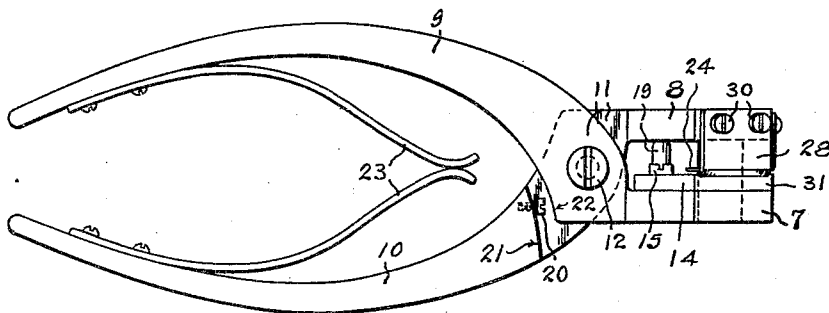


Fig. 1.

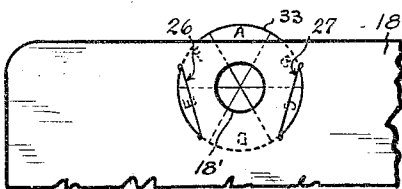


Fig. 6

INVENTOR
Gale S. Robinson
BY
Fred C. Mathews
ATTORNEY

UNITED STATES PATENT OFFICE

GALE S. ROBINSON, OF SEATTLE, WASHINGTON

COMBINED PUNCH AND SLITTING DEVICE

Application filed September 17, 1930. Serial No. 482,483.

My invention relates to a combined punch and slitting device or tool for punching and slitting sheets of paper, cards and the like for the reception of disc like flags of a form disclosed in my Patent No. 1,751,495, issued March 25, 1930, and the general object of my invention is to provide a combined punch and slitting device of simple and efficient construction which is not expensive to manufacture and which may be used to rapidly and accurately perforate and slit sheets of paper, cards, or like material on which disc like flags of the nature disclosed in my prior patent hereinbefore identified are to be used.

Another primary object of my invention is to provide a punch which will form two relatively inclined slits and a hole in a sheet of paper or card at a single operation, said slits being positioned and dimensioned so as to receive therein oppositely disposed peripheral portions of a disc like flag and to hold said disc like flag so that another peripheral portion thereof is displayed beyond the adjacent top or edge of the sheet and said hole being positioned substantially centrally of the disc like flag and being large enough so that the flag may be grasped by the fingers at the location of the hole for the purpose of turning the flag.

Other and more specific objects of the invention are to provide a combined punch and slitting device or tool which has a punch and two slitting knives operating in combination with a single die block in such a manner that the punch enters the work just ahead of the knives and serves as a means for insuring the accurate positioning of the slitting knives at each punching operation, and to provide a combined punch and slitting tool of this nature which has a single resilient stripper plate to release the punched and slitted material from the tool, and to provide means for engaging with the edge of the material to be punched to thereby properly position such material in the tool.

Other and more specific objects will be apparent from the following description taken in connection with the accompanying drawings.

In the drawings Figure 1 is a side elevation

of a combined punch and slitting device constructed in accordance with my invention.

Fig. 2 is a view looking down on the top of the same.

Figs. 3 and 4 are sectional views substantially on broken lines 3—3 and 4—4 respectively of Fig. 2.

Fig. 5 is a fragmentary plan view of a sheet or card which has been punched and slitted with this tool.

Fig. 6 is a similar fragmentary plan view of a sheet or card which has been punched and slitted and which has a flag disc inserted therein.

In accordance with my invention I provide a combined punch and slitting device embodying two tong like elements formed of relatively wide flat jaw portions 7 and 8 and longer handle portions 9 and 10 and having between the said jaw and handle portions the usual flattened and notched portions 11 which are connected with each other by a pivot 12.

The jaws 7 and 8 are relatively wide at their rear end and are tapered as at 13 toward their forward end as shown in Fig. 2. The jaw member 7 has a die plate 14 secured thereto, as by screws 15, and said die plate 14 and jaw member 7 are provided with registering holes 16 for the reception of a cylindrical punch member 17 which is carried by the other jaw member 8. Said holes 16 also permit the discharge of pieces of the paper which are punched out of sheets or cards 18 to leave perforations 18'. A stop member or pin 19 is secured to one jaw member 7 and adapted to abut against the other jaw member 8 to limit the closing movement of said jaw members. This pin 19 may also act as a dowel to help position and hold the die plate 14 and further cooperates with the heads of screws 15 to form a stop against which the edge of the paper or card may strike to correctly position the paper in the tool for punching and slitting.

A screw 20 in a shoulder 21 which is formed on the handle member 10 serves to limit the opening of the jaw members 7 and 8 by striking against a shoulder 22 on a portion 11 of the handle member 9. The two members of the punch and slitting tool are shown in the

fully closed position in all of the figures. This is the position they will occupy at the completion of a punching and slitting operation and before squeezing pressure on the handles 9 and 10 is released. Springs 23 urge the handle members 9 and 10 apart and hold the jaws 7 and 8 in an open position except when pressure is exerted on the handles.

A resilient L shaped stripper plate 24 is secured to the front end of the punch member 8 and extends downwardly and is thence bent at substantially right angles and extends inwardly past the cutting end of the die member 17 and has a hole 25 therein through which said die member may project. The stripper plate 24 is made of resilient material as spring bronze and when it is released will preferably stand out slightly beyond the end of the die member 17 but will yield readily when the punching is done. When the tool is released after a punching and slitting operation this stripper member 17 will spring out and press the sheet or card which has been punched and slitted off of said die member.

For the purpose of forming two relatively inclined or convergent slits 26 and 27 in the sheet or card 18 I provide two knives 28 and 29 which are secured as by screws 30 to the two inclined edges 13 of the jaw member 8 and make shearing engagement with correspondingly inclined edges 31 of the die plate 14. When the jaws 7 and 8 are closed on a card or sheet the punch member 17 will punch the hole 18' and the knives 28 and 29 will cut the two slits 26 and 27 cleanly leaving said slits ready for the insertion of the disc 33 which will be rotatably supported within said slits and will project above or beyond the edge of the card to display a distinguishing signal.

The punch member 17 extends a short distance beyond the knives 24 and 25 so that it will first engage with the material which is being punched and slitted and will cut said material and be accurately centered by the hole 16 before the knives begin to cut into the material. This insures accurate positioning of the knives relative to the cutting edges of the die block thus insuring a clean cut by the knives and preventing dulling of the knives by engagement with the die block. The stop pin 19 limits the closing movement of the jaws so that the knives will just be permitted to cut through and slit the paper. The knives are beveled sharply on their outer sides and will tend to press the material on the outer sides of the slits downwardly while the paper between the slits will be supported on the die plate and can not be pressed down. This tends to leave the slits slightly open and makes it easier to insert the disc like flags.

The stripper plate 24 serves as a guide to

hold the paper or card down on the die plate 14 as the same is being inserted and insures that the edges of said paper or card will strike against the screw heads 15 and be properly positioned thereby. The stop pin 19 also acts as a stop with which the edge of the paper may engage.

In using this device, the edge of the material to be punched and slotted is inserted between the die plate 14 and stripper plate 24 when the jaws 7 and 8 are in the expanded or spread apart position and such material is pressed back until it rests squarely against the heads of the two screws 15 which thus serve to position the punch 17 and knives 29 and 28 the correct distance from the edge of the material. Pressure is then exerted on the handles 9 and 10 to force the jaws 7 and 8 together thereby causing the hole 18' and slits 26 and 27 to be made. As this pressure is released the springs 23 separate the jaws 7 and 8 and the stripper plate 24 presses the material off of the punch 17 allowing the material to be removed and leaving a clean cut hole 18' and slits 26—27 as shown in Fig. 5.

The foregoing description and accompanying drawings clearly disclose a preferred embodiment of my invention, but it will be understood that changes in the same may be made within the scope and spirit of the following claims.

I claim:

1. In a combined punch and slitting tool, two relatively opposed jaws movable toward and away from each other, a punch member carried by one of said jaws, a die block on the other jaw having a receptacle for said punch member and having two shearing edges disposed in relatively inclined relation on opposite sides of said punch receptacle, and two slitting knives carried by the jaw opposite said die member and cooperating with the shearing edges of said die block.

2. In a combined punch and slitting tool, two relatively opposed jaws movable toward and away from each other, a punch member carried by one of said jaws, a die block on the other jaw having a receptacle for receiving said punch member on the cutting stroke and having two shearing edges disposed in relatively inclined relation on opposite sides of said punch receptacle, two slitting knives carried by the jaw opposite said die block and cooperating with the shearing edges of said die block and a resilient stripper plate cooperating with said die member for releasing punched material therefrom.

3. In a combined punch and slitting tool, two relatively movable opposed jaws movable toward and away from each other, a punch member carried by one of said jaws, die block means carried by the other jaw and having a receptacle for said punch member and two relatively convergent shearing edges

on opposite sides, two slitting knives carried by the jaw opposite said die block means and cooperating with said shearing edges, and stop means to the rear of said punch member and said slitting knives for positioning material within said tool.

knives said die plate having a receptacle for snugly receiving said punch member and having inclined shearing edges positioned for movement into and out of shearing relation relative to said slitting knives, a resilient stripper plate secured to the front end of the jaw which carries said punch and extending downwardly and rearwardly between said two jaws and having a perforation fitting over said punch and stop means toward the rear of said die plate for engaging the edge of material which is inserted between said jaws.

In testimony whereof I affix my signature.
GALE S. ROBINSON.

4. In a combined punch and slitting tool, two relatively opposed jaws movable toward and away from each other, a cylindrical punch member carried by one of said jaws, a die block carried by the other jaw having a cylindrical receptacle for receiving said punch member and having two relatively inclined shearing edges extending on opposite sides of said punch receptacle, two slitting knives carried by the jaw opposite said die member and cooperating with the shearing edges of said die block, a stop member for limiting the closing movement of said two jaw members, and stop means toward the rear edge of said die plate for engaging the edge of material which may be inserted in said tool and positioning said material for punching and slitting.

5. In a combined punch and slitting tool, two relatively opposed jaws movable toward and away from each other, a cylindrical punch member carried by one of said jaws, a die plate carried by the other jaw and having a cylindrical receptacle affording a snug fit for said punch member, said die plate having convergent side edges positioned on opposite sides of said punch receptacle for shearing purposes, slitting knives carried by the jaw member which carries said punch for cooperating with said shearing edges to form slits in material which may be within said punch and slitting tool, said punch extending slightly beyond the plane of said slitting knives whereby it will enter said receptacle in said die block before said knives engage said shearing edges to thereby properly position said knives, stripper plate means resiliently movable relative to said punch, means for limiting the closing movement of said jaws and stop means for material between said jaws.

6. A combined punch and slitting tool, embodying two relatively crossed tong like members pivotally connected together at the location where they cross and each having a relatively wide flat jaw, said two jaws being arranged in relatively opposed relation and being movable toward and away from each other by manipulation of said handles, a punch member disposed substantially in the medial plane of one of said jaws and projecting toward the other jaw, the sides of said jaws being tapered convergently toward their forward ends, a slitting knife secured to each tapered side of the said jaw which carries said punch member, the cutting edges of said knives being straight on the inside and beveled on the outside, a die plate secured to the jaw opposite said punch and said slitting

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