W. E. HOSCH, DEC'D.
A. M. HOSCH, ADMINISTRATRIX.
TOTALIZING MECHANISM.
APPLICATION FILED FEB. 13, 1918.

1,409,547. Patented Mar. 14, 1922.

2 SHEETS—SHEET 1.

Fig. 1.

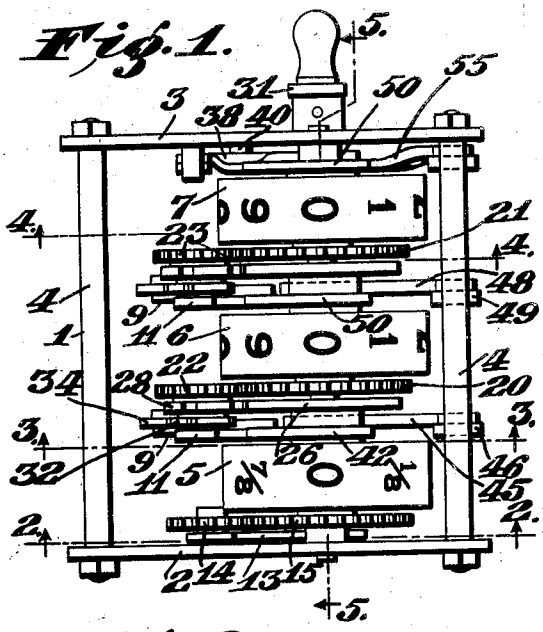


Fig. 3.

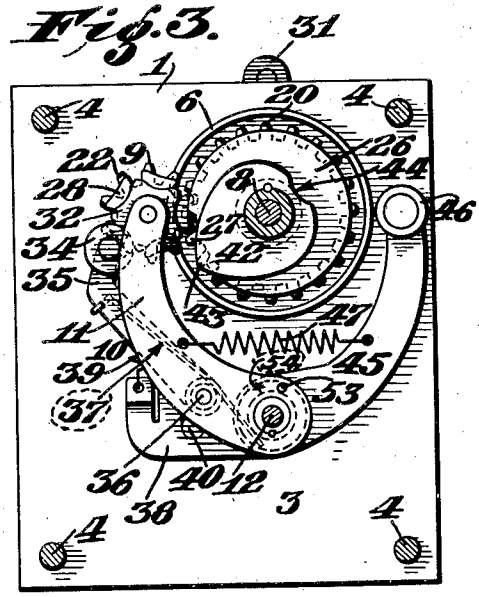


Fig. 2.

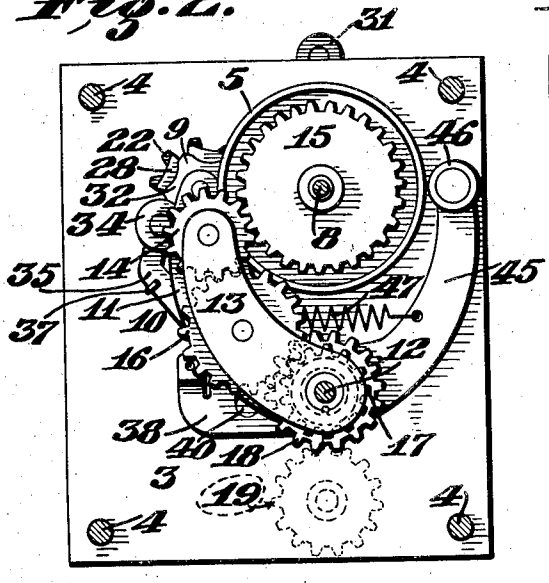
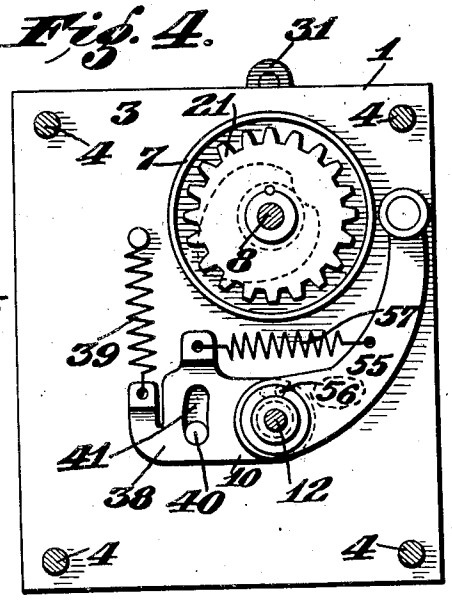


Fig. 4.



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By Bruce A. Ernst
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2 SHEETS—SHEET 2.

Fig. 5.

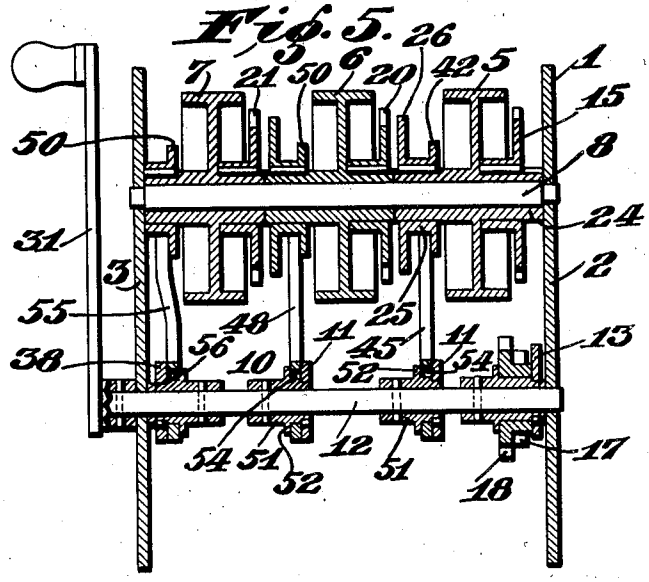


Fig. 6.

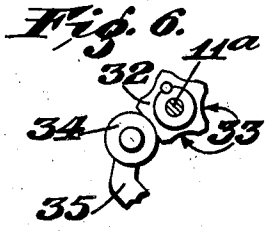


Fig. 7.

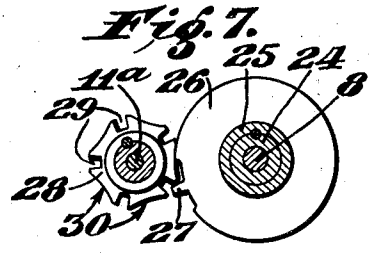


Fig. 8.

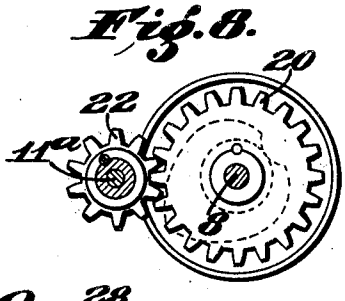


Fig. 9.

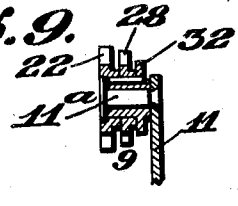
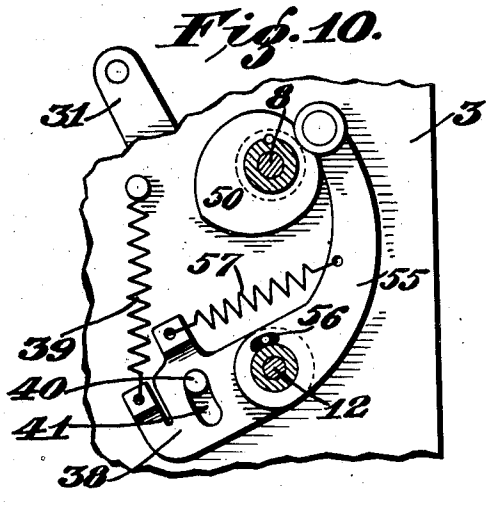


Fig. 10.



Inventor:
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By Bruce L. Ewing
his Atty.

UNITED STATES PATENT OFFICE.

WALTER E. HOSCH, OF ST. LOUIS, MISSOURI; ANNIE MAE HOSCH ADMINISTRATRIX OF SAID WALTER E. HOSCH, DECEASED, ASSIGNOR TO THE MEASUREGRAPH COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION.

TOTALIZING MECHANISM.

1,409,547. Specification of Letters Patent. Patented Mar. 14, 1922.

Application filed February 13, 1918. Serial No. 216,955.

To all whom it may concern:

Be it known that I, WALTER E. HOSCH, a citizen of the United States, residing in the city of St. Louis and State of Missouri, have invented new and useful Improvements in Totalizing Mechanism, of which the following is a specification.

This invention relates to counters or totalizing mechanism. The general object of the invention is to produce a very simple mechanism for counting or totalizing, and one of the novel features resides in organizing the parts in such a way as to facilitate the setting back or return of the counter wheels to their zero position. Such totalizing mechanism usually includes carrying mechanism associated with the counter wheels to effect the carrying from the wheels of lower denomination to the wheels of higher denomination. My invention provides an organization of parts operating in such a way that when the counter wheels are to be set back or returned to their zero position, the carrying mechanism may be disconnected from them so that the counter wheels become independently rotatable; the mechanism also includes very simple, novel means for effecting the independent rotation of the counter wheels back to their zero position, and for preventing accidental movement of the carrying mechanism while disconnected from the counter wheels.

Further objects of the invention will appear hereinafter.

The invention consists in the general combination of parts and simplicity of details to be described hereinafter, all of which contribute to produce a simple and efficient totalizing mechanism.

In the drawing which fully illustrates the preferred embodiment of my invention as applied to a simple totalizing device,

Figure 1 is a plan of my totalizer mechanism;

Figure 2 is a vertical section taken about on the line 2—2 of Figure 1;

Figure 3 is a vertical section taken about on the line 3—3 of Figure 1;

Figure 4 is a vertical section taken about on the line 4—4 of Figure 1;

Figure 5 is a longitudinal section taken about on the line 5—5 of Figure 1;

Figure 6 is a detail view illustrating detent means for preventing accidental movement of the carrying mechanism when it is disconnected from the counter wheels;

Figure 7 is a vertical section showing the details of a Geneva stop movement which I may employ as part of the carrying mechanism;

Figure 8 is a vertical section showing in detail the manner in which the driving pinion of the carrying mechanism drives its corresponding counter wheel;

Figure 9 is a vertical section through one of the carrying mechanisms; and

Figure 10 is a fragmentary vertical section illustrating my novel returning means for returning each counter wheel to its zero position.

Referring more particularly to the parts, 1 represents the frame of the machine which comprises a pair of vertical frame plates 2 and 3 connected by a plurality of horizontal frame bars 4. The counter wheels 5, 6 and 7 are rotatably mounted in a coaxial relation, that is to say, they are loosely rotatable on an arbor 8 fixed in the frame. (See Figure 5). These wheels are of different denomination, for example, the wheel 5 may be employed to indicate fractions of the unit of measure, if the totalizer is used in conjunction with a measuring machine. That is to say, if employed for measuring cloth, it is convenient to have the wheel of lowest denomination indicate eighths of a yard. In that case, the wheel 6 would indicate units of yards and the wheel 7 would be the 10's wheel. While I have only illustrated two wheels of higher denomination, it should be understood that there may be as many of these higher denomination wheels as desired.

The carrying from each wheel of lower denomination to each wheel of higher denomination is effected through the agency of a carrying mechanism 9 corresponding to each higher denomination, and these carrying mechanisms are supported in such a way that they normally form a driving connection between the wheels which they connect. At each revolution of the wheel of lower denomination the wheel of next higher denomination will be advanced through one number space. The carrying mechanisms are movably mounted, however, so that they

may be moved in such a way as to disconnect them from the counter wheels, thereby permitting the counter wheels to be independently rotatable; while in this condition the counter wheels are returned by the returning mechanism to their zero position. In disconnecting the carrying mechanism the drive to the wheel of lowest denomination is also disconnected, so that this wheel may be also returned with the other counter wheels to its zero position.

In order to accomplish these results I employ a movable frame 10 which comprises a plurality of carrier arms 11, there being one of these carrier arms to correspond with each of the carrier mechanisms, and these carrier arms are rigidly attached to a rock shaft 12 rotatably mounted in the frame 1. A similar arm 13 is provided, rigid with the rock shaft 12, and this arm carries a pinion 14 which meshes with a gear wheel 15 mounted to rotate with the wheel 5, that is to say, in the present case this wheel 15 is rigid with the wheel 5. I provide means for driving the pinion 14 so as to advance the counter wheels. For this purpose I provide an idle gear 16 which is driven by a pinion 17 rotatably mounted on the rock shaft, and this pinion 17 is rigid with a gear wheel 18 which may be driven by a gear wheel 19 (indicated by the dotted outline) from any piece of mechanism, for example, a cloth measuring machine.

The counter wheels 6 and 7 are provided with rigid gear wheels 20 and 21 which are similar to the gear wheel 15 and these gear wheels are rotated periodically through one number space by means of pinions 22 and 23 with which they mesh respectively. These pinions 22 and 23 constitute parts, respectively, of the two carrying mechanisms 9. One of these mechanisms is shown in longitudinal section in Figure 9. Any suitable carrying mechanism may be employed. I have illustrated a very simple form involving the use of a Geneva stop movement. I shall now describe the mechanism located between the wheels 5 and 6, which co-operates with its carrying mechanism 9 to effect this carrying movement, and it should be understood that this mechanism is duplicated between the wheels 6 and 7. Referring particularly to Figure 5, on the hub 24 of the wheel 5 there is rigidly secured, a sleeve 25, the end portion of which is formed into a Geneva disc 26 (see Figure 7), said disc having a single tooth 27. This tooth co-operates with a Geneva stop wheel 28 having a plurality of tooth spaces 29 which are engaged in succession by the tooth 27 as the disc 26 revolves. Between these periodical advances of the wheel 28, this wheel 28 is held against rotation by one of the concave faces 30 held against the periphery of the disc 26. This Geneva stop wheel 28 is rigid with its corresponding pinion 22 and rotatable on a pin 11^a on the end of its supporting arm 11. Its periodical advancing movement is imparted through pinion 22 to the gear 20 and the counter wheel 6.

The means for disconnecting the carrying mechanisms from the counter wheels consists of a lever 31 which is rigidly secured to the rock shaft 12. By moving this lever in the proper direction evidently the arms 11 and the arm 13 will move away from the counter wheels and leave them free to rotate independently on the arbor 8.

In order to prevent the carrying mechanisms from moving accidentally when they are disconnected from the counter wheels, the parts 22 and 28 carry a rigid detent wheel 32. (See Figures 6 and 9). This detent wheel may be in the form of a star-wheel having a plurality of concave recesses or notches 33. In one of these notches a roller 34 lies, said roller being carried by a small arm 35 pivotally mounted at 36 on its corresponding arm 11, and pressed into engagement with the notch 33 by a small wire spring 37. I provide means for normally holding the arms 11 and 13 at the proper distance from the counter wheels to maintain an efficient driving connection with the gear wheels of the counter wheels, and the other parts. For this purpose the rock shaft 12 is provided with a rigid stop plate 38 which is pulled upwardly by a spring 39 (see Figure 4), the upward movement of the plate 38 and the arms 11 being limited by means of a stop pin 40 which is received by a slot 41 in the stop plate. If it were not for this, the pinion 22 would be pressed so forcibly against the gear 20 as to impede its free rotation.

In order to effect the return of the wheel 5 to its zero position, associated with the wheel is a returning cam; to this end the sleeve 25 is formed at one end into a returning cam 42. (See Figure 3). This cam 42 is eccentric on the axis of rotation and is formed with a peak 43 on one side of its axis of rotation, and on the opposite side of the axis is formed with a notch or depression 44. This depression is nearer to the axis than the peak. Corresponding to this cam 42 I provide returning means in the form of an arm 45, on the side of the counter wheels opposite to the carrying mechanisms; when the movable frame 10 is moved to disconnect the carrying mechanisms, this returning means or arm 45 moves up against the edge of the cam 42. On account of the construction and form of the cam, when the roller 46 carried on the arm 45 presses against the cam it will rotate the cam in one direction or the other; this rotation will continue until the roller 46 seats itself in the depression 44. This is the zero position of this counter wheel. In order that

the pressure of the roller 46 against the cam 42 shall be a yielding pressure, the pull upon the arm 45 is exerted through a spring 47, the other end of which is attached to the corresponding arm 11. Between the wheels 6 and 7 a similar arm 48 is provided, carrying a roller 49 which co-operates with a similar heart-shaped cam 50 which is rigid with the hub of the wheel 6. The arms 45 and 48 are rotatably mounted on hubs 51 rigidly attached to the rock-shaft 12 and are held in place by the arms 11 which attach to the ends of the hubs. The arms 45 and 48 seat against collars 52 on the hubs and there is a pin and slot connection between the arms 11 and the arms 45 and 48, respectively, (see Figure 3), in which 53 represents the pin carried by the arm 11, and 54 represents the slot in the arm 45. With this construction, evidently, when the arm 45 moves in toward the counter wheel after the roller 46 comes against the cam 42 the spring 47 will extend and yieldingly hold the roller 46 against the cam. This arrangement is desirable because it enables all of the returning arms to maintain engagement with their corresponding cams at the same time, that is to say, one cam could not prevent the other cams from being engaged by their arms.

Substantially the same arrangement is adopted for returning the 10's wheel 7 (see Figure 4), in which 55 represents the returning arm which has a pin and slot connection 56 with the stop plate 38. the spring 57 being employed to connect the arm 55 with the stop plate.

In practice the mechanism described above may be mounted in a suitable case, with a window opening extending over the counter wheels in such a way that only one number on each counter wheel is visible through the window. This case and window have been omitted in the drawing to facilitate the disclosure of the invention.

It is understood that the embodiment of the invention described herein is only one of the many embodiments my invention may take, and I do not wish to be limited in the practice of my invention nor in my claims, to the particular embodiment set forth.

What I claim is:—

1. In mechanism of the class described, the combination of a plurality of counter wheels, a movable frame, carrying mechanisms supported thereby for carrying from the wheels of lower denomination to the wheels of higher denomination, the wheel of lowest denomination having a gear wheel mounted rigidly therewith for driving the same, a pinion mounted on said movable frame to engage said gear wheel to rotate the wheel of lowest denomination, means carried on said movable frame, meshing with said pinion to drive said gear wheel, means for shifting said frame to disengage said pinion from said gear wheel and to disconnect said carrying mechanisms from said counter wheels to permit independent rotation of said counter wheels, and returning means carried on said movable frame and actuated thereby for returning said counter wheels to their zero position, said counter wheels having means co-operating with said returning means for rotating said counter wheels to their zero position.

2. In mechanism of the class described, the combination of a plurality of counter wheels, a pivotally mounted frame, carrying mechanisms supported thereby for carrying from the wheels of lower denomination to the wheels of higher denomination, the wheel of the lowest denomination having a gear wheel mounted rigidly therewith, a pinion mounted on said frame to engage said gear wheel to drive said counter wheels, a driving gear wheel mounted to rotate on the pivotal axis of said frame, means mounted on said frame for meshing with and driving said pinion from said last named driving gear wheel, means for shifting said frame to disengage said pinion from said first named gear wheel and thereby disconnect said carrying mechanisms from said counter wheels to permit independent rotation of said counter wheels, and returning means carried on and actuated by said frame, said counter wheels having means co-operating with said returning means for rotating said counter wheels to their zero position.

3. In mechanism of the class described, the combination of a plurality of counter wheels, a pivotally mounted frame, carrying mechanisms supported thereby for carrying from the wheels of lower denomination to the wheels of higher denomination, the wheel of the lowest denomination having a gear wheel mounted rigidly therewith, a pinion mounted on said frame to engage said gear wheel to drive said counter wheels, a driving gear wheel mounted to rotate on the pivotal axis of said frame, means mounted on said frame to mesh with and drive said pinion from said last named driving gear wheel, means for shifting said frame to disengage said pinion from said first named gear wheel and thereby disconnect said carrying mechanisms from said counter wheels to permit independent rotation of said counter wheels, a cam on each of said counter wheels, and yielding means actuated by said frame for yieldingly engaging said cams and co-operating with said cams to rotate said counter wheels to their zero positions.

4. In mechanism of the class described, the combination of a plurality of counter wheels, a gear wheel mounted to rotate with each counter wheel, a carrying mechanism corresponding to each counter wheel and in-

cluding a pinion meshing with its corresponding counter gear wheel for carrying-ing from the wheels of lower denomination to the wheels of higher denomination, means for yieldingly and normally holding said frame in a position to maintain said carrying mechanisms connected with said counter wheels, means for moving said frame to disconnect said carrying mechanisms from said counter wheels and thereby permit the independent rotation of sad counter wheels, a cam corresponding to and rigid with each counter wheel, an arm carried by said frame corresponding to each of said cams, each of said arms having a roller to engage its corresponding cam to rotate the cam and its corresponding counter wheel to return the same to its zero position, and yielding means for connecting each of said arms with said frame to move the arms against the cams.

5. In mechanism of the class described, the combination of a plurality of counter wheels, a shaft rotatably mounted and extending substantially parallel with the axis of said counter wheels, a plurality of arms carried by said shaft, a carrying mechanism corresponding to each counter wheel and supported on each of said arms, each of said counter wheels having a cam for returning the same to its zero position, means for rocking said shaft to disconnect said carrying mechanisms from said counter wheels to permit the independent rotation of said counter wheels, means for holding said carrying mechanism against accidental movement while the same are disengaged from said counter wheels, a plurality of movable returning arms, means actuated by the rotation of said shaft for yieldingly moving the same into engagement with said cams when said shaft is rocked, said returning arms and said cams cooperating to rotate said counter wheels into their zero position while said carrying mechanisms are disconnected therefrom.

6. In mechanism of the class described, the combination of a frame, a plurality of counter wheels, a rock-shaft rotatably mounted in said frame and extending substantially parallel with the axes of said counter wheels, a plurality of arms rigidly carried by said rock-shaft, a carrying mechanism corresponding to each counter wheel and supported on each of said arms, each of said carrying mechanisms including a pinion, a gear wheel rigid with each counter wheel and meshing with its corresponding carrying pinion, a spring tending to rotate said rock-shaft and normally holding said pinions in mesh with said gear wheels respectively, a stop for limiting the rotation of said rock-shaft in that direction, operating to hold said pinions in a position to engage with said gear wheels, means for rocking said shaft in a direction to move said arms and said carrying mechanisms away from said counter wheels to permit the independent rotation of said counter wheels, a plurality of movable returning arms corresponding respectively to said counter wheels, a spring corresponding to each of said last named arms for yieldingly moving said returning arms toward said counter wheels, a cam on each of said counter wheels for engagement with said returning arms, respectively, and cooperating therewith to return the counter wheels to their zero position.

7. In mechanism of the class described, the combination of a plurality of counter-wheels, a movable frame, carrying mechanisms mounted on said frame at one side of said wheels for carrying from the wheels of lower denomination to the wheels of higher denomination, each of said counter-wheels having a substantially heart-shaped cam rigid therewith, a movable returning arm supported by and actuated by said movable frame, corresponding to each of said cams and located at the side of said counter-wheels opposite to the carrying mechanisms, and a spring connecting each of said returning arms with said movable frame whereby a movement of said movable frame in one direction will disconnect the carrying mechanisms and actuate the returning arms by their springs to pull the returning arms against their corresponding cams and thereby return the counter-wheels to their zero position.

8. In mechanism of the class described, the combination of a plurality of counter wheels, a movable frame, a plurality of carrying mechanisms supported by said frame to cooperate with said counter wheels in effecting the carrying movement from the wheels of lower denomination to the wheels of higher denomination, each of said counter wheels having a returning cam associated therewith for rotating the same, means for actuating said movable frame to disconnect the carrying mechanisms from the counter wheels to permit the counter wheels to rotate independently of each other, a returning member corresponding to each cam, and resilient means for connecting each of said returning members with said movable frame to enable said returning means to engage said cams yieldingly to return the counter wheels to zero when said carrying mechanisms are disconnected therefrom.

9. A totalizer having a plurality of counter wheels each having a rigid cam for setting back each wheel individually to zero, the combination of a plurality of arms corresponding respectively to the cams, and means for yieldingly forcing all of the arms against the cams in unison.

10. A totalizer having a plurality of

counter wheels each having a rigid cam for setting back each wheel individually to zero, the combination of a rocking-frame, an arm carried by the rocking frame corresponding to each cam, a spring connecting the frame to each arm for pulling the same yieldingly against its corresponding cam when the frame is rocked, and means for actuating the rocking-frame to move the arms against the cam.

In testimony whereof, I have hereunto set my hand.

WALTER E. HOSCH.