Nov. 6, 1928. 1,690,410

D. W. HUDSON

PAPER PERFORATING MECHANISM

Filed Jan. 21, 1927

FIG. 1.

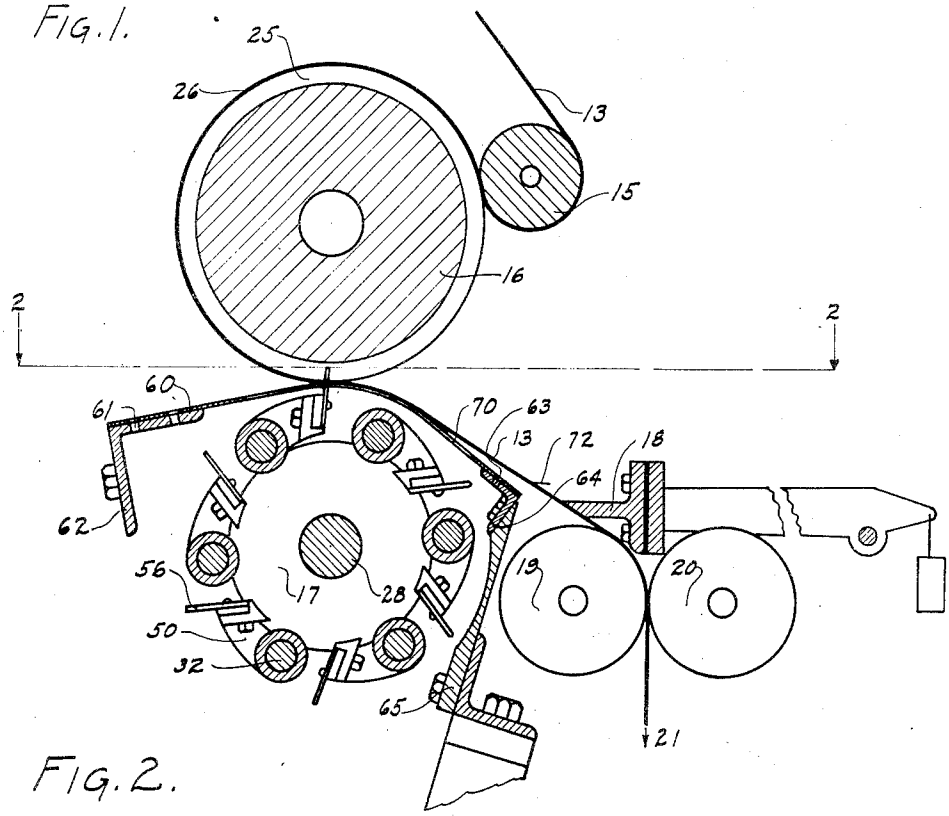
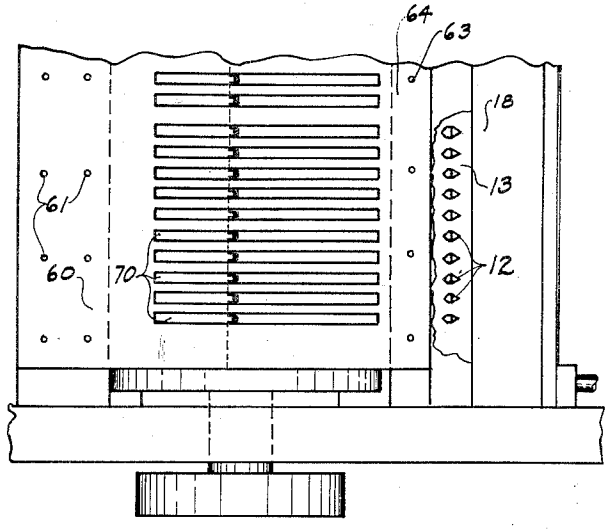


FIG. 2.



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PAPER-PERFORATING MECHANISM.

Application filed January 21, 1927. Serial No. 162,453.

This invention relates to improvements in paper perforating mechanism of the type shown in my Patent No. 1,509,838, of September 30, 1924.

It is the object of the present invention to provide means for preventing the paper from being caught upon the perforating fingers shown in the patent above referred to.

In the drawings:

Figure 1 is a diagrammatic sectional view transversely through a machine embodying the present invention.

Figure 2 is a fragmentary detail view taken in section in the plane indicated at 2—2 in Figure 1 and showing in plan the mechanism which is added to the structure shown in the patent above referred to to satisfy the above specified object of this invention.

Like parts are identified by the same reference characters throughout the both views.

For the purposes of the present disclosure the paper web 13 may be assumed to enter the machine about roller 15, from which it passes onto a die roll 16. This roll is peripherally grooved at 25, as disclosed in my previous patent, the purpose of the grooves being to receive the perforating knives carried by the companion roll 17. After being acted upon by the perforator the paper web 13 passes beneath a brush 18 and between creasing rolls 19 and 20, from which it is delivered for further treatment in the direction indicated by the arrow at 21.

The skeleton roll 17 which carries the perforating mechanism is mounted on a shaft 28 and carries in its periphery a series of rock shafts 32 to which are secured arms 50 carrying the blades 55 in which the perforating teeth or fingers 56 are formed. It will be understood that a perforating finger will register with each of the peripheral grooves 25 in the die roll 16.

It will be understood that in accordance with the disclosure of the former patent above referred to, the rock shafts 32 are successively oscillated in synchronism with the rotation of roll 17 to the end that as each set of perforating fingers approaches a position immediately beneath the die roll 16 it is impelled outwardly about the axis of rock shaft 32, whereby to penetrate the web of paper supported by the die roll. The cam mechanism by which this oscillation of rock shafts 32 is preferably accomplished is not shown in this application for the reason that it is fully disclosed in the aforesaid patent and is not essential to an understanding of the present invention.

It will readily be understood that in the operation of the device shown in my previous patent the web of paper would be torn and wound upon cylinder 17 in the event that any of the perforating teeth or fingers caught in the web during their retractive movement. In order to prevent this, I have added, in accordance with the present invention, a device which I call a comb and which is shown at 60 in the accompanying drawings.

The comb comprises a piece of sheet metal riveted at 61 to an angle iron support 62 which extends longitudinally of the machine. The other side margin of the comb is similarly secured at 63 to the longitudinally extending angle iron support 64 carried by bracket 65.

Between its two supports the sheet of metal which comprises the comb 60 extends between die roll 16 and the skeleton roll 17 which carries the perforating mechanism. The intermediate portion of the comb is curved into general conformity with the cylindrical contour of roll 17.

The intermediate portion of the sheet metal comb is provided with parallel slots 70 which register with and are adapted to receive the teeth 56 as such teeth are projected upwardly in the oscillatory movement of rock shafts 32 and arms 50. The advancing web, however, is confined between the unslotted portions of the comb and the ungrooved portions 26 of the die roll. Consequently, when the perforating teeth 56 are withdrawn through slots 70 during the continued rotation of roll 17 and the continued advance of the web 13, the web will be supported by the comb and it will be impossible for the paper web to become wound upon roll 17 or to adhere to the individual teeth 56. The triangular tongues struck up by the perforating teeth tend to maintain a forward inclination as shown at 72, but are folded rearwardly when they encounter the brush 18 and are creased in their rearward folded position by rollers 19 and 20. It will be understood that in all particulars except the addition of comb 60 (and a slight change in the form of brush 18 as will be noted) this machine may be taken to conform with the structure disclosed in my

previous Patent No. 1,509,838. The comb 60 fully satisfies the purposes of this invention as above expressed.

I claim:

1. In a perforating machine, the combination with a roll carrying outwardly movable perforating teeth, of a die roll having grooves complementary to said teeth and an intermediate comb between said rolls having slots extending in the direction of travel of said teeth during the rotation of the roll upon which they are mounted, and intermediate unslotted portions adapted to support a web upon which said teeth have acted.

2. In a perforating mechanism, the combination with a roll and perforating teeth mounted thereon for outward movement during the rotation of said roll, of a die roll provided with grooves adapted to receive said teeth, supports upon either side of said rolls, and a comb mounted on said supports and extending longitudinally of said rolls therebetween, said comb comprising a curved sheet of metal having slots in the direction of tooth movement during the rotation of said first mentioned roll, and unslotted portions extending between said rolls and adapted to support a web upon which such teeth have acted.

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