

H. R. RICHARDSON
TRAVELER'S EXPENSE REGISTER.

(Application filed Oct. 1, 1900.)

(No Model.)

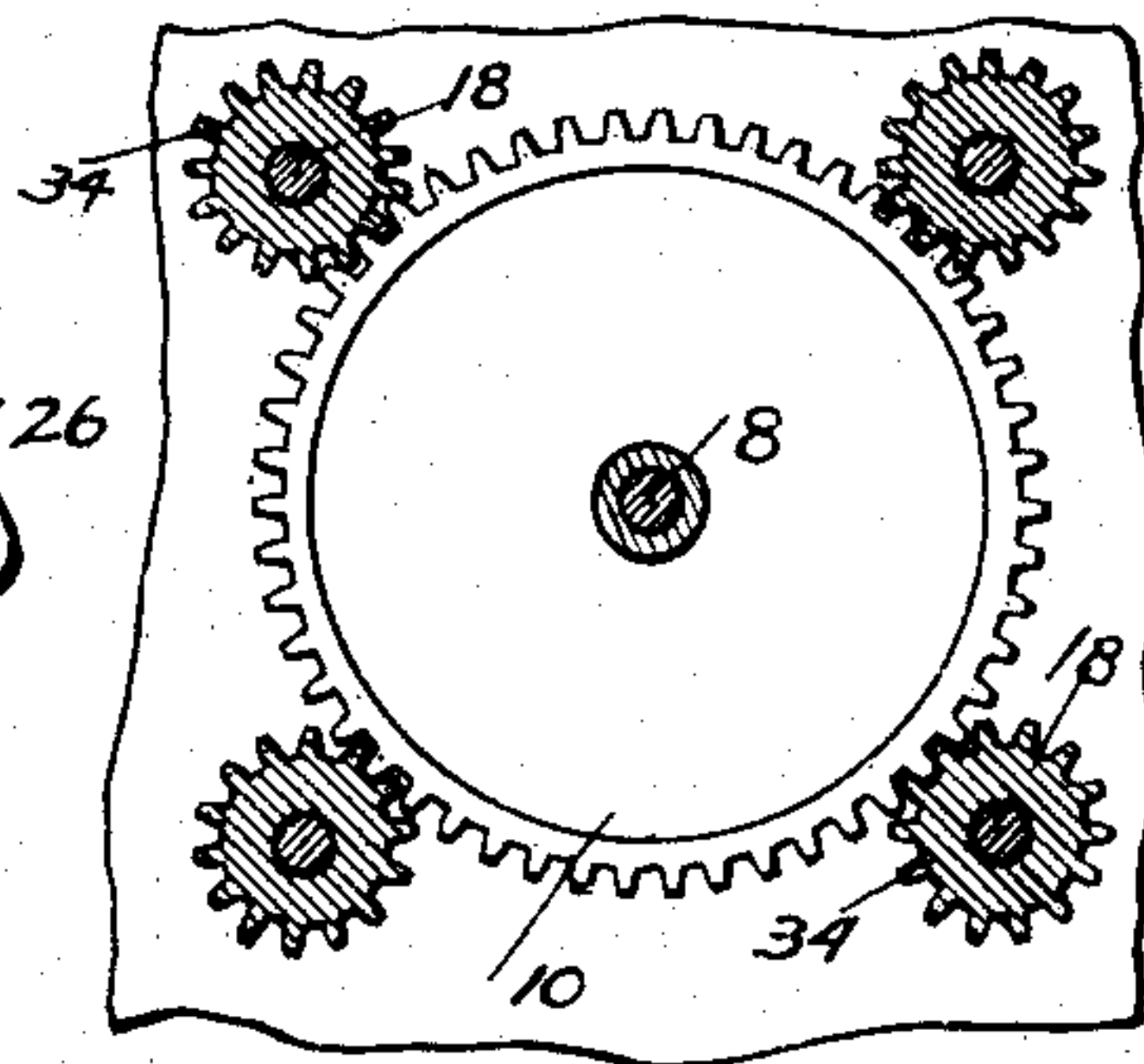
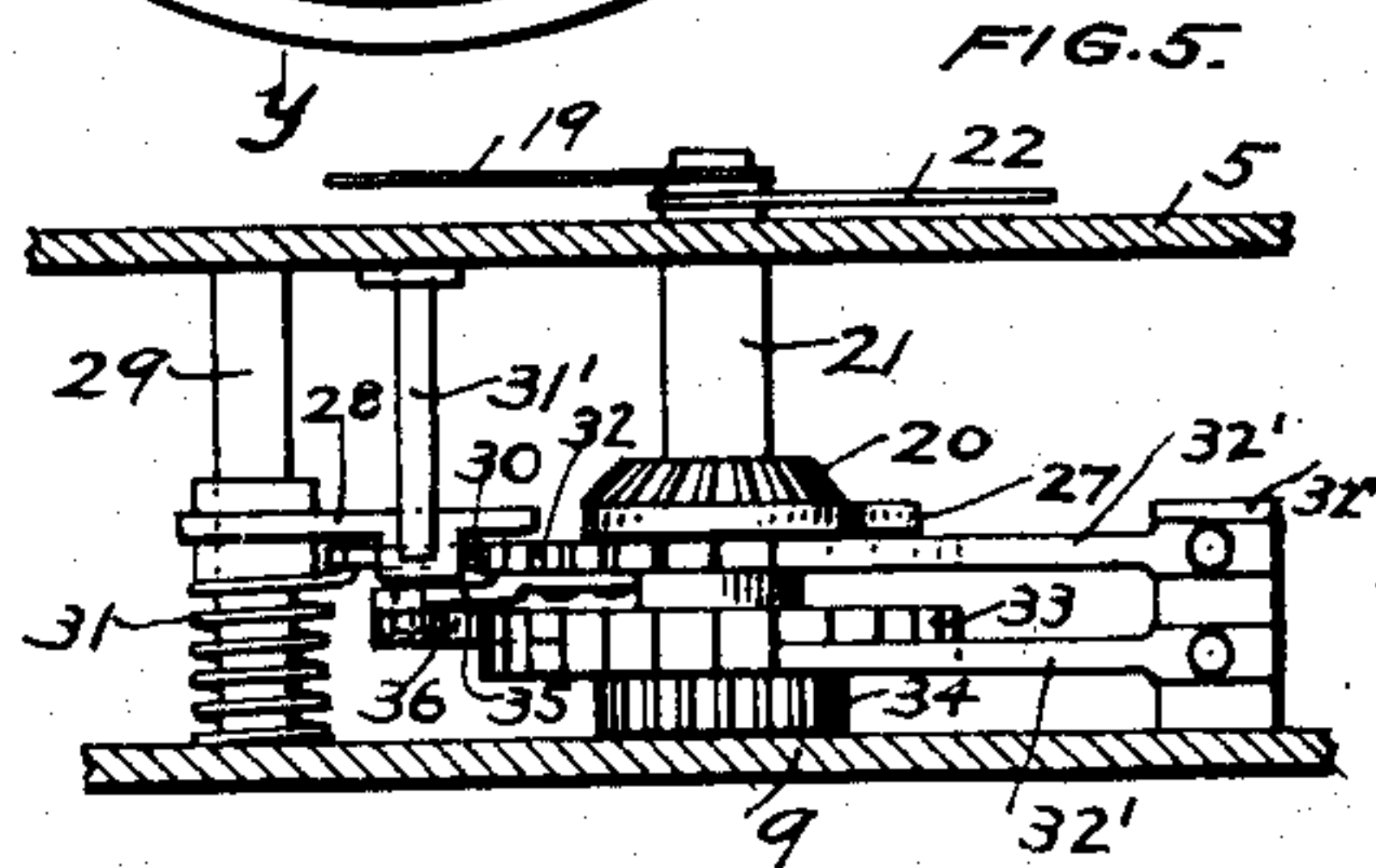
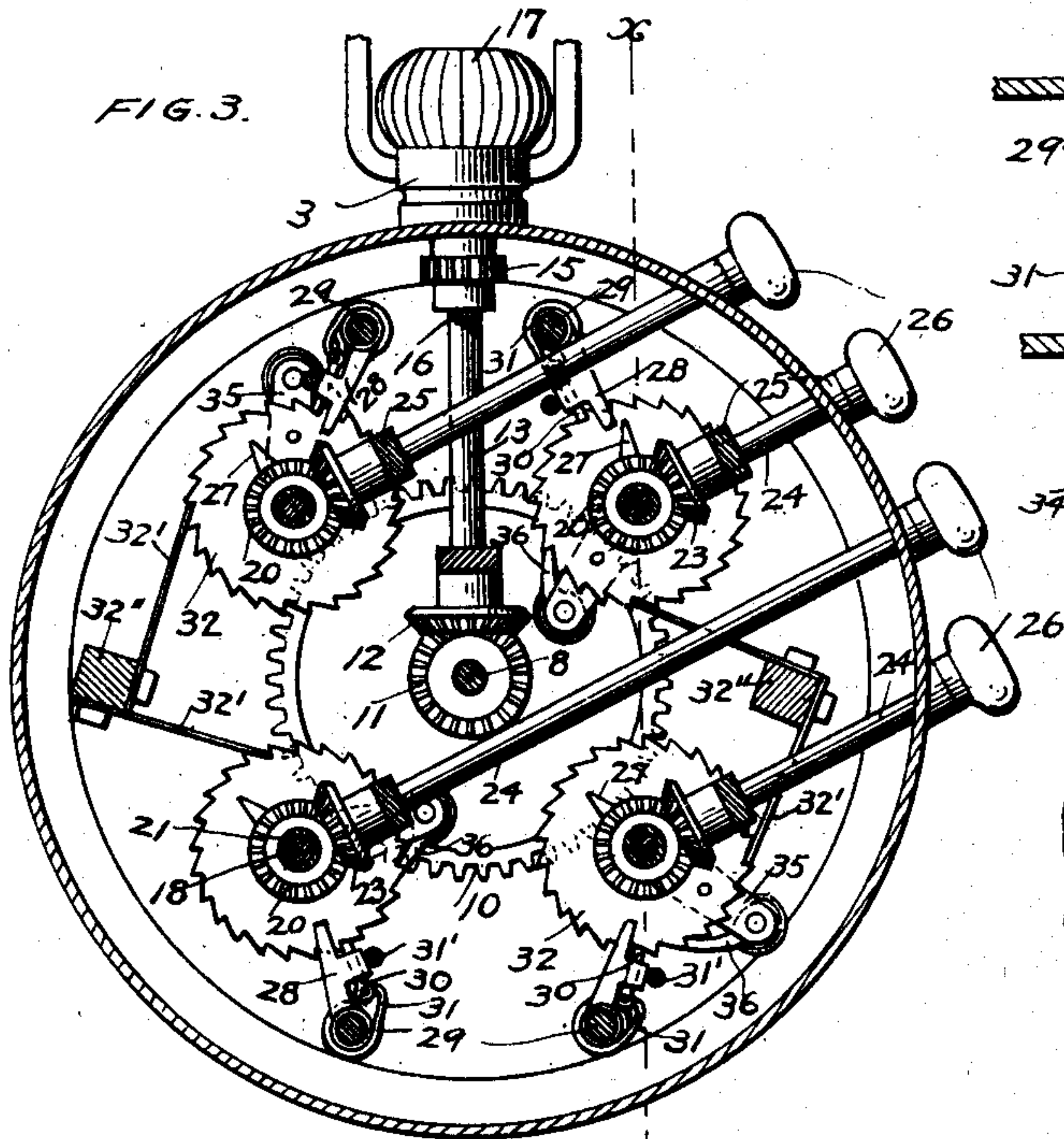
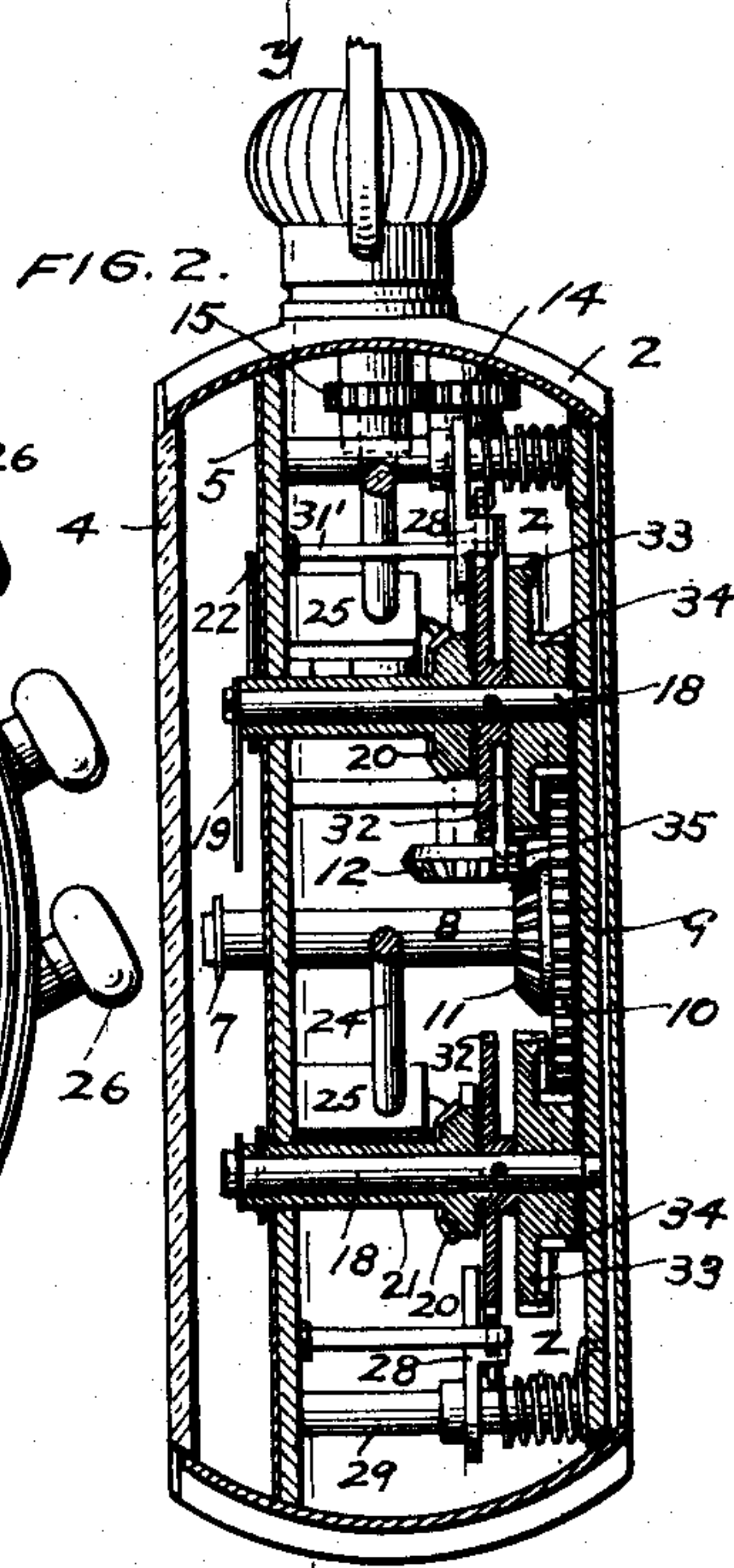
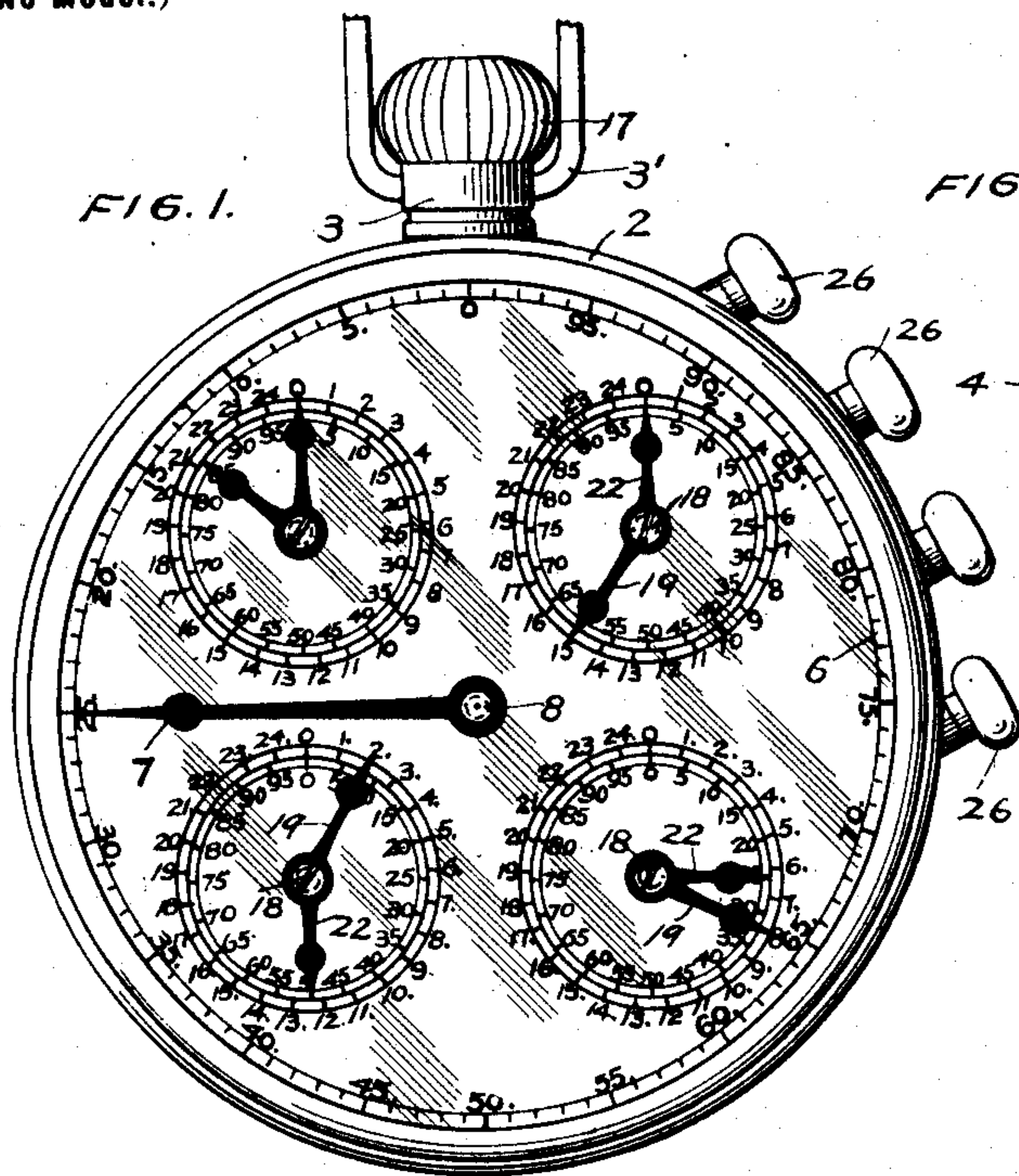


FIG. 4.

INVENTOR.

HENRY R. RICHARDSON.

BY Paul & Hawley

ATTORNEYS.

WITNESSES

J. Jensen
Richard Paul

UNITED STATES PATENT OFFICE.

HENRY R. RICHARDSON, OF ST. LOUIS, MISSOURI.

TRAVELER'S EXPENSE-REGISTER.

SPECIFICATION forming part of Letters Patent No. 668,859, dated February 26, 1901.

Application filed October 1, 1900. Serial No. 31,621. (No model.)

To all whom it may concern:

Be it known that I, HENRY R. RICHARDSON, of St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Travelers' Expense-Registers, of which the following is a specification.

The invention relates to cash-registers, and particularly to that class known as "calculators" or "adding-registers."

One object of the invention is to provide a pocket-register adapted for travelers generally, but designed particularly for the use of traveling salesmen, by means of which they may conveniently keep a complete accurate account of their traveling expenses and avoid the labor and inconvenience of keeping an ordinary expense-account.

A further object is to provide a registering device wherein different items of expense—such as railroad fare, hotel bills, and cab fare—may be registered separately and from time to time automatically transferred to a total-register, which will indicate the grand total of all the different registers.

A further object is to provide a registering device wherein the totals of the several expense-registers may be registered separately and independently of the common-total register, to the end that the traveler may at the end of his trip or journey ascertain at a glance the totals of the individual expenses, as well as the entire expenses of the trip.

The invention consists generally in various constructions and combinations, all as hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a front view of a pocket-register embodying my invention. Fig. 2 is a sectional view on the line $x x$ of Fig. 3. Fig. 3 is a sectional view on the line $y y$ of Fig. 2. Fig. 4 is a sectional view on the line $z z$ of Fig. 2. Fig. 5 is an edge view of a ratchet mechanism.

In the drawings, 2 represents a case wherein the operating mechanism of the register is arranged. This case is preferably in the form of a watch, to be carried conveniently in the pocket, and is provided with the usual watch-stem 3 and a loop or ring 3', to which a chain or cord may be attached. In the front of the case I provide an ordinary watch-crystal 4,

beneath which is the dial-plate 5. This dial-plate is provided at its circumference with a large dial 6, suitably graduated to indicate dollars, preferably from "1" to "100." A hand or indicator 7 is provided on a stud 8, mounted in the center of the casing and projecting through the dial-plate. The opposite end of the stud 8 is mounted in a plate 9 at the back of the case and carries a large gear 10 and a small beveled gear 11, that engages a similar gear 12 on a stud or shaft 13. The shaft 13 is also provided with a pinion 14 on its end opposite the gear 12, that engages a similar pinion 15 on a spindle 16, that extends through the stem 3 and is revolved by means of the crown-head 17. This construction permits the user of the register to move the indicator-hand 7 over the face of the dial-plate. Within the large dial 6 on the face of the dial-plate I prefer to provide a series of smaller dials, preferably four in number, each consisting of concentric circular rows of graduations, the inner circle representing units or fractions of a dollar that are preferably multiples of five and the outer circle representing dollars, preferably from one up to twenty-five, so that the smaller dials will collectively register a total of one hundred dollars. In the center of each of the smaller dials I provide a stud 18, mounted in the dial-plate and the plate 9 and each carrying a long hand 19, that is adapted to move over the outer circle of graduations of the smaller dial when the stud is revolved. A small beveled gear 20 is loosely mounted on each of the studs 18 and is provided with a sleeve 21, extending through the dial-plate, and whereon a short hand 22 is mounted to move over the inner circle of graduations and register the expenses up to one dollar. The gear 20 is driven from a similar gear 23 on the end of a shaft 24, that is mounted in bearings 25 in the casing and projects through the walls of the same and is provided with a knob 26, by means of which the shaft may be revolved and the gears and indicator-hand operated.

The gear mechanism for operating the indicating-hands on all the small dials are the same as the one described above, except that the operating-shafts are of different lengths, according to the position of their dials. Each of the gears 20 is provided with a lug 27, which,

with every revolution of the gear, will engage a pivoted arm 28, that is supported on a stud 29 and carries a sliding dog or catch 30, that is normally held in a forward or advanced position by a spring 31, which also holds the arm 28 normally in contact with a stop 31'. When in its forward position, the dog 30 engages the teeth of a ratchet 32, that is secured on the stud 18 and turns therewith. With every revolution of the loosely-mounted gear 20 the dog 27 engages the arm 28 and causes the ratchet 32 to advance one step or tooth and move the long hand 19 over one graduation on the outer circle to register thereon the total of the expenses registered on the inner circle of graduations during the revolution of the gear 20. Stop-pins 32' are provided on blocks 32'' to engage the teeth of the ratchets 32 and prevent the same from turning backward. These small dials and the indicating mechanism in connection therewith are designed particularly for registering separately the different items of expense, such as railroad and cab fare or hotel bills, and permit the user to keep each of these accounts separately without the use of account-books. Whenever the traveler incurs an expense that he wishes to make a record of, he simply moves the short indicator-hand of the dial appropriated for that particular expense to indicate the sum expended. Any amount up to one dollar, presuming that the inner circles of the smaller dials are graduated to indicate that amount, will be registered by the short hands, and when they have completed a revolution the totals will be registered by the long hands on the outer registering-dials. It is desirable to provide means for ascertaining the sum of the totals registered on the smaller dials, and I therefore provide a mechanism in connection with each of the small dial mechanisms by which the total of the small outer registering-dials will be automatically transferred to the large dial with every movement of the ratchets 32. This mechanism consists in a ratchet 33, mounted on each of the studs 18 and having an integral gear 34 to engage the teeth of the large gear 10. The ratchets 32 are provided with arms 35, carrying pawls 36, that engage the teeth of the ratchets 33, so that whenever the ratchets 32 are advanced one step the ratchets 33 and the gears 34 will be operated also and their movement transmitted through the gear 10 to the large indicator-hand to move the same over the large dial and record the total registered by the small dials.

When the ratchets 32 are advanced, the ratchets 33 will be advanced also; but the latter may be operated independently of the former and the common-total hand moved forward to zero from any point on its dial without affecting the mechanism of the individual dials. The common-total dial is preferably graduated to register up to one hundred dollars and the total-dials for each of the individual dials are graduated to register up to twenty-five dollars each, so that the totals which the operator may register on all the dials will aggregate the sum of two hundred dollars. These dials may, if preferred, be graduated so that the operator may register a greater or less sum than described above.

In operation the user having incurred an expense which he wishes to register on one of the individual dials operates the mechanism for turning the short indicator-hand until it points to the amount expended. Any additional expense incurred later is registered in the same manner until the hand has made a complete revolution or the amount of the expense exceeds one dollar, when by the mechanism described the ratchet 32 will be advanced one tooth or step and the long hand moved over its graduation to register the total of the sums indicated by the short hand. Simultaneously with the movement of the long hand to register the total on the individual-total dial the hand of the common-total dial will also be operated to register thereon an amount corresponding to the total on the individual dial. The common-total hand will be operated whenever any one of the individual-total hands is operated, so that the aggregate total of the amounts registered on the individual-total dials will be shown on the common-total dial. The user will thus be able at the end of his trip or journey or at any time during the same to determine at a glance the total of the particular expense for which any one of the individual dials has been appropriated and also the entire expenses of the trip.

It will be understood that the position and arrangement of the common-total and individual dials may be changed and the mechanism for operating the several indicator-hands may be modified and in many other ways the details of construction varied without departing from the spirit of my invention.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with a case, of a dial provided with a series of individual expense-dials item and total indicator hands adapted respectively to register the items of that particular expense for which the dial is appropriated and the totals of such expense, means for operating said indicator-hands, a total-dial common to all of said individual dials provided on said plate, an indicator-hand therefor, and operative means provided between said individual dials and said common dial whereby the hand of the latter will be operated to register the common total when the total-hands of the individual dials are operated to register the sum of the items indicated by said dials, substantially as described.

2. The combination, with a case, of a dial-plate provided with a common-total dial, an indicator-hand therefor, a series of individual dials each having graduations for the various items of the particular expense for which that

dial is appropriated and also for totals thereof, suitable item and total indicator hands for said individual dials, means for operating the hands of the individual dials to register various items of expense and to indicate at certain predetermined intervals the totals thereof, and means for operating the common-total indicator-hand simultaneously with the movement of the total-hand of each individual dial, whereby the user at a glance may determine the totals of the expenses for which each individual dial is appropriated and the aggregate totals or expenses indicated by the total-hands of all the dials, substantially as described.

3. The combination, with a case, of a dial-plate provided with a large total-dial and a series of individual smaller dials, each having two concentric circles of graduations, the outer representing dollars and the inner fractions thereof, indicator-hands for said large and small dials, means for operating the short hands of the smaller dials to move the same over the inner graduations thereon, means for operating the long hands to advance the same one step or graduation with each revolution of the short hands, and suitable operative means provided between said long-hand-operating means and the large dial-hand, whereby the latter will be automatically operated simultaneously with said long hands to register the total of the small total-dials upon the large dial, substantially as described.

4. The combination, with a case, of a dial-plate therefor provided with a series of individual-expense dials having separate graduations for the expense items and for the totals thereof, studs mounted in said case, total-indicator hands mounted on said studs, ratchets secured on said studs, spring dogs or pawls normally engaging the teeth of said ratchets, gears loosely mounted on said studs, sleeves provided on said studs and revolved thereon by the movement of said gears, indicator-hands for the expense items carried by said sleeves, means for revolving said gears, lugs provided thereon and adapted to engage said dogs and advance said ratchets one step or tooth with every revolution of said gear, whereby the total-hands will be moved to register on the total-dials the sum of the amounts indicated on the item-dials, substantially as described.

5. The combination, with a case, of a dial-plate therefor provided with a total-dial and an individual-expense dial, a stud 8 mounted in said case, an indicator-hand 7 for the total-dial mounted thereon, a gear 10 mounted on said stud, a stud 18 also mounted in said case, a ratchet 32 secured on said stud 18, a spring dog or catch normally engaging the teeth of said ratchet, a ratchet 33 also mounted on said stud and connected with said ratchet 32 to be operated thereby, a suitable gear connection provided between said ratchet 33 and said gear 10, a gear 20 loosely mounted on said stud 18, a sleeve carried by said stud and con-

nected with said gear to be revolved thereby, a hand mounted on said sleeve and adapted to move over the graduations on the individual-expense dial, means for revolving said gear and sleeve, and a lug carried by said gear 20 to engage said dog with every revolution of said gear to advance said ratchets one step and register on the total-dial the sum of the expenses indicated by the individual-expense dial, substantially as described.

6. The combination, with a case, of a dial-plate therefor provided with a total-dial and a series of individual-expense dials, each having graduations for the items of expense and for the totals thereof, a stud 8 mounted in said case, a hand 7 thereon, a gear 10 secured on said stud, studs 18 also mounted in said case, indicator-hands secured on said studs 18 and adapted to indicate the totals on said expense-dials, ratchets 32 secured on said studs 18, spring-dogs normally engaging the teeth of said ratchets, ratchets 33 also secured on said studs 18 and connected with said ratchets 32 to be operated thereby and having gear connections with said gears 10, gears 20 loosely mounted on said studs 18, means for revolving said gears 20, sleeves loosely mounted on said studs 18 and connected with said gears 20 to be operated thereby, indicator-hands mounted on said sleeves to indicate the items of the individual expenses, and lugs provided on said gears 20 to engage said dogs and advance said ratchets to simultaneously register the totals on the individual-total and the common-total dials, substantially as described.

7. The combination, with a case, of a dial-plate therein provided with a common-total dial, a series of individual-expense dials, an indicator-hand for said common-total dial, a stud 8 whereon said hand is mounted, a gear 10 secured on said stud, means for operating said stud to move said hand over the face of the dial, studs 18 also mounted in said case, ratchets 32 secured on said studs 18, indicator-hands mounted on said studs 18 and adapted to travel over said individual-expense dials, ratchets 33 loosely mounted on said studs 18, pawls carried by said ratchets 32 and engaging the teeth of said ratchets 33, whereby said ratchets 33 will be operated by the movement of said ratchets 32 but may be moved forward independently thereof, and suitable gears provided on said ratchets 33 and engaging said gear 10, whereby said common-total hand may be turned forward on its dial without affecting said ratchets 32 and the individual-expense hands connected therewith, substantially as described.

8. The combination, with a suitable case, of a dial-plate therefor provided with a common-total dial and a series of individual-expense dials having separate graduations for the expense items and for the totals thereof, an indicator-hand for said common-total dial, studs 18 mounted in said case, indicator-hands for the totals of the individual-expense

dials mounted on said studs 18, ratchets 32
secured on said studs, spring dogs or catches
normally engaging the teeth of said ratchets,
gears loosely mounted on said studs 18, shafts
5 24 projecting through the wall of said casing
and having gears to engage said loosely-
mounted gears, lugs provided on said loosely-
mounted gears and adapted to engage said
spring-dogs and advances said ratchets, sleeves
10 mounted on said studs and adapted to re-
volve with said gears, indicator-hands for
the individual-expense items carried by said
sleeves, and suitable operative connections
provided between said ratchets 32 and said

common-total indicator-hand, whereby with 15
every revolution of said loosely-mounted
gears said ratchets and studs will be opera-
ted to move the indicator-hands over the dials
and register the totals on the individual-ex-
pense dials and simultaneously transfer the 20
sum to the common-total dial, substantially
as described.

In testimony whereof I have hereunto set
my hand this 24th day of August, 1900.

HENRY R. RICHARDSON.

In presence of—

M. C. NOONAN,

M. E. GOOLEY.