Nov. 23, 1954 J. P. MYERS ET AL 2,695,379

ANIMATED ELECTRIC SIGN

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Fig. 1.

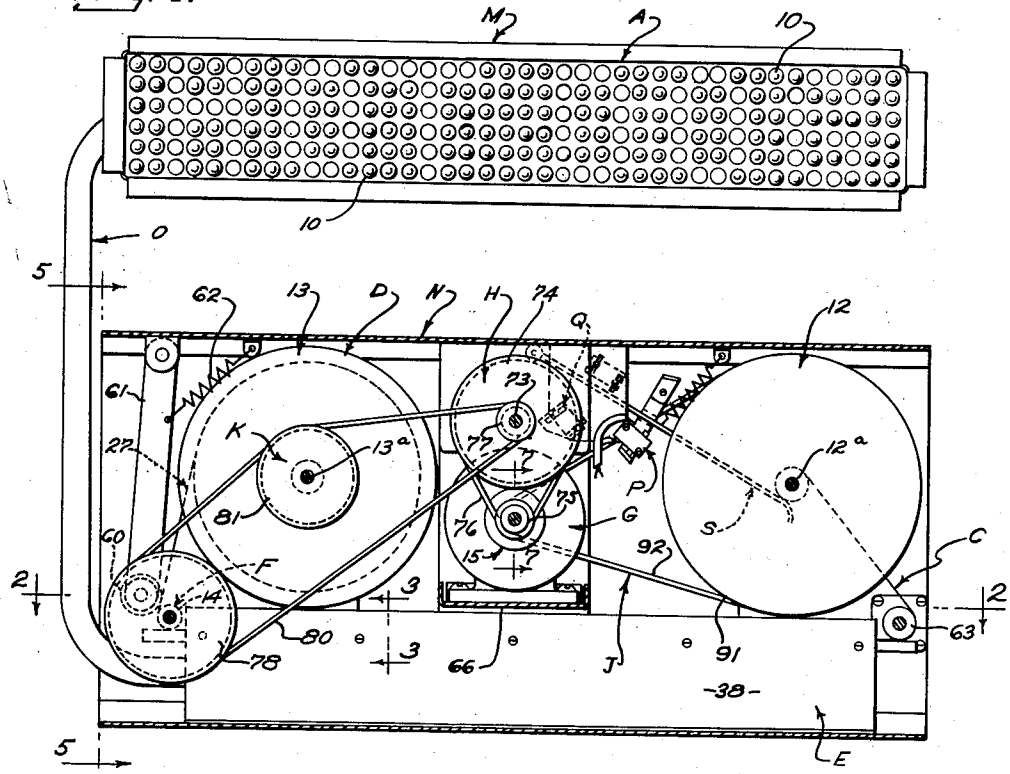
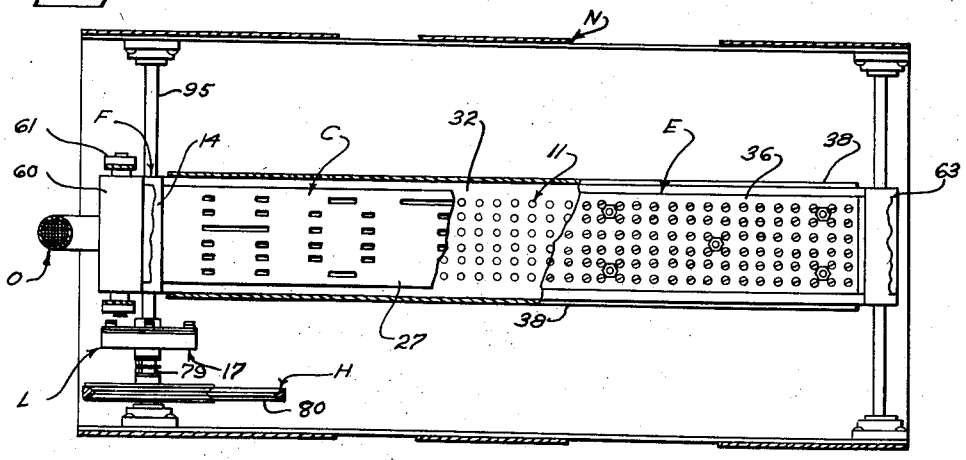


Fig. 2.



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Fig. 3.

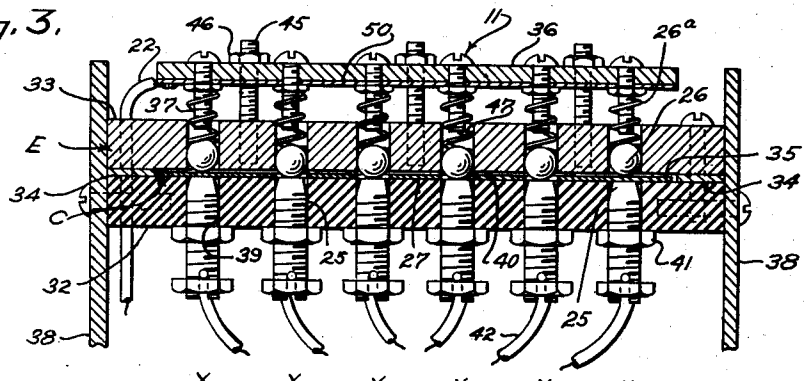


Fig. 4.

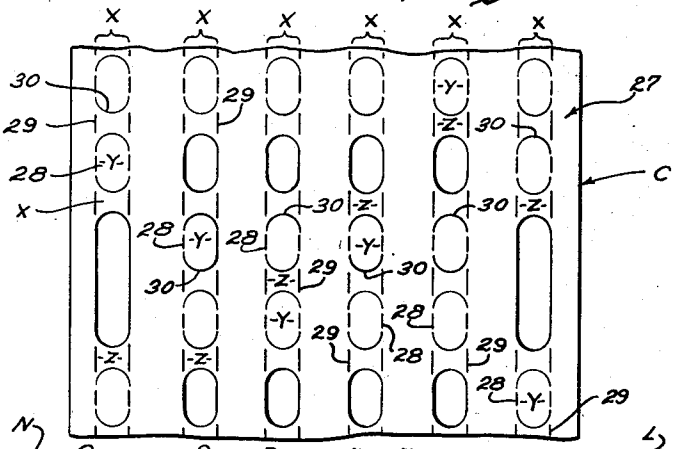


Fig. 5.

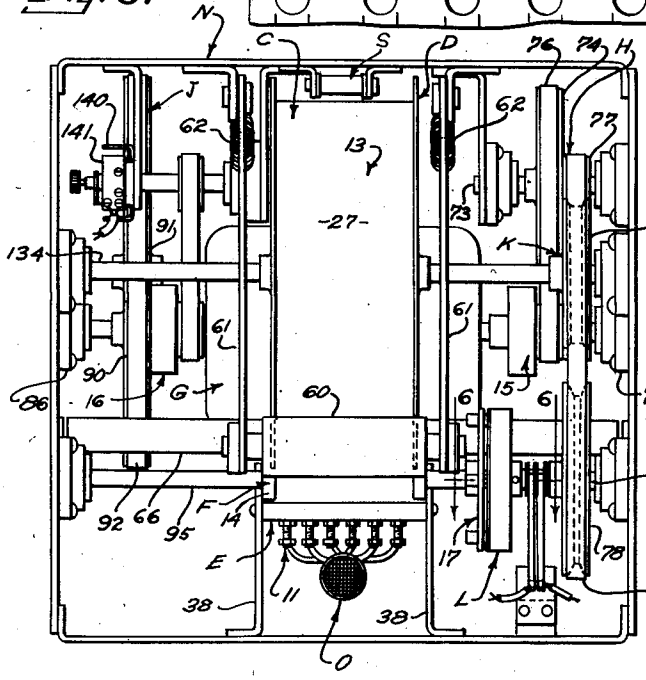
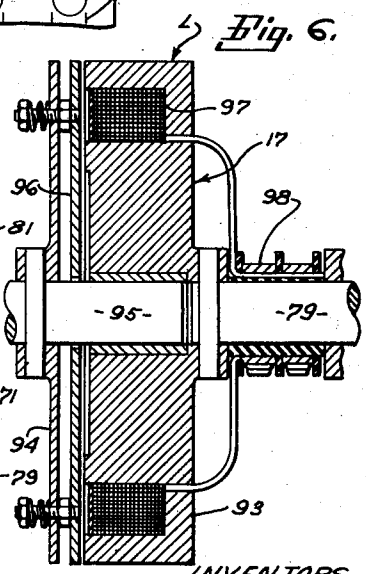


Fig. 6.



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Fig. 7.

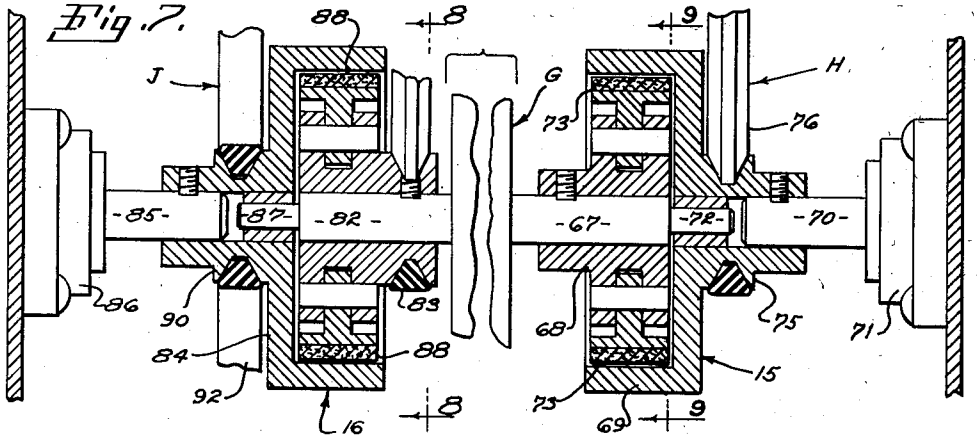


Fig. 8.

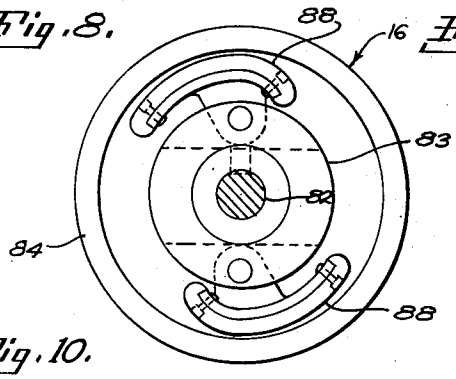


Fig. 9.

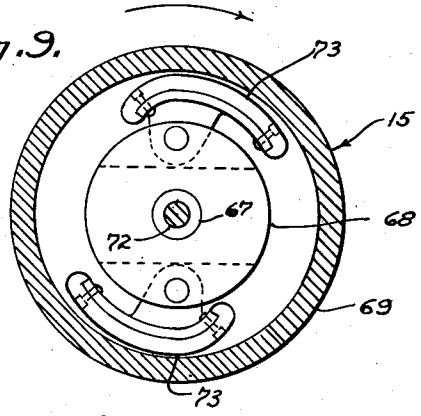
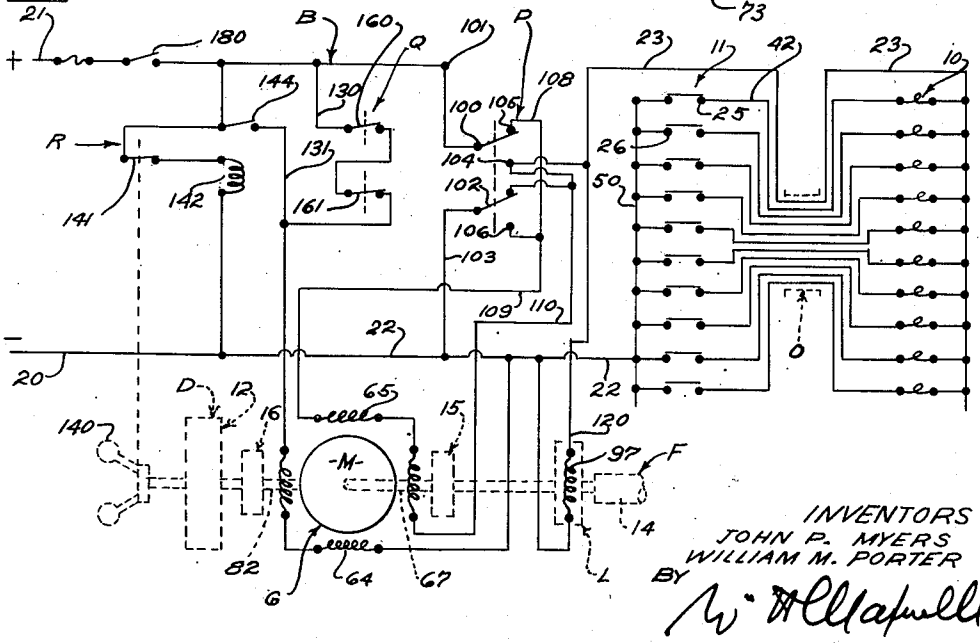


Fig. 10.



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2,695,379

ANIMATED ELECTRIC SIGN

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Application November 28, 1947, Serial No. 788,432

5 Claims. (Cl. 317—157)

This invention has to do with an animated electric sign, it being a general object of the invention to provide a sign or like device preferably involving a plurality of lamps or the like, selectively operated, which sign is under control of a web and is such as to operate continuously repeating a predetermined sign or display, and is such that it can be readily varied at will by simple variation of the web.

Electric signs and the like have been provided involving a plurality of lamps or like units and various controls have been provided for such signs, which controls are generally complicated both in construction and of operation and are not readily variable.

It is a general object of the present invention to provide a sign of the general character referred to, that is a sign involving a plurality of lamps and a control for selectively energizing the lamps, which control involves a simple, inexpensive control element or web such that a person other than a technician or skilled mechanic can readily condition the web so that the sign operates in any desired manner. With the construction of the present invention a web is provided that is formed of a sheet of material such as a heavy paper, and has parts conditioned to be broken out or punched out at will, the pattern of the punched out parts determining the character of the sign or display as the apparatus operates.

Another object of the invention is to provide a simplified and improved switch construction for a mechanism of the general character referred to. The present invention provides a switch which involves few simple dependable parts and is, consequently, inexpensive of construction and dependable and effective in operation.

Another object of the present invention is to provide a single unit or mechanism carrying or embodying the several switches necessary to control the sign and forming a guide that handles the web which controls the switches.

Another object of the present invention is to provide a sign of the general character referred to involving a simple, effective and dependable control system serving to reverse the web handling mechanism at each end of its movement, to the end that the mechanism will operate indefinitely, repeating operation of the web.

The various objects and features of our invention will be fully understood from the following detailed description of a typical preferred form and application of the invention, throughout which description reference is made to the accompanying drawings, in which:

Fig. 1 is a view of the apparatus provided by the invention showing a front elevation of the sign proper and showing various working parts of the apparatus, certain of the parts being shown in section. Fig. 2 is a view taken as indicated by line 2—2 on Fig. 1. Fig. 3 is an enlarged detailed sectional view taken as indicated by line 3—3 on Fig. 1. Fig. 4 is a plan view of a portion of the web employed in the apparatus. Fig. 5 is an enlarged view taken as indicated by line 5—5 on Fig. 1. Fig. 6 is an enlarged sectional view taken as indicated by line 6—6 on Fig. 5. Fig. 7 is an enlarged sectional view taken as indicated by line 7—7 on Fig. 1. Fig. 8 is a transverse view taken as indicated by line 8—8 on Fig. 7. Fig. 9 is a transverse sectional view taken as indicated by line 9—9 on Fig. 7, and Fig. 10 is a diagrammatic view illustrating the control system provided by the present invention.

The construction provided by the present invention involves, generally, a sign A including a plurality of lights or lamps 10, a control circuit B including among other elements switches 11 for the lamps 10, a control C for the switches of circuit B which control is preferably in the form of a web, supporting means D for the web, preferably involving a supply reel 12 and a take-up reel 13, a carrier E for the switches of the circuit B and forming a guide for the web of means C, feed means F preferably in the form of a feed roller 14, a prime mover G preferably in the form of a reversible electric motor, a drive H from the motor to the feed F and preferably including a clutch 15, a drive J from the motor G to the supply reel 12 and preferably including a clutch 16, a drive K for the take-up reel 13 preferably in the form of a frictional drive, a release L for the feed drive releasably coupling the drive H with the feed F and preferably involving a magnetic clutch 17, a carrier M for the sign, a housing N for the balance of the elements, and a cable O coupling the unit at the housing N with the unit at the carrier M. In addition to the elements mentioned the invention provides a control synchronizing or coordinating the operation of the various elements named, which control system preferably involves, generally, a master switch P controlling the circuit to the lamps, the motor G, and the clutch 17, stop switches Q for the motor, a starting switch R for the motor and an operator S for the master switch P.

A sign A involves, primarily, a bank or series of lamps 10 suitably supported by or from the carrier M. In the drawings we have shown a panel-like carrier at the face of which there is a bank of lamps 10. It is to be understood that the lamps 10 may be supported in suitable sockets carried by the carrier M in the manner common to electric signs. In the particular case illustrated the lamps are arranged in an elongate rectangular bank involving parallel rows of lamps uniform in size and shape.

The circuit B for the sign couples the lamps 10 with a power circuit by power lines 20 and 21, the circuit B including various electrical connections and the switches 11 which control the lamps 10, there being a switch 11 for each lamp 10. A connection or lead 22 from power line 20 extends to and connects with one pole of each switch 11 while a lead line 23 connected with the power line 21 through switch P extends to or connects with the other poles of the switches 11 through the lamps 10. As a result of this arrangement, which is clearly illustrated in Fig. 10 of the drawings, each lamp 10 is under control of a switch 11 when the circuit from the main power line is closed through the switch P.

Each switch 11 involves, generally, a stationary contact 25 preferably in the form of a post, a movable contact 26, preferably in the form of a ball, and a spring 26a normally urging the ball toward the switch. The switch construction just referred to is illustrated in Fig. 3 of the drawings and will be more fully described and will be best understood when considered in connection with the carrier E hereinafter described.

The control C is a web type control, the web being formed by an elongate strip or sheet 27 of flexible material, preferably non-conductive material. In the preferred form of the invention a non-conductive or insulating material such as paper may be used for the web 27 and we have found, in practice, that a paper of jute base and of heavy weight operates satisfactorily. The web 27 may be of any desirable length, it being preferred that it be a strip of substantial length and of uniform width throughout its length.

In accordance with the present invention the web 27 is provided with a plurality of control portions or zones X which control portions or zones preferably extend lengthwise of the web, it being preferred generally that there be as many zones extending lengthwise of the web as there are rows of lamps 10 extending lengthwise of the sign A. Each control zone X of the web 27 is characterized or established by longitudinal rows or lines of weakened points 28 and 29. The weakened points 28 and 29 are preferably cuts made in or through the web 27 either completely through or substantially through the web, and in the preferred arrangement each cut is of considerable length and the cuts 28 and 29 alternate lengthwise of the web. Each zone X is further provided with transverse lines 30 of weakening similar generally in character to the lines of weakening 28 and 29, except

that they extend transversely of the web **27**. The transverse lines **30** preferably extend between points adjacent but spaced somewhat from the ends of laterally opposite lines **28** and each pair of lines **28** is provided at each end with a transverse line **30**. The transverse lines of weakening are preferably arcuate or outwardly curved so that each pair of longitudinal lines **28** with its adjoining transverse lines **30** defines or establishes an area Y on the control zone X subject to being removed or displaced or forming a punch-out that can be readily separated from the balance of the web, but which will not become displaced or which will remain continuous with the balance of the web until deliberately removed.

The longitudinal lines or points of weakening **29** occur between adjacent punch-out zones Y so that the connecting zones Z which bridge or extend between the adjacent zones Y may, if desired, be punched out or removed, uniting the openings established by removal of adjacent zones Y to form slots of substantial length in the control zone X of the web. Through the construction that we have provided areas or punch-outs Y can be removed from the web **27** wherever desired to form limited openings through the web, limited in extent to the size of the areas Y and bridging areas Z can be punched out or removed, establishing openings of any desired length. In practice areas Y and Z are punched out of the web **27** in the several control zones X to make patterns or figures such as are desired in the sign A. For example, the patterns may form letters in such sequence and so related as to create the message desired to be delivered by the sign.

The supporting means D for the web preferably involves two spaced reels **12** and **13** preferably supported in the housing N on spaced parallel axles **12a** and **13a**, respectively. The web or control strip **27** is wound on the reels **12** and **13**, one end of the web being fixed to reel **12** and the other to reel **13**. The reel **12** is a supply reel on which the major portion of the web is wound when operation of the apparatus is started, while the reel **13** is a take-up reel onto which the web winds as it pays from the reel **12**.

The carrier E that carries the switches **11** and which guides the web **27** relative to the switches may be a rigid body suitably mounted in the housing N and supporting the various parts of the switches and forming a channel through which the web operates. In the particular case illustrated the carrier E involves a base plate **32** carrying the fixed contacts **25** of the switches **11**, a top plate **33** above and parallel with the base plate **32**, spacers **34** between the plates **32** and **33** spacing the plates so that they have parts spaced apart and defining the web channel **35**, a pressure plate **36** located above the top plate and carrying the springs **26a** of the switches **11** and guides **37** carried by the pressure plate guiding the spring **26a** and forming stops for the balls **26** of the switches.

The base plate **32** is preferably a flat elongate rectangular plate fixed between suitable uprights or supports **38** in the housing N. The plate **32** is preferably formed of insulating material or a non-conducting material, and it is provided with threaded openings **39** into which the posts or stationary contacts **25** of the switches are threaded. In the preferred arrangement the posts **25** are threaded upwardly into the opening **39** so that their upper or contact ends **40** are substantially flush with the top of the plate **32**. Nuts **41** are threaded on the projecting lower end portions of the posts and may be tightened against the bottom of the plate **32** to set the posts in the desired positions. Leads **42** from the line **23** connect to the outer or lower ends of the posts.

The top plate **33** is preferably a flat plate corresponding in size and shape to the plate **32** and spaced above the plate **32** by the spacers **34**. The spacers **34** are elongate strips of suitable thickness located at opposite edges of the plates **32** and **33** so that they are spaced apart and space the plates **32** and **33** apart to define the desired web channel **35**.

The pressure plate **36** is located above the top plate **33** and is coupled to the top plate by suitable screws **45**. The screws project upwardly from plate **33** and nuts **46** are threaded on the screws above the pressure plate **36** so that the position of the pressure plate **36** relative to the plate **33** can be adjusted by operation of nuts on the screws.

The top plate **33** has openings **47** registering with the openings **39** that carry the posts **25**. The balls **26** are slidably carried in the openings **47** and the springs **27** are arranged between the pressure plate **36** and the balls **26**, the lower end portions of the springs entering the openings **47** as clearly shown in Fig. 3 of the drawings. By adjusting the pressure plate **36** relative to the top plate **33** the pressure with which the springs urge the balls toward the posts **25** can be adjusted. The guides **37** are carried by the pressure plate **36** to depend therefrom into or through the springs **26a** so that their lower ends terminate in the openings **27** forming stops positively preventing displacement of the balls **26** from the openings **47**. In the particular arrangement illustrated a contact plate or bus bar **50** is carried by the pressure plate to make contact with the springs **26a**. The lead line **22** of the circuit B is connected to the bus bar **50**.

The spacers **34** extend lengthwise of the plates **32** and **33** so that the web channel **35** extends lengthwise of the structure. The switches **11** are carried or supported by the structure just described so that they occur in lines or series extending lengthwise of the structure and are spaced apart in the manner that the control zones X of the web **27** are spaced apart across the web. As the web **27** is passed through the channel **35**, the switches **11** are under control of the control zones of the web, one control zone X of the web controlling one row of switches **11**.

With this arrangement the uppermost row of lamps in the sign A is under control of the control zone at one edge of the web while the lowermost row of lamps is under control of the zone X at the other edge of the web, the intermediate rows of lamps being under control of the intermediate zones X of the web. When the web is in the carrier E, as shown in Fig. 3, the balls **26** of the switches are held out of contact with the posts except where areas of the web have been removed. When the web is so positioned that one of the openings therethrough, established by the removal of an area of a control zone, registers with a switch ball **26**, that particular switch ball is urged downwardly into contact engagement with the post beneath it. As that patricular opening in the web is moved out of register with that particular switch ball, the ball is lifted away from the post, thus opening the switch and that particular switch remains open until another web opening moves into register with it. It will thus be apparent that the switches **11** are selectively controlled by the web and the sequence of opening and closing of the switches is determined by the arrangement of openings established in the control web by removal of areas Y and Z of the control zones X of the web.

The feed F for the web preferably operates to draw the web through the carrier E dragging it from the supply reel **12** and delivering it to the take-up reel **13**. The feed F preferably involves primarily a feed roller **14** driven as hereinafter described and located to have engagement with the control web as it issues from the carrier E. In the case illustrated a pressure roller **60** is provided to hold the web in pressure engagement with the feed roll, the pressure roll **60** being carried by pivoted arms **61** normally urged toward the feed roll by one or more springs **62**. In the particular arrangement illustrated a guide roller **63** is provided at the receiving end of the carrier E and the web passes over or around the roller **63** preliminary to entering the channel of the carrier.

The prime mover G is provided primarily to drive the moving or working parts of the mechanism. It will be apparent that in accordance with the broader principles of the invention any suitable form or type of prime mover may be employed and that various elements of the mechanism that we have provided may be varied, depending upon or to accommodate the particular type of prime mover used. In the particular form of the invention illustrated the prime mover G is an electric motor and, furthermore, is a reversible motor and consequently the mechanism involves elements adapting the reversible motor to the parts requiring operation. The motor G is shown in the drawings as involving primarily operating coils **64** and starting coils **65**. The motor is shown mounted in the housing N on a suitable support or bed **66** so that it is located generally between the reels **12** and **13** and above the carrier E.

The drive H from the motor G to the feed F involves, generally, a clutch **15** and other parts necessary to establish the desired driving connection. In the particular arrangement illustrated the clutch **15** is on and driven directly by one end **67** of the motor shaft. The par-

ticular clutch **15** that we have shown is a mechanical clutch involving a drive element **68** fixed on the motor shaft and a driven element 6? fixed on a spindle **70** carried by a suitable bearing **71**. A guide pin **72** is shown provided on the end of the motor shaft guiding the driven part **69** beyond the end of the spindle **70**. The drive element **68** of clutch **15** drives the driven element through suitable pivoted shoes **73** which serve to establish the desired driving connection only when the drive element is rotated in the direction indicated by the arrow in Fig. 9.

A suitable drive is provided from the clutch **15** to the feed means F and in accordance with the form of the invention under consideration this drive is through the release means L which is located immediately adjacent the means F. The drive connection shown in the drawings involves a suitable speed reduction, it being necessary, in practice, to turn the feed roller **14** very much slower than the motor G. The drive connection illustrated is a belt drive and is shown as involving a countershaft **73** carrying a large pulley **74**. A small pulley **75** is provided on the driven element of the clutch **15** and a belt **76** connects the pulleys **74** and **75**. The drive from the countershaft **73** to the release means L is shown as involving a small pulley **77** on the countershaft, a large pulley **78** on the shaft **79** driving the means L, and a belt **80** operating over the pulleys **77** and **78**.

From the foregoing description it will be apparent that the drive H is primarily a drive from the motor G to the feed means F acting through the release L, and it is a releasable drive such as to be disengaged when the clutch **15** is disengaged. The particular clutch illustrated is such as to be engaged only when the drive element **68** thereof is rotated in the direction indicated by the arrow in Fig. 9.

The drive K for the take-up reel **13** is preferably a frictional drive such as to operate the take-up reel at varying speeds as may be necessary to take up the web as it passes from the feed means F and accumulates on the take-up reel. In the particular arrangement illustrated the means K involves a pulley **81** on the shaft **13a** carrying the take-up reel **13**. The belt **80** operates over pulley **81** and in practice the pulley is such that the belt **80** bottoms on pulley **81** in a manner to allow the belt to slip on the pulley so as to gain the desired variation in the drive of the take-up reel.

The drive J from the motor to the supply reel **12** is provided for effecting rewinding of the control web onto the supply reel and is preferably such as to operate the supply reel at a substantial speed so that the rewinding operation is performed rapidly. The drive J involves or is characterized by a clutch **16** establishing the desired driving connection between the motor G and the supply reel **12**. In the particular arrangement illustrated the clutch **16** is located on the other end **82** of the motor shaft and a suitable drive is provided between the clutch and the shaft **12a** carrying the supply reel. The clutch **16** is shown as a mechanical clutch involving a drive element **83** fixed on the motor shaft and a driven element **84** fixed on a spindle **85** supported in a suitable bearing **86**. A guide pin **87** projects from the end **82** of the motor shaft into the driven element so that it is guided beyond the end of the spindle **85**. The drive element **83** of the clutch involves shoes **88** that engage the driven element **84**. The particular clutch shown is such that the shoes **88** establish the desired driving connection between the drive and driven elements only when the drive element is rotated in the direction indicated by the arrow in Fig. 8. The necessary drive from the clutch **16** to the supply reel **12** is shown as a belt drive involving a pulley **90** on the drive element of the clutch, a pulley **91** on the reel **12** and a belt **92** operating between the pulleys **90** and **91**.

The means or the release L is desirable when the particular type of driving arrangement just described is used, in that it is desirable that a minimum number of parts be in operation as the web is being rewound onto the supply reel **12**. The particular release means L shown in the drawings involves a clutch **17** and the particular clutch shown is a magnetic clutch. The drive element **93** of the magnetic clutch **17** is fixed on the shaft **79** operated by means H as above described. The driven element **94** of the clutch **17** is fixed on the shaft **95** that carries the feed roller **14**. A grip plate **96** is carried by the driven element **94** and is attached to and carried by the driven element **93** when the windings **97** carried by the drive element **93** are energized. Suitable electrical connections are established to the clutch **17** through slip rings **98**.

From the foregoing description it will be apparent that the sign A may be any desired size, shape, design or proportioning and may be arranged at any suitable location. The various working parts other than those incidental to the sign A may be confined to the housing N and the various electrical connections necessary between the housing N and the sign A may be carried by the cable O, thus making it possible to locate the housing N in any desired location remote from the sign A.

The control system provided by the present invention is such as to provide for the desired operation of parts requiring control, for example, as the general circuit to the lamps, the motor circuit, etc. In the particular case illustrated it is desirable to provide a general control or an off and on control for the circuit to the lamps so that all of the lamps are off during the rewinding of the control web from the take-up reel to the supply reel. Since the present form of the invention employs a reversible motor G it is necessary to provide suitable control means or switching apparatus for effecting the desired reversal of the motor. Further, since the particular arrangement employs or involves a magnetic clutch at the means L, it is desired that suitable switching be provided for controlling this clutch.

The master switch P of the control means is a double pole double throw switch controlling the main circuit to the lamps of the sign, the circuit to the motor G and also the circuit to the magnetic clutch **17** of means L. The switch P may involve two simultaneously operating blades or shifting elements, one a blade **100** connecting with power line **21** by means of a lead line **101**, and the other a blade **102** connected with power line **20** or lead line **22** by a line **103**. Blade **100** operates between contacts **104** and **105** while blade **102** operates between contacts **106** and **107**. When blade **100** engages contact **105** blade **102** engages contact **107**. When blade **100** engages contact **104** blade **102** engages contact **106**. A jumper **108** connects contacts **105** and **106** and a line **109** extends from the jumper **108** to the starting coils **65** of the motor G. A line **110** extends from the coils **65** to contacts **104** and **107** of the switch. This arrangement and relationship of parts is such that flow is through the starting coils **65** in one direction when the blades **100** and **102** are in engagement with the contacts **105** and **107**, respectively, and is in the opposite direction when the blades **100** and **102** are in engagement with the contacts **104** and **106**, respectively.

Lead line **23** to the lamps **10** connects to contact **104** so that the circuit to the lamps is closed only when the blade **100** of switch P is in engagement with contact **104**. The relationship of parts is such that when the blade **100** is in engagement with contact **104** the general circuit to the lamps is closed or energized so that the lamps will operate when their individual switches **11** are closed and the motor G is operating in a manner to drive the feed means F causing the web to feed from the supply reel through the carrier E in order to control operation of the switches **11** which in turn control the lamps.

A line **120** in which the winding **97** of the clutch **17** is connected extends from lead line **20** to the contact **104** so that the clutch **17** is energized simultaneously with the main circuit to the lamps and with operation of the feed F feeding the web from the supply reel to the take-up reel.

The stop switches Q and the starting switch R are parts of the control system employed when a reversible motor is used, the stop switches serving to stop operation of the motor when the web has been fully wound onto the take-up reel or has been fully wound onto the supply reel and to start the motor following its being stopped. It is to be understood, of course, that the web is never fully wound on to either reel but that the ends of the web always remain connected to the two reels as hereinabove described.

The stop switches Q are preferably limit switches **160** and **161**, and are shown connected in series in a line **130** extending between lead line **21** and the lead line **22**. The operating windings **64** of the motor G are connected in the line **130**. The switches **160** and **161** being in series when either one is open the line **130** is

open and the operating coils of the motor are deenergized, with the result that the motor stops operation.

The starting switch R is in a line **131** forming a shunt connection around the switches Q. The switch controlling line **131** is preferably relay controlled, the relay being operatively connected with the motor G so that it is energized and closes the switch in line **131** when the motor is stopped. In the diagram, Fig. 10, we have indicated a centrifugal governor **140** operated by the motor G or from the shaft of the motor G and coupled with a switch **141** controlling the relay R, so that the relay switch is closed when the motor is stopped, but is opened when the motor is in operation. The switch **141** controls energizing of a winding **142** of the relay which operates the switch **144** in line **131**.

Through the connection and relationship of the stop switches Q and the starter switch R when the motor is running the starter switch is open, and when either of the stop switches is open the motor stops running. As soon as the motor stops the starter switch is closed and the motor is started.

The operator S for the master switch P and the stop switches is responsive to the web and is such as to open one of the stop switches when a predetermined amount of the control web has been wound onto the supply reel and to open the other stop switch when a predetermined amount of web has been withdrawn from the supply reel. The operator S further operates the master switch to one position when one stop switch is opened and operates the master switch to the other or opposite position when the other stop switch is open. In the particular arrangement illustrated in the drawings the operator S is shown as involving an arm **150** pivotally supported at **151** and arranged with its outer end portion bearing against the roll of web on the reel **12**. The stop switches Q are arranged at opposite sides of the arm **150** and are related to the arm so that one switch is engaged and open when the reel **12** is empty, as shown in Fig. 1, while the other is opened when reel **12** is full. The master switch is shown operated by a branch **155** carried by the arm **150** which branch has ears **156** at its ends, one of which engages and operates the switch P in one direction when one stop switch is operated, while the other ear engages the switch P and operates it in the other direction when the other stop switch is opened.

From the foregoing description it will be apparent that with a bank of lights **10** arranged in a manner such as is shown in Fig. 1, and with a corresponding arrangement of lamp control switches **11** in the carrier E, a control web **27** with rows of control zones X corresponding to the rows of lamps in the sign may be operated in the apparatus, so that the lamps display the pattern borne by the control web and established thereon by punching out areas as hereinabove described. It will be apparent that when the circuit from the power line is energized, as by closing a control switch **180**, the apparatus is put in operation and it will first operate to feed the control web from the supply reel to the take-up reel and when the desired length of web has been thus fed the mechanism reverses and the web is reeled back onto the supply reel until the desired supply has been re-established, whereupon the mechanism reverses and the web is again fed from the supply reel. It will be understood that the lamps operate only as the web is fed from the supply reel to the take-up reel, and furthermore, that the operation of the apparatus is such as to rapidly restore the web to the supply reel and is such that the desired message is conveyed by the sign as the web feeds from the supply reel to the take-up reel.

An outstanding and important feature of the construction that we have provided is the provision of an inexpensive control web which can be conveniently replaced from time to time at very little expense. By providing a control web with readily removable parts, such as the areas removable from the control zones, any one can establish any desired pattern on the control web and that pattern will be displayed by the sign.

Having described only a typical preferred form and application of our invention, we do not wish to be limited or restricted to the specific details herein set forth, but wish to reserve to ourselves any variations or modifications that may appear to those skilled in the art and fall within the scope of the following claims.

Having described our invention, we claim:

1. Web-controlling means for animated electric sign circuits having a plurality of web-operated switches, comprising a movable web adapted to operate said switches upon movement of said web, a carrier having means for guiding the web in operative relation to the switches, a feed roller engaged with said web for moving said web in one direction relative to the switches, a supply reel for said web, a take-up reel for said web, a reversible prime mover having a drive shaft projecting from opposite ends thereof, drive means operatively connected with one end of said drive shaft and with said feed roller to feed the web from the supply reel at a relatively slow uniform rate of speed, drive means operatively connected with the other end of said drive shaft and with said supply reel to rewind said web on said supply reel at a relatively rapid rate of speed, means for operating the take-up reel, a releasable clutch interposed in the driving connection from said prime mover to said feed roller, means for releasing said clutch to interrupt and establish operation of said feed roller when the prime mover is reversed, and web-controlled means for reversing said prime mover to alternately effect driving of said feed roller and driving of said supply reel, respectively, upon reversal of said prime mover.

2. Web-controlling means for an animated electric sign circuit having a plurality of web-operated switches, comprising a movable web adapted to operate said switches upon movement of said web, a carrier having means for guiding the web in operative relation to the switches, a supply reel for said web at one side of said carrier, a take-up reel for said web at the other side of said carrier, a feed roller engaging said web to feed the same in one direction, a reversible prime mover having a drive shaft projecting from opposite ends thereof, a governor on said shaft, drive means operatively connected with said drive shaft and with said feed roller, drive means operatively connected with said drive shaft and with said supply reel for rewinding said web on the supply reel, drive means for operating the take-up reel from the prime mover, a master switch for controlling the circuit and for reversing said prime mover, actuating means for operating said master switch, said actuating means including a member engaged with the web on said supply reel and operable responsive to the amount of the web on said supply reel, stop switches for said prime mover, stop switch actuating means engaged with said web and operative responsive to winding a predetermined amount of said web on said supply reel and said take-up reel, respectively, a starting switch for said prime mover, and means operatively connected to said governor for actuating said starting switch to start said prime mover when the prime mover has stopped.

3. Web-controlling means for an animated electric sign circuit having a plurality of web-operated switches, comprising a movable web adapted to operate said switches upon movement of said web, a carrier having means for guiding the web in operative relation to the switches, a supply reel for said web at one side of said carrier, a take-up reel for said web at the other side of said carrier, a feed roller engaging said web to feed the same in one direction, a reversible prime mover having a drive shaft projecting from opposite ends thereof, a governor on said shaft, drive means operatively connected with said drive shaft and with said feed roller, electrically controlled release means in said drive means between the prime mover and the feed roller, drive means operatively connected with said drive shaft and with said supply reel for rewinding said web on the supply reel, means for operating the take-up reel from the prime mover, a master switch for controlling the circuit, for releasing said release means and for reversing said prime mover, actuating means for operating said master switch, said actuating means including a member engaged with the web on said supply reel and operable responsive to the amount of the web on said supply reel, stop switches for said prime mover, stop switch actuating means engaged with said web and operative responsive to winding a predetermined amount of said web on said supply reel and said take-up reel, respectively, a starting switch for said prime mover, and means operatively connected to said governor for actuating said starting switch to start said prime mover when the prime mover has stopped.

4. Web-controlling means for animated electric sign circuits having a plurality of web-operated switches, comprising a movable web adapted to operate said switches

upon movement of said web, supporting means for said web including a supply reel and a take-up reel, guide means for said web including a carrier for the switches between said reels, a feed roller at one end of said carrier and engaged with said web for feeding the web in one direction through the carrier, a reversible prime mover having a drive shaft projecting therefrom, drive means operatively engaged with said drive shaft and with said feed roller for driving said feed roller at a relatively slow uniform rate of speed, said drive means including releasable clutch means operable to drive said feed roller in one direction only and to disconnect said feed roller from said drive means to permit rapid movement of the web in the other direction through said carrier, drive means operatively engaged with said drive shaft and with said supply reel and including clutch means operable to drive said supply reel in one direction only to rewind said web on said supply reel at a relatively rapid rate of speed, means for operating said take-up reel from the prime mover, and control means including means disposed in the path of said web for reversing said prime mover responsive to the amount of web on one of said reels and for effecting release and engagement of said releasable clutch means.

5. Web-controlling means for animated electric sign circuits having a plurality of web-operated switches, comprising a web adapted to operate said switches upon movement of the web, a supply reel for said web, a take-up reel for said web, guide means for shiftably supporting said web between said reels in operative relation to the switches, a feed roller for shifting said web in said guide means, a reversible prime mover having a rotatable shaft, power transmission means for rotating said feed roller upon rotation of said shaft in one direction, means for rotating said supply reel upon rotation of said shaft in one direction to rewind said web on the supply reel and including a clutch having means to interrupt rotation of the supply reel upon rotation of said shaft in the other direction, said power transmission means also including means for rotating said take-up reel in one direction when the power transmission means to said supply reel is interrupted comprising a clutch having means to disconnect said power transmission means to said take-up reel upon rotation of said shaft in the other direction, release means in the power transmission means for the feed roller to interrupt rotation of said feed roller and allow the same to idle on the web when the web is being rewound on the supply reel, and means engageable with the web on the supply reel for reversing said prime mover and for operating said release means responsive to winding of said web on and off said supply reel.

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