July 6, 1926. 1,591,917

F. E. J. WILDE

ELECTRIC SIGN CONTROLLER

Filed March 25, 1925 3 Sheets-Sheet 1

Fig. 1.

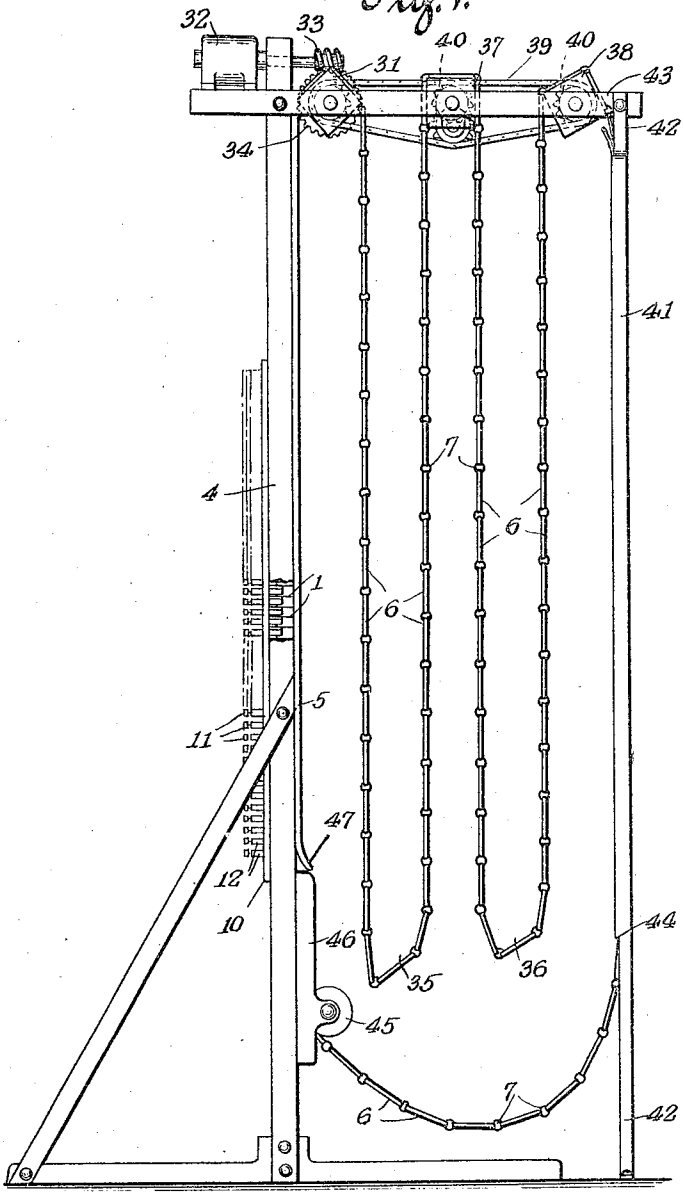
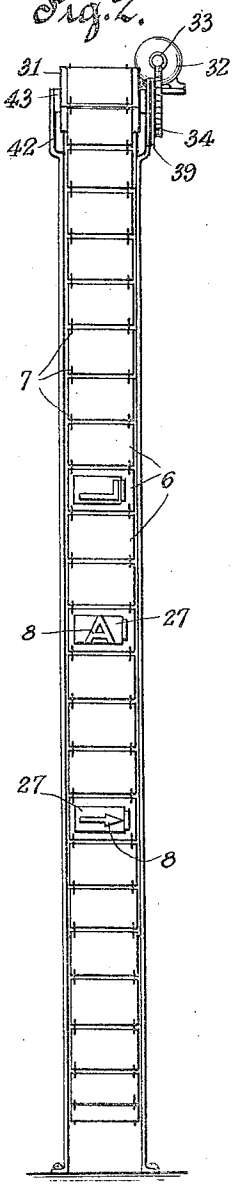


Fig. 2.



Inventor

Francis E. J. Wilde

By his Attorney

Philip S. McLean.

July 6, 1926. 1,591,917

F. E. J. WILDE

ELECTRIC SIGN CONTROLLER

Filed March 25, 1925 3 Sheets-Sheet 2

Fig. 3.

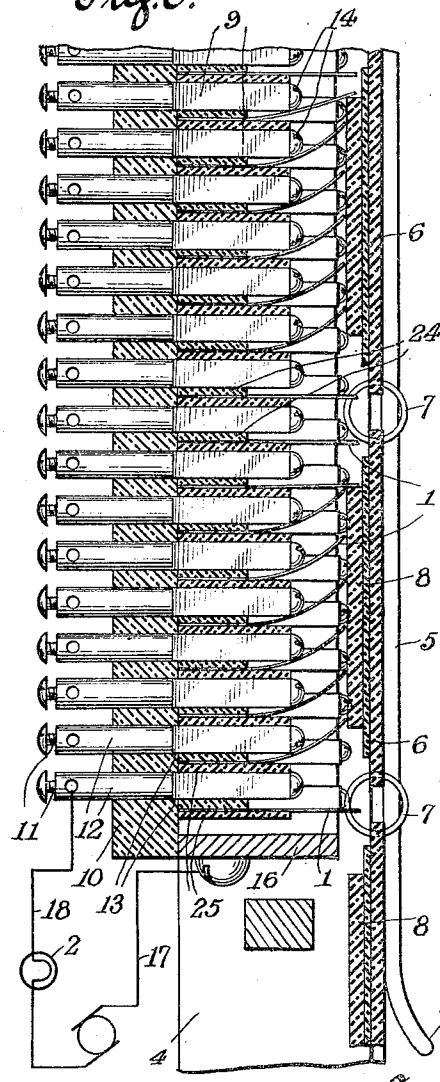


Fig. 4.

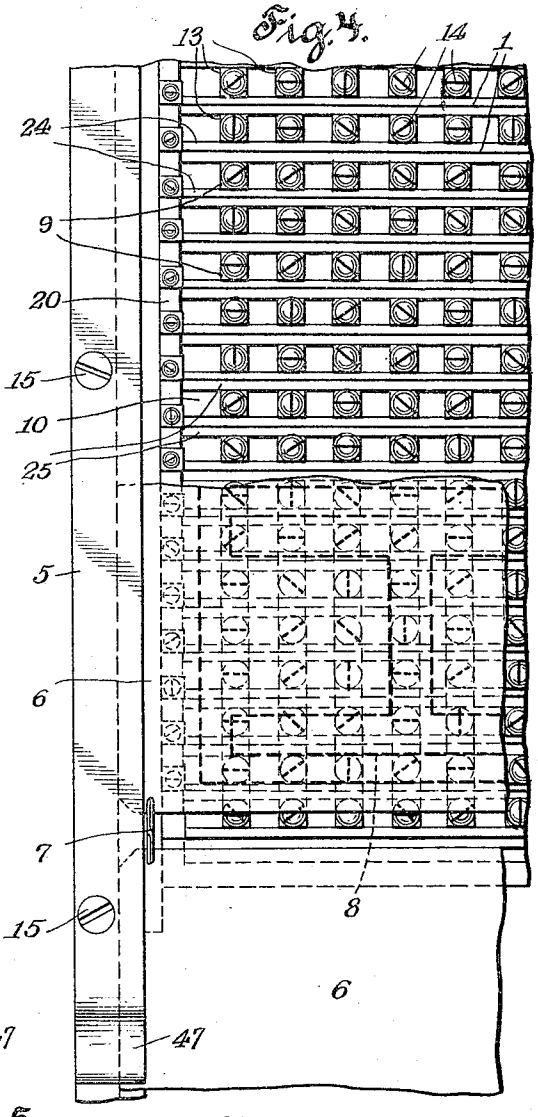
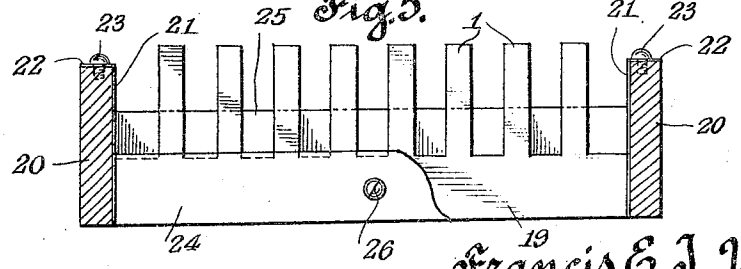


Fig. 5.



Inventor

Francis E. J. Wilde

By his Attorney

Philip S. McLean.

July 6, 1926. 1,591,917

F. E. J. WILDE

ELECTRIC SIGN CONTROLLER

Filed March 25, 1925 3 Sheets-Sheet 3

Fig. 6.

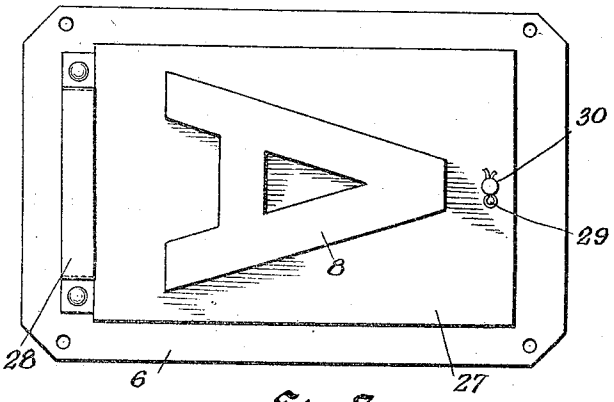


Fig. 10.

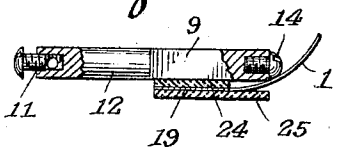


Fig. 7.

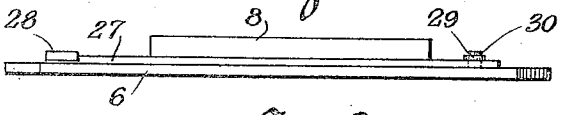


Fig. 11.

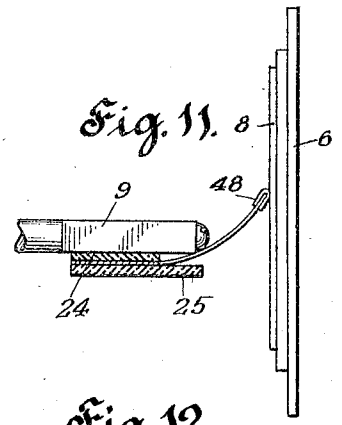


Fig. 8.

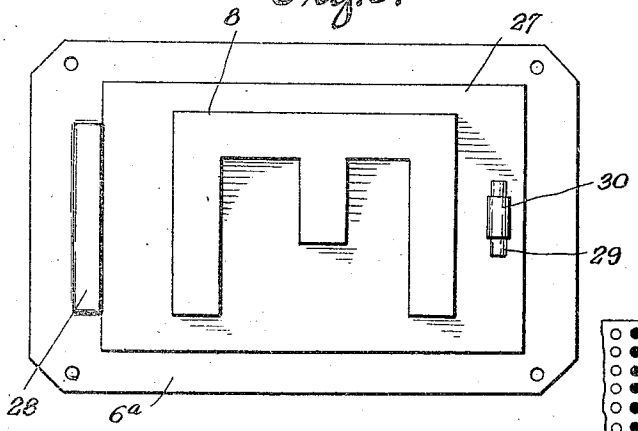


Fig. 12.

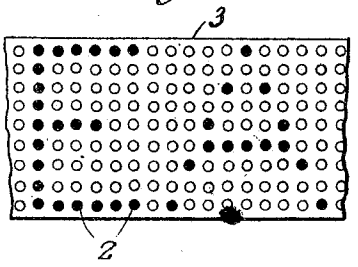
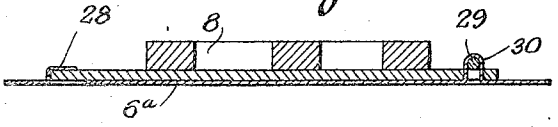


Fig. 9.



Inventor

Francis E. J. Wilde

By his Attorney

Philip S. McLean.

Patented July 6, 1926. 1,591,917

UNITED STATES PATENT OFFICE.

FRANCIS E. J. WILDE, OF MEADOWMERE PARK, LONG ISLAND, NEW YORK, ASSIGNOR TO MOTOGRAM CORPORATION, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

ELECTRIC-SIGN CONTROLLER.

Application filed March 25, 1925. Serial No. 18,119.

This invention relates to "talking" signs and particularly to the control mechanism by which the letters or other characters are caused to traverse the sign-board.

Heretofore such control mechanism has been relatively heavy, expensive and complicated apparatus and quite limited in exhibition possibilities.

Important objects of the present invention are to overcome the objections and limitations found in the present machines and to provide apparatus of a simple, compact and inexpensive form, of smaller size and having a greater range of operation.

Other objects are to provide control mechanism for electric signs in which the parts that may require attention are fully accessible and readily replaceable or repaired should such be necessary.

The foregoing and other objects are attained in part by special novel contact mechanism, involving upstanding or outstanding fingers forming actuators for the individual lamps or signals of the sign and resiliently mounted so that they may be bent over on engagement by traveling sign characters, into cooperative relation with companion elements to close energizing circuits through the thus selected lamps.

In a preferred form the individual controls are provided in groups or rows made up of metallic combs having resilient teeth positioned in the path of the traveling design patterns and arranged to be flexed thereby into engagement with companion terminal posts. These combs are readily removable so that a whole row of contact fingers may be replaced or adjusted at a time and the posts preferably have screw tips which are readily replaceable or adjustable. The patterns or designs which govern the display are linked together in a chain and to provide for a maximum of length, the intermediate portions of this chain may be supported in one or a number of freely swung traveling loops.

Other important novel features of the invention will appear as the specification proceeds in the drawings accompanying and forming part of this specification, the invention is shown embodied in practical commercial form, but it should be understood that the invention is not to be confined to this particular form, a fact which will be apparent from the broad scope and spirit of the description and claims.

Figure 1 is a side view of the control mechanism.

Figure 2 is a rear view of the same.

Figure 3 is an enlarged vertical sectional view of a portion of the bank of contactors illustrating operation of the same by passage of the character patterns.

Figure 4 is a broken rear view of these same parts.

Figure 5 is a detached partly broken view of one of the contact combs.

Figures 6–7 and 8–9 are plan and edge views respectively of some of the letter characters.

Figures 10 and 11 are broken detail views further showing operation of the flexible contactors, the latter showing a special contactor type with insulating material for operation by metallic patterns.

Figure 12 is a fragmentary view illustrating a portion of the sign-board as controlled by this apparatus.

In Figures 1 and 2 the general relation and arrangement of parts is possibly best illustrated. These views show a bank of control contacts 1 positioned to correspond with the lamps 2 of the sign-board 3, Figure 12, which they govern. This bank of contacts is arranged vertically, supported thus in a suitable frame 4 which carries guides 5 for the pattern carrying panels 6. These panels are shown linked together in the form of an endless chain by means of split spring rings 7 on the order of "key rings" which can be quickly opened up to separate any of the links in the chain for the purpose of adding, subtracting or changing characters. The characters are in the form of raised patterns 8 having the shape of the letters, numbers or other figures which are to be reproduced on the sign-board and these patterns, as best shown in Figure 3, project inwardly from the faces of their supports sufficiently to engage the spring contacts and to bend the same over into engagement with the inner ends of correspondingly positioned terminal posts 9. These posts are shown set in a suitable insulating support 10 mounted on the frame and as provided at their outer ends with binding screws or terminals 11 from which conduc-

tors are extended to the correspondingly positioned lamps on the sign. In one preferred form, these posts are made of square or rectangular stock, rounded at the outer or terminal end as at 12 and are held within the insulating support by simply driving them into round holes provided therefor and until the shoulders 13 at the ends of the square portions cut or seat into the insulating material far enough to lock the posts and hold them against turning.

To enable ready renewal or adjustment of the contact portions, the tips of these posts are shown as formed by round head screws 14, providing rounded contact and bearing surfaces for the contact fingers to bend over. These rounded bearing surfaces increase the current carrying surfaces and by easing the bends of the contact fingers, prevent said fingers from being injured by continued flexing. These contact screws are exposed and readily accessible at the back of the insulating support and so can be quickly adjusted, removed or replaced as occasion requires. To uncover these contacts the chain may be uncoupled and drawn out of the guides or if desired, the chain may be left intact and shifted back out of the way after releasing the chain from the guides, one or both of the guides being for this purpose shown as a strap or bar removably secured on the back of the frame by screws 15.

In the present disclosure, the spring fingers are the "leaf" contacts, thus operating each time they are bent into engagement with a terminal post to complete a circuit through the particular lamp or lamps with which such post is connected. For this reason all the spring fingers are mounted in a current conducting frame 16 suitably insulated from other parts of the machine and to which current is supplied from a suitable generator such as by the connection indicated at 17 in Figure 3. The other side of this circuit is diagrammatically shown at 18 extending from one of the terminal posts to the lamp controlled thereby.

The contact fingers are shown arranged in rows extending crosswise of the bank and each row, Figure 5, as consisting of the teeth of an integrally formed "comb" 19. These combs may be cut from strips of phosphor bronze or other good conducting spring metal of a length to properly fit between the side bars 20 of the conducting frame 16. For mounting the comb strips and electrically connecting them with the side bars, they are shown having angularly bent ends 21 fitting flat against the inside faces of the frame bars and overturned at the upper or outer ends at 22 to overlie the edges of the bars, screws 23 being passed through these overturned lugs to detachably hold the combs in place and form current conducting engagement between the frame and strips. The back portions of the combs are shown as reinforced by strips of insulation 24, 25, at opposite sides of the same and secured thereto by screws or rivets 26. These insulating strips brace the bodies of the combs, holding them solid against any twisting tendency from flexure of the individual teeth and this bracing effect is increased by making the combined width of each comb with its insulating strips equal to the spacing between adjoining rows of the terminal posts. The inserted combs thus fit snugly in the slots formed between the adjoining rows of posts and so are braced by these posts and kept electrically separate therefrom by the insulating separators.

The insulating strip 24 at the front or upper side of each comb is shown as narrower than the back strip 25 so as to permit the fingers to freely flex forwardly or upwardly toward and into engagement with their cooperating posts, the added width of the back strips preventing the fingers when released from snapping back into engagement with the wrong posts, at the back of the same. If desired, however, this back strip may be low enough or the parts so related that when released, the spring contacts will snap back into engagement with the preceding posts and so produce a momentary "flashing" effect following the travel of each character.

As the pattern chain carries no current, both the supporting panels and the figures or patterns may be made of insulating material and are so indicated in Figures 3, 4, 6 and 7. In Figures 8 and 9 a metallic panel 6^a is shown carrying a pattern made of non-conducting material. In both forms the character is shown mounted on a sub-panel or base 27 engaged at one end beneath a loop or strap 28 and held at the opposite end by a cotter or pin 29 passed through a post or loop 30 extending through an opening provided in the sub-base. This construction, it will be seen, makes it possible to readily interchange the letters or characters on the chain without disconnecting or changing the chain.

For supporting and driving the chain a square pulley 31 is shown provided at the upper end of the trackway, the sides of said pulley being substantially equal to the lengths of the chain links so that said pulley will both carry and propel the chain smoothly and uniformly. This rectangular pulley is shown operated from a suitable motor 32 through a worm and gear drive 33, 34.

A special feature enabling the condensing of a considerable length of the pattern chain within a comparatively small space, is the supporting of the chain in a series of intermediate continuously traveling loops. Two of such intermediate loops are illustrated

in Figure 1 at 35, 36, the first hanging between the back of the drive pulley and an intermediate idler square pulley 37 and the second hanging between this intermediate or idler and a supporting square pulley 38 at the back of the machine. These pulleys are driven in unison by suitable gearing, the same being shown as a sprocket chain 39 running over sprocket wheels 40 on the pulley shafts. The supporting pulleys may be removable and interchangeable so that one, two, or in fact any number of them, may be used, depending on the length of chain in the machine and the number of loops in which it is draped.

From the last supporting pulley, the chain is directed back to the contact bank by suitable means such as the guide channel 41. This channel is shown as having its side flanges 42 secured at the top of the frame bar 43 in which the rolls or pulleys are journaled and as having its side flanges at the bottom spread apart and resting on the floor or supporting structure so as to brace and steady the rear of the machine. The back or web of the panel is cut away from between the side flanges at the bottom approximately at the point 44 to allow the chain to swing between the supporting side flanges forwardly in a gradual curve where it is shown guided by an idler 45 between side gages 46 which position the links to pass freely beneath the inclined lower ends 47 of the guide rods 5.

As a further possibility, metallic characters on metallic supports may be used in the machine as indicated in Figure 11, but in such a case it is desirable to insulate the tips of the contact fingers where they engage with such letters as indicated at 48 to prevent electrification of the chain.

By placing the characters either horizontally or vertically on the chain, the apparatus may be used to operate either a horizontal or a vertical sign, without changing the apparatus in any way. By feeding the patterns upwardly, a smooth continuous and uniform action is obtained and a machine capable of handling a sign of very large dimensions may be built into a comparatively small space. The looping of the intermediate portions of the chain enables the handling of a great length of chain within a relatively small space, permits the chain to run freely without friction or cramping of any kind and enables inspection and changing of the chain readily to meet various requirements.

The various parts of the machine can be simply and durably constructed and the current carrying parts are inexpensive and can be readily adjusted or renewed. The side flexing of the spring contacts is relatively slight and is a gradual, easy movement so that said springs will operate continuously without showing any signs of wear.

What is claimed is:

1. In apparatus of the character disclosed, sign controls, a chain carrying patterns for actuating said controls, angular sided pulleys for supporting and driving separated vertical stretches of said chain, an angular sided pulley between the first two pulleys for supporting and driving an intermediate section of the chain in the form of suspended traveling loops and means for driving the pulleys in unison to continuously maintain the traveling loops.

2. In apparatus of the character disclosed, a bank of upstanding flexible sign controlling spring fingers, individual terminal posts insulated from each other and from the spring fingers and positioned to be engaged by the individual spring fingers and shiftable patterns positioned to engage the spring fingers and to deflect the same into engagement with their respective terminal posts.

3. In electrical sign controlling mechanism, insulated terminal contacts, resilient spring contact fingers supported in position to be bent into engagement with certain insulated terminal contacts and shiftable pattern members for bending selected contact fingers into engagement with the cooperatively positioned terminal contacts.

4. In electrical sign controlling mechanism, insulated terminal contacts, resilient spring contact fingers supported in position to be bent into engagement with the terminal contacts and shiftable pattern members for bending selected contact fingers into engagement with the cooperatively positioned terminal contacts, said patterns being in the form of raised characters of insulating material and an endless chain for carrying the same repeatedly over the contact fingers.

5. In electrical sign controlling mechanism, a bank of terminal contacts, substantially horizontally disposed spring contact fingers for engagement therewith but normally separated therefrom and vertically traveling sign patterns for bending the spring contacts vertically into engagement with the individual terminal contacts.

6. In electrical sign controlling mechanism, substantially horizontally extending spring contact fingers, vertically traveling sign patterns for bending said fingers vertically and insulated individual circuit controlling contacts positioned for engagement by the individual fingers as said fingers are bent by the traveling sign patterns.

7. In apparatus of the character disclosed, a metallic comb having individualized flexible spring fingers, contact means for cooperative engagement by said fingers, and a traveling pattern for bending individual fingers into engagement with the cooperating contact means.

8. In apparatus of the character disclosed, metallic combs arranged in a bank and each having individualized spring contact fingers, cooperating contact elements for engagement by the different fingers of the various combs and traveling pattern members for bending selected variously positioned fingers into engagement with the cooperating contact means.

9. In apparatus of the character disclosed, a current conducting frame, metallic combs having end lugs detachably secured to said frame and spring contact fingers intermediate the end lugs, contact means positioned for engagement by said fingers and traveling pattern devices for bending the fingers into engagement with the cooperating contact means.

10. In apparatus of the character disclosed, a current carrying frame, combs detachably secured in said current carrying frame and having flexible spring contact fingers, insulated terminal contacts supported in the frame in position to be engaged by the fingers when the latter are bent toward the same and traveling patterns for so bending the contact fingers

11. In apparatus of the character disclosed, a current carrying frame, combs detachably secured in said current carrying frame and having flexible spring contact fingers, insulated terminal contacts supported in the frame in position to be engaged by the fingers when the latter are bent toward the same, traveling patterns for so bending the contact fingers and insulating separators between the combs and the terminal contacts.

12. As an article of manufacture, a multiple contact for sign controlling mechanism comprising a metallic strip having end attaching lugs and intermediate individualized spring contact fingers.

13. As an article of manufacture, a multiple contact for sign controlling mechanism comprising a metallic strip having end attaching lugs, intermediate individualized spring contact fingers and an insulating backing for said comb-like structure.

14. In apparatus of the character disclosed, individual terminal contacts arranged in rows with spaces between the rows and comb elements detachably engageable in said spaces and provided with individualized spring contact fingers bendable into engagement with the adjacent terminal contacts.

15. In apparatus of the character disclosed, individual terminal contacts arranged in rows with spaces between the rows, comb elements detachably engageable in said spaces and provided with individualized spring contact fingers bendable into engagement with the adjacent terminal contacts and insulating separators between the combs and terminal contacts.

16. In apparatus of the character disclosed, a base of insulating material provided with spaced openings, terminal posts set in said openings, spring contact fingers supported for engagement with the individual terminal posts and traveling sign patterns for flexing said fingers into engagement with the posts.

17. In apparatus of the character disclosed, a base of insulating material provided with spaced openings, terminal posts set in said openings, spring contact fingers supported for engagement with the individual terminal posts and traveling sign patterns for flexing said fingers into engagement with the posts, said posts having removable tips rounded to effect a gradual flexure of the spring fingers.

18. In apparatus of the character disclosed, a base of insulating material provided with spaced openings, terminal posts set in said openings, spring contact fingers supported for engagement with the individual terminal posts, traveling sign patterns for flexing said fingers into engagement with the posts and removable screw contact tips on the posts.

19. In apparatus of the character disclosed, a base of insulating material provided with spaced openings, terminal posts set in said openings, spring contact fingers supported for engagement with the individual terminal posts and traveling sign patterns for flexing said fingers into engagement with the posts, said posts having rounded portions extended through the insulating base and angular shoulders engaged with the base.

20. In apparatus of the character disclosed, a frame having side bars, combs having yielding spring teeth and angularly turned ends to fit between the side bars, outturned lugs on said angularly turned ends engageable over the edges of the side bars and disengageable fastenings for said lugs.

21. In apparatus of the character disclosed, a traveling chain having noncurrent-carrying patterns and circuit controlling couples having bendable elements engageable by said patterns and cooperating elements into engagement with which the first elements are bent.

22. In apparatus of the character disclosed, a substantially vertical guideway, a substantially vertical channel to the rear of said guideway, pulleys at the upper ends of the guideway and channel, a pattern chain extending through the guideway and channel and supported at the top by said pulleys, means for guiding the lower reach of the chain between the channel and foot of the guideway, sign controls supported opposite the guideway in position to be actuated by the pattern chain and a driven pulley intermediate the other two pulleys over which

the intermediate section of the chain is draped in free swinging traveling continuous loops.

23. In apparatus of the character disclosed, a pattern chain having links detachably connected together, patterns removably and interchangeably mounted on said links, individually insulated terminals and resilient spring fingers disposed substantially at right angles to the line of travel of said characters and bendable transversely by the characters in their movement into individual circuit completing engagement with said insulated terminals.

24. In apparatus of the character disclosed, a bank of spring contact fingers, cooperating contacts at the sides of said contact fingers and engageable thereby upon lateral bending of said spring fingers, raised characters of insulating material and means for traversing said characters over the contact fingers to bend the same into engagement with the cooperating contact means.

25. In apparatus of the character disclosed, terminal posts, flat spring contact strips mounted at the sides of said posts with their flat sides toward the posts, insulated therefrom but bendable transversely into engagement therewith, said strips projecting beyond the posts and patterns traveling past the ends of the posts and engaging the projecting ends of selected numbers of the strips to bend such strips into circuit establishing engagement with the companion terminal posts.

26. In apparatus of the character disclosed, patterns arranged for travel in a definite path, spring fingers fixedly secured at one side of said path and having freely flexing ends projecting substantially at right angles to the line of travel into the path of the patterns so as to be engaged and bent thereby, terminal posts positioned to be engaged by the free bending portions of the spring fingers, said fingers and posts being relatively insulated and signal elements having as terminals cooperating pairs of the fingers and posts.

27. In apparatus of the character disclosed, patterns in the form of raised characters of different designs, means for propelling the same in a definite path, contact elements having freely yieldable portions projecting at an angle to such travel directly into the path of the raised characters so as to be engaged and displaced thereby, companion contact elements positioned opposite the displaceable portions of the first elements, normally free thereof but adapted to be engaged by the portions of the companion elements displaced by the traveling raised characters, said cooperating elements being relatively insulated and signal devices each connected with a pair of such cooperating elements.

28. In apparatus of the character disclosed, a chain of non-current carrying raised characters of insulating material, means for traversing said chain in a definite path, contact devices comprising normally separated and relatively insulated pairs of cooperating elements located at one side of the chain, one element of each pair having a portion projecting into the path of travel of the raised insulating characters and displaceable thereby into engagement with the companion element and signal devices each connected with a pair of the contact elements.

29. As an article of manufacture, a multiple contact for sign controlling mechanism comprising a one piece metallic strip of spring material having a back and individualized spring contact fingers projecting therefrom in spaced relation, said back portion having means for securing the same in rigid relation with the fingers free for flexure.

30. In apparatus of the character disclosed, terminal posts, relatively insulated spring contact fingers bendable in one direction into engagement with companion posts, means for limiting flexure in the opposite direction to prevent engagement with other posts and sign patterns arranged for travel to flex the contact fingers in the first direction mentioned.

31. In apparatus of the character disclosed, a bank of yieldable contact fingers all electrically connected, a bank of terminal posts, electrically insulated from each other and from the yieldable fingers but paired with individual fingers and each positioned for engagement by the finger with which it is paired and traveling sign patterns arranged to displace selected fingers into engagement with their companion terminal posts.

In witness whereof, I have hereunto set my hand this 19th day of March, 1925.

FRANCIS E. J. WILDE.