

No. 681,943.

Patented Sept. 3, 1901.

C. F. ZIEGLER.  
ELECTRIC SWITCH.

(Application filed May 4, 1901.)

(No Model.)

Fig. 1.

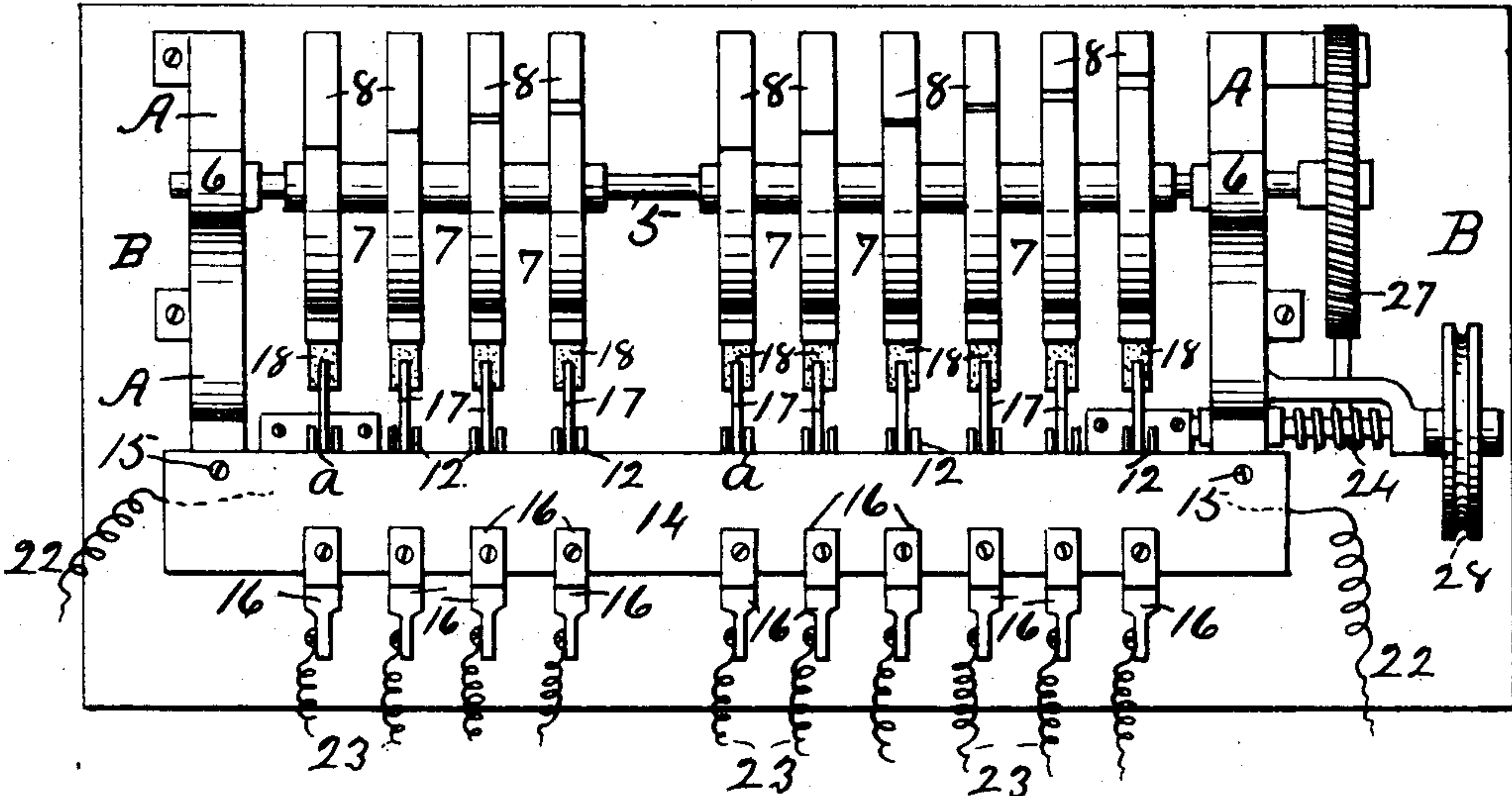


Fig. 2.

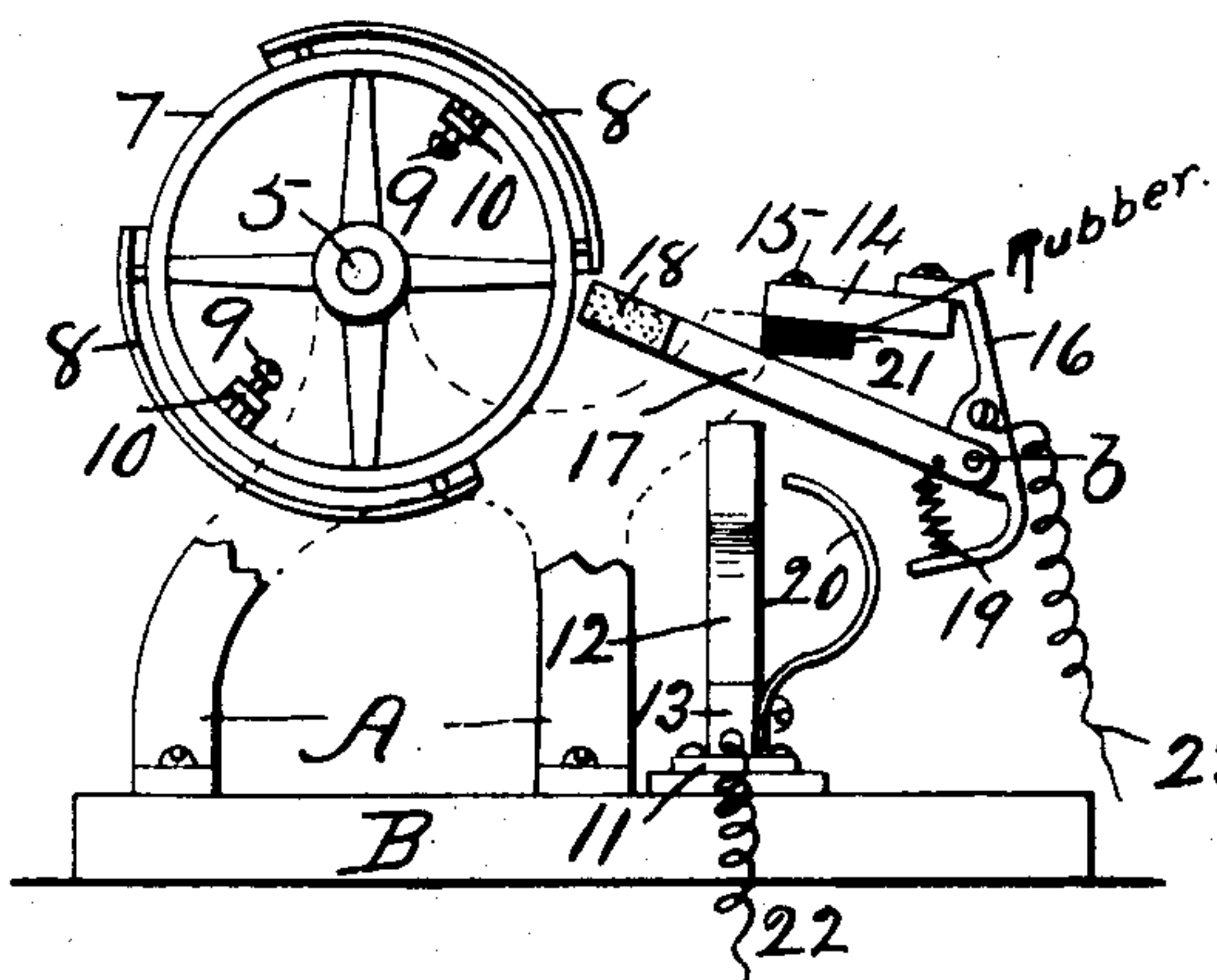


Fig. 3.

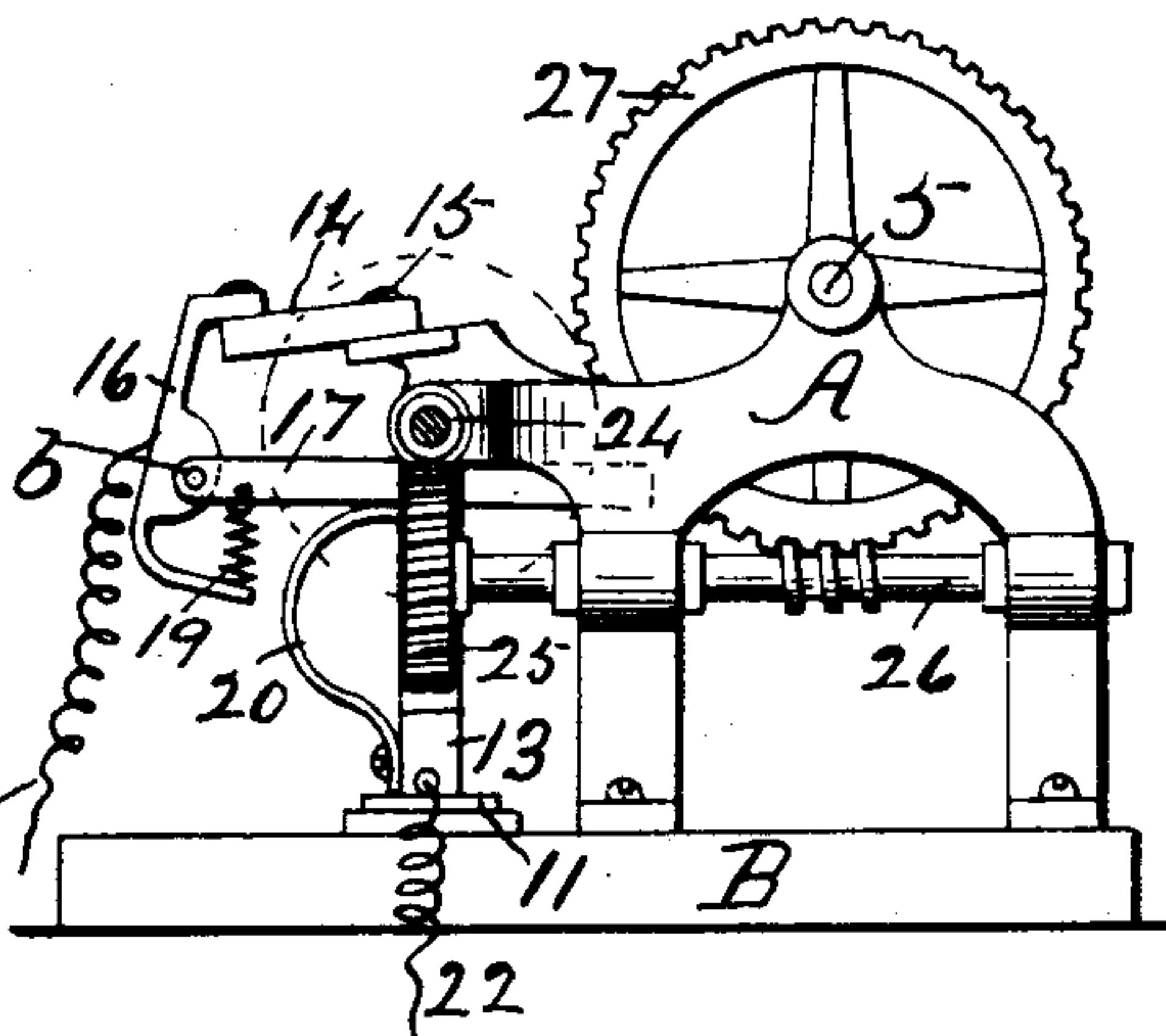
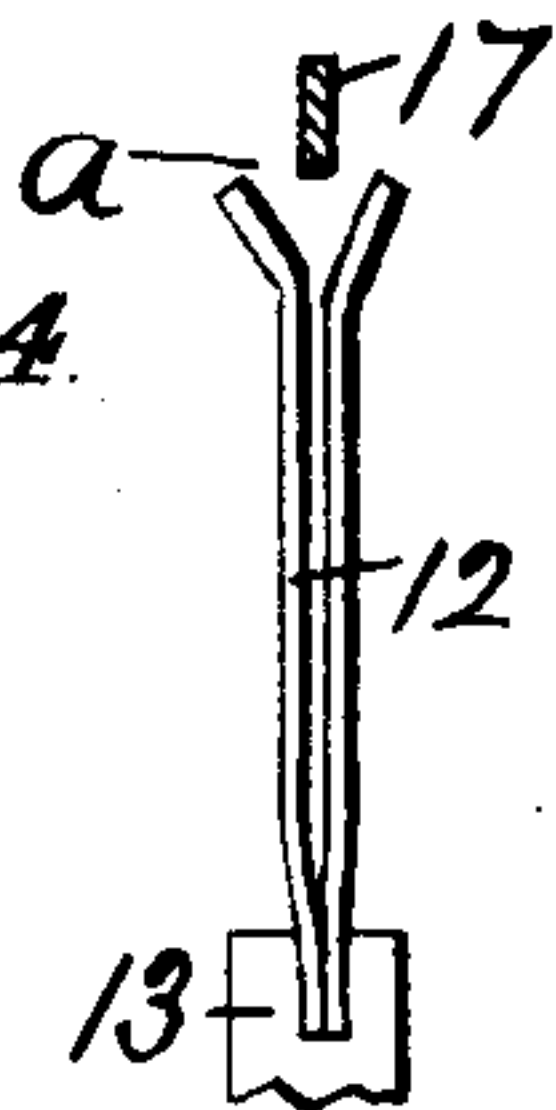


Fig. 4.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

CHRISTIAN F. ZIEGLER, OF CHICAGO, ILLINOIS.

## ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 681,943, dated September 3, 1901.

Application filed May 4, 1901. Serial No. 58,734. (No model.)

*To all whom it may concern:*

Be it known that I, CHRISTIAN F. ZIEGLER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Electric Switches; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to an automatic electric switch, and more especially to that class of devices for intermittingly opening and closing a series of circuits energized from one general circuit and used in the production of electric display-signs for commercial or exhibition purposes and commercially known as a rotary "jackknife-switch," and has for its object to provide a device of this character that is simple in construction, economical and efficient in operation, and not liable to get out of repair.

In the drawings, Figure 1 is a top plan of a machine embodying the improved features. Fig. 2 is an end elevation with a part of the frame broken away. Fig. 3 is an end elevation of the opposite end from that shown in Fig. 2. Fig. 4 is a detail of the circuit-closing blade and fork.

A may represent the different parts of the main frame, and B an insulated base, which will ordinarily be made of any suitable material. A rotatable shaft 5 has its respective ends journaled in the corresponding parts of the frame, as at 6. A number of wheels or disks 7 are mounted on shaft 5 and rotate therewith. The wheels or disks are disposed at intervals and form, substantially, a revolving drum or body. A number of segments or contact-points 8 are mounted on the peripheries or rims of the wheels 7 and are adjustably retained in place by set-screws 9, inserted through a lug 10, forming an integral part of the segments and engaging the inner circumferential surface of the wheel-rims, as shown in Fig. 2. Any number of segments may be used in accordance with the number of contacts to be made in each revolution and the space between each varied as circumstances may require. The segments on the series of wheels will be set in different planes

with reference to each other in producing varied effects, as illuminating each letter of a sign or other object in regular succession, or arranged to produce an irregular effect. A metal plate 11 is fixed on the base B and runs lengthwise thereof. The lower ends of a number of contact-forks 12 are inserted in posts 13, forming an integral part of the electrically-charged plate 11. These forks correspond in number with the disk wheel 7 and are located at intervals and opposite thereto, as shown in Fig. 1. The upper ends of these forks are spread apart, as at *a*, to insure contact. The respective ends of a bridge 14 are supported on the opposite ends of the frame and are secured thereto by screws 15. The upper ends of a number of brackets 16 are secured to the outer edges of the bridge 14 and are disposed at intervals in line with the series of disk wheels. One end of a circuit-closing lever or blade 17 is pivoted to each of the brackets 16, as at *b*. The opposite disengaged ends of the levers 17 are provided with an insulating-tip 18, Fig. 1, and stop just short of the rim of the disk wheels, but in position to receive the intermittent contact of the series of segments as the disk or drum wheel revolves. One end of the spring 19 is secured to the lower of the brackets 16 and the other end to the circuit-closing levers 17, as shown in Figs. 2 and 3. The lower end of a spring 20 is secured to each of the posts 13, the upper disengaged end being in position to be contacted by the levers 17 when in the circuit-closing position shown in Fig. 3. In Fig. 2 the levers are shown in their normal disengaged position, the circuit being broken. A strip of rubber 21 is secured to the under side of the electric bridge 14, which serves as an insulated cushion or buffer for the contact of the series of circuit-closing blades when thrown upwardly out of contact with the series of forks by the tension of the springs 19 and 20. The wires 22 have their terminal ends secured to the base connection with the contact-forks, and the terminal end of wires 23 connected to the brackets form the usual positive and negative communication with the source of electric energy and provide an independent connection for each letter, lamp, or other object



connected in the series of circuits. A rotary motion is transmitted to the drum-shaft 5, carrying the series of disk wheels, through the medium of a worm-shaft 24, engaging a pinion 25, mounted on a worm-shaft 26, which in turn engages a worm-gear 27 on the drum-shaft. A band-pulley 28 is mounted on shaft 24, from which a belt may run to the driving-motor. A more direct operative connection may, however, be used as a means for transmitting the desired motion.

In operation as the drum-wheel revolves the segments have, periodically, a rolling contact with and depress the adjacent ends of the lever 17 into engagement with the forks 12, closing the circuit and lighting the letters or lamps in order, according to the disposition of the contact-segments on the drum-wheels. As the segments pass out of contact, the levers are automatically returned to their normal position by the springs 19 and 20, breaking the circuit and extinguishing the lighted object in the same order.

It will be readily understood that the illuminating display may be varied indefinitely by the arrangement of the contact-segments, whether a long or short contact and the speed at which the drum-wheel revolves, thus giving an endless combination and effect. The drum-wheels and segments are not in the electric circuit, and therefore not charged, being simply a mechanical part of the machine. The wheels or disks provide a continuously rotatable body in the form of a skeleton drum, which is not charged electrically. The series of contact-segments mounted thereon may be of any desired number or length, with a regular or an irregular intervening space in accordance with the effect it is desired to produce.

Having thus described my invention, what

I claim as new, and desire to secure by Letters Patent, is—

1. In combination with a series of rotary devices, a series of circuit-closing levers 17, 45 having projecting insulated tips arranged for mechanical contact with said rotating devices, a series of stationary parts in electric circuit with said levers, arranged for mechanical and electrical contact with the said levers 50 as these latter are depressed by said rotating devices, a series of cushions arranged to prevent the excessive upward movement of the said levers, a series of springs attached to the said stationary parts to receive the impact 55 of the said levers and aid in replacing them and a series of replacing-springs acting directly on said levers substantially as set forth.

2. In combination with a series of circuit-closing levers of rigid material arranged to be rocked on their pivots by the impact of such rotary devices a series of fixed rigid parts arranged and adapted to close the circuit with the said levers as the latter are depressed against them and replacing-springs and stops for said levers substantially as set forth. 65

3. Circuit-closing devices of rigid material arranged in a series of pairs one member of each pair being pivoted, in combination with a series of rotary segments acting on the pivoted members of the said pairs to close the said circuits, and replacing-springs for the said levers substantially as set forth. 75

In testimony whereof I affix my signature in presence of two witnesses.

CHRISTIAN F. ZIEGLER.

Witnesses:

J. B. DONALSON,  
L. B. COUPLAND.