

W. H. CHAPPELL.
ELECTRIC PRODUCTION CONTROLLING DEVICE FOR FACTORIES.
APPLICATION FILED OCT. 31, 1908.

926,386.

Patented June 29, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

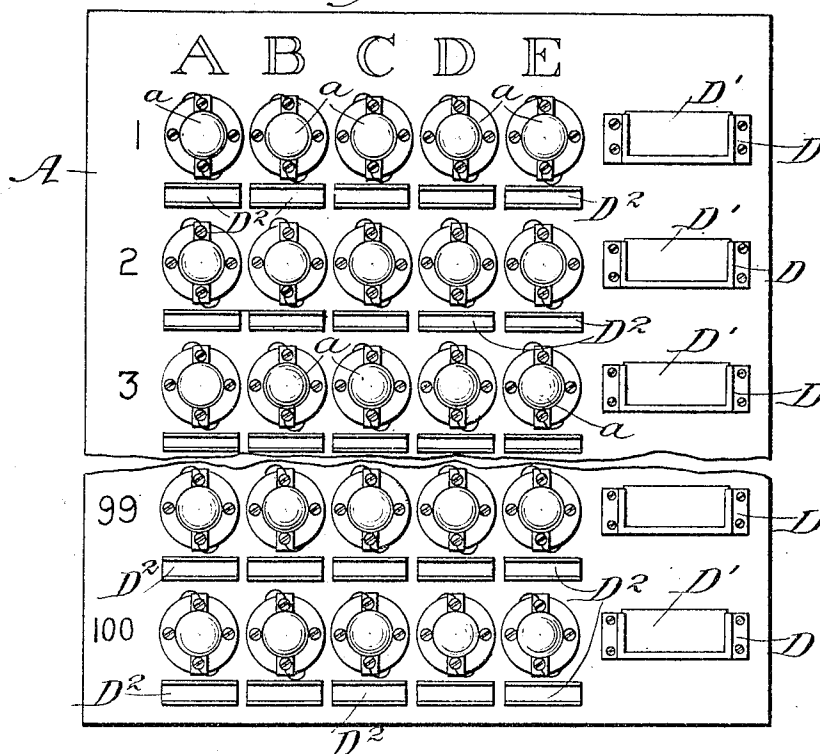
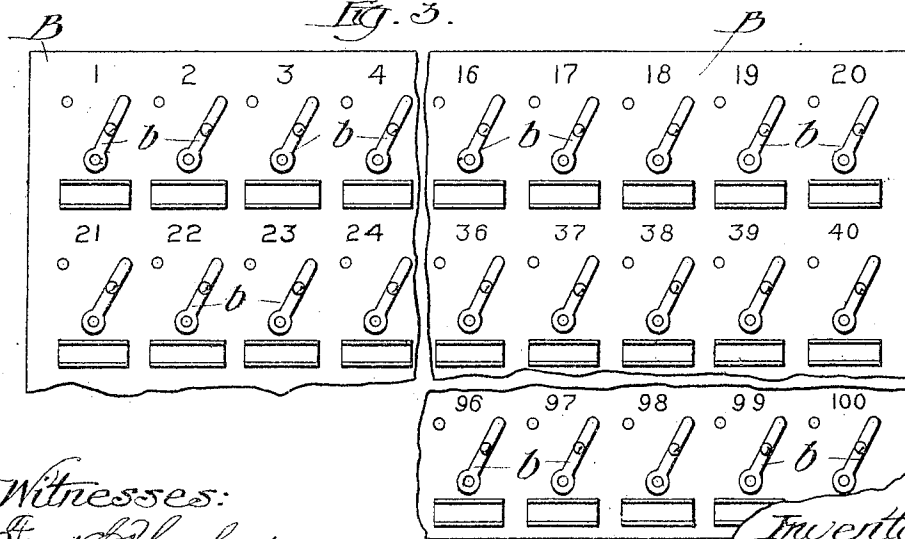


Fig. 3.



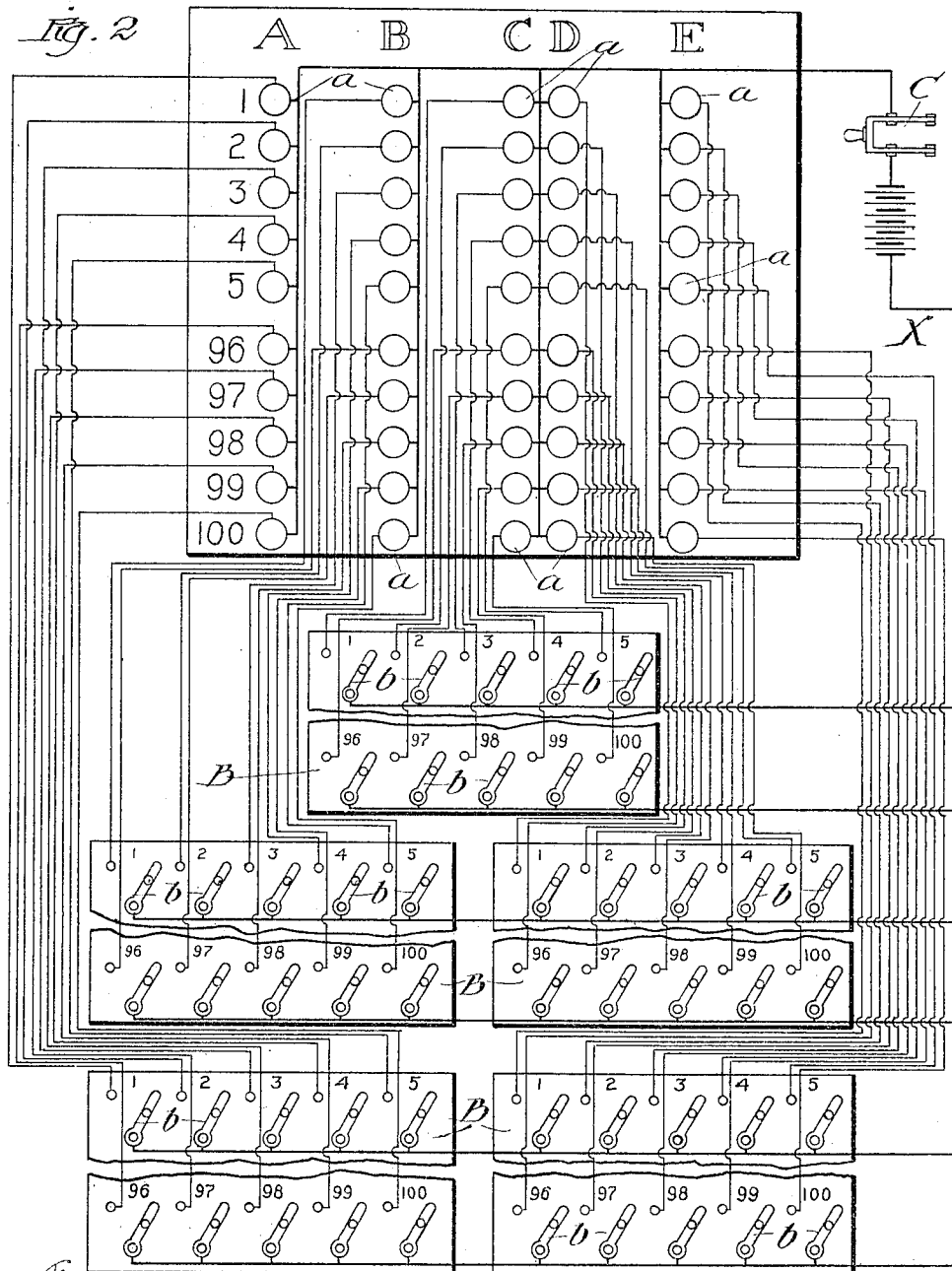
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

WILLIAM H. CHAPPELL, OF CHICAGO, ILLINOIS.

ELECTRIC PRODUCTION-CONTROLLING DEVICE FOR FACTORIES.

No. 926,386.

Specification of Letters Patent.

Patented June 29, 1909.

Application filed October 31, 1908. Serial No. 460,405.

To all whom it may concern:

Be it known that I, WILLIAM H. CHAPPELL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Electric Production-Controlling Devices for Factories, of which the following is a specification, reference being had to the drawings forming a part thereof.

10 The purpose of this invention is to provide an improved apparatus by which a party in charge of the office of a manufacturing establishment consisting of several departments and having several jobs or pieces of work passing through the process of manufacture may be informed to what department or stage of progress each piece of work has advanced.

20 It consists of the devices, combinations of devices and features of construction shown and described, as indicated in the claims.

In the drawings:—Figure 1 is an elevation of a signal board, hereinafter referred to as the flash-board, comprising a plurality of electric signal lamps arranged in rows and columns. Fig. 2 is a diagrammatic view presenting the flash-board and the several circuits and switches which control the signal lamps therein in their operative relation to each other. Fig. 3 is a detail plan of one of the switch boards pertaining to any one department or division whose work is to be indicated on the flash-board.

30 On the flash or signal board, A, there are mounted signal lamps, *a*, arranged in any desired number of longitudinal or vertical rows or columns, with an equal number of lamps up to any desired number in each such row or column, numbered or otherwise indicated serially from one end to the other of the column, such serial indications (1, 2, 3, 4, etc., in the drawings) being hereinafter referred to as the "circuit numbers," all lamps of the same number in the several columns being in line with each other transversely of the column. One vertical row or column of signal lamps is appropriated to each department, subdivision or room of the factory, the number, alphabetical indication, or the title of the department, division or room being indicated at the head of the column,—as, for example, "Drafting room," "Pattern shop," "Foundry," "Machine shop," "Finishing room," "Packing and shipping room," or, as in the drawings, Department A, B, C, D, etc. In each

department, subdivision or room of the factory whose production is to be indicated and subjected to control by means of the device, there is provided, under the control of the foreman, a switch-board, B, having as many switches, *b*, as there are signal lamps in each column on the flash board, A, and having circuit numbers to correspond with those of the horizontal rows of lamps on the flash board. Each switch is connected in electric circuit with the lamp of corresponding number in the column or vertical row appropriated to the department. All the circuits from all departments are energized by a main line, X, from an electric generator or battery (not shown), and a switch, C, conveniently mounted on or with respect to the flash board, is interposed in this circuit and subject to the control of the superintendent or the person for whose information the flash board is designed. Preferably, in line with each horizontal row of signal lamps on the flash board there is provided a clip, D, for holding a removable index or title card, D¹, and also at each signal (lamp) means, as a pocket, D², for holding such a card.

One mode of using the device is as follows: Upon any piece of work being started in the factory, the clerk in charge of the flash board will prepare a title card and insert it in the clip, D, opposite any horizontal row of flash lamps not already appropriated to a particular job, and upon the work ticket or shop order which goes to the factory the job will be indicated by the circuit number on the flash board of the row of signal lamps which has been thus appropriated to it. If there is no entire row of signal lamps open, the clerk will put cards or work tickets having the job number in the pockets, D², of the first unoccupied lamps in the several columns, respectively, of all the departments through which the job must pass, and on the shop order he will note the circuit numbers of the several lamps under the titles of the respective departments. The foreman or person in charge of any department, division or room of the factory to which the job comes, will, upon receiving the same and putting it in order of performance in his department or room, close the switch bearing the circuit number of the job for his department. This switch will remain closed so long as the job is in that department or room. At any time

that the superintendent or manager or other person for whose information the flash board is designed desires to ascertain the state of advancement of any particular job,—that is, the department, division or room which it has reached in the progress toward completion or shipment,—he will close the main switch, C, thus energizing all circuits which are closed by the job switches, b, and thereupon the signal lamps on the flash board corresponding to all closed shop switches will be illuminated, thus indicating the jobs which have reached or are in progress in each department or room. The manager may thereupon, observing any job which should, in his judgment, have made further advancement than is shown, immediately communicate with the foreman of the department in which it appears by the flash board to be in progress, and make such inquiries or give such instructions as the situation requires.

In many shops handling a large number of jobs or orders at one time through the various departments it may not be found convenient or desirable to adopt the method of use above described, which involves assigning to each job a circuit number for each department, or the same circuit number for all departments at the time the order is transmitted from the office to the factory, because that might involve tying up in all the departments a large number of signals long in advance of the time when the jobs in question would reach the departments, which would necessitate a signal board and switch boards of much larger capacity than the total number of jobs at any time actually in progress. In any such case the preferred mode of use of the device will be that the foreman in each room or department, upon putting in process of performance a job for which the order has reached its department, will apply the order number to any vacant switch in his department and notify the office of the number of that switch or circuit. The clerk in charge of the signal board at the office will thereupon apply the order number to the signal of the circuit number indicated in the column pertaining to the department from which the report comes. In this way the signal on the signal board and the switch in the department will be appropriated to any job only when the job actually reaches the department. The mode of use of the device in other respects will be unchanged by the adoption of this modified mode of appropriating the particular circuits to particular jobs.

It will be obvious that other forms of signaling devices besides lamps can be employed without departing from the substance of the invention; and the representation of lamps should be understood as indicating any electrically-operated visual signaling device.

An electric lamp is, however, in many re-

spects the most efficient and satisfactory device for the purpose, and for this reason it is chosen for illustration and description.

It will be obvious, of course, that the distinction between rows and columns is relative only, it being immaterial which is horizontal and which is vertical, the only essential requirement being that each signal is in a group which pertains to a particular department, division or room of the factory and also in a group which pertains to a particular piece of work or job, and that the groups by rooms and the groups by jobs are in transverse relation to each other. And the terms "column" and "row", as employed in the claims, are to be understood as indicating merely this transverse relation of the groups without regard to the particular position or direction of either the rows or columns.

The word "department" is used in the claims to denote any segregated or segregable position of an entire shop or factory including such subdivisions as might be denominated "departments", "rooms", "sections," and the like, when under charge of separate foremen or superintendents, or requiring to be separately indicated or reported.

I claim:—

1. In combination for the purpose indicated, a signal board comprising a multiplicity of signaling devices arranged in rows and columns, the several rows being serially indicated and the several columns being distinctively indicated to correspond with departments of the factory, and switch boards and electric switches thereon for the several departments, so indicated, the several switches on each such switch board being electrically connected for controlling the several signal lamps in the column corresponding to the department.

2. A factory work indicator consisting of a signal board having a multiplicity of signaling devices arranged in rows and columns, the rows being serially indicated and the columns being distinctively indicated for the several departments of the factory; a switch board and electric switches thereon for each department, and an electric circuit from each switch to a signaling device on the signal board, the circuits from the switch board of each department, all running to lamps in the same column, and all the switches whose circuits extend to the signals in the same row having the same serial indication as such row, and means for energizing the circuits.

3. In a work indicator for a shop or factory, in combination with a signal board having a multiplicity of signaling devices arranged thereon in rows and columns, the rows being serially indicated and the columns being distinctively indicated to correspond to the several departments of the factory; switch boards for the several depart-

ments, each having a plurality of switches corresponding to the number of rows of signals on the signal board and correspondingly numbered; circuits from the several switches
5 in each department to the correspondingly numbered signaling devices of the column corresponding to the department; a main circuit from which all such circuits are energized, and a main switch associated with the
10 signal board for controlling said main circuit.

4. In combination for the purpose indicated, a signal board comprising a multiplicity of signaling devices arranged in rows and columns, the several rows being serially indicated and the several columns distinctively
15 indicated to correspond with departments of the factory; switch boards and switches thereon for the several departments so indicated, the several switches on each such
20 switch board being electrically connected for controlling the several signal lamps in the column corresponding to the department, and means associated with each signaling device for holding a work ticket.

25 5. In combination for the purpose indicated, a signal board comprising a multiplicity of signaling devices arranged in rows and columns, the several rows being serially indicated and the several columns distinctively
30 indicated to correspond with departments of a factory; switch boards and switches thereon for the several departments so indicated, the several switches on each such switch
35 board being electrically connected for controlling the several signal lamps in the column corresponding to the department, and means associated with each row for holding a work ticket.

6. In combination for the purpose indicated, a signal board comprising a multiplicity of signaling devices arranged in rows and columns, the several rows being serially indicated and the several columns distinctively indicated to correspond with departments
45 of the factory; switch boards and switches thereon for the several departments so indicated, the several switches on each such switch board being electrically connected for controlling the several signal
50 lamps in the column corresponding to the division, department or room, and means associated with each row and additional means associated with each signaling device for holding a work ticket.

55 7. A factory work indicator consisting of a signal board having a multiplicity of signaling devices arranged in rows and columns, the rows being serially indicated and the columns being distinctively indicated for the
60 several departments of the factory; a switch board and switches thereon for each department, and an electric circuit from each switch to a signaling device on the signal board, the circuits from the switch board of
65 each department all running to lamps in the

same column, and all the switches whose circuits extend to the signals in the same row having the same serial indication as such row; means for energizing the circuits, and means associated with each switch for holding a work ticket.

8. In combination, for the purpose indicated, a signal board comprising a multiplicity of signaling devices arranged in rows and columns, the several rows being serially indicated and the several columns being distinctively indicated to correspond with the departments of the factory; switchboards and electric switches thereon for the several departments so indicated, the several
80 switches on each such switchboard being separately connected for controlling the several signal lamps in the column corresponding to the department, and being arranged contiguously thereon.

85 9. In combination, for the purpose indicated, a signal board comprising a multiplicity of signaling devices arranged in segregable groups distinctively indicated to correspond respectively with the departments of
90 the factory, the several signaling devices of each group being contiguously positioned to constitute the group; switchboards and electric switches thereon for the several departments, the several switches on each such
95 board being contiguously positioned thereon and electrically connected for controlling the signal lamps respectively of the corresponding group on the signal board, the switches of each switchboard and the signaling devices
10 of the corresponding group on the signal board being similarly serially indicated on the switchboard and signal board respectively.

10. A factory work indicator comprising a
10 signal board having a multiplicity of signaling devices arranged in rows and columns, the rows being contiguous and serially indicated, and the columns being contiguous and distinctively indicated for the several
11 departments of the factory; a switchboard and contiguously positioned electric switches thereon for each department; an electric circuit from each switch to a signaling device on the signal board, the circuits from the
11 switchboard of each department all running to lamps in the same column, and all the switches whose circuits extend to signals in the same row having the same serial indication as such row, and means for energizing
12 the circuits.

11. In a work indicator for a shop or factory, in combination with a signal board having a multiplicity of signaling devices arranged thereon in rows and columns, the columns being contiguously positioned on the board, and the signaling devices being contiguously positioned in the rows respectively, the rows being serially indicated and the columns being distinctively indicated to corre-
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5 spond to the several departments of the factory; switchboards for the several departments, each having a plurality of switches contiguously positioned thereon corresponding to the number of rows of signals on the signal board and correspondingly indicated in regular succession; circuits from the several switches in each department to the correspondingly indicated signaling devices of the column corresponding to the department; a
10 main circuit from which all such circuits are

energized, and a main switch associated with the signal board for controlling said main circuit.

In testimony whereof, I have hereunto set 15 my hand at Chicago, Illinois, this 29th day of October, 1908.

WILLIAM H. CHAPPELL.

Witnesses:

M. GERTRUDE ADY,
JULIA S. ABBOTT.