(No Model.)

S. J. SANFORD.

FIRE TELEGRAPHY.

No. 516,879. Patented Mar. 20, 1894.

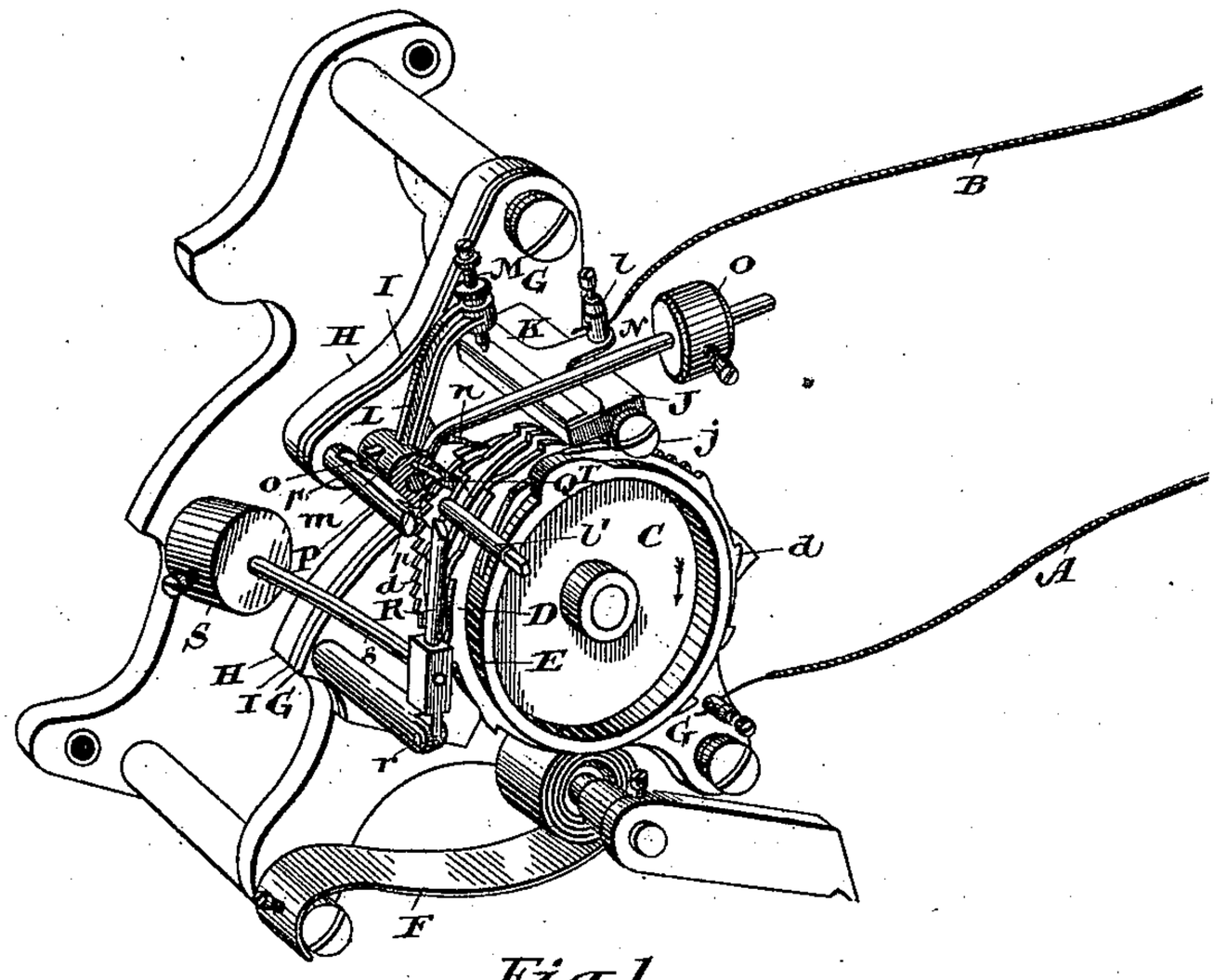

Fig. 1.

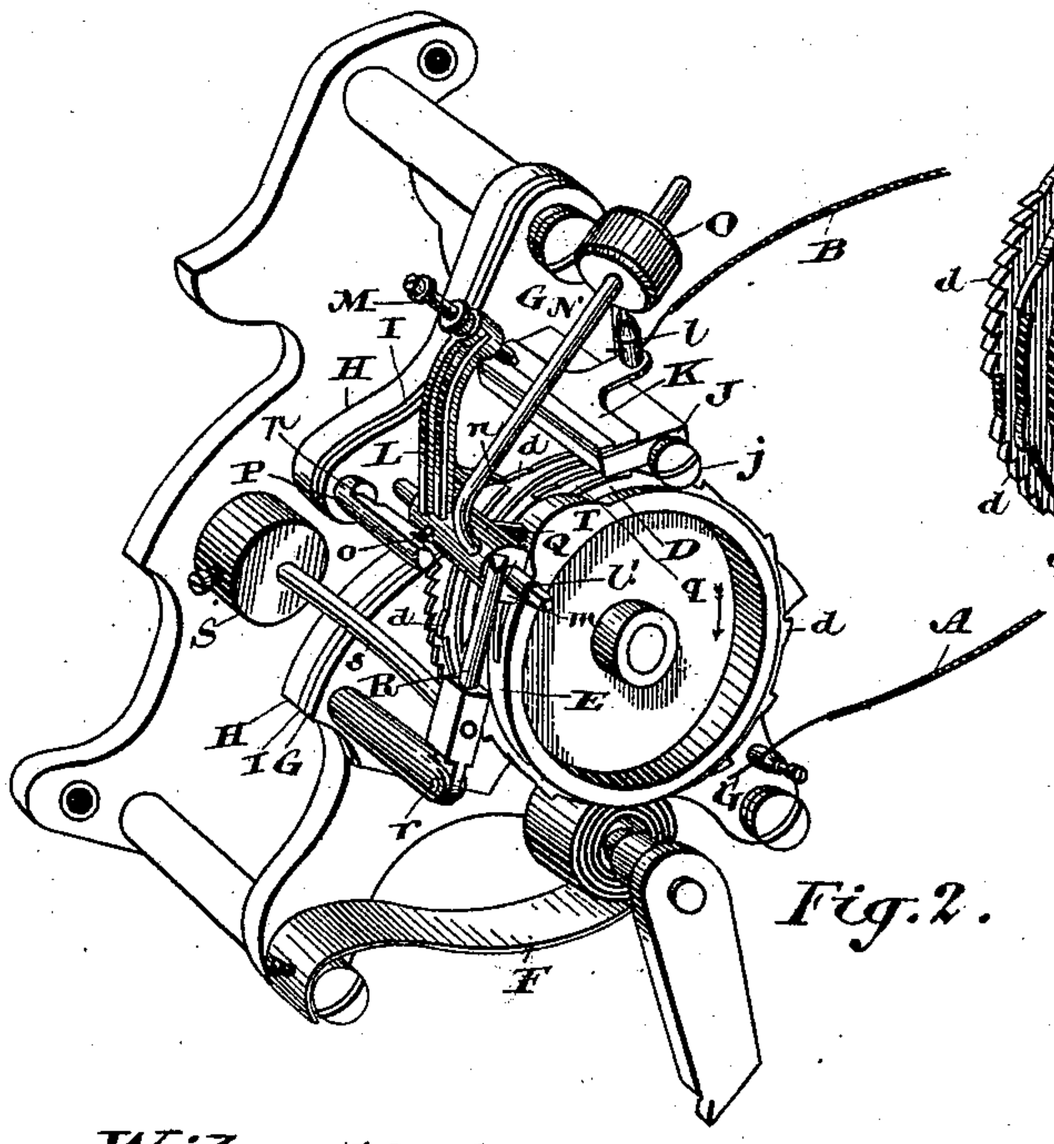

Fig. 2.

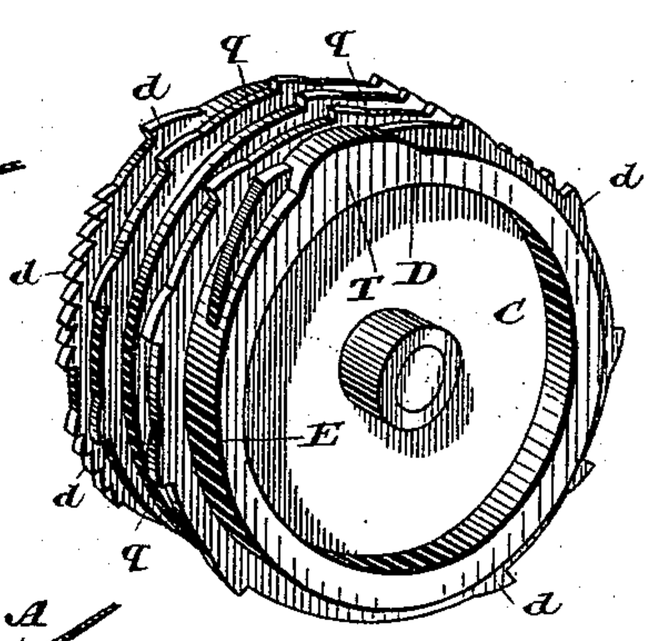

Fig. 3.

Witnesses.

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FIRE TELEGRAPHY.

SPECIFICATION forming part of Letters Patent No. 516,879, dated March 20, 1894.

Application filed February 3, 1891. Serial No. 380,088. (No model.) Patented in Canada May 3, 1893. No. 42,805.

To all whom it may concern:

Be it known that I, SYDNEY JAMES SANFORD, electrician, of the town of Barrie, in the county of Simcoe, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Fire Telegraphy, of which the following is a specification.

This invention has been patented to me in the Dominion of Canada May 3, 1893, No. 42,805.

My invention relates to improvements in fire telegraphy patented to me on March 6, 1886, under No. 337,436, and the object of the present invention is to produce an apparatus operating in, and with the mechanism of the street box, by which rapid connections are made, at first, by the mechanism of the street box which runs at a uniform speed, so as to rapidly communicate the number of that particular box to the number indicating box in the fire hall, and by which same apparatus slow connections are subsequently made so as to ring slowly the same number any desired number of times on the gongs and tower bell, and it consists essentially of securing on the end of the main spindle of the street box mechanism a number wheel with a broad rim, circling round which is a spiral thread, with ratchet-shaped teeth or projections, extending from the inner to the outer end of the thread which ratchet teeth are arranged at the inner end close together in sets to indicate each digit of the number, each set being slightly separated, while in the corresponding numbers following the ratchet teeth in each set used to indicate each digit, are each further separated, as well as the sets which indicate the number, each number formed by the ratchet teeth being also still further separated; a circuit breaker is arranged to cooperate with the projections on the thread and the whole is constructed in detail as hereinafter more particularly explained.

Figure 1, is a perspective view showing the mechanism ready to start, the circuit breaker being at the inner end or commencement of the thread. Fig. 2, is a similar view showing the circuit breaker at the outer end of the thread lifted, and in the act of being transferred to the inner end of the thread after having indicated and sounded the alarm. Fig. 3, is a detail of the number wheel.

In the drawings like letters of reference indicate corresponding parts in each figure.

As I do not claim anything in the ordinary mechanism of the street box, I do not show it, but show only the frame, as I thereby avoid all unnecessary complication in the drawings.

A and B, are the wires leading from the street box to the numbering apparatus in the fire hall.

C, is the number wheel, which in this instance is arranged for the number 195.

D, is a spiral thread formed on and circling round the broad rim, E, from inside to outside. It will be noticed that the number 195 is indicated by ratchet teeth, *d*, the set of teeth which form each digit at the inner end of the thread being separated by a small space on the thread. Another space now intervenes between the last set of teeth representing the units digit and the next succeeding ratchet which forms the hundreds digit of the corresponding number following. The hundreds digit has another space intervening between it and the first ratchet of the tens digit. Each of the ratchets representing the units of the tens digits are separated at equal distances by smaller spaces, till a larger space is reached which now separates the set of ratchet teeth of the tens digit from the ratchet teeth representing the units digit. Each of the teeth representing the units digit are separated by other smaller spaces corresponding in length to those spaces separating the teeth of the tens digit. There is now another larger space intervening till the ratchet teeth representing the hundreds digit of the repeated number are reached.

As in the street box shown it is only intended to indicate the number in the numbering apparatus in the fire hall and then ring the gongs and tower bell three times, the ratchet teeth representing the number in the latter case are formed three successive times on the thread in the manner above stated.

F, is the spring from which the mechanism of the street box and consequently the number wheel derives its motion.

G, is a metal plate secured to the frame, H, of the street box by the intermediate insulating plate, I.

J, is a tablet of insulating material secured

to the plate, G, above the number wheel, C, by the screw, *j*.

K, is a metal plate secured on the insulating plate, J, and having fastened to it the binding screw, *k*, in which is secured the end of the wire, B.

l, is a binding post in which is secured the end of the wire, A.

L, is a circuit breaker pivoted on the spindle, *l'*. The circuit breaker is comprised of an arm having a hub, *m*, through which the spindle, *l'*, passes, an adjusting screw, M, passing through the free end of the arm, and a dog, *n*, extending from beneath the arm as shown.

N, is an auxiliary arm extending from the hub, *m*, and having a weight, O, adjustably secured thereon.

o, is a projection formed on the hub, *m*, and designed to co-operate with a guide rod, P, which has notches, *p*, cut in it at the inner and outer ends.

Q, is a projection also extending from the hub, *m*, and designed to follow the groove, *q*, between the threads, from inside to outside so as to keep the dog, *n*, over the thread, and thus bring it in contact with the ratchets formed on the thread as the number wheel revolves.

R, is a rod pivoted at, *r*, and having its upper end held against the end of the hub, *m*, by the weight, S, adjustably secured on the rod, *s*, extending from the rod, R.

Having now described the principal parts involved in my invention I shall now proceed to describe their operation.

The normal position of the circuit breaker and consequently the dog, *n*, is at the inner end of the spindle, *l'*, with the adjusting screw, M, pressing upon the plate. The current now passes through the wire, A, plate, G, spindle, *l'*, circuit breaker, L, plate, K, and binding post, *l*, out on the wire, B. When however the mechanism of the box is thrown into operation, and the number wheel, C, commences to revolve in the direction indicated by arrow, the dog, *n*, which in normal position is just in front of the first tooth representing the units digit 1 ascends the said tooth and thus lifts up the bottom of the adjusting screw, M, in the free end of the circuit breaker from contact with the plate, K, by which means the circuit through the wires, A, and, B, is broken and the first hundred digits is communicated and indicated in the numbering apparatus in the fire hall in the same manner as described in my patent above referred to. A small space now intervenes in the thread till the dog, *n*, reaches the next set of ratchets representing the tens digit which in passing over it repeatedly breaks the circuit passing through the wires, A, and, B, until the tens digit is also communicated and indicated in the fire hall. A similar operation now takes place until the units digit is also communicated and indicated in the numbering apparatus in the fire hall, after which the numbering apparatus in the fire hall is thrown out. The other sets of ratchets now on the thread, are arranged as before described to operate the gongs and tower bell three times, and the connections and breaks are made by the dog, *n*, in the manner above set forth but at slower intervals. At the same time the projection, Q, has traveled to the outside of the thread, D, and comes against the boss, T, as shown in Fig. 2, thus raising the projection, Q, above the periphery of the thread, D, and placing the projection, *o*, in the outer notch, *p*, below the level of the central projecting portion of the guide rod, P. The weight, S, now forces the hub, *m*, inwardly, the projection, *o*, holding the projection, Q, below the level of the central portion till it passes beneath it. The circuit breaker, L, is thus held up until the projection, *o*, passes the inner end of the central portion of the rod, P, when it comes up through the inner notch, *p*, and allows the circuit breaker, L, to assume its normal position as shown in Fig. 1.

Although I show my number wheel arranged with ratchets to give the alarm on the gongs and tower bell three times, it will of course be understood that the wheel might be arranged with a greater or less number of sets of teeth so as to operate them more or less frequently. It is generally understood however that arrangement of more than three sets of ratchets on a wheel is unnecessary, as there are many ways now commonly in use by which the alarm may be duplicated as many times as may be desirable.

It will be noticed that I show my apparatus standing on a closed circuit, the number being communicated by breaking the circuit, but it will of course be understood that it might be made to stand on an open circuit, and communicate the number by closing the circuit, by making indentations instead of teeth in the wheel, the circuit maker in this case being in its normal position held clear of the plate by the dog, *n*, resting on the periphery of the thread, D, and the closing of the current being effected by means of the dog dropping into the indentations in the periphery of the thread, thereby allowing the bottom of the adjusting screw in the free end of the circuit maker to come in contact with the plate. I have described this alternative form of operating the numbering apparatus in the fire hall, as I wish it to be distinctly understood that I claim the same in this application.

What I claim as my invention is—

1. In fire alarm telegraphy a street alarm box having a number wheel, C, with spiral thread, D, formed on the rim, and teeth formed on the thread, in combination with a circuit breaker, L, having an adjustable screw, M, dog, *n*, and supplemental weighted arm, N, said circuit breaker controlling the operation of the mechanism and operated mechanically by the number wheel, substantially as and for the purpose specified.

2. In fire alarm telegraphy a street alarm

box having a number wheel, C, with a spiral thread, D, formed on the rim, and teeth formed on the thread, in combination with a weighted circuit breaker, L, dog, *n*, and projection, Q, running in the slot, *q*, for the purpose specified.

3. In fire alarm telegraphy a street alarm box having a number wheel, C, with a spiral thread, D, formed on the rim, and teeth formed on the thread, in combination with a weighted circuit breaker, L, dog, *n*, projection, *o*, on the hub, *m*, working under the rod P, and through the notches, *p*, the circuit breaker, L, being lifted clear of the plate, K, by the projection, Q, rising on the boss, T, and moved back to the inner end of the spindle, *l'*, by the lever, R, having a weighted supplemental arm substantially as specified.

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Witnesses:

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