

(No Model.)

F. ANDERSON  
AUTOMATIC TELEGRAPH.

No. 265,297.

Patented Oct. 3, 1882.

Fig. 1.

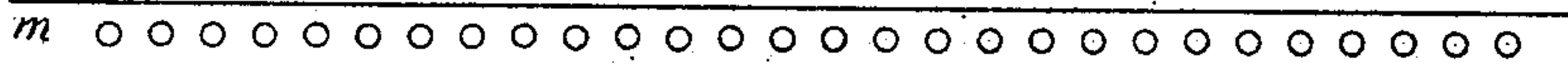


Fig. 2.

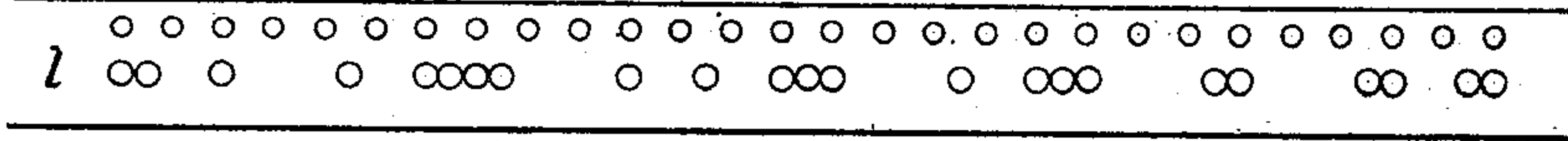


Fig. 3.

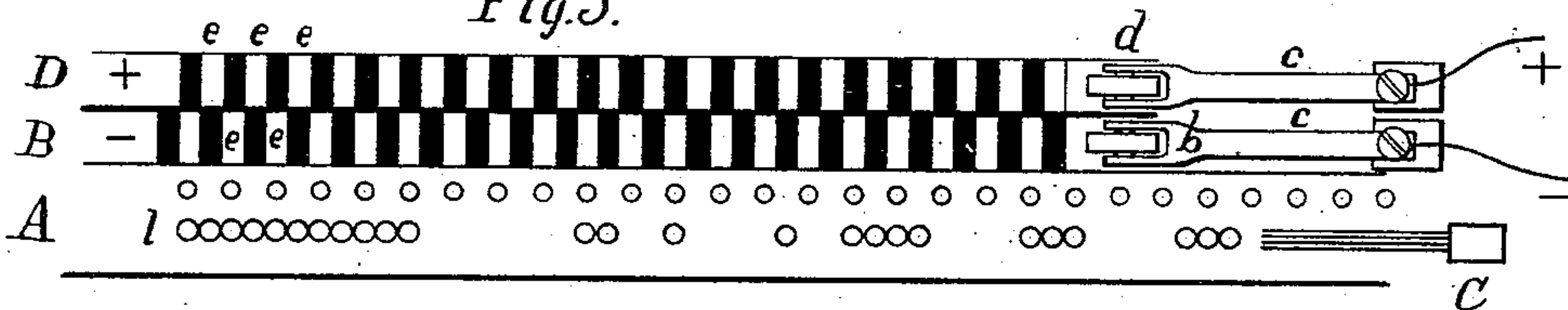


Fig. 4.

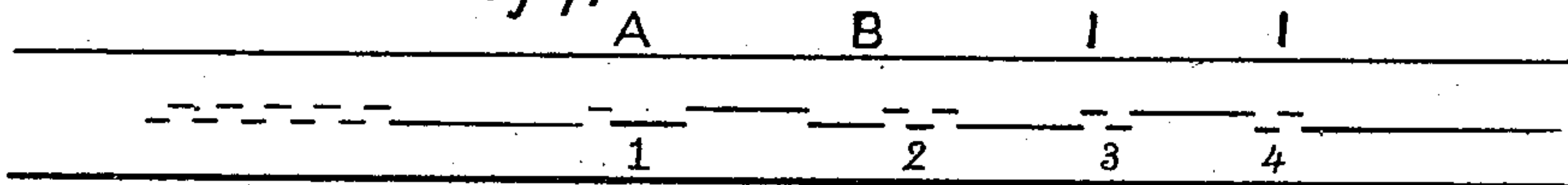


Fig. 6.

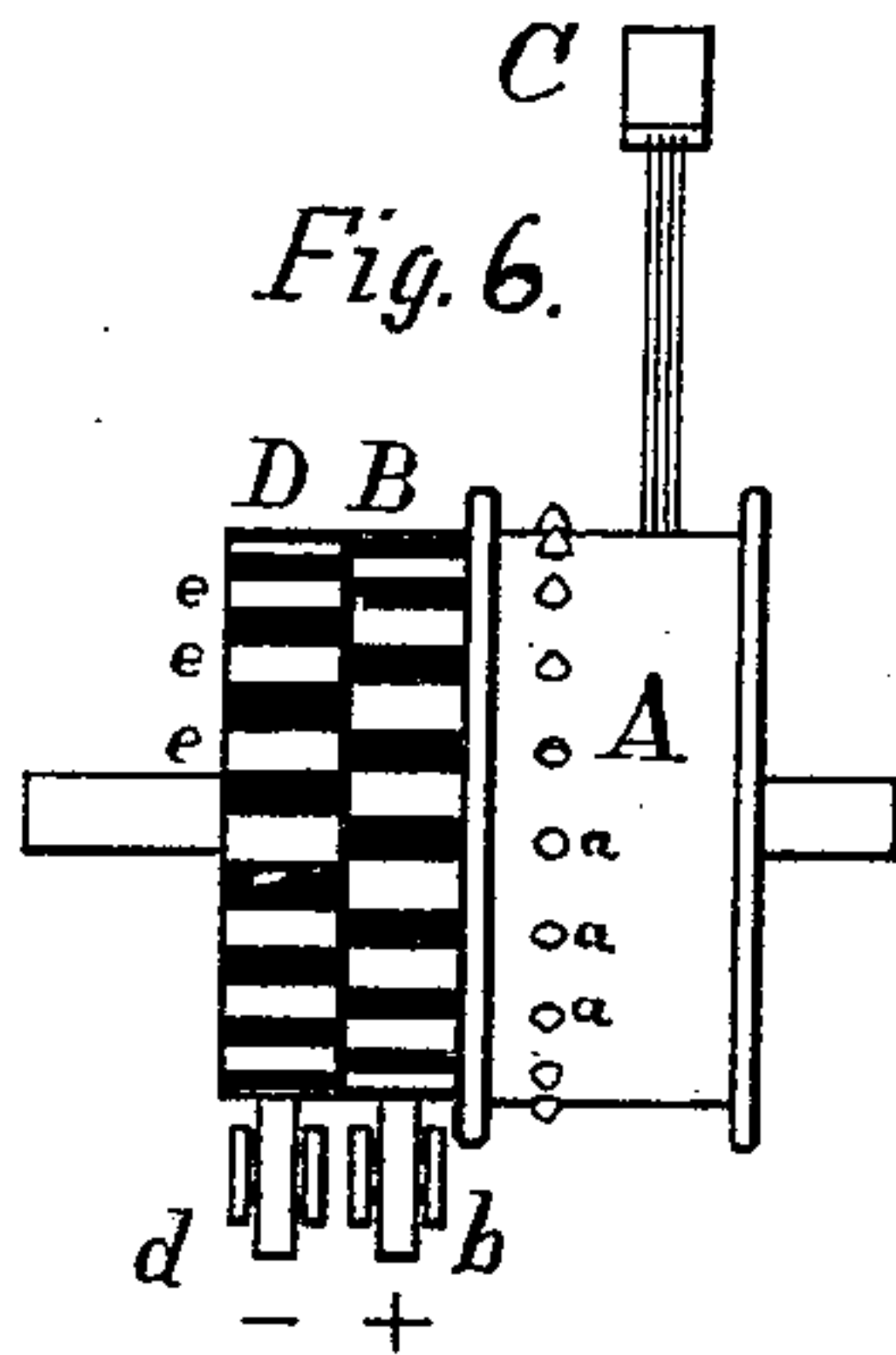
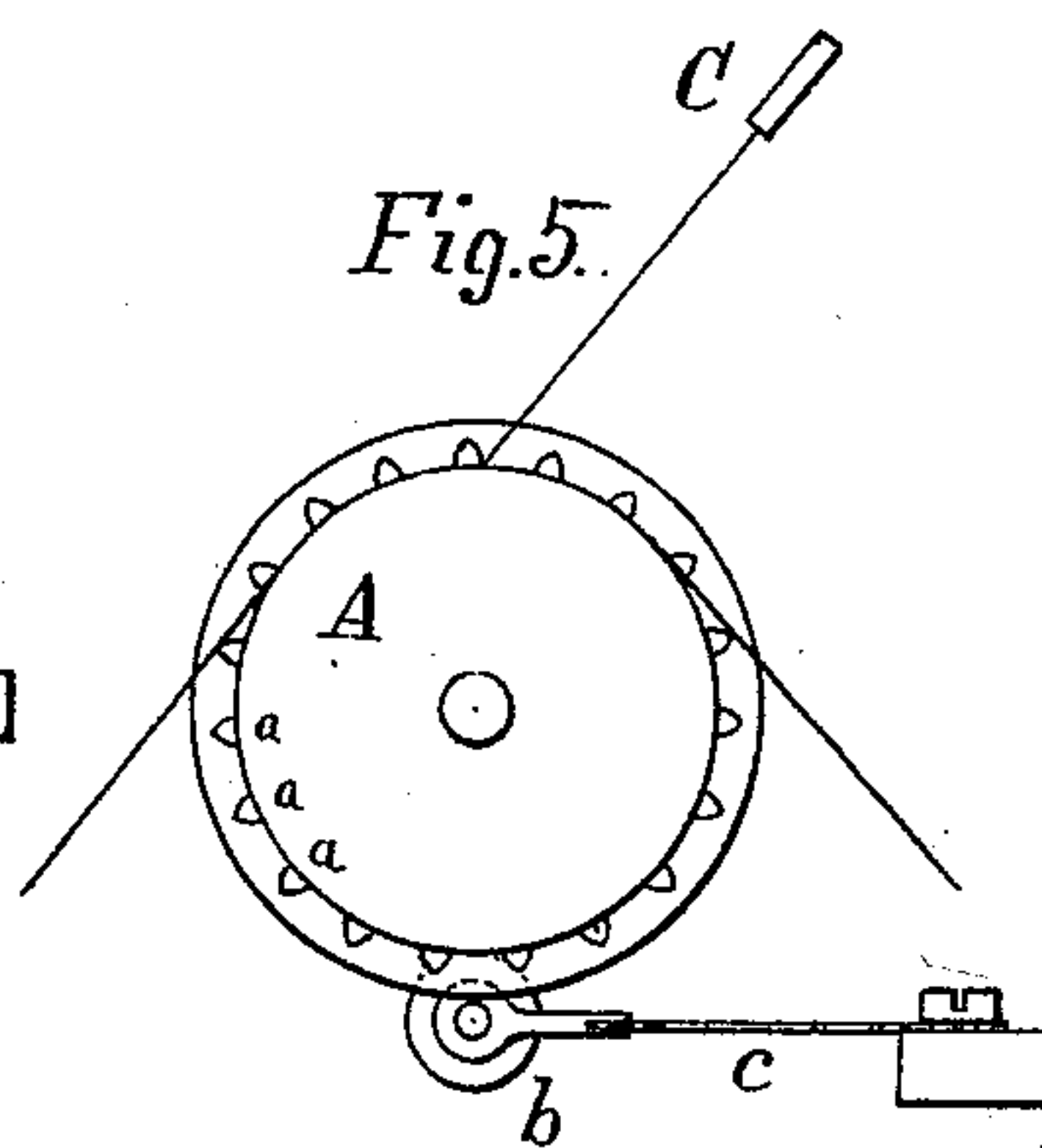


Fig. 5.



WITNESSES

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# UNITED STATES PATENT OFFICE.

FRANK ANDERSON, OF PEEKSKILL, NEW YORK, ASSIGNOR TO THE AMERICAN RAPID TELEGRAPH COMPANY, OF CONNECTICUT.

## AUTOMATIC TELEGRAPH.

SPECIFICATION forming part of Letters Patent No. 265,297, dated October 3, 1882.

Application filed May 20, 1881. Renewed September 6, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK ANDERSON, of Peekskill, in the county of Westchester and State of New York, have invented a new and  
5 useful Improvement in Automatic Telegraphs; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention relates to automatic telegraphs of that class in which the characters representing the letters are formed at the receiving  
10 end by means of alternate impulses of opposite polarity.

The object of the invention is to simplify the final preparation of the fillet commonly used  
15 with such telegraphic apparatus.

My invention consists of improved details hereinafter fully described and specifically claimed.

The invention is a modification of the form  
20 of apparatus shown in an application filed by me in the United States Patent Office of even date herewith, the general principle being the union of pole-changing and impulse-selecting devices with the simple fillet and drum.

In the accompanying drawings, Figure 1 represents a fillet, of paper or any equivalent material, perforated with a single row of holes at equal distances, and adapted simply to guide and regulate the passage of the fillet over the  
30 drum. Fig. 2 represents a similar strip having a like row of guiding-holes and another row at unequal distances, each of the latter serving as selecting-holes to determine the impulse required at any given instant. Fig. 3 represents the surface of the circuit-breakers attached to or forming part of the drum as if unwound, with the fillet similar to that shown in Fig. 2 lying in proper relative position on one side. Fig. 4 represents the record made  
40 by the fillet shown in Fig. 3. Fig. 5 is a view of the end, and Fig. 6 of the periphery of the united drum and circuit-breaker.

The selecting-holes in the fillet of paper represented in Figs. 2 and 3 at *l* are made and operate on the principle set forth in my said application.  
45

The uniform row of holes represented at *m* in Figs. 1, 2, and 3 may be on one side or in the middle, and is intended to operate in connection with pins *a* in the drum, Figs. 5 and 6,  
50

said pins entering the holes in the paper and guiding it in a manner well known to those skilled in the art to which this invention appertains.

The presentation of the alternating currents  
55 of opposite polarity, effected in the apparatus shown in my said application by means of holes arranged at equal distances asunder, in this apparatus is caused by special construction of the drum. This construction is shown  
60 in Figs. 3, 5, and 6. That part of the drum marked A (shown more clearly in Fig. 6) is of conducting material, and the pins *a*, arranged in straight line about its periphery, are fitted to enter the holes of the row *m* in the fillet.  
65 (Shown in other figures.) At one side of the roller A, either contiguous, as shown, or at a distance, (no matter, so long as there is electrical connection between the two,) is a double circuit-breaker, D B, which may be made by  
70 inserting sections of non-conducting material at equal intervals, or in other well-known ways. The opposite poles of a battery or batteries are connected with this double circuit-breaker by the pressure-rollers *b d*, (or springs alone may  
75 be used,) which are insulated from each other, one roller, *b*, pressing continually on the sections B and the other, *d*, on the sections D of the circuit-breakers. The contact-spaces on  
80 circuit-breaker are placed in alternate positions, as shown, so that only one side of the battery at a time is in electrical connection with the drum A.

C, Figs. 5 and 6, is a brush or other suitable contact device, that in falling through the perforations and coming in contact with roller or drum A allows the impulses to pass to the line. In this case, as in the apparatus shown in my application heretofore mentioned, it is evident that while in operation this device  
90 would, if there were no perforations in the fillet, allow none of the impulses to pass to line; or, if there were no paper on the roller A, every pulsation presented by the circuit-breakers D B would pass to the line. In one case there  
95 would be no record. In the other a succession of alternate dots would result. It only remains, then, to perforate the fillet with a single row of holes that act to select certain of the impulses and transmit them to the line.  
100



The record may be dots or dashes, according to the distance apart of the holes, just as in the other apparatus.

If I used the system of recording which  
5 utilizes only the positive current for marking, the other serving only to cut off the positive current, the holes *l* might include either an odd or even number of the pulsations presented when a dash or space was wanted; but to  
10 adapt it to the system in which both currents are utilized in the record (as in Patent No. 172,409, of January 18, 1876, and Patent No. 228,585, of June 8, 1880) requires that the distance apart of the holes for either dots or dashes  
15 of any length must be such as to include only an odd number of the impulses presented by the circuit-breaker, owing to the fact that if two impulses of the same polarity succeed each other there will be but one mark or record, unless the impulses are much farther apart than  
20 is usual in the formation of telegraphic characters.

The diagram, Fig. 3, and record, Fig. 4, have just the same relations as Figs. 2 and 3 in my  
25 application aforesaid, and the same description is applicable to either. For illustration here, it is sufficient to point out that the first series of selecting row of holes in line *l* has each hole opposite a circuit-closing space either  
30 in section D or B, and while this row continues there will be a continuous series of dots at the receiving end, as represented directly below in Fig. 4; but when this series of holes in *l* terminates there are no more alternating currents  
35 transmitted and no opposing current to neutralize the last impulse. This therefore continues to mark the papers, as represented in said figure, gradually failing. If, then, another selecting-hole should occur, and the space  
40 selected in D or *n* should be in the same section as the last, the two records would run together and destroy distinctness; but if I place the next selecting-hole opposite a pole-changing space whose number, counting from  
45 the last, is an odd number the impulse sent will be of polarity opposite from that last sent, and the recorded mark will be on the opposite line and distinct.

In forming the letter A of the Morse alphabet, as shown at 1 Fig. 4, two holes in line *l* of Fig. 3 close together, and one opposite a circuit-closing space in B and the other opposite the circuit-closing space in D next in order select successive impulses of opposite polarity;

and the second hole, not being immediately  
55 followed by another, "tails" out and forms the dash of A. To keep said dash from "tailing" out to an uncertain extent, and thus losing its identity, a third hole at an odd number, distant as before, and therefore of an opposite  
60 polarity from that of the last, is formed to cut off the A dash. As this impulse cannot be readily prevented from recording in the double-pen system, the space is made long enough to form a recognizable space-dash. Thus we get,  
65 by selecting opposite impulses, as described, a dot or line to represent the letters or characters, and also a dash of greater length to represent a space. The other characters are made on the same principle, as shown more fully in  
70 my aforesaid application.

The row of pins *a a a* is placed on the roller A in such relation to the contacts *e e e*, and the perforations *l* in fillet are so placed in relation to pin-holes *m* that when the fillet is placed on  
75 the roller A the selecting-holes *l* will be opposite either one or the other of the contacts *e e*, the pins serving to always insure such relation.

I do not claim, in themselves, the pin-holes for guiding the paper, nor the production of  
80 alternating currents by a circuit-breaker, in view of the invention by Siemens and others.

I am aware that a pole-changer consisting of a drum and perforated fillet has been shown in the British patent of Siemens, No. 1,253 of  
85 1868, and I am also aware of the patent granted in the United States to Randall, No. 237,595, of 1881, and I do not therefore broadly claim a drum provided with circuit-breaking contact-sections or a perforated fillet therewith.  
90

Having thus described my invention, what I claim is—

A drum consisting of pole-changing sections D and B and a fillet-carrying section, A, in combination with contact devices bearing directly on sections D and B, respectively, and  
95 connected to opposite battery-poles, and with a brush connected to the line and bearing on fillet or drum A, the parts being adapted to operate in connection with the perforated fillet  
100 as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANK ANDERSON.

Witnesses:

RUFUS ANDERSON,  
COLERIDGE A. HART.