

(No Model.)

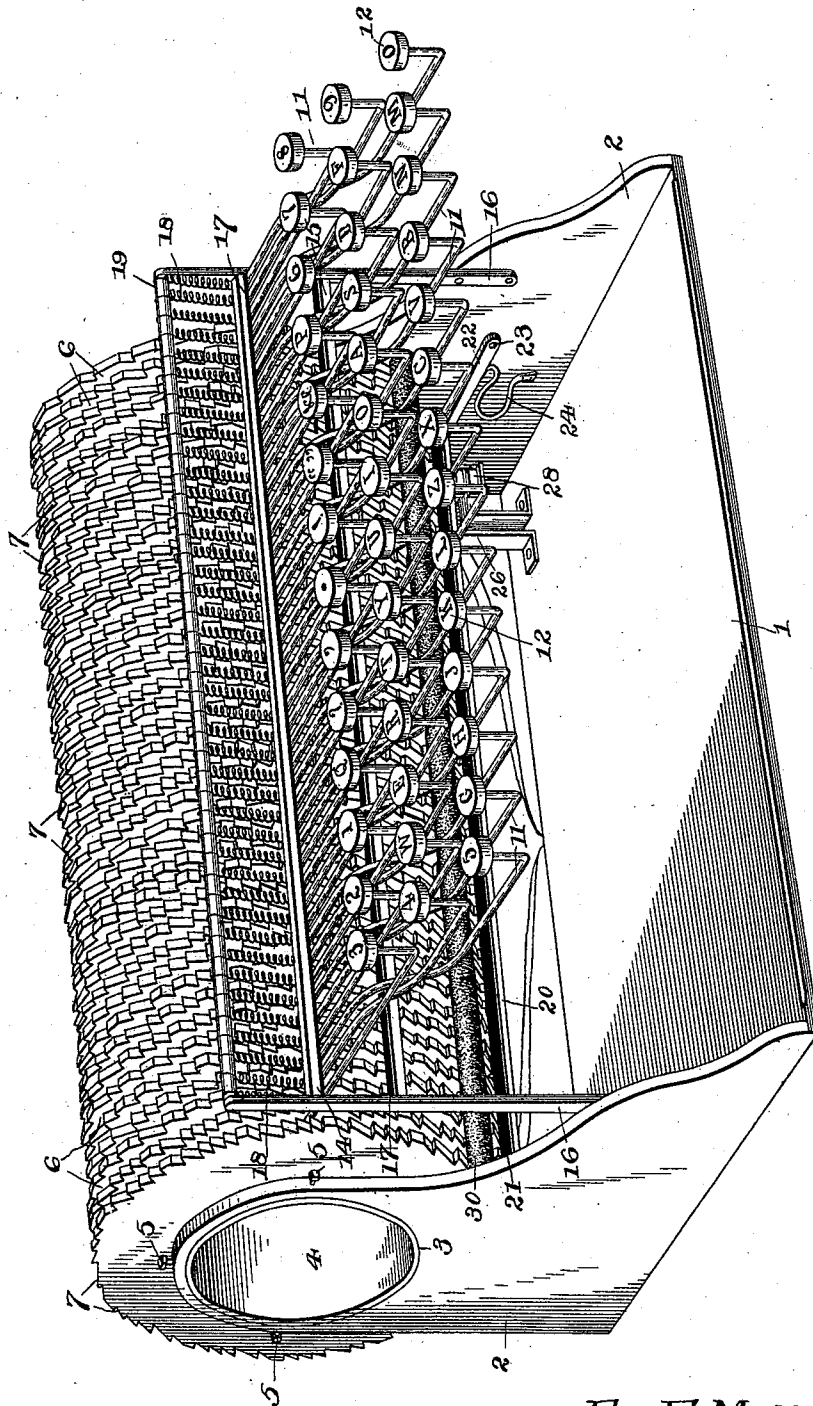
2 Sheets—Sheet 1.

E. E. MULLINIX.
FINGER BOARD TELEGRAPH KEY.

No. 530,957.

Patented Dec. 18, 1894.

Fig. 1.



Inventor

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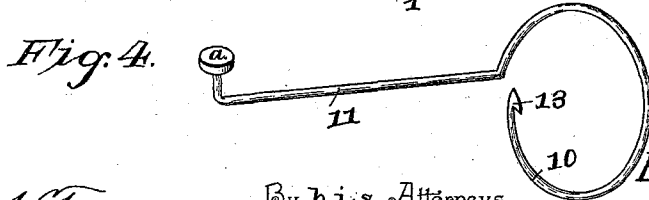
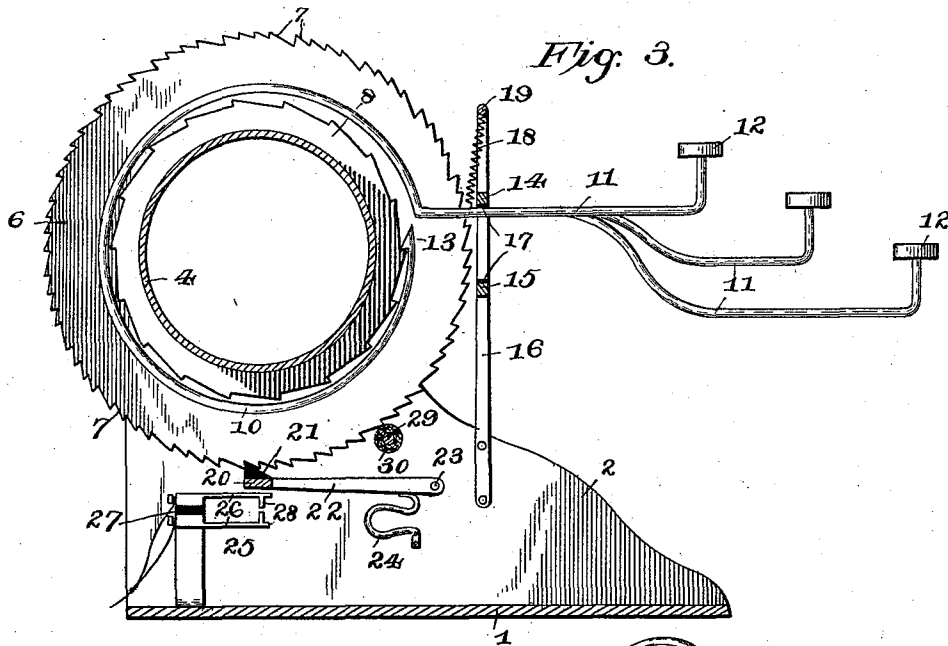
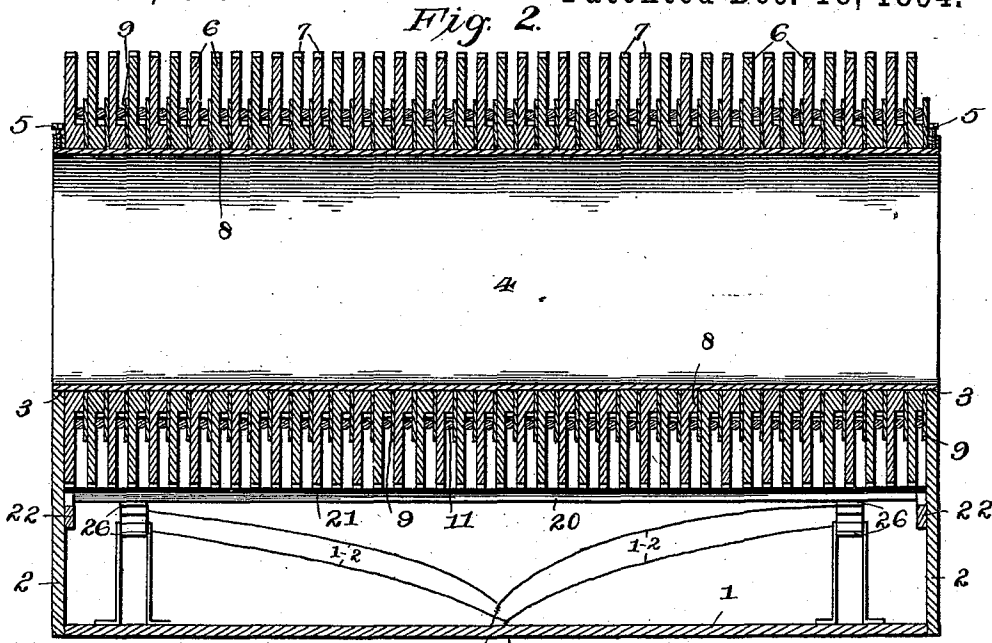
By his Attorneys,

C. A. Snow & Co.

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UNITED STATES PATENT OFFICE.

ELMER E. MULLINIX, OF BURLINGTON, KANSAS.

FINGER-BOARD TELEGRAPH-KEY.

SPECIFICATION forming part of Letters Patent No. 530,957, dated December 18, 1894.

Application filed July 31, 1894. Serial No. 519,094. (No model.)

To all whom it may concern:

Be it known that I, ELMER E. MULLINIX, a citizen of the United States, residing at Burlington, in the county of Coffey and State of Kansas, have invented a new and useful Finger-Board Telegraph-Key, of which the following is a specification.

This invention relates to finger board machines for telegraphic keys, and it has for its object to provide a new and useful machine of this character that shall provide simple and rapid means for manipulating the ordinary circuit closers or keys employed in telegraphy for sending messages in telegraphic symbols.

To this end the main and primary object of the present invention is to provide an improved finger board machine that can be manipulated with the same ease and rapidity as typewriters and other key operated machines, while at the same time providing means for imparting to the circuit closer or key operated thereby the proper vibrations which make up the dots and dashes of the ordinary telegraphic alphabet.

With these and other objects in view which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination and arrangement of parts hereinafter more fully described, illustrated and claimed.

In the accompanying drawings:—Figure 1 is a perspective view of a finger board machine or manipulator for telegraph keys constructed in accordance with this invention. Fig. 2 is a central longitudinal sectional view thereof. Fig. 3 is a vertical transverse sectional view, including a simplified form of circuit closer or telegraphing key. Fig. 4 is a detail in perspective of one of the operating levers for the telegraphing wheels.

Referring to the accompanying drawings, 1 designates a suitable supporting frame having the opposite end uprights 2, provided with the shaft openings 3, in which are fitted the opposite ends of the horizontal hollow shaft cylinder 4, and said hollow shaft cylinder is held in the openings of the end uprights 2, by means of the set screws 5, arranged in threaded openings in said uprights and impinging on the shaft cylinder, said set screws also providing for the longitudinal adjustment of the

said shaft cylinder if found necessary for adjusting any part of the machine.

The hollow shaft cylinder 4, accommodates for rotation thereon a longitudinal series of vertically disposed telegraphing wheels 6. The telegraphing wheels 6, may be made of any suitable material and are arranged slightly spaced from each other to accommodate the operating mechanism therefor, and there are a sufficient number of these telegraphing wheels to carry the entire telegraphic alphabet, that ordinarily includes twenty-six letters, ten figures, and six characters. Each of said telegraphing wheels 6, represents one particular letter, figure, or character, so that each wheel will carry only the same letter, figure or character, and is provided on its periphery with a uniform series of symbol projections 7, which represent the particular letter, figure or character carried by the wheel.

The symbol projections 7, which are formed on the periphery of the telegraphing wheels correspond to the symbols of the ordinary telegraphic alphabet comprising combinations of dots and dashes. So, for instance, one wheel will be provided on its periphery with regularly spaced groups of one dot and one dash each, representing the letter "a" of the alphabet, while another wheel would be provided on its periphery with regularly spaced groups of one dash and three dots, representing the letter "b," and so on throughout the entire alphabet, including the numerals and marks of punctuation, so that the entire series of wheels will together complete the telegraphic alphabet.

The telegraphing wheels 6 are provided at one side with the notched hubs 8, at one side of which are fitted the retaining flanges 9, which serve to retain in operative position on said notched hub, the inner circular pawl ends 10, of the outwardly extended operating levers 11, which carry upon their outer ends the finger keys 12, on which are placed the letter, figure, or character corresponding to the letter, figure or character carried by the wheel operated thereby. The inner circular pawl ends 10, of the operating levers 11, are preferably made of spring steel and are provided with the catch hooks 13, which are normally held into registering engagement with the notches of the hubs 8. The said circular

pawl ends 10, loosely encircle the notched hubs of the telegraphing wheels so as not to cause a backward movement of the wheels when the levers are released after being pushed down, while at the same time the said notched hubs are embraced sufficiently tight by said circular pawl ends to insure the registering engagement of the catch hooks 13, with the notches of the said hubs.

The notches on the wheel hubs 8, correspond in number to the number of groups of symbol projections carried by the wheels, or in other words correspond in number to the number of letters, figures or characters carried by the wheels, so that the depression of a lever for operating one of the telegraphing wheels will rotate such wheel a distance equal to the space between the groups of symbols thereon, for the purpose to be presently referred to. The levers 11, which are operatively connected with the hubs 8, by means of the pawl ends 10, are of different lengths so that the keys on the outer ends of the same may be readily manipulated by the fingers of the hands, and said operating levers are preferably arranged in three different lengths so that every fourth key will be operated by an operating or key lever of the same length, and by this arrangement all levers of the same length will be in the same row, thereby providing three longitudinal rows of finger keys, the arrangement of which is similar to the arrangement of the key board of a typewriter or similar key operated machine, but the arrangement of the key ends of the said levers may be modified to suit the requirements of the machine as may be found desirable.

At the front side of the machine the operating levers 11 are arranged to play between the parallel stop bars or rods 14 and 15 respectively. The said stop rods or bars 14 and 15 are arranged longitudinally in front of the telegraphing wheels and are connected at their opposite ends to the supporting uprights 16, arranged at opposite ends of the supporting frame 1, and said bars or rods are preferably provided with the padded or cushion sides 17, to ease the striking of the operating levers thereon and to reduce the wear of the machine. The upper of said stop bars or rods 14, limits the upward movement of the operating levers 11, and the lower of said bars or rods 15, limits the downward movement of said levers so that there is no possibility of rotating the telegraphing wheels 6, too far. When the operating levers are depressed against the lower stop bar or rod 15, the same are quickly retracted or elevated to their normal position against the under side of the bar or rod 14, by means of the retractile springs 18, connected at their lower ends to said levers and at their upper ends to the attaching rod 19, connecting the upper ends of the supporting uprights 16.

The rotation of the telegraphing wheels 6, carries the symbol projections 7, thereof over the normally spring elevated press rod 20. The

press rod 20, is preferably beveled on its upper side as at 21, to provide for the easy contact of the symbol projections of the wheels therewith, and such upper beveled side is preferably insulated in order to prevent any short circuiting through the said press rod which is adapted to work directly over and in contact with the circuit closing or telegraph keys operated thereby. The press rod 20, is attached at its opposite ends to the free ends of the supporting arms 22, pivoted at one end as at 23, to the inner sides of the frame uprights 2, and arranged above the elevating springs 24, which serve to hold the press rod 20, normally in contact with the irregular or notched peripheries of the telegraphing wheels 6. The said press rod is arranged directly above the telegraph or circuit closing keys 25 that are suitably supported in position thereunder and may be of any well known construction or of the simple construction illustrated in the drawings, in which the key is shown as comprising the spaced spring key or contact plate 26, suitably spaced and insulated from each other at one end as at 27, and provided at their other free ends with the opposed contact pins 28, normally out of contact with each other and providing means for the closing of the circuit through the plates 26, when the press rod 20, is pressed downward on one of the plates. One of the plates 26, has connected therewith one of the circuit wires 1—2, while the opposing plate has connected thereto the other of said circuit wires, the circuit wires 1—2 being arranged in the ordinary key circuit which is well known.

In connection with the press rod described two of the circuit closing telegraph keys 25, are preferably employed, one being located near each end of the series of wheels, and under about the third or fourth wheel from the opposite ends of the supporting frame, and this arrangement insures the closing of the circuit when any wheel is used, and in order to further insure the closing of the circuit when any wheel is used the circuit wires connected to the upper moving contacts of the keys 25, are joined together and the lower circuit wires connected to the fixed contact of said wheel also joined, so that the closing of the circuit over one of said keys would have the same effect as the closing of the circuit over both keys.

From the above it will be understood that whatever may be the character of the telegraph or circuit closing key arranged under the press rod 20, so as to be operated by the depression thereof, when one of the telegraphing wheels is rotated in the manner described, the symbol projections on such wheel will press the rod 20 downward onto the telegraph or circuit closing key so as to give the self-same impulses as would be given by the finger of the hand in operating directly on a telegraph key in the ordinary manner. So by the means described it is simply necessary for the operator to manipulate the keys of

the key board of the machine in a similar manner to other key operated machines in order to operate one or more telegraph keys that may be arranged under the press rod 20.

5 Directly in front of the press rod 20, and below the front lower portion of the wheel 6, is arranged a lubricating rod 29, extending from end to end of the supporting frame and covered with an oil pad 30, that is adapted
10 to be saturated with oil or any other suitable lubricating material so that the symbol projections of the telegraphing keys will be kept lubricated and will therefore quickly and
15 freely work over the press rod 20, without material friction thereon.

While the set screw fastenings for the shaft cylinder 4 have been described as admitting of a longitudinal adjustment of said cylinder for the purpose of adjusting the space be-
20 tween the wheels 6, it will be obvious that other means might be employed for this purpose, and in fact any changes in the form, proportion and the minor details of construction may be resorted to without departing
25 from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

30 1. In a telegraph key finger board, the combination of a series of independently revoluble telegraphing wheels provided with peripheral symbol projections, and a single continuous movable press rod normally held
35 in contact with the peripheries of all of said wheels and arranged to work over and onto a separate telegraph or circuit closing key, substantially as set forth.

2. In a machine of the class described, the
40 combination of a longitudinal series of vertical independently revoluble telegraphing wheels provided with peripheral symbol projections, a single continuous movable key operating press rod held normally in contact
45 with the peripheries of all of said wheels, and a continuous oil pad supported in contact with the peripheries of all of the wheels in front of said press rod, substantially as set forth.

3. In a machine of the class described, a
50 longitudinal series of vertical independently revoluble telegraphing wheels provided with peripheral symbol projections, a movable key operating press rod held normally in contact with the peripheries of said wheels, a lubricating rod arranged longitudinally in front
55 of said press rod, and an oil pad covering said rod and contacting with the peripheries of said telegraphing wheels, substantially as set forth.

4. In a machine of the class described, the
60 combination with a supporting frame, of a longitudinal series of independently revoluble telegraphing wheels mounted within said frame and provided with peripheral symbol
65 projections, normally spring elevated supporting arms pivoted at opposite ends of said frame, a beveled and insulated press rod connecting the free ends of said supporting arms and held in contact with the peripheries of
70 said wheels, said rod being adapted to work over a circuit closing or telegraph key, and separate operating means for each of said telegraphing wheels, substantially as set forth.

5. In a machine of the class described, the
75 combination with the supporting frame; of a hollow shaft cylinder removably and adjustably mounted on said frame, a longitudinal series of vertical telegraphing wheels provided with peripheral groups of symbol projections, notched hubs at one side, and retaining
80 flanges at one side of the hubs, operating levers provided with finger keys at their outer ends and at their inner ends with circular pawls loosely embracing the notched hubs of
85 said wheels and having catch hooks normally engaging the notches of said hubs, an upright frame arranged in front of said wheels and having upper and lower cushioned stop bars or rods between which said levers play, re-
90 tractile springs connected to said levers and to said upright frame above the levers to hold the latter normally elevated, and a movable insulated press rod held normally in contact with the peripheries of said wheels and adapted to work over and onto a telegraph or
95 circuit closing key, substantially as set forth.

6. In a machine of the class described, the
100 combination of a series of independently revolving telegraphing wheels having peripheral groups of symbol projections, a single continuous movable press rod normally held in contact with the peripheries of all of said wheels, oppositely located circuit closing keys arranged below said press rod near its opposite ends and each comprising spaced spring
105 key or contact plates insulated from each other at one end and provided at their opposite ends with opposed contact pins, and the circuit wires having branches connected with said contact plates of the keys, substantially
110 as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

ELMER E. MULLINIX.

Witnesses:

GEO. T. HALL,
F. W. JARBOE.