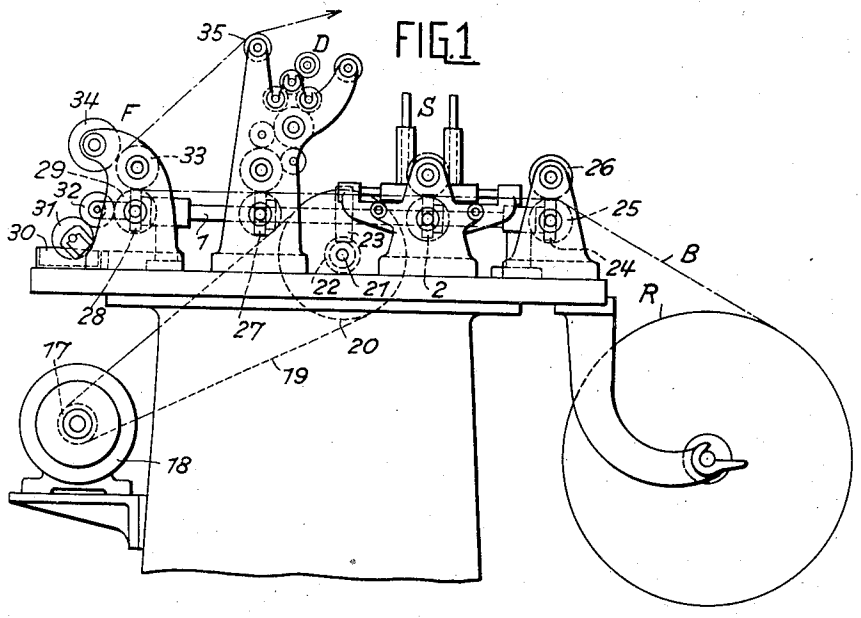
Nov. 10, 1931. P. GANGLER 1,831,167

DEVICE FOR PUNCHING OR SIMILARLY TREATING CONTINUOUSLY RUNNING WEBS

Filed March 8, 1929 2 Sheets-Sheet 1

FIG. 1



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FIG. 2

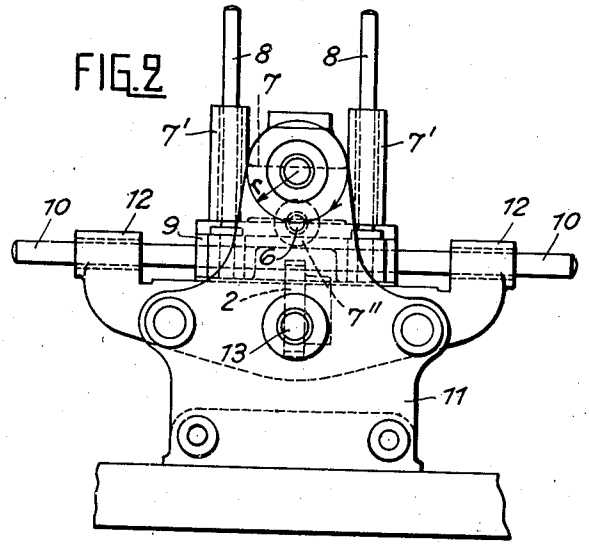
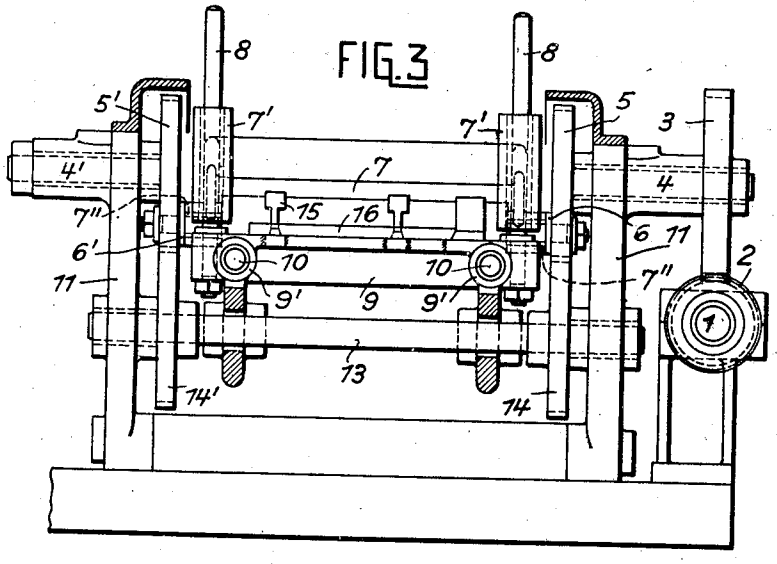


FIG. 3



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Patented Nov. 10, 1931

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UNITED STATES PATENT OFFICE

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DEVICE FOR PUNCHING OR SIMILARLY TREATING CONTINUOUSLY RUNNING WEBS

Application filed March 8, 1929, Serial No. 345,334, and in Germany April 12, 1928.

The invention relates to improvements in devices for cutting, punching, stamping, embossing and similarly treating continuous webs of paper or similar materials.

As compared with known devices of this kind, the novel feature of the invention consists essentially in the fact that the die holder consists of a slide adapted to be reciprocated in the direction of the feed of the web and that the stamp or punch holder consists of a slide guided at right angles to the first slide, the said stamp or punch slide being adapted to be revolved and imparting, due to its vertical guiding device, the suitable reciprocating motion to the die slide, for the purpose of driving both slides commonly and in unison and in such a way that the die slide attains the same speed as the web in the lowest position of the punch die. The improved device thus combines with a simple and reliable construction the advantage that, for punching and embossing continuously running webs without interruption of the feed, flat or plate-like punching and embossing members may be employed instead of the not so useful or effective punching and embossing cylinders used up to now for treating continuously running webs.

An embodiment of the invention is illustrated in the accompanying drawings by way of example and as applied to a machine for punching, printing and providing with transparent areas paper webs for the manufacture of so-called "window" letter envelopes.

In the drawings is

Fig. 1, an elevation of such a machine fitted with the improved punching device, in a more diagrammatic representation,

Fig. 2, a side-elevation of the improved punching device on an enlarged scale, and

Fig. 3, a front elevation of Fig. 2, partly in section, and viewed from the right-hand side in Fig. 2.

Referring to Fig. 1 of the drawings, it will be seen that a web of paper B is drawn off a real R and in a continuous operation punched, printed and provided with the above mentioned transparent "windows", in order to manufacture window envelopes from the finished paper web. The drive takes place by means of the pulley 17 keyed on the shaft of a suitable electric motor 18 through a belt 19 and the pulley 20 mounted on a shaft 21, which drives the first motion shaft 1 of the machine by means of the worm wheels 22 and 23. This shaft 1 drives through a worm wheel 24 the feed rollers 25 and 26, which pull the paper web B with continuous speed off the reel R. The web B is continuously fed forward first under the punching device S, then through the printing device D driven from the shaft 1 by the worm wheel 27, and then through the window applying device F, which is driven from the shaft 1 by means of the worm wheel 28. The window applying device applies to those places of the paper web at which the windows or transparent areas are to appear at the finished envelopes, a suitable varnish capable of rendering those places transparent, by means of a revolving segment 29, to which the varnish contained in the tank 30 is applied by rollers 31 and 32 and which cooperates with a counter roller 33. The web of paper now passes between this roller 33 and a roller 34 over a roller 35 to a suitable drying apparatus in which the varnish applied to the paper is hardened.

The punching device S consists of a horizontal slide 9, adapted to slide with slide rods 10 fixed in its eyes 9′ at both sides in sleeves 12 of the frame 11. On rods 8 mounted on the slide 9 there is adapted to be vertically reciprocated a second slide 7 guided by bushes 7′ at both its sides upon said rods 8. The slide 7 carries at its underside the desired punches 15 or other suitable tools adapted for the special purposes of the device, while the dies corresponding 16 are mounted on its upper side of the horizontal slide 9.

The drive of the punching device takes place by means of a worm wheel 2 keyed on the shaft 1, which by means of a worm wheel 3 turns a bolt 4 journaled in the frame 11. The bolt 4 rotates by means of the spur wheels 5 and 14 a shaft 13 journaled in the frame 11 which in its turn by means of the spur wheel 14′ rotates the spur wheel 5′ mounted on the bolt 4′ at the same speed and in the same direction as the spur wheel 5.

The two wheels 5 and 5′ serve as crank discs

for imparting a planetary motion to the punch or stamp slide 7. For this purpose, the toothed wheels or discs 5 and 5′ are with their centers of rotation located at both sides of the slide 7 in the vertical central plane of the to and fro strokes of the die slide 9 and provided with crank pins 6 and 6′, which engage suitable bearings 7″ provided in the side cheeks of the stamp slide 7 symmetrically between the above mentioned guide sleeves 7′. The crank discs 5 and 5′ operated by a common drive consequently impart a planetary motion to the stamp slide 7, said motion being guided horizontally by the rods 10 and vertically by the rods 8, when said discs rotate. By this movement of the slide 7 a reciprocating motion is imparted to the horizontal slide 9 in the direction of the feed of the web and controlled by rods 10 and sleeves 12. The radius r of the circles described by the central axes of the crank pins 6, 6′ corresponds with that of the feed rollers 25, 26 for the paper web, so that the horizontal slide 9 on its forward stroke, and particularly in the middle of the same, will attain the same speed of feed as the paper web at the moment when the crank pins 6, 6′ are in their lowest position. Since in this position the upper slide 7 is likewise in its lowest working position, in which its tools enter the dies of the slide 9, the cutting, punching, stamping, embossing or other treatment of the paper web may take place without the feed of the web being interrupted.

Various modifications may be made without departing from the spirit of the invention.

I claim as my invention:

A device for punching and similarly treating a continuously traveling web, having a die carrying slide adapted to reciprocate in the direction of travel of said web, a punch carrying slide, means for guiding the punch slide vertically upon said die slide, and driving means with opposite crank pins engaging the punch carrying slide on either side of same, said driving means comprising two rotary discs provided with said crank pins and forming spur wheels which are in direct engagement with two other spur wheels mounted on a common shaft, and means for driving one of said crank discs only.

In testimony whereof I have affixed my signature.

PAUL GANGLER.