

H. ANGEL.
TAPE PERFORATOR.
APPLICATION FILED NOV. 27, 1908.

944,123.

Patented Dec. 21, 1909.
2 SHEETS—SHEET 1.

Fig. 1.

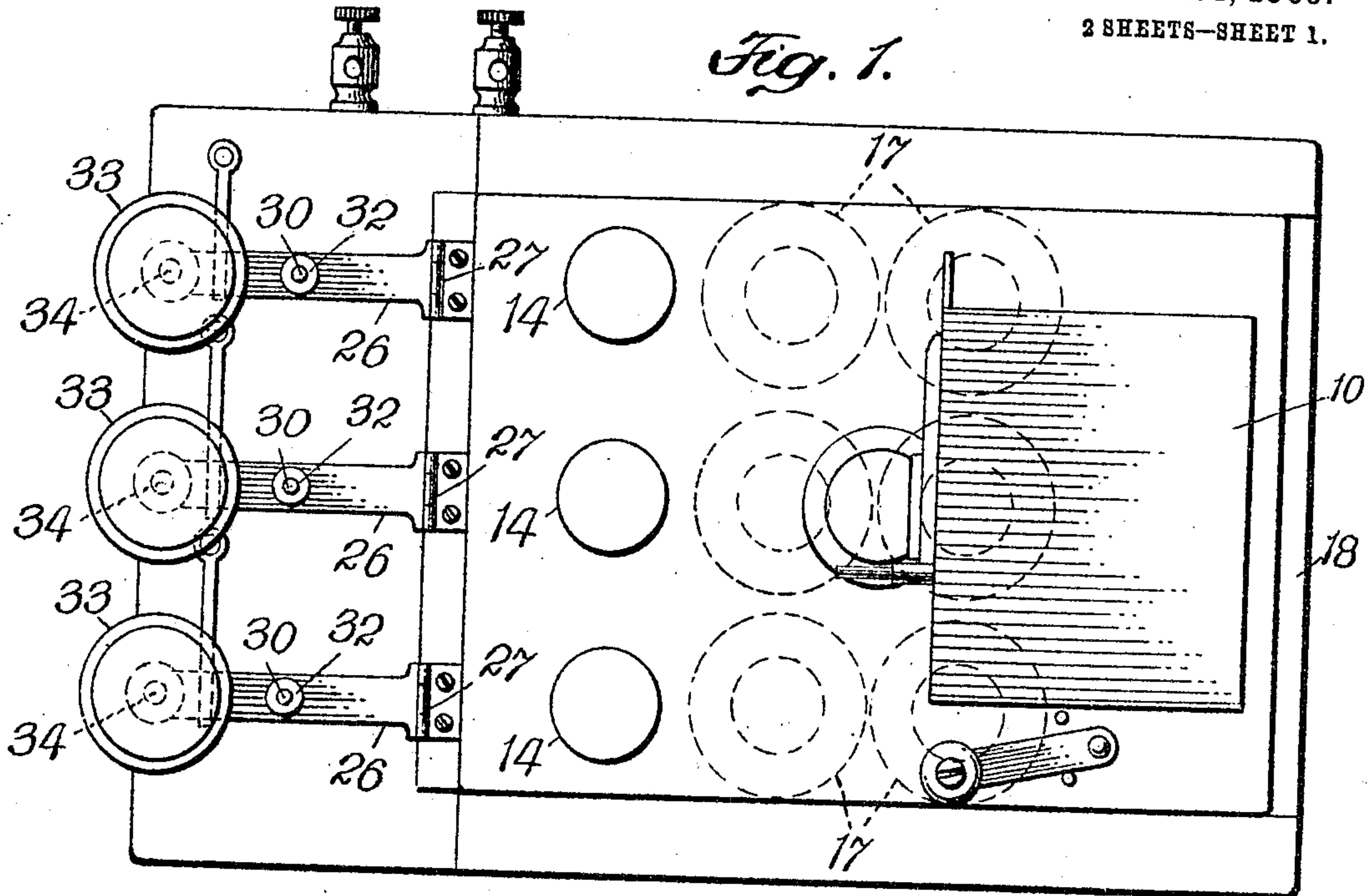
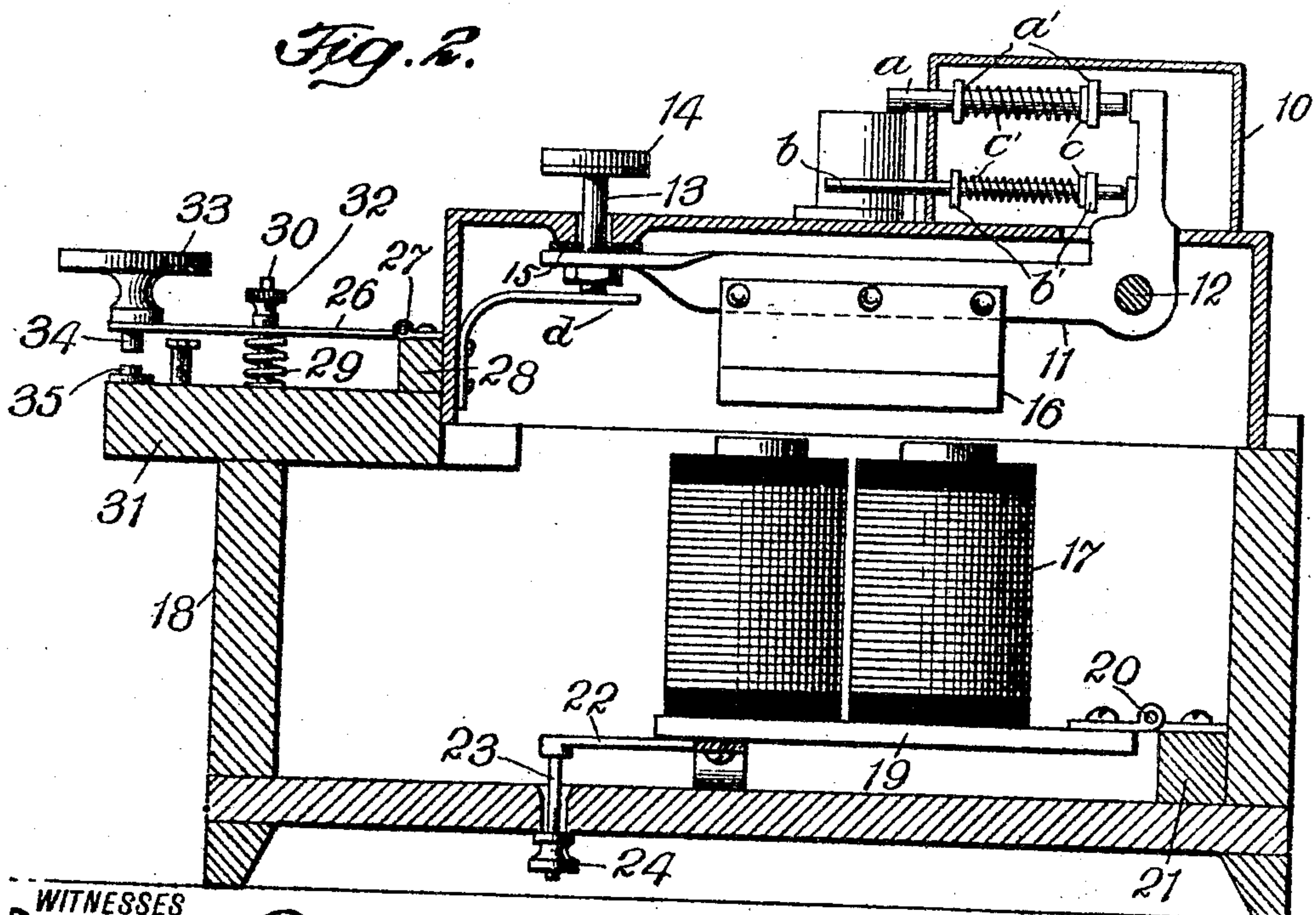


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

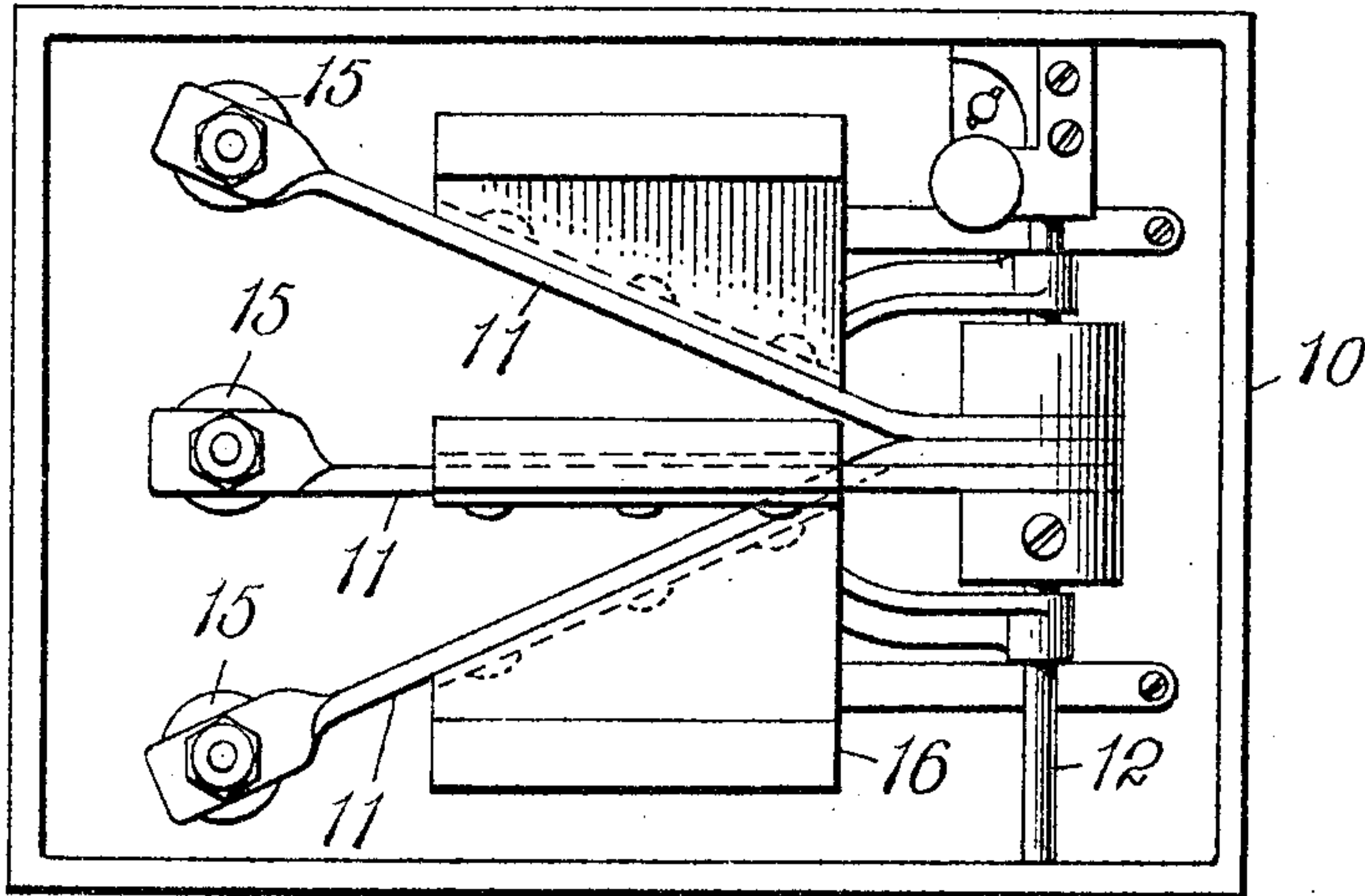
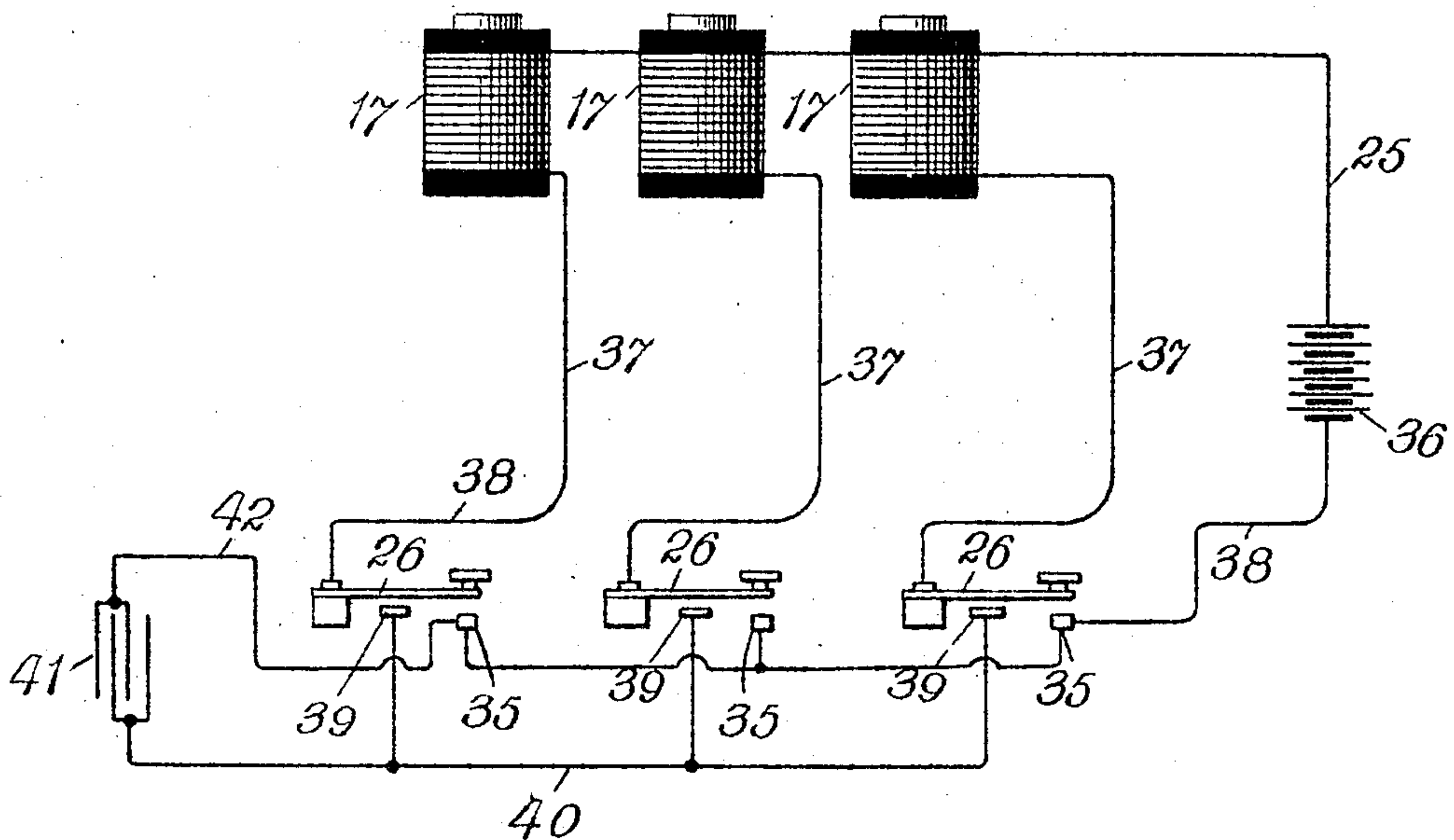


Fig. 4.



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TAPE-PERFORATOR.

944,123.

Specification of Letters Patent. Patented Dec. 21, 1909.

Application filed November 27, 1908. Serial No. 464,554.

To all whom it may concern:

Be it known that I, HERBERT ANGEL, a subject of the King of England, and a resident of New York, borough of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Tape-Perforators, of which the following is a full, clear, and exact description.

This invention relates more particularly to an electro mechanical perforator which is adapted for perforating tape used in connection with cable messages.

The primary object of the invention is to provide simple and efficient means whereby a perforator of the ordinary construction may be operated either electrically or mechanically so that in case the electrical feature of the invention becomes inoperative from any cause whatever the mechanical means may be used to operate the perforator or vice versa, thus overcoming the objections to this class of perforators as ordinarily constructed.

A further object of the invention is to provide simple means whereby a perforator of the usual or of any preferred form may be operated electrically, and to provide means whereby a plurality of coils for operating the levers of the perforator may be used in connection with a single condenser instead of a condenser for each coil or sets of coils.

With these and other objects in view, the invention will be hereinafter more particularly described with reference to the accompanying drawings, which form a part of this specification, and will then be pointed out in the claims at the end of the description.

In the drawings, Figure 1 is a plan view of one form of device embodying my invention. Fig. 2 is a longitudinal section, partly in elevation, of the device. Fig. 3 is an inverted plan of the perforator element; and Fig. 4 is a diagrammatic view showing the electric connection between the coils and a single condenser used in connection with the coils.

In the class of perforators used in connection with cable messages, the tape is perforated centrally and lengthwise thereof and above and below the central line of perforations are other perforations to indicate dots and dashes whereby the words of the message may be readily ascertained.

Any preferred form of perforating mechanism may be employed and I have illus-

trated in Fig. 2 merely one form, wherein perforating elements *a* and *b* are shown mounted in guides *a'* and *b'*. A coiled spring *c* encircles each perforating element, abutting at one end against a collar *c'*, for restoring the perforating element to its normal position. For each line of perforations there is a perforating element, and these elements are as above stated arranged within a casing 10 and are adapted to be operated by a lever 11 pivoted at 12 under the casing 10, and on the outer end of each of said levers is a rod or stem 13 on the outer end of which is a button or device 14 which is adapted to be struck by a mallet or otherwise in the usual manner to move each lever independently, there being a lever for each perforator element. The levers may be normally forced in one direction by springs *d* or otherwise, and around the stem or rod 13 may be arranged a washer 15 of a yielding material to prevent the levers from engaging directly against the casing 10, all of which may be of the usual or of any preferred construction.

To operate the levers 11 independent of the buttons or knobs, I provide each lever 11 with an armature 16, and each armature is adapted to be operated by one or more coils 17. These coils 17 may be supported within a casing 18 so as to rest upon a bar 19, and this bar 19 may be hinged, as at 20, to a cross-bar 21, and the other end of said bar 19 may be held to an arm 22 which may be connected to a rod or stem 23 in which is a thumb nut 24 to adapt the coils to be adjusted relatively to the armature 16. As shown there are a set of coils for each armature 16 and its lever 11, and in an electric circuit 25 are arranged a plurality of keys 26. These keys 26 are supported upon the casing 18 adjacent to the perforator casing 10, there being as many keys as there are sets of coils or levers 11. The keys 26 are pivoted at 27 to a supporting bar 28 at one end and are normally forced upward by a spring 29 arranged around a stem 30 which projects outward from the table 31, forming a part of the casing 18, and on the outer end of each stem 30 may be a nut 32 to vary the tension of the spring 29. A finger piece or button 33 is arranged on the outer end of each key lever 26, and under the key lever is a contact 34 which moves with said key lever and is adapted to engage a contact 35 located on the table 31. Each contact 35 is included in the electric circuit

25, and in said circuit is a battery 36, or other source of supply, which is connected with each set of coils, the other end of said coils being each connected by the wires 37 to one of the keys 26. The battery 36, through the wire 38, connects all the contacts 35 so that if any key lever is operated, the circuit will be through the battery, the wire connecting the coils, through one of the wires 37, key lever 26, one of the contacts 35, and through wire 38 to the battery, thus acting upon the proper key lever 11 and causing the same to operate the perforating element connected therewith instead of by the button or part 15, though permitting said levers to be operated by this means if desired.

Instead of using a plurality of condensers one for each coil, I arrange a contact 39 under each key lever 26 and position the same so that the lever will engage therewith before it engages the contact 35, and all of said contacts 39 are connected together by the wire 40 to the condenser 41. The condenser 41, through the wire 42, is connected with one of the contacts 35, so that no matter which key is operated, the condenser will be connected with the key through the contact 39 before the key engages the contact 35, thus preventing a spark at the contact points.

From the foregoing it will be seen that simple and efficient means are provided whereby a perforator of the usual construction for perforating tape may have its mechanism operated either mechanically or electrically and entirely independent of each other, so that in case either feature of the perforator is out of order the other may be employed to operate the device; that simple means are provided for operating the perforator levers, and that a single condenser may be employed in the electric circuit for the several keys instead of a condenser for each key.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:—

1. In a device of the character described, the combination with a perforator having operating levers and means whereby said levers may be operated mechanically, of an armature for each operating lever, a plurality of coils for independently operating the levers, an electric circuit including said coils, a key lever for each perforator lever included in the electric circuit, and contacts one of which is movable with each lever whereby the circuit through the coils may be completed as the levers are operated and thereby operate the perforator levers.

2. In a device of the character described, the combination with a perforator having

operating levers each provided with an armature and means whereby said levers may be operated mechanically, of an electric circuit, a plurality of key levers, one for each perforator lever included in the electric circuit, and means included in the electric circuit whereby the key levers may independently operate the perforator levers.

3. In a device of the character described, the combination with a perforator having operating levers and means whereby said levers may be operated mechanically, of an armature secured to each perforator lever, a plurality of coils for independently operating the levers, an electric circuit including said coils, a key lever provided with a finger-portion for each perforator lever and included in the electric circuit, and means whereby the circuit through the coils may be completed as the levers are operated and thereby operate the perforator levers.

4. In a device of the character described, the combination with a perforator having mechanical means for operating the same, said operating means including a plurality of levers each provided with an armature, together with electrically operated means whereby the levers may be made to operate independently of the mechanical means.

5. In a device of the character described, the combination with a perforator having mechanical means for operating the same, said operating means including a plurality of levers each provided with an armature, a key for each perforator lever, and electrically operated means connected to the keys whereby the levers may be made to operate independently of the mechanical means.

6. In a device of the character described, the combination with a perforator, of mechanical means for operating the same, electric means including a plurality of keys for operating the perforating mechanism, and a single condenser adapted to be thrown in circuit by any one of the keys when the same is moved to operate the perforating mechanism.

7. In a device of the character described, the combination with a perforator, of electric means including a plurality of keys for operating the perforating mechanism, and a single condenser adapted to be thrown in circuit by any one of the keys when the same is moved to operate the perforating mechanism.

This specification signed and witnessed this 23d day of November A. D. 1908.

HERBERT ANGEL.

Witnesses:

W. A. TOWNER, Jr.,
E. KRANCER.