

March 22, 1938.

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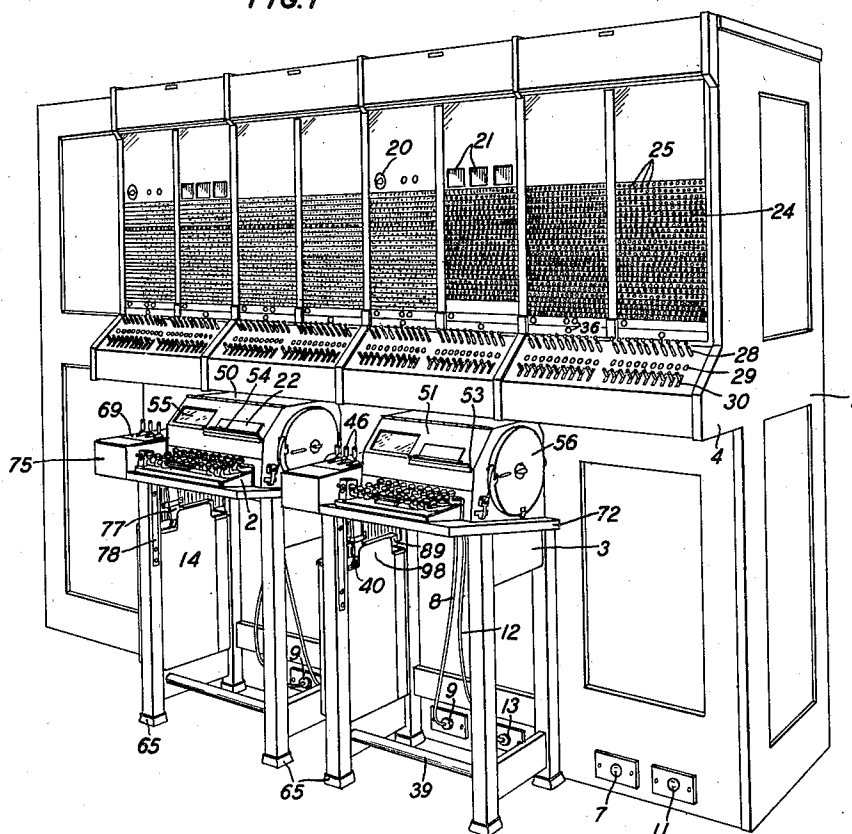
2,111,644

TELETYPEWRITER EQUIPMENT

Filed Aug. 22, 1936

3 Sheets-Sheet 1

FIG. 1



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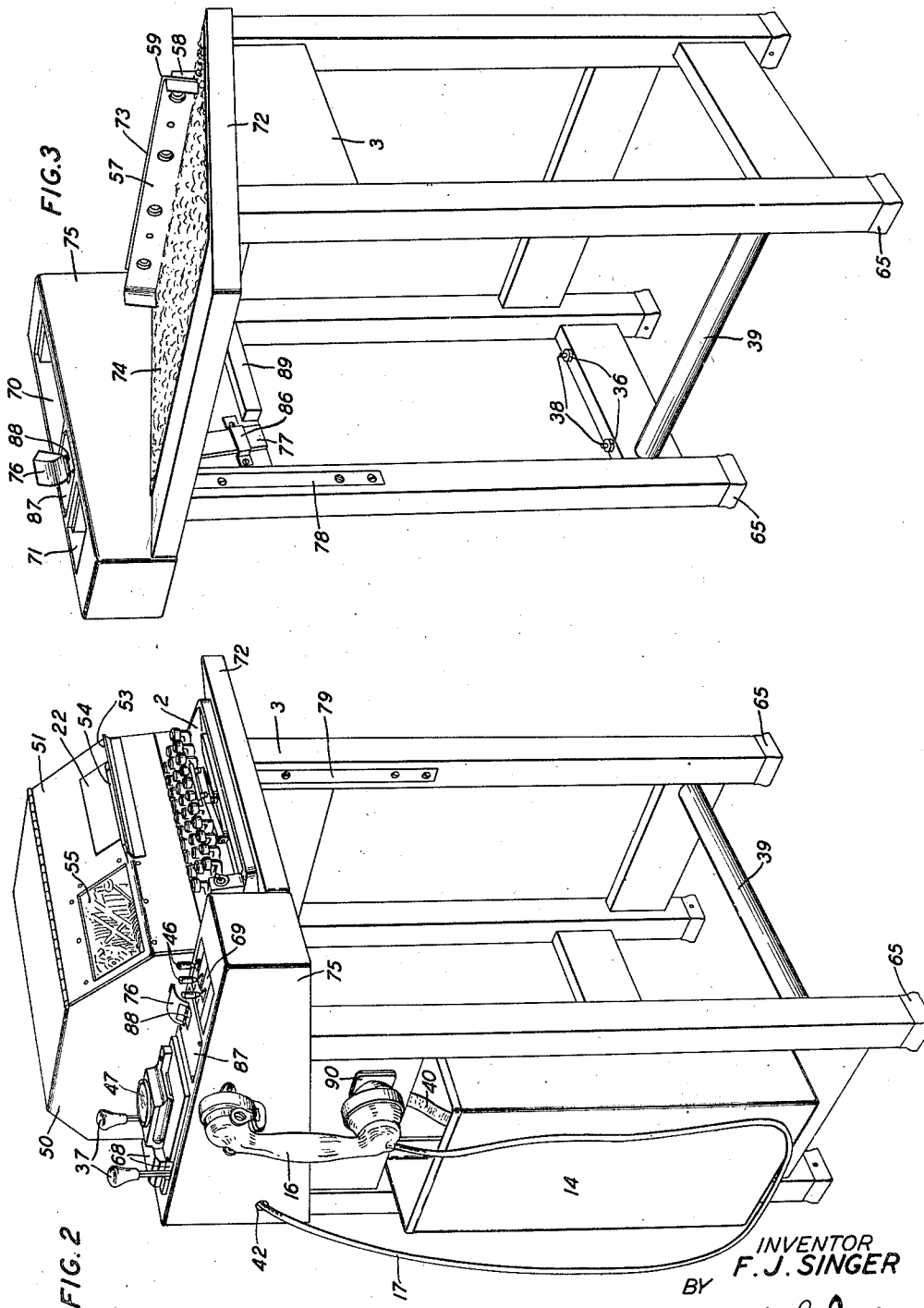
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3 Sheets-Sheet 3

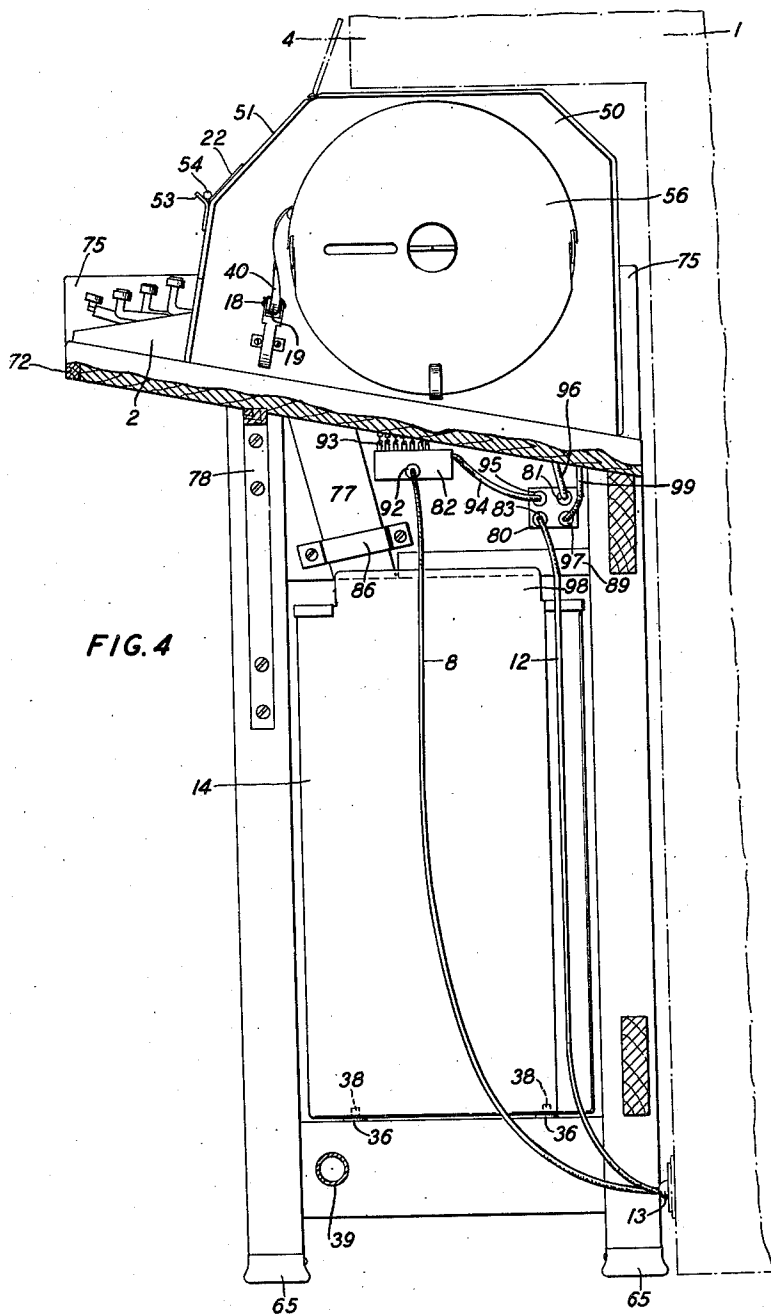


FIG. 4

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TELETYPEWRITER EQUIPMENT

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6 Claims. (Cl. 178—1)

This invention relates to an improved teletypewriter exchange switchboard of the type shown in Patent 2,037,193 granted April 14, 1936 to A. A. Burgess et al., and, more particularly, to means for increasing the area, available to an operator, of the jack-field of the switchboard multiple.

The practices used in operating telephone exchange switchboards cannot all be followed in operating teletypewriter exchange switchboards. For example, a telephone operator can place her chair close to the switchboard multiple and the extent of the area of the jack-field then available to her will be limited by the length of her arm. However, in teletypewriter exchange switchboard practice the area of the jack-field available to an operator is limited by a factor not found in telephone switchboard practice. This factor is the operator's teletypewriter which is usually located in front of her thereby blocking off an amount of the jack-field equal in dimension to the length and height of the teletypewriter. Thus, when the operator wishes to insert a plug in a jack, she reaches up above her teletypewriter to the jack-field, the top row of which is determined by the limit of her reach. However, the effectiveness of her reach is limited by the height of her teletypewriter since the height of the jack-field available to her is roughly equal to the length of her reach minus the height of her teletypewriter.

The teletypewriters ordinarily employed at teletypewriter exchange switchboards are usually about ten and one-half inches high. These teletypewriters are generally placed just below the front of the switchboard multiple with the result that the multiple commences about ten and one-half inches above the possible operating level which is at the keyboards of the teletypewriters. Thus, the number of rows of jacks that can be reached by an operator is distinctly limited by this construction since the total number of multiple jacks that an operator is able to reach is less than if her teletypewriter were lower in height.

Accordingly, it is an object of this invention to increase the area of the jack-field available to an operator at a teletypewriter exchange switchboard.

It is also an object of this invention to provide a teletypewriter exchange switchboard with a novel teletypewriter table and assembly.

These objects are accomplished by decreasing the effective height of the operator's teletypewriter so as to enable the operator to reach a

greater amount of the jack-field of the switchboard multiple. To obtain this decrease in the effective height of the operator's teletypewriter, the operator's table is provided with a sloping, or slanting, top. The construction of this table is such that the high part of the table top is that edge nearest to the operator and the low part of the top is that edge nearest to the switchboard. Thus, the top of the table slopes downward from the front of the table to the rear with the result that the back edge of the table top is several inches lower than the front edge.

With this construction, when a teletypewriter is placed upon this slanting table top, the bottom of the teletypewriter, in the preferred embodiment of the invention, is approximately three and one-eighth inches higher than it would be with the usual horizontal table top. This saving in operating height enables the operator's chair to be raised about three and one-eighth inches thereby providing, on a six-panel multiple, space within the operator's reach for approximately 360 additional jacks and lamps to be connected to an additional 360 subscribers' lines.

This increase in the area of the jack-field available to the operators increases the capacity of the operators' positions. In view of the steadily increasing demand for teletypewriter exchange facilities, this increase in the capacity of the operators' positions becomes of increasing importance. Furthermore, the lowering of the bottom of the jack-field of the switchboard multiple with respect to the position of the operator decreases the average amount of reach in answering and completing calls, thereby reducing the amount of time required to answer and complete calls and likewise reducing the amount of fatigue experienced by the operators in doing this type of work. As a result of this reduction in both time and fatigue, the efficiency of the operators is increased.

This design also takes into consideration the fact that the optimum width of one section of a teletypewriter exchange switchboard is approximately twenty and one-half inches, and this spacing is considered to be a minimum spacing for operators and permits a maximum number of operators to be placed alongside a given length of switchboard. In other words, it enables a minimum length of switchboard to serve a particular number of subscribers' lines.

The above features and other novel features of this teletypewriter table and assembly will be explained in more detail in connection with the drawings in which:

Fig. 1 is a three-dimensional view of a portion of a teletypewriter central office having a small teletypewriter exchange switchboard with two operators' tables and teletypewriters arranged in front of it and constructed in accordance with the invention;

Fig. 2 is a three-dimensional view of a teletypewriter and cover mounted upon an operator's table fully supplied with position equipment;

Fig. 3 is a three-dimensional view of the operator's table shown in Fig. 2, but with the teletypewriter, cover, and position equipment removed; and

Fig. 4 is a cross-sectional side view of the assembly shown in Fig. 2 and mounted under the projecting key-shelf of the switchboard in the manner shown in Fig. 1.

Fig. 1 represents a small teletypewriter exchange switchboard 1 similar to that disclosed in Patent 2,037,193, granted April 14, 1936, to A. A. Burgess et al. The disclosure of this Burgess et al. patent is incorporated herein by reference as a part of this specification. Returning now to the consideration of Fig. 1, the upper front portion of the teletypewriter exchange switchboard 1 has a jack-field 24 comprising rows of jacks 25. Just above the jack-field 24 are busy test lamps 20 and ticket boxes 21 for storing message rate tickets 22. Immediately below the jack-field 24 are the messenger, supervisor, and other miscellaneous positional keys 36.

Slightly lower down on the switchboard 1 is the projecting, or overhanging, key-shelf 4 having a row of calling and answering plugs 28, a row of supervisory lamps 29, and a row of supervisory keys 30. Behind the lower portion of each section of switchboard 1 is position relay equipment (not shown) which is connected by suitable conductors to terminal strips (not shown) and to outlets 7. Also behind the lower portion of the switchboard 1 is a conduit (not shown) leading from the local source of power supply (not shown) and connected to outlets 11.

Directly in front of the switchboard 1 are the operators' teletypewriters 2-2, each of which is mounted upon a table 3. For the sake of simplicity, only two teletypewriters 2-2 and tables 3-3 have been shown and it is to be understood that more may be readily employed if desired. As is shown in Figs. 1 and 4, key-shelf 4 projects outward a distance sufficient to permit a teletypewriter 2 and a table 3 to fit underneath to the extent of about half their width to enable the operators to sit close to the jack-field 24 for efficient operation. Tables 3 may be readily moved up and down the length of the switchboard 1 in accordance with different traffic requirements. The width of these tables 3 is approximately 20 3/8 inches, which is just a little less than the optimum width of one section of a teletypewriter exchange switchboard, which is approximately 20 1/2 inches.

The feet of each table 3 are provided with a base 65 composed of non-resilient material, such as hard rubber. To insure that the top of a table 3 will be stable and to obviate jiggling of table 3, the bases 65 may be removed to permit the insertion of a stabilizing device (not shown), after which the bases 65 may be replaced. An alternative means of stabilizing table 3 over an uneven floor surface is to use bases composed of resilient or compressible material, such as a rubber composition, which is designed to be compressible in accordance with the unevenness of the surface of the floor of the switchboard room to reduce

5 tipping or jiggling of the table 3. If the floor of the switchboard room is sufficiently level, then the legs of each table 3 may be provided with cup-shaped feet of hard brass to facilitate sliding the tables 3 up and down the length of the switchboard in accordance with different traffic requirements.

Each operator's teletypewriter 2 and table 3 is provided with position equipment located at the left of the teletypewriter 2 and mounted upon readily removable panels 68 and 69 to facilitate removal for maintenance or modification to meet different requirements of different installations. These panels 68 and 69 are best seen in Fig. 2 and are fitted into holes 70 and 71 (shown in Fig. 3) in the key-box 75. This position equipment includes an electric calculagraph 47 used by the operator to time messages as a basis for determining the amount to be charged for a particular call. Calculagraph 47 is provided with levers 37, one of which is used to indicate on a message rate ticket 22 the time when the message began and the other to indicate the time the message ended. Also included are the operator's position keys 46 for performing the supervisory functions of ringing on the answering cord, cord circuit splitting, recall and recall-release. These keys 46 are connected by leads (not shown) to a connecting block 82 (Fig. 4) located inside key-box 75.

This position equipment is connectible to the switchboard 1 by the line cable 8 and the power cable 12. Line cable 8 has a plug 9 which is adapted to fit into any of the outlets 7, at the base of switchboard 1, leading to the position relay equipment (not shown) inside switchboard 1. Power cable 12 has a plug 13 which is adapted to be inserted into any of the power outlets 11, at the base of switchboard 1, leading to the local source of power supply (not shown).

Since the tables 3 are usually located about 5 inches apart, as is shown in Fig. 1, it is practical to mount a telephone handset 16 upon the left end of table 3. To prevent the mouthpiece of telephone 16 from marring the left-end panel of table 3, a small square pad 90 of resilient material, such as rubber or felt, is attached to the panel of table 3 as shown in Fig. 2. Telephone 16 is connected to the switchboard 1 by a cord 17 which passes through a hole 42 in the left-end panel of table 3 to the connecting block 82. The telephone circuit then passes from the connecting block 82 over conductors in cable 8 and through outlet 7 to the relay equipment inside the switchboard 1.

In Fig. 3, table 3 is shown devoid of panels 68 and 69, teletypewriter 2 and the used tape storage receptacle or container 14. Along the lower left end of the table frame are two studs 38-38 for securing the used tape container 14 in a manner to be described hereinafter. Leather washers 36 are placed around these studs 38 to prevent container 14 from marring the frame of table 3. The lower front side of the table 3 is braced by a steel pipe 39 which also serves as a foot-rest for the operator.

The top of table 3 is divided into two parts. The right portion 72 of the top slopes from the front downward to the rear for supporting a teletypewriter 2 and has a bracket, or stop bar, 73 for preventing the teletypewriter 2 from sliding, or slipping, off the table top. The surface of this portion 72 is covered with a felt base 74 to adsorb and deaden the noise of the operation of teletypewriter 2. The left portion of the table 75

top comprises a key-box 75 having a horizontal top having holes, or cut-outs, 70 and 71 for receiving panels 68 and 69. Attached to the middle of the top of key-box 75 is a face-plate 87 to which is secured the hinged cover, or cap, 76 of the used tape chute 77 which will be described hereinafter. These two parts of the table top are supported by a bent steel bar brace 78, which also serves as a brace for the frame of table 3. A similar brace 79 is located at the upper right front corner of table 3 for supporting the top of table 3 and also for bracing the right side of table 3.

As is shown in Fig. 4, a connecting block 82 is attached to the inner surface of the left-end panel of table 3 and is partially located inside key-box 75. Connecting block 82 is provided with a receptacle for receiving plug 92 of the line cable 8 and is also provided with terminals 93 designed to be connected to the wiring of panels 68 and 69. At the right of connecting block 82 is a small jack panel 80 having four jacks, or receptacles. A cord 94 having a plug 95 carries the line circuit from connecting block 82 into panel 80. From here the line circuit goes out over plug 81 and cord 96 into teletypewriter 2. The power circuit for operating teletypewriter 2 leads from power cable 12 over plug 83 into panel 80 and then out over plug 97 and cord 99 to teletypewriter 2.

Each table 3 is provided with a thin rectangular tube 77 which serves as a chute for the used tape 40. The upper end of tube 77 is attached to the face-plate 87, which is secured to the top of key-box 75, and the lower end of the tape chute 77 is secured to the upper left part of the frame of table 3 by a bracket 86. Cap 76 for tape chute 77 is attached to face-plate 87 by a hinge 88 so that access to chute 77 may be had in the event that tape 40 should stick to chute 77 or in case an operator should want to read back used tape 40. Fig. 2 shows cap 76 in its normal position and Fig. 3 shows it raised up. Cap 76 is so positioned over the entrance to chute 77 that the tape 40 is automatically deflected into chute 77 by the curved top of cap 76 and need not be initially introduced therein by hand.

The used tape container, or receptacle, 14 is preferably made of sheet metal and fits in between the left legs of table 3 so that its side is flush with the inner sides of these legs. Container 14 is secured to table 3 by the two studs 38, which fit into holes (not shown) in the bottom of container 14. Marring of the frame of table 3 by container 14 is prevented by two leather washers 36, which are placed over studs 38 so that they come between the frame of table 3 and the bottom of container 14. The side of container 14 that faces the inside of table 3 has a lip 98 (Fig. 4) that extends above the top of container 14. This lip 98 rests against a cleat 89 secured to the upper part of the frame on the left end of table 3. Container 14 is held in place by studs 38 and also by the fact that its center of gravity is outside the frame of table 3 and hence tends to tip container 14 outward, a movement which is prevented by lip 98 bearing against cleat 89. In the event that the tables 3—3 in Fig. 1 should be pushed together, the container 14 of the table 3 at the right in Fig. 1 would fit in between the right pair of legs of the left table 3 and would come flush with their inner sides.

Mounted upon the slanting top 72 of each table 3 is a teletypewriter 2. Each teletypewriter 2 has supports (not shown) which rest on the

felt base 74 which serves to insure stability and to deaden the noise of operation. Teletypewriter 2 is placed on base 74 in such a position that the stop bar 73 comes against the back supports of the teletypewriter to hold it firmly in place.

Ordinarily, the highest part of the teletypewriter 2 is the rear portion. However, since top 72 slants downward to the rear, the normally high rear part of teletypewriter 2 is correspondingly lowered. The difference in height between the front part of top 72 and the rear part is so great that, in the preferred embodiment of the invention, the normally high rear part is lowered to such an extent that the top of the teletypewriter 2 is approximately 3 and $\frac{1}{8}$ inches lower with respect to the front of the table than it would be if top 72 were horizontal. This enables the operator's chair to be raised about $3\frac{1}{8}$ inches thereby providing, on a six-panel multiple, space within the operator's reach for approximately 360 additional jacks and lamps to be connected to an additional 360 subscribers' lines.

This sloping position of teletypewriter 2 makes it desirable to use a cover 50 of new design for the teletypewriter 2 instead of the usual cover. The cover 50 comprises two end plates to which the one-piece back, top and bottom part of the front of the cover 50 are spot-welded. The upper part 51 of the front of the cover 50 is hinged to the top portion of cover 50 and fits in between the end plates the same as the back and top. This lid, or hinged front part, 51 of cover 50 is hinged so that it may be lifted up as shown in the dotted lines in Fig. 4 to facilitate changing the inking ribbon of the teletypewriter or the tape 40 without the trouble of pulling the table 3 out from under the key-shelf 4 as would be necessary if cover 50 were constructed in all one piece. A stop, or trough, 53 is attached to the lower right portion of lid 51 for holding a pencil 54 and toll, or message rate, tickets 22. Secured to the left portion of lid 51 is a glass plate 55 through which the printed portion of tape 40 may be read.

Cover 50 is constructed with a minimum number of openings to confine the noise of the operation of teletypewriter 2 within the cover 50, where it will be absorbed by the lining (not shown) of sound absorbent material. To further reduce the number of openings in cover 50, the tape reel 56 is mounted on the cover 50 rather than on table 3. This enables tape 40 to pass over the straightening feed roller 19 and then through a narrow slot 18 in the right end of cover 50. Tape 40 passes over the typing mechanism of teletypewriter 2 and then out through a narrow slot (not shown) in the left end of cover 50, under cap 76, and then through the tape chute 77 to the used tape container 14. To further prevent noise from issuing from teletypewriter 2, the openings in cover 50 around the hinged lid 51 and around the keyboard of teletypewriter 2 are provided with a seal (not shown) made of folded sheet rubber. Thus the noise of operation of the teletypewriters 2 is considerably diminished.

It can be seen in the drawings that the top of the table 50 is not in a plane parallel to that of the sloping table top 72 and that, instead, it lies in a horizontal plane. This shape of the cover 50 takes advantage of the fact that the front part of teletypewriter 2 is not as high as the rear part. Consequently, the effect of this construction is equivalent to reducing by about

one inch the height of the ordinary cover generally used.

On the inside of the back of the cover 50 are two hooks (not shown) which engage with the metal bracket, or stop bar, 73. The bracket 73 comprises two metal parts 57 and 58 held together with a strip of felt 59 in between, the rear metal part 58 being secured to the table top 72. The hooks on cover 50 engage with the rear metal part 58, which is so designed that the movement of the cover 50 is very limited. The front metal part 57 forms a cradle into which the back of the teletypewriter base fits. Thus, this bracket 73 prevents direct contact between cover 50 and teletypewriter 2 thereby serving to further muffle the noise of the operation of teletypewriter 2.

By means of this teletypewriter and table assembly, the operators are able to make more efficient use of the switchboard multiple and the number of jacks that can be reached by each operator is materially increased with a consequential increase in the capacity of the office. Of course, it is to be understood that additional modifications within the scope of the principles herein outlined are within the scope of the invention as herein set forth and claimed.

What is claimed is:

1. A table for supporting a printing telegraph machine together with its position equipment, said table having a sloping top for supporting the printing telegraph machine, said top sloping from the front of the table downward to the rear, and a key-box for supporting the position equipment, said key-box having a horizontal top.

2. A table for supporting a tape printing telegraph machine together with its position equipment, said table having a sloping top for supporting the printing telegraph machine, said top sloping downward from the front of the table to the rear, a key-box for supporting the position equipment, said key-box having a horizontal top, and a tape chute attached to the key-box and having a hinged cover with a curved top for guiding tape.

3. In combination a teletypewriter and table assembly including a table having a slanting top, said top slanting from the front of the table downward to the rear, a teletypewriter mounted

upon the slanting top of the table, holding means for preventing the teletypewriter from sliding off the top of the table, a cover for the teletypewriter, said cover having a horizontal top, position equipment for the teletypewriter, and a key-box for supporting the position equipment, said key-box having a horizontal top.

4. In combination a teletypewriter and table assembly, including a table having a slanting top, said top slanting from the front of the table downward to the rear, a teletypewriter mounted upon the slanting top of the table, holding means for preventing the teletypewriter from sliding off the top of the table, a cover for the teletypewriter, said cover having a horizontal top, position equipment for the teletypewriter, said position equipment being mounted upon panels, and a key-box for supporting the position equipment, said key-box being provided with a horizontal top having receptacles for receiving said panels.

5. In a printing telegraph central office, a printing telegraph exchange switchboard having a projecting key-shelf, a table movably located underneath the projecting key-shelf of the switchboard, said table having a top slanting downward from the front of the table to the rear, a teletypewriter mounted upon the slanting top of the table, holding means for preventing the teletypewriter from sliding off the top of the table, a cover for the teletypewriter, said cover having a horizontal top, position equipment for the teletypewriter, and a key-box having a horizontal top for supporting the position equipment, said teletypewriter and table being adapted to be moved up and down the length of the switchboard in accordance with varying traffic conditions.

6. In a teletypewriter central office including in combination a teletypewriter exchange switchboard having an operator's teletypewriter and a table positioned in front of the switchboard, said switchboard having a jack-field, the method of increasing the area of the jack-field available to the operator, said method comprising sloping the top of the table downward from the front to the rear, mounting the teletypewriter upon the top of the table, and lowering the bottom of the jack-field down near the top of the teletypewriter.

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