International Time Recording Company
Engineering Data Sheet 203
September 1, 1927

DIAL RECORDERS

The International Dial Recorder is used where it is desired to print the record for a number of employees, over a certain pay period, on one sheet of paper. This recorder is made in three sizes for 50, 100 or 150 employees and also for three different lengths of pay periods: daily, weekly and eight day or quadri-monthly. On a daily or weekly machine, any employee may register six times but on the quadri-monthly machine, the registrations are limited to four. Any dial recorder may be equipped with a two-color device which automatically prints any irregularity of the working schedule in ink of a different color from that of the regular registrations.

The daily type dial is made in three styles. On the single drum machine, a new record sheet must be installed each night after the last registration has been made or in the morning before the first registration. On the daily double drum machine, the new record sheet may be installed any time during the day as the drum being used is alternated from day to day. If more than six registrations are desired in any one day, a twelve registration machine will have to be used. The twelve registration machine is similar to the double drum machine, the main difference being that a record sheet wide enough for twelve registrations is used and the carriage spaces twice daily.

All International Dial Recorders are fully automatic, that is, it is not necessary to shift any levers to get the registration in the proper space. For each number on the dial there is a corresponding spacing bar which locates the drum for printing in the proper space. When a registration is made on any number, the spacing bar of the same number is moved one notch and thus the machine is prepared for the next registration on the same number and that number only is affected. This feature makes it impossible to blur the record by printing one registration on top of another as the machine automatically locks and prevents more registrations than can be located in the space provided. At 12:00 midnight or some other predetermined time, the carriage shifts from one day's space to the next and at the same time restores the spacing bars to their original positions. On the daily single drum machine, the spacing bars must be restored manually at the time of changing the record sheet.

The weekly and quadri-monthly machines are so constructed that when the carriage is reset all the way back, it becomes locked until the first registration is made. This is very convenient where it is desired to change the record sheet and reset the carriage after working hours as it prevents the carriage from spacing during the night. When the first registration is made on the machine after resetting, the carriage is unlocked and travels to the proper position for printing. The carriage will then space properly throughout the week.

On the daily double drum machine, a lever is provided which will lock the carriage and prevent it from spacing when no changes are desired, as on Sundays and holidays.

Numbering Plan

[*This section discusses the numerical model or type designations, e.g., 6125, assigned to ITR dial recorders*.]

First figure "6" means International Dial Recorder.

Second figure. "0" means Daily.
"1" means Weekly.
"2" means 8 days, 4 registrations.
"5" means daily, 12 registrations.

Third figure. "2" means 50 capacity.
"3" means 100 capacity.
"4" means 150 capacity.
"7" means daily double drum—50 capacity.
"8" means daily double drum—100 capacity.

Fourth figure. "0" means one color.
"5" means two color.

Disassembly

Remove the crosshead lever clip.

Drive out taper pin, loosen binder screws and remove the cross head.

Take out four large hexagon head screws and remove dial.

Disconnect front end of carriage drive rod.

Remove pendulum.

Disconnect the carriage tapes.

With accommodation gear release lever, run down the motor spring using great care not to kink the tapes.

Remove the four screws and take out the clock movement. Be sure to loosen the front screws on the accommodation gear shaft. Do not attempt to remove the shaft.

Remove carriage shaft by loosening set screw in top of rear casting and loosening screws in the two collars.

Remove color change rod.

Remove rear drive shaft connection.

Turn carriage sideways and remove drive shaft.

Remove carriage.

Disconnect heavy spring on the front fork and remove screw from connecting rod, also pin from the bracket; then remove front fork and automatic locking pawl complete.

Remove connecting rod between forks.

Remove cotter key and pin in collar on main operating shaft and remove collar.

Remove screw in rear fork and screw in controller; then remove fork and controller assembly complete.

Loosen set screw in the casting located on the dial holder.

Remove screw from shaft hanger at bottom of shaft and remove column change shaft complete. Remove trip rod.

Printing Carriage

Check the ribbon shift thoroughly to see that it shifts at least one tooth each registration and that the spools have enough friction so that the ribbon does not drag on the paper. To increase the friction, remove the gear and bushing from the ribbon spindle and lengthen friction spring. Use extreme care not to lose the small friction spring or friction stud.

The pin on the minute wheel, used for tripping the hour, has adjusting screws that will allow it to be moved in several directions. This pin should be adjusted so that it seats as deeply as possible into the hour wheel sprocket and have equal clearance when the minute wheel is revolved in either direction.

The minute wheel should not be positioned at the 00 minute until after the hour wheel has tripped. The minute finding pawl should stand about 1/32” above the star wheel.

Reassembling

When reassembling, it should be remembered that all parts on the International Dial fit correctly and no bending is necessary.

Under no condition should the front rods, that hold the dial, be moved as their adjustment is made at the factory and there is no necessity of their being changed.

Install the trip rod.

Install the rear fork and controller assembly.

Install the sliding collar on main operating shaft, front fork and automatic locking pawl complete.

Connect up heavy spring for front fork.

Install the connecting rod from front to rear fork.

Install the clock movement complete and connect up the accommodation shaft to train of gears by tightening the set screw.

Install the carriage minute wheel drive shaft and have "X" on shaft enter on the same side as screw in hub of minute wheel as it was originally fitted there.

Place the carriage in position over the drum and put screws in the day indicator.

Insert the top carriage support shaft through the carriage guide tube and tighten set screws in the two collars.

Install color change and color flag rod.

Install lower carriage guide rod replacing the washers in their proper position.

Timing The Carriage

1. Shove the carriage back to its locked position.

2. Adjust the tape anchor post to its central position.

3. Connect up tapes. The front end of the short tape should be on the lower side of the pulley. The short tape should be placed on the anchor post first.

4. Change the mesh of the column change gear with the gear on the motor drive arbor until the ear on the column change wheel is 1/8" from the accommodation gear when the backlash is removed.

5. Remove tapes from carriage.

6. Mark the accommodation gear and wind the motor spring twelve 1/3 turns or 4 complete turns.

7. Reconnect the tapes and test the movements of the carriage making certain that it works freely enough to reset all spacing bars.

The next adjustment is to mesh the driving gear for resetting the spacing bars with the gear on the column change shaft so that when in the normal position of any day the resetting disc will be as far away from the spacing bars as possible. This means that the arm will be in a horizontal plane and at its extreme forward position. If the machine is not timed in this manner, six registrations cannot be made each day. The only exception to this adjustment is when less than six registrations are desired each day, as on the 8 column machine. The final adjustment is made by the eccentric bushing in the sliding disc, which is adjusted so that there is a slight clearance between the spacing bars and the stop on the disc after the sixth registration.

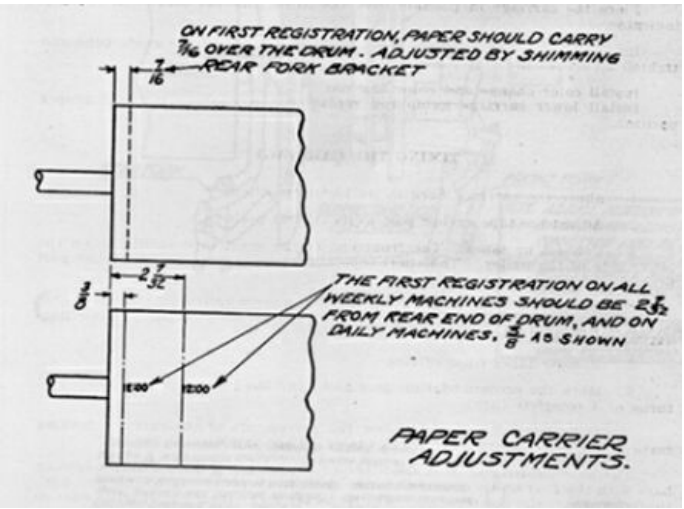
Install the clock face, hands, front board, dial and crosshead lever.

When timing the clock movement, carriage and color change timing wheel, proceed as follows: Time all units with the color change timing wheel, first turning it to 12:00 midnight. Disconnect the rear toggle and turn the hands of the clock until 12:00 midnight is printed. Block the finder into the star wheel, loosen the front toggle and set the hands to correspond with the timing wheel and type wheels. Now tighten both toggles and check the printing with the hands several times during an hour especially at the even hour.

To time the day to day spacing of the carriage, turn the minute hand until the carriage shifts. Loosen the set screw in front end of accommodation gear shaft and turn minute hand until the recorder prints the desired time, then tighten set screw.

Adjustments

1. Adjust the position of the carriage in relation to the anchor post for tapes, so that when the first registration is made at 12:01 A. M, there will be a distance of 27/32” from the end of the drum to the first figure on a weekly dial and on a daily or double drum, the distance will be 3/8”.



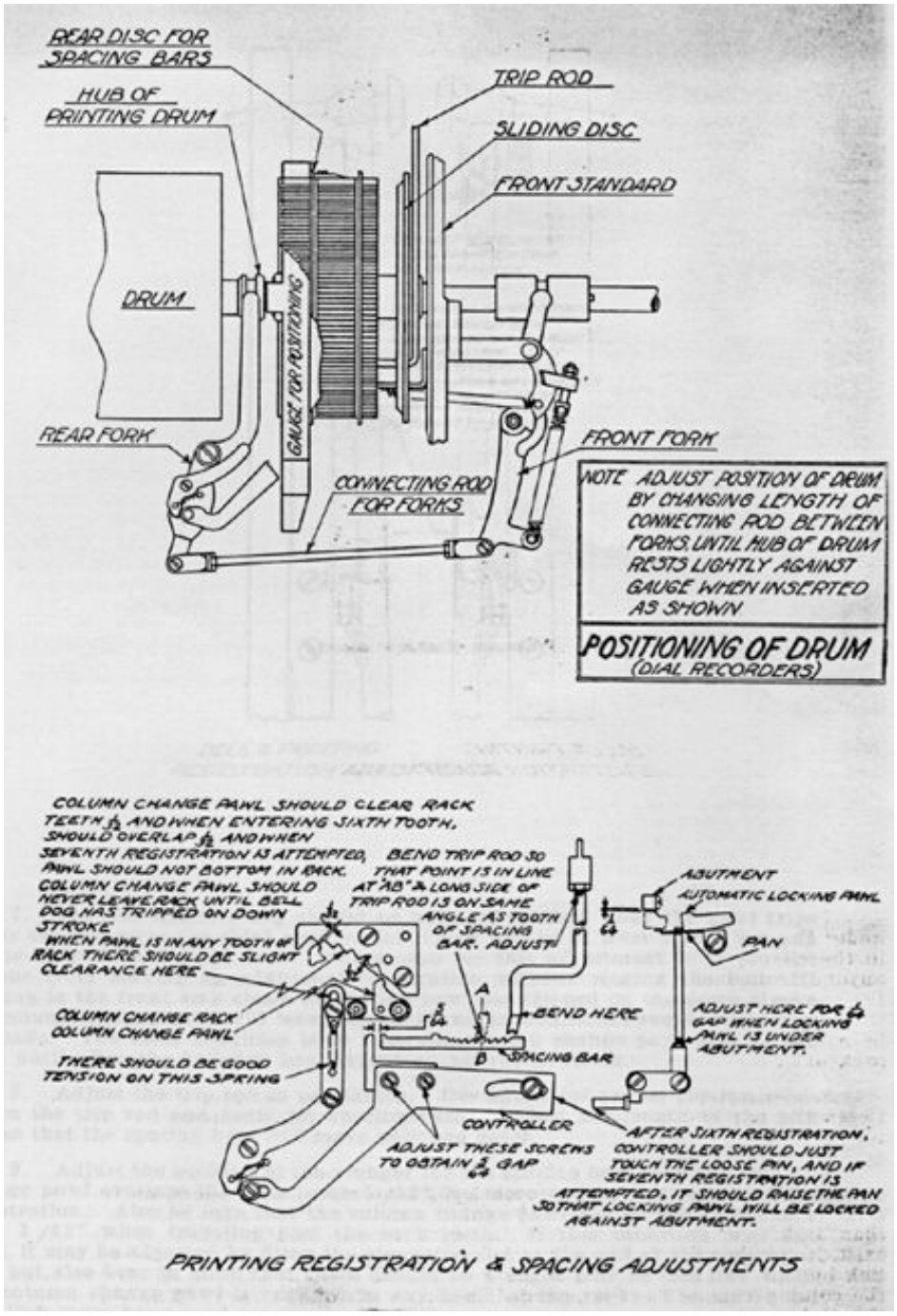
2. Set the crosshead lever so that there is a clearance of 3/32” between the pin in the operating lever and the face of the dial. To get the proper adjustment, it may be necessary to bend the loop a trifle. This adjustment must be accurate to prevent the person registering from bending the spacing bars by swinging the operating lever. A gauge is provided for this purpose.

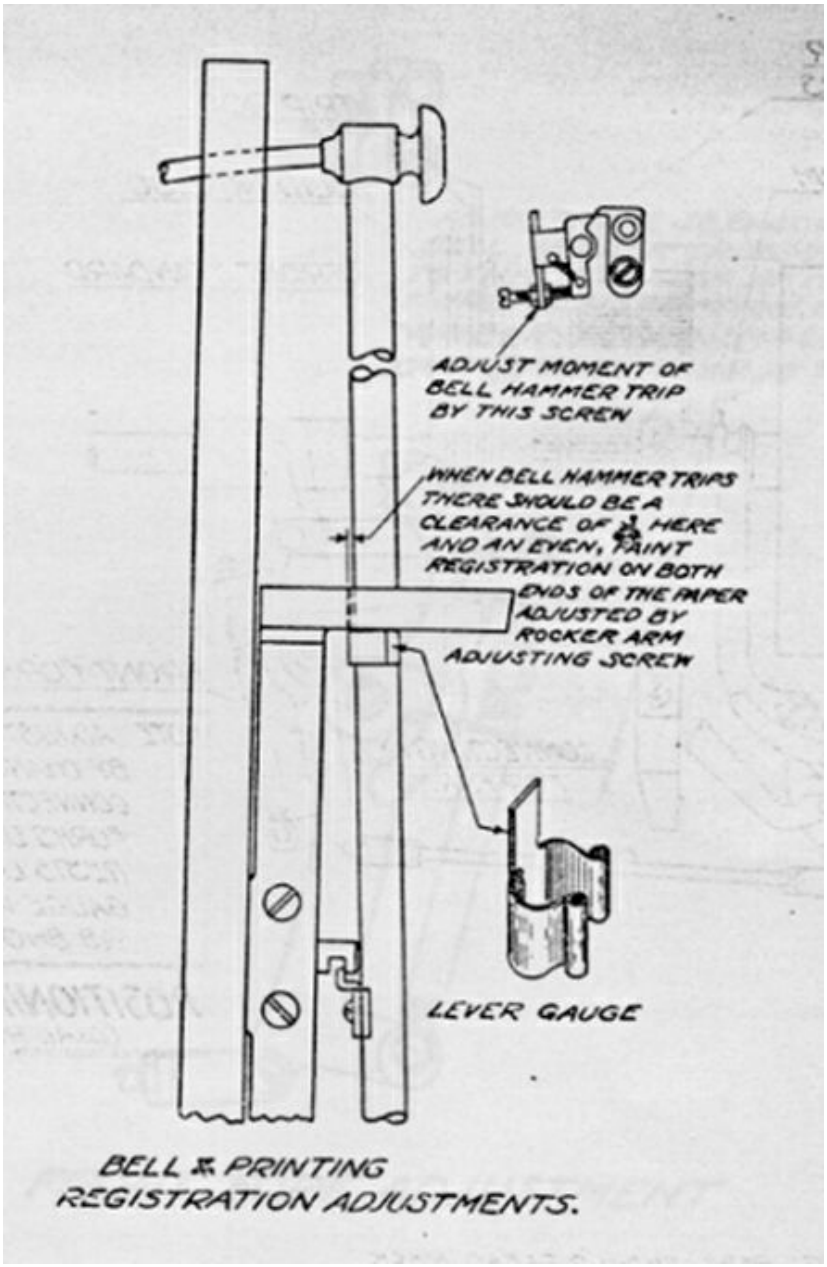
3. Adjust the connecting rod between the front and rear forks so that when the gauge for the printing drum is in position, the drum just rests lightly against it. When the drum is in its normal position, the hub should rest against the bumper spring.

4. Adjust the screw in the round rocker for a faint impression on the front end of the drum when the clip is on the operating lever or 3/64” clearance.

5. Adjust the screw in the rear end of the rocker arm for the proper impression on the rear end of printing drum.

6. Adjust the angle of the bell hammer trip pawl until the bell just trips with the clip under the operating lever.

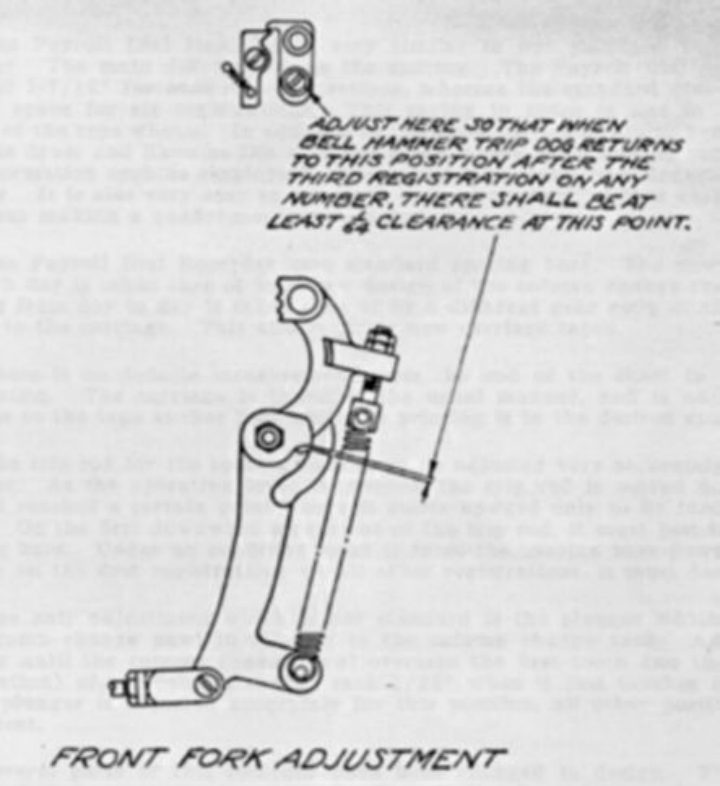




7. The bell hammer dog should be adjusted so that when the pawl trips under the dog after the third registration, there will be at least 1/64" air gap in the elbow of the front fork. The reason for this adjustment is to prevent anyone from making an additional registration without ringing the bell. If the gap in the front fork closes before the pawl has tripped on the down stroke the column change pawl will leave the rack and an additional registration may be made. The ideal condition is to have the column change pawl stay in the rack until after the bell dog has tripped on all registrations.

8. Adjust the trip rod as per sketch. Use gauge for proper clearance between the trip rod and drum for spacing bars. Adjust the length of the trip rod so that the spacing bars will move only one notch.

9. Adjust the position of the plunger for the spacing bars until the column change pawl overlaps the rack tooth 1/32", no more and no less, on the sixth registration. Also be sure that the column change pawl has no more clearance than 1/32" when traveling past the rack teeth. If this condition does not exist, it may be adjusted by filing the elongated slot at the end of the controller link but also bear in mind that there should be a slight play in this link when the column change pawl is engaged in any tooth of the rack. The spring on this link must have good tension.



10. Adjust the lift rod for the automatic locking pawl for 1/64" clearance between the locking pawl and abutment.

When all of these adjustments have been made correctly and six registrations printed, the end of the controller should be just touching the loose stud for raising the locking pawl, the pawl being raised by the controller when a seventh registration is attempted.

The automatic locking pawl prevents a seventh registration, undue strain on the mechanism and tearing of the paper. It is a cleverly arranged piece of machinery perfectly balanced, which prevents a speedy registration by traveling over a beveled surface on the pan. If the operating lever is operated rapidly, the pawl riding on this beveled surface will receive a little kick thus locking the machine from registering. When the operating lever is pressed slowly, the locking pawl will slide under the abutment.

The retard device is for the purpose of preventing the carriage from operating too fast when spacing from one day to the next.

For one color recorder, use ribbon No. 40

For two color recorder, use ribbon No. 39

Payroll Dial Recorder

The Payroll Dial Recorder is very similar to our standard weekly dial recorder. The main difference is in the spacing. The Payroll Dial requires a space of 1-7/16" for each six registrations, whereas the standard dial requires 2-1/8" space for six registrations. This saving in space is due to the new design of the type wheels. In addition to the space for registrations being made less, the drum and likewise the slips are made longer, thus leaving more space for information such as employee's name, total time, total pay, deductions and net pay. It is also very easy to get eight days of six registrations each on one slip, thus making a quadri-monthly recorder.

The Payroll Dial Recorder uses standard spacing bars. The new spacing for each day is taken care of by a new design of the column change rack. The spacing from day to day is taken care of by a different gear ratio of the motor spring to the carriage. This also requires new carriage tapes.

There is no definite measurement from the end of the sheet to the first registration. The carriage is timed in the usual manner, and is adjusted in relation to the tape anchor post until the printing is in the desired space.

The trip rod for the spacing bars must be adjusted very accurately on this recorder. As the operating lever is pressed, the trip rod is moved downward until it reaches a certain point where it starts upward only to be forced down again. On the first downward movement of the trip rod, it must just touch the spacing bars. Under no condition must it force the spacing bars down, except slightly on the first registration; on all other registrations, it must just touch

The only adjustment which is not standard is the plunger which adjusts the column change paw in relation to the column change rack. Adjust the plunger until the column change paw overlaps the first tooth (on the second registration) of the column change rack 1/32” when it just touches the rack. If the plunger is adjusted accurately for this position, all other positions will be correct.

Several parts of this recorder have been changed in design. Therefore when ordering parts, always specify for Payroll Dial Recorder.