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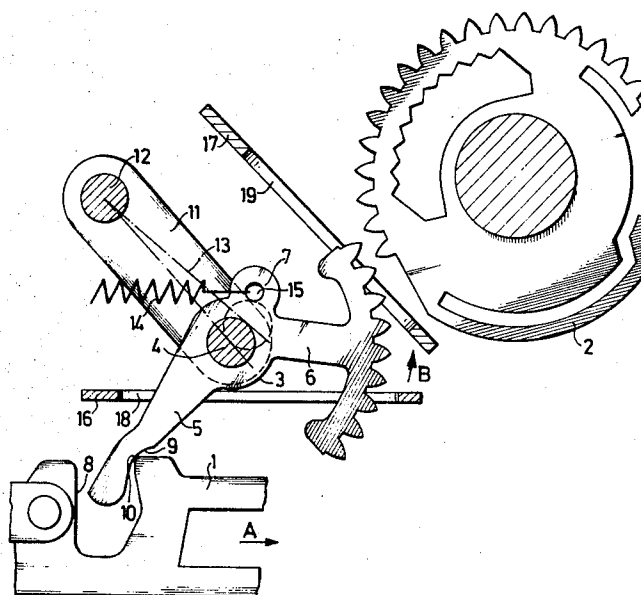
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[54] **DEVICE FOR TRANSFER OF VALUES IN CALCULATING MACHINES**
5 Claims, 1 Drawing Fig.

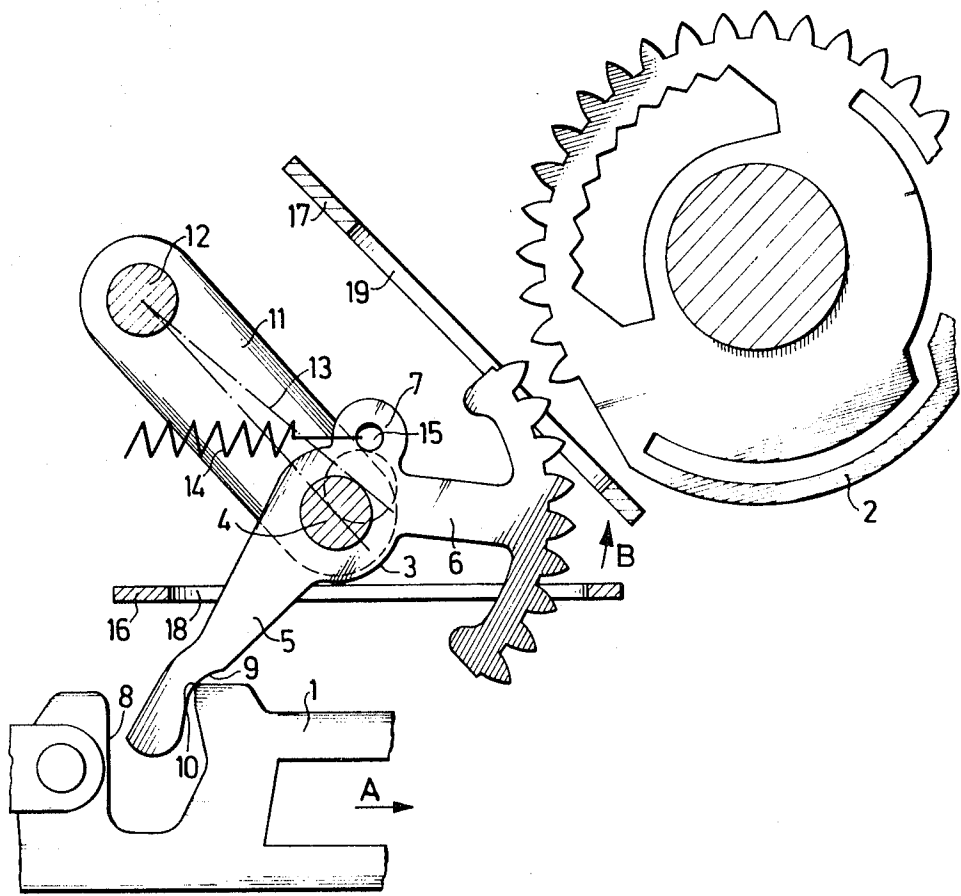
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ABSTRACT: An arrangement for transferring reciprocatory motion of a pin carriage controlled rack member of a calculating machine to a toothed control disc which is connected to a value roller of the machine. The arrangement takes the form of a transfer element pivoted on a shaft and having one arm abuttingly engaging the rack member and another arm in the form of a gear segment. Reciprocation of the rack member will oscillate the transfer element. The shaft is carried by a control arm and is movable to cause the gear segment to mesh with and separate from the teeth of the control disc. A spring biases the transfer element toward abutment with the rack member.



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DEVICE FOR TRANSFER OF VALUES IN CALCULATING MACHINES

The present invention relates to a device for transferring a value keyed into the pin carriage of a calculating machine and sensed by means of a rack to the corresponding control disc of a roller controlling the amount.

Devices of the above general type are known. Thus, for instance, a so-called control mechanism has become known which comprises primarily two gears per each value, an intermediate gear and pivotable gear. The pivotable gear meshes with the intermediate gear and with a pertaining rack which latter feels or senses the value introduced into the pin carriage by actuation of a key. By means of a control coulisse or sliding block, the adjusting mechanism is subsequently pivoted in the direction toward the control roller to such an extent that the pivotable gear will mesh with the pertaining adjusting disc in conformity with the keyed-in value. The zero position of adjusting mechanism and rack is automatically restored by the reversed course of the function. This solution, which in itself is successful is, however, relatively expensive and in some instances due to lack of space cannot be employed.

According to another heretofore known device which is somewhat comparable to the device under consideration, although no transfer of values is effected in the meaning of the present invention, the value keyed into the carriage is felt or sensed by an arm which is rotatably pivoted by a stationary shaft. This arm was heretofore positively connected to a second arm designed as a gear segment and likewise journaled on said shaft. The said connection was effected by a coupling mechanism controlled by the drive of the calculating machine.

The gear segment now automatically follows the rotary movement of the sensing or feeling arm until the latter is stopped by a control pin symbolizing the initially keyed-in value. The thus pivoted gear segment, through a transmission acts upon a number roller of an adjusting control mechanism and makes the keyed-in value visible. This mechanism, due to the great number of the employed individual elements, is relatively complicated in construction and function and therefore expensive.

It is, therefore, an object of the present invention to provide a device for transferring a value keyed into the pin carriage of a calculating machine, which will overcome the above-mentioned drawbacks.

This object and other objects and advantages of the invention will appear more clearly from the following specification in connection with the accompanying drawing which illustrates by way of example a device according to the present invention.

The device according to the present invention is characterized primarily in that each rack or control disc has associated therewith a transfer element which comprises a plurality of arms and is rotatably connected to a shaft and the rotary movement of which is effected through the intervention of resilient means especially by an arm provided with a cam, said arm within the area of the cam resting on a nose-shaped protrusion of the main rack, whereas another arm designed as a gear segment is adapted after a rotary movement briefly to mesh with the control disc.

In conformity with a further development of the present invention, the shaft is by means of a connecting element pivotally journaled for pivoting about a second stationary shaft.

Referring now to the drawing in detail, the arrangement shown therein comprises a main rack 1 which, by depressing a nonillustrated key, feels or senses a value keyed into the likewise nonillustrated pin carriage and moves from the illustrated zero position in the direction of the arrow A by a distance which corresponds to the keyed-in digit. Subsequently, the rack briefly remains in its respective new position. Each main rack 1 has associated therewith a control disc 2 which pertains to a nonillustrated amount roller, and has furthermore associated therewith a transfer element 3 which is

rotatably mounted on a shaft 4. This transfer element comprises three elements 5, 6 and 7 punched out of a material-homogeneous work piece. The arm 5 is at that side which faces the control disc 2 provided with a cam surface 9 and has its free end extending into a substantially U-shaped recess 8 of the main rack 1. The cam surface 9 is so designed that the nonillustrated pitch of the main rack 1 corresponds substantially to the pitch of the arm 6 forming a gear segment. Since the arm 5 within the cam surface area 9 rests on a nose-shaped protrusion 10 of the main rack 1 and inasmuch as a tension spring 14 is connected to an arm 7 provided with an eye 15, the arm 5 will, in response to a displacement of the main rack 1, for instance in the direction of the arrow A, roll along its cam surface 9 on the nose-shaped protrusion 10 of the main rack. The transfer element 3 will be pivoted along a circular path in the direction of the arrow B. In order to transfer the value contained in the main rack to the control disc 2, a nonillustrated control coulisse or slide block will, during the brief rest position of the main rack, act upon the transfer element 3. Since the shaft 4 is by means of a connecting member 11 connected to a second stationary shaft 12, shaft 4 now pivots out of its zero position into the dash or dot-dash line position 13. As a result thereof, arm 6 will mesh with the control disc 2 and will transfer the keyed-in value. Subsequently, the transfer element and the main rack will be returned to zero position by an inverse course of function. The rotary and pivotal movements of the individual transferring elements 3 are effected in recesses 18, 19 of a diagrammatically illustrated frame 16, 17 which is used for journaling the adjusting mechanism.

As will be seen from the above, the arrangement according to the present invention represents a considerable simplification and thereby a reduction in cost as well as in the cost of stockkeeping because the transfer element between gear rack and control disc consists only of a flat punched member. Furthermore, in this way, a favorable utilization and division of the space within the machine housing is realized and also a simple and safe control of the coupling function between gear rack and control disc and amount control roller.

It is, of course, to be understood that the present invention is, by no means, limited to the particular construction shown in the drawing but also comprises any modifications within the scope of the appended claims.

What I claim is:

1. In a calculating machine having a reciprocable rack member adapted for reciprocation upon cycling of the machine and further adapted to reciprocate an amount determined by the setting of a pin in a pin carriage by actuation of a key of the machine, said machine also having a toothed control disc connected to a value designating roller of the machine; means for connecting said rack member to said control disc for transferring the reciprocatory motion of the rack member to said control disc in the form of rotary motion, said means comprising a shaft, a transfer element rotatably mounted on said shaft and having a plurality of arms projecting therefrom in a direction outwardly from said shaft, said rack member having a protrusion thereon and a first one of said arms, said transfer element having a cam surface on the outer end engaging said protrusion, resilient means acting on said transfer element and urging said cam surface against said protrusion so that reciprocation of said rack member will be accompanied by rotation of said transfer element, a second one of said arms of said transfer element being in the form of a gear segment adapted to mesh with the teeth of said control disc, and a control arm connected at one end to said shaft and pivotally supported at its other end, said control arm extending in such a direction that pivotal movement thereof will move said shaft to cause said gear segment to mesh with and separate from the teeth of said control disc.

2. A calculating machine according to claim 1, in which said cam surface on said first arm faces said control disc and said rack member includes a notch into which the outer end of said first arm extends, the said protrusion on said rack member being formed on the side of said notch which faces said cam surface on said first arm of said transfer element.

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3. A calculating machine according to claim 1, in which said transfer element comprises a third arm having an aperture therein, said resilient means taking the form of a tension spring having one end engaging said aperture in said third arm.

4. A calculating machine according to claim 1, in which said control arm is adapted to move said gear segment into meshing engagement with the teeth of said control disc during

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reciprocation of said rack member in one direction only thereof.

5. A calculating machine according to claim 1, in which said control arm extends in a direction substantially perpendicular to said cam surface when said rack member is in retracted position.

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