No. 715,461. Patented Dec. 9, 1902.

J. M. DALY.

COMPUTING MACHINE.

(Application filed May 12, 1902.)

(No Model.)

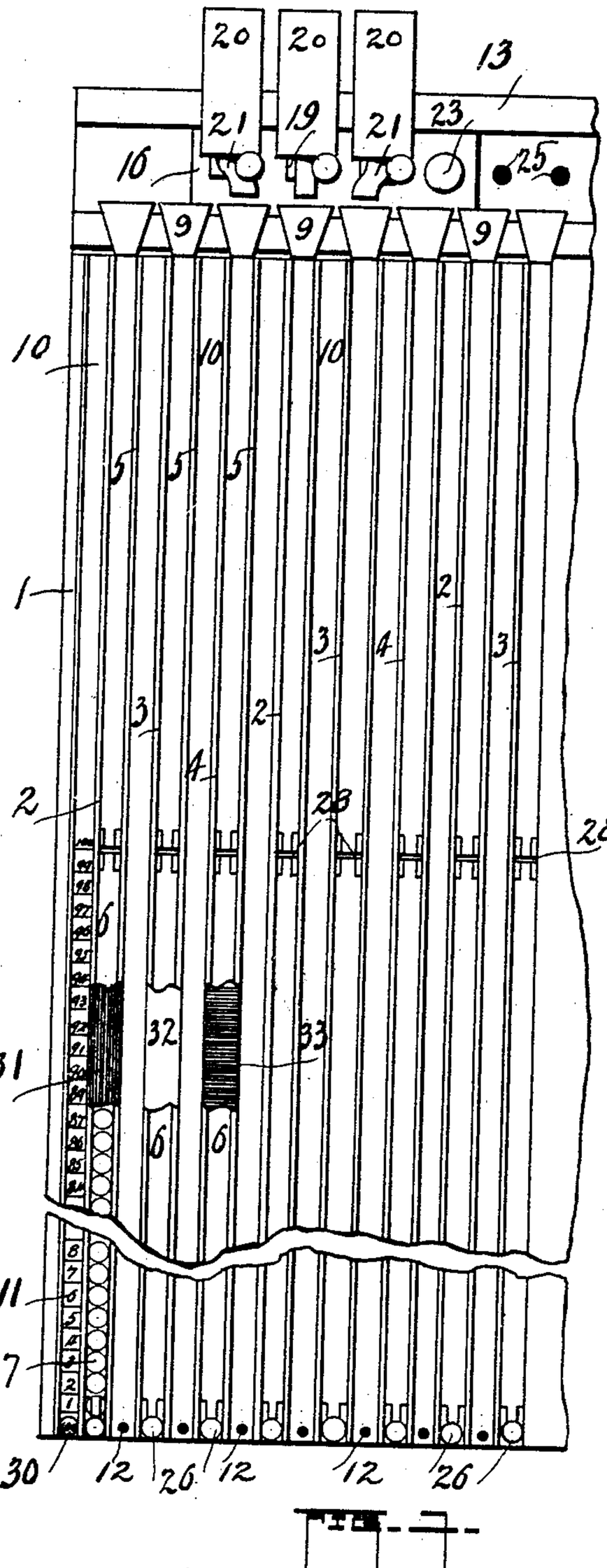

FIG. 1.

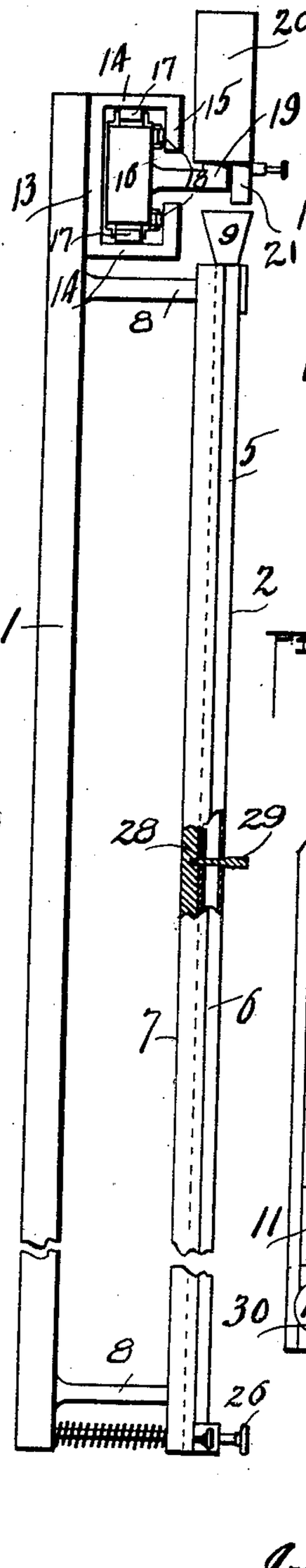

FIG. 2.

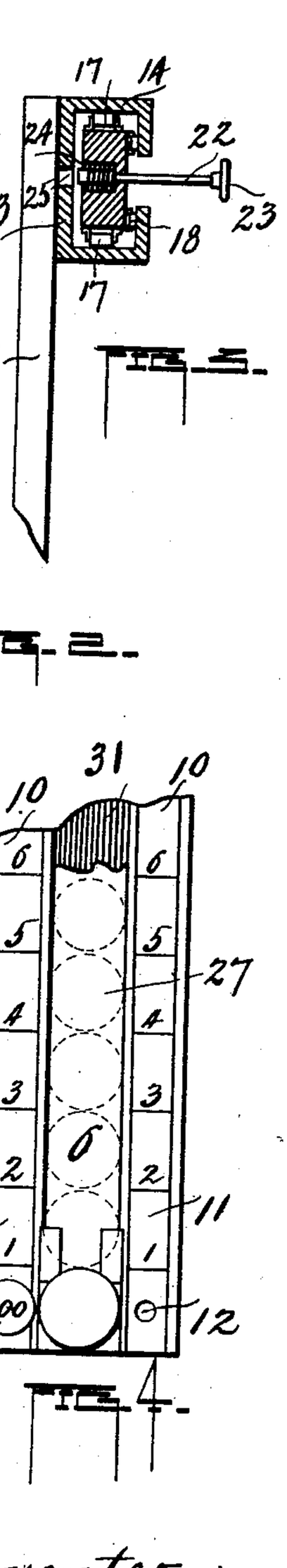

FIG. 5.

FIG. 4.

FIG. 3.

Witnesses:—
J. E. Shaw
Chas. H. Daly

Inventor.
John M. Daly
By Chas. H. LaPointe
Atty.

UNITED STATES PATENT OFFICE.

JOHN M. DALY, OF CHICAGO, ILLINOIS.

COMPUTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 715,461, dated December 9, 1902.

Application filed May 12, 1902. Serial No. 106,965. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. DALY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Computing-Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention has reference to a computing-machine and to that class known as "gravity" computing devices, and the same is an improvement upon the invention contained in my application bearing Serial No. 80,381, filed October 28, 1901.

The object of the present invention is the provision of a series of tubes or other transparent receptacles mounted in a frame, a series of charts carried in juxtaposition to said tubes, and to mechanism supported above said tubes and movable in frame parts in such a manner that the mechanism may be intermittingly caused to coact with the tubes of the series.

A further object of the invention is in dividing the tubes into two parts and in the provision of a removably-arranged valve or plate to be inserted between the tubes; and the invention further consists of registering plugs or other devices coacting with the charts for indicating the number of devices having been dropped into and removed from the tubes.

A further object of the invention is in the provision of a color scheme as a backing for the series of tubes to indicate the character and style of goods or equipment for which the machine is used.

The invention comprises details of dropping mechanism and slugs to be dropped therefrom into the tubes and mechanism for discharging the same from the tubes, all of which is more or less described and claimed in the application above referred to and to which reference only will be made in this application.

Figure 1 is a front elevation, in sectional outline, of my improvement. Fig. 2 is an end elevation, partly in section. Fig. 3 is a sectional detail, and Fig. 4 is a view illustrating certain details.

This invention is designed more particularly for use by railroads in keeping account of box-cars and coal-cars in use on foreign roads and also for the purpose of recording the number of cars in use on its own road belonging to foreign roads, and it is to be understood in this connection that no limit is placed on the style of equipment of which record is to be kept, nor is it desired to confine the use of the machine to railroads alone, as it may be found valuable for other and various uses.

Referring to the drawings, 1 indicates a frame-support from which it is designed to support a series of tubes. For convenience these tubes will be referred to in series of three, as 2, 3, and 4, and there may be as many tubes as is necessary and arranged in series or not, as desired. Each tube is of transparent material and formed of the sections 5 and 6.

7 indicates a backing, of suitable material, serving as an additional support for the tubes, and the tubes and backing 7 are supported from the frame 1 at top and bottom by the castings 8, and 9 indicates a funnel of bell-metal, at the head of each tube, as shown. Upon the backing 7 and in juxtaposition to the tubes are arranged channel-ways 10, in which is arranged a numerical index or table 11, and at the lower end of each of the channel-ways is a perforation 12 for a purpose to be described.

13 indicates a channel frame or track having the top and bottom runways 14 and the runways 15. Movably arranged in this channel-frame, which is supported at the head of the tubes, as shown, is a carriage or similar frame part 16, having rollers 17 for rolling upon the top and bottom ways 14 of the channel, and in addition the rollers 18 for engaging with and rolling upon the ways 15. It is designed to have these rollers at opposite ends of the carriage both for engaging the ways 14 and 15.

19 indicates arms or supports extending out from the carriage, upon which it is designed to support slug-dropping devices 20, as shown. These slug-dropping devices in every particular are similar to the slug-dropping devices described in my application above referred to, and it is therefore not thought necessary to go into detail herein, with the exception that short tubes 21 depend from the base of the devices 20 and coincide with the

opening in the devices through which slugs are dropped, and the lower ends of the tubes are brought into coincidence with the funnels 9 for dropping the slugs into the tubes forming part thereof.

In this application the object is to do away with the use of an indefinite number of slug-dropping devices and to construct the machine so as to reduce the cost thereof and to carry a multiplicity of tubes in a comparatively small space; hence a carriage carrying two or more slug-dropping devices movable above the tubes, and by bringing the tubes very close together it may or may not be necessary to curve the short tubes 21 of the outer dropping devices to cause the three, as shown in the drawings, to aline with the proper tubes. In arranging for means whereby the carriage may be shifted from side to side in the frame I have provided for positively holding and, if need be, stopping the carriage as the tubes 19 of the dropping devices coincide with each successive tube 2, 3, and 4. This means comprises a plunger 22, having bearing through the carriage and carrying the finger-hold 23 and the same held by the spring 24, and the said plunger is arranged to coact with a series of perforations 25 in the channel-frame properly spaced for retaining the tubes 21 in proper alinement with the tubes as the carriage is shifted across the frame. The mechanism just referred to may be modified to suit the convenience of the construction of the machine, and I do not wish to be confined to the details thereof, as other and equivalent means may be provided for the convenience of the operator in shifting the carriage and locking it intermittingly during the movement thereof.

At the lower end of the tube-sections 6 is provided a plunger 26 and coacting parts identical with those shown in the application above referred to for the purpose of releasing one or more slugs at a time from the tubes, as may be desired. The slugs are the same as those described in the aforementioned application and referred to as 27.

By dividing the tubes, or rather separating them into sections, designating them as 5 and 6, an opening 28 is provided for the admission of a valve-plate 29. The function of the valve-plate and the dividing of the tubes, together with the perforations 12 at the lower end of the charts, is as follows: Supposing in computing the number of cars held of foreign roads or by foreign roads there is a great number and considering that the chart registers the tubes containing one hundred, two hundred, more or less, it is desired to drop a given number from the tubes, the valve-plates 29 will be slipped in the openings 28 between the tube-sections and divide the slugs therein and actuate the plunger 26 to release all the slugs in tube-section 6. A plug 30, having a sign indicating the number of slugs dropped, is inserted in the opening 12, the valve released, and the slugs then in the tube-section 5 permitted to drop in the section 6. This is further understood by saying that if a tube when filled contains two hundred slugs and the division of the tube coincides with the chart at "100" and the valve-plate inserted and dropping the one hundred slugs in or from section 6, a plug 30 is inserted at the opening 12 at the bottom of the chart, with an indicating sign or character representing "100," and when the valve is removed and the upper one hundred slugs dropped into the section 6 the chart will register "200." The same plan is followed, each time substituting a plug of higher denomination, enabling the operator to register in one tube an indefinite number of slugs, thus simplifying the operation of the machine and doing away with a superfluous number of parts.

Referring to the color scheme suggested, the idea is to color the backing 7 behind the tubes in a manner to indicate different equipment—that is to say, behind the tube 2 is arranged a red panel 31 indicating box-cars, and behind the tube 3 is arranged a white panel 32 indicating coal-cars of the initial road in use on a foreign road designated by the tube 4, and behind the tube 4 is arranged a blue panel 33 indicating cars of an initial road in use by the foreign road. To make it a little clearer, by arranging the tubes in series numbered 2 and 3 throughout these may be the initial road, or designate them as "Illinois Central railroad," and the tubes 4 throughout may be the foreign roads—as, for instance, "Santa Fe," &c. This color scheme may be varied, if desired, as different-color slugs may be used with as good satisfaction, and throughout various details may be made without departing from the scope of invention herein.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a device of the character described, the combination of a series of transparent tubes, charts in juxtaposition to said tubes, a carriage movable above said tubes carrying slug-dropping devices and slugs, substantially for the purpose described.

2. In a device of the character described, the combination of a series of transparent tubes, charts carried in juxtaposition to said tubes, a carriage movable above said tubes carrying slug-dropping devices and slugs, and means for locking the carriage in its movement, substantially as described.

3. In a device of the character described, the combination of a series of tubes, charts carried in juxtaposition to said tubes, a carriage mounted above the tubes and movable in a suitable frame, slug-dropping devices and slugs supported by said carriage, a locking device movable with the carriage arranged to engage parts of the frame for holding the

carriage in a fixed position at predetermined periods, substantially for the purpose described.

4. In a device of the character described, a series of tubes mounted in a stationary frame, charts adjacent to said tubes, each tube divided into two sections, a movable frame part arranged above the tubes, two or more slug-dropping devices and slugs, supported by said movable frame, tubes depending from the dropping devices and means for shifting and locking the carriage, in manner and for the purpose described.

5. In a device of the character described, a series of tubes mounted in a stationary frame, charts adjacent to each tube, the said tubes divided into two sections, a movable frame part arranged above the tubes, two or more slug-dropping devices with slugs, supported by said movable frame, tubes depending from the dropping devices, means for shifting the carriage and locking it intermittingly when the tubes of the dropping devices are coincident with the tubes in the stationary frame and slug-releasing mechanism at the lower end of each tube, substantially as described.

6. In a computing-machine, a receptacle, a chart carried adjacent to said receptacle, computing devices to coact with said receptacle, a chart for indicating the number of devices dropped into the tube, a valve-plate for shutting off a portion of said devices in the receptacle, mechanism whereby the computing devices below the valve may be released and a registering plug or similar device coacting with the said chart for registering the number of devices released from the receptacle, substantially as described.

7. In a computing-machine, a receptacle, a chart adjacent to the receptacle, computing devices to coact with the receptacle and chart and dropping mechanism above the receptacles, a valve-opening in the receptacle, a valve-plate coacting therewith, means for releasing a given quantity of computing devices from the receptacle, and a registering-plug arranged with an arbitrary sign coacting with the said chart, substantially in the manner and for the purpose described.

8. In a device of the character described, a series of receptacles, a series of charts or scales, slidably-arranged mechanism above the receptacles, computing devices carried by said mechanism to be dropped into the tubes, means whereby the computing devices may be released from the receptacles, and colored panels arranged at the rear of the receptacles, substantially as and for the purpose described.

9. A device for use by railroads in keeping record of equipment of initial and foreign roads, comprising one or more receptacles, one or more charts, computing devices coacting with said receptacles and charts and a slidably-arranged device above the receptacles containing said computing devices, a valve for each tube, means for releasing the computing devices from the lower end of the tubes, a supplemental registering device coacting with said charts, and color devices coacting with said receptacles to indicate style of equipment, substantially as and for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN M. DALY.

Witnesses:
JULIUS I. IVERSON,
JOSEPH G. PRATT.