

(No Model.)

P. H. FLYNN.
ADJUSTABLE PERFORATOR AND CUTTER FOR BUSINESS ENVELOPES.
No. 526,347.

Patented Sept. 18, 1894.

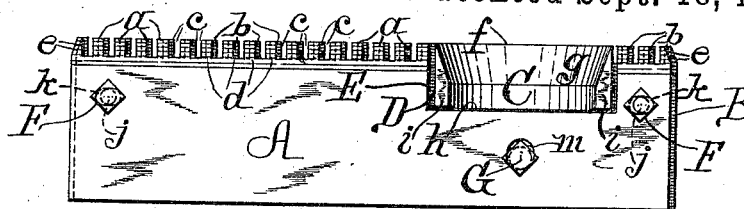


FIG-1-

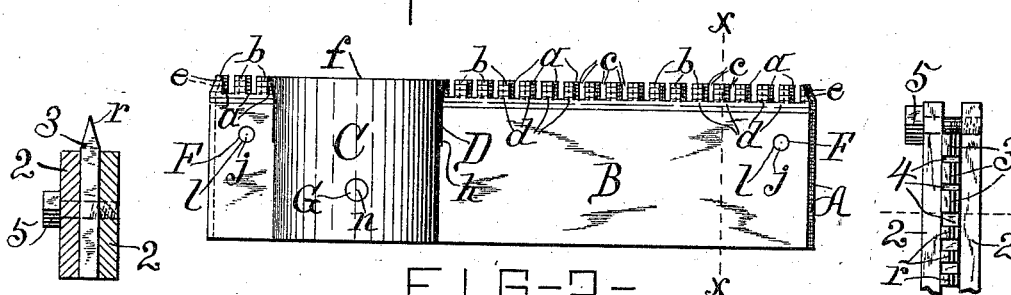


FIG-2-

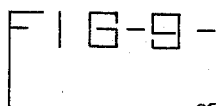


FIG-3-

FIG-10-

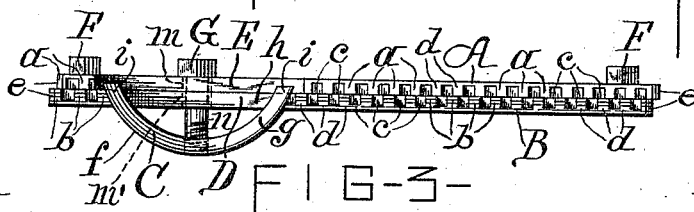


FIG-4-

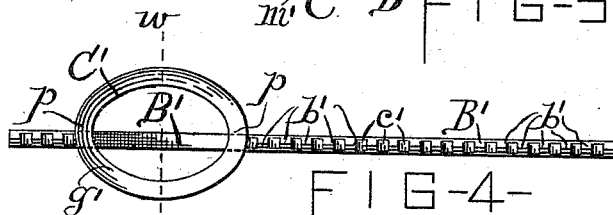


FIG-5-

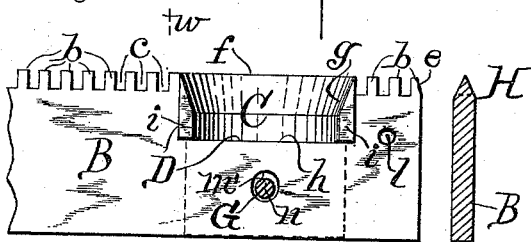


FIG-6-

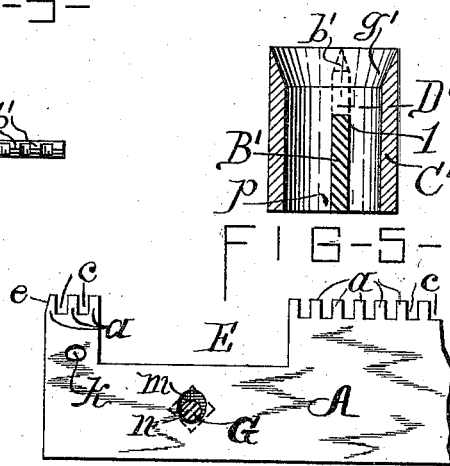
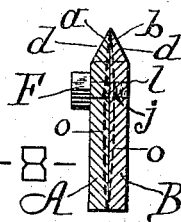


FIG-7-

WITNESSES:
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FIG-8-



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PETER H. FLYNN, OF SYRACUSE, NEW YORK.

ADJUSTABLE PERFORATOR AND CUTTER FOR BUSINESS-ENVELOPES.

SPECIFICATION forming part of Letters Patent No. 526,347, dated September 18, 1894.

Application filed September 30, 1893. Serial No. 486,849. (No model.)

To all whom it may concern:

Be it known that I, PETER H. FLYNN, a citizen of the United States, residing at Syracuse, in the county of Onondaga, and State of New York, have invented certain new and useful Improvements in Adjustable Perforators and Cutters for Business-Envelopes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, in which—

Figure 1 is a front elevation of my adjustable perforator and cutter for business envelopes; Fig. 2, a rear elevation thereof; Fig. 3, a top plan of same; Fig. 4, a modified form of my device wherein a single perforating-plate with an oval knife or cutter is utilized; Fig. 5, a transverse vertical section of said modified structure, taken upon dotted line *w, w*, Fig. 4; Fig. 6, an elevation, looking toward its inner face, of the combined toothed and cutter-provided plate appertaining to my main construction, as segregated from its companion plate; Fig. 7, an elevation, looking toward its inner face, of the companion plate (provided with teeth) before referred to, as segregated from the combined toothed and cutter-provided plate illustrated in the foregoing figure; Fig. 8, a transverse vertical section of my adjustable tool taken upon dotted line *x, x*, Fig. 2. Fig. 9 illustrates in transverse vertical section another modified formation of my device; while Fig. 10 is a top plan view of aforesated modification.

In all the foregoing figures the several parts are, for clearer illustration of detail construction, shown enlarged beyond their customary dimensions, the proportion of enlargement being about a one-third ratio.

Throughout the several views like letters and numerals of reference indicate corresponding parts.

My invention relates broadly to improvements in devices calculated for the simultaneous perforating (or puncturing) and cutting out of envelopes, whether in completed form or the blanks thereof in sheets.

More specifically (or directly) my invention has reference to an improved form of device for concurrently perforating and cutting

out envelopes especially applicable for utilization in the correct and expeditious puncturing and cutting-out of my improved envelope embodied in Letters Patent of the United States granted October 18, 1892, and numbered 484,733.

The object of my invention is, the production of an improved tool or die adapted for the purposes before referred to, embodying adjustability of its parts, readily segregable when desirable, in height less than type high, that will satisfactorily perforate and cut-away the desired portion of an envelope coincidentally, a device that is strong, durable and efficient, and easily operated, and which is susceptible, by proper insertion and locking among the type of a printer's chase ready for the printing press, of accomplishing through the customary working of the usual form of press the purposes wherefor my device is designed—the envelopes—whether in completed form or marked in blanks upon sheets of paper—for customary printing of the front of same—obviously being fed to the press as usual—my device operating upon the paper fed concurrently with the action thereof of the contiguous type in the chase. Furthermore the purpose of my invention is the attainment of a perforator and cutter combined for envelopes and the like wherein by proper adjustment the puncturing teeth thereof may be so set as to diminish or increase the length of the perforations caused thereby; and finally the intent of my invention is the production of a device of the species referred to susceptible through its primary construction and its modifications of practical utility in the varying manner of application that may be advantageous incidental to the utilization broadly of my device for the concurrent perforating and cutting out of envelopes in their ordinarily completed form or in marked-out blanks on paper sheets.

My invention consists in the novel features of construction, combination of co-acting parts, operation and adaptation hereinafter described, and specifically enumerated in the clauses of the claims hereunto annexed.

It is constructed as follows: A, B, are flat rectangular-shaped plates, of elongated form, constructed of steel or other suitable case-hardened metal, each of corresponding length,

height and thickness, and disposed one against the other by the abuttal of their smooth inner faces (or sides), the respective plates being retained together flatwise, yet adapted to limited longitudinal movement by means hereinafter specified. The top and bottom edges of the respective companion plates terminate upon like planes. The straight upper edges of both the united plates A, B, are serrated or notched the greater portion of their length and thereby creating a series of teeth *a* and *b* for a distance along the top edge of the respective companion plates, the teeth of both corresponding in width and height, and obviously so in thickness. Preferably the spaces *c* existent between the several teeth of the respective plates A, B, are of similar size to that of the width of the stated teeth, although the spaces may be of a different width if preferred. Exteriorly the several teeth of the operating plates are chamfered or beveled as indicated by the letter *d*, thereby insuring sharp perforating edges or points to the teeth on a line vertically flush with the vertical interior faces (or sides) of the plates. The terminating teeth at the extremities of the companion plates A, B, are outwardly edgewise beveled whereby the end teeth are strengthened and braced. See letters *e*.

C denotes a cutting-blade or knife, of segmental shape transversely and edgewise, detachably and adjustably mounted upon the rear plate B contiguous an end thereof; which cutter *C* in height corresponds to that of the plate B whereto it is connected, and, describing an arc or avoidal sweep rearwardly the plate, presents from the rear a semi-cylindrical appearance. The horizontally-straight cutting edge of the transversely segmental contoured cutting-knife *C* is created by the chamfering of the interior of said cutter part along its upper extremity, as at *g*; whereby the penetrable edge of said cutting segment is practically vertically flush with the outer periphery of the cutter-block.

D denotes a dovetail mortise or recess entering into the upper serrated edge of the plate B about one-third the depth of said plate, while in length said mortise is usually treble its own depth; the perforating teeth *b* extending from either edge of the mortise or opening *D* to the extremities of the plate. The horizontal lower edge of the mortise-opening alluded to creates by the terminating edge of the plate thereat a ledge or bearing *h*, whereupon may rest by its coincident end shoulders *i, i*, the semi-tubular cutter *C*, whose upward cutting-edge is, at all times, calculated to lie on a plane longitudinally lineal with that of the cutting edges of the perforating teeth. The upper portion of the cutter-block fits by its shoulders *i, i*, snugly within the mortise-opening *D* and abuttingly the dovetail ends thereof. As is obvious, when mounted in position the depressed vertical edges of the cutter-block *C* underneath the shoulders thereof, fit impingingly against the

contiguous rear face of the carrying-plate B priorly mentioned.

The companion front-plate A at that end portion located opposite the mortise and cutter-blade of the connected rear plate B, has a mortise or opening *E* extending downward from its toothed edge a distance slightly greater than the depth of the opening in the rear plate, while in length it is somewhat greater than that of the referred-to opening in the back plate.

By my creating the opening or mortise in the plate A of dimensions exceeding that of the opening *D* in the rear plate, requisite clearance from the laterally projecting shoulders of the cutter *C* of the opposite plate is assured, and concurrently sufficient leeway between the said shoulders and the extremities of the opening *E* to permit of unobstructed movement longitudinally of the front-plate A, by means now to be specified, to attain such slight degree of adjustment as may be desirable.

F, F, are square-headed set-screws securing the longitudinally adjustable plate A in snug contact with the back plate B at any predetermined position with reference thereto; said screws being located ordinarily in proximity to the upper portions of the plates and adjacent their respective extremities. The heads of the screws outstanding from the outer face of the front-plate A, their end-threaded shanks *j* penetrate short slotted-orifices *k* whose direction of elongation is longitudinal with that of the plate A wherein they are formed, the threaded ends of the screws' shanks penetrating and working in screw-holes *l* located in the rear plate B coincident to the slotted orifices in the forward plate. The slotted-orifices *k* through which the shanks of the set-screws project transversely through the front plate, admit, upon the loosening of the screws, the moving longitudinally, to a minimum degree, in either direction, of said front-plate A along the contacting face of the rear companion-plate B, whereby, through such movability, the normally coinciding teeth *a, b*, of the two unitedly-operative plates may be so arranged longitudinally the direction of length of the plates, through adjustment, as to increase and also diminish within circumscribed limits the length lineally and horizontally of the perforating impact of each group (or pair) of interiorly abutting teeth *a, b*, appertaining to the series of teeth of the respective plates A, B. As is evident, the narrowing or lengthening of the stroke of the unison-acting teeth *a, b*, serves to diminish or increase the portions of paper, of envelopes and the like, between the perforations or lineal slits caused therein by the penetration into the same of the teeth of my device, thereby, according to the amount of paper left non-perforated between the lineal punctures caused by the adjusted teeth, increasing or diminishing the strength of the paper along the plane of said perforating.

It being a fact, that some paper utilized in the manufacture of envelopes is tough and firm while some is spongy and weak, and, as a necessary sequence, the non-punctured portions of paper existent between the perforations should be more or less according to the toughness or weakness of the paper, the advantages accruing to my adjustable tool in its adaptability for attaining the results mentioned, are readily apparent. It being essential that the cutter C should invariably terminate at its cutting-edge upon the same plane at which the perforating teeth end, and as in the occasionally required sharpening of said cutter the length thereof gradually, but to a slight degree, diminishes, the necessity of provision being made for the insuring of the cutting-edge thereof always ending lineal with the edges of the perforating teeth, is readily understood.

To secure vertical adjustment of the cutter, admitting of its being secured in a higher position than the cutting-edge as it becomes worn, I provide vertical slots *m, m'*, of like size, in the cutting-perforating plates A, B, disposed coincidently upon a line midway the ends of the openings D, E, of the plates and slightly beneath the openings' bottom-termination, and G is a square-headed set-screw, the shank *n*, thereof penetrating the slots *m, m'* and entering by its threaded end a coinciding screw-hole in the segmental cutter C, whereby the screw being tightened the cutting-knife is firmly retained in desired operative position. As the cutter becomes worn through sharpening the binding screw G is moved upward and thereby insures the proper disposition of the same. It will be noticed that, the slots are somewhat wider than the diameter of the set-screw G, the reason therefor being to allow of sufficient space at either side of the screw-shank for no barrier to obstruct the longitudinal movement of the plates in their adjustment for varying cutting edges of their teeth. If wished, the means afore-described may be dispensed with, and a plate of metal inserted between the shoulders of the cutter C and the bearing-ledge of the plates, or a plate inserted underneath the cutter's bottom edge to raise and properly uphold said cutter in correct operative position, the cutter being retained firmly to the plate B in any ordinary manner.

Referring to the companion operating-plates A, B, their smooth meeting sides may be, whenever deemed advantageous, formed slightly concaved or dished, as indicated by the dotted lines *o, o*, in Fig. 8 (sectional) of the drawings, such formation permitting only the upper and lower portions of the united plates A, B to abut, and thereby, whatever roughness or inequalities may exist upon the inner faces of said plates intermediately their top and bottom portions thorough meeting of the vertical sides of the teeth *a, b*, of the serrated plates is insured—a very important matter. The plates A, B, are constructed of

a height less than ordinary type-high, for the purpose of absolutely protecting the inking or impression rollers of the printing-press utilized from being cut into by the teeth and knife (*i. e.*, cutter) of my device, a result to be avoided by all means.

To insure non-cutting of the press rollers as well as requisite working of my device, the deficiency in height of the tool is readily compensated for by the building up on the platen of a printing-press of my perforating and cutting tool, which building up thereat is accomplished by the utilization upon the platen at that part whereof the tool among the type in the form will come in contact, of a suitably-sized sheet of brass or tin or other satisfactory metal, which built-up metal not only makes up the deficiency in height of the tool, but also provides the essential hard substance required for the tool to cut against in its perforating and cutting of the interposed paper. As is noticeable, the extremities *i, i*, of the cutter C project laterally beyond the inner face of the plate B a slight distance, which projection is necessary to attain clean and absolute cutting out of that portion of the envelope whereupon the cutter C is intended to operate. In other words, it is required that the cutter at the extremities of its cutting-edge should penetrate by incision forwardly across and a minimum degree beyond the line of perforations or indentations created simultaneously by the perforating teeth of the tool. This has reference to formed envelopes.

Whenever I prefer to utilize my device in a manner whereby the length lineally of the individual perforations created by the perforating teeth are not capable of varying adjustment, and which very evidently increases the simplicity of my device and thus the expense of construction, I merely curtail the formation of my appliance by dispensing with the employment of the forward plate A, and retaining for service simply the rear plate B provided with the segmental cutter and integral perforating-teeth, the teeth, in this instance, necessarily being beveled at either side and terminating centrally with their cutting-edges, said double beveling of the teeth being indicated at H, sectional detail, shown at the right-hand of the segregated plate B, Fig. 6 of the drawings.

At Figs. 4 and 5 I illustrate a variation of my main construction, in that I employ a single operating plate B', having a dovetailed mortise D' adjacent an end thereof as in my primary formation, with teeth *b'* disposed along the upper edge of the plate and beveled at either side, creating central perforating points, and within the mortise or opening D' I firmly seat a cutter C' of oval form transversely, and having throughout its circumference an interiorly chamfered cutting-edge *g'*; the transversely elongated portion of said cutter being disposed longitudinally with the plate whereto it is connected, and its center being disposed a trifle to one side

of the center of its supporting plate, as denoted by the letter *p*. This cutter *C'*, coincides in height with that of the toothed plate whereto it is secured, and at either end, starting from its bottom edge, it is slotted vertically about two-thirds its height as at 1, which slots are at least equal to the width transversely of the plate *B'* and whereby said oval-like cutter-block is by its slots aforesaid securely fitted upon that portion of the plate *B'* lying beneath the opening *D'* thereof, the rounded ends of the cutter snugly fitting against the dove-tail ends of the opening. Whenever it may be advisable to slightly raise the cutter incidental to wear of its cutting-edge, such result may readily be accomplished by the insertion of a metallic blank underneath its lower edge or by the interposition of a metallic plate between the upward termination of its vertically slotted portions and the lower bearing edge of the plate *B'* located at the downward termination of the dovetailed opening *D'*. This aforementioned modified construction is applicable for service in those instances where envelopes are simply marked out in blanks upon paper sheets, and wherein the perforating and cutting are to be performed prior to the formation of the envelopes.

The purpose of having the center of the cutter disposed slightly to one side of the longitudinal center of the plate *B'*, is that the perforations created in the envelope blanks may invariably come in the back-flap of the envelope and not at all in the envelope's front.

In Figs. 9 and 10 I illustrate a further modification of my primary construction of an adjustable perforator and cutter for business envelopes, in that I utilize two separate metallic plates 2, 2, that are of similar dimensions, rectangular in outline, and elongated, and disposed on edge; both devoid of serrations at their top edges, while obviously one of them may be provided with a cutter of requisite contour secured thereto in any preferred manner. Between these plates 2, 2, disposed slightly apart, there are inserted steel perforators 3, each perforator being distinct, and its perforating edge being of a length corresponding to that of the size of the steel body, each perforator being beveled at its ends to form a centrally disposed penetrating-edge, as indicated at *r*. The distance between each perforator 3 is increased or diminished by the interposition of metallic spacers 4, of less height, between the individual perforating dies; which perforators and spacers may transversely be varied in size as desirable, various sizes being kept at hand for utilization.

The plates 2, 2, are securely held in place together by means of square-headed set-screws 5 passing transversely through them, and which also firmly secure the interposed perforators and spacers rigidly in place. Evidently, in the employment of this before described modification of my device, metallic

plates and spacers commonly used in printing establishments may be used in part construction of the same—with but slight changes; and whereby the cost of formation is materially reduced.

By the operation of my device I am enabled to thoroughly and quickly perforate with small holes or incisions the folded edge of envelopes, and concurrently cut out from the edge of the folded envelopes a slot or opening of requisite size, all by means of the same impression that produces the printing of the envelopes, and likewise when my device is utilized for the perforating and cutting out of envelopes in marked-out blanks upon paper sheets.

My prior Letters Patent of the United States, dated October 18, 1892, and numbered 484,733, illustrate and describe to a certain degree, the results attainable of accomplishment by my present invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A combined perforator and cutter for business envelopes, comprising an elongated flat body having perforating teeth along the major portion of its upper edge or edges, a recess in the body breaking the continuity of said teeth, and a cutter mounted operatively in said recess, and adapted to proper adjustment, substantially as described.

2. A combined perforator and cutter for business envelopes, comprising a flat rectangular like body adapted to rest on edge, perforating teeth along the major portion of its outer longitudinal edge, a recess opening into said edge in proximity to an extremity of the toothed body and breaking the continuity of the row of perforating-teeth, and a cutter-blade detachably secured in said recess, its cutting-edge terminating on a plane coinciding to that of the puncturing edges of the teeth, substantially as set forth.

3. A combined perforator and cutter for business envelopes, comprising a straight flat-like body adapted to rest on edge having a straight line of perforating teeth along its opposite longitudinal edge, and a cutting-blade curvilinear in cross horizontal section standing across the line of teeth, said cutter being detachably secured to the serrated body portion, all arranged and operating substantially as described and for the purposes stated.

4. A combined perforator and cutter for business envelopes, comprising a longitudinally bisected body provided with perforating teeth along a longitudinal edge or border thereof, the two plates forming the serrated body being capable of longitudinal adjustment one to the other, and a cutter-blade connected to said body, its cutting edge terminating upon a plane practically coinciding to that whereat the cutting-points of the teeth terminate, substantially as described.

5. A combined perforator and cutter for business envelopes, comprising a body longi-

5 tudinally and vertically bisected and adaptable of adjustment, a series of perforating teeth along one of its straight borders, and a curvilinear cutter contiguous the serrated border and detachably connected with the body aforesaid, substantially as described and for the purposes enumerated.

6. A combined perforator and cutter for business envelopes, comprising a bisected body formed by two rectangular flat plates disposed side to side and adjustable upon each other, the outer longitudinal edge of the respective plates being suitably serrated, and a cutter of satisfactory shape detachably mounted upon the aforesaid bisected body, all arranged and operating substantially as described.

7. A combined perforator and cutter for

business envelopes, comprising a bisected body provided with perforating teeth along a longitudinal border thereof, the parallel abutting plates with serrated edges creating conjointly teeth that are adaptable of longer or shorter cut through the adjusting of the plates longitudinally, means for adjustably securing the plates operatively together, and a curvilinear cutter located near the teeth and adjustably connected to the bisected body, substantially as shown and described.

In testimony whereof I affix my signature, in presence of two witnesses, this 22d day of September, 1893.

PETER H. FLYNN. [L. S.]

Witnesses:

WM. C. RAYMOND,
E. KAN KEMOELLER.