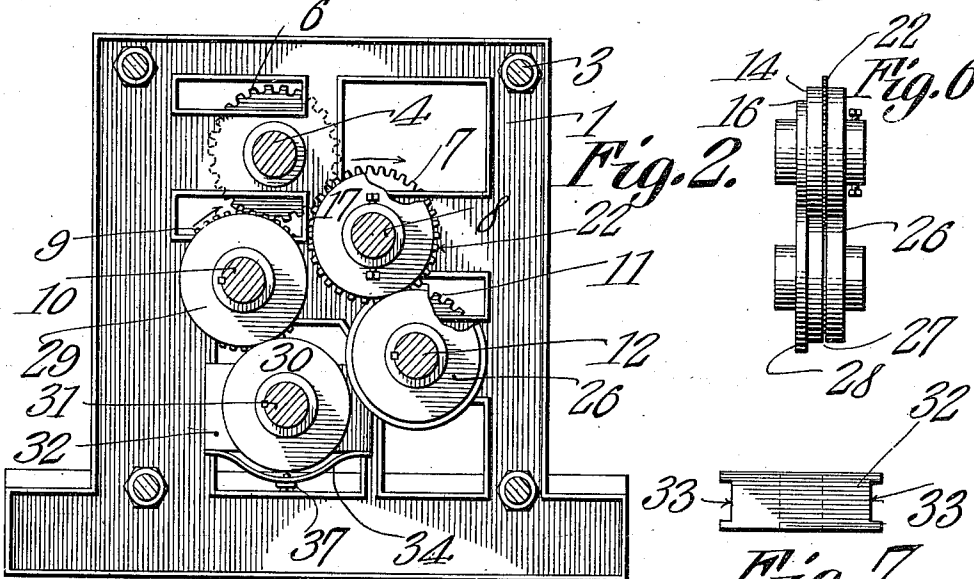
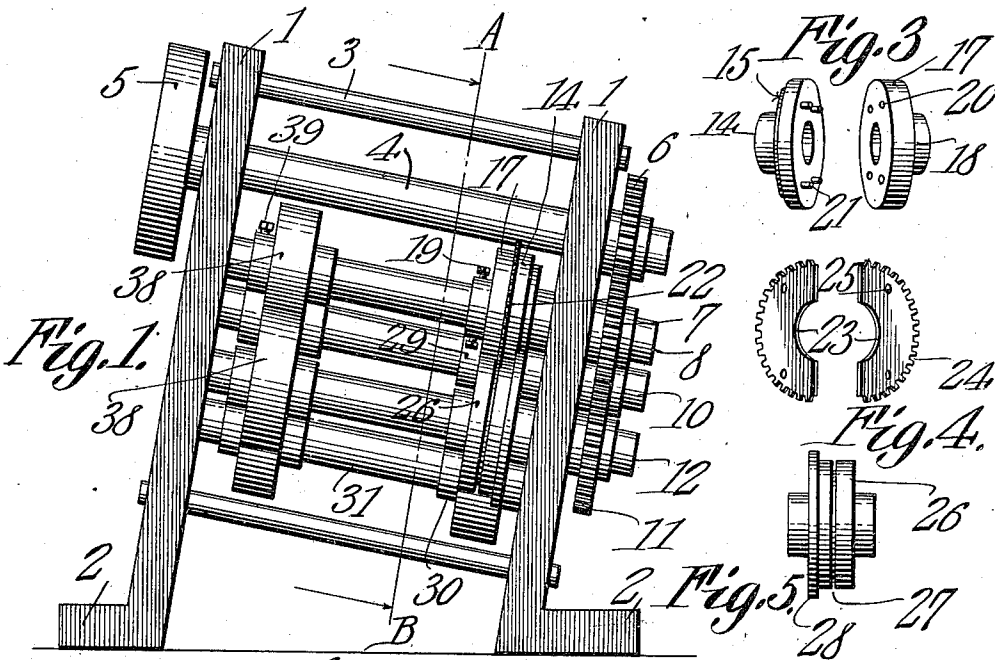


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PERFORATOR.

APPLICATION FILED AUG. 11, 1910.

989,627.

Patented Apr. 18, 1911.



UNITED STATES PATENT OFFICE.

LOYD N. MEADOWS, OF WICHITA, KANSAS.

PERFORATOR.

989,627.

Specification of Letters Patent.

Patented Apr. 18, 1911.

Application filed August 11, 1910. Serial No. 576,709.

To all whom it may concern:

Be it known that I, LOYD N. MEADOWS, a citizen of the United States, residing at Wichita, in the county of Sedgwick and State of Kansas, have invented a new and useful Perforator, of which the following is a specification.

It is the object of this invention, generally, to provide a device of the class above mentioned, which shall be inexpensive to manufacture, facile in operation, and devoid of complicated parts; specifically, the provision of a perforator adapted to operate upon an envelop to perforate the same in the first instance, and subsequently, to smooth down the raveled edges of the perforation.

The invention further aims to provide a perforator of novel and improved form, to provide means whereby the perforator may be assembled with its supporting parts, the provision of novel means for holding the envelop in proper position during the process of perforation, and the provision of adjustable means for supporting that end of the envelop which is remote from the perforating instrumentality.

Other and further objects will be made manifest hereinafter as the description of the invention progresses.

The drawings show but one form of the invention, and it is to be understood that changes, properly falling within the scope of what is claimed, may be made, without departing from the spirit of the invention.

In the accompanying drawings, wherein similar numerals of reference are employed to denote corresponding parts,—Figure 1 shows the invention in end elevation; Fig. 2 is a transverse section upon the line A—B of Fig. 1; Fig. 3 is a detail perspective of the primary and of the complementary rollers; Fig. 4 is a detailed perspective of the perforator wheel, the component parts thereof being separated; Fig. 5 is a side elevation of the secondary roller; Fig. 6 is a side elevation showing the primary and complementary rollers with the perforator wheel mounted between them, the secondary roller being shown in operative relation with the previously mentioned parts; Fig. 7 is a top plan of one of the boxings; Fig. 8 is a side elevation of one of the resilient

members whereby the boxings are actuated; and Fig. 9 is a bottom plan of the resilient member shown in Fig. 8.

In carrying out the invention, there is provided, as a fundamental member, a frame, fashioned from side plates 1, provided along their lower edges, with laterally extending feet 2, the foot 2 of one of the plates being disposed at an obtuse angle thereto, and the foot of the other of said plates being disposed at an acute angle thereto, so that the frame, as an entity, when mounted upon a suitable supporting base of any description, will be tilted out of the vertical, as shown most clearly in Fig. 1 of the drawings. The side plates 1 are connected by bolts 3, or other suitable retaining members, to form a rigid frame in which the various moving parts of the structure are journaled for rotation as hereinafter described.

Journaled for rotation in the plates 1, is a drive shaft 4, carrying at one end, beyond one of the end plates 1, a pulley 5, or other element, whereby the drive shaft 4 may be operatively connected with a prime mover. Upon its opposite end, and beyond the other of the plates 1, the drive shaft 4 carries a pinion 6, adapted to mesh with a pinion 7, carried by a shaft 8, mounted similarly to the drive shaft 4, and hereinafter referred to as the primary shaft. The pinion 6 is likewise in mesh with a pinion 9 carried by a shaft 10 disposed below the drive shaft 4 and to the rear of the primary shaft 8 and hereinafter referred to as the rear shaft. The pinion 7 which is carried by the primary shaft 8 is in mesh with a pinion 11 carried by a shaft 12, located below the primary shaft 8 and slightly to the front of the same, the shaft 12 being hereinafter referred to as the secondary shaft.

The shaft 8 carries the primary roller 14, which, as shown most clearly in Figs. 3 and 6 of the drawings, is reduced in diameter across one of its end faces as denoted by the numeral 15 to form in the periphery of the roller, a recess 16. Mounted upon the primary shaft 8 is a complementary roller 17, having a reduced neck 18, adapted to receive a set screw 19, whereby the complementary roller 17 may be secured to the primary shaft 8, for rotation therewith. The

primary roller 14 and the complemental roller 17 are provided with registering openings, indicated by the numeral 20 in Fig. 3, these openings 20 being adapted to receive retaining elements 21, bolts or the like, whereby the primary roller 14 may be assembled with the complemental roller 17 for rotation with the primary shaft 8.

A perforator wheel 22 is provided, the same being adapted to be clamped between the adjacent faces of the primary roller 14 and the complemental roller 17, the perforator wheel being divided diametrically to form separate sections 20, provided upon their peripheries, with teeth 24, there are openings 25 in each of the sections 23, which openings are adapted to register with the openings 20 in the primary roller 14 and in the complemental roller 17, to receive the retaining elements 21.

Mounted upon the secondary shaft 12, is a secondary roller 26, shown most clearly in Fig. 5 of the drawings. This secondary roller 26 is provided with a circumscribing groove 27, adapted to receive that portion of the perforator wheel 22 which extends beyond the faces of the primary roller 14 and the complemental roller 17. The secondary roller 26 is provided, moreover, at one end, with an outstanding flange 28, which, as shown to best advantage in Fig. 6 of the drawings is adapted to overlie one end of the primary roller 14, and to register in the recess 16 in the primary roller.

The rear shaft 10 has secured thereto, a roller 29 adapted to engage frictionally, a roller 30, carried by the lower shaft 31, which said shaft is mounted for vertical reciprocation in the frame, in a manner to be described hereinafter. At this point it may be stated that the rollers 29, 30, 26, 14, 17 are disposed in substantially the same plane.

Passing now to a detail description of a means whereby the lower shaft 31 is mounted for vertical reciprocation in the frame, it will be seen that the frame plate 1 is provided with a plurality of openings, one of which, adjacent the lower portion of the plate, is adapted to receive a boxing 32, shown in detail in Fig. 7 of the drawings, the boxing being recessed, as denoted by the numeral 33 at both ends, to receive the frame plate 1. It is in these boxings 32 that the lower shaft 31 is journaled for rotation, and, in order that the roller 30 upon the shaft 31 may at all times bear, yieldingly, against the roller 29 which is mounted upon the rear shaft 10, an arcuate spring 34 is located below each of the boxings 32, the springs being recessed at their ends as denoted by the numeral 35, to engage the frame plate. A bolt 36 or the like is made to engage the intermediate portion of the spring 34, there being upon the bolt 36, below the spring 34, a nut 37, adapted to bear against the frame

plate 1, whereby the tension of the spring 34 may be adjusted.

Each of the shafts 8, 12, 31 and 10 carries a roller 38, it being understood that the rollers 38 upon the shafts 8 and 12 co-act with each other, and that the rollers 38 upon the shafts 10 and 31 likewise co-act with each other, all of the rollers 38 being located in a common plane. These rollers 38 are adapted to slide longitudinally of the shafts upon which they are mounted, the said rollers being retained in the desired position, by means of set screws 39 or other fastening means adapted to a like end.

The operation of the device is as follows;—The envelop which is to be perforated, is inserted between the primary roller 14 and the complemental roller 17 upon the one hand, and the secondary roller 26 upon the other hand, it of course being understood that the machine has been put in motion through the instrumentality of the drive shaft 4. As the envelop is drawn between the rollers hereinbefore mentioned, the toothed periphery 24 of the perforator, entering the groove 27 of the secondary roller 26 will cut a line of perforations across the envelop. Before the perforation of the envelop has been completed, one edge of the envelop will be engaged between the rollers 29 and 30, these rollers serving to carry the envelop through the machine after the process of perforating has been completed, and likewise serving to smooth down the raveled edges of the perforations. While the envelop is thus being perforated and smoothed at one end, the several rollers 38 will engage the other end of the envelop, carrying the same smoothly and evenly through the machine, it being recalled that all of the rollers 38 are slidably mounted upon their respective shafts, so that they may be adjusted for envelops of different lengths.

It is to be noted that the flange 28 of the secondary roller 26 overlies one of the end faces of the primary roller 14. By this construction, the envelop will always be perforated at a fixed distance from the ends thereof, the end of the envelop in the process of perforation, bearing normally against the flange 28. Owing to the fact that all of the shafts are inclined, so that the ends thereof which are remote from the flange 28, are at a greater elevation than the ends of the shafts which are adjacent the flange 28, the envelop in the process of perforation, will tend to move gravitationally toward the flange 28.

The shafts 10, 8, and 12, are driven by intermeshing pinions, while the shaft 31 is driven by the frictional engagement between its rollers and the rollers which are mounted upon the rear shaft 10, the shaft 31 being yieldingly supported, as hereinbefore pointed out.

Having thus described the invention, what is claimed is:—

1. A device of the class described comprising a frame; primary and secondary shafts journaled for rotation in the frame; a primary roller carried by the primary shaft; a perforator wheel secured to the primary roller; a secondary roller secured to the secondary shaft and having a groove to receive the perforator wheel, and an outstanding flange at one end only to overlie one end of the primary roller and to serve as an edge guide, the opposite end of said secondary roller being free for the passage of the envelop; the ends of the shafts remote from the flange being at a greater elevation than the ends adjacent the flange.

2. A device of the class described comprising a frame; primary and secondary shafts journaled for rotation in the frame; a primary roller and complemental roller carried by the primary shaft; a perforator wheel laterally engaged between the primary and the complemental rollers; the primary and complemental rollers and the perforator wheel being provided with registering openings; retaining elements mounted in said openings; a secondary roller mounted upon the secondary shaft and having a circumscribing groove to receive the perforator wheel, and an outstanding flange at one end to overlie one end of the primary roller.

3. A device of the class described comprising a frame; primary and secondary shafts journaled for rotation in the frame; a primary roller mounted upon the primary shaft and reduced in diameter across one of its end faces to form a circumscribing recess in the periphery of the roller; a complemental roller mounted upon the primary shaft; adjustable means for securing the complemental roller for rotation with the primary shaft; a toothed perforator wheel arranged to be laterally engaged between the primary and complemental rollers, and comprising separable sections; the primary roller, the complemental roller and the perforator wheel being provided with registering openings; retaining elements mounted in the openings; and a secondary roller secured

to the secondary shaft and provided with a circumscribing groove to receive the perforator wheel, and with a peripheral flange to register in the recess in the primary roller.

4. A device of the class described comprising a frame; primary and secondary shafts journaled for rotation in the frame; a primary roller carried by the primary shaft; a perforator wheel secured to the primary roller; a secondary roller secured to the secondary shaft and having a groove to receive the perforator wheel, and an outstanding flange at one end, to overlie one end of the primary roller; and co-acting rollers mounted upon the primary and secondary shafts and adjustable thereon longitudinally of said shafts.

5. A device of the class described comprising a frame; primary and secondary shafts journaled for rotation in the frame; a primary roller carried by the primary shaft; a perforator wheel secured to the primary roller; a secondary roller secured to the secondary shaft and having a groove to receive the perforator wheel, and an outstanding flange at one end to overlie one end of the primary roller; a rear shaft journaled in the frame to one side of the primary shaft; a lower shaft journaled for rotation in the frame below the rear shaft and slidably mounted in the frame; co-acting rollers upon the rear shaft and the lower shaft, aligned with the primary and secondary rollers; other co-acting rollers mounted upon all of said shafts and adjustable thereon longitudinally of said shafts; resilient means for actuating the lower shaft to hold the rollers thereon in contact with the rollers upon the rear shaft; a power shaft journaled for rotation in the frame; a gear train connecting the power shaft with the primary shaft, the rear shaft and the secondary shaft.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

LOYD N. MEADOWS.

Witnesses:

GEORGE J. HILL,
H. S. AMIDON.