H. GALL.

FEEDING AND MOISTENING DEVICE FOR SECURING A REINFORCING STRIP ABOVE THE PERFORATED EDGE OF A STRIP.

APPLICATION FILED JAN. 28, 1913.

**1,147,715.**

Patented July 27, 1915.

2 SHEETS—SHEET 1.

Fig. 1.

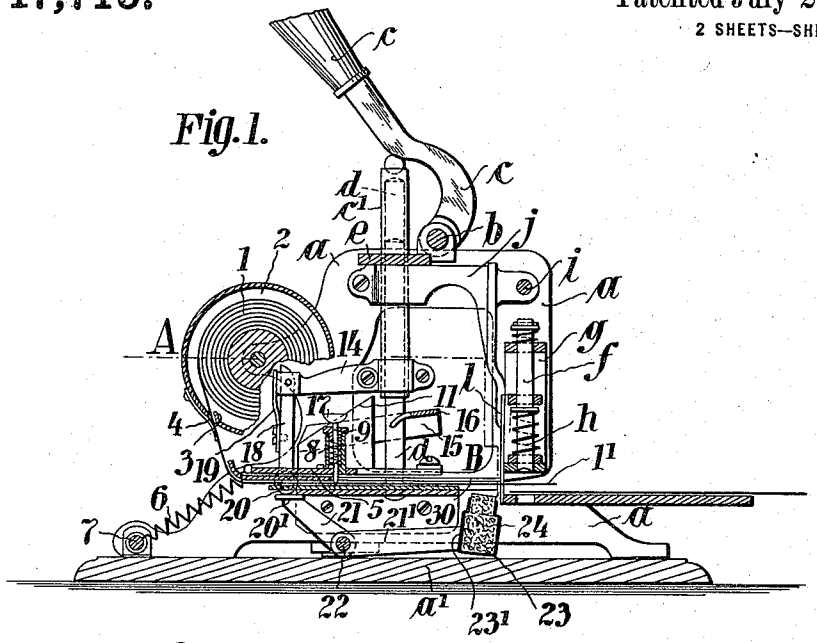



Fig. 2.

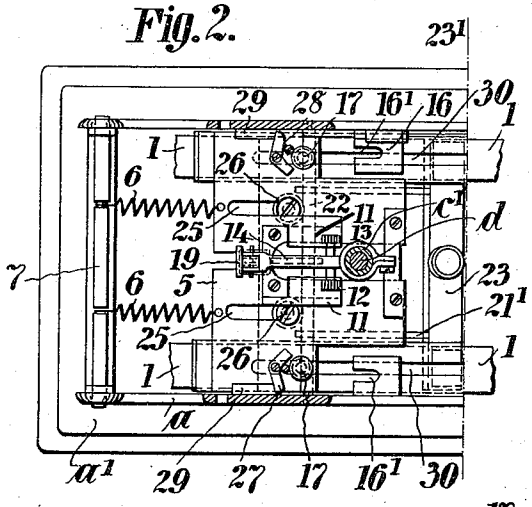
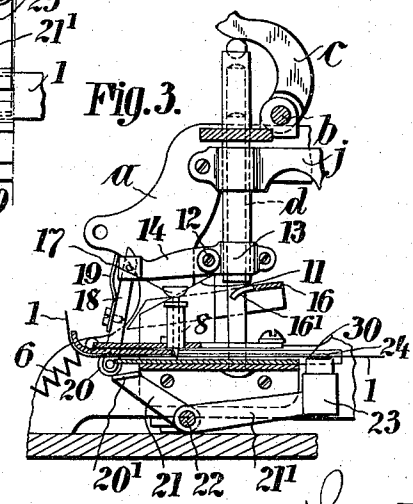



Fig. 3.




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2 SHEETS—SHEET 2.

Fig.4.

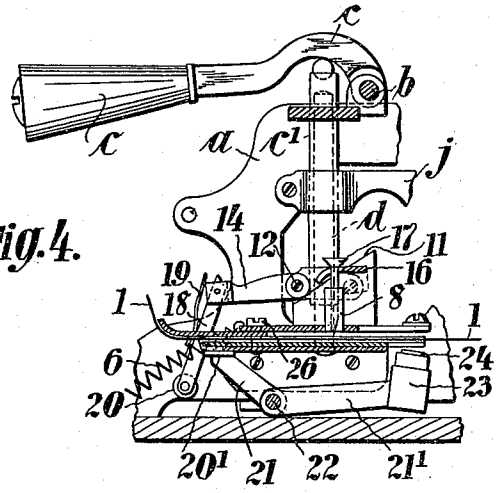



Fig.6.

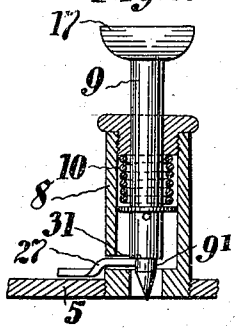



Fig.5.

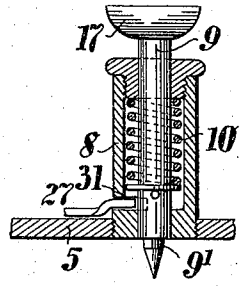



Fig.7.

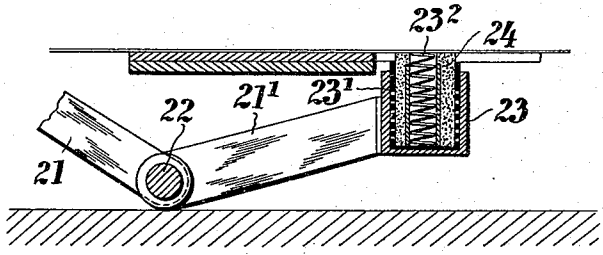
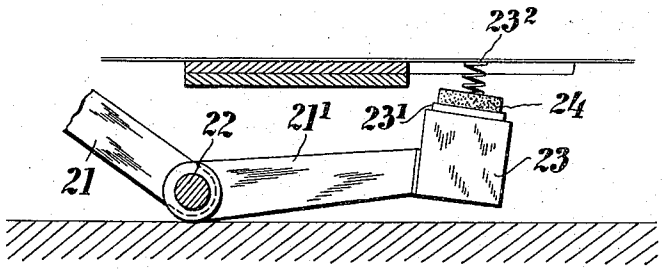



Fig.8.




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# UNITED STATES PATENT OFFICE.

HERMANN GALL, OF BERLIN, GERMANY.

## FEEDING AND MOISTENING DEVICE FOR SECURING A REINFORCING-STRIP ABOVE THE PERFORATED EDGE OF A STRIP.

1,147,715. Specification of Letters Patent. Patented July 27, 1915.

Application filed January 28, 1913. Serial No. 744,636.

*To all whom it may concern:*

Be it known that I, HERMANN GALL, a subject of the Emperor of Austria-Hungary, residing at Berlin, Germany, have invented certain new and useful Improvements in Feeding and Moistening Devices for Securing a Reinforcing-Strip Above the Perforated Edge of a Strip, of which the following is a full, clear, and exact specification.

The invention relates to improvements in devices for perforating paper particularly to improvements in the feeding and moistening devices for securing a reinforcing strip above the perforated edge of the paper and in which a portion of a gummed reinforcing strip is advanced, moistened, cut off and attached along the perforations.

The novel feature of, and important improvement in the paper perforator according to my present invention, as compared with the known devices, is to be seen in the fact that the movement of the strip is caused by a sliding piece which is positively operated by means of a lever, and which carries a point engaging the paper and coming free at the end of each forward movement, releases the paper.

The moistening of the strip is effected in the well known manner by means of a closed, oscillating water receptacle containing a suitable absorbing means and provided with springs, which when pressed against the gummed paper strip are compressed and which by their expansion during the lowering of the water receptacle give the paper strip free and have the tendency to cling to the absorbing means. By this arrangement, a reliable feed for the strip is provided and the apparatus is protected against being soiled during the process of the moistening.

In the accompanying drawings: Figure 1 shows the general arrangement of a paper perforator according to the present invention in its position of rest, partly in elevation and partly in vertical section. Fig. 2 is a top plan view partly in horizontal section on line A—B, Fig. 1. Fig. 3 shows the device for giving to the paper its initial motion with the moistening device resting against the strip, and Fig. 4 shows it at the end of its course with the moistening device at rest. Figs. 5 and 6 show the pin engaging the paper strip in two different positions. Figs. 7 and 8 show a modified form of moistening arrangement in vertical section through the water receptacle, in Fig. 7 with the moistening device pressed against the paper strip and in Fig. 8 with the moistening device swung downward.

The novel device forming the object of the present invention is suitably used in connection with a paper perforator comprising the customary perforating punches which stand under the control of springs $h$ and which are mounted so as to be vertically movable in the frame $g$ and are operated after the moistened reinforcing strips 1, $1^1$ have been brought fully into punching position, and after the cutting device which is vertically mounted in the main frame $a$ has been actuated. The operation of these parts is effected in the ordinary well known manner by means of a lever mechanism $b$, $c$, the tube $c^1$ telescoping with a rod $d^1$ mounted vertically in the frame work $a$ and in the base plate $a^1$ and passing through the arms $j$, $i$.

The arrangement for advancing the reinforcing strips 1, $1^1$ which are passed through channels provided with slots 30 at both sides of the lower frame $a$, $a^1$ of the machine consist of a plate 5 sliding horizontally and guided by pins 26 working in slots 25 in said plate, Fig. 2. The plate 5 is connected by means of tension springs 6 to a cross bar 7 and is provided with a slotted portion surrounding the guide rod on which the telescoping tube $c^1$ works, to enable the plate 5 to slide freely. The sliding plate is made of two parts, one on each side of the guide rod, which parts are provided with similarly directed inclined faces 11. Upon the downward movement of an arm 14 carried by the movable tube $c^1$, rollers 12 rotatable in suitable bearings on said arms are pressed upon the inclined surface 11, and when the operation is effected by pressing down the handle lever $c$ movable about $b$, a vertical downward movement only can be imparted to the rollers 12, they push the parts 11 and the sliding plate 5 forward. The sliding plate 5 carries in addition pin shaped devices 9 each side, see Figs. 5 and 6, these pins are provided with points $9^1$ engaging the paper strip 1. Each pin 9 is located in a vertical casing 8 and is provided with a head 17, and each of them is controlled by a spring 10 tending to force it downward and is adapted to be operated by means of a plate 16 on the frame of the device.

The guide plates 16 are upwardly inclined

in the direction of the forward motion and each of them is provided with a longitudinal slot $16^1$ through which the shaft 9 of the pin passes and which engages said shaft just below the head 17 of the pin. By this arrangement upon the movement of the sliding plate 5 toward the front, the pin 9 is raised from the position shown in Fig. 5 into the position Fig. 6, against the action of the spring 10, whereupon a bent lever controlled by a spring 28, Fig. 2, and provided with a locking pawl 27, extends through the slotted opening 31 of the casing 8 and catches under the stepped portion between the pin shaft 9 and the pin point $9^1$, keeping the pin in the position shown in Fig. 6 until upon the return movement of the sliding plate 5, under the pull of the spring 6, after the lever *c* has been released, one arm of the bent lever 27 comes into engagement with a projection 29, Fig. 2, on the side of the casing *a* thus releasing the pin 9, so that it again engages the paper strips 1, $1^1$.

21, $21^1$, are lever arms pivotally connected at 22 and located below the guides and sliding plate 5, on both sides of the frame-work *a*. The arms $21^1$ carry at their forward ends a transversely arranged water container 23, which at each end below the channels 30 for the strips has openings for the reception of absorbent wicks 24 for moistening the paper strips 1, $1^1$. The lever arm 21, as will be seen in Fig. 1, is provided at its free end with a plate $20^1$ adapted to move beneath the roller 20 which roller is carried by an arm 18 pivoted to the arm 14 so as to move in a vertical, plane and is kept in the position shown in Fig. 1 by the action of a spring 19.

The arm 14 by means of a clamping device 13 is clamped to the tube operated by the lever *c*.

The paper strips are fed from both sides from drums 2 located in the main frame and their tension is regulated by means of springs 3 pressing upon each of them.

From the slotted opening of each drum 2, each strip is passed over the bent-up end of the fixed guide, into the channel 30 in the frame-work to the place where the perforating and cutting operations are performed.

The operation of the foregoing described device is as follows: Upon the depression of the handle *c*, the cutting means, the operation of which need not be considered here, and the moistening device are operated almost simultaneously, the arm 18 kept in the vertical position by means of the spring 19 presses upon the end of the arm 21, thus raising said arm and pressing the wicks or sponges 24 in the water container momentarily against the paper strip 1. During its depression the arm 18 moves against the pressure of the spring 19 from the position shown in Fig. 3 into that shown in Fig. 4, so that the levers 21, $21^1$ are released and the container 23, 24 under the action of gravity returns into its original position. When the lever arm *c* is still further depressed, the movement of the tube $c^1$ caused thereby, and the motion of the arm 14, carries the rollers 12 mounted on the latter down onto the sloping surfaces 11 in connection with the sliding plate 5, pushing the plate 5 forward until the rollers 12 come to the end of the sloping surface 11. The paper strips are drawn forward with the sliding plate 5 by the points $9^1$ of the pins 9 engaging in the paper, until the engagement of the pins with the strips ceases, when the heads of the pins 9 enter the slots $16^1$ of the sloping guides 16, disengaging the points and locking the pins by means of the locking device, in the manner already described. When the lever *c* is released and the rollers 12 return along the inclined surfaces 11, the sliding plate 5 is carried back into its initial position by the pull exerted by the spring 6 and the pins $9^1$, 9 released from the locking device 27 by the contact of the arm thereon with the projection 29. After being released, the pins $9^1$, 9 under the influence of the springs 10 are pressed downward and engage again with the paper strips 1, ready to push them forward.

As shown in Figs. 7 and 8 the moistening device carried by the lever mechanism 21, 22, $21^1$, comprises a water container extending transversely and having at each of its ends a perforated device inserted into or formed with the container which holds the absorbing material for moistening the gummed strips. Each of the parts $23^1$ is provided with a small central tube, which is separated from the absorbent material in which is located a spring $23^2$ normally projecting beyond the absorbent body 24, the spring being prevented from coming into actual contact with the absorbent body 24 by the surrounding tube. If the water container 23 is pressed against the gummed strengthening strip 1 through the action of the lever mechanism, on depressing the handle, the spring $23^2$ is compressed, see Fig. 1. The strength of the spring is so calculated that a perforation of the paper strips or a displacement of the same out of the proper course is avoided. When the water container descends into its original position, after the release the lever mechanism 21, $21^1$ and after the absorbent body 24 has momentarily been pressed into contact with the strip, the spring $23^2$ is released and its upper coil presses against the gummed strip, so that the latter is set free and can be moved forward without impediment, even when the absorbent material through wear and tear has become sticky.

I claim:

1. In paper perforating machines of the character described, having paper cutting and punching devices the combination of a bipartite recessed slide plate for feeding a means for reinforcing the edge of the material to be perforated through the machine, a guide rod in the recess of said plate, means for operating said plate, pins upon each side of said plate for engaging said reinforcing means with their points during the advancement of the same, means for releasing said pins from engagement with said reinforcing means, springs for tensioning the last named means, a system of levers operated by said plate, a moistening device carried by one of the levers of said system, and means for carrying said moistening device against the reinforcing means, substantially as described and for the purpose set forth.

2. In paper perforating machines of the character described, having paper cutting and punching devices the combination of a bipartite, recessed slide plate for feeding a means for reinforcing the edge of the material to be perforated through the machine, a guide rod in the recess of said slide plate, a tube telescopically engaging said guide rod, means carried by said tube for operating said slide plate in one direction, means for returning said plate into its original position after its release from said operating means, means upon each side of said plate for engaging said strips with their points during the advancement of the same, means for releasing said pins from engagement with said strips, springs for tensioning said strips, a system of levers operated from said plate, a moistening device carried by one of the levers of said system and means for carrying the moistening device against said strips, substantially as described and for the purpose set forth.

3. In paper perforating machines of the character described, having paper cutting and punching devices, the combination of a slide plate for feeding a means for reinforcing the edge of the material to be perforated through the machine, means for operating said slide plate, spring controlled pins carried by said slide plate at each side thereof, a vertical casing for each of said pins, a cup-shaped head upon each of said pins, points on said pins for engaging the strips during the advancement of the same, means extending through an opening of the pin casing for releasing the pins from engagement with said strips, means for locking the pins in their released position during the forward movement of the slide plate, means for bringing said pins into engagement with said strips during the return movement of said plate, a system of levers operated by said slide, a moistening device upon one lever of said system comprising a water container, and a container for an absorbent body having perforated walls, a central tube within said water container surrounded by said absorbent body, and a spring within said tube normally projecting beyond the absorbent body, substantially as described and for the purpose set forth.

4. In paper perforating machines of the character described, having paper cutting and punching devices the combination of a slide plate for feeding strips for reinforcing the edge of the material to be perforated through the machine, means for operating said slide plate, means upon each side of said plate for engaging said reinforcing means during the advancement of the same, means for releasing the engaging means, means for tensioning said reinforcing means, a system of levers operated by said slide, a moistening device upon one lever of said system comprising a water container and a container for an absorbent body, a central tube within said water container separated from said absorbent body, and a spring within said tube normally projecting beyond the absorbent body, substantially as described and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

HERMANN GALL.

Witnesses:
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."