June 2, 1936. F. ZOFZIK 2,042,695

DEVICE FOR TRANSMITTING MOTION

Filed April 24, 1935

Fig. 1

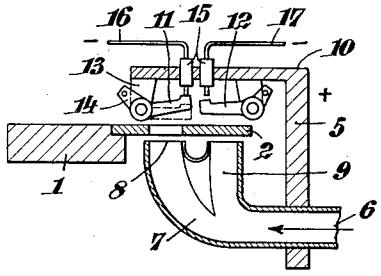


Fig. 3

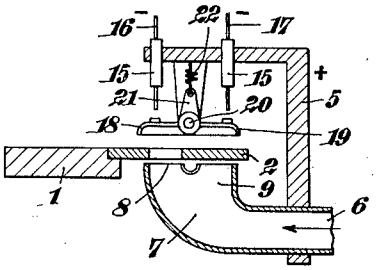


Fig. 2

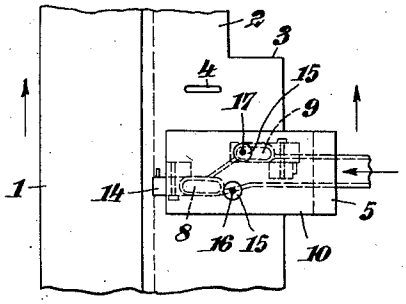


Fig. 4

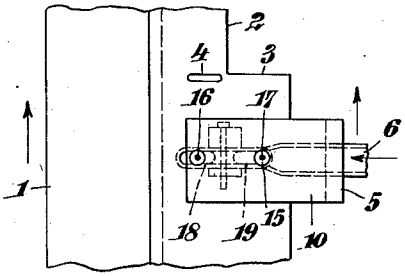
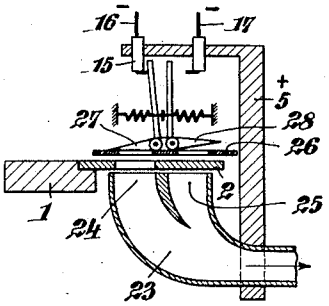


Fig. 5



F. Zofzik
INVENTOR

By: Glascock Downing & Seebold
Attys.

Patented June 2, 1936 2,042,695

UNITED STATES PATENT OFFICE

2,042,695

DEVICE FOR TRANSMITTING MOTION

Franz Zofzik, Fischamend, near Vienna, Austria, assignor to Josef Florenz Waagen- und Gewichtefabriks, A. G., Fischamend, near Vienna, Austria, a company of Austria

Application April 24, 1935, Serial No. 18,057
In Austria August 10, 1934

3 Claims. (Cl. 200—81)

This invention relates to improvements in devices for transmitting movements, as, for instance, for transmitting the motion of one member to another member without the use of any mechanical agent, and its essential feature consists in that the motion of a moving member is transmitted by a current of air (suction or compressed air), which is controlled by a shutter, to intermediate members in the form of contacts or the like which control a source of current operating a second member, which is independent from the moving member and is caused to perform the same movements as the moving member.

Three modes of carrying out the present invention are illustrated by way of example on the accompanying sheet of drawings in which:—

Figs. 1 and 2 show the two movable members in sectional elevation and in plan view respectively.

Figs. 3 and 4 are similar views of a modified construction of the device, while

Fig. 5 shows in sectional elevation a device operated by suction.

A shutter **2**, provided with a stepped or recessed part **3** and an opening **4**, is connected with a member **1** the movement of which is to be transmitted. The member **5**, to which the movement is transmitted is movable in the same direction as the member **1** by a reversible electromotor (not shown) and is provided with a passage **6** for the flow of compressed air. The passage terminates in the shape of a discharge nozzle **7** provided for instance with two discharge openings **8** and **9**, which are separated from each other for a distance somewhat smaller than the distance between the stepped part **3** and the opening **4** of the shutter **2**. Below an arm **10** of the member **5** and opposite the openings **8** and **9**, are secured rocking levers **11** and **12**, which are rotatably mounted in bearings **13** and the movement of each of which is limited by a stop **14**. Electric conductors **16** and **17**, leading to the circuits controlling the operation and direction of rotation of the reversible motor by way of convenient relays (not shown), are arranged in insulators **15** above the rocking levers. In the position illustrated in Fig. 2 it is supposed, that the member **5** is being moved in the direction of the arrow by the electromotor. When the port **8** of the nozzle comes into alignment with the port **4** the air admitted by way of the passage **6** flows through the opening **4** and lifts the rocking lever **11**. In view thereof, the rocking lever contacts with the conductor **16**, thereby closes the circuit of said relays and disconnects the motor. The member **5** stops in the same position as the member **1**. Now if the latter moves in the direction opposed to the direction of the arrow, the port **9** of the nozzle will be uncovered by the stepped part **3** of the shutter **2**, whereby the air current discharged through the nozzle will lift the rocking lever **12** and thereby contact with the current conductor **17** and close a new relay circuit, which causes the electromotor to run backward. Thus in view of the arrangement, the member **5** follows the periodic and variable movement of the member **1** in either direction. The direction of flow of the compressed air is at a right angle with respect to the plane of the shutter **2** and therefore does not impede movement of the shutter or the member **1**.

Instead of a rectilinear movement, the member **1** may be guided along a curved line, in which case the member **5** also follows the track of movement of the member **1**.

The transmission of motion is more exact, if the opening **4** and the ports **8** and **9** of the nozzle are comparatively narrow.

In the construction shown in Figs. 3 and 4, the stepped part **3** and the opening **4** are arranged in alignment and also the two ports **8** and **9** of the nozzle are disposed side by side and in alignment. The two rocking members **18** and **19** are in the ferm of a double armed lever, mounted on a pivot **20** and maintained in the horizontal position by an arm **21** and a tension spring **22**. The arms **18** and **19** of the lever are spoon-shaped and, by the current of air, rock backward alternately and control the motion of the member **5** in the same way as in the case of the Figs. 1 and 2.

The described arrangement is applicable in connection with all movable parts, operated by small force, such as measuring instruments or parts of balances or for synchronizing the movements of feed-bands and so forth. In this case for instance the pointer of the measuring instrument or the inclination pendulum of the balance may be provided with the shutter **2** furnished with the opening **3** and with an electric control member and may be independently movable with respect to an auxiliary pointer, driven by an electromotor which is reversible by way of a control member of the pointer. The auxiliary pointer is provided with the nozzle, furnished with two discharge ports and by means of which an air current is directed against the shutter, in order to control the electromotor for rocking forward and backward and stopping the auxiliary pointer. Registration arrangements, determin-

ing the covered distance according to the units of value for determining the deflection of the member 1, may be connected directly with the member 5.

Fig. 5 illustrates diagrammatically the use of suction as controlling agent.

The ports 24 and 25 of the suction nozzle are disposed just below the shutter 2. The controlling member consists of a perforated wall 26, carried by the member 5; rocking members 27 and 28 being arranged above the openings of said wall and, according to the position of the shutter, uncover the openings thereof and thereby operate the contacts of the current conductor 16 and 17.

What I claim is:—

1. Device for transmitting the motion of one member to another member, comprising in combination a moving member, a shutter attached to said moving member, means for subjecting the shutter to the action of a current of air, a second movable member, circuit controlling means on said second member, and intermediate members arranged on said second member, said intermediate members being controlled by said current of air and controlling said circuit controlling means.

2. Device for transmitting the motion of one member to another member, comprising in combination a moving member, a shutter provided with a slit and with a stepped part attached to said moving member, an air nozzle with two ports arranged below said shutter, a second member disposed above said shutter, and contacts secured to said second member, said contacts being controlled by air passing through said air nozzle.

3. Device for transmitting the motion of one member to another member, comprising in combination a moving member, a shutter attached to said moving means, means for subjecting the shutter to the action of a current of air directed at right angles thereto, a second member, and intermediate members arranged on said second member, said intermediate members being controlled by said current of air.

FRANZ ZOFZIK.