

1,063,562.

FIG. 1

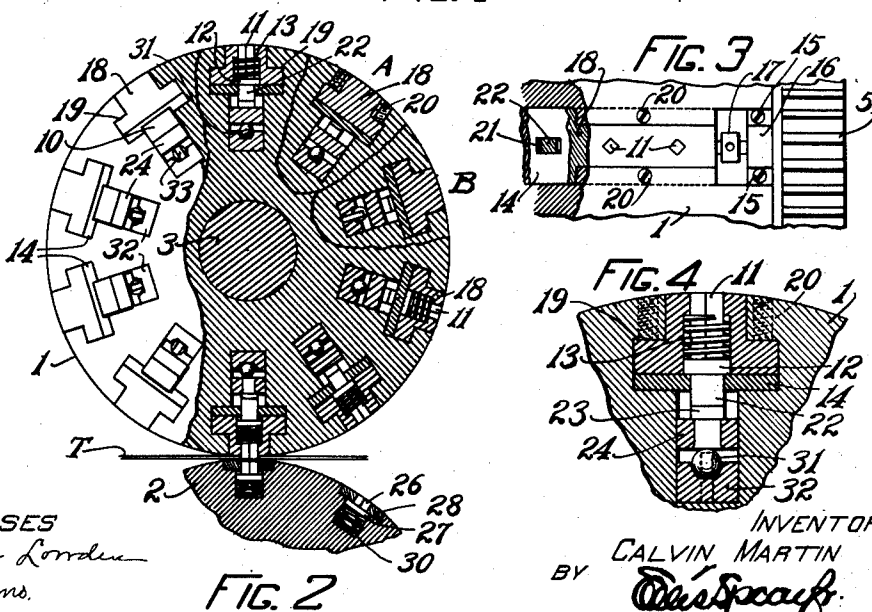


FIG. 3

FIG

WITNESSES
Victoria Lorrden
R. B. Ellms.

INVENTOR
BY CALVIN MARTIN
Calvin Martin
ATTY.

UNITED STATES PATENT OFFICE.

CALVIN MARTIN, OF PEABODY, MASSACHUSETTS, ASSIGNOR TO CARTER TICKET COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

TICKET-PUNCHING DEVICE.

1,063,562.

Specification of Letters Patent.

Patented June 3, 1913.

Application filed March 16, 1912. Serial No. 684,325.

To all whom it may concern:

Be it known that I, CALVIN MARTIN, a citizen of the United States, residing at Peabody, county of Essex, Commonwealth of Massachusetts, have invented certain new and useful Improvements in Ticket-Punching Devices, of which the following is a specification.

This invention relates to punching machines and particularly to that class used for perforating or otherwise marking strips of paper.

The rapid and accurate dieing out of strip stock has proven a matter of great practical difficulty for practical commercial operation. This is especially true in ticket or check printing where the cutting and punching forms part of a continuous operation.

To the end therefore of producing a device capable of operation in such a system I have devised my present invention.

The construction and operation of the invention will be fully described in the specification which follows.

In the drawings I have shown an embodiment which I have found satisfactory in operation and to this I shall make particular reference by the use of like reference numerals similarly used throughout specification and drawings.

Figure 1 is an elevation of so much of a punching machine as is necessary to illustrate my invention, it being partly in section. Fig. 2 is a transverse section of the upper roll and a portion of the lower roll. Fig. 3 is a fragment of Fig. 1 in plan. Fig. 4 is a connection of a unit male die, enlarged.

In my machine I provide a pair of rolls 1 and 2, keyed or otherwise fast on the shafts 3 and 4 respectively, which are suitably mounted to contact with each other through the medium of a strip of paper or tickets T. The rolls 1 and 2 are uniformly driven by gears 5 and 6. The roll 1 carries ten lines or rows of male dies adapted to register with a similar series of female dies on the roll 2 so as to punch or cut out small portions of the paper strip T.

The operation of the female dies 28, is effected by their registration with the male dies 11 as will be later described. The male dies are operated by a track cam 7 in which the shaft 3 is journaled as at 8. This cam 7 is provided with a cam-groove 9, adapted

to engage a series of cam-rolls 10, one for each series of male dies to cause simultaneous operation of each series at the moment of registering with the female dies 28 of the roll 2. Each unit die is similarly mounted within its respective roll, the male dies 11 of a series being supported and operated through the agency of blocks and bars suitably housed within the roll 1, as will be described.

The male dies 11 are here shown as of square cross-section, although they may be of any desired shape. They are formed with a collar 12 which supports a coiled spring 13 surrounding the shank of the die 11 and operating to keep said die retracted within its recess in the roll 1. In this position the collar 12 bears against a base plate 14, rigidly secured within its recess in the roll 1 by screws 15 which also serve to hold in place an adjusting block 16. The block 16 is centrally threaded to receive one end of a right and left adjusting screw 17, the opposite end being threaded into the die-block 18 which supports one of the series of dies 11.

The die-block 18 is shouldered, as at 19, to permit set-screws 20 to fasten it in desired position, and the plate 14 is provided with a series of rectangular openings 21 adapted to receive the squared heels 22 of the dies 11 so as to permit adjustment of the die-block 18. These heels 22 are beveled at their extremities so as to form cam or wedge surfaces adapted to cooperate with similar wedge shaped surfaces on the pins 23 for the purpose of projecting the dies 11, against the action of the springs 13, slightly beyond the surface of the roll 1 at the desired time.

The pins 23 are fast on a slide-bar 24, said bar being provided at one extremity with a cam-roll 10, previously mentioned. The bar 24 is supported on balls 31 which rest on a grooved plate 32. A slight rise in the cam-groove 9 as indicated at 25 (Fig. 1) causes the slide-bar 24 to move inward at the moment of contact between the dies 11 and the strip T; and the consequent outward movement of the dies 11, due to the wedge-shaped heels 22 and pins 23, perforates the strip T as seen at H, Fig. 1.

The female dies 28 are of unit construction, so one only need be described. The lower 26 is mounted within a recess in the

roll 2. A collar 27 contacting with the die plate 28, secured by screws 29 to hold it in place, keeps the end of the follower 26 flush with the periphery of the roll 2. The spring 30 insures this position but permits a slight retraction when the die 28 meets the die 11 through the strip T.

The operation of my device is as follows: As the strip T is fed between the rolls 1 and 2, the dies 11 and 28 come into alignment as shown in Fig. 2. At this point, the slide 24 is thrust longitudinally under the action of the rise 25 of the track cam 7, acting on the roll 10. This advances the pins 23 so that their inclined surfaces pass over the beveled heels 22 of male dies 11. The dies 11 are therefore thrust through the dies 28 punching out a corresponding portion of the strip T. The cam 7 immediately withdraws the slide 24, allowing the springs 13 to withdraw the dies 11 from the dies 28. This withdrawal of the die 11 from the female die 28 permits the rise of the follower 26 under the action of this spring 30. The follower therefore clears the opening of the die 28 from the blank punched out by the male die 11. The rolls continue their rotation, presenting the next series of dies which in turn perform their operation and withdraw. In this manner I am able to punch with great rapidity a continuously moving strip of ticket or like stock, each punching being performed with completeness of operation and certainty of result.

Various modifications may obviously be made in the details of construction and arrangement of my device, all without departing from the spirit of my invention if within the limits of the appended claims.

What I therefore claim and desire to secure by Letters Patent is:

1. In a ticket punching machine a pair of rolls, a plurality of longitudinal series of die pairs carried by said rolls, each of said die pairs comprising a male member and a female member, a spring for holding said male member retracted, a longitudinal slideway beneath said male dies, a slide movably mounted in said slideway, effective to shift said plate upon the coincidence of each of said series of male and female dies, said slides having inclined surfaces disposed to contact with said male dies, said female dies

each comprising a die plate, a shouldered follower having an end projecting within the opening of said die plate and a spring below said shoulder and normally holding said follower with its end within said die.

2. In a ticket punching machine a pair of rolls, a plurality of longitudinal series of die pairs carried by said rolls, each of said die pairs comprising a male member and a female member, a spring for holding said male member retracted, a longitudinal slideway beneath said male dies, a slide movably mounted in said slideway, a plurality of balls between said slide and said slideway, a cam having a cam slot effective to shift said slide upon the coincidence of each of said series of male and female dies, said slides having inclined surfaces adapted to contact with said male dies, said female dies each comprising a die plate, a shouldered follower having an end projecting within the opening of said die plate and a spring control below said shoulder normally holding said follower with its end within said die.

3. In a ticket punching machine a pair of rolls, a plurality of longitudinal series of die pairs carried by said rolls, each of said die pairs comprising a male member and a female member, a spring for holding said male member retracted, an inclined heel, a longitudinal slideway beneath said heel, a slide movably mounted in said slideway, a plurality of balls between said slide and said slideway, a cam, having a cam slot effective to shift said slide upon the coincidence of each of said series of male and female dies, a plurality of studs on said slides and having inclined surfaces adapted to contact with said beveled heels and said male dies, said female dies each comprising a die plate, a shouldered follower having an end projecting within the opening of said die plate and a spring control below said shoulder and normally holding said follower with its end within said die.

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

CALVIN MARTIN.

Witnesses:

JOSEPH W. DOWNS,
RUTH B. ELLINS.