O. & H. HOENACK.

TELEGRAPHIC TAPE PERFORATOR.

APPLICATION FILED AUG. 15, 1913. RENEWED JAN. 18, 1915.

1,150,765.

Patented Aug. 17, 1915.

2 SHEETS—SHEET 1.

Fig. 1.

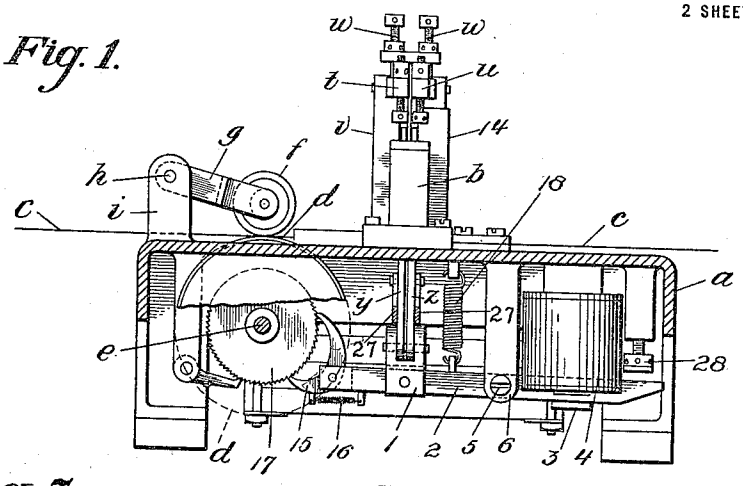


Fig. 7.

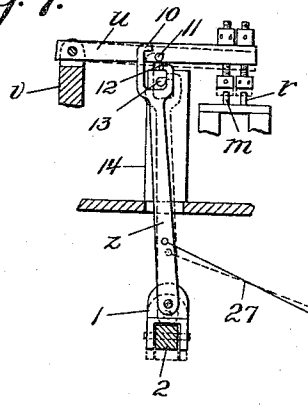


Fig. 8.

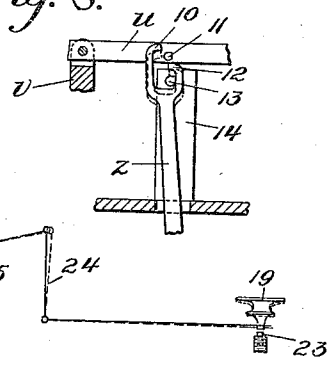
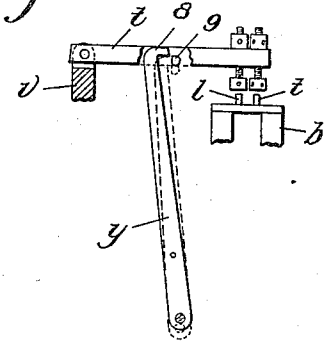


Fig. 9.



Witnesses:
L. L. Browning
M. C. Brady

Otto Hoenack
Hugo Hoenack
Inventors
By their Attorney
Edward C. Davidson

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

O. & H. HOENACK.

TELEGRAPHIC TAPE PERFORATOR.

APPLICATION FILED AUG. 15, 1913. RENEWED JAN. 18, 1915.

1,150,765.

Patented Aug. 17, 1915.

2 SHEETS—SHEET 2.

Fig. 2.

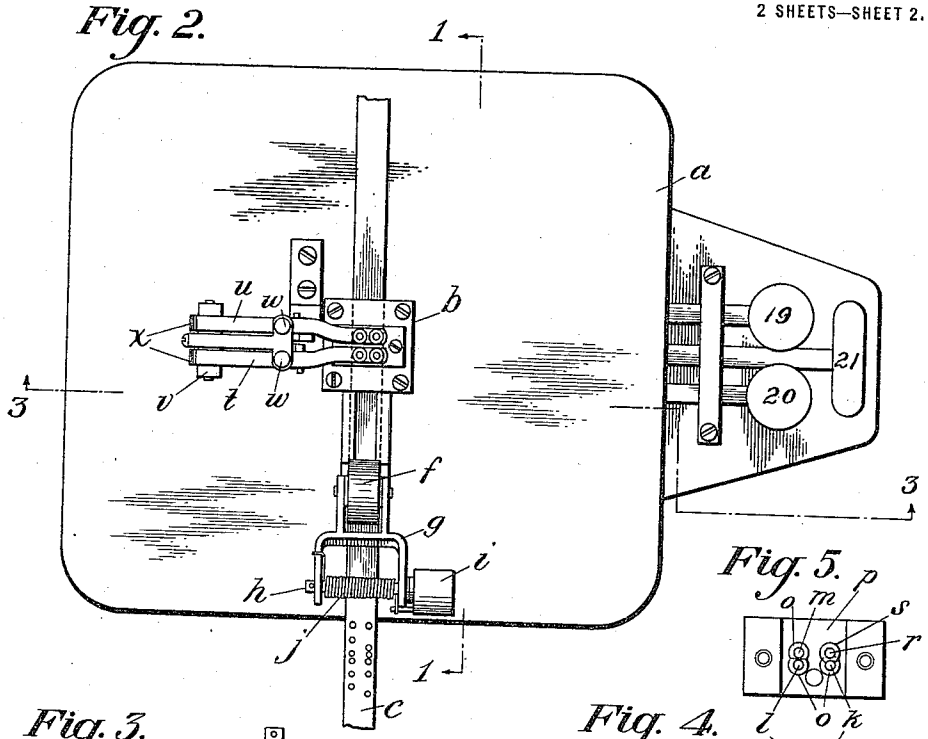


Fig. 5.

Fig. 3.

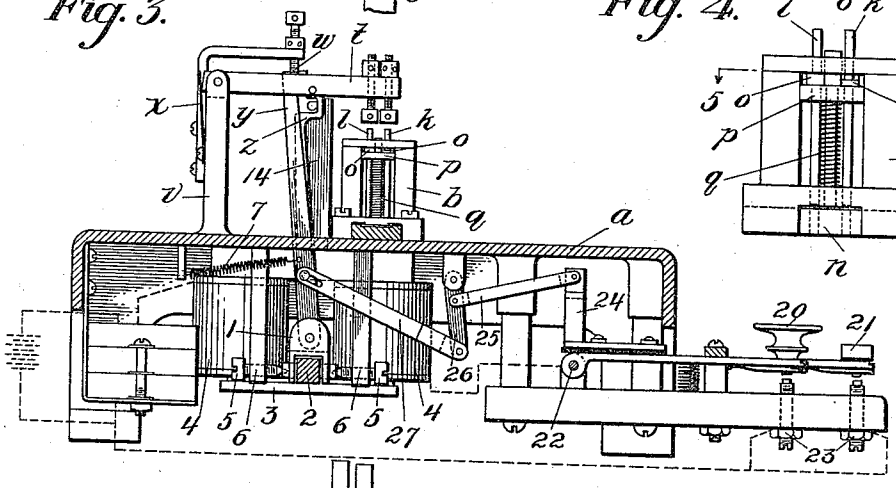


Fig. 4.

Fig. 6.

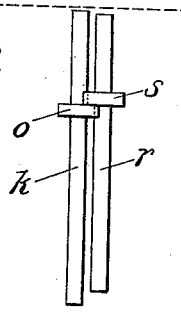
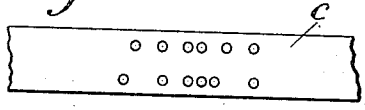


Fig. 10.



Witnesses:
L. L. Browning
M. C. Brady

Otto Hoenack
Hugo Hoenack
Inventors
By their Attorney
Edward C. Davidson

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

OTTO HOENACK, OF ARLINGTON, NEW JERSEY, AND HUGO HOENACK, OF NEW YORK, N. Y., ASSIGNORS TO R. H. SELLERS COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

TELEGRAPHIC-TAPE PERFORATOR.

1,150,765. Specification of Letters Patent. Patented Aug. 17, 1915.

Application filed August 15, 1913, Serial No. 784,865. Renewed January 18, 1915. Serial No. 2,981.

To all whom it may concern:

Be it known that we, OTTO HOENACK, residing in Arlington, in the county of Hudson, State of New Jersey, and HUGO HOENACK, residing in the borough of the Bronx, city, county, and State of New York, and both citizens of the United States of America, have invented an Improved Telegraphic-Tape Perforator, of which the following is a specification.

The object of this invention is to produce a simple and effective machine for puncturing a transmitting tape adapted for use in automatic telegraphy such as the Delany system. The perforations are made in the tape in two rows, a dot being represented by a perforation in each row transversely right-angular arranged, and a dash by a perforation in each row obliquely arranged. The device for puncturing the tape comprises three punches and a plunger vertically arranged, two levers, one adapted to depress two of the punches to form a dot character and the other one adapted to depress the other punch, and the plunger which is provided with a collar arranged to act on one of the punches operated by the first lever to form a dash character. Three keys are employed adapted to close an electric circuit to energize an electric motor having an armature lever provided with means for feeding the tape and carrying controlling bars set to act on the punch levers by the dot and dash keys, the third key merely closing the circuit to feed the tape for spaces between the characters.

These features with other details of construction will now be fully described and are illustrated in the accompanying drawings in which—

Figure 1, is a vertical section, showing the principal working parts of the machine, taken on line 1, 1, Fig. 2: Fig. 2, a plan view of the machine: Fig. 3, a vertical section, taken on line 3, 3, Fig. 2. Fig. 4, an enlarged elevation of the punch and die housing: Fig. 5, a plan of the same on line 5, 5, Fig. 4: Fig. 6, an enlarged elevation of one of the punches and its actuating plunger: Fig. 7, a detached view of the dash forming punch lever with its controlling rod and key connection. Fig. 8, a similar view of the lever and its controlling bar to clearly show the stop function of said rod: Fig. 9, a detached view of the dot forming lever and its controlling bar: and Fig. 10 illustrates the arrangement of the punctures in a strip to form dash and dot characters.

Upon the frame *a* is mounted the punch holder or housing *b* provided with the usual guide way for the tape or strip of paper *c* which is drawn through said guide way by a feed roller *d* carried by a shaft *e* and extending through an opening in the bed of the frame. A co-acting pressure roller *f* is held in a light frame *g* on a stud *h* extending from a post *i* on the bed and is pressed toward the feed roller *d* by a torsional spring *j* surrounding the stud *h'*. Three punches *k*, *l*, *m*, are fitted to slide vertically in the housing and act on a die *n* held in the lower part of the housing. Each punch is provided with a collar *o* resting on a pusher plate *p* upwardly pressed by a spring *q* on a guiding stem supporting the plate. Alongside of the front punch *k* is a plunger or pusher rod *r* mounted in the punch housing and plate *p* as are the punches but which is shorter than they (Fig. 6) and which does not co-act with the die. This plunger *r* is provided with a collar *s* that lays over the collar *o* of the punch *k*, the arrangement being such that the punch *k* may be depressed to perforate the tape on the die *n* without moving the plunger, and may also be operated when the plunger is depressed. Above the punches extend two levers *t* and *u* pivotally supported on a standard *v*, and each held in upward position against an adjustable stop *w* by a spring *x* secured to the standard and acting on the ends of the levers. The levers *t* and *u* have the usual adjustable screws to act on the tops of the punches. The lever *t* operates the punches *k* and *l* that are transversely arranged over the tape at right angles thereto; and the lever *u* operates the punch *m* and the plunger *r*, effecting punctures in the tape in a line oblique thereto.

The lever *t* is actuated by a controlling bar *y* and the lever *u* by a controlling bar *z* pivotally carried at their lower ends in a yoke 1 which is pivotally connected to a lever 2 arranged at right angles to the levers *t*, *u*. This lever 2 carries the armature 3 of an electro magnet 4 secured to the underside of the bed of the machine, said lever being held to rock on screws 5 passing

through the lower ends of brackets 6. The controlling bars y and z are held in a rearward direction by springs 7, the bar y having at its upper end a hook 8 adapted, when the bar is moved forward, to engage a pin 9 on the side of the lever t, as shown at Fig. 9: and the bar z has a forked end, one branch of which is provided with a hook 10 adapted to engage a pin 11 on the lever u and the other branch with a hook 12, somewhat lower than the hook 10, and adapted to engage with a stop pin 13 extending from the side of a standard 14. The arrangement is such that with the bar z held by its spring in rearward position and the magnet lever 2 actuated, the hook 10 will be inoperative and the hook 12 will limit the movement of said lever by contacting with the pin 13, thereby limiting the movement of the armature lever so as to cause the tape to be fed its shortest distance after a dot character has been formed by the actuation of the lever t; and also for effecting suitable spacing between the characters on the tape. The hook 10 will be in position to actuate the lever u to form a dash character when the bar z is moved into forward position and the hook 12 will then pass by the stop pin 13, as indicated by the dotted lines shown in Fig. 7.

On the outer end of the armature lever 2 is pivoted a pawl 15 provided with a spring 16 and arranged to act on a ratchet wheel 17 secured to the shaft e of the feed roller d. The feeding action occurs when the pawl end of levers 2 is raised by a spring 18 and the armature 3 moved away from the magnet 4 after being attracted thereby.

Three keys, 19, 20, 21, are by their levers mounted to rock on a shaft 22 and are upheld by springs in the usual manner. All of their contact stops 23 are electrically connected and in a circuit which includes a source of current as a battery, the magnet coils 4, and the levers of the keys 19, 20, 21. The battery and circuit wire are diagrammatically illustrated by dotted lines in Fig. 3, it being understood, of course, that the simple system of wire connections here required may be arranged in any suitable manner. The levers of the keys 19 and 20 are connected to the controlling bars u and t respectively by similar bar and link connections, shown in full in Fig. 3 and by single lines in Fig. 7. On each of the key levers is secured an insulated arm 24 from which extends a link 25 pivoted to a lever 26 extending downwardly from a rocking connection on the underside of the bed of the frame a. Between the lower ends of these levers 26 and the controlling bars t and u are links 27 connected to said bars by studs and slots (Fig. 3) so that the armature lever 2 is free to move without disturbing the keys 19, 20, and such movements occur when the tape is moved for spacing between the characters.

The manipulation of the space key 21 merely closes the magnet circuit, the lever 2 then being attracted until arrested by the hook 12 contacting with the fixed stop 13; and the reverse movement of the lever under influence of its spring 18 causes the wheel d to feed the tape the necessary spacing distance. The same movement of the wheel d, controlled by the same means, occurs when the dot key 20 is depressed which key first moves the controlling bar y so that its hook 8 may engage the pin 9 of the lever t and then closes the electric circuit, punctures being made by punches k and l producing a dot character on the tape. When dash key 19 is depressed, the controlling bar z is first moved into position to bring hook 10 over pin 11, causing, on further depression of the key, actuation of lever u and then the electric circuit is closed by the final movement of the key (Fig. 7 dotted lines). The armature lever 2 is then stopped by screw 28, as the hook 12 has passed by the pin 13, so that upon the circuit being again opened, spring 18 causes wheel d to feed the tape a greater distance than is required for a dot or a space feed, as a dash character, which requires more feed of tape than a dot character, is then produced on the tape by the lever u acting directly on the punch m and indirectly on the punch k through the medium of the plunger r.

The operation of this machine is illustrated in Fig. 10 which shows a piece of tape with characters produced by manipulating the keys in the following order,—dash key 19, space key 21, dot key 20, space key 21, dot key 20 twice, dash key 19, space key 21 and dot key 20.

We claim:

1. A telegraphic tape perforating machine, comprising punches adapted to form dot and dash characters in the tape, an electro motor having a pivoted armature lever, keys for closing the motor circuit and means for operating the punches comprising controller bars operated by the armature lever and adapted to be set in operative position by the keys before the motor circuit is closed thereby.

2. A telegraphic tape perforating machine, comprising punches adapted to form dot and dash characters in the tape, an electro motor having a pivoted armature lever, keys for closing the motor circuit, means for operating the punches comprising controller bars operated by the armature lever and adapted to be set in operative position by the keys before the motor circuit is closed thereby and means actuated by the armature lever for feeding the tape under the punches.

3. A telegraphic tape perforating machine, comprising punches adapted to form

dot and dash characters in the tape, an electro motor having a pivoted armature lever, keys for closing the motor circuit, a spring for retracting the armature lever, means for operating the punches comprising controller bars operated by the armature lever and adapted to be set in operative position by the keys before the motor circuit is closed thereby and means actuated by the armature lever, as it is retracted by its spring, for feeding the tape under the punches.

4. A telegraphic tape perforating machine, comprising punches adapted to form dot and dash characters in the tape, an electro motor having a pivoted armature lever, keys for closing the motor circuit, two levers extending over the outer ends of the punches, one adapted to depress two punches transversely right angularly arranged to the tape and the other one adapted to depress two punches arranged obliquely to the tape, a controller bar carried by the armature lever for each of the punch operating levers and means connecting said controller bars to the dot and dash keys respectively, whereby when either key is manipulated to close the motor circuits its controller bar will be caused to act on the lever of the punches adapted to produce the character represented by the key manipulated.

5. A telegraphic tape perforating machine comprising a punch housing having a guide way for the tape, two punches arranged at right angles to the tape in the guide way, a third punch and a plunger rod alongside the two right angularly arranged punches held in the housing, a collar on the plunger and a collar on the adjacent punch located beneath the plunger collar, a lever adapted to act on the two right angularly arranged punches to produce a dot character, and a lever adapted to act on the other punch and the plunger to produce a dash character on the tape and means for operating the lever.

6. A telegraphic tape perforating machine comprising a punch housing having a guide way for the tape, two punches provided with collars and arranged at right angles to the tape in the guide way, a third punch and a plunger rod alongside the two right angularly arranged punches held in the housing, a collar on the plunger and a collar on the adjacent punch located beneath the plunger collar, a pusher plate through which all of the punches pass and upon which the collars of the punches rest, a spring for upholding the pusher plate, a lever adapted to act on the two right angularly arranged punches to produce a dot character, and a lever adapted to act on the other punch and the plunger to produce a dash character on the tape, and means for operating the levers.

7. A telegraphic tape perforating machine comprising punches adapted to form dot and dash characters in the tape, an electro motor having a pivoted armature lever, keys for closing the motor circuit, means for operating some of the punches and provided with a laterally extending pin, a controlling bar carried by the armature lever having a forked end, a hook on one of the branches of the fork, a fixed stop pin against which the said hook acts to limit the movement of the armature lever with the controlling bar in normal position, a connection between the controlling bar and one of the keys, a hook on the other branch of the fork of the controlling bar adapted to engage with the pin of the punch controlling means when the operating key is depressed, the other hook being then free to pass by the stop pin.

8. A telegraphic tape perforating machine comprising punches adapted to form dot and dash characters in the tape, an electro motor having a pivoted armature lever, keys for closing the motor circuit, two levers extending over the outer ends of the punches, one adapted to depress two punches transversely right angularly arranged to the tape and the other one adapted to depress two punches arranged obliquely to the tape, a controller bar carried by the armature lever for each of the punch operating levers provided with laterally extending pins, a hook on the controlling bars adapted to engage said pins, a stationary pin, another hook on one of the controlling bars which contacts with the stationary pin to limit the movement of the armature lever and means connecting said controller bars to the dot and dash keys respectively, whereby when either key is manipulated to close the motor circuit its controller bar will be caused to act on the lever of the punches adapted to produce the character represented by the key manipulated.

In testimony whereof, we have hereunto subscribed our names.

OTTO HOENACK.
HUGO HOENACK.

Witnesses:
R. H. SELLERS,
C. A. AUER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."