

J. E. SMITH.  
Printing Telegraphs.

No. 148,768.

Patented March 17, 1874.

Fig. 1.

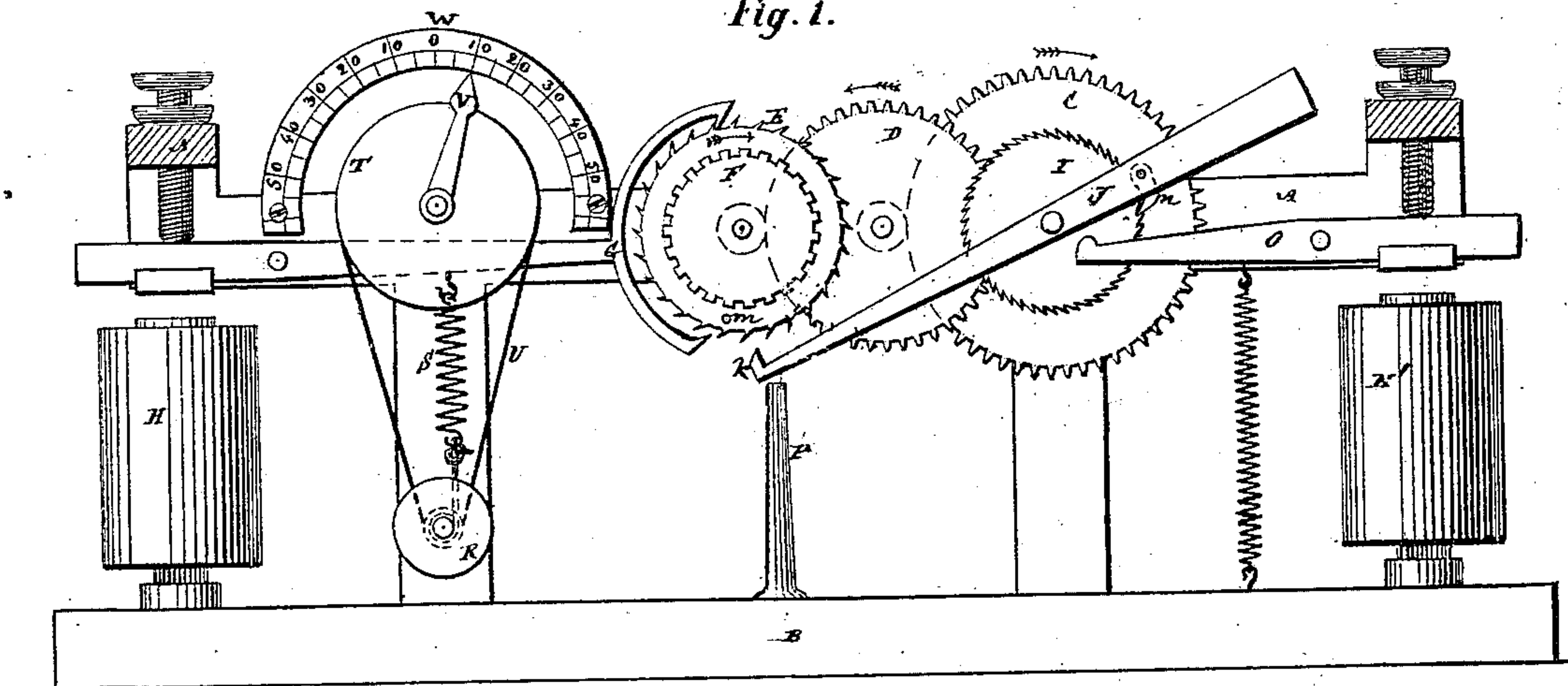
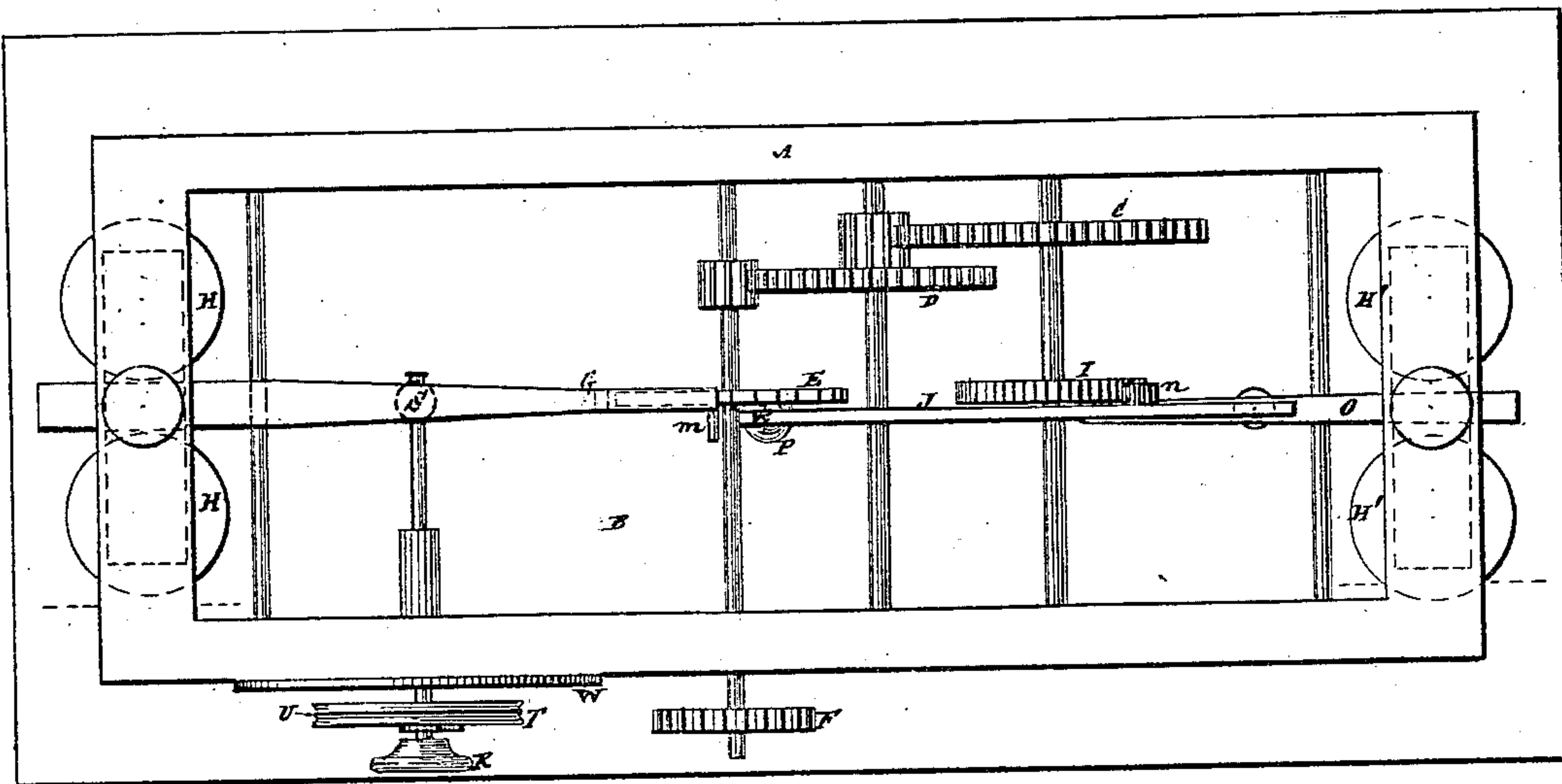


Fig. 2.



Witnesses:  
Fred Haggner  
Fred Truck

J. E. Smith.



# UNITED STATES PATENT OFFICE.

JOHN E. SMITH, OF NEW YORK, N. Y.

## IMPROVEMENT IN PRINTING-TELEGRAPHS.

Specification forming part of Letters Patent No. 148,768, dated March 17, 1874; application filed August 23, 1872.

*To all whom it may concern:*

Be it known that I, JOHN E. SMITH, of the city, county, and State of New York, have invented certain new and useful Improvements in Printing-Telegraphs; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming part of this specification, and in which—

Figure 1 represents a sectional side elevation of a printing-telegraph, in part, with my invention applied; and Fig. 2 a plan view of the same.

Similar letters of reference indicate corresponding parts.

The one part of my invention consists in a unison device for bringing the type-wheel into harmony with the transmitter. This device or means is composed of a pin connected with the escapement-wheel or type-wheel shaft, and a lever by which the pin is caught, when said lever is moved in one direction by its own gravity, or by a spring, but controlled in such movement by the type-wheel escapement, and moved in the opposite direction by an electromagnet. Another part of my invention consists in an index, in combination with and arranged for operation by the adjusting-spring of the pallet which forms a part of the type-wheel escapement, whereby a correct adjustment of said spring may be easily obtained by persons of but little or no experience in the management of telegraph apparatus.

In the accompanying drawing, A represents a frame which carries the greater portion of the mechanism, and B its base. C D are wheels forming portion of a train of clock-work, driven by a weight or spring, (not shown in the drawing,) for propelling the escapement-wheel E, and type-wheel F. The escapement-wheel E is liberated, step by step, by the vibration of its pallet G, as pulsations of electricity are sent through a magnet, H, by the action of the transmitter. Secured on the shaft of the wheel C is a fine-toothed ratchet-wheel, I, and upon the same shaft, and close to the wheel I, is loosely supported an unbalanced lever, J. The lighter portion of this lever terminates in a projection, k, arranged to catch a pin, m, upon the escapement-wheel E, for the purpose of bringing the type-wheel F into

unison with the transmitter. The heavier end of said lever is provided with a pawl, n, arranged to engage with the wheel I, so that gravity can move said lever to lock the type-wheel, only as permitted by the action of the type-wheel escapement. This lever is moved in a reverse direction to that produced by its gravity by a lever, O, acted upon by a magnet, H', whenever any character on the type-wheel is printed. This magnet H' may be the printing-magnet, or it may be an independent one in the same circuit. The movement of the lever J is limited in one direction by a post or stop, P, and in the opposite direction by the lever O.

From this description it will be perceived that when the vibration of the pallet G, for selecting characters on the type-wheel, permits the clock-work to move as indicated by arrows, the rotation of the wheel I allows the lever J to be moved by gravity in the same direction as if moved by the clock-work. It will also be seen that if this motion be continued long enough without printing, the projection k of the lever J will catch the pin m, thereby locking the type-wheel. If, after such locking, the key in the transmitter corresponding with the unison character be touched, that character will be printed, and the type-wheel will be unlocked by the action of the lever O upon the lever J, leaving the type-wheel in harmony with the transmitter. The lever J should be permitted to move through such a space that two or three complete revolutions of the type-wheel will be required to bring said lever into locking position. A balanced locking-lever, moved by light friction, as described in Letters Patent No. 127,111, granted to me May 21, 1872, recoils on striking its check-pin, corresponding with the post P, causing, at times, the locking of the type-wheel within one revolution, thereby throwing said wheel out of unison. Such liability is overcome by my present invention, inasmuch as the pawl n prevents a recoil of the lever J. Instead of making one end of the locking-lever J overbalance the other, a delicate spring may be arranged to press downward on the end provided with the pawl, or upward on the other end of said lever. S is the spring which acts on the escapement-pallet G in a reverse direc-



tion to the magnet H. The proper adjustment of this spring is of great importance. To effectually and easily secure this, I connect a reduced portion of the ordinary spring-adjusting device R, by a belt, V, with a pulley, T, the diameter of which is several times that of the reduced portion of the device R, hugged by the belt. The pulley T has secured to it an index, V, which indicates, upon a scale, W, any motion that may be given the adjuster R. This pulley and scale may be attached to the frame A, or any other convenient support. To apply these means, an approximate adjustment should first be obtained, and the index set to zero on the scale. Next, while the transmitter is permitted to run, the spring S should be slackened until the pallet G ceases to move, and the position of the index noted. Then, in a similar manner, the tension of said spring should be increased until the vibration of the pallet G again ceases, and the position of the index, under such condition of things, be again noted. This done, a correct adjustment may be obtained by diminishing the tension of the spring until the index falls midway between the two extremes mentioned. Thus, if these extremes be forty degrees to the left of the

scale, and sixty degrees to the right thereof, the spring-adjusting device R should be turned till the index be made to stand at ten degrees to the right of zero. This method of adjustment is applicable to all type-wheel levers, whether such levers propel the type-wheel or act to liberate clock-work, as herein described. It can also be applied to dial-telegraphs.

What is here claimed, and desired to be secured by Letters Patent, is—

1. The combination of the gravitating or unbalanced unison-lever J, the pawl *n*, the ratchet-wheel I, of the train of gear connected with the type and escapement wheels, the pin *m*, the armature-lever O, and the magnet H', substantially as and for the purposes herein set forth.

2. The combination of the index V, the scale W, the pulley T, and the belt U, with the adjuster R, and spring S, of the escapement-pallet G, essentially as and for the purpose specified.

J. E. SMITH.

Witnesses:

FRED. HAYNES,  
FERD. TUSCH.