

April 30, 1935.

J. BECHLER

1,999,557

CLOCK

Filed April 30, 1931

3 Sheets-Sheet 1

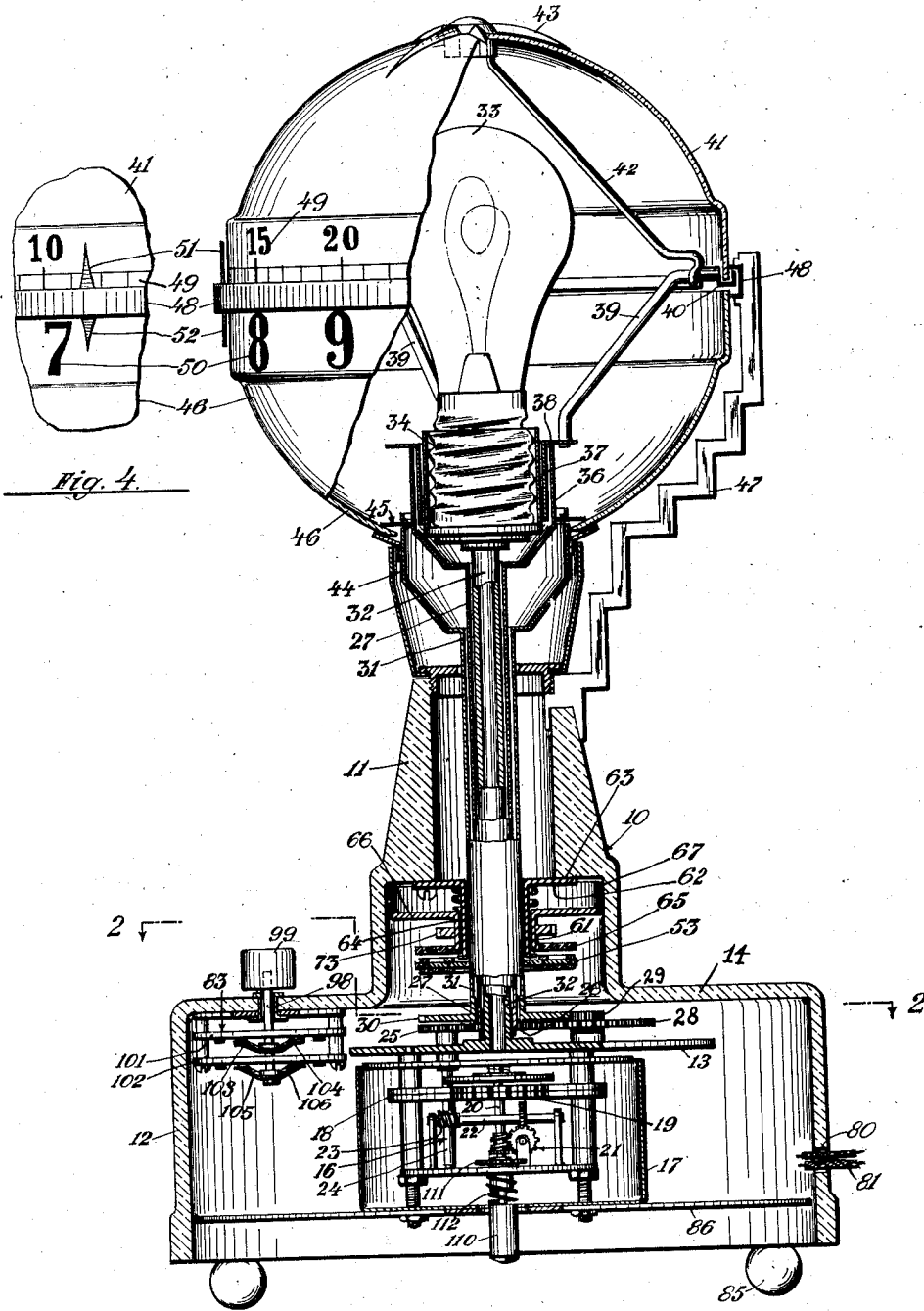


Fig. 4.

Fig. 1.

INVENTOR:
Joseph Bechler,
BY *Julius Wittal,*
his ATTORNEY

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3 Sheets-Sheet 2

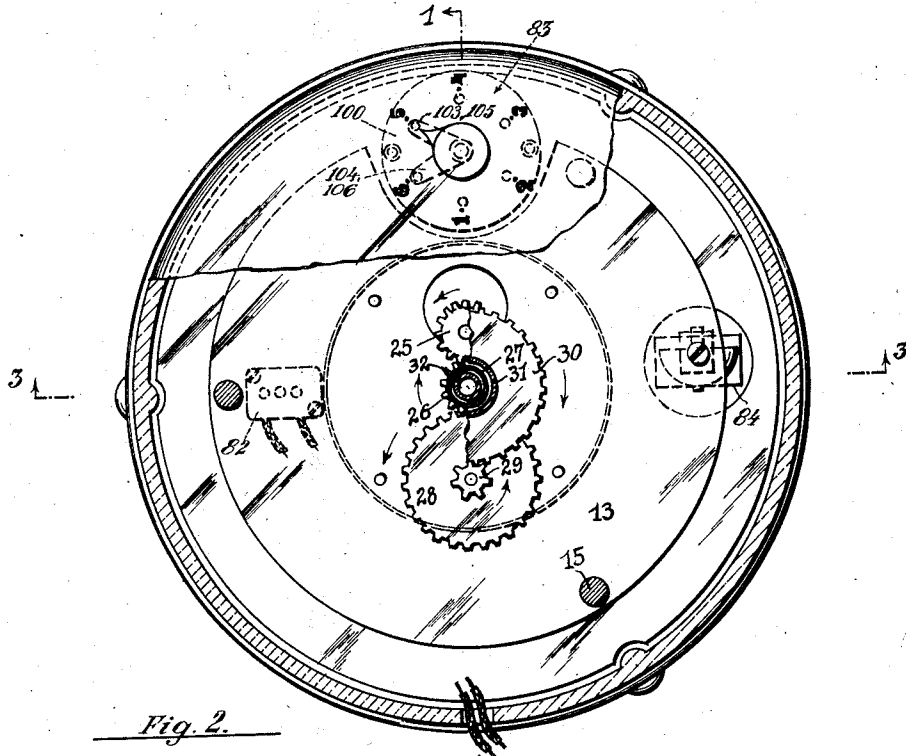


Fig. 2.

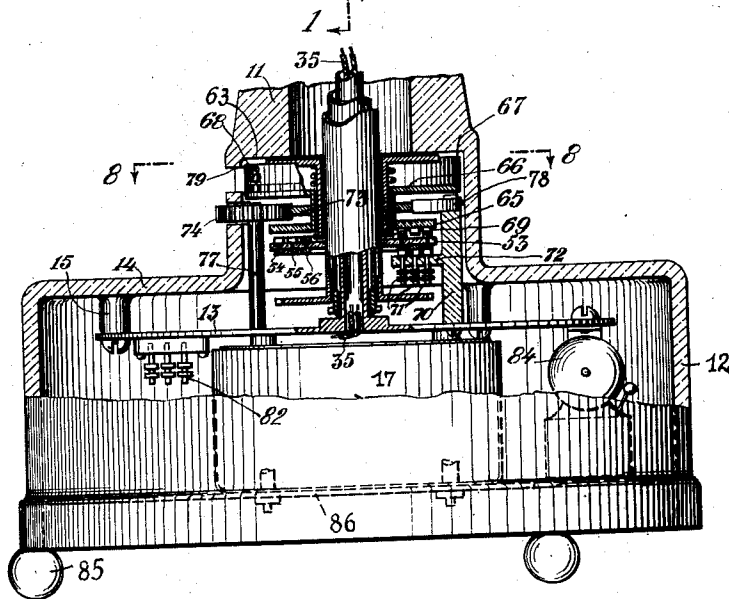


Fig. 3.

INVENTOR:
Joseph Bechler,
BY *Julius Wital,*
his ATTORNEY

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3 Sheets-Sheet 3

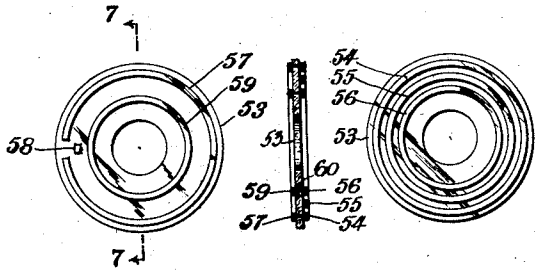


Fig. 5.

Fig. 7.

Fig. 6.

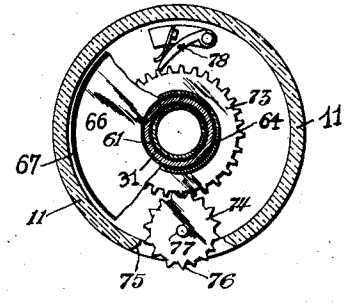


Fig. 8.

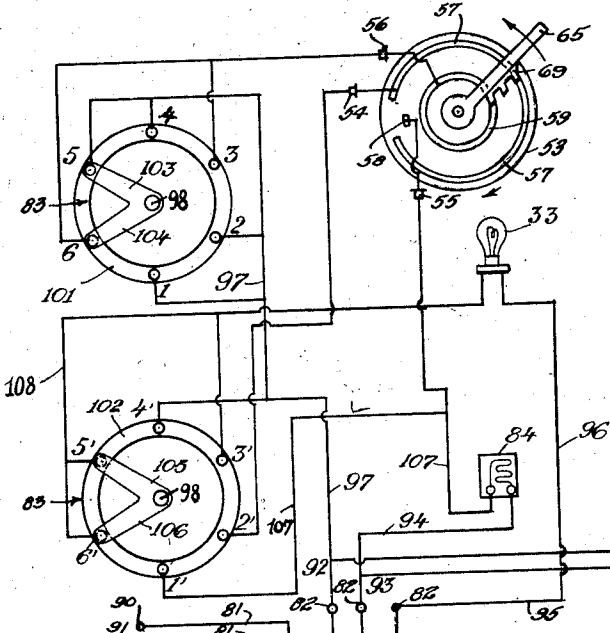


Fig. 9.

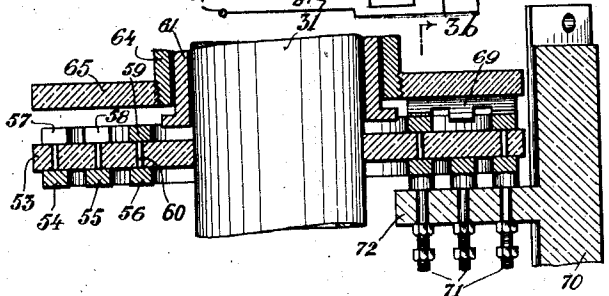


Fig. 3a.

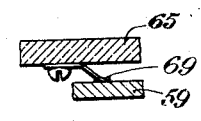


Fig. 3b.

INVENTOR: Joseph Bechler,

BY his ATTORNEY: Julian J. Wittal

UNITED STATES PATENT OFFICE

1,999,557

CLOCK

Joseph Bechler, New York, N. Y., assignor to
Arthur Williams, New York, N. Y.

Application April 30, 1931, Serial No. 533,945

2 Claims. (Cl. 200—36)

This invention relates to clocks, and specifically to a combined alarm clock and lamp with novel construction, operation and combinations of movements, uses and purposes.

5 An object of this invention also resides in providing an alarm clock as characterized hereinbefore which will be entirely electrically operated.

10 Still another object of my invention is to provide a clock, alarm clock and table lamp which may be operated with a plurality of combinations of the three, and for predetermined and controlled time intervals and periods, as to the sound and light effects.

15 Still further objects of my invention are: to provide a device of the character mentioned which will be comparatively simple in construction, inexpensive to manufacture, easy to handle and control, and artistic in appearance.

20 Other objects of this invention will be apparent as the specification of the same proceeds.

In the drawings:

Fig. 1 is a central vertical sectional elevation of my assembled device;

25 Fig. 2 is a transverse section on the broken line 2—2 of Fig. 1, parts being shown in plan view;

Fig. 3 is a fragmentary sectional elevation on the line 3—3 of Fig. 2;

30 Fig. 4 is a fragmentary detail showing the arrangement of the hour and minute pointers or hands.

Fig. 5 is a plan view of an electric contact carrying disk of an insulating material used in my device, while

35 Figs. 6 and 7 are a bottom view and sectional elevation thereof, respectively;

Fig. 8 is a sectional plan view, the section being taken on the line 8—8 of Fig. 3, and

40 Fig. 9 is an electrical diagram showing the electrical elements and circuits in my device an insulating disk 65 of the device being therein indicated by an arm-like element 65 for the sake of clearness, said element 65 being considered as a broken away portion of the disk.

45 Fig. 3a is an enlarged view of the central portion of Fig. 3, while

Fig. 3b is a fragmentary sectional detail thereof on the line 3b showing a resilient electrical brush.

50 The same characters of reference designate similar parts in the several views, and referring now to the drawings more closely, by characters of reference, the numeral 10 indicates the frame structure of my device in general having the upper hollow columnar part 11 and the lower hollow housing or base 12. Said frame struc-

ture is preferably made of one integral piece of any suitable material, like sheet metal, casting, etc., but I prefer to use for the same some specific composition of marble or similar effect, as indicated in the drawings.

5 In the hollow base portion 12 is arranged a base or supporting plate 13, preferably being secured to and suspended from the top 14 of said base portion 12, as by screws 15. Down hanging from said base plate 13 is the clock mechanism, generally indicated by the numeral 16 and being enclosed in the case or housing 17, while above said plate and supported by it is most of the rest of the mechanism of my device, to be described presently.

10 The clock mechanism is of the electric type and may be any of the standard makes, as shown in the drawings, or any suitable specific motor and movement may be used. In the mechanism shown in Fig. 1 briefly, the numeral 18 indicates the field laminations, 19 is the armature, the rotation of which is transmitted through shaft 20 and gearing 21 to a horizontal shaft 22 and from that through screw drive 23 to the vertical driving shaft 24 of the clock mechanism.

25 Shaft 24 is passed through the plate 13 and carries a gear 25 thereabove which is in mesh with a gear 26 fast on an intermediate tube 27, said gear 26 being also in mesh with a gear 28 journaled in and above the plate 13 on the opposite side of the device. A gear 29 is on the same shaft with gear 28 and in mesh with gear 30 integral with or fast on the outer tube 31.

30 An inner tube 32 is also provided being integral with or secured into base plate 13 and passing in a fixed stationary manner, upwardly through the center of the hollow columnar portion 11, while the intermediate tube 27 and the outer tube 31 are rotatable therearound and are resting in an anti-frictional manner on the upper surfaces of the base plate 13 and of the gear 26, respectively, though it is understood that they may be supported in any other suitable manner to permit their easy rotation around the central vertical axis of the device.

35 The inner fixed tube 32 will carry on its upper end the illuminating member of my device, as the bulb 33, set into the usual socket 34 and the electric insulated conductor wires 35 for feeding the bulb may be passed through the inside of the tube 32.

40 The intermediate tube 27 has a cup shape enlarged head 36 surrounding the socket 34, into which is secured, rotatably around said socket,

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a sleeve 37, the flange 38 of which carries a three branched wire frame 39 having a circular channel member 40 secured at its upper end and rotatable therewith. A translucent semi-spherical hollow glass body 41 is resting in said channel and is further supported and secured to the wire frame 39 by additional wires 42 which may end in an ornamental top securing piece 43.

The outer tube 31 may also terminate at its upper end by a cup shape hollow body 44 which may have secured thereon, through appropriate flanges and rings 45, a lower spherical translucent hollow glass body 45, the same thus being rotatable with the outer tube 31.

Several arms 47, preferably three in number may be further secured or set into the upper end of the frame portion 11 and may carry a circular inwardly turned channel 48 adapted to conceal the meeting edges of the lower and upper semi-spheres 46 and 41. As will be seen, the glass upper portion of the device will have the appearance of a full globe and its upper and lower halves will rotate independently of each other and with different speeds.

Minute numerals and indications 49 may be arranged around the lower circumference of the upper half globe 41 and above the ring 48, while hour indications 50 will be provided on the upper part of the lower half globe 46. A minute pointer 51 is also secured at an appropriate point on the ring 48, and projecting upwardly therefrom, while an hour index member 52 is secured on the ring opposite and reverse thereto.

A disk 53 of insulating material may be secured on the outer tube 31 rotating therewith and having three continuous full electroconductive ring rails 54, 55, and 56 at its under surface (Fig. 6) and the corresponding conductors 57, 58 and 59 on its upper surface (Fig. 5) insulated conductor stems 60 passing through the material of disk 53 at appropriate places and connecting the corresponding rails on the two sides of the disk.

A fixed sleeve 61 closely engages the outer tube 31 above said disk 53, (Figs. 1, 3 and 3a) said tube being rotatable in said sleeve which may have a flange 62 at its upper end by which it is secured on a shoulder 63 on the upper portion 11 of the frame housing 10, and a second, freely rotatable, sleeve 64 may further be arranged around the first sleeve 61, carrying at its lower end a disk 65 of insulating material, secured thereon and rotatable therewith, while its upper end may have a flange 66 and an upstanding marginal ring 67 thereon carrying hour markings 68 on its outer surface. (Figs. 3 and 3a.) A treble resilient electrical brush or bridge device 69 having three downhanging arms is carried in an insulated manner on the under side of the disk 65, the three arms thereof being in alignment with the three upper conductors 57, 58 and 59 of the disk 53 and contacting with them at appropriate predetermined time periods, the three arms of the switch 69 being also electrically interconnected, as by being parts of one integral sheet metal piece, so as to be able to make electrical connections between the rails 57, 58 and 59 when contacting with them.

A column 70 of insulating material may further be secured on the base plate 13 (Fig. 3) carrying three current introducing posts 71 on an arm 72, said posts passing through said arm in an insulated manner and having resilient brushes of any design on their upper end travelling on and steadily contacting with the lower rails 54, 55 and 56 of disk 53.

Sleeve 64 also may have a ring gear 73 secured thereon being in mesh with a gear 74 (Figs. 1, 3 and 8) partly projecting through an opening 75 in the wall of column 11, as at 76, said gear 74 being rotatable on a shaft or pin 77 secured into the base plate 13.

A ratchet device 78 permits the rotation of gear 73, and sleeve 61 therewith, in one direction and prevents rotation in the reverse direction and also fixes the position of said sleeve and of the upstanding marginal ring 67 thereon. The position and the hour markings on said ring may be observed through an upper opening 79 in the wall of column 11.

An opening 80 is provided in the wall of the base portion 12 (Fig. 1) and the outside current carrying wires 81 may be introduced there-through. The current is first led to a three post terminal piece 82 (Fig. 3) where one pole thereof is branched off to two posts and from there it is distributed to a double six point switch 83 (Fig. 1) the purpose and construction of which will be explained presently, also to the motor of the clock movement, to the lamp, and finally to an electric bell 84 secured at an end of the base plate 13.

My device may stand on any suitable legs 85 and the bottom of its housing may be closed by a partition plate 86 which preferably may be secured on the housing 17 of the movement and may have appropriate openings therein or there-around to permit the free escape of the sound of the bell from within the hollow base frame.

The use and operation of my combination alarm clock and the table lamp is as follows:

From a source of current having the poles 90, 91 (Fig. 9) the electric energy is introduced into the mechanism, as at 80 through conductors 81, and it first is led to the three post termination block 82 where one pole of the same is branched off into two posts while the other is connected to the third post.

The motor indicated in Fig. 1 is designed for a single phase alternating current and its characteristics will be so designed that, through the gearing described, the outermost tube 31 will execute one revolution in twelve hours, while the intermediate tube will revolve with a twelve times larger speed, making one revolution every hour. It will be obvious that by this means the markings on the upper and lower glass bulbs will show through their respective indicators or pointers 51 and 52, the minutes and hours, respectively.

It will also be understood that other available types of currents may be used, and other detail construction as to time markings employed, with suitably designed motors and gearings.

From the three post terminal block 82 the first branching off of the current will be to the motor mechanism 16, as indicated at 92 and 93 in the diagram of Fig. 9.

From the branch-off point 93 a further line 94 will lead to the alarm mechanism 84 while, having conductors 95 and 96 will connect another post of block 82 with the bulb 33. Pole 90 of the source of current will also be connected to the double six point switch 83 by the line 97 in the manner indicated in Fig. 9.

Said switch may be of any standard make and one form thereof is indicated in the drawings. It may have a shaft 98 rotatable in the top of base housing 12 and having a knob 99 protruding thereabove by which it may be operated and an

indicating dial 100 around said shaft to show the position of the switch (Figs. 1 and 2).

Two control switches 101 and 102 are arranged around said shaft, each having six contact points, as indicated in the diagram of Fig. 9 and identical conductor arms, 103, 104 and 105 and 106, placed at an angle of 60 degrees to one another, are secured on the shaft, insulated therefrom, for each control switch. The current of conductor 97 is distributed to the respective posts of the two control switches as indicated in Fig. 9, and the second poles of the alarm and lamp devices will also be connected to certain posts of said switches by the conductors 107 and 108, as also indicated in the diagram of Fig. 9.

In the distribution of the current an important role is given to the rotating disk 53 with its lower and upper conductor rails or sections of rails, receiving and transmitting the current through the three posts 71. In this embodiment the current for the bulb will be connected through rail 57 having a gap therein, the alarm current through the small section 58 and both of these will receive the current through the continuous ring rail 59 when they are connected thereto by the three part bridging switch 69.

The operation of the alarm will be timed by gear 74 by turning the same at its projecting portion 76 by the finger of the user of the clock. This will move the bridging brush carrying disk 65 and also the indicator ring 67, the position of said ring being shown by the numeral 68 exposed through the opening 79. The hour and minute at which the alarm is desired to operate may be set there and ratchet 78 will secure the position so set.

It will be obvious by studying the drawings and the diagram of Fig. 9 that various combinations in the operation of the clock, alarm and light may be obtained, through setting the switch 83 and the indicator 67.

Specifically, after having the alarm set at a certain hour on the indicator 67, the following combinations may be possible upon the six settings of switch 83; when the switch is in position No. 1, its arms connecting the respective posts 1 and 2; and 1' and 2'; both, the light and the alarm will be permanently turned off; in similar position No. 2 both will be on normally, and the alarm will ring but the light will be cut off at the hour set; position No. 3, both will be in operating position all the time, and the light will remain when the alarm rings; position No. 4, the light will be on alarm will be off normally, light will remain on, the clock is simply used as a lamp; position No. 5 light off, alarm on normally, light will be cut off at the hour set, the device is used as an alarm clock; and, finally, in posi-

tion No. 6, the switches connecting posts 6, 1 and 6', 1', the light will be off, and the alarm on, normally, and also at the set hour, when the alarm, of course, will ring but the light will also be lit.

For starting the motor, a knob 110 and gearing 111 is provided, normally kept out of engagement with the rest of the motor mechanism by spring 112. Knob 110 is projecting below the bottom 86 and by pushing it inwardly the clock mechanism may be engaged and turned until the armature will be in phase and starts to rotate under the electric power.

What I claim as new, is:

1. In a clock having an electrically operated rotatable main time indicating element; a normally open switch for an electric circuit, said switch being rotatable with said time indicating element, and means to close the switch at a predetermined phase of rotation of said element; said means comprising an adjustable indicator member adapted to be set from the outside of the clock and a bridge brush piece in the path of said open switch, said bridge piece being carried on said indicator member and adapted to be set to a certain phase in the rotation of said time indicating elements by the setting of said indicator member; said normally open switch comprising a disk of insulating material secured on said time element and having continuous conductor ring rails at one side thereof and partly broken corresponding conductor ring rails on the other side, and electrical connections between the respective rails on the two sides; brushes in contact with the full rails at the one side to introduce the current, said bridge piece carried by said indicator member riding on said rails on the other side of said disk and being adapted to interconnect them at predetermined intervals and according to predetermined plans.

2. For any electrical circuit, a normally open switch device having a rotatable time indicating element connected therewith, said normally open switch comprising a disk of insulating material secured on said time element and having continuous conductor ring rails at one side thereof and partly broken conductor ring rails on the other side, and electrical connections between the respective rails on the two sides; brushes in contact with the full rails at the one side to introduce the current; an adjustable indicator an insulated brush bridge piece set by said indicator riding on said rails on the other side of said disk and being adapted to interconnect them at predetermined intervals and according to predetermined plans.

JOSEPH BECHLER.