

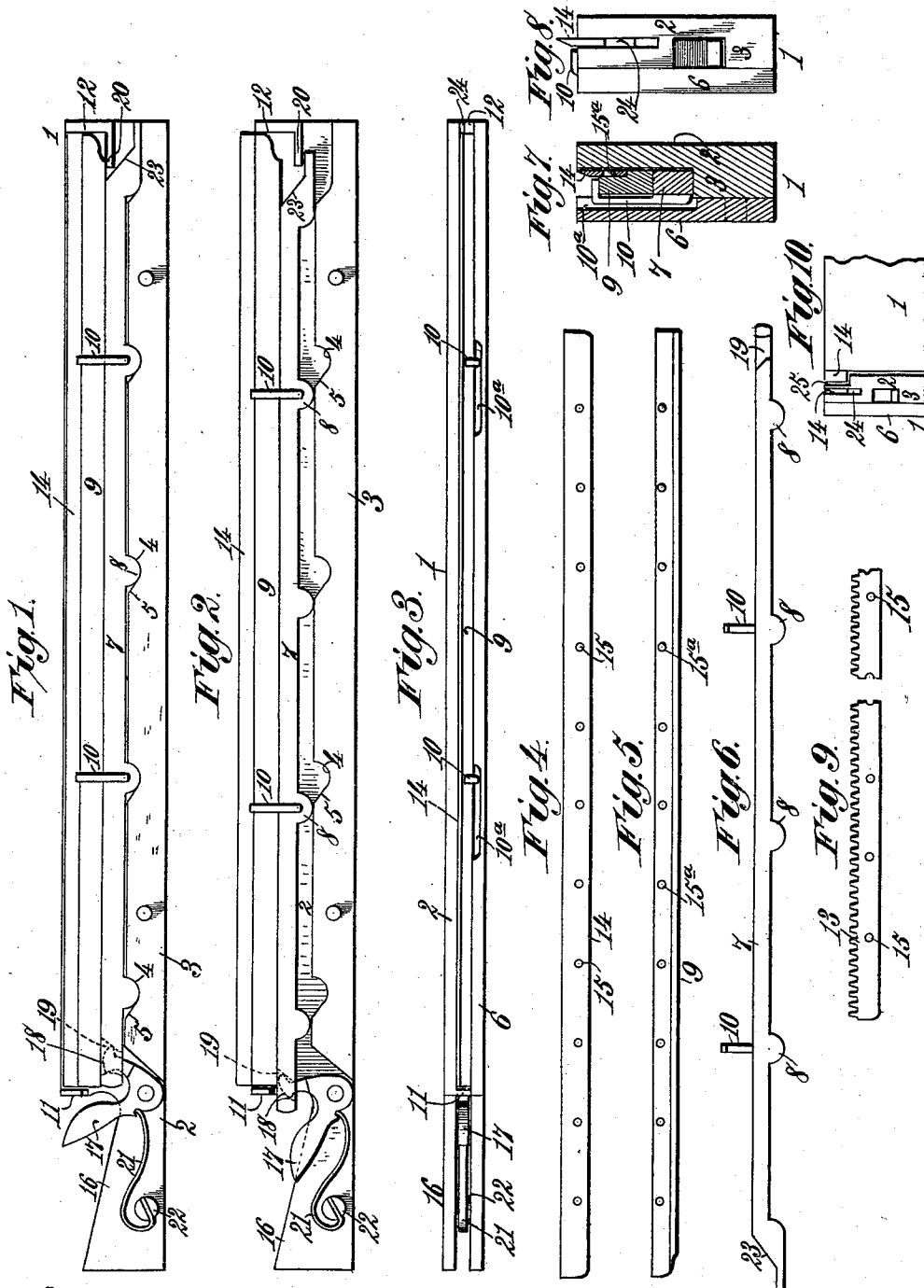
(No Model.)

J. L. NICHOLS.

PERFORATING OR SCORING ATTACHMENT FOR PRINTING MACHINES.

No. 566,090.

Patented Aug. 18, 1896.



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UNITED STATES PATENT OFFICE.

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PERFORATING OR SCORING ATTACHMENT FOR PRINTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 566,090, dated August 18, 1896.

Application filed February 24, 1896. Serial No. 580,326. (No model.)

To all whom it may concern:

Be it known that I, JOHN L. NICHOLS, a citizen of the United States of America, residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented certain new and useful Improvements in Perforating or Scoring Attachments for Printing-Machines, of which the following is a specification.

My present invention relates to improvements in perforating and scoring attachments for printing-machines, which are adapted to be arranged with the type to effect the operation of perforating or scoring the paper simultaneously with the printing thereof.

The invention has for its object the provision of an attachment of this character which is simple and novel of construction, smooth and accurate in operation, and in which the perforating or scoring blade moves out of the casing in which it is housed in a perfectly straight or directly perpendicular path in order that the perforating or scoring operation may take place without tearing the paper or moving it upon the surface of the type, as would likely otherwise occur, and produce an objectionably-smearred printing impression, and in which the perforating-blade comes in perforating contact with the paper at the precisely proper time and is withdrawn into the housing immediately thereafter to avoid injury to the inking-rollers.

The invention, to this end, consists in the novel construction and combination or arrangement of parts hereinafter described and claimed.

In the annexed drawings, Figure 1 is a side elevation of a perforating and scoring attachment constructed in accordance with my invention, the top plate being removed and illustrating the perforating or scoring blade housed within the casing. Fig. 2 is a similar view with the perforating or scoring blade projected out of the casing into operative position. Fig. 3 is a top or front plan view. Fig. 4 is an elevation of the scoring-blade. Fig. 5 is an elevation of the blade-carrying bar. Fig. 6 is a detail of the slidable bar. Fig. 7 is a transverse sectional view of the perforating or scoring instrument. Fig. 8 is an end elevation of the casing or housing. Fig. 9 is a detail of the sectional perforating-

blade. Fig. 10 is a detail showing the relative arrangement of two perforating or scoring attachments when arranged to perforate or score the paper in lines running at right angles.

In the said drawings the reference-numeral 1 designates a casing or housing consisting of a base-plate 2, formed with or suitably secured to which at the lower part thereof is a pressure-sustaining bar 3, which fills completely the space between the base-plate 2 and the cover-plate 6, hereinafter referred to, and forms therewith a practically solid lower portion. This construction is important, as, when the apparatus or instrument is set up with the type in the chase, tremendous pressure is exerted thereon to retain the type and the instrument in proper place. This pressure is exerted upon the lower portion of the perforating or scoring instrument and is well sustained by the said pressure-sustaining bar, preventing the possibility of the base and cover plates being crowded together and upon the hereinafter-described moving parts. In this way the said moving parts have a smooth, accurate, and timely operation.

In devices prior to my invention no provision is made for sustaining the described pressure, and consequently the plates of the casing or housing are crowded upon the moving parts, causing them to bind and preventing the essentially easy and timely operation thereof, and rendering liable the injury of the inking-rollers by the delayed projection of the perforating or scoring blade.

The front face of the pressure-sustaining bar 3 is provided at suitable intervals with a series of pockets 4, preferably, and as shown in the drawings, of a shape approximately semicircular, and each of said pockets has a tangential or diverging riding-surface 5. The cover-plate 6 is secured to said bar by means of suitable stud-holes engaging projecting studs of the latter, as shown.

Immediately in front of the back plate is arranged a slide-bar 7, which is capable of a longitudinal and a vertical or outward and inward sliding movement, as will be described. The rear face of the slide-bar 7 is formed or provided with projecting lugs 8, approximating more nearly a semicircular

shape than and adapted to fit the semicircular pockets 4 in the pressure-sustaining bar 3.

The numeral 9 represents a carrier-bar for the perforating or scoring blades, and is disposed to rest against the slide-bar 7, in free contact with which it is held or confined by a plurality of holding-fingers 10, secured to the slide-bar and loosely embracing the carrier-bar, as shown. This carrier-bar is actuated by the slide-bar and, as will hereinafter appear, partakes of but one movement of the latter, to wit, the vertical or inward and outward movement, being prevented from any movement in a longitudinal direction by guides 11 and 12, projecting from the base-plate 2 at opposite ends thereof, and between which said carrier-bar fits and moves accurately.

The perforating-blade 13 and the scoring-blade 14 do not differ in construction except in that the operative edge of the latter is a continuous cutting edge while the corresponding edge of the former is provided with a series of perforating-teeth. The said plates 13 and 14 are preferably made in a suitable number of sections, as illustrated in Fig. 9, in order that they may be adapted to attachments of varying lengths, and near the back edge of each of said blades or sections of blades is provided a series of holes 15, corresponding in distance apart and adapted to interengage a series of pins 15^a, projecting from the under side of the carrier-bar 9, whereby the said blades or sections of blades may be secured readily to said carrier-bar and be easily detachable from and replaceable upon the same.

The numeral 16 indicates an extension of the base-plate 2, to which is pivoted a lever 17, the actuating end of which extends outside the casing or housing. The other end of said lever is formed with a rounded head 18, which lies in a seat 19, provided therefor in the under face of the slide-bar 7, with both walls of which seat the said head has positive engagement.

In practice the perforating or the scoring blade, according to the operation which is to be performed, is attached to the carrier-bar 9, and the attachment properly set in place with the type for simultaneously perforating or scoring the paper with the printing thereof, the pressure-sustaining bar 3 taking the force exerted upon the type and the perforating or scoring instrument to retain the same in place, as hereinbefore explained.

The perforating or scoring operation of the instrument is effected by any suitable known device carried by the platen of the printing-machine, which, when the platen descends upon the type, engages and depresses the exposed end of the lever 17, whereupon the slide-bar 7 is pulled or drawn in a longitudinal direction by the end of the lever which is engaged with the seat 19 in said bar. The bar slides freely and smoothly under the impulse of the lever, as there is an absence of

the counteraction of internal and distant springs which were a feature of constructions prior to my invention. The presence of internal springs, distant from the actuating-lever, would necessarily involve a hard and jerky movement of the slide-bar. During this longitudinal movement of the slide-bar the lugs 8 thereon move outward easily and with the least possible friction upon the tangential riding-surfaces 5 of the pockets 4, the holding-fingers 10, which embrace the blade-carrying bar 9, moving in suitable channels 10^a, provided therefor in the cover-plate 6, as shown.

The outward movement of the slide-bar forces the carrier-bar and the attached perforating or scoring blade outward, projecting the latter from the casing into proper position to perform the operation of perforating or scoring the paper at the instant the platen brings the same against the type-surface to take the impression of the type. The path of the outward movement of the blade is precisely vertical, longitudinal movement thereof being prevented by the guides 11 and 12, as described. Were the blades permitted to partake of any of the longitudinal movement of the slide-bar there would, of necessity, be danger of the paper becoming torn or being moved upon the surface of the type, whereby an imperfect and smeared printing impression would result.

The outward movement of the slide-bar, the carrier-bar, and the perforating or scoring blade is accurately limited by guide-stop 20, arranged above and in the path of said slide-bar at one end of the base-plate 2, and the outward movement of the carrier-bar and blade is guided and confined from longitudinal movement by the guide 11 at the opposite end of said base-plate, with which guide-stop and guide the slide-bar and the carrier-bar, respectively, come in contact at the proper moment.

Immediately the printing and perforating or scoring operation has been effected the lever assumes its normal position under the impulse of an engaging spring 21, carried by a stud 22 on the extension 16, and by reason of the positive engagement of the rounded head 18 of said lever with the seat 19 in the slide-bar positively pushes or forces said slide-bar into the casing, the lugs 8 being forced into the pockets 4 when the guide-stop 20 engages a cam-face 23, formed for that purpose on the slide-bar, and at the same time the carrying-bar 9 and the blade carried thereby are drawn into the casing by the fingers 10, as will be obvious. Thus the return of all the parts to their normal position is effected without the employment of internal springs or springs distant from the actuating-lever, as has been usual in prior devices of the general character.

My invention contemplates the provision of perforating or scoring attachments which are peculiarly adapted also for use when it is

desired to perforate or score the paper in lines perpendicular or any other desired angle to each other, and for this purpose, and as shown in Fig. 10 of the drawings, the end of the casing opposite that which carries the lever 17 is slotted, as at 24, in order that the perforating or scoring blade 13 or 14, or a section thereof, may project outside the casing into close proximity to the perforating or scoring blade of a similar device arranged at right angles or other angle thereto, as will be understood. To this end also the base-plate 2 is cut away or channeled, as at 25, so that the projecting end of the blade or section of blade of the companion device may more nearly approach the perforating or scoring blade thereof. These improvements are important in that thereby the meeting perforations of different lines of perforation may be close together and without break, as is desired in checks and other commercial and like paper, where it is of advantage that the paper be easily separated on the lines of perforation without tearing, which is likely to occur if there be a break of the line of perforation.

The device of the platen which operates the actuating-lever 17 has not been particularly described or shown herein, as such devices are well known in the prior art and constitute no part of my present invention. Any suitable device of the kind may be employed for this purpose.

Having thus described my invention, what I claim as new is—

1. In a perforating or scoring attachment for printing-machines, the combination with a longitudinally and vertically slidable bar having a cam-face, a spring-retained lever positively engaged with and actuating said bar, a guide-stop arranged in the path of said slidable bar to engage the cam-face, an outwardly-movable blade-carrier, a perforating or scoring blade secured to and detachable from said blade-carrier, and fingers carried by the longitudinally-slidable bar and loosely embracing the blade-carrier, substantially as described.

2. In a perforating or scoring attachment for printing-machines, the combination of a longitudinally and vertically slidable bar having a cam-face, means for actuating said bar, a guide-stop arranged in the path of said slidable bar to engage said cam-face, an outwardly-movable blade-carrier connected to the slidable bar and provided with projecting pins, a perforating or scoring blade provided with perforations for engaging with said pins and detachable therefrom and guides to direct the movement of said blade-carrier and blade, substantially as described.

3. In a perforating or scoring attachment for printing-machines, the combination of a longitudinally and vertically slidable bar, means for actuating said slidable bar, an outwardly-movable blade-carrier provided with projecting pins, a sectional perforating or scoring blade provided with perforations for engagement with said pins and detachable therefrom, and guides to direct the movement of the said blade, substantially as described.

4. In a perforating or scoring attachment for printing-machines, the combination with a casing provided at one end with a slot, of an outwardly-movable perforating or scoring blade projecting through said slot, and means for moving the blade and means for preventing longitudinal movement of the blade, substantially as described.

5. In a perforating or scoring attachment for printing-machines, the combination with a casing provided at one end with a slot, and channeled or cut away at one side, of an outwardly-movable perforating or scoring blade adapted to project through said slot, and means for moving the blade, all arranged to facilitate perforating or scoring paper in lines running at right angles from each other, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOHN L. NICHOLS.

Witnesses.

L. W. PRENDERGAST,
JOHN BRANDTJEN.