

**IMPROVEMENT IN ELECTRO-MAGNETS.**

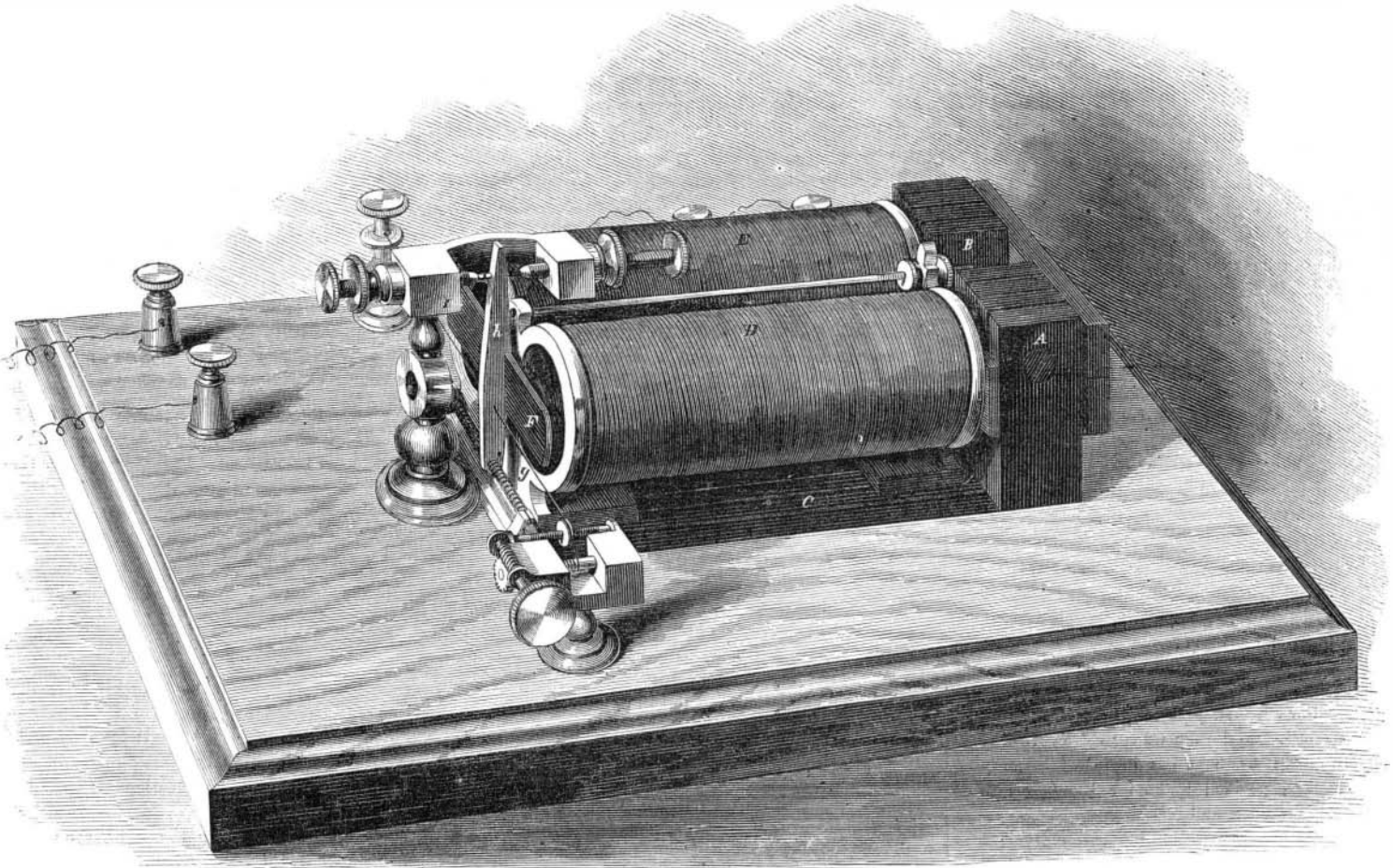
The practical working of the electric telegraph has caused a very wide diffusion of a knowledge of electricity and magnetism among our people, and the hope of making valuable inventions in this department of the arts has led to an intense study of the various phenomena of these forces. We have already described a number of inventions in telegraphing, and the field seems to be just fairly opening before our inventors. The invention which we here illustrate does not relate to the details of telegraphing, but is an improvement in the electro-magnet for whatever purpose used.

matter may be obtained by addressing the inventor, Alfred G. Holcomb, of this city.

Mr. Holcomb informs us that, to measure the increase of attractive power produced in the soft iron cores of the helices, by the combination of the steel magnet and the battery, he arranged a delicate lever, like a steelyard, to draw away the armature from the ends of the cores by means of a weight, and obtained the following very singular results; showing that the power of the cores under the combined action of the battery and permanent magnet was greater than the sum of its powers under the influence of the two separate. In the table

our paper in just as neat and convenient form as if it were bound. It is only necessary to make the article known to cause it to be generally adopted by people who wish to preserve files of valuable papers and to have them always ready for reference.

A portfolio is made of two stiff leaves, connected by a back of cloth, leather or other pliable substance. To the inside of one of the leaves are fastened two cords, *a a* (see cut prefixed), with metallic needles secured by the middle at their ends. On the inside of the opposite leaf are fastened at one end the elastic bands, *b b*, with eyes at their free ends for the passage of the needles.



**HOLCOMB'S IMPROVEMENTS IN ELECTRO-MAGNETS.**

A permanent steel magnet, C, has connected with its two poles, A and B, the soft iron cores of two helices, D and E. In front of the poles of these cores is placed the armature, F, to which is attached the straight steel wire, g, operating as a spring by being drawn a little from a straight line between the two points to which the ends are fastened.

Supposing the magnet is to be used as a relay magnet in telegraphing, the spring is so strained that it will just balance the power induced in the cores by the permanent magnet, in which case, the platinum point at the end of the lever, h, to which the armature is attached, will be neither fully in contact with the corresponding point on the standard, I, nor yet so far removed from it as to entirely break the local circuit. Now if the electricity be so passed through the helices, D and E, as to add its force to the influence of the permanent magnet, the magnetism of the cores will be so increased that they will draw the armature forward, thus completely and certainly breaking the local circuit. Then if the current be reversed, so as to counteract the influence of the permanent magnet on the soft iron cores, the power of the spring will draw back the armature, effectually closing the local circuit. It will be seen that this arrangement permits the employment of a spring twice as powerful as if no permanent magnet were used, or it enables a spring of given power to operate with a current of half the force.

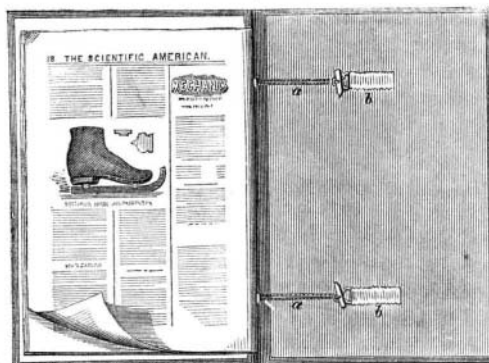
The inventor says this magnet has been thoroughly tested for telegraphing, and found practicable, and that it can be easily applied to every kind of telegraph instruments.

A patent for this invention was granted on the 15th of May, 1860, and further information in relation to the

below, the first column shows the power of the cores when subjected to the battery alone with currents of varying force; the second column its constant power under the influence of the steel magnet alone; the third column, the power when both were combined, and the fourth column the differences between the third and the sum of the first two. The close relation between the first and the fourth is very curious. The numbers are units of the weight used:

Battery power.	Power from steel magnet.	Power from both combined.	Excess of combined power over both separate.
5	20	30	05
7	20	34	07
10	20	39	09
17	20	52	15
20	20	58	18
24	20	68	18

**JACOBS' PORTFOLIO PAPER FILE.**



Several months since we bought one of the files here illustrated, and we would not sell it (if we could not get another) for several times its cost. By its means, we are enabled to keep a file of the current volume of

On the inner edge of the latter-named leaf, are two eyes for the passage of the cords, *a a*. The newspaper being placed in the portfolio in the position shown, the needles are pushed through it near the fold, and are then passed through the eyes in the edge of the leaf and the eyes on the free ends of the bands, *b b*; these bands being forcibly drawn forward for the purpose.

By this arrangement, the newspaper is not only held in a perfectly protected and safe position, free from creases in its pages resulting from folds, but it is in a far more convenient form for handling than is obtained by any other mode of filing known to us.

The patent for this invention was procured (through the Scientific American Patent Agency) on the 15th of June, 1860; and further information in relation to it may be obtained by addressing the inventor and manufacturer, J. Nelson Jacobs, at Worcester, Mass., or Lyman Drury, at the Century office, No. 37 Park-row, New York.

**KEEPING HORSES' FEET AND LEGS IN ORDER.**—If I were asked to account for my horses' legs and feet being in better order than those of my neighbor, I should attribute it to the four following circumstances: First, that they are all shod with few nails, so placed in the shoe as to permit the foot to expand every time they move; second, that they all live in boxes instead of stalls, and can move whenever they please; third, that they have two hours daily walking exercise when they are not at work; and fourth, that I have not a head-stall or track-chain in my stall. These four circumstances comprehend the whole mystery of keeping horses' legs fine, and their feet in sound working condition up to a good old age.—*Miles.*