

No. 788,204.

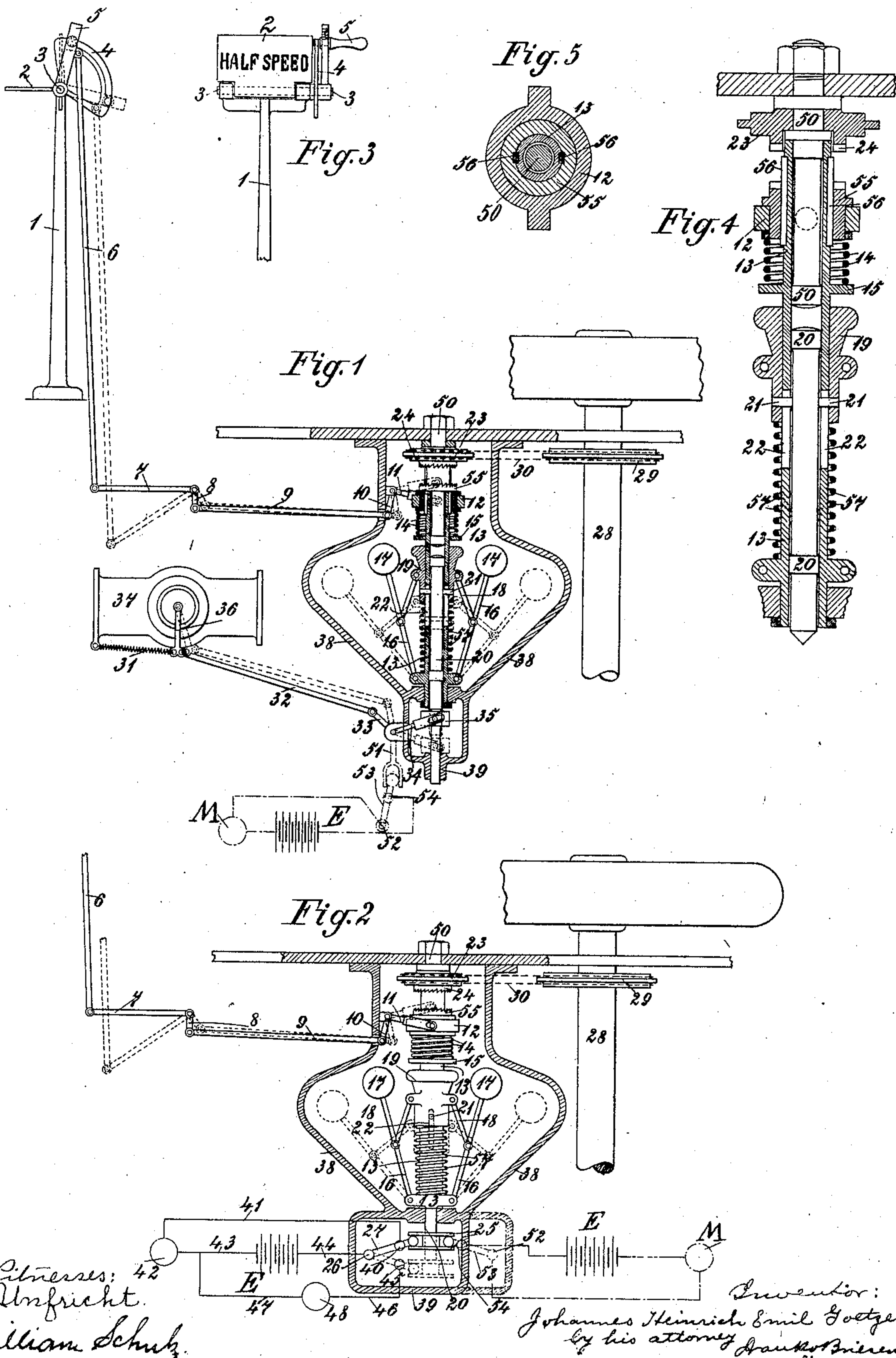
PATENTED APR. 25, 1905.

J. H. E. GOETZE.

SPEED CONTROLLING APPARATUS FOR MOTOR DRIVEN VEHICLES.

APPLICATION FILED OCT. 3, 1904.

3 SHEETS—SHEET 1.



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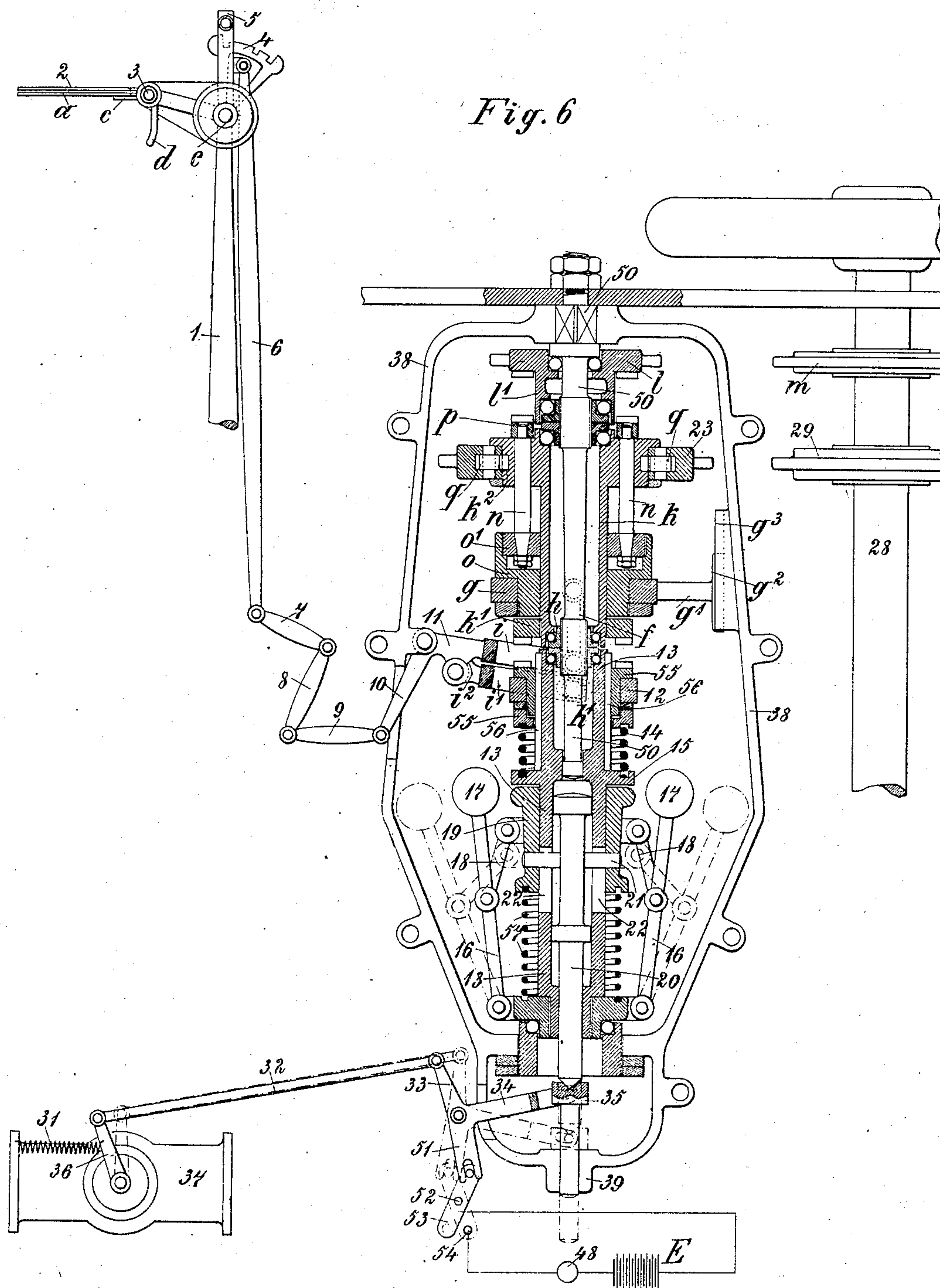
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3 SHEETS—SHEET 2.



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Dr. Viktor Briesen

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3 SHEETS—SHEET 3.

Fig. 8

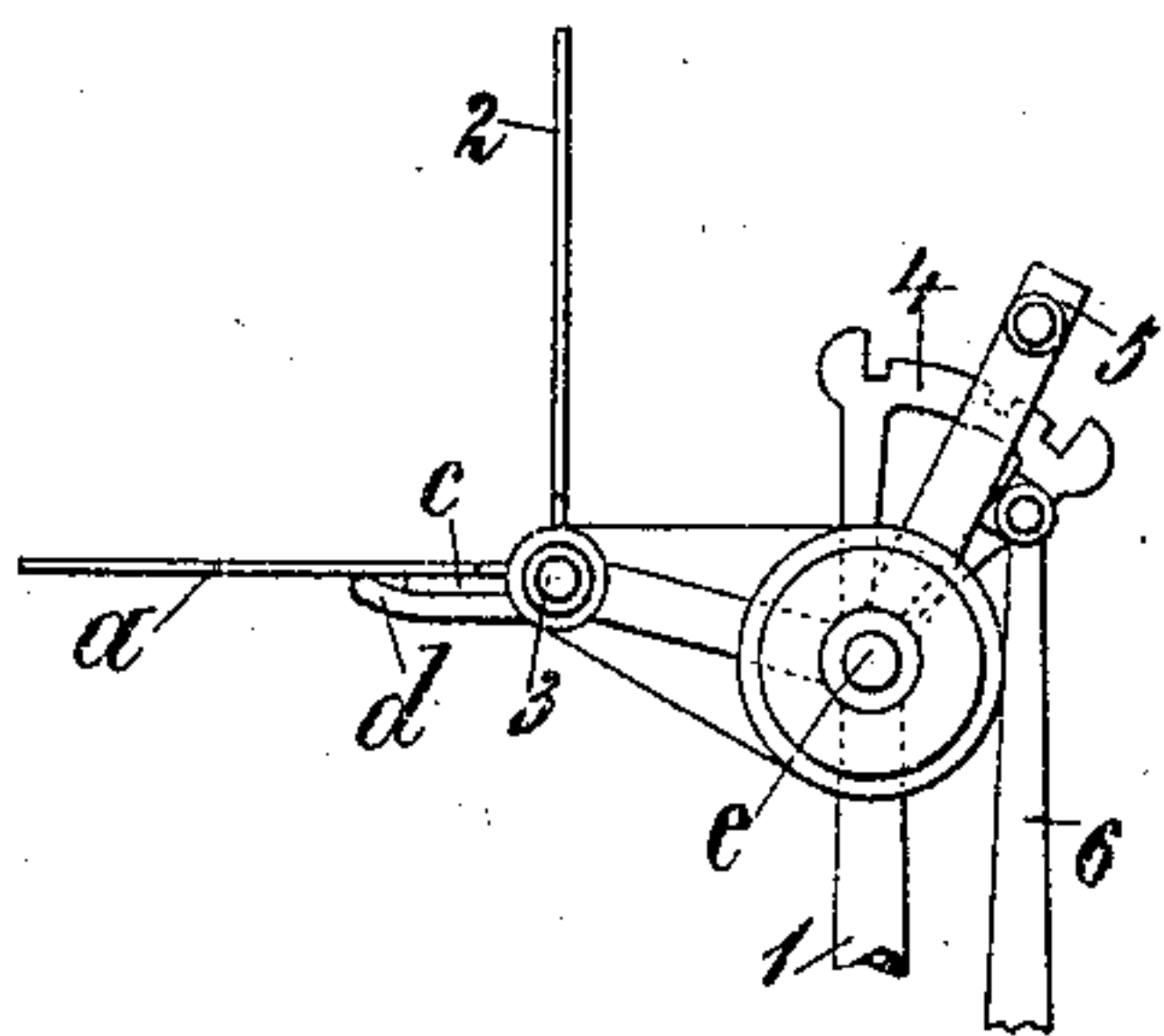


Fig. 11

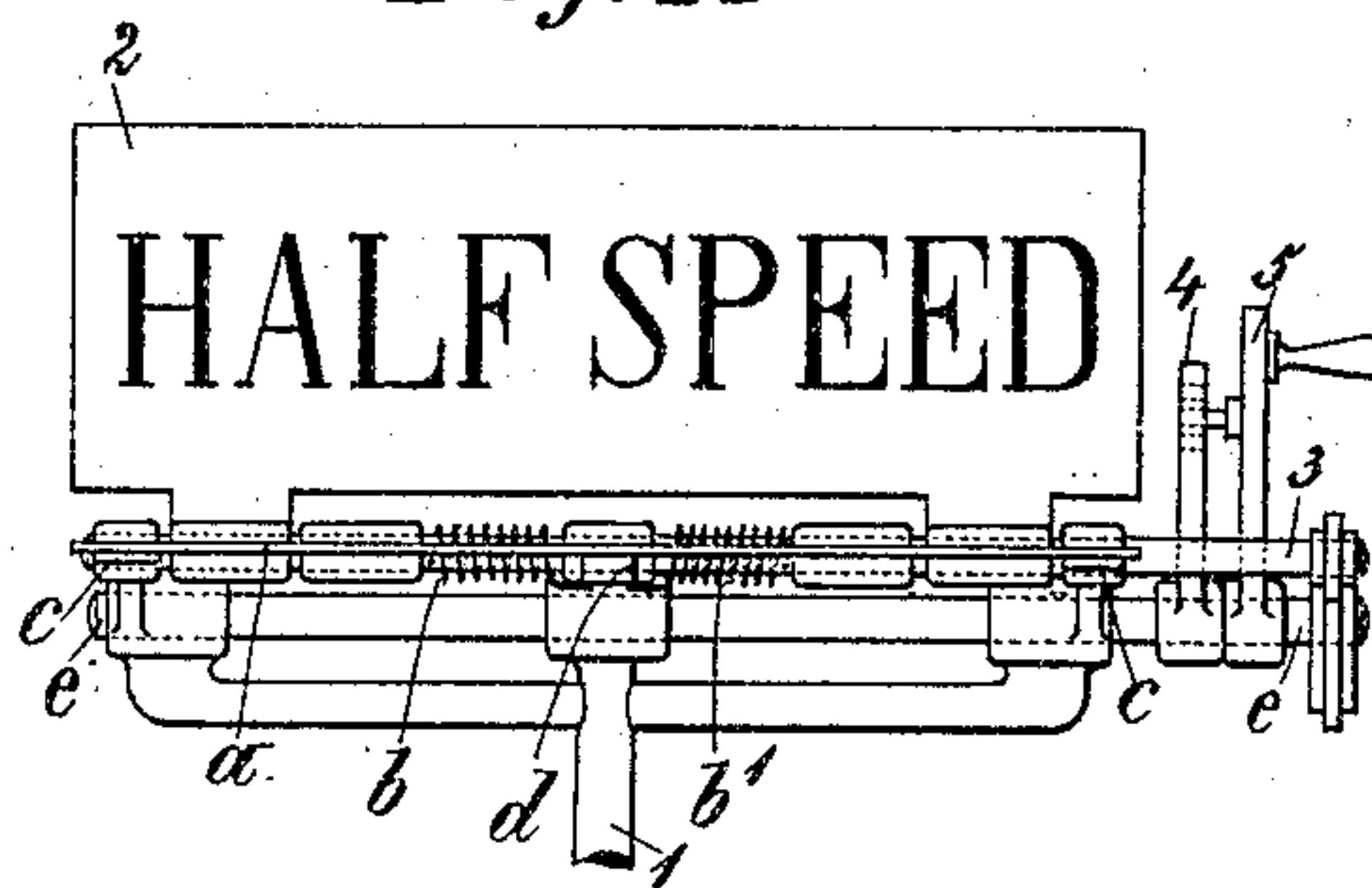


Fig. 12

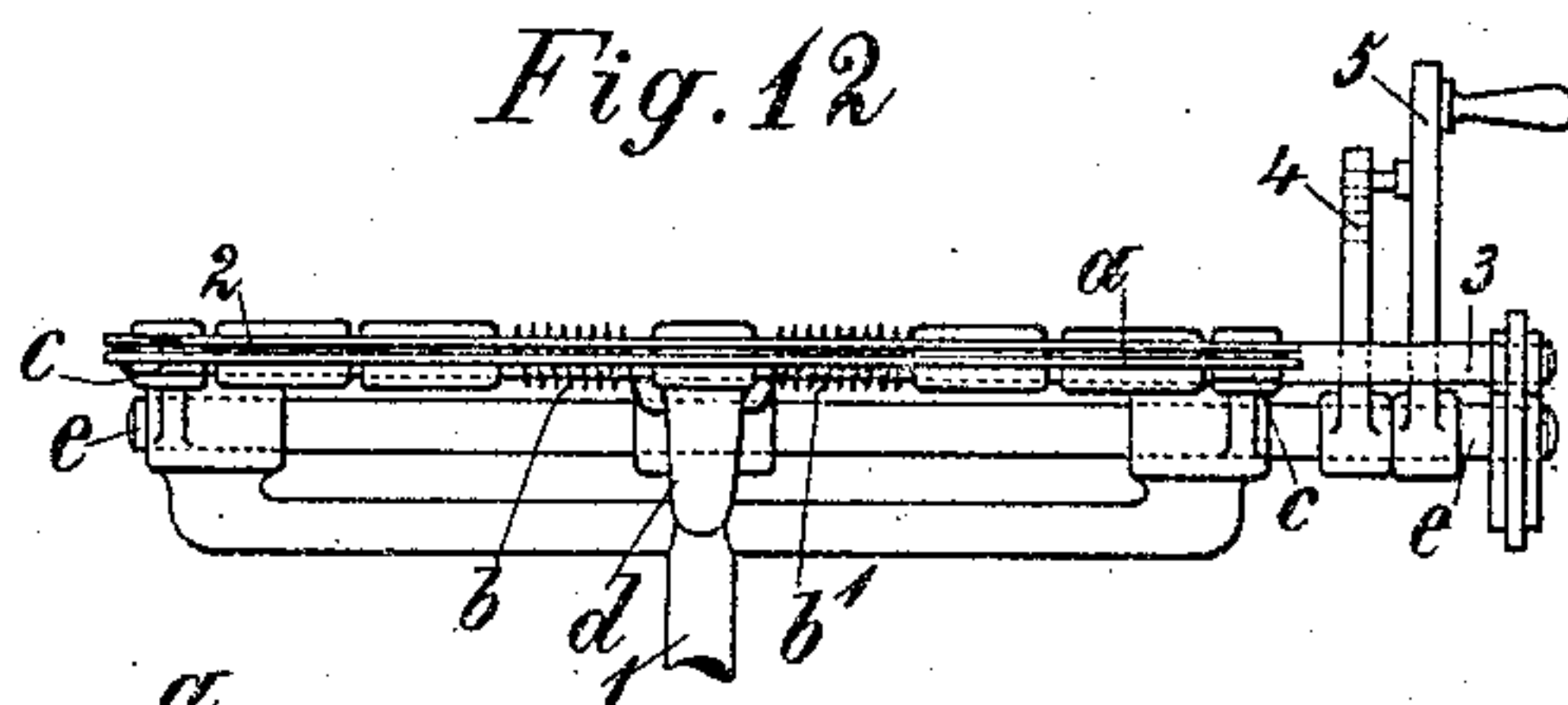
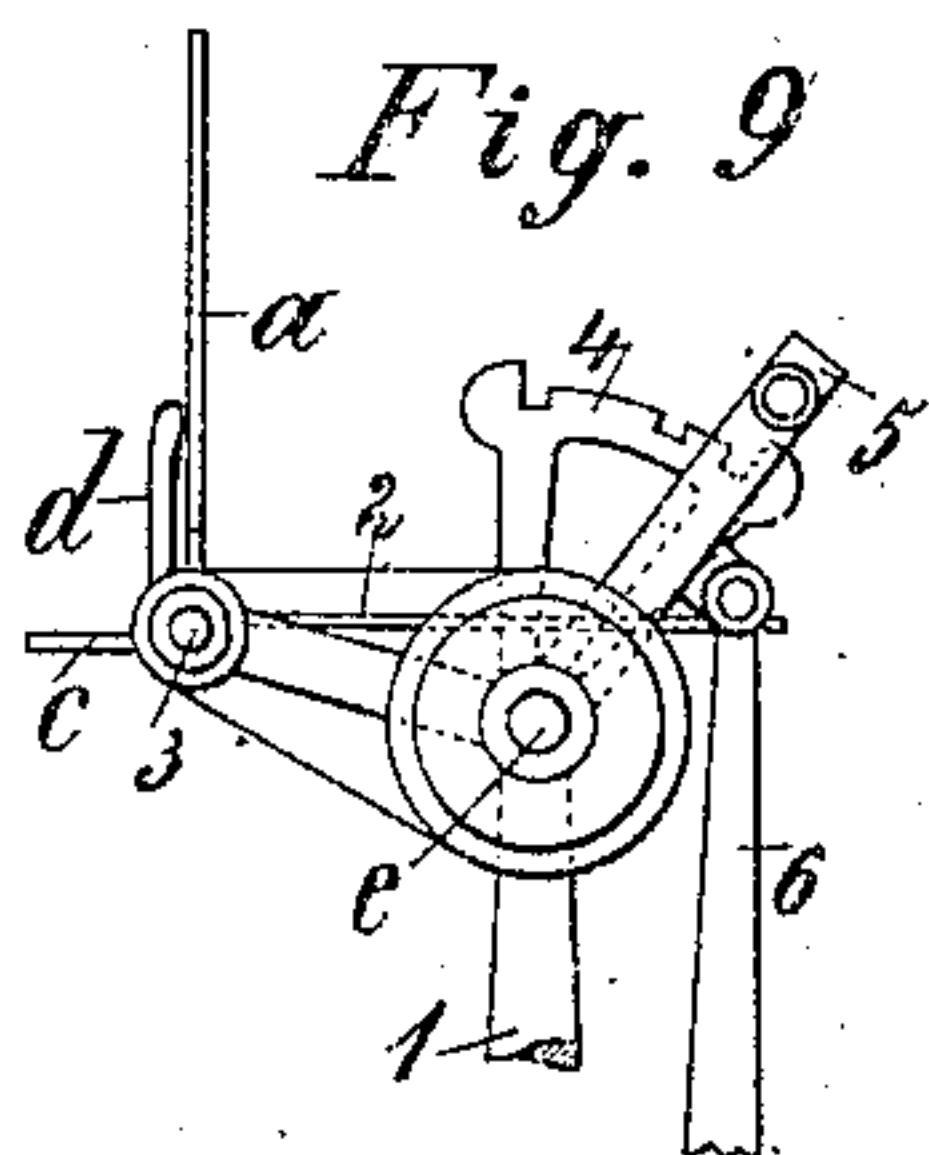


Fig. 9



S L O W

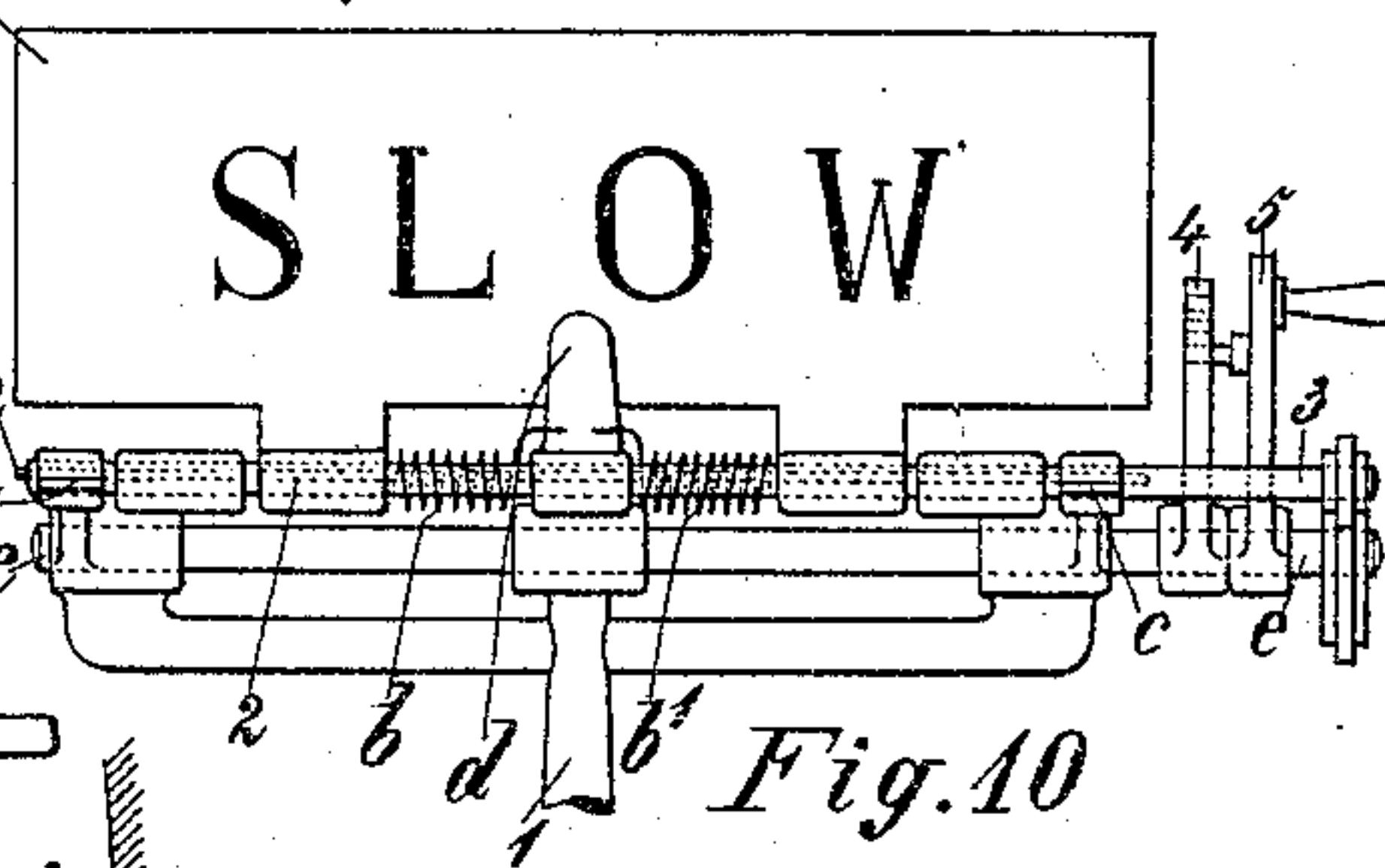


Fig. 7

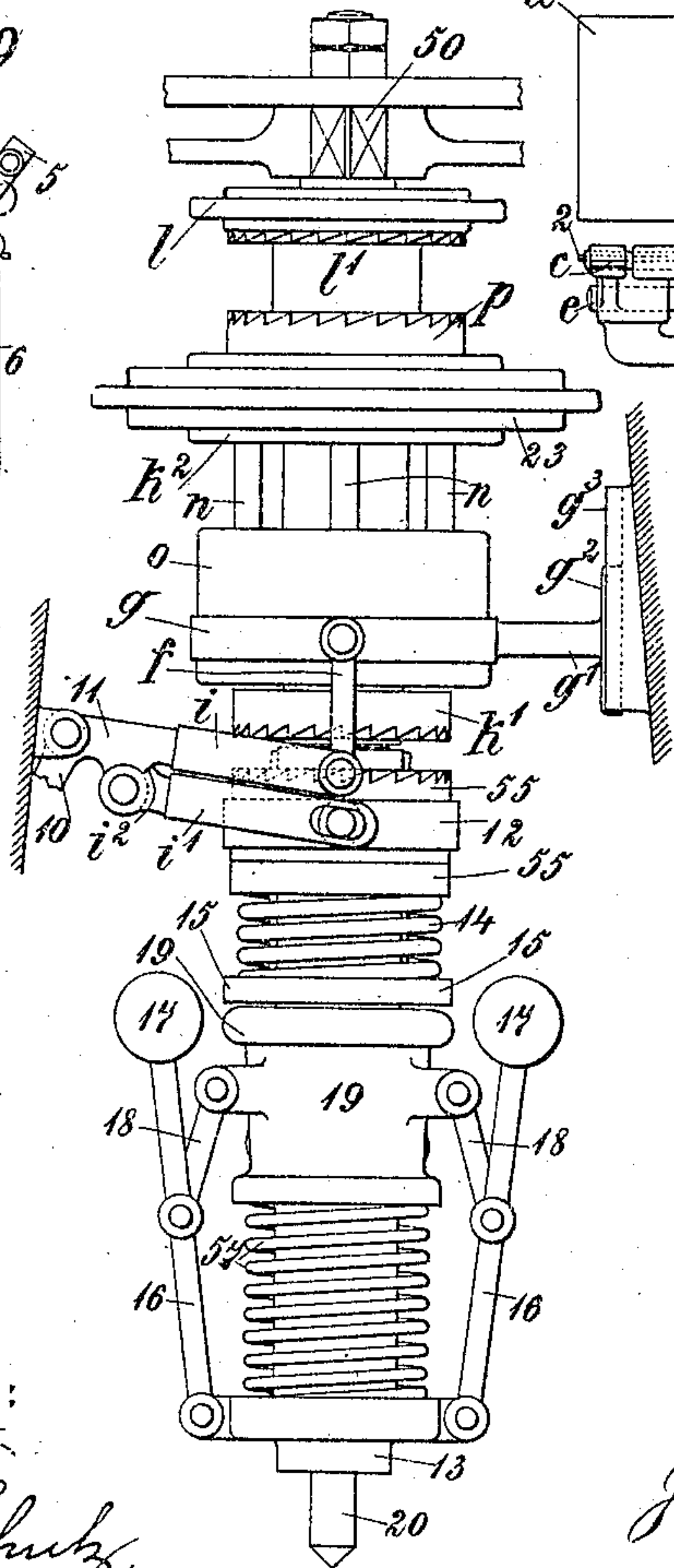
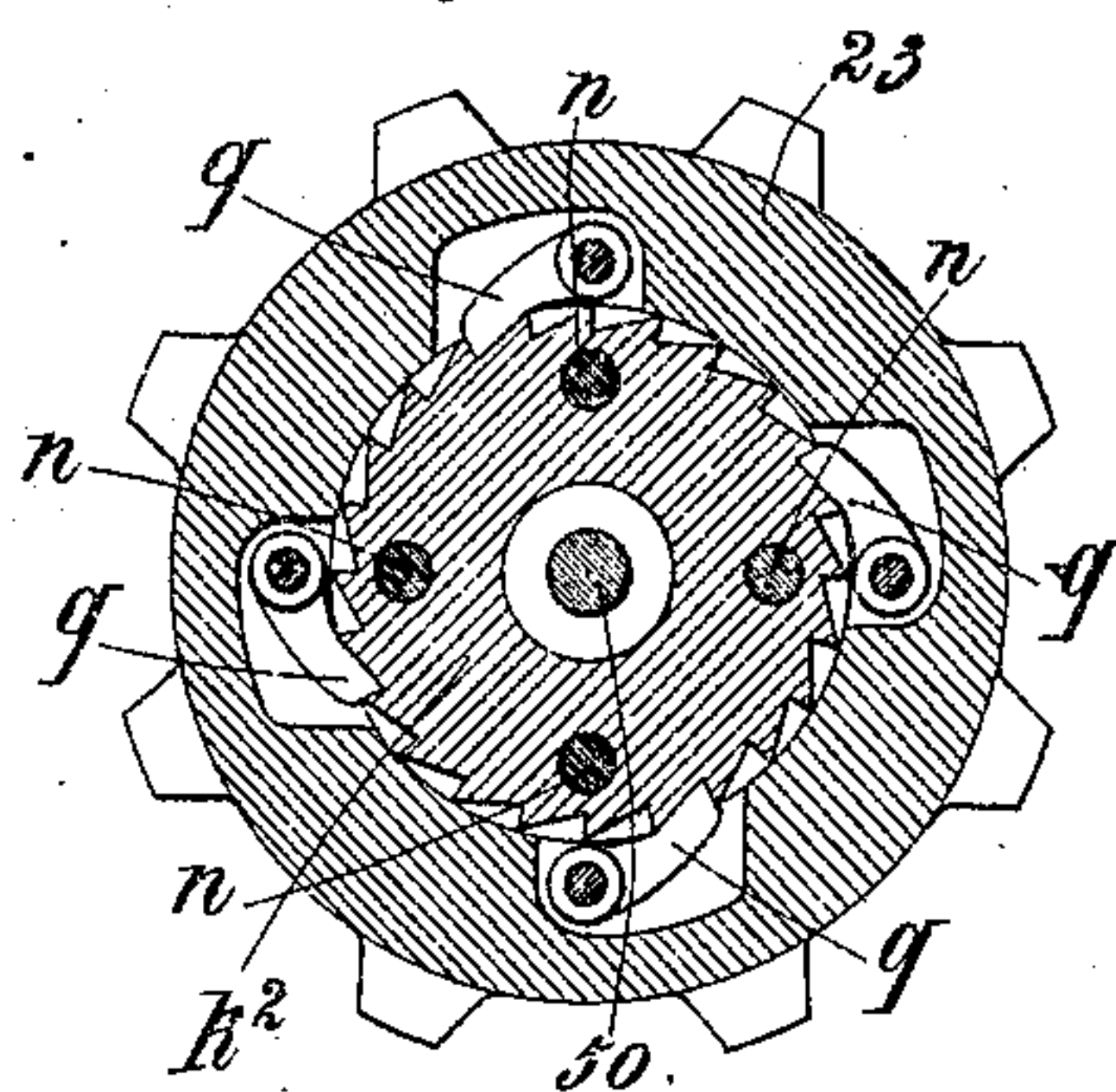


Fig. 13



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UNITED STATES PATENT OFFICE.

JOHANNES HEINRICH EMIL GOETZE, OF HECKKATHEN, NEAR BERGEDORF,
GERMANY.

SPEED-CONTROLLING APPARATUS FOR MOTOR-DRIVEN VEHICLES.

SPECIFICATION forming part of Letters Patent No. 788,204, dated April 25, 1905.

Application filed October 3, 1904. Serial No. 226,951.

To all whom it may concern:

Be it known that I, JOHANNES HEINRICH EMIL GOETZE, a citizen of the German Empire, and a resident of Heckkathen, near Berge-
dorf, Germany, have invented certain new and
5 useful Improvements in Speed-Controlling
Apparatus for Motor-Driven Vehicles, of
which the following is a specification.

This invention relates to an apparatus for
10 controlling the speed of motor-driven vehicles.
It presupposes that when the motorist or
chauffeur enters a district or country where
there is a speed limit for motor-driven vehi-
cles his speed of travel is made to conform to
15 the regulations. To this end a plate is pro-
vided, on which are inscribed suitable indica-
tions, such as "Slow" or "Half-speed," and
which is out of sight when the vehicle is run-
ning on a clear road or at full speed, but is
20 brought into view by a change in the speed,
so saving unnecessary trouble to the police
employed in regulating the traffic, as well as
to the chauffeur himself. Means are also pro-
vided and are set in operation on the indicator-
25 plate being brought into view, and which
means on the speed travel being exceeded be-
yond the legal limit are adapted to act auto-
matically on the throttle-valve or on the spark-
ing or igniting device or on the steering-gear
30 and to cut off the source of power.

The annexed drawings illustrate three forms
of the improved apparatus.

Figure 1 represents an example of an ap-
paratus embodying the features of my inven-
35 tion, and Fig. 2 shows a modification thereof.
In Fig. 1 the cutting off of the motive power
is effected by mechanical means, whereas in
Fig. 2 it is effected by electrical means. Fig.
3 is a front view of the speed-indicator and
40 adjoining parts, showing the indicator raised;
Fig. 4, a detail longitudinal section through
the governor-spindle; Fig. 5, a cross-section
through the lower coupling member. Fig. 6
is a longitudinal section through a modifica-
45 tion of the apparatus; Fig. 7, a side view of
Fig. 6 with some of the parts omitted; Fig.
8, a detail side view of the speed-indicator;
Fig. 9, a similar view showing the parts in a
different position; Fig. 10, a front view of

Fig. 9; Fig. 11, a front view of Fig. 8; Fig. 50
12, a similar view showing both indicators
folded down, and Fig. 13 a cross-section
through the free chain-wheel of the clutch for
the centrifugal governor.

For the purpose of my invention I arrange 55
in front of the motorist's or chauffeur's seat
an indicator-plate 2, capable of a turning
movement upon a pillar or post 1 or upon
any other suitable carrier, and upon the axis
3 of this plate is fixed a hand-lever 5, adapt- 60
ed to travel over a guide-quadrant 4, mount-
ed on the pillar 1. By the aid of this hand-
lever 5 the indicator-plate 2, which is in-
scribed with a distinguishing indication, such
as "Half-speed," can be raised or lowered. 65
The plate is down or lowered when the road
is clear—that is to say, when there is no ne-
cessity to limit the speed of travel. The lever
5 is linked or connected, by means of a rod 6,
with the arm 7 of a bell-crank lever. The 70
arm 8 of this lever is connected by a rod 9
with the arm 10 of a bell-crank lever whose
forked arm 11 engages a ring 12, forming
part of a toothed clutch 55, said part being
adapted to slide by the feather 56 (see Figs. 75
4 and 5) on the rotatable sleeve 13. This
clutch-piece 55 is controlled by a spring 14,
which bears against a collar 15 on the sleeve
13. On this sleeve are mounted upon arms
16 the balls 17 of a centrifugal governor. The 80
arms 16 are connected by links 18 to a sleeve
or collar 19, which is adapted to slide on the
sleeve 13. This latter surrounds a spindle 20,
which is connected to the sleeve 19 by two
pins 21, Figs. 1 and 4, passing through slots 85
22 in the sleeve 13, so that movement of sleeve
19 communicates motion to the spindle 20.
The sleeve 13 is rotatable on a fixed spindle
50, on which is loosely mounted a chain-wheel
23. This latter is provided with crown 90
ratchet-teeth 24 to engage the teeth of the
clutch member 55. The chain-wheel 23 is
actuated when the vehicle is traveling by
means of a chain 30, passing over a wheel 29,
which is secured to the axle 28 of the rear 95
wheels of the vehicle. It is, however, obvious
that the chain-wheel 23 may be actuated in
any other well-known manner. In case the

centrifugal governor is horizontal it would be provided with a spring 57.

In the mechanically-operated arrangement, Fig. 1, a bearing 35 engages with the spindle 20 under the action of a spring 31 and a system of rods and levers 32 33 34. The outer end of the rod 32 is connected with the arm 36 of the throttle-valve in the exhaust or in the supply-pipe of the cylinder 37, which is held open by the tension of the spring 31. The bearing 35 moves in a small box or compartment 39, forming part of the casing 38 inclosing the centrifugal governor, and on which box or compartment the bell-crank lever 33 34 is mounted. The form of arrangement is applicable to motors having either incandescence tube-ignition or spark-ignition devices. In the electrical mode of operation, Fig. 2, the end of the spindle 20 is provided with two disks 25, between which works the forked end of a contact-arm 27, turning about a pin 26. In this modification a small chamber 39, forming part of the casing 38 inclosing the centrifugal governor, contains the contact-arm 27 and the end of the spindle 20. In the ordinary running of the vehicle the contact-arm 27 rests on the contact 40, which is connected by wire 41 with the ignition-chamber 42. From this latter a wire 43 passes to the battery or source of electricity E and is connected by a wire 44 with the contact-arm 27. With a second contact 45 a wire 46 is connected and a wire 47 with the wire 43, and in the second circuit so formed an electric bell or the like 48 is inserted. Also in the ordinary running of the vehicle the contact-arm 27 rests upon the contact 40, and the ignition-circuit is thus complete; but should the arm be moved to engage with the contact-piece 45 the ignition-circuit will be broken and the bell-circuit will be set in operation. This breaking of the ignition-circuit can only take place if the centrifugal governor operates to effect it and the speed of travel of the vehicle exceeds its legal limit. The operation or throwing out of action by mechanical means is effected in a similar manner, Fig. 1. In this case when the recognized speed limit is exceeded the spindle 20 is lowered, and the rod 32 acts against the tension of the spring 31, and the throttle-valve in the inlet or outlet pipe on the cylinder 37 is wholly or partially closed, so that the source of power is entirely or partially cut off. The relative positions of the parts when the source of power is interrupted are represented in dotted lines in both arrangements.

On setting the plate 2 in the vertical position the bell-crank levers 7 8 and 10 11 are actuated by means of rods 6 and 9, so that the spring 14 can press the clutch member 55 into engagement with the teeth 24 of the wheel 23, so bringing the centrifugal governor into operation, which when the predetermined speed

limit for travel is exceeded automatically reduces the supply of motive power to the desired degree. Thus the mechanism not only constitutes a control for the driver of the motor-vehicle, but also an indication for the police, as on the approach of the vehicle it can be seen at once by looking at the indicator-plate whether the driver is going at the legal rate of speed. The apparatus serves, moreover, as a check on the driver himself when needed.

In Figs. 1 and 2 are shown in dot-and-dash lines special electric circuits for an electromotor, the working of which can be interrupted by the movement of the spindle 20. M indicates the electromotor, and E the battery or source of electricity. On the bell-crank lever 33 34 of the system of linkwork 34 33 32, which is connected with the throttle-valve, (held open by spring 31, Fig. 1,) is an arm 51. This arm works upon a contact-arm 53, pivoted on a stud 52 on the motor-wire, and said contact-arm on the movement of the spindle 20 quits the contact-piece 54, which is in connection with the source of electricity, and thus breaks the circuit through the electromotor M and stops its work. In Fig. 2 a similar arrangement is shown. Here the contact-arm 53, pivoted on the stud 52, is held between the disks 25, fixed on the spindle 20, and by the movement of the spindle breaks contact with the piece 54.

While in the preceding two arrangements the diminished speed of travel is indicated by a single plate being brought into a position in which it is visible, the modifications illustrated in Figs. 6 to 13 show how it is possible by actuating two plates to further indicate more than one change of speed. The same numerals and letters of reference are used to indicate similar parts in these modifications, as in the previously-described ones. On the axle 3, besides the fixed plate 2, is a loosely-arranged second plate *a*, which presses against springs *b b'* through the projection *c*, which has a fixed position relatively to the axle 3. By means of a finger *d*, fixed on the axle 3, the plate *a* can be turned against the pressure of the springs *b b'* through an angle of ninety degrees. The rotation of the axle 3 is effected in a special manner from the axle *e*, upon which the hand-lever 5 is fixed, said hand-lever being capable of being set or fixed in three different positions on a quadrant 4, Figs. 6 and 10, 8 and 11, as well as 9 and 12. The hand-lever 5 is connected with a bell-crank lever 10 11 by a rod 6, bell-crank lever 7 8, and a rod 9. On the arm 11 of the bell-crank lever a fork *i* is formed, which is connected with a ring *g* within the casing by connecting-rods *f*. This ring is provided with an arm *g'*, and this latter with a sliding piece *g''*, which is guided by the strip *g'''* on the wall of the casing 38. On the arm 11 of the bell-crank lever 10 11 is a second fork *i''*, which is con-

nected with the ring 12 and provided with a
 nose i^2 , by which it is supported on the arm
 11. The ring 12 is carried by the clutch mem-
 ber 55, which by means of the feather or key
 5 56 is secured to the sleeve 13 and can slide there-
 on. The sleeve 13 extends to a pair of ball-
 bearing collars h h' , of which collar h' serves
 as a support for sleeve 13, while collar h serves
 as a support for a second sleeve k . Sleeve k
 10 extends to the boss l' of the chain-wheel l ,
 which is loose upon the spindle 50 and during
 the travel of the vehicle is actuated by the
 chain-wheel m , affixed to the wheel-axle 28.
 A second chain-wheel 29, affixed to the axle
 15 28, drives the chain-wheel 23, which carries
 with it the sleeve k during travel. One end
 of this sleeve k forms a clutch member k' ,
 and the other end constitutes a toothed disk
 k^2 . Through two or more holes in the toothed
 20 disk k^2 pass rods n . These rods connect a
 disk o' with a clutch member p . The disk o'
 is screwed into a sleeve o , that is engaged by
 ring g . The teeth of clutch member p are
 adapted to engage corresponding recesses in
 25 the chain-wheel l . The teeth of the second
 clutch-piece k' engage the recesses provided
 in the clutch member 55. Engaging the teeth
 of the toothed disk k^2 are pawls q , arranged
 in the chain-wheel 23, which when desired
 30 can be put into gear during travel, so that the
 sleeve k moves with the clutch-piece k' and
 the clutch-piece p with the sleeve o , which are
 connected by the rods n . These rods n are
 of such a length as to pass through the toothed
 35 disk k^2 until the teeth of the clutch-piece p
 mesh with the teeth of the chain-wheel l . The
 spring 14 between the collar 15 of the sleeve
 13 and the clutch 55 shifts the latter toward
 the free position. This happens when the in-
 40 dicator-plate 2 is brought into the vertical po-
 sition, and consequently upon such movement
 the fork i' is set free, so that during the travel
 the coupling of the parts k' and 55 takes place,
 and hence the centrifugal governor is set in ro-
 45 tation. The governor on exceeding the regu-
 lation speed cuts off, by means of the spindle
 20 and parts 35, 34, 33, 32, 36, 51, 52, 53, and
 54, the motive power and sets the bell 48 in
 operation. Thus under specially favorable
 50 conditions the motorist is able to maintain a
 moderately good speed, and for this purpose
 and also to have an indication of the control
 the second plate a is provided, so that if it be
 in the vertical position, Figs. 9 and 11, the
 55 connected parts o n p , which had already been
 moved a certain distance by the coupling of
 the parts 55 and k' , owing to the movement
 imparted to the fork i , are still further dis-
 placed until the parts p and l are coupled. As
 60 the wheel l will turn at a greater speed than
 the wheel 23, the sleeves k and 13 will also ro-
 tate more quickly. This produces with re-
 gard to wheel 23 a certain amount of over-

running. The pawls q , which are under the
 influence of springs, therefore slide freely 65
 over the ratchet-teeth.

Owing to the great weight of motor-ve-
 hicles, variation in the load need scarcely be
 considered. If during high speed on a level
 road or on a long downward incline the indi- 70
 cator-plate rises, the indication thereon will
 not automatically and instantly correspond
 truly with the speed. In such a case the mo-
 torist must apply the brake until the bell or
 other sounding device ceases to ring. As 75
 soon as the prescribed speed has been attained
 care must be taken when descending inclines
 with the automatic mechanism indicating the
 slightest excess of speed that the motive power
 be cut off in each instance for a sufficient 80
 length of time to insure that the normal mod-
 erate speed is restored.

The audible signaling device (illustrated by
 way of example in Fig. 2) can be applied to
 each of the modifications shown. For incan- 85
 descence tube ignition any suitable source of
 electricity (wet or dry batteries) may be em-
 ployed.

The operation is as follows: When the road
 is clear and there is no speed limitation, the 90
 speed-indicator is folded down, so as to permit
 the motorist to run with full speed; but when
 it is necessary not to exceed a certain low
 speed the indicator 2 is brought into a vertical
 position, Fig. 3, by turning handle 5 down. 95
 This will by rod 6, bell-crank 7 8, link 9, and
 bell-crank 10 11 cause the clutch members 23
 55 to be coupled, so that sleeve 13, spindle 20,
 and governor 17 17 participate in the rotation
 of wheel 23, which is driven from the car- 100
 axle. As soon as the speed permitted is ex-
 ceeded the governor will pull collar 19, to-
 gether with spindle 20 and bearing 35, down-
 ward. This downward movement of the bear-
 ing will by bell-crank 34 33 and rod 32 partly 105
 close valve 36 of supply-pipe 37. In this way
 the speed will be slowed down to the desired
 degree. After the road is again clear the in-
 dicator is folded down to open clutch 23 55
 and allow the motorist to resume full speed. 110

What I claim is—

1. In a motor-car, the combination of a first
 clutch member with means for operatively
 connecting the same to one of the car-axles,
 a rotatable sleeve, an inclosed slidable spindle, 115
 a spring-influenced second clutch member slid-
 ably mounted on the sleeve, a governor car-
 ried by the sleeve and operatively connected
 to the spindle, a valve controlled by the spin-
 dle, and an indicator operatively connected to 120
 the second clutch member, substantially as
 specified.

2. In a motor-car, the combination of a first
 clutch member with means for operatively
 connecting the same to one of the car-axles, a 125
 rotatable and slidable spindle, a sleeve embrac-

ing the same, a second clutch member slid-
ably mounted upon the sleeve, a governor car-
ried by the sleeve, a collar operated by the
governor and engaging the spindle, a valve
5 controlled by the spindle, and an indicator op-
eratively connected to the second clutch mem-
ber, substantially as specified.

Signed by me at Hamburg this 14th day of
September, 1904.

JOHANNES HEINRICH EMIL GOETZE.

Witnesses:

AUGUST WENK,
OTTO W. HELLMRICH.