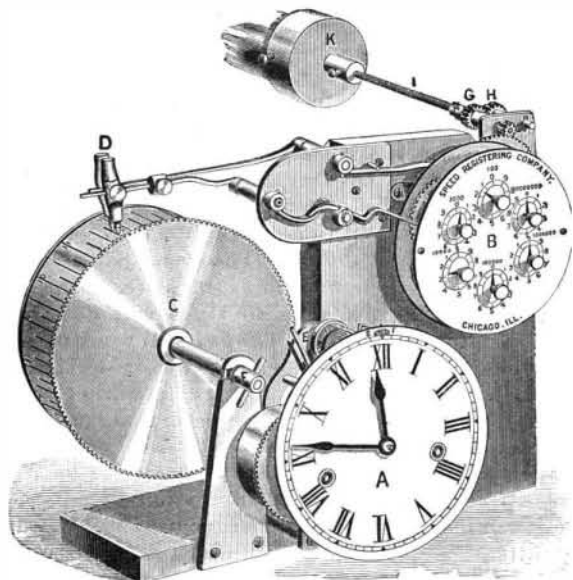


# A REGISTER AND RECORDER FOR REVOLVING SHAFTS.

The illustration represents a mechanism, patented by Mr. Solon M. Terry, of Pittsfield, Mass., for registering the number of revolutions of a shaft running any kind of machinery, and also for registering any inequalities which may occur in the speed, recording also duration



THE TERRY SPEED REGISTER AND RECORDER.

of stop, the time of day and the day of the week when the irregularities or stoppage occurred. It is probable that there are but few manufacturing concerns in the country which would not save money, and some of them very considerable amounts, by the use of a device for the purposes accomplished by this mechanism. At the present time competition in all industries is exceedingly close, and the manufacturer who does not look carefully after all the small wastes in his business has but little chance of success. The wastes occurring from running below speed, from irregular speed, and from stoppages, where many hands are employed, are items that too often escape proper attention, and in many cases the employers probably have no conception how large a figure they make, while there are probably few shops run with such regularity that the introduction of such a mechanism would not contribute to an increased efficiency.

The registering mechanism, B, includes a front and rear metallic disk, in which is journaled a shaft carrying a large toothed wheel back of the rear disk, this wheel being adapted to mesh with a pinion, G, to be driven by the drive shaft whose revolutions are to be recorded. This pinion is preferably on one end of a short flexible shaft, I, on the other end of which is a cap, K, to be tightened on the driving shaft. There are ten times as many teeth on the large toothed wheel as on the pinion, so that it requires ten revolutions of the drive shaft to turn the large wheel once. In the disks are journaled five other shafts, each having a pinion and intermeshing gear, so that the first shaft turns the second, the second turns the third, and so on up to the sixth, each shaft, by its complete revolution, turning the following shaft only one-tenth of a revolution. The outer ends of the shafts extend through their bearings in the outer disk, where their ends are tapered and a dial, B, is secured with six separate scales, or one for each shaft, an indicator hand being so secured by an adjustable cap to the end of each shaft as to rotate therewith, while it can be readily turned back, when it is desired to start the hands anew at O, by a firm pressure of the fingers. Upon one of the shafts is a lug, and on the main back plate is pivotally mounted a lever adapted to be

tripped by the lug with each revolution of such shaft, the lever having on its other end a sharp point or marker, D, normally held in contact with a strip of paper on a recording drum. Upon the main vertical back plate of the registering mechanism is mounted a clock, A, the mainspring shaft of which is extended to the rear and carries a broad-toothed gear wheel adapted to give motion to the recording drum, C. This drum is designed to make two revolutions in twenty-four hours, and has a central longitudinal screw-threaded aperture, in which fits a screw arranged to give a lateral motion to the drum as it is rotated by the gear wheel on the mainspring shaft of the clock, so that each succeeding row of marks or perforations made by the marker will be separate and distinct from the preceding row. Upon the periphery of the drum is removably secured a record strip, which preferably has the days, hours, and divisions of hours printed thereon for a whole week, as partly shown in the diagram, which is a sample of a record as made according to this invention between the hours of 1 and 3:30. The speed of the drive shaft at the time this record was made was 200 revolutions per minute, and the absence of marks on the record at 2:20 Thursday indicates a stoppage of the shaft at that time. The clock employed in connection with this register is a superior eight-day marine movement, with a double spring, and when once adjusted in the position it is to occupy, is designed to make an absolutely perfect record, showing not only the times of regularly starting and stopping the machinery and all intervening stoppages, but the exact rate of speed for each portion of every hour during the week, whether this comes from great differences in the work done, or low or high pressure steam in a steam engine, or a variable flow of water in a water wheel plant. The entire registering and recording mechanism, except its connection with the drive shaft, is inclosed in a substantial case, the key to which may be kept by the factory owner or superintendent.

This device is manufactured by the Speed Registering Company, of Chicago, Illinois, and is being placed

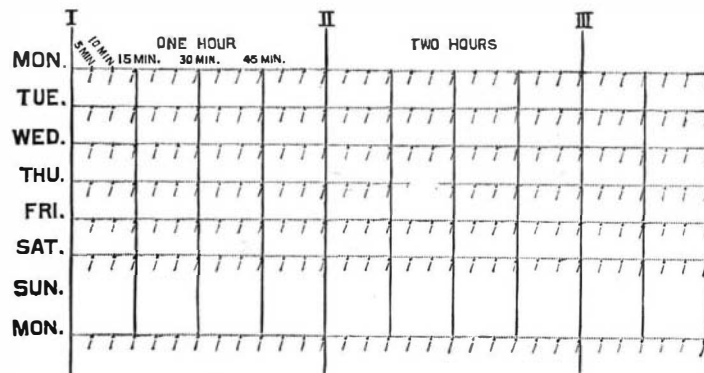


DIAGRAM OF RECORD MADE BY THE TERRY SPEED REGISTER AND RECORDER.

with manufacturers at a low rental, by Mr. S. H. Pomeroy, general agent, Pittsfield, Mass.

## AN IMPROVED MECHANICAL MOVEMENT.

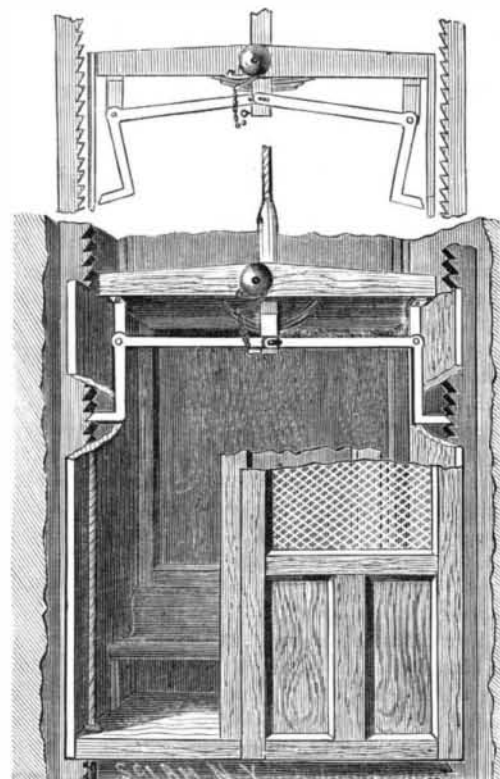
A device for converting reciprocating into rotary motion, avoiding all dead centers, and designed to transmit power without any undue friction or lost motion, is shown in the accompanying illustration. On the base plate is arranged a longitudinally extending guideway, vertical plates from which support at their upper ends a second guideway, and in these ways slides a frame having heads at each end, the rod connected with the machinery furnishing the reciprocating motion being secured to one of the heads. Within the frame is an essentially rectangular opening, the bottom and top sides of which each have three rack teeth, while the inner ends thereof are centrally recessed, and have top and bottom shoulders. The top and bottom rack teeth are adapted to be alternately engaged on each forward and backward movement of the frame by the teeth of a segmental wheel secured on a transverse shaft, having a fly wheel and the usual pulley connected with the machinery to be driven. The small views represent the manner of contact of the teeth of the segmental wheel with the rack teeth and shoulders of the sliding frame at different positions of the reciprocating rod, whereby a continuous rotary motion is imparted to the transverse shaft.

For further information relative to this invention address Mr. James Hayton, the patentee, No. 3 Mortison's Avenue, Fifth South, between Second and Third East, Salt Lake City, Utah.

SIR CHARLES PALMER says, thirty years ago, 747 men were employed in British steamers per 100 tons, whereas to-day the ratio is 288 men per 100 tons. In 1850 the total of steam tonnage owned in Britain was 167,698 tons, and last year 4,717,730 tons.

## AN IMPROVED SAFETY INDICATOR FOR ELEVATORS.

The illustration represents a simple and practical device whereby the condition of the automatic safety attachments to a passenger or freight elevator will be

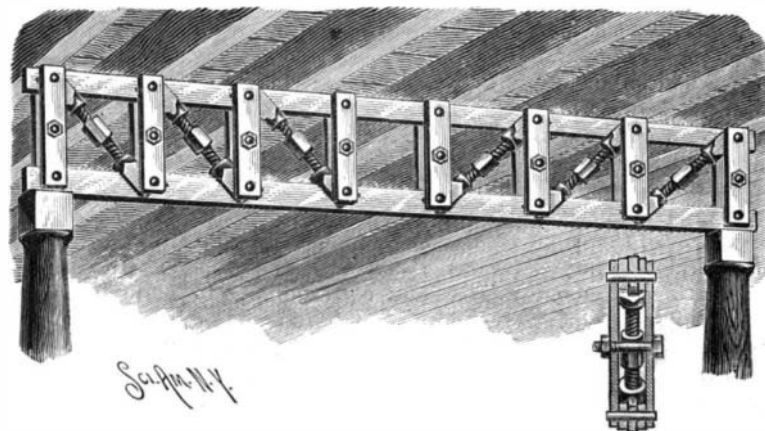


LYNN'S SAFETY INDICATOR FOR ELEVATORS.

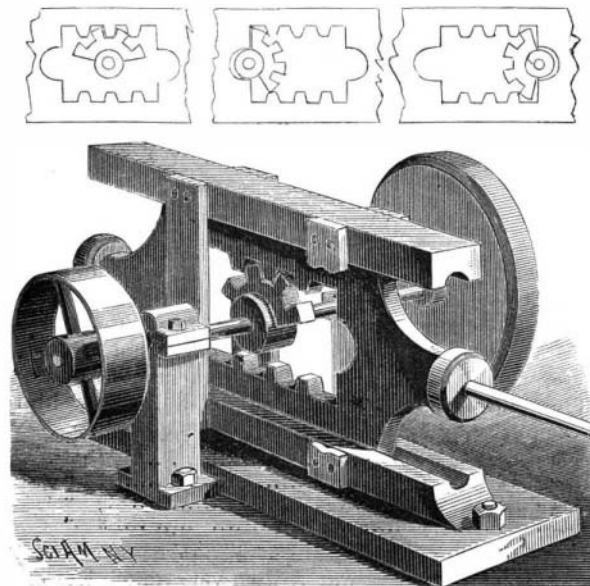
audibly manifested at every reciprocal movement of the elevator car. It has been patented by Mr. Joseph Lynn, of No. 275 Walnut Street, Holyoke, Mass. To the opposite side walls of the elevator shaft are secured toothed racks adapted to permit an upward sliding movement thereon of the toes of bell crank levers, while preventing any downward movement when such toes are brought into engagement with the teeth of the racks. These levers are pivoted at their corners upon depending bracket arms secured on the under side of the top cross bar of the car, their inner ends being lapped upon each other and longitudinally slotted where they have contact with and are loosely secured by a bolt to a central bracket block. This block at its lower end forms the support for a semi-elliptic leaf spring, the ends of which bear upon the lower surface of the cross bar. The elevator cable is secured to the upper end of the block, which slides up and down through the cross bar with the movement of the spring. The spring is compressed, as shown in the top view, when the elevator car is suspended from the cable; but when the car is seated on the shaft bottom, the spring assumes the position shown in the main view, the toes on the crank arms being then projected outward, a position which the springs would likewise cause them to assume, and stop the downward movement of the car, in case of the breaking of the cable with the car suspended therefrom at any point in the shaft. To prevent accident from an inoperative or defective condition of the spring, an alarm or signal bell is provided, to be struck by a crank hammer operated by a flexible connection with the block supporting the spring, so that each time the cable is slackened the downward movement of this block will cause the bell to be struck. Should the bell fail to sound on the car reaching the bottom of the shaft, the absence of the signal would be an indication of a defect calling for immediate attention. It is evident that this safety indicator can be used in connection with any form of safety clutch besides the one shown in the illustration.

## AN IMPROVED LIFTING TRUSS GIRDER.

The illustration represents a contrivance by means of which it is possible to raise floors, ship decks, etc., which, through sagging, have dropped below their



OLSEN'S LIFTING TRUSS GIRDER.



HAYTON'S MECHANICAL MOVEMENT.