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Walker

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[54] **PLANNING TOOL FOR DEVELOPING THE STAFFING REQUIREMENTS OF A SERVICE WORK FORCE**

[75] Inventor: **Maurice J. Walker,** Lincolnshire, Ill.

[73] Assignee: **M. Walker Associates, Inc.,** Northbrook, Ill.

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[52] **U.S. Cl.** ..... **235/85 R,** 235/89 R

[51] **Int. Cl.** **G06c 3/00**

[58] **Field of Search** ..... 235/85 R, 89 R, 70 A; 116/114 R, DIG. 37, DIG. 46; 35/31 E, 75, 24 A

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Primary Examiner—Stephen J. Tomsky

Attorney, Agent, or Firm—Alter, Weiss, Whitesel & Laff

[57] **ABSTRACT**

A tool and method for developing the staffing requirements of a service work force which provides patient care. The tool is used to ascertain the number of persons required to give each component of care, such as nurses, practical nurses, and nurse's aides. The tool includes at least two indicators mounted for movement with respect to each other. One of the indicators has a selector scale calibrated in a spaced graduated series of indicia representing the total number of patients or other task unit services by the work force. At least three other scales are formed on the other of the indicators. Each of the other scales comprising a series of indicia represent fractions of man hours or fractions of personnel required for each in a cumulative total number of task unit services by the work force. Movement of one indicator relative to the other of the indicators displays information which indicates the total number of man hours required for each of at least three different categories of workers for the total number of task units requiring service. According to a further feature, one of the indicators includes a plurality of scales which may be selected by separating, inverting, or reversing pieces.

5 Claims, 3 Drawing Figures

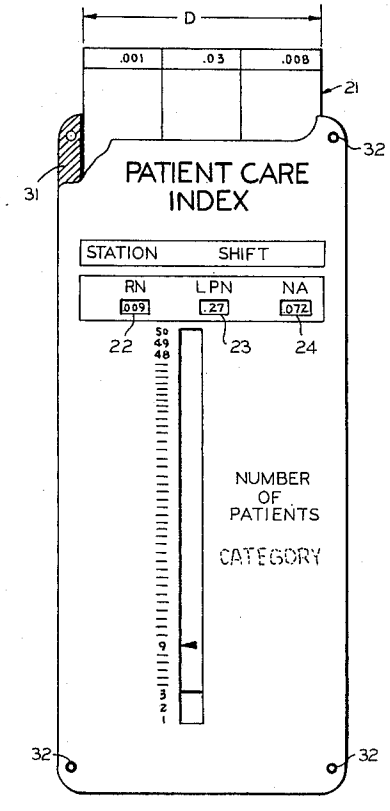


FIG.1

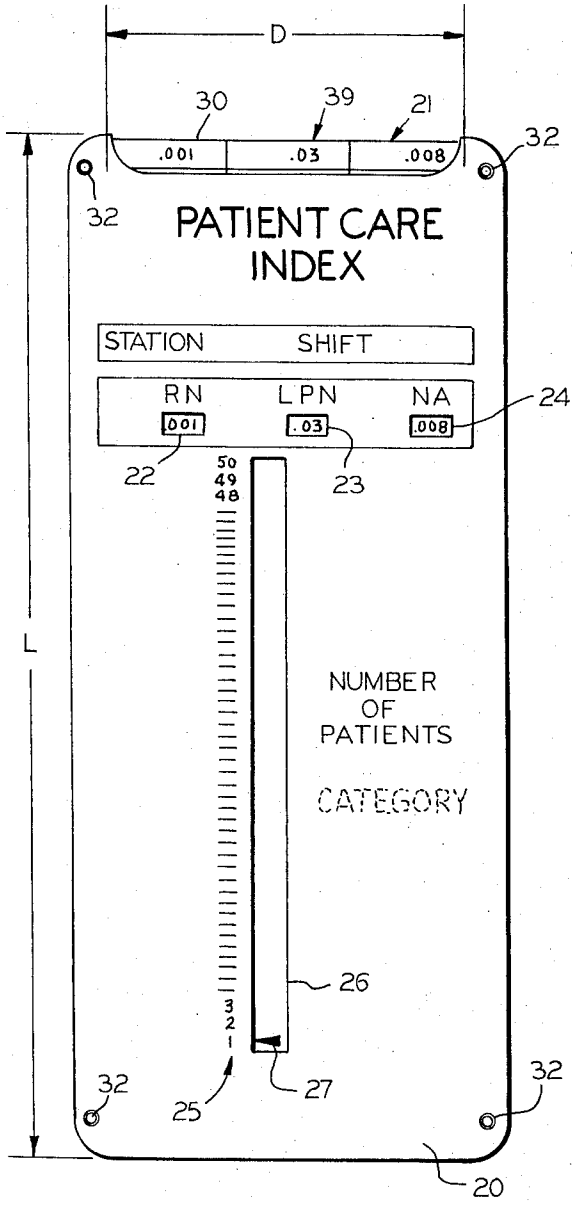
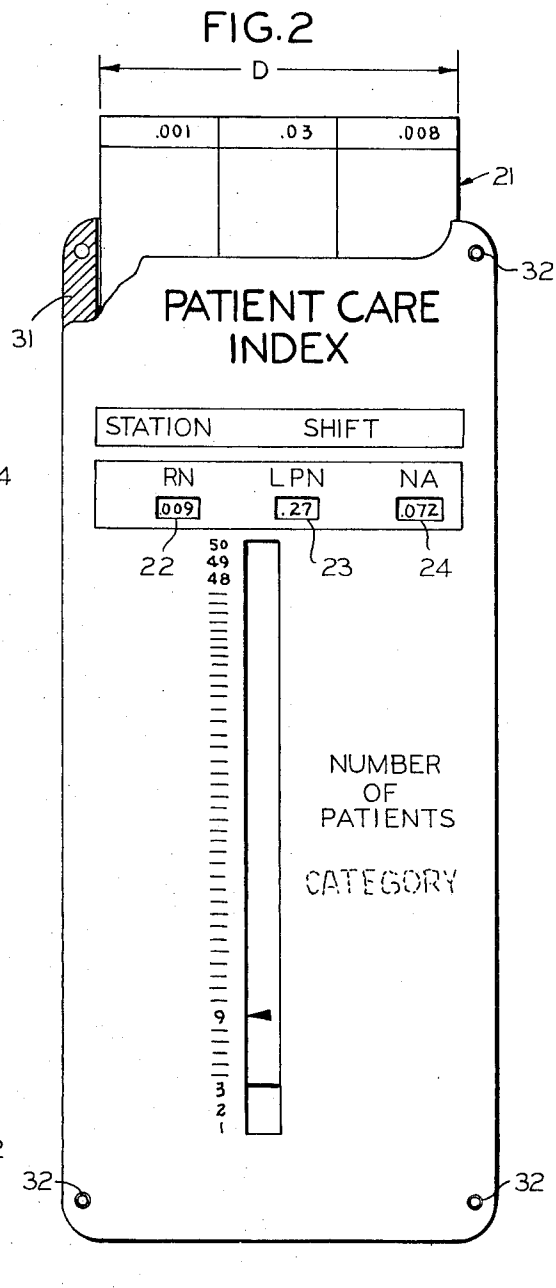


FIG.2



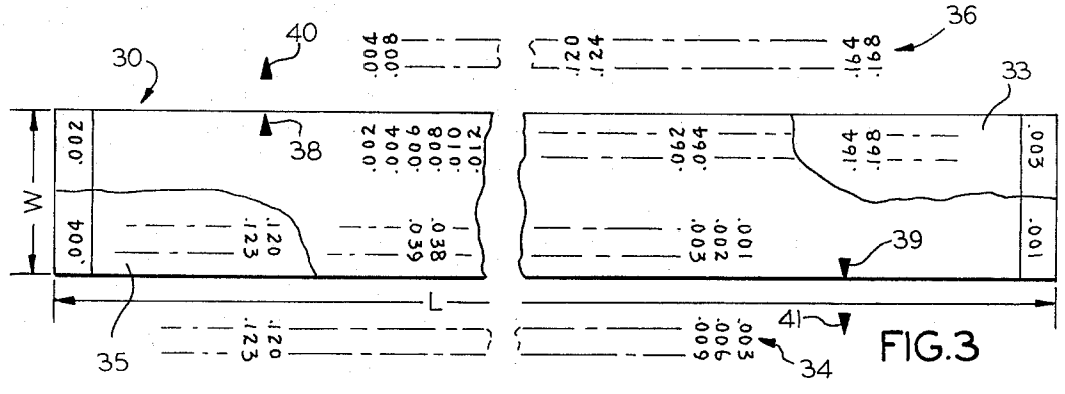


FIG.3

PLANNING TOOL FOR DEVELOPING THE STAFFING REQUIREMENTS OF A SERVICE WORK FORCE

BACKGROUND OF THE INVENTION

This invention relates to tools and methods for developing the staffing requirements of a work force and more particularly of a highly professional work force practicing in a complex art, such as human health care, for example.

An example of a work force likely to use the inventive tool and method is found in a modern hospital. The patients are constantly changing, and their care needs change also. For example, on any given hospital floor, the patients one day or shift may require certain balance of skill levels in the nursing staff which is totally different than the balance of skill levels required by different patients on the same floor on a different day or shift.

Heretofore, the scheduling of a balanced work force has tended to depend upon the judgment of someone having many years of experience. This means that high salaried people must divert their attention to administrative tasks, that their accumulated experience is lost when they depart, that too much depends upon their intuitive suppositions, and that the resultant health care is as good as and no better than such intuition.

Moreover, it is not even clear that the person scheduling the work force is using the proper criteria for selecting the staff for any given day. The patient care program includes the four interrelated activities of patient classification, skill level determination, activity analysis or scheduling, and staffing. Traditionally, the nurse believes that patient care means the treatment given patients to render aid or assistance. However, a true patient care program should mean the amount of care required to render the best possible service to each patient. Thus, the basic scheduling should be built around the anticipated time required by each patient and by the skill level of each person furnishing health care or service to each patient.

SUMMARY OF THE INVENTION

Thus, to schedule a work force according to the invention, a well-defined, easily understood process may be followed by an administrative aide, as distinguished from a highly skilled nurse. The first step in such process comprises a classification of patients according to the different amounts of each category of care that each patient requires. The patient care program also requires the establishment of well-defined categories of patient-related activities, consistent with the hospital's or nursing home's policies and desires. Usually there are three to five categories of care, ranging from "ambulatory" to "intensive". The critical point in the selection of categories is not the degree of illness, but the amount of care required.

The second step in the inventive process is a worker's skill level determination since a registered nurse is not required to perform all tasks for all patients. Preferably, the nursing personnel and administrative staff members determine the lowest skill level (registered nurse, licensed practical nurse, nurse's aide, or orderly) required to perform each activity of patient care. Perhaps as many as two to 300 different tasks are categorized, considering both state requirements and the institution's policies. This determination is desirable to

insure that proper care is given to all patients by appropriate personnel.

A third step in the inventive process is an activity analysis. More particularly, because of its design, type of patients, administration desires, or various other factors, each institution requires a unique amount of time to perform each of its activities. Thus, the third phase of the patient care program begins with an analysis of all institutional activities, to improve its methods and systems. Systematic analysis of work flow, procedures, and work planning are combined with patient care standard data to determine appropriate amounts of time, and therefore staff, for each level of patient care. Although this standard data is predetermined from studies in health care facilities combined with time measurement methods, it is carefully modified to fit existing conditions.

After these process steps have been completed, the administration consults the inventive tool, selects scales, and sets them to indicate how staff personnel may be assigned to perform the desired or required patient care functions.

According to one aspect of the invention, the tool comprises at least two indicators mounted for movement with respect to each other. One of the indicators has a selector scale calibrated to indicate the total number of patients or other task units services by the work force. At least three other scales are provided on the other of said indicators for representing the fractions of man hours required for a cumulative total number of patients or task unit services by the work force. Therefore, these indicators may be set relative to the other of the indicators for displaying information correlated to a position on the selector scale. The information so displayed on each of the other scales indicates the total number of man hours required for each of at least three different categories of workers for the total number of task units requiring service.

DESCRIPTION OF THE DRAWINGS

FIG. **1** is a plan view showing the inventive slide chart indicator tool in a zero position;

FIG. **2** is a similar view showing the inventive slide chart indicator tool in an operated condition; and

FIG. **3** is a plan view (partially broken away to show both sides) of a single slide graph unit used in FIGS. **1** and **2.**

DESCRIPTION OF THE PREFERRED EMBODIMENT

The slide chart indicator tool means comprises at least two indicators **20, 21** which are mounted for movement with respect to each other. As here shown, indicator **20** is an outer wrapper or jacket, and indicator **21** is an internal slide graph, including three slide units of the type seen in FIG. **3.** The indicator **20** has a plurality of windows **22, 23, 24,** cut or otherwise formed in an outer wrapper or envelope. The other indicator **21** is a sliding member having a plurality of independent slide graph units, each with a plurality of scales longitudinally printed thereon. The various windows, scales, indicators, and information are interrelated so that, as the sliding member **21** is positioned, parallel, discrete items of information are displayed at each of three windows **22, 23, 24** in member **20.**

The outer wrapper or jacket **20** includes a selector scale **25** calibrated in a spaced graduated series of indi-

cia representing a total number of patients or other task units. Here, by way of example, the drawing has been prepared to show an indicia in the form of numbers extending from 1 to 50. Adjacent scale **25** is a longitudinal window **26** for displaying an arrow or other suitable pointer **27** printed on the sliding member **21.** As member **21** is pulled, the arrow points toward the number of patients or task units in a given area of a hospital or other center. Adjacent the window **26** is the descriptive notation "number of patients" and a "category notation". The category may be anything convenient to the hospital or health care center. For example, the category could be children's ward, maternity ward, cardiac ward, intensive, or the like.

The inner slide graph **21** is preferably assembled from a number of discrete slide graph units, one of which is shown in FIG. **3.** More particularly, each slide graph unit **30** comprises an elongated board having a length L corresponding to the length L of the outer wrapper **20,** and a width W corresponding to one-third of the distance D defined by two side guides, preferably held in place within the wrapper by means of any suitable number of rivets **32.** One of the side guides is cross hatched at **31,** for easy identification. Each slide graph unit (preferably plastic or heavy cardboard) occupies sufficient physical space within the wrapper **20** so that the three slide graph units slide and function as a single unit.

As seen in FIG. **3,** each slide graph unit has two scales on each side, with one scale beginning on each end of the unit. Thus, for example, by rotating FIG. **3** through 90° in a counterclockwise direction, scale 0.001 is seen extending from 0.001 upwardly to correspond to the left-hand scale in FIGS. **1** and **2.** If this slide graph unit **30** is flipped over while in this counterclockwise position, the 0.003 scale is seen to begin at 0.003, as indicated by a broken away section **33** of the outer wrapper and by the scale **34,** which has been lettered beside the slide graph unit. If FIG. **3** is next returned to normal (as seen with the drawing in its upright position) and then rotated by 90° in a clockwise direction, a 0.002 scale is seen as beginning with the number 0.002. If the slide graph unit **30** is flipped over while in this clockwise position, the 0.004 scale is seen to begin at 0.004 as indicated by a broken-away section **35,** and by the scale **36** which has been lettered beside the slide graph unit.

The pointer at **38** refers to the position of the 0.001 scale if the slide graph unit **30** is used in the center position **39** of the sliding unit **21.** Likewise, the pointers **39, 40** and **41** refer to the 0.002, 0.003 and 0.004 scales, respectively, if they are in the center position **39.** All of the slide graph units are slid out and simultaneously aligned to match the position of the center unit, as indicated on scale **25** by a pointer, such as **27.**

Upon reflection, it should be apparent that the three slide graph units shown in FIGS. **1** and **2** provide an optional selection of any three of twelve different scales and that any selected scale may appear before any of the windows **22–24.** A still greater selection of scales may be provided by the use of additional slide graph units.

The inner slide graph **21** thus includes columns of figures providing at least three scales, here indicating classes of workers such as registered nurses (RN), licensed practical nurses (LPN), and nurse's aides (NA). However, any other or additional classes of workers may also be provided, such as doctors, orderlies, and the like.

Initially, time, motion, patient care needs, mix of patients, hospital policy, etc. are studied to determine how much time each class of worker must devote to each category of patient. From these studies standards are generated on a per patient basis in a suitable time scale (such as the closest tenths, hundredths, or thousandths of an hour, for example). From these standards, a chart of tables is prepared in the form of columns, with the first row being a number group, such as 0.008, 0.009, 0.01, 0.02 . . . 0.09, 0.10, 0.11 . . . etc. For convenience of expression, the figures in the first row (seen in windows **22–24,** FIG. **1**) may be described as a "basic time module". The number in each succeeding row in the columns is the basic time module increased by one multiple. Thus, for example, the column in window **24,** having the basic time module 0.008 is the number group or series 0.008, 0.016, 0.024 . . . etc. The center column having the basic time module 0.03 is the number group 0.03, 0.06, 0.09 . . . etc. Hence, it should be apparent, if the indicator **27** is raised to, say four patients, the number then displayed in window **22** is four times the basic time module number that would be then displayed if the indicator **27** points to 1. Likewise, similar displays appear at each of the other windows.

From the time studies, there is a basic time module for each category of service and for each class of worker giving such service to each task unit (a single patient being one task unit in this case). For example, FIG. **1** has been drawn to show that each patient requires one-thousandth of a registered nurse's time each hour; therefore, the basic time module is 0.001 for registered nurses (RN). Each patient requires three-one-hundredth of a licensed practical nurse's hour and eight one-thousandths of a nurse's aides' hours. Thus, the basic time modules for these workers are 0.03 and 0.008, respectively. From FIG. **2,** it is seen that the hospital personnel are assigned so that nine patients in this particular category are served by 0.009 registered nurses, 0.27 licensed practical nurses, and 0.072 nurse's aides. If the shifts are 8 hours, these figures are multiplied by 8 so that during one shift, 0.072 hours of a registered nurse's time, 2.16 hours of a practical nurse's time, and 0.576 hours of a nurse's aides' time are required.

Of course, other patients assigned to the same nurse's station will have other patient care requirements. Thus, for example, one station might have say, four different categories and therefore four different planning tools, each being similar to that shown in FIGS. **1, 2,** except that different basic time modules are used to make the work force assignments. The man hours might then be such that by adding the figures appearing in windows **22, 23, 24** of four different planning tools, it is found that two nurses, three licensed practical nurses, and three nurse's aides are required.

Scheduling staff requirements vary from shift to shift and unit to unit, on a day-by-day basis dependent upon the number and classification of patients or task units. Therefore, at the end of each shift, all patients or task units are classified, in accordance with a patient classification chart, for the next shift. During the change of shift, the classification is reviewed and adjusted, as necessary. Accordingly, adjustments to the unit staff are made and duties are assigned. The staffing data is re-

viewed by the floor supervisor or nursing director and collected into a report that is presented weekly to the hospital administration who compares the actual staff with the theoretical staff, that is, the staff required to perform the degree of patient care desired by the institution.

Thus, the inventive patient care or other staff scheduling program is a very successful means of reducing the cost of giving services while improving the care actually given to patients.

The foregoing has described the task units in terms of hospital patients, the basic time module in terms of man hours, and the class of workers in terms of registered nurses, licensed practical nurses, and nurse's aides. However, the invention is not necessarily limited to these particular criteria. Instead, similar work forces may be developed for other assignments, as well. Therefore, the appended claims are to be construed to include all equivalents falling within the true scope and spirit of the invention.

I claim:

1. A tool for developing and staffing a service work force with the required amount of personnel comprising:

a frame having at least two surfaces;

a series of information display windows, laterally aligned in said frame;

index window means longitudinally disposed in said frame and having a selector scale adjacent thereto calibrated into a graduated series of indicia representing the total number of task units serviced by said work force;

a plurality of separate slide means equal to the number of said display windows;

said slide means adapted to be slidably disposed in said frame;

each of said slide means comprising a plurality of series of indicia representing scales in terms of fractions of man hours required for a given class of worker to serve in a total number of task units serviced by said work force, the relative lengths of each series of indicia being correlated relative to each other;

each of said slide means additionally comprising an identifying proportion factor representing the basic time module of work which a worker must devote to each category of work, whereby the position of each slide in said frame is determined from time studies directed at ascertaining the basic unit of time required to perform a pre-selected task;

said slides having a physical relationship to said index window means whereby any one of said plurality of series of indicia may be displayed in said window means responsive to interchanging, reversing, and inverting the positions of said slides in accordance with said proper identifying proportion factor;

selector means on each of said slides for positioning each said slide relative to said frame by selecting the total number of task units on said selector scale regardless of the interchanged, reversed, or inverted position of said slide;

whereby alignment of said slides relative to each other indicates in said display windows the total number of man hours required for each of the different categories of work required.

2. The tool of claim **1** wherein each task unit comprises a health care patient of a particular category and each graduation on said selector scale indicates a cumulative total number of patients served by said work force.

3. The tool of claim **2** wherein each of the other scales is a number group beginning with said basic time module, and a graduation in the scale comprises a multiple of said basic time module, said relative scale lengths being such that the cumulative total number corresponds to the multiple of the number displayed.

4. The tool of claim **3** wherein said other scales contain information relating to the numbers of man hours per task unit required for registered nurses, licensed practical nurses, and nurse's aids, respectively.

5. The tool of claim **3** wherein said selector scale is carried by an outer wrapper and the other separate slides interchangeably fit side by side within said outer wrapper to carry a slide graph inside said outer wrapper, and windows in said outer wrapper for displaying information from the scales on said side graph.

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