

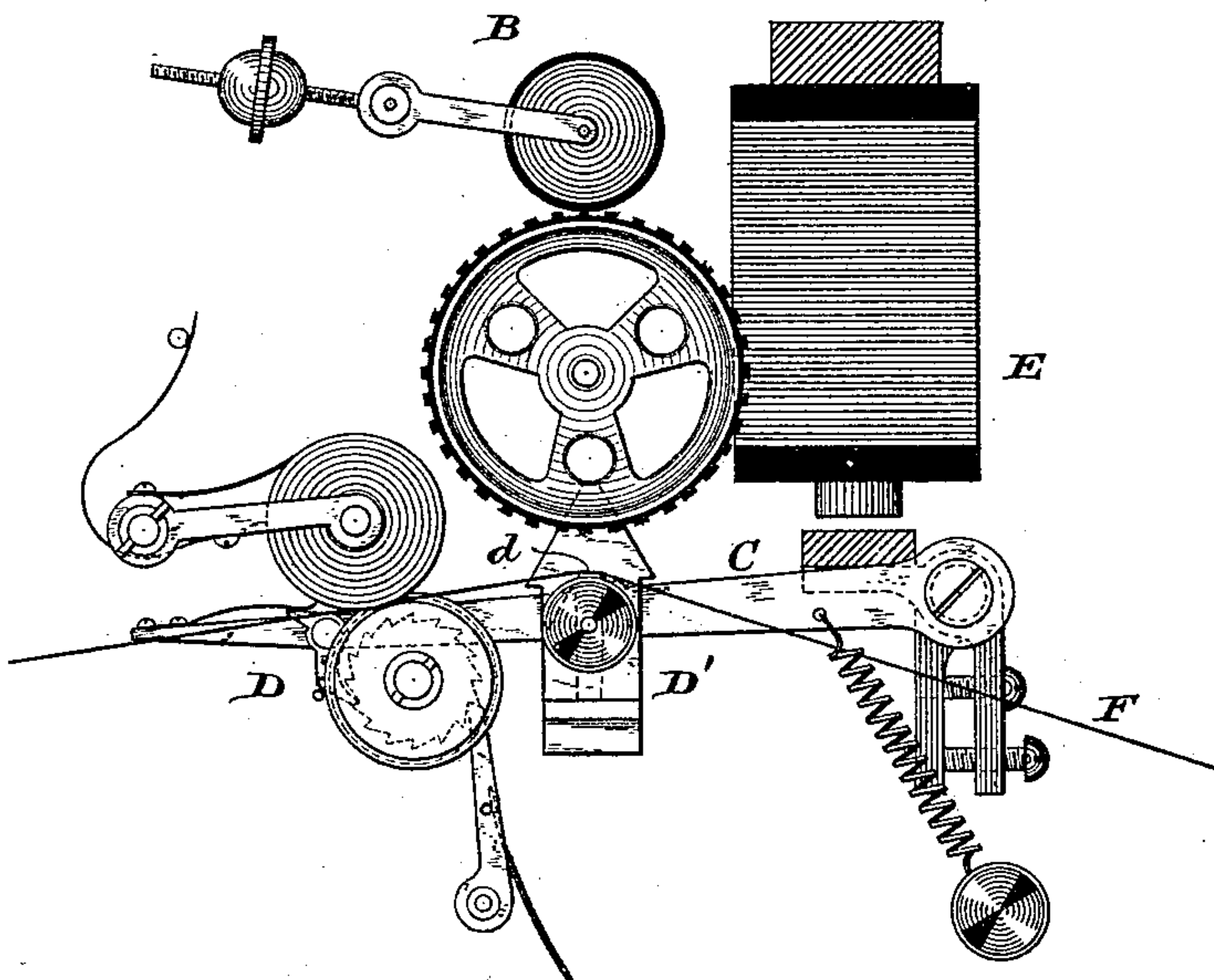
(No Model.)

W. J. BURNSIDE.  
PRINTING TELEGRAPH.

No. 273,810.

Patented Mar. 13, 1883.

*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



WITNESSES

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# UNITED STATES PATENT OFFICE.

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## PRINTING-TELEGRAPH.

SPECIFICATION forming part of Letters Patent No. 273,810, dated March 13, 1883.

Application filed January 19, 1883. (No model.) Patented in England April 18, 1882, No. 1,853, and in France May 13, 1882, No. 148,937.

*To all whom it may concern:*

Be it known that I, WILLIAM JOHN BURNSIDE, a subject of the Queen of Great Britain, residing at Hilcot Court Road, Lower Norwood, in the county of Surrey, England, have invented certain new and useful Improvements in Printing-Telegraphs, of which the following is a specification.

Heretofore the type-wheel faces of printing-telegraphs have been made of metal. This occasions numerous imperfections in the instruments, the most important of which are, first, the weight of a metal-faced wheel seriously interferes with the efficient operation of the instrument; second, with a hard-faced type it is necessary to use a comparatively soft impression-pad. The friction of the paper strip over such a surface, if stationary relatively to the paper, would interfere with the working of the instrument and necessitate an augmentation of the battery-power otherwise unnecessary. A roller impression-pad is therefore in practice found essential. The size of such a roller must be limited within certain proportions relatively to the other parts of the instrument, so that the type-face must make its impression against a surface of considerable convexity, and a large battery-power is therefore required to produce a perfect impression. Aside from this objection, there is another of even greater importance, due to the use of a soft impression-pad—that is, the amount of battery-power necessary to take a perfect impression from a type-face presenting a large surface—such, for instance, as the letters M and W—is so great as to cause the type-faces presenting comparatively small surfaces to make more or less of an indentation in the paper strip, and where the surface is very small, as in the letter I, the hyphen, and the dot, the paper is frequently perforated and the movement of the type-wheel is momentarily interrupted. This has been found such a serious annoyance that the faces of the smaller types or characters have been made relatively much larger than they should be; but this produces unsightly work, and is otherwise objectionable. With the dot it has even been found necessary to use a stop fixed to

some rigid part of the instrument to limit the force of the impression and prevent the perforation of the paper. The adjustment of this stop is such a delicate matter as to prevent its general use in practice, and the dot has been in many instruments dispensed with.

To remedy these defects and to produce an instrument which will operate efficiently with a minimum battery-power, I have made the present invention, which consists primarily in a printing-telegraph instrument in which a type-wheel having a soft or elastic face is employed; and, secondly, in the use of a hard flat-faced impression-block in connection with such a wheel.

The invention also consists in certain other improvements in the organization of the instrument and the construction of the type-wheel.

By the term "hard" impression-block I do not wish to be understood as meaning a superlatively hard substance, or even one considered hard relatively to matter generally, but one of sufficient hardness relatively to the soft or elastic type to take a proper impression and not offer too much frictional contact to the moving paper strip. Hard rubber is very well adapted to my purpose, and other substances may be employed.

In the accompanying drawings, Figure 1 is an elevation illustrating so much only of a printing-telegraph of well-known construction as is necessary to illustrate my invention. Fig. 2 is a detail view of the type-wheel with the strip carrying the elastic letters or characters removed, and Fig. 3 is a view of the strip having the raised letters projecting from its face.

I will first describe the construction of the type-wheel.

The body or frame of the wheel, which may be either solid or skeleton, can be formed of any suitable material, the lightest consistent with proper strength being preferable. I regard aluminum or hard rubber as best adapted to the purpose. As illustrated in Fig. 2, the tread or periphery of the type-wheel is grooved or depressed for the reception of the flexible strip carrying the embossed or raised letters.



The strip, which is illustrated in Fig. 3, when bent around the wheel, fits accurately in the groove in the wheel-face, and is permanently secured by cement or otherwise. The projecting letters are made of soft rubber or similar suitable elastic substance, and are formed in one piece with a connecting-strip or base. In order to prevent the stretching or distortion of this rubber strip in putting it in place on the wheel, and to accurately preserve the relations of the letters to each other, I mount the elastic strip on which the letters are formed upon a non-elastic tape or base, *b*, as indicated in the several figures. The strip thus made can be drawn tightly and closely into place in the groove in the type-wheel face and secured, as above mentioned, without danger of stretching the rubber. By thus setting the type-strip into a groove or depression in the face of the wheel, lateral displacement is rendered impossible, and the alignment of the letters is absolutely insured.

In Fig. 1 I have shown my improved type-wheel in its relation to such only of the other parts of a printing-telegraph apparatus as are necessary to a clear comprehension of my invention.

The inking devices B, the pivoted impression-lever C, the paper-feeding mechanism D, and the impression-magnets E are of the usual and ordinary form, and need no description.

The hard impression-block D, having a flat impression-surface, *d*, which is exactly parallel with the face of the type on the wheel at the moment of impression, is carried by the impression-lever and intermittently operated to cause a letter to be printed in the usual way on a paper strip, F, (indicated in broken line,) which is drawn from a roll by the mechanism D.

It is deemed unnecessary to recapitulate the advantages of my invention, as they will fully appear from the foregoing.

I claim as my invention—

1. The combination, substantially as set forth, of the impression-magnet, the impression-lever, paper-strip-feeding mechanism, an impression block or pad, and a type-wheel having a soft elastic type-face.

2. The combination, substantially as set forth, of the impression-lever, paper-strip-feeding mechanism, a type-wheel having a soft or elastic type-face, and a hard impression-block having a flat impression-surface.

3. The combination, substantially as set forth, of the impression-lever, paper-strip-feeding mechanism, an impression-block, and a type-wheel consisting of a frame or body around which is secured a soft or elastic strip having embossed or projecting types or characters mounted upon a non-elastic flexible base or tape.

4. The combination, substantially as set forth, of a type-wheel body or frame having a grooved face, and a flexible strip having or carrying embossed or projecting type or characters secured in the groove in the face of the wheel.

In testimony whereof I have hereunto subscribed my name.

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