Sept. 1, 1936. J. FOELLMER 2,052,615

DEVICE FOR INSERTING TABS IN PILES OF SHEETS

Filed June 25, 1934 2 Sheets-Sheet 1

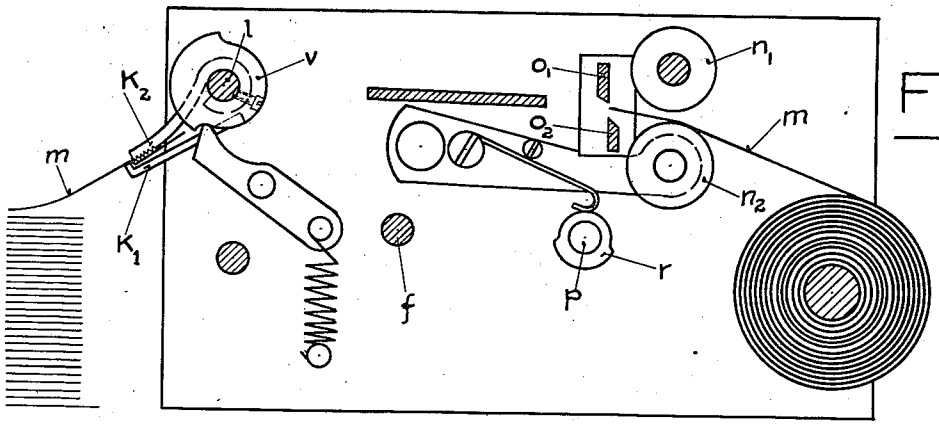


Fig. 4.

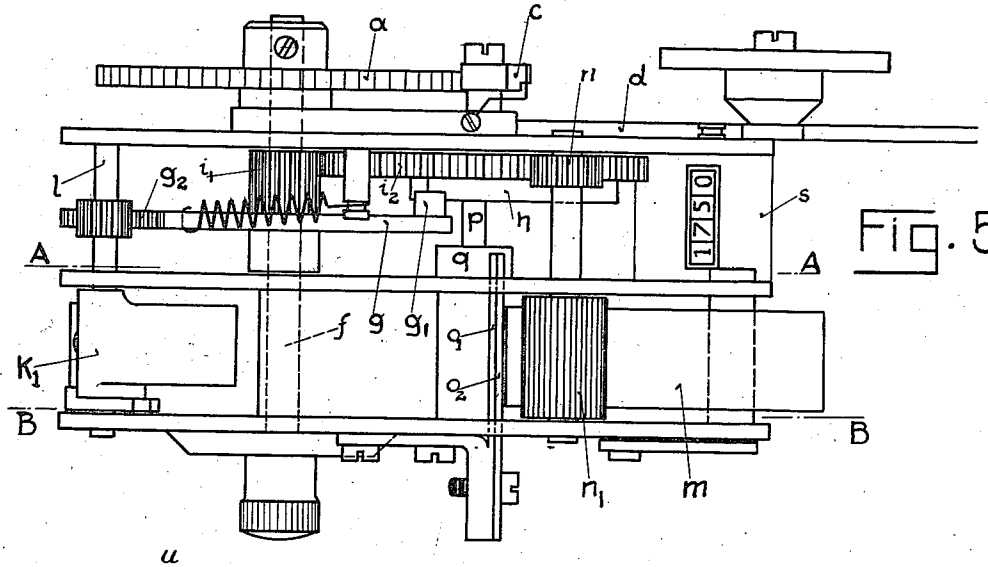


Fig. 5.

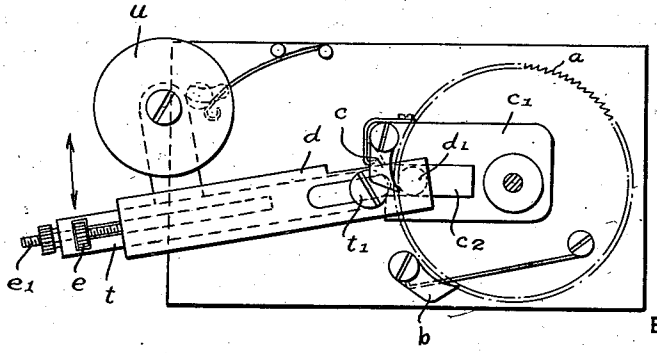


Fig. 1.

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Fig. 2.

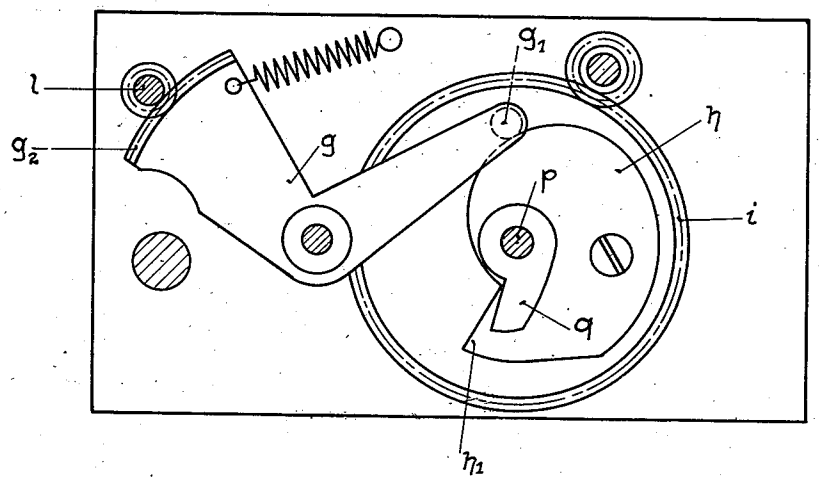
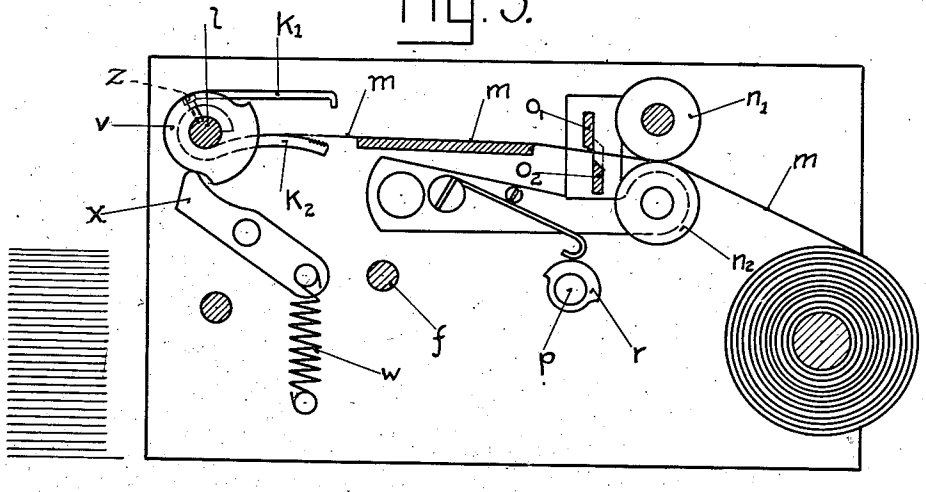


Fig. 3.



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DEVICE FOR INSERTING TABS IN PILES OF SHEETS

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Application June 25, 1934, Serial No. 732,212
In Germany July 1, 1932

4 Claims. (Cl. 93—93)

This invention relates to a device for inserting tabs in piles of sheets.

If a pile of printed sheets as ejected from the press is to be subjected to further treatment including trimming and packing, the sheets have to be counted. For this purpose devices are known already which in connection with a counting mechanism insert tabs between the sheets after a certain number of them has been counted, so that later on only these tabs need be counted.

The invention provides a device of this class, which, compared with existing types, is distinguished by great simplicity and reliability, which is further independent in its operation from the height of the pile and can be easily attached to any printing press.

The main feature of the invention is the provision of a feed wheel which by means of a lever and pawl is moved by the printing machine and, after a certain number of feed motions, reciprocates a gripper which in its end position grips a paper strip or tab and places it by a swinging motion on the top sheet of the pile. The pawl of the feed wheel can be adjusted so that it will feed, at will, one tooth or several teeth so as to vary the number of feed motions, i. e., the number of sheets which can be deposited during one operation cycle of the gripper. The feed wheel cooperates with a cutting device which separates strips of any desired length from a paper reel and supplies them to the gripper by means of rollers arranged so that they convey the paper strip only for a certain period determined by the action of the feed wheel. The device is provided with a counting mechanism so as to permit the reading of the total number of deposited sheets at any time.

One form of the invention is illustrated in the accompanying drawings, in which Figure 1 is a rear side view of the feed wheel with lever and pawl; Fig. 2, a longitudinal section on the line A—A, of Fig. 5; Fig. 3, a longitudinal section on the line B—B, of, Fig. 5; Fig. 4, a longitudinal section on the line B—B, of Fig. 5, but showing the device in operating condition; and Fig. 5, a top view of the device.

Referring to the drawings, the feed wheel a secured to the shaft f is locked by the pawl b and moved by the pawl c which is moved by the rod d on the lever t. The pawl c rests on the oscillatory holder c_1 having a guide c_2 for the pin d_1 at the end of the rod d which is longitudinally slidable and connected with the lever t adapted to swing about the stationary pin t_1. When the rod d is displaced relative to lever t, the distance between the axis of rotation t_1 of the lever t and pin d_1 will be varied and thus also the size of the swinging motion of the holder c_1 and therefore the number of teeth of the feed wheel a which are fed by the pawl c. The amount of displacement between the rod d and the lever t and thus the number of fed teeth of the wheel a can be altered by the set nut e whose screw bolt e_1 is secured to the rod d. The swinging lever t is provided with a member, e. g., a roll u, which is acted upon by the printing machine at each printing operation by suitable means, such as an electromagnet. The shaft f of the feed wheel a carries a rotatable bell crank g (Fig. 2) one arm of which slides with the pin g_1 on the eccentric h, and the other arm terminates in a toothed segment g_2. The eccentric h secured to a shaft p is driven by the feed wheel a by means of a back gear i_1 and i_2 (Fig. 5) at a ratio of, say, 1:5. One arm of the bell crank g sliding with the pin g_1 on the eccentric h acts with its other arm to the free end of which the toothed segment g_2 is attached, upon a pinion disposed on the shaft l of a gripper k_1 k_2.

This gripper consists of two claws k_1 and k_2 and a stop disc v firmly connected with the claw k_1. The disc v with the claw k_1 is loosely rotatable on the shaft l whereas the claw k_2 is clamped to the shaft l by means of a screw z which also serves as driver for the claw k_1 by striking this claw and carrying it along when the gripper returns to procure a new strip of paper and has been opened. A braking lever x loaded with a spring w rests on the edge of the disc v and has a double effect. In the first place, it brakes the claw k_1 until the gripper opens, owing to the rotation of the claw k_2, and the screw on the shaft l drives the claw k_1; and it further limits the motion of the claw k_1 when the gripper turns back to grip a new strip. Speaking more accurately, the lever x holds the claw k_1 for a short time during which period the claw k_1 continues to rotate. In this way, the gripper k_1 k_2 opens to be able to catch the ends of the paper strip m.

The strip m is fed from a reel over two rollers n_1 and n_2 and shears o_1 and o_2 to the gripper k_1 k_2. The roller n_1 is continually driven from the main shaft f or the feed wheel a by the pinion n, and the other roller n_2 is disposed on an oscillating lever and periodically pressed against the continually rotating roller n_1 by the eccentric r arranged on the shaft p. The result is that the paper strip m is caught only periodically by

the rollers n_1 and n_2 and moved forward, the strip remaining stationary during the cutting step. A third eccentric q secured to the shaft p moves the cutting device o_1 and o_2 in such a way that a strip of desired length is cut off. The device is provided with a counter s from which the total number of sheets deposited can be read off.

The device functions as follows:

Assumed the feed wheel a has 100 teeth, and it is desired to insert a tab after every 250 sheets. The distance between the rotary axis t_1 and the pin d_1 on the lever t, d is first adjusted by means of the screw e, e_1, so that the pawl c, at each swinging motion of the lever t, d, will move the feed wheel a to the extent of two teeth. When the lever t, d has therefore been actuated 250 times, or 250 sheets have been ejected, by the printing machine, the feed wheel a will have completed five revolutions. During motion of the feed wheel a the sliding pin g_1 secured to one arm of the freely rotatable bell crank g lies on the eccentric h secured to the shaft p which is driven from the shaft f at a ratio of 1:5, so that the shaft p completes one revolution to every five of the shaft f. By means of the eccentric h the sliding pin g_1 is moved outwardly, and the toothed segment g_2 on the other arm of the bell crank g will thus rotate the pinion on the shaft l carrying the two gripper claws k_1 and k_2, the latter one of which being firmly connected with the shaft l by means of clamping screw. The shaft l will rotate, owing to the action of the bell crank g and the toothed segment g_2. During this rotation of the shaft l, the rotation of the disc v and thus of the claw k_1 will be stopped for a distance by the action of the braking lever x, so that the two claws k_1 and k_2 form a jaw opening towards the paper strip m (Fig. 3). In the meantime, the eccentric r has pressed the roller n_2 against the roller n_1 and thus slowly moved the strip m until the latter projects into the jaw formed by the gripper claws k_1, k_2. The eccentric q secured to the shaft p will then abut against the knife o_2, press it against the top knife o_1 and thus cut off a strip of paper. In the meantime, the sliding pin g_1 of the bell crank g has advanced on the eccentric h to a point h_1 permitting approach to the shaft p, so that the pinion on the shaft l will slightly turn back to provide for the closing of the gripper k_1, k_2. During further motion of the eccentric h the sliding pin g_1 of the bell crank g will finally reach a point h_1 at which the eccentric h has a notch. At this point the sliding pin g_1 will suddenly approach the shaft p, so that the shaft l will be rapidly turned in opposite direction by the toothed segment g_2. This will cause rotation of the gripper k_1, k_2 which has caught the cut paper strip, through an angle exceeding 180°, and the gripper will then place the strip on the pile of sheets and open, whereupon the operation cycle will begin again.

I claim:—

1. A device for inserting tabs in sheet piles in cooperation with a printing machine, comprising, in combination, a shaft, a feeding wheel secured to said shaft, a pawl for locking said wheel, a stationary pin, a lever swingingly connected with said pin, a longitudinally displaceable rod connected with said lever, a second pawl for moving said feed wheel, means connecting said second pawl with said rod, means actuated by a printing machine at each operation thereof and connected with said lever for moving said feed wheel to a predetermined degree, a reciprocating gripper, means for opening and closing said gripper, supply rollers for periodically feeding a paper strip to said gripper, means for driving said rollers from said feed wheel shaft, and means for connecting said gripper with said feed wheel to cause the gripper to insert the paper strip in the sheet pile after a predetermined number of revolutions of said feed wheel.

2. A device according to claim 1, comprising means for adjusting the feed wheel moving pawl to move the wheel to a predetermined degree.

3. A device according to claim 1, said last named means including a bellcrank, loosely arranged on the feed wheel shaft, for swinging the gripper to a predetermined degree and reciprocating the motion thereof, one arm of said bell crank controlling the gripper, a second shaft, means for controlling said second shaft with the feed wheel shaft and an eccentric carried by said second shaft and actuating the other arm of said bell crank.

4. A device according to claim 1, said last named means including a bellcrank, loosely arranged on the feed wheel shaft, for swinging the gripper to a predetermined degree and reciprocating the motion thereof, one arm of said bellcrank controlling the gripper, a second shaft, means for controlling said second shaft with the feed wheel shaft and an eccentric carried by said second shaft and actuating the other arm of said bellcrank; a cutting device for separating a strip of paper from a reel, driving means for said device and an eccentric for periodically pressing one of the paper supply rollers against the other to move the paper or to keep it stationary during cutting, said last named eccentric and said driving means for the cutting device being arranged on said second shaft.

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