SOCIETE NATIONALE DES CHEMINS DE FER BELGES

B

# Livret HLT

## Fascicule 12 — Traction électrique

## Automotrices type 1962

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## Figures

**DIRECTION M.A.**
BUREAU 24-13

# Automotrices type 1962.

## LISTE DES FIGURES ET SCHEMAS.

Figures 1 à 36
et 24bis, 24ter, 27bis.

Dessins 62/B. 00.01.01
à
62/B. 00.01.08

Courbes 62/F. 02.01.11
62/F. 02.02.13

Schémas 62/A. 00.01.01
62/D. 00.01.01
02
03
04
62/G. 00.01.01.

**Mars 1962.**

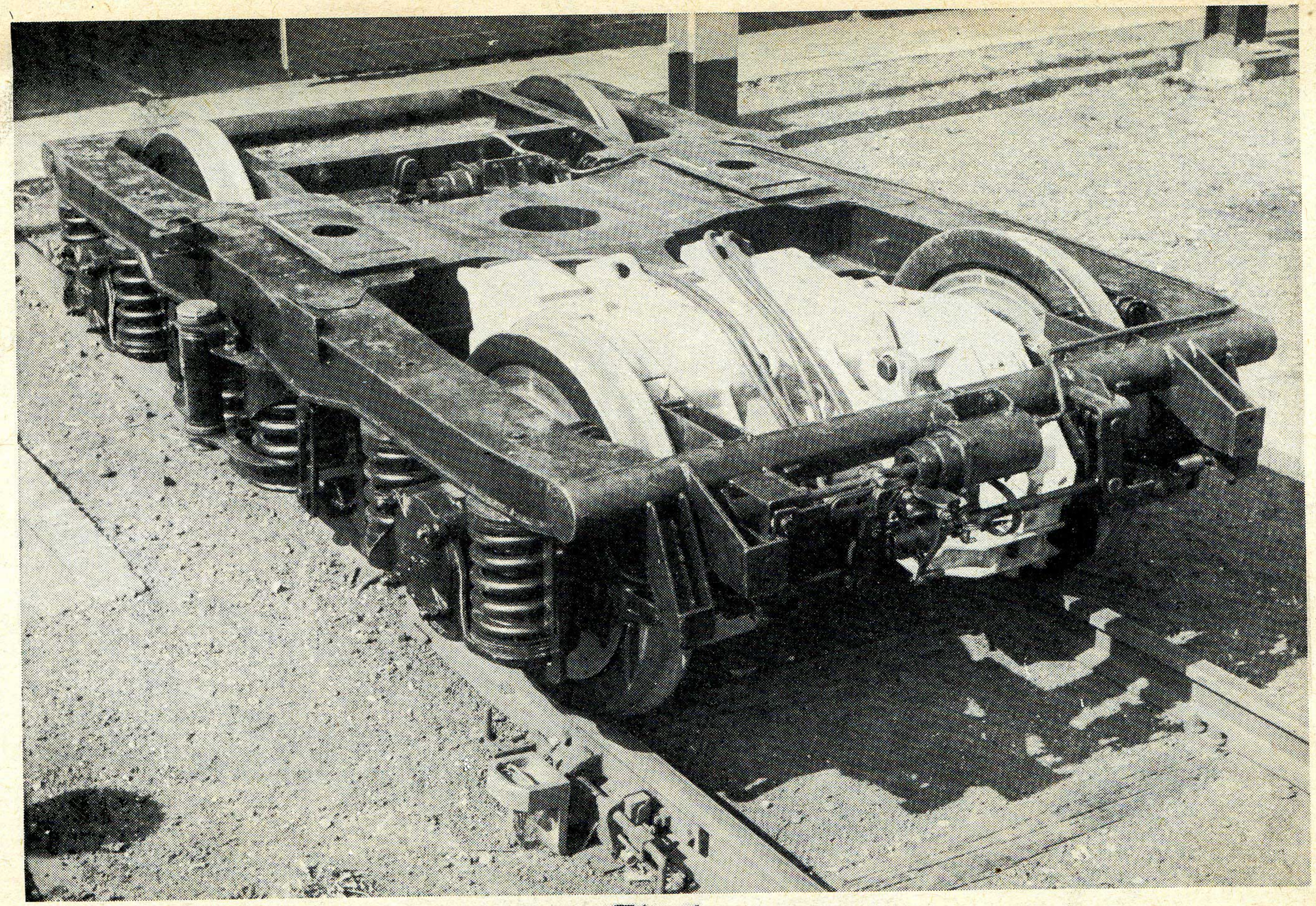


Fig. 1

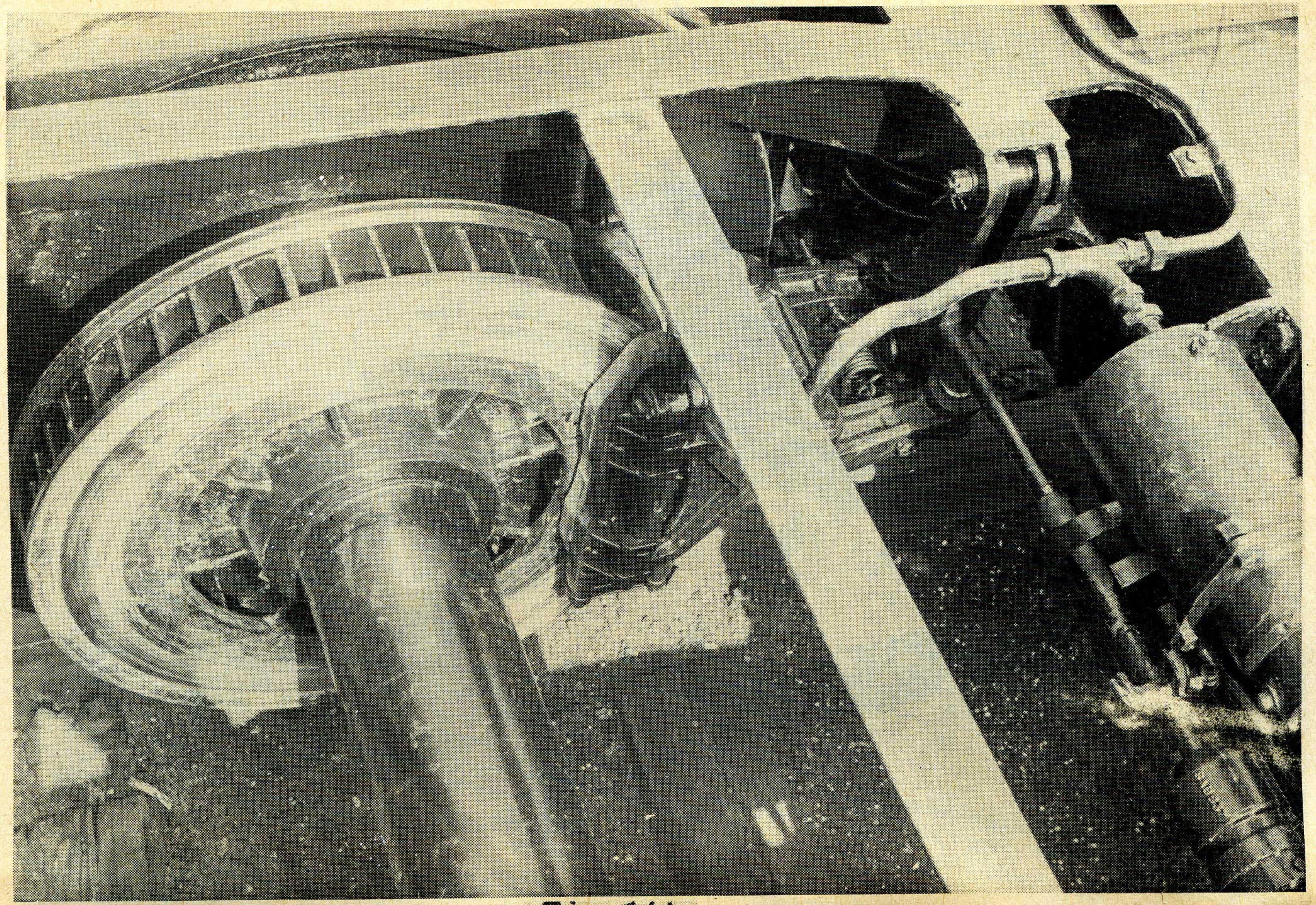
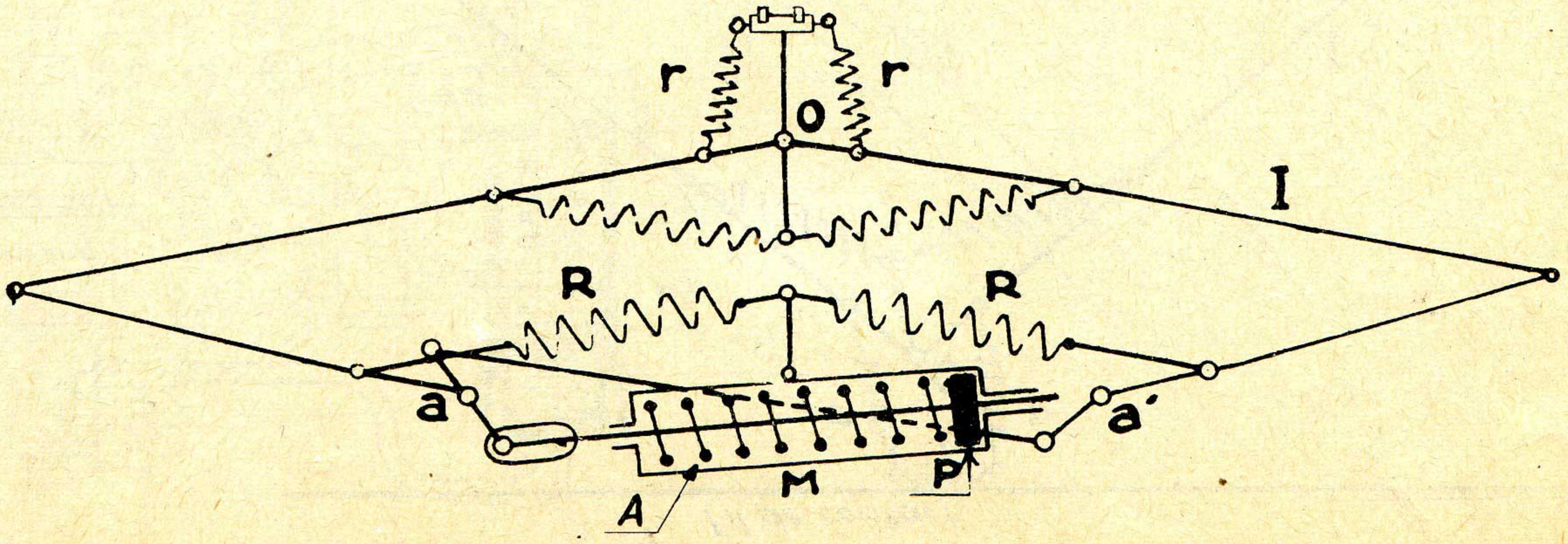


Fig. 7bis.

Fil de contact

Fig. 2



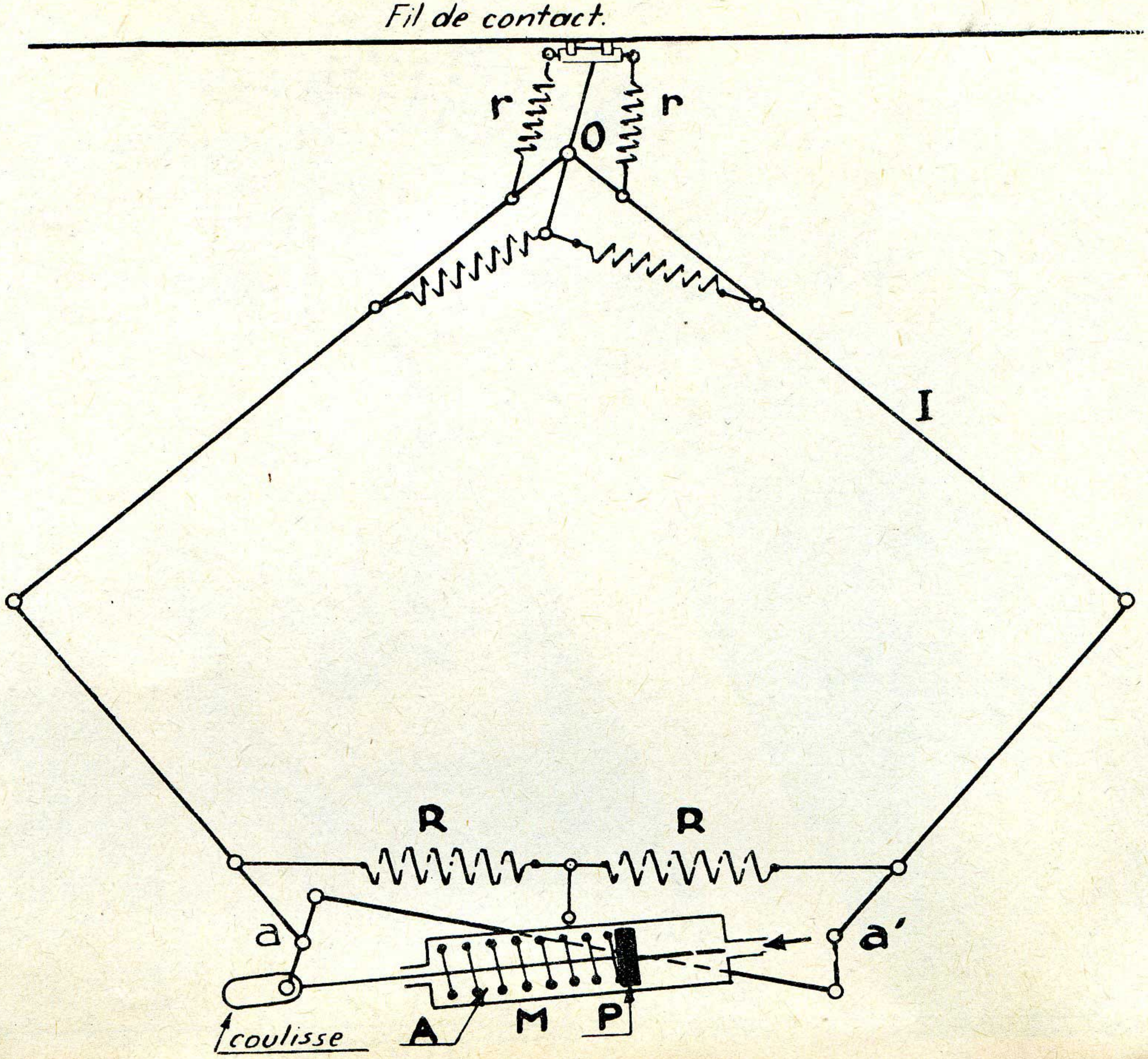
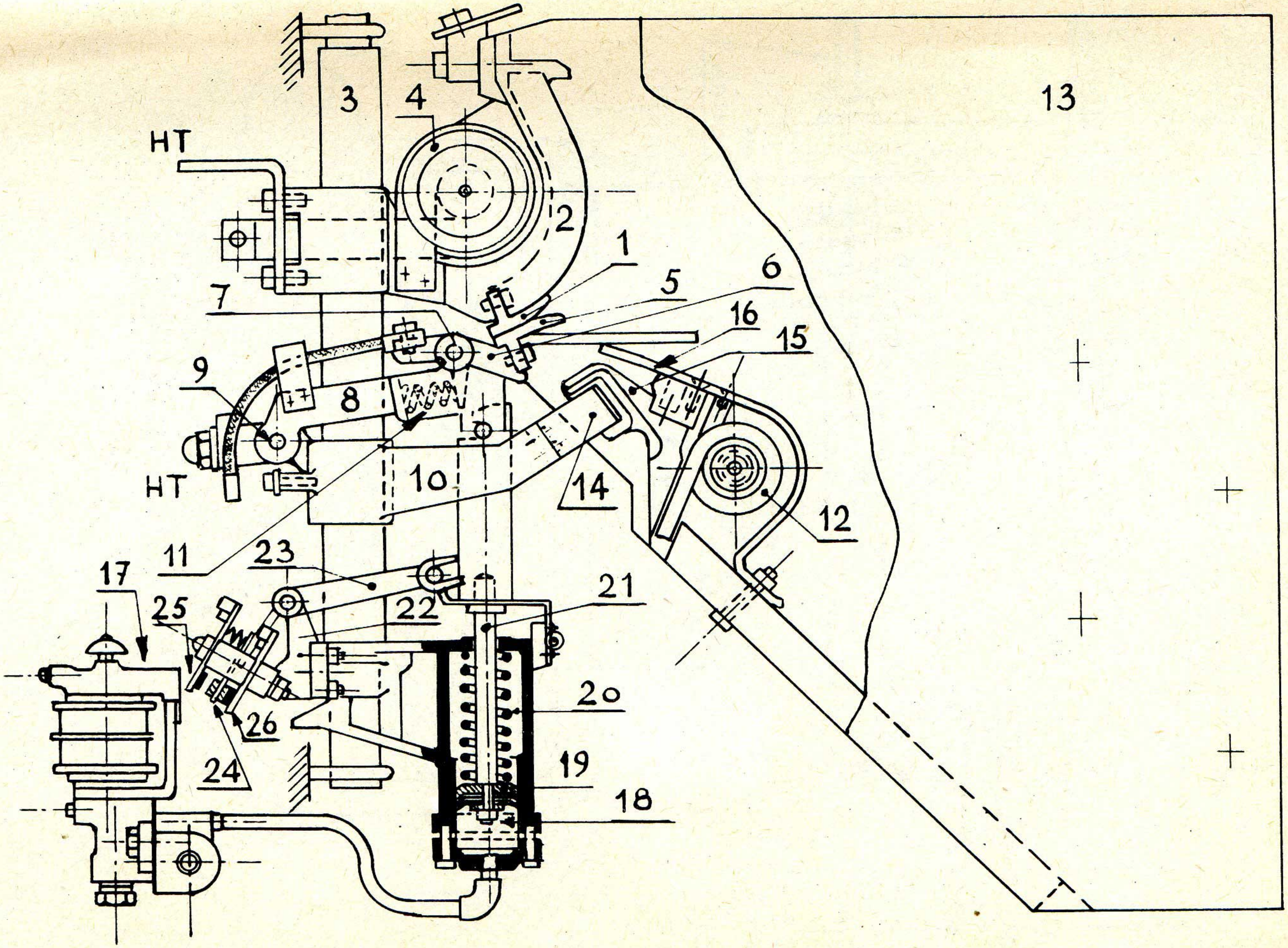



Fig. 3

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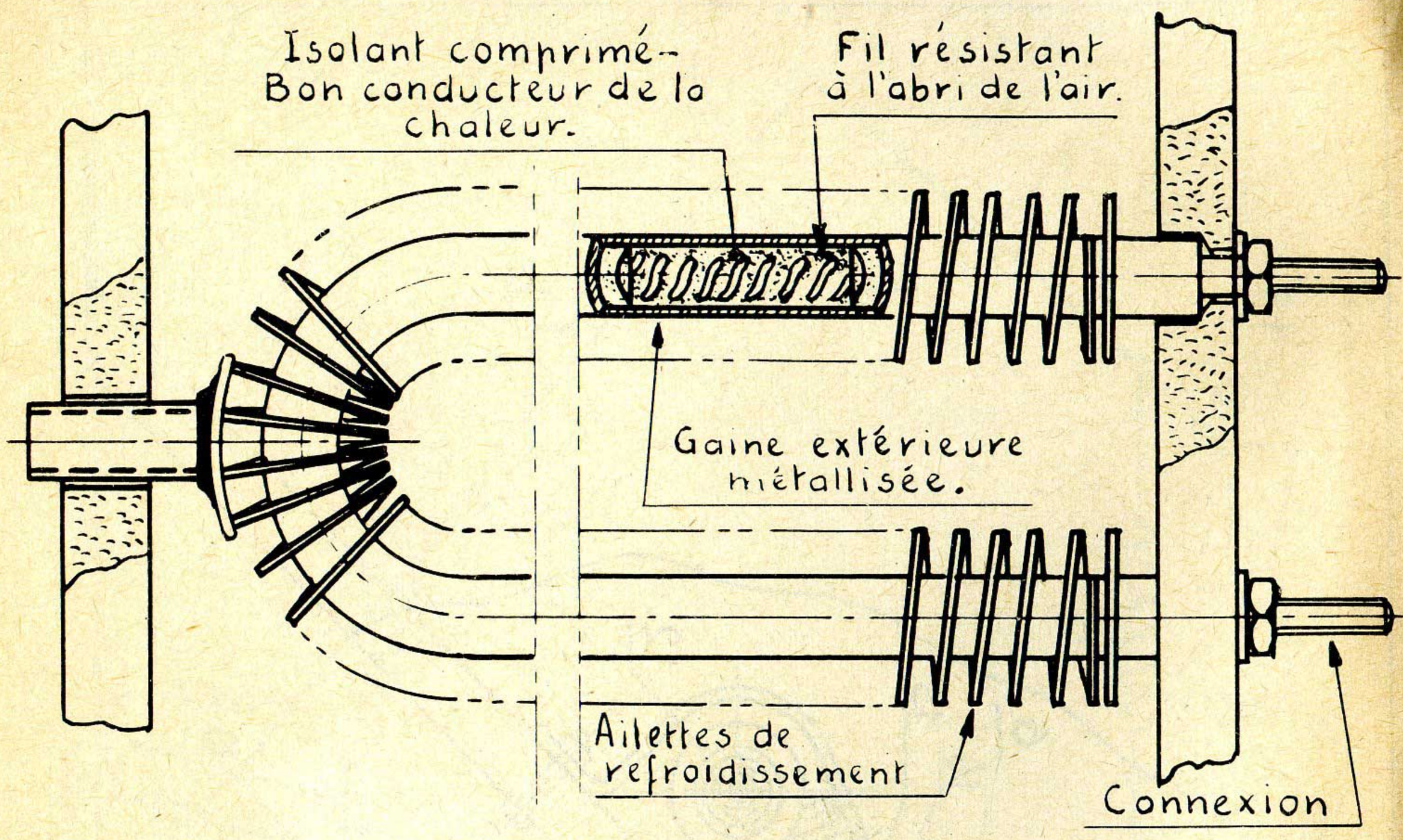
Isolant comprimé-
Bon conducteur de la
chaleur.
Fil résistant
à l'abri de l'air.
Gaine extérieure
métallisée.
Ailettes de
refroidissement
Connexion

Fig. 5


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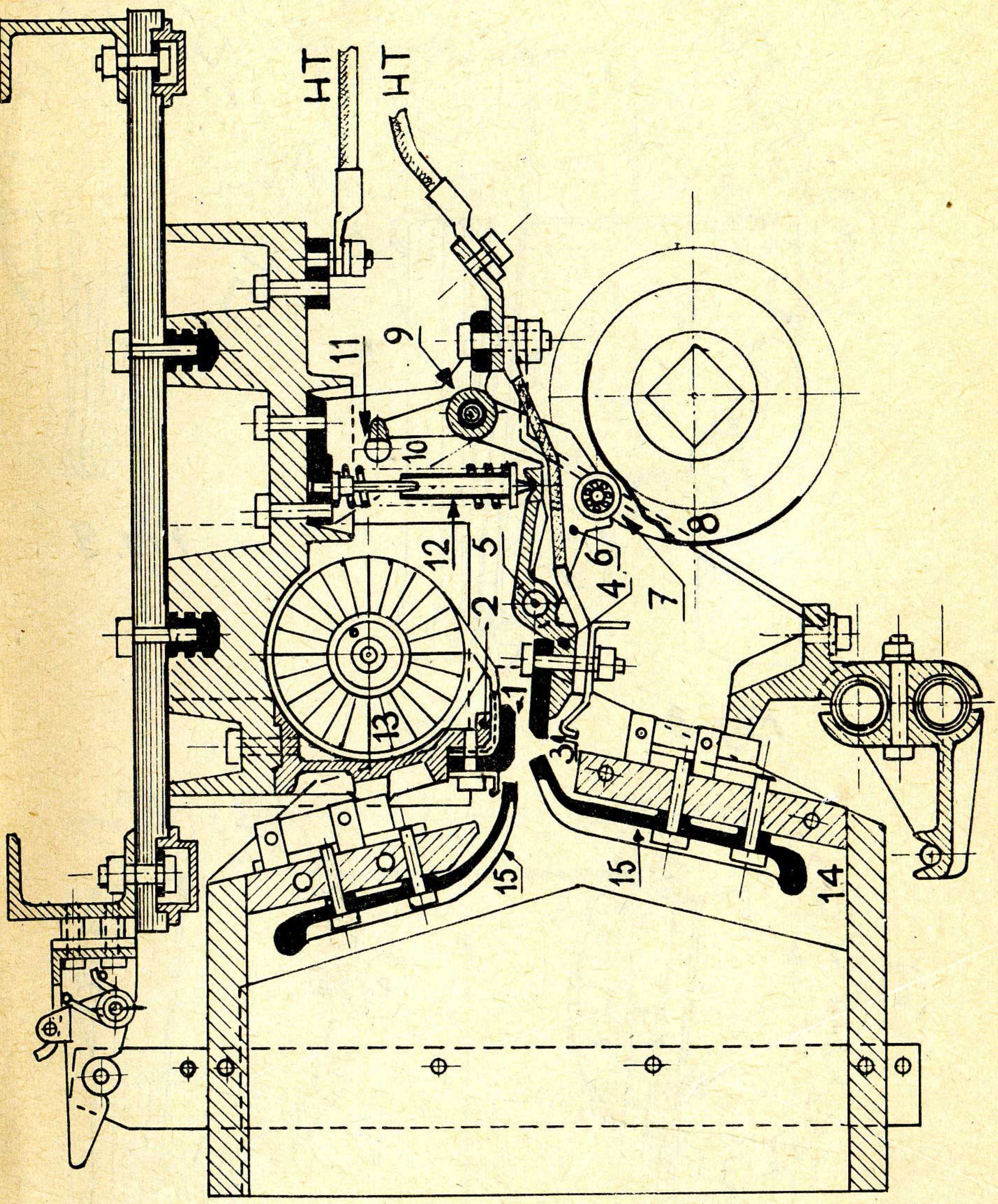
Fig. 6

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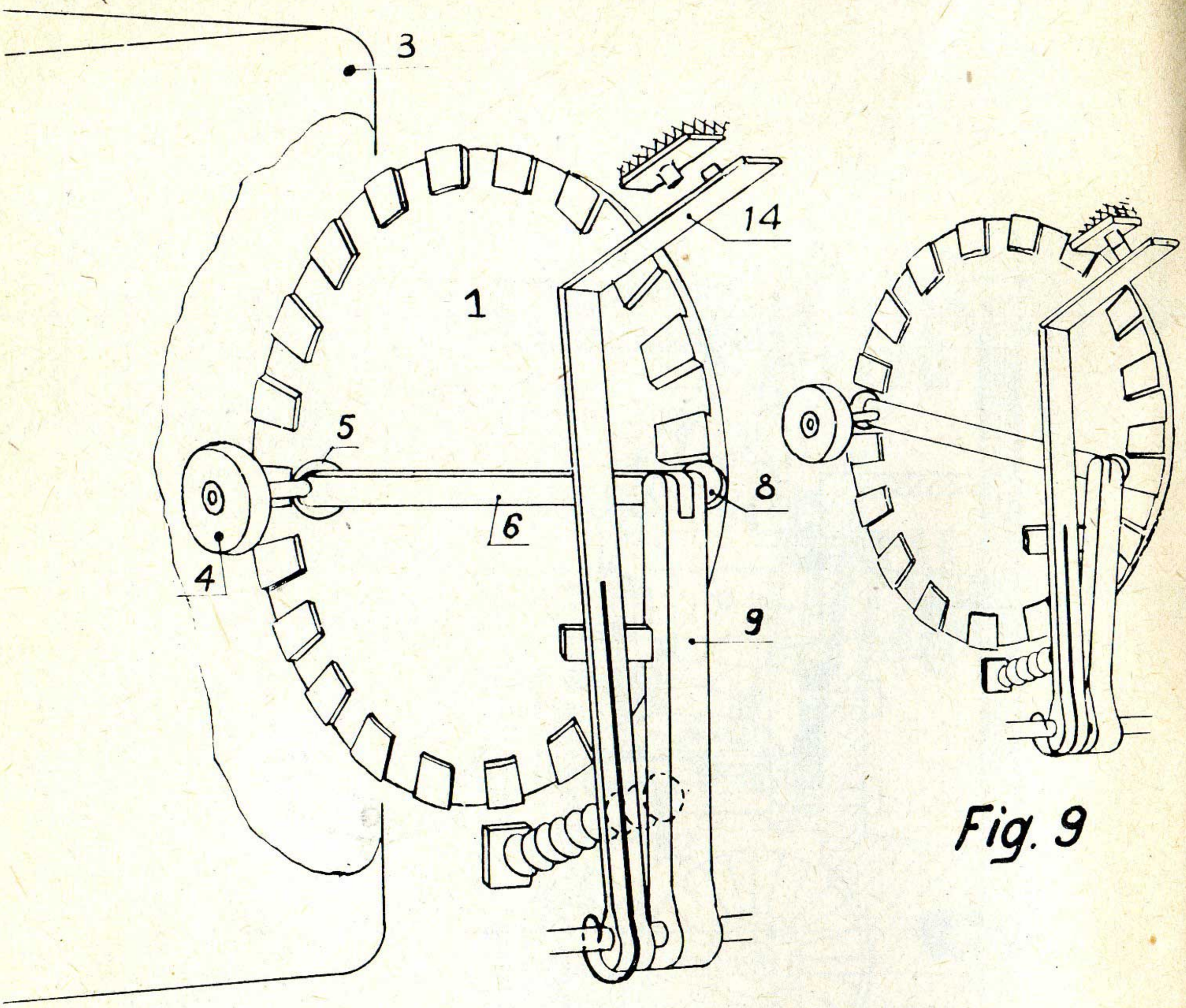
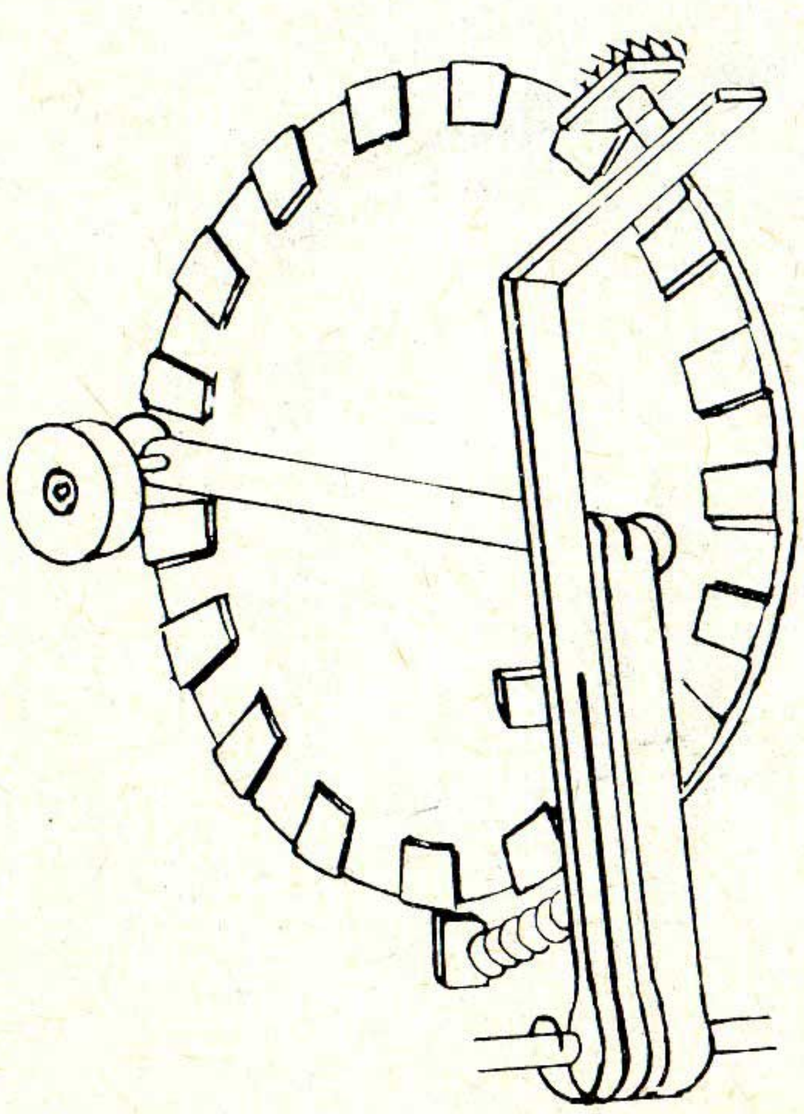



Fig. 8

Fig. 9



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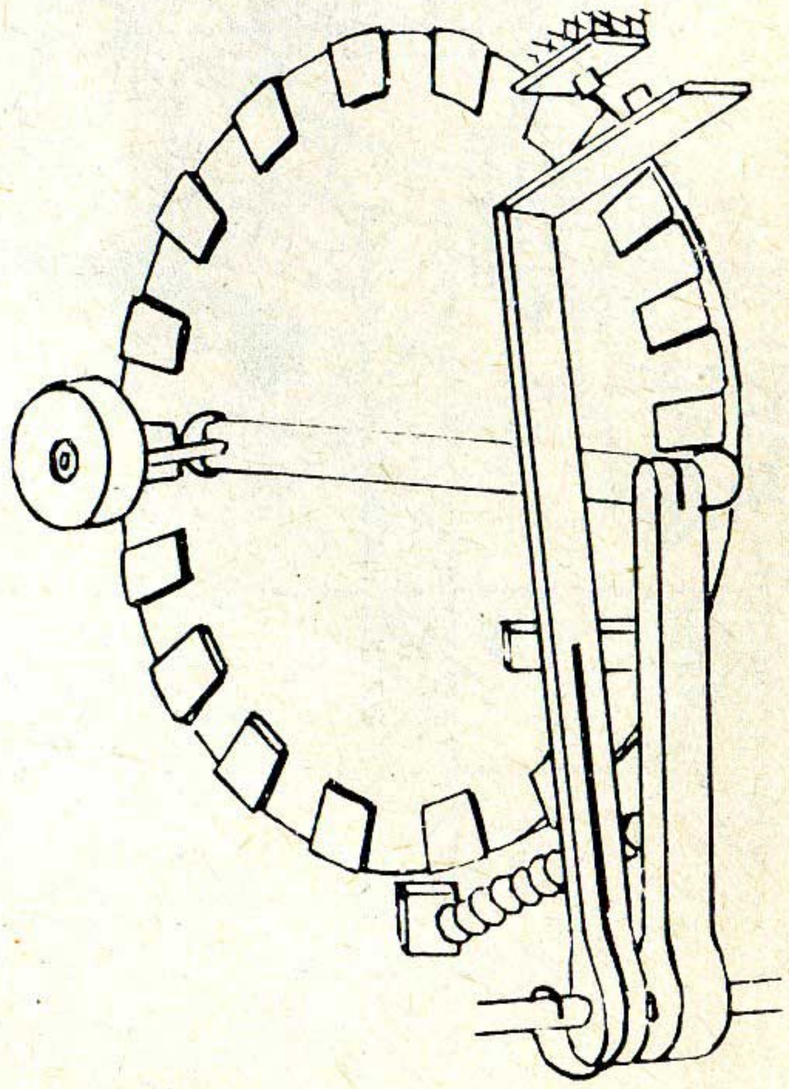

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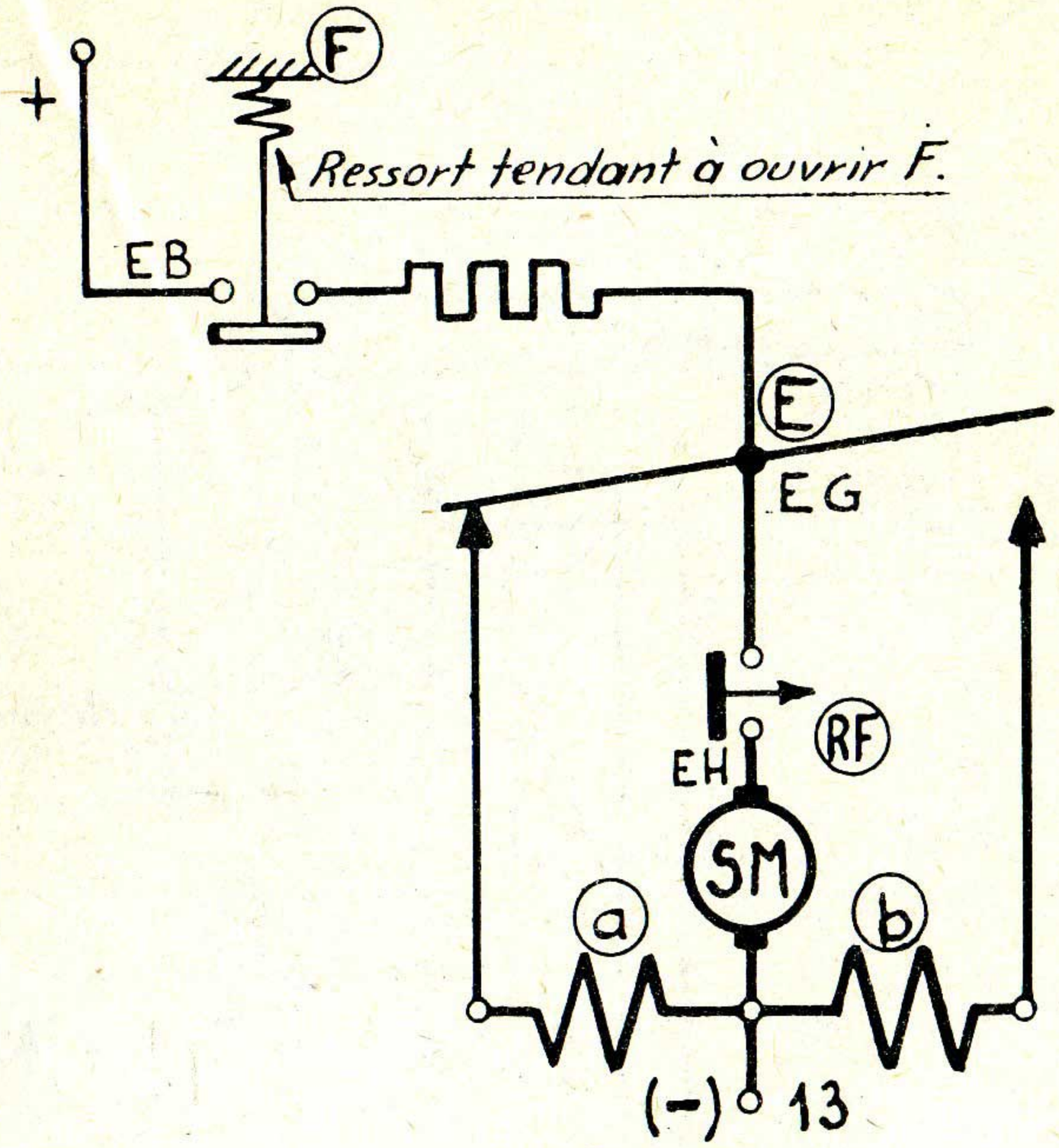
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Ressort tendant à ouvrir F.
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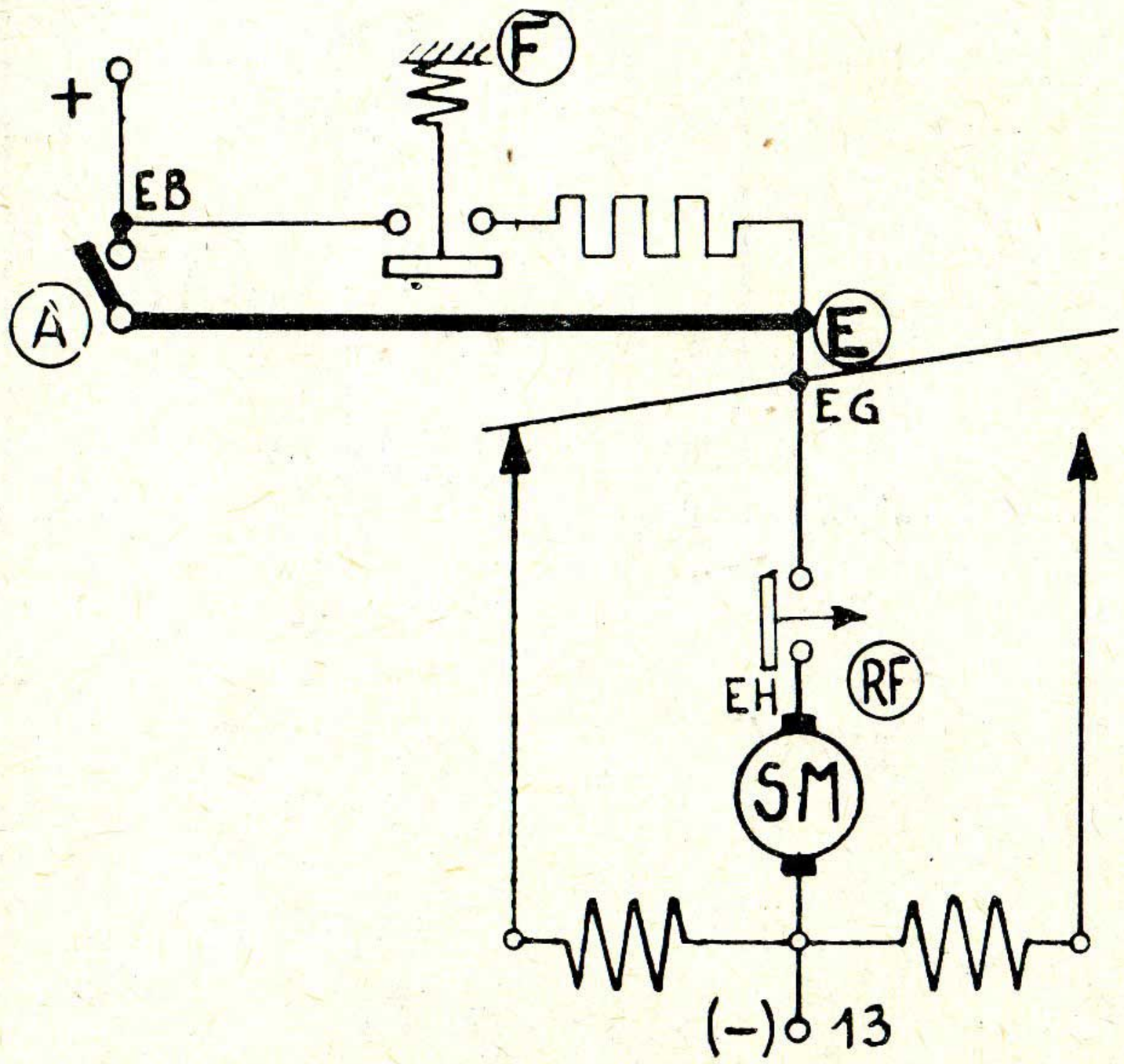
Fig. 12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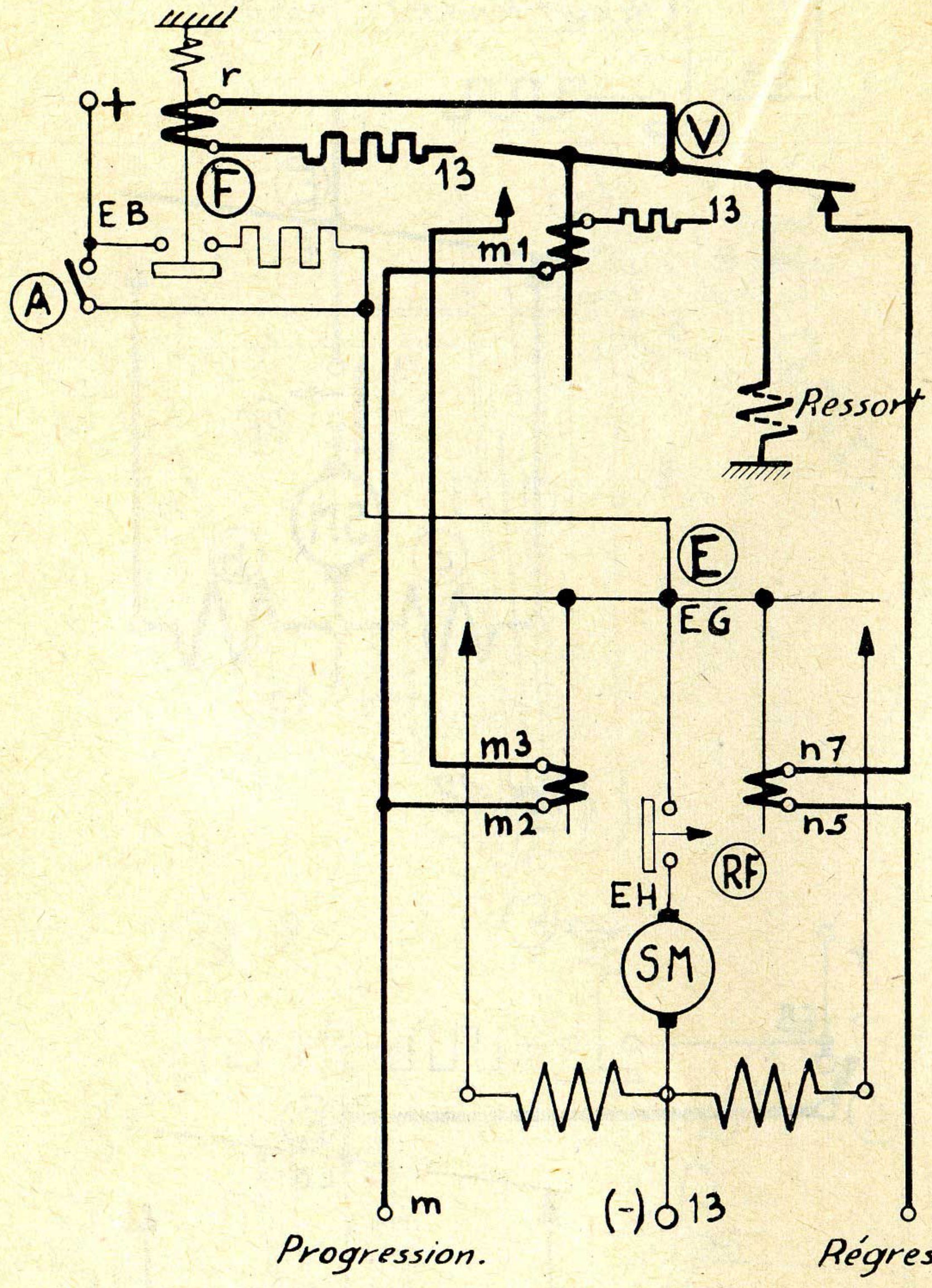
EG
RF
EH
SM
(-)
13

Fig. 13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Progression.
Régression.

Fig. 14

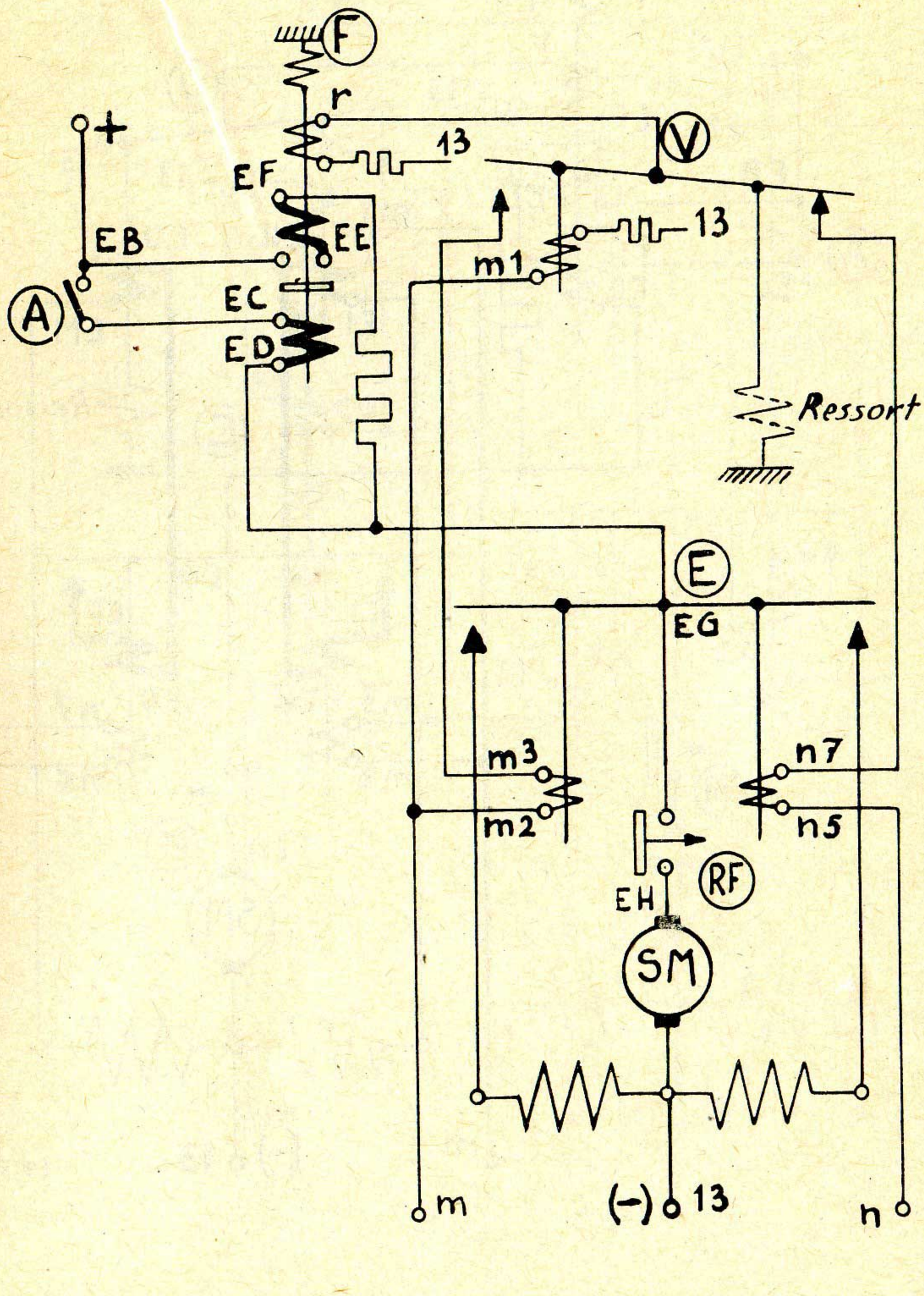


Fig. 15

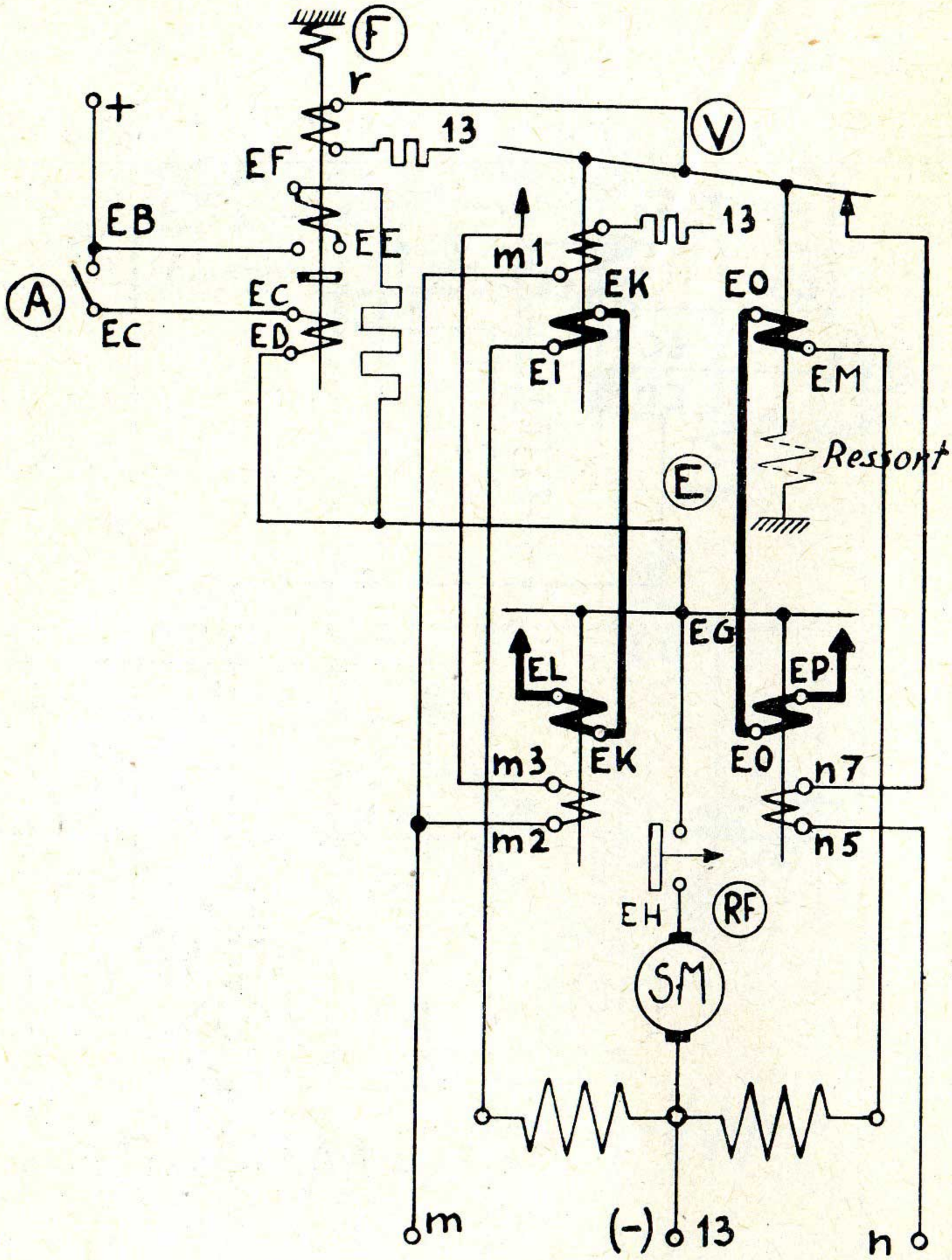
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Fig. 16

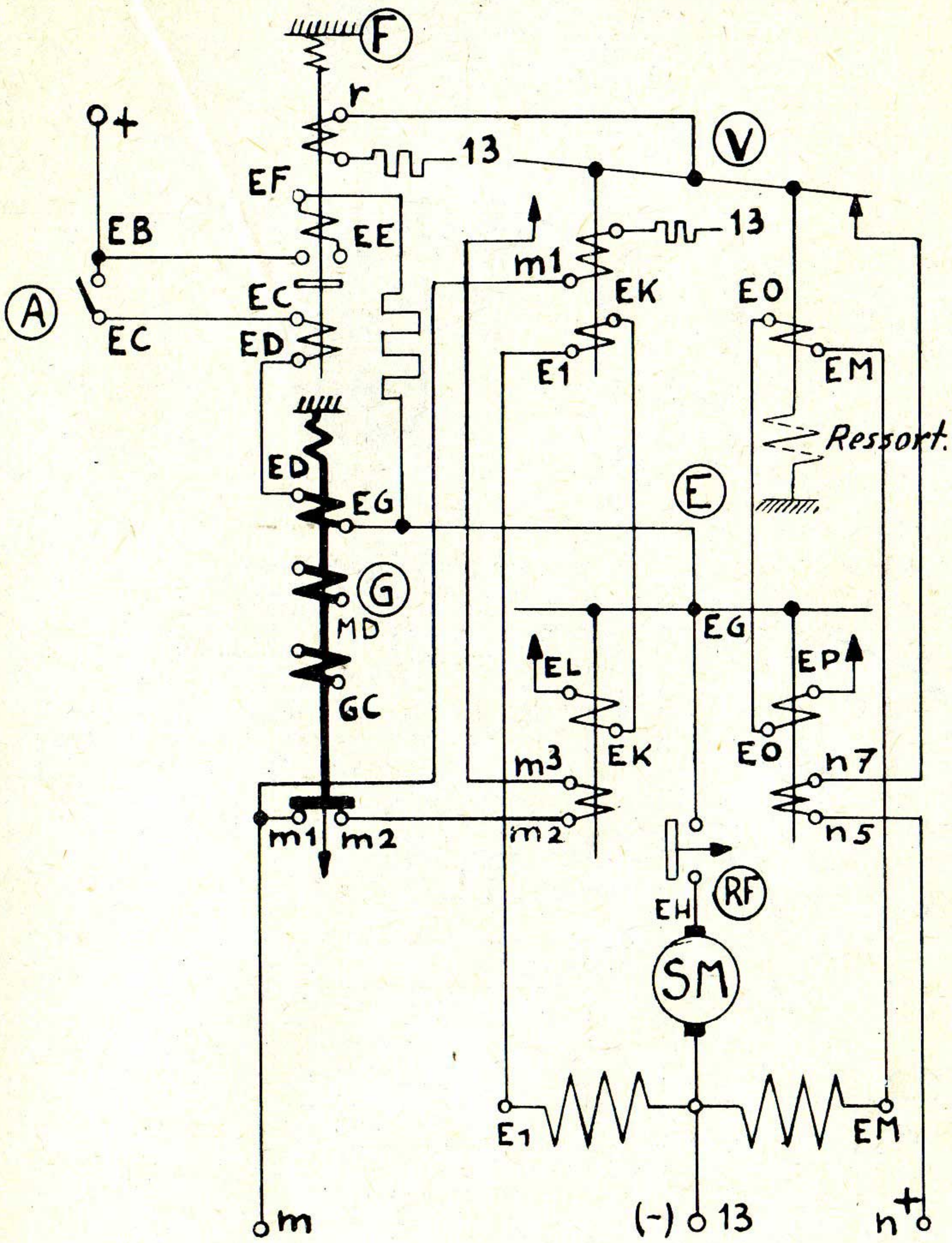
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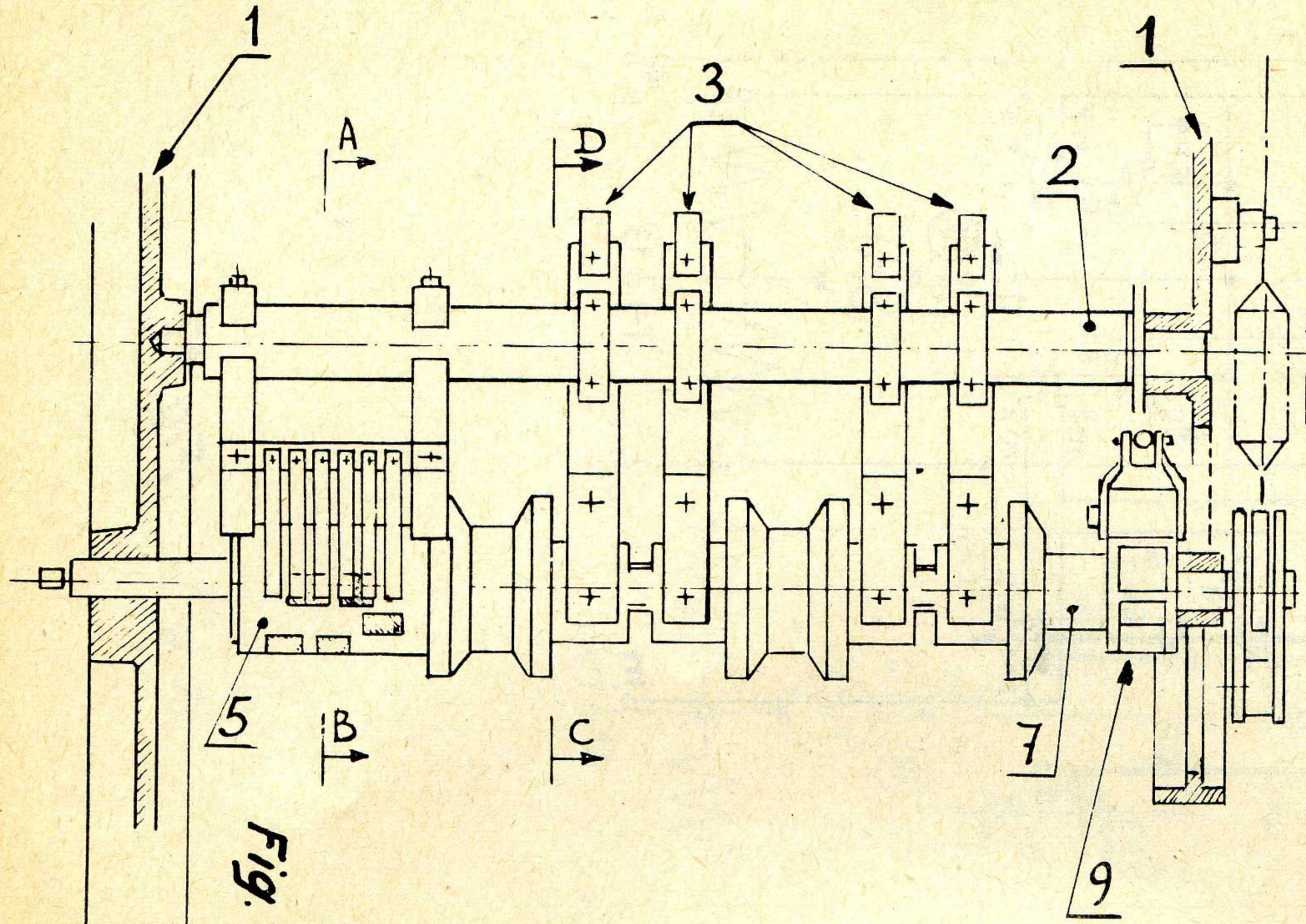
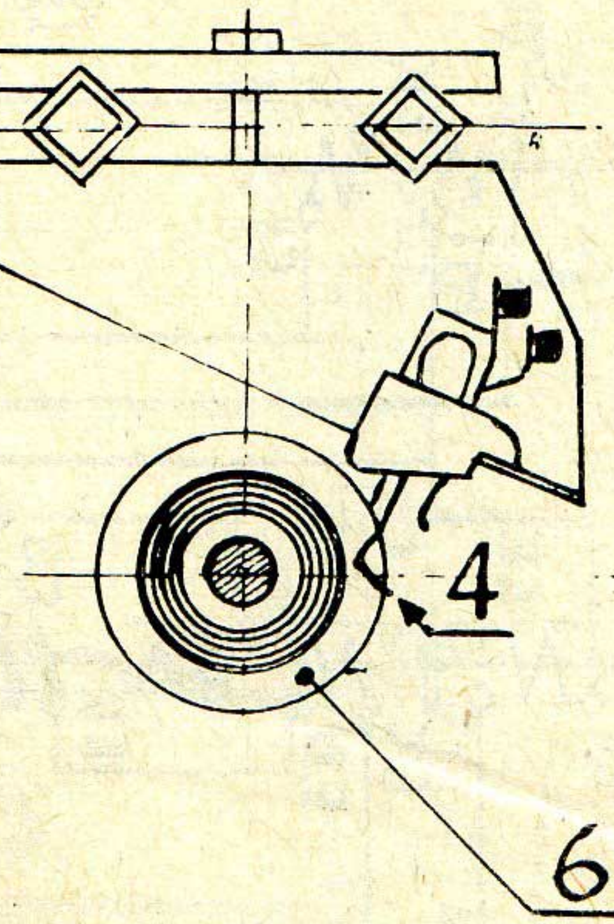
Fig. 17




Coupe A-B




Coupe C-D

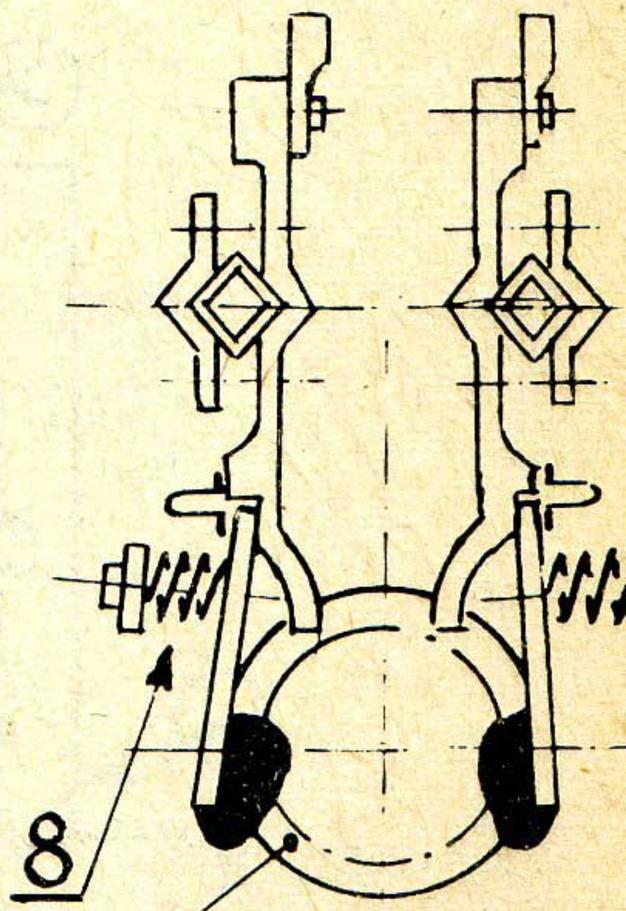
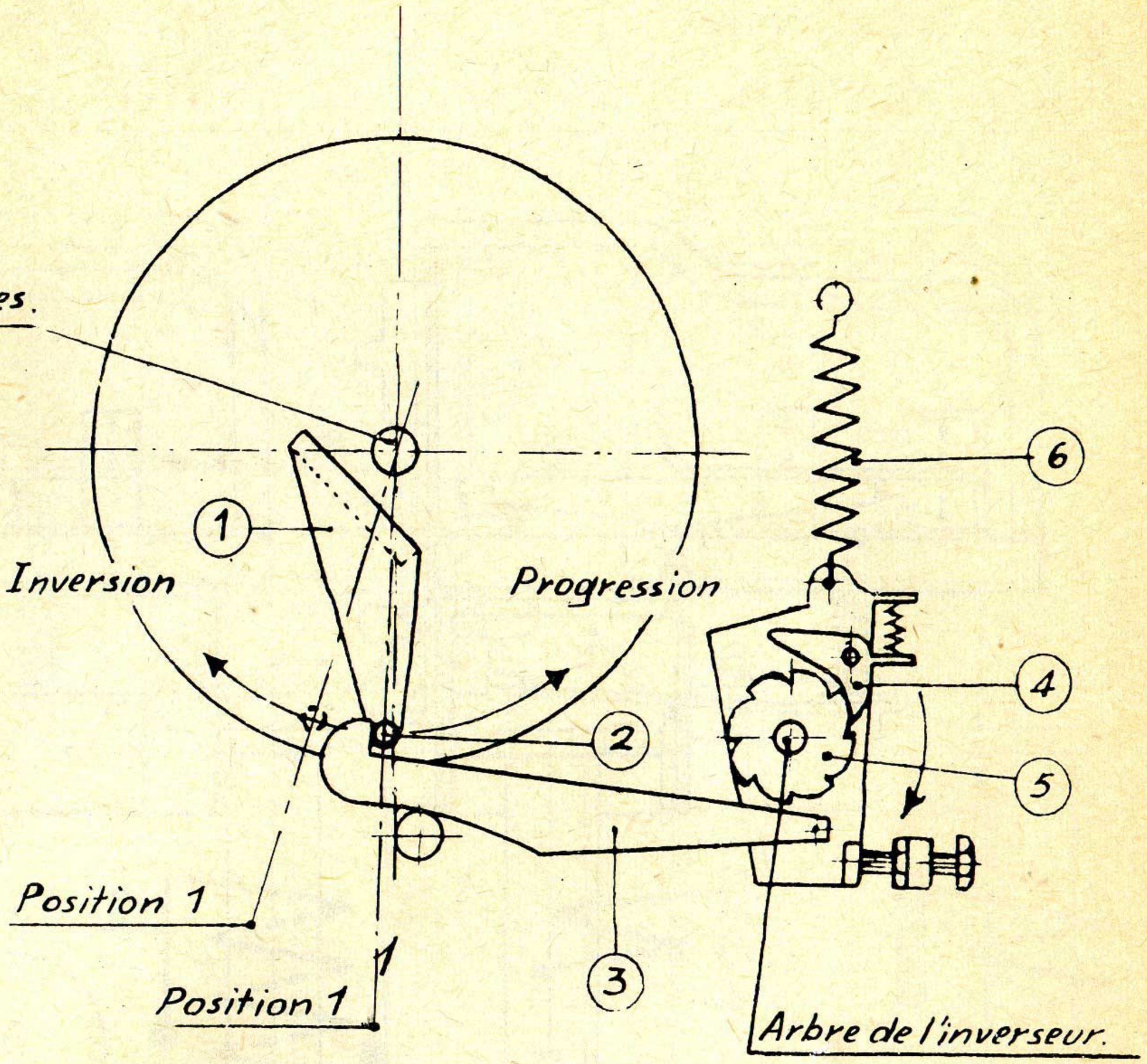



Fig. 78




Ensemble du mécanisme de l'inverseur.

Fig. 19

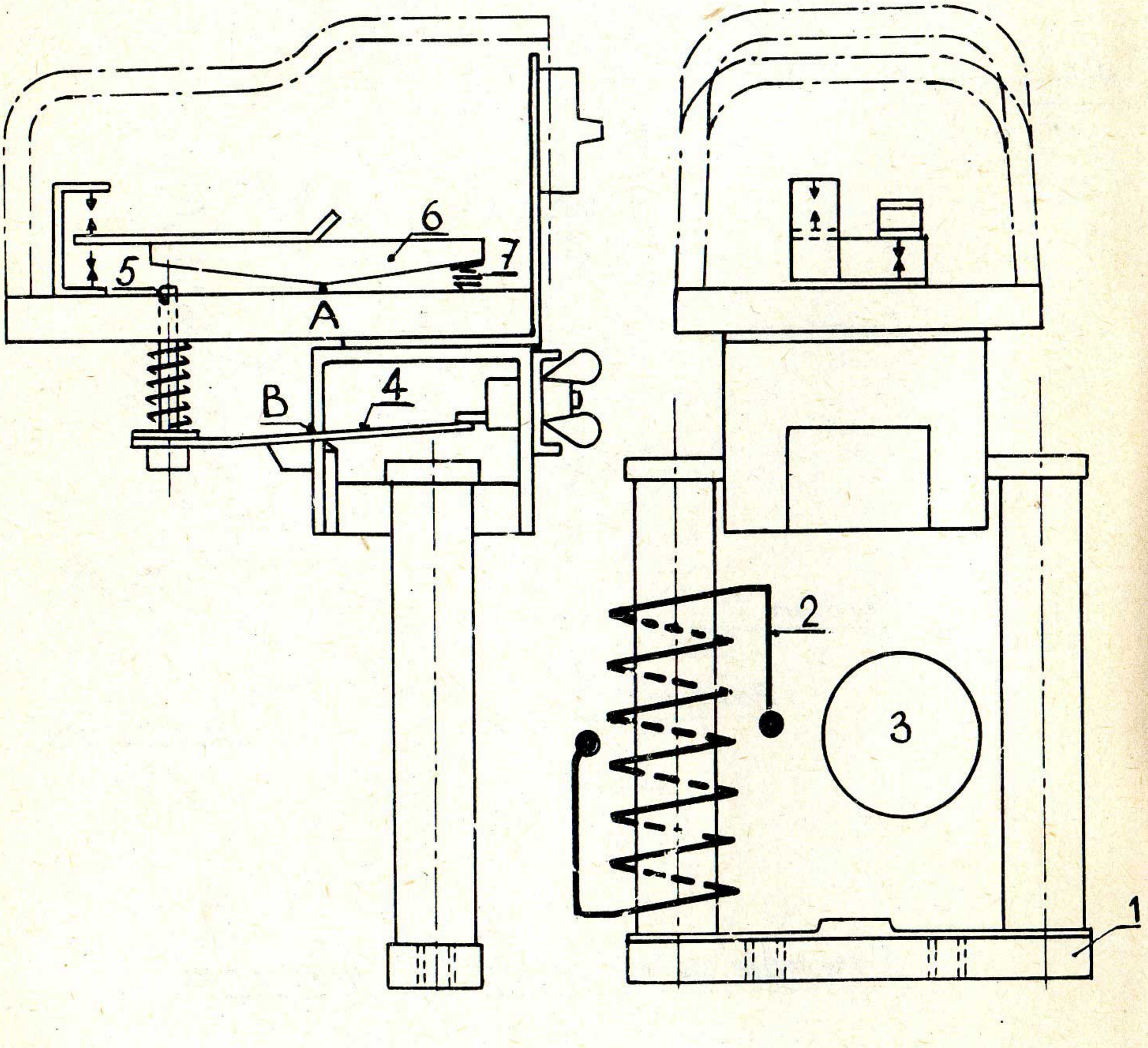
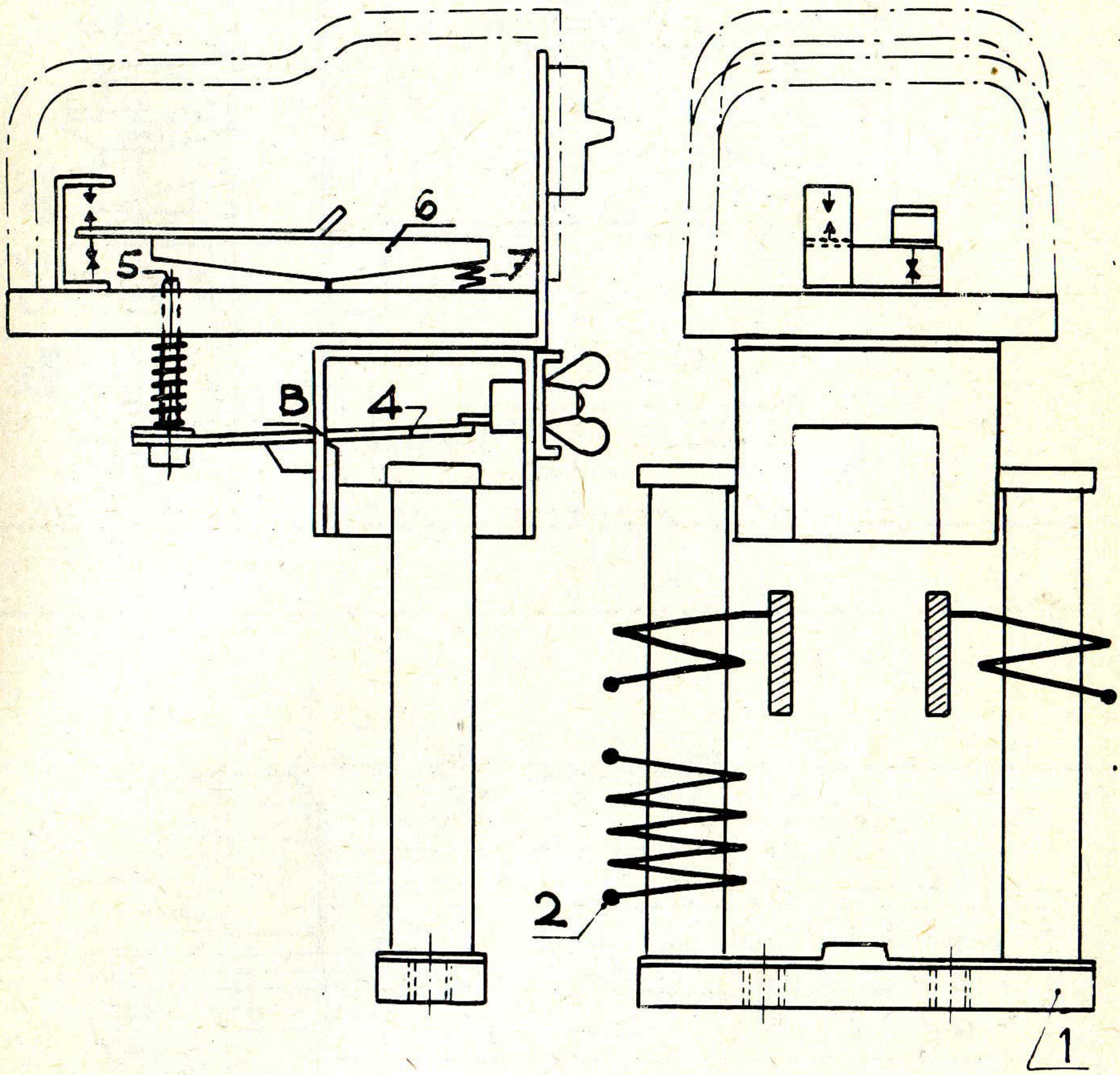



Fig. 20

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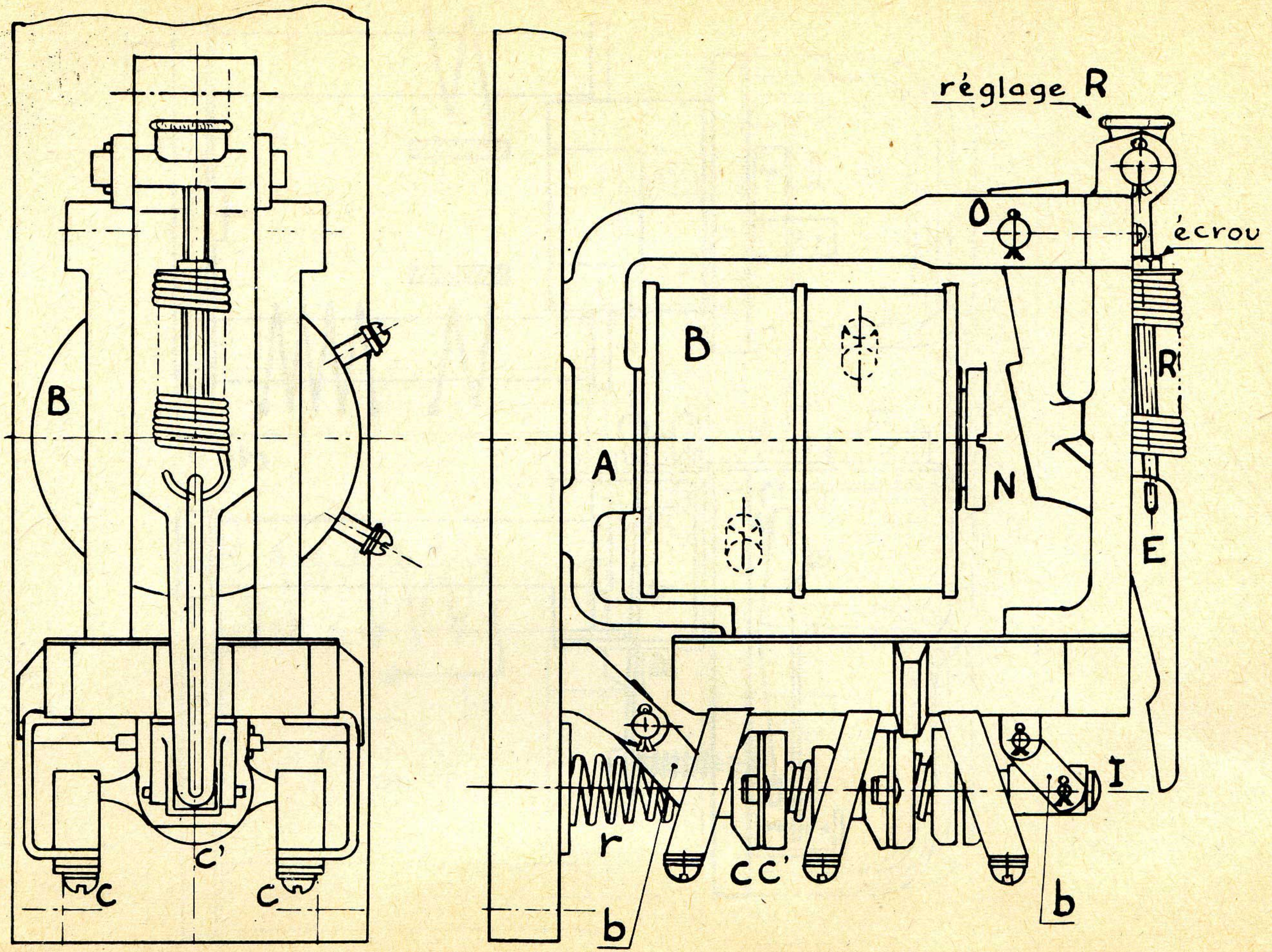


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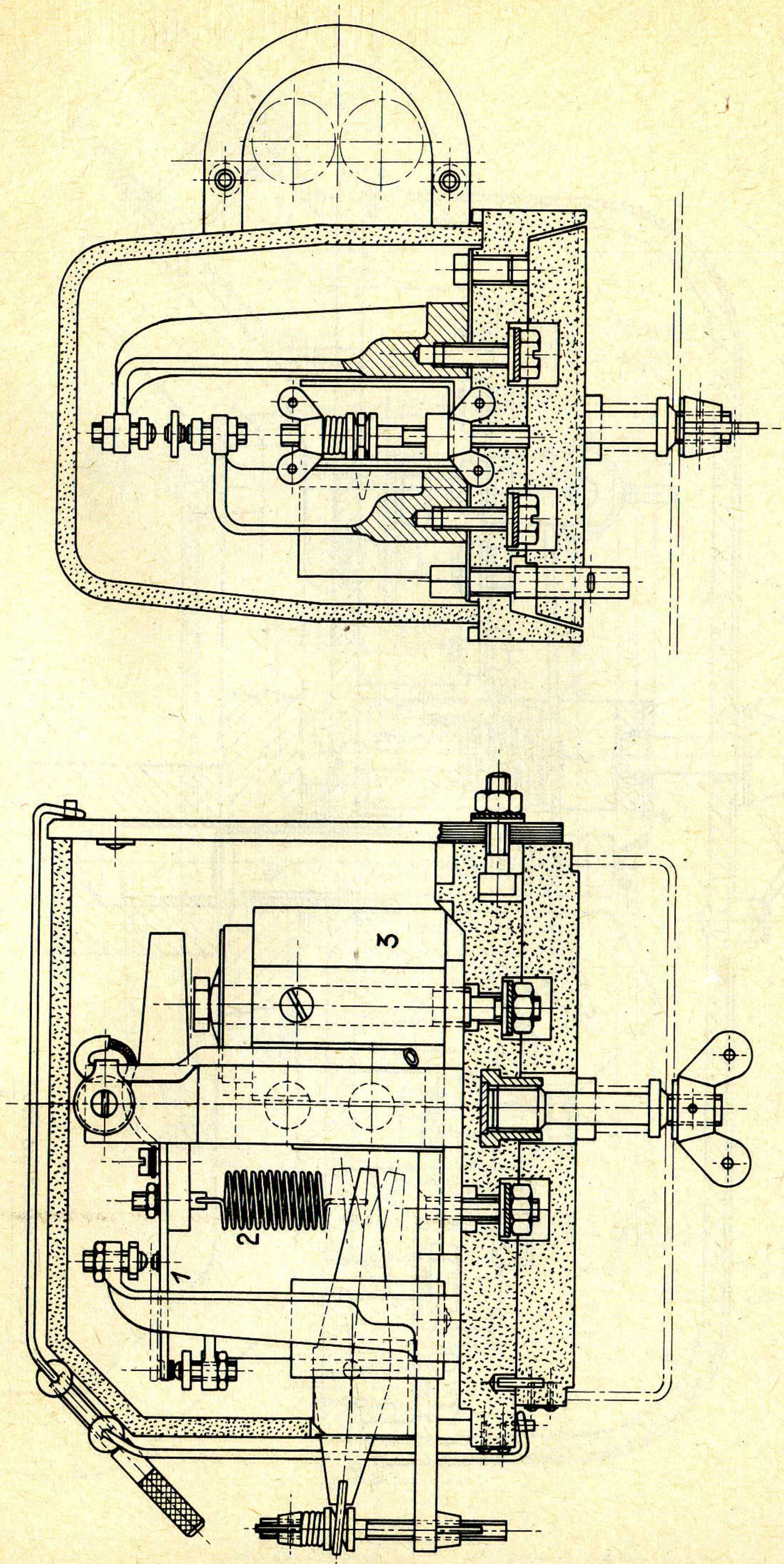


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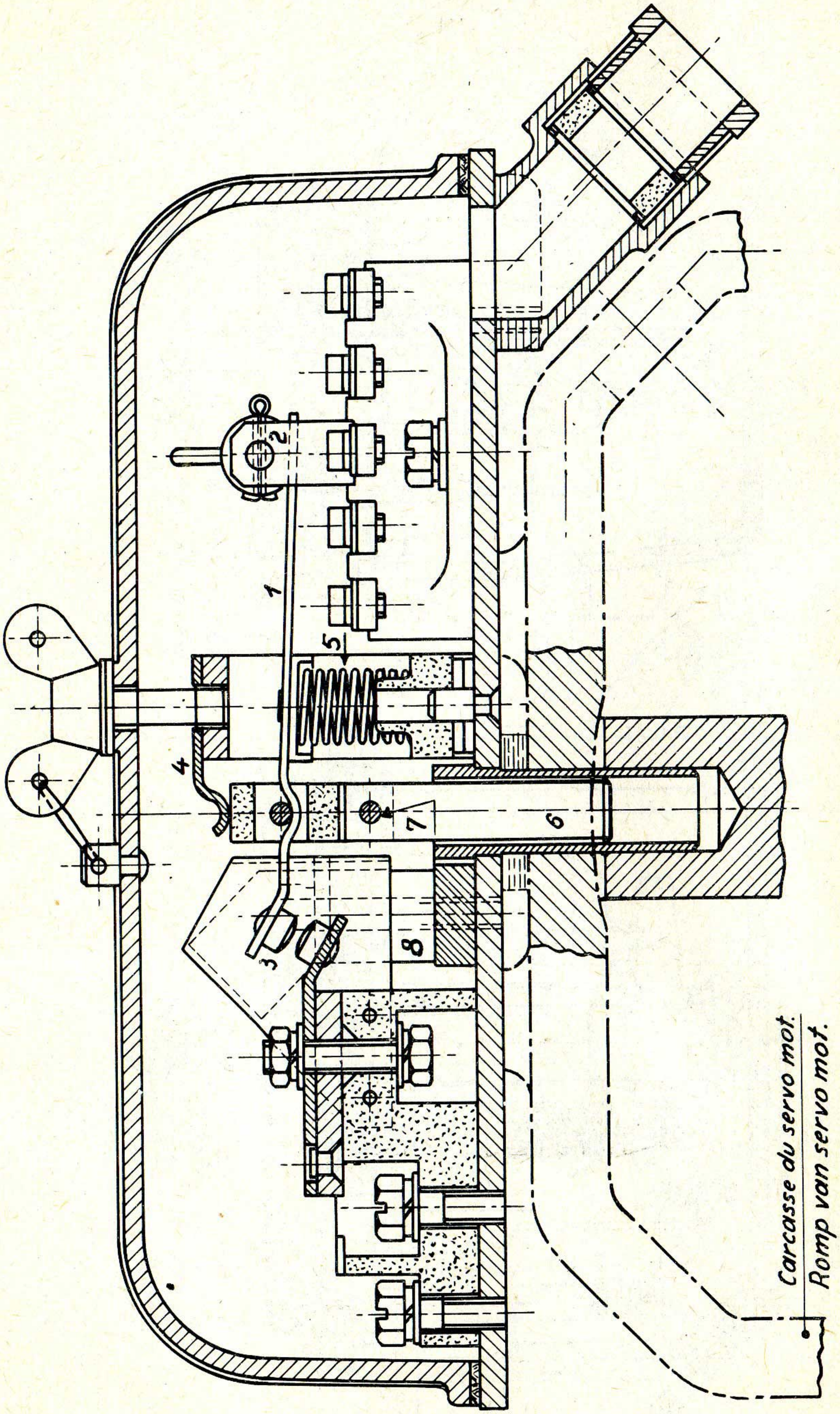


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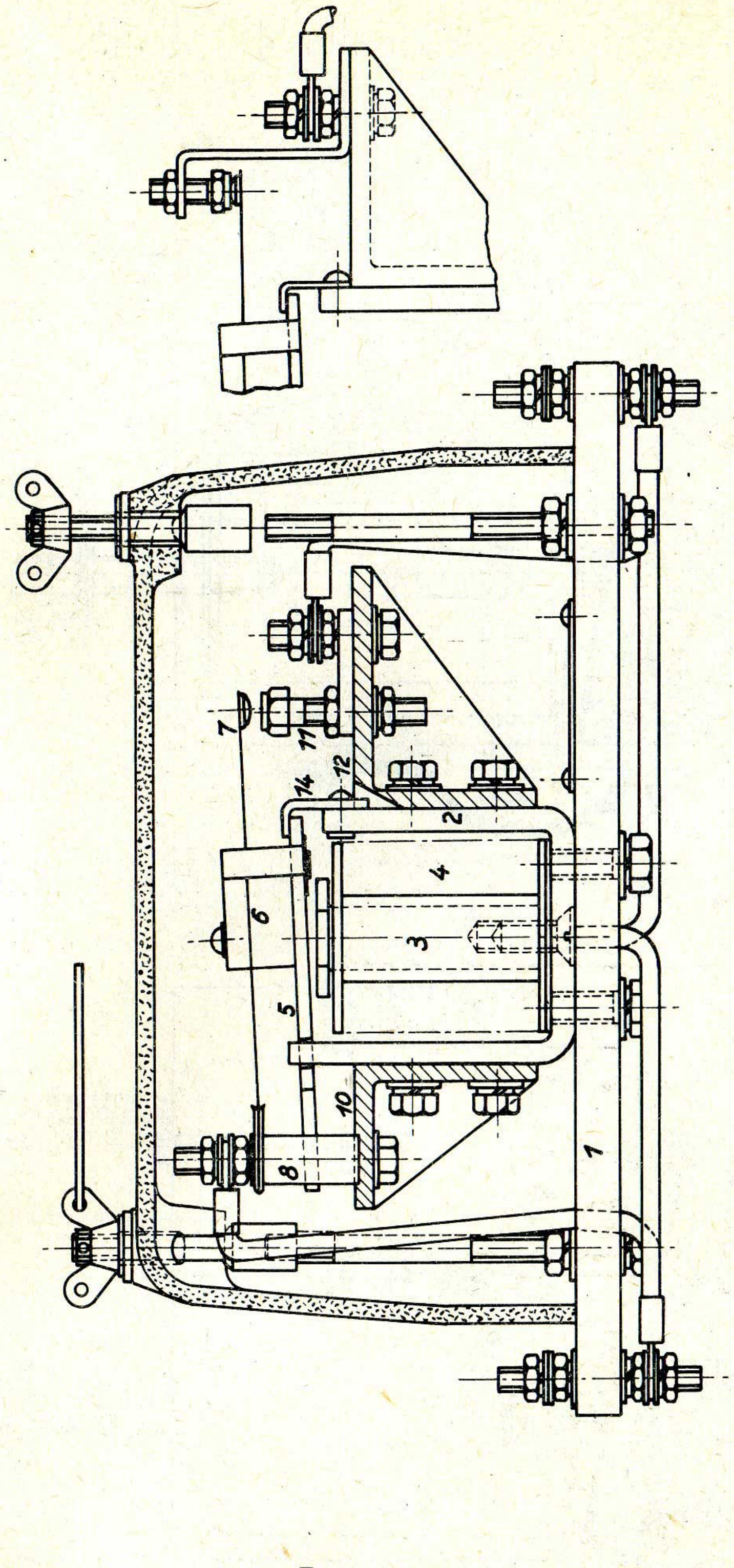



Fig. 24 bis.

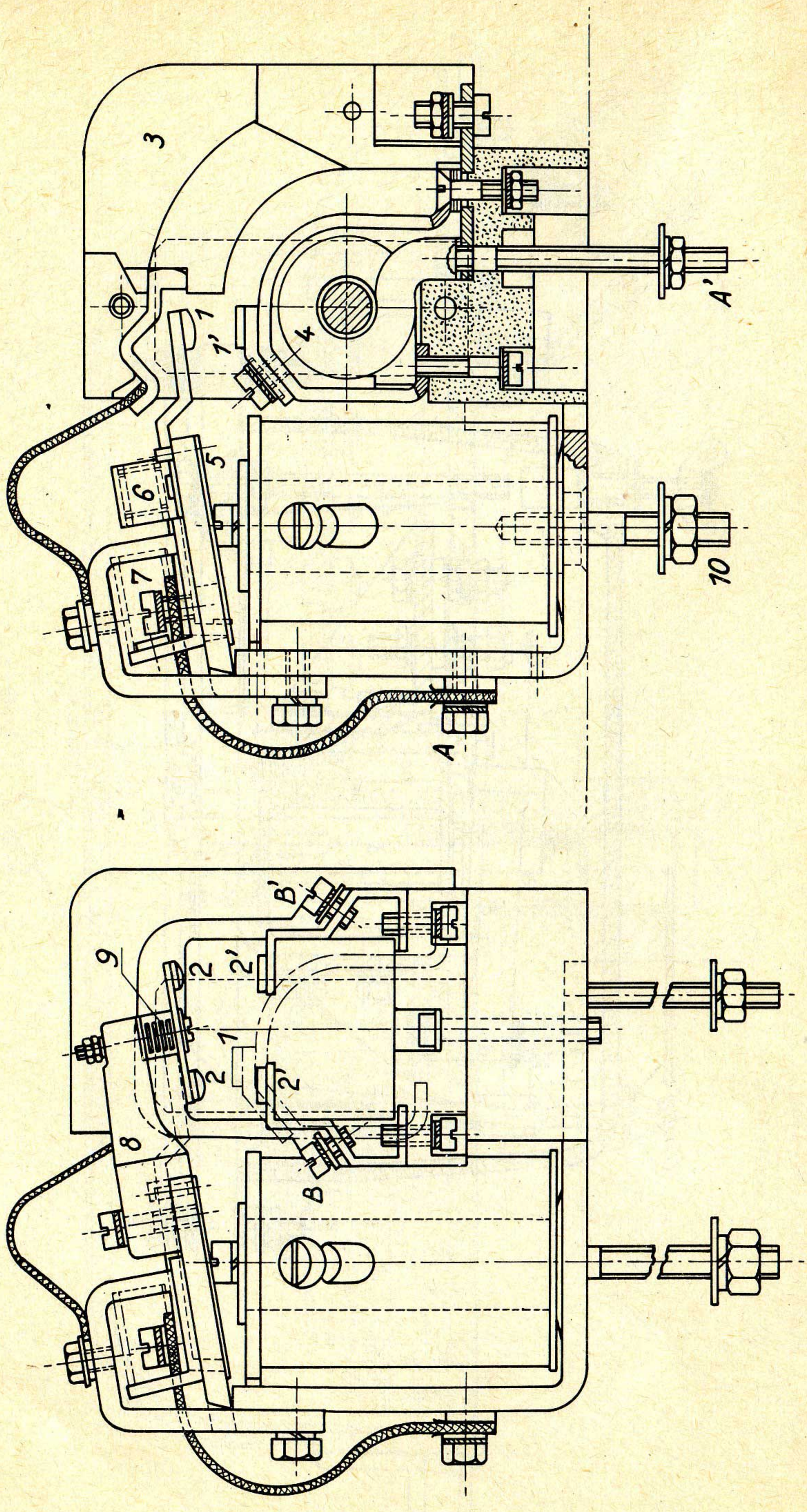
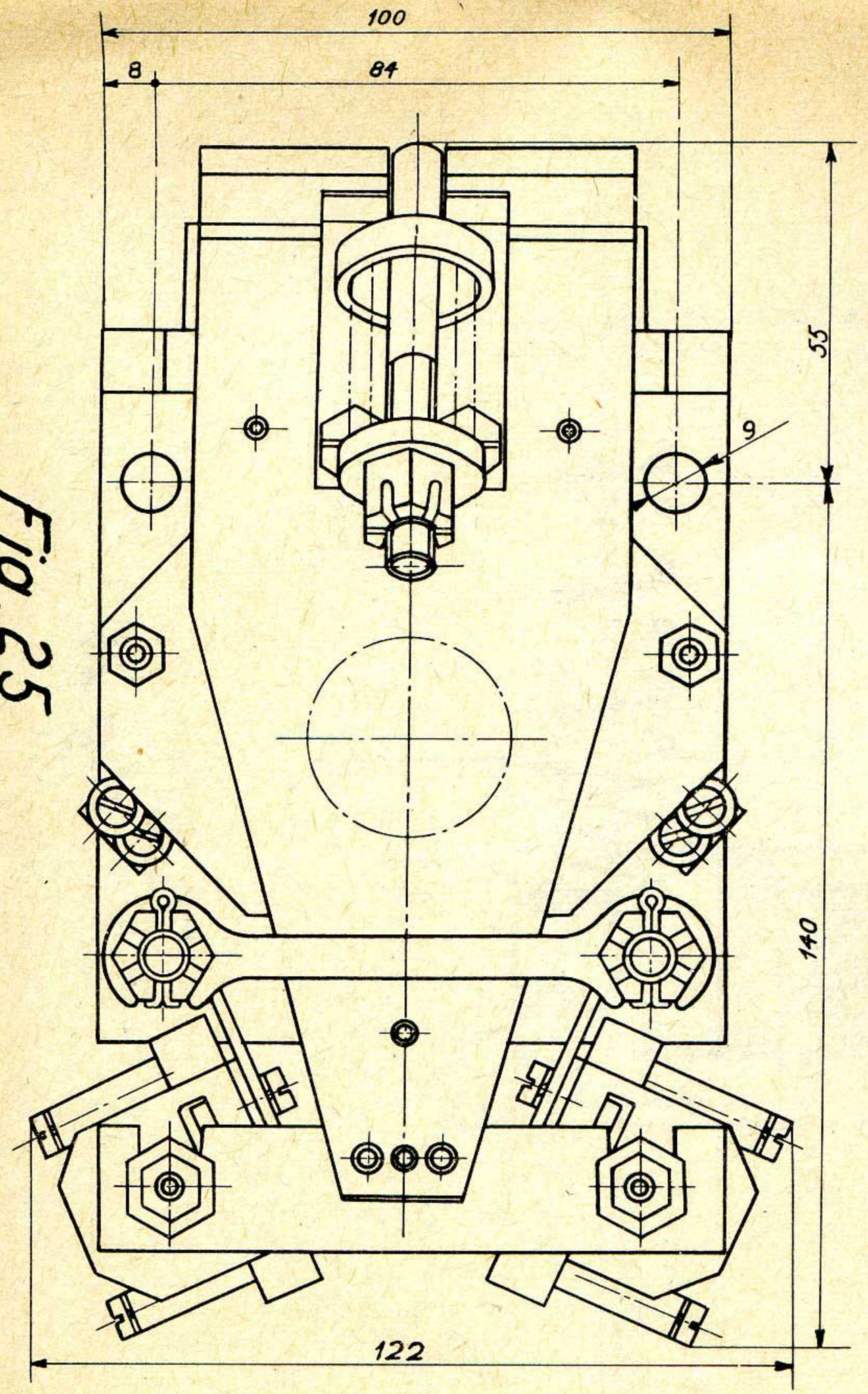
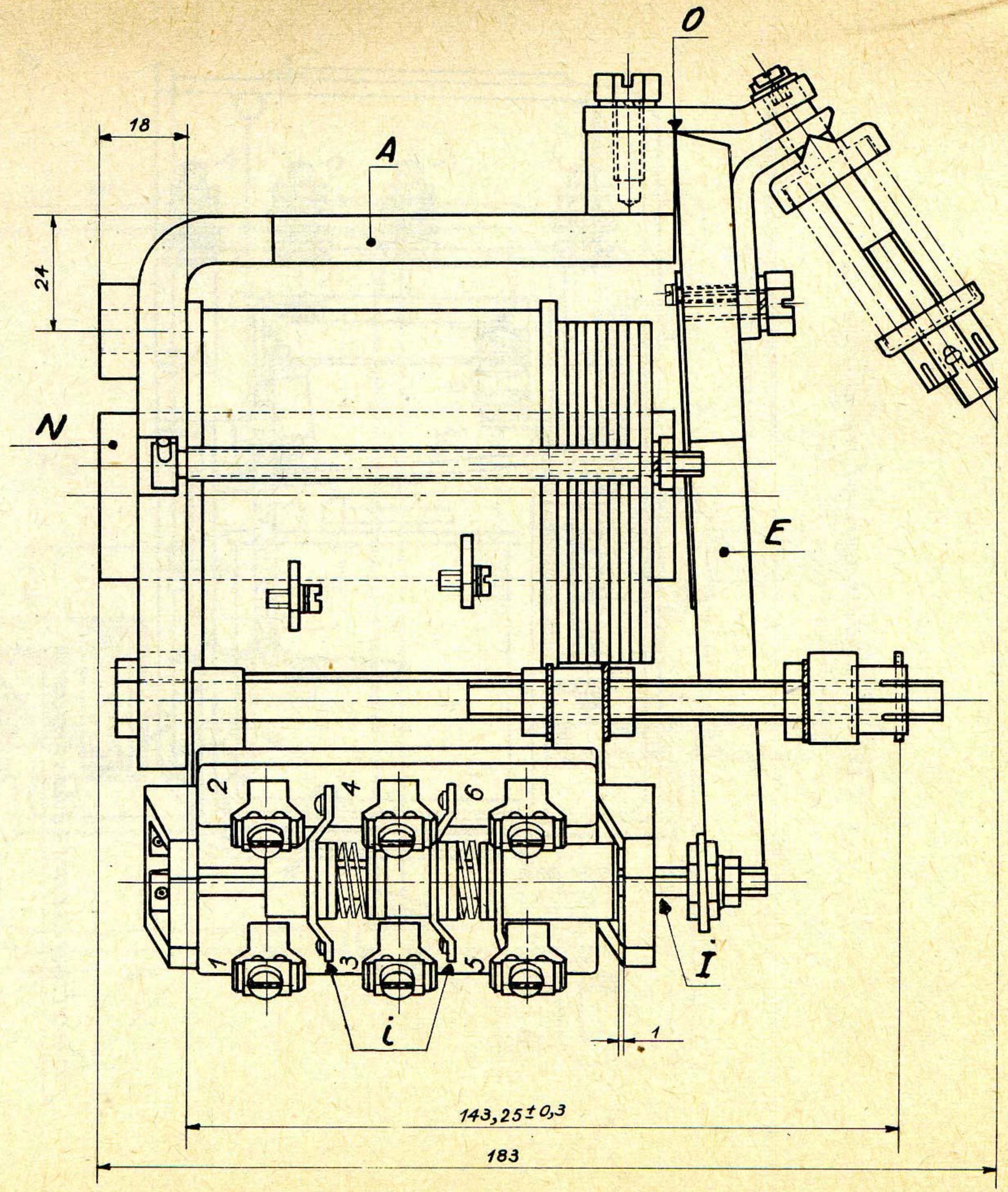
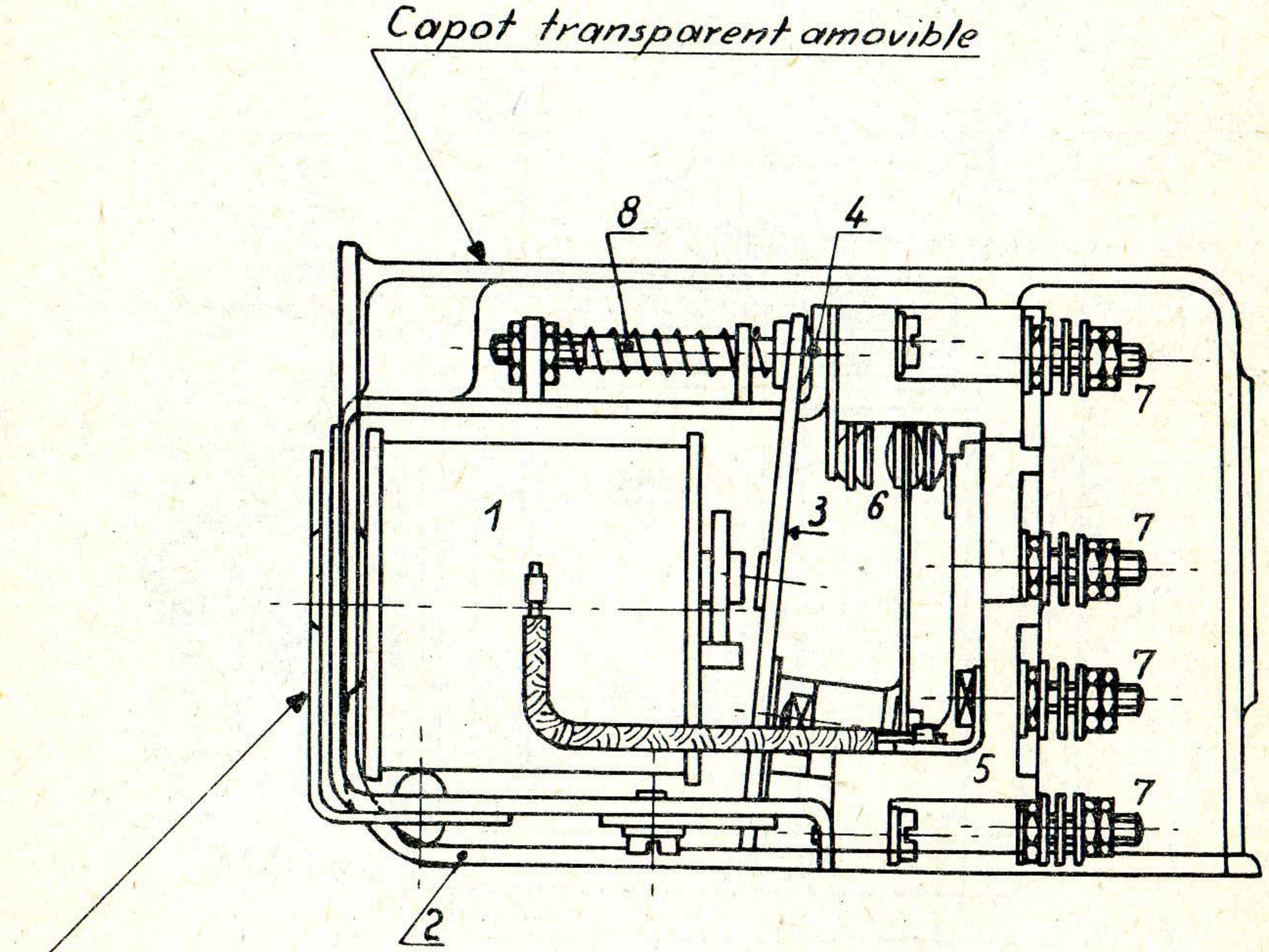



Fig. 24 ter.

Fig. 25

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Fixation semi-élastique.

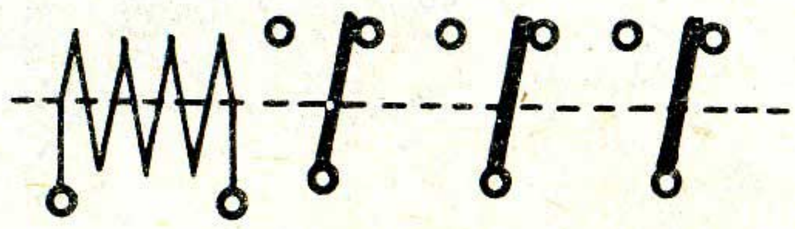
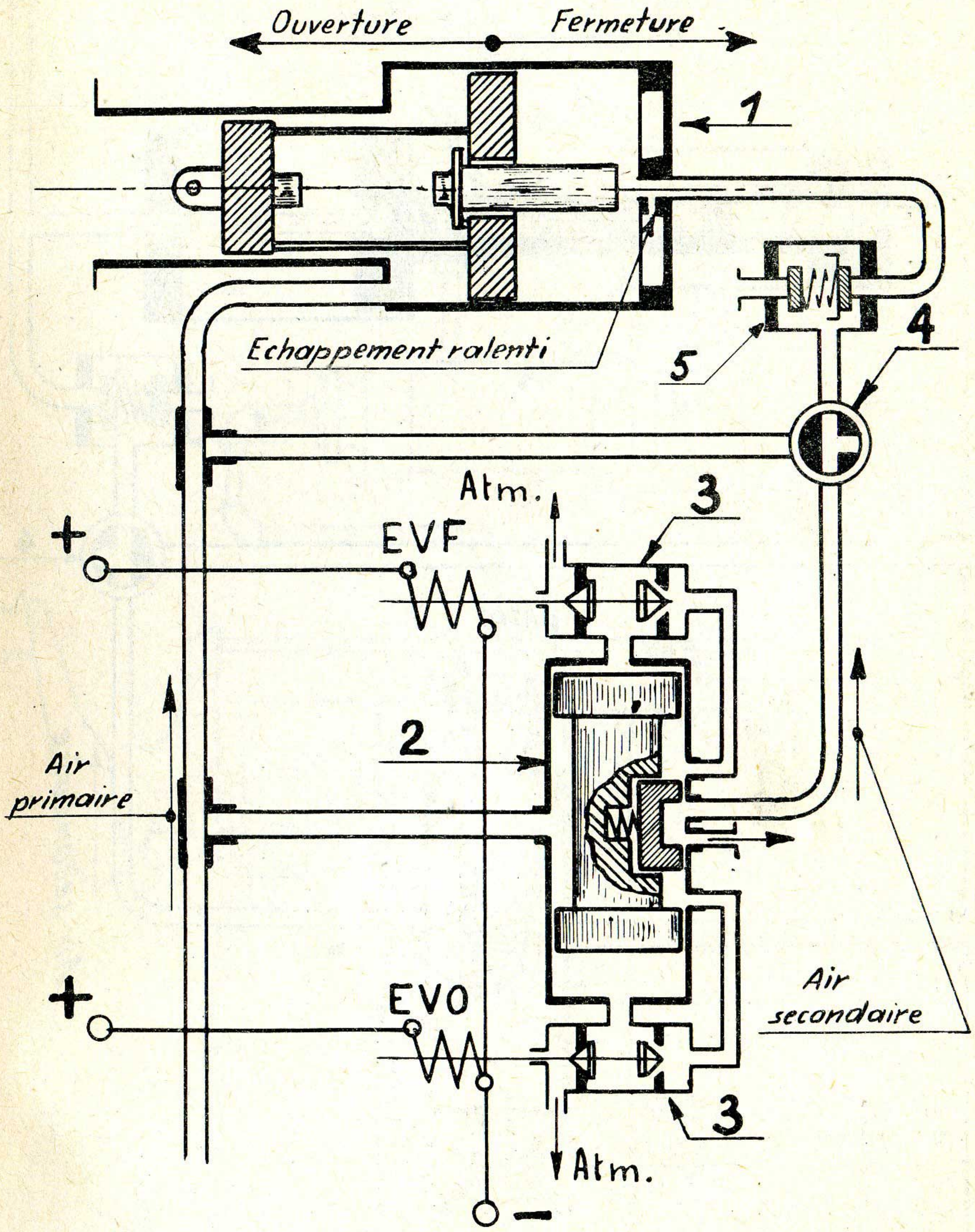


Fig. 26


Ouverture
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3
EVF
+
2
Air
primaire
EVO
+
Air
secondaire
3
Atm.
−

Fig. 27

Cylindre marche-pieds fourgon.

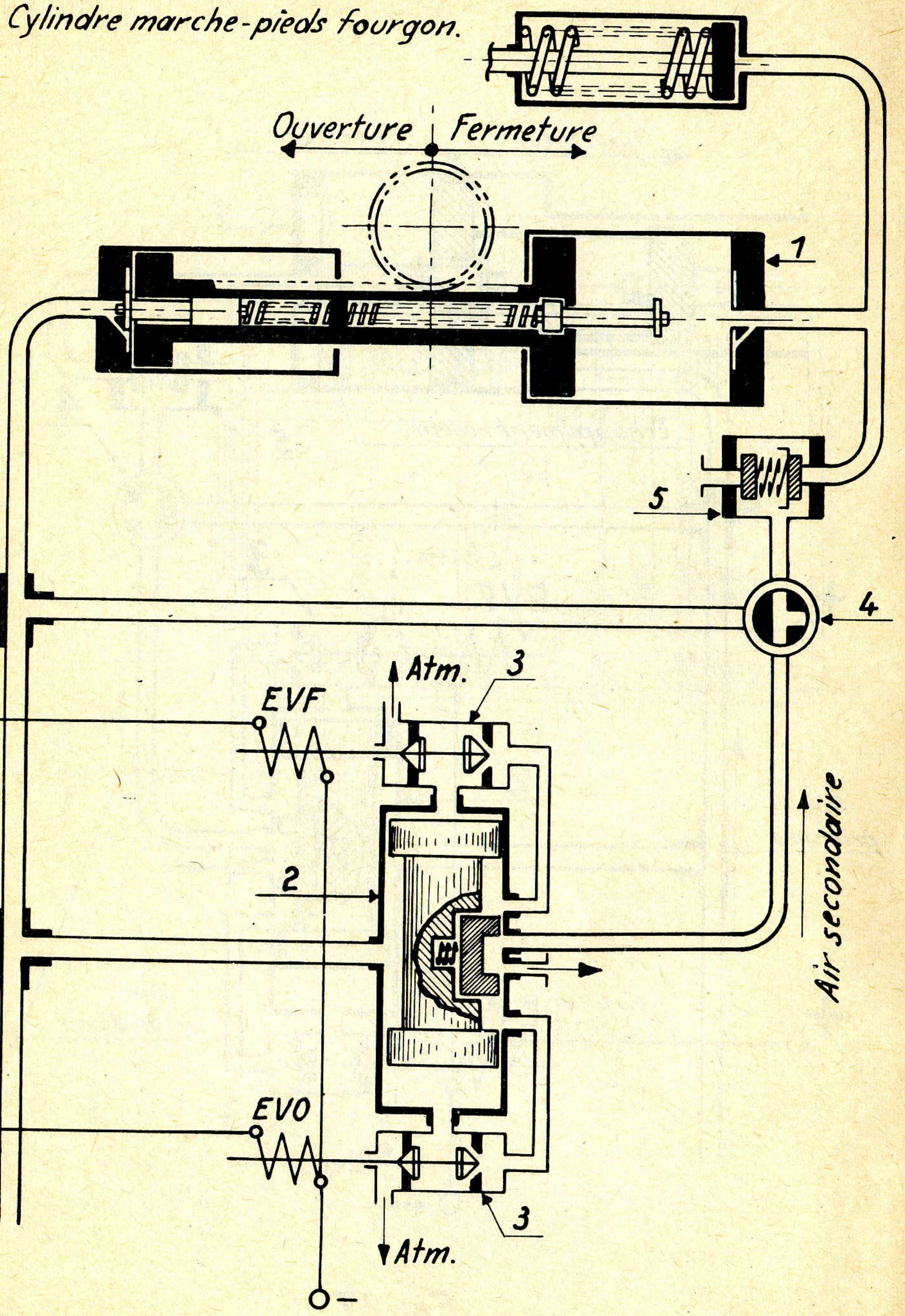
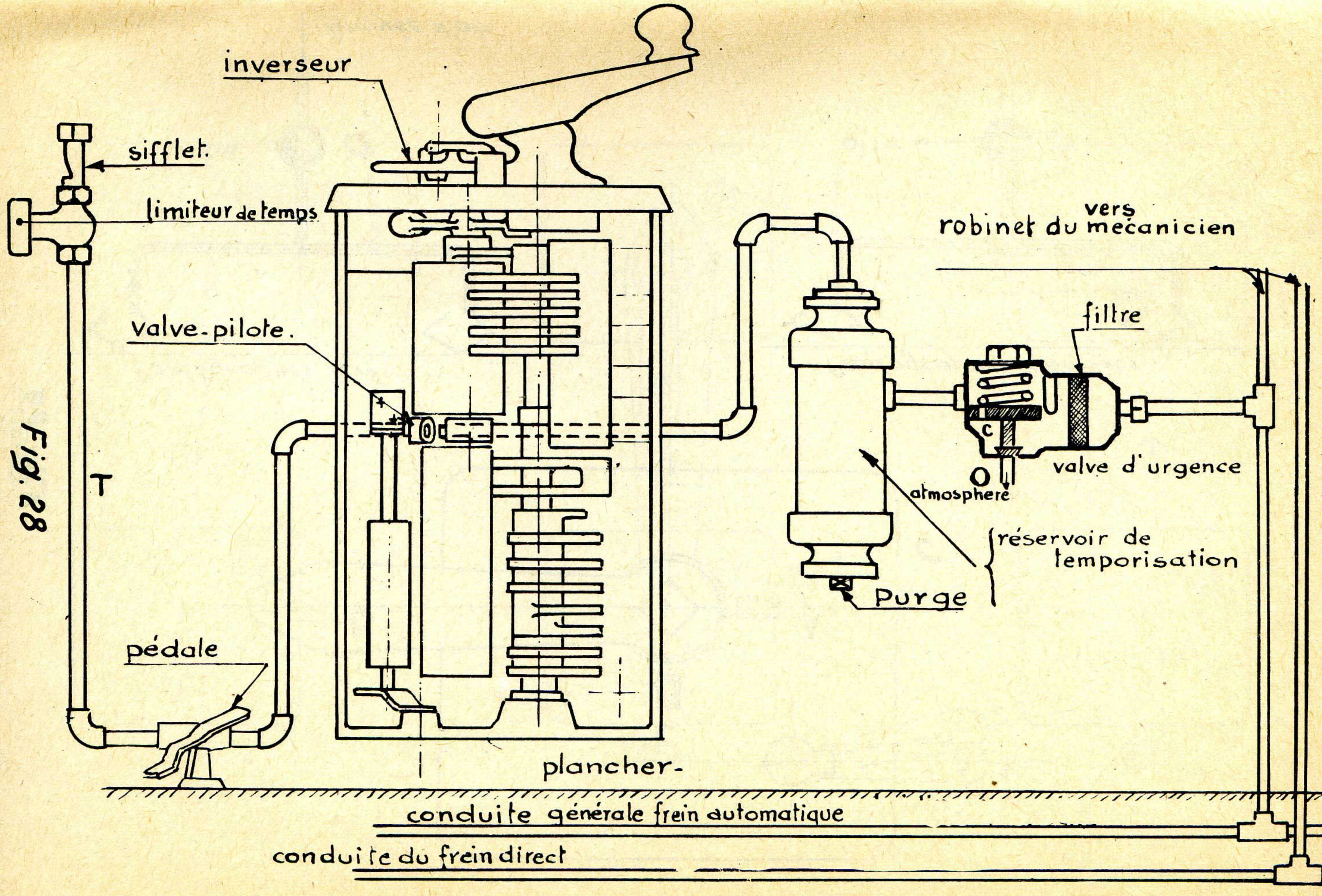



Fig. 27 bis.

Fig. 28


inverseur
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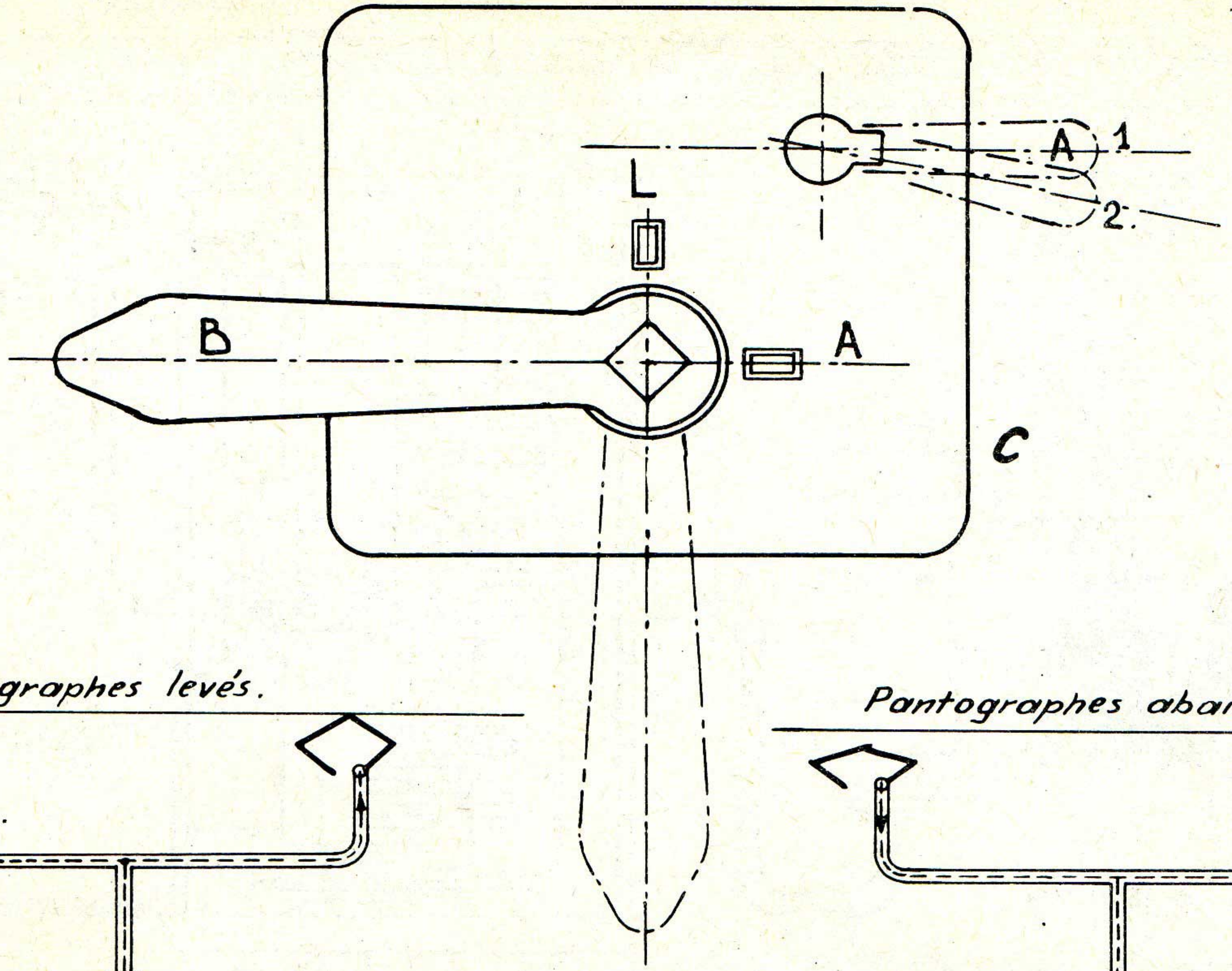
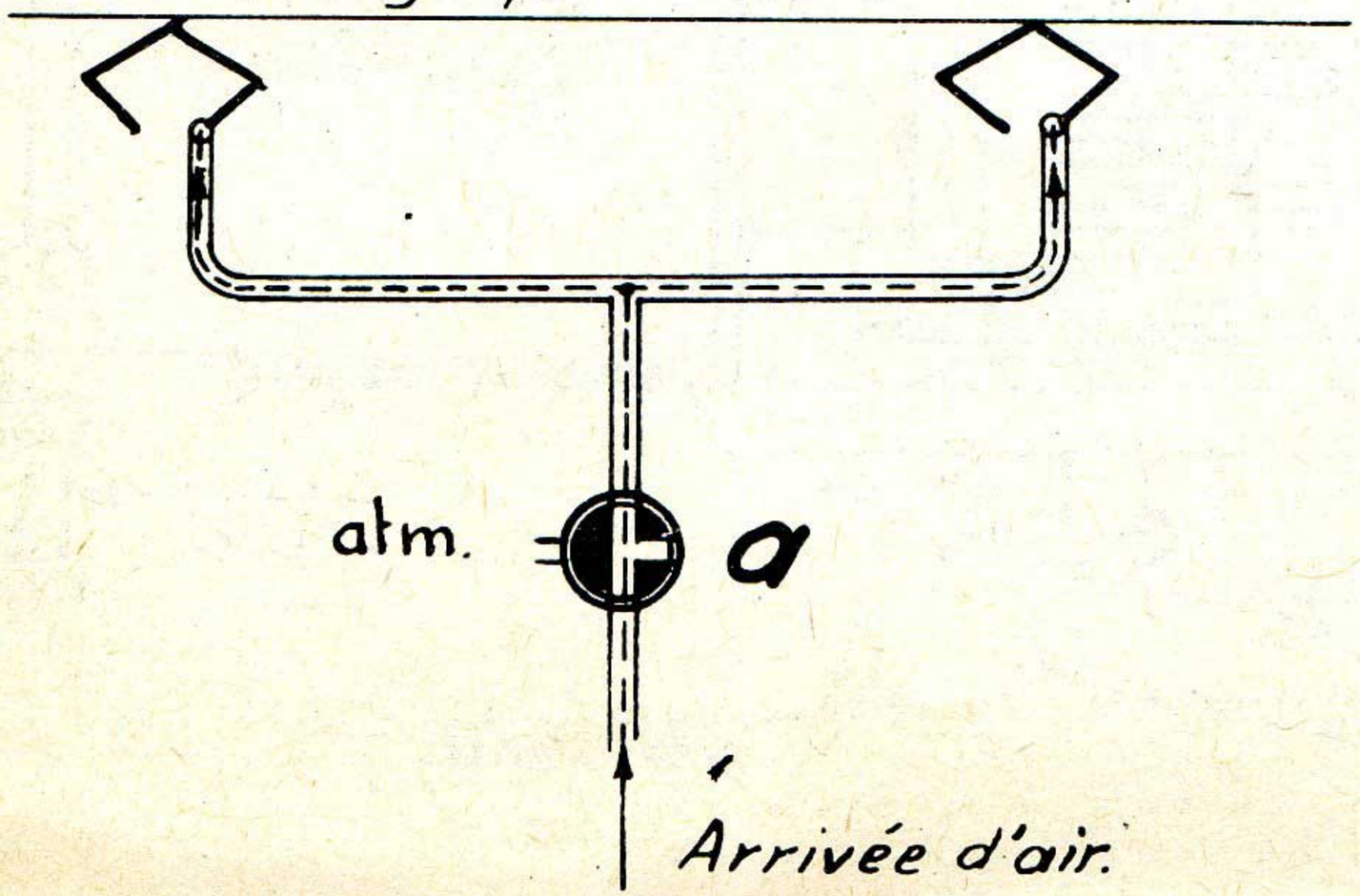
réservoir de
temporisation
Purge
conduite générale frein automatique
conduite du frein direct

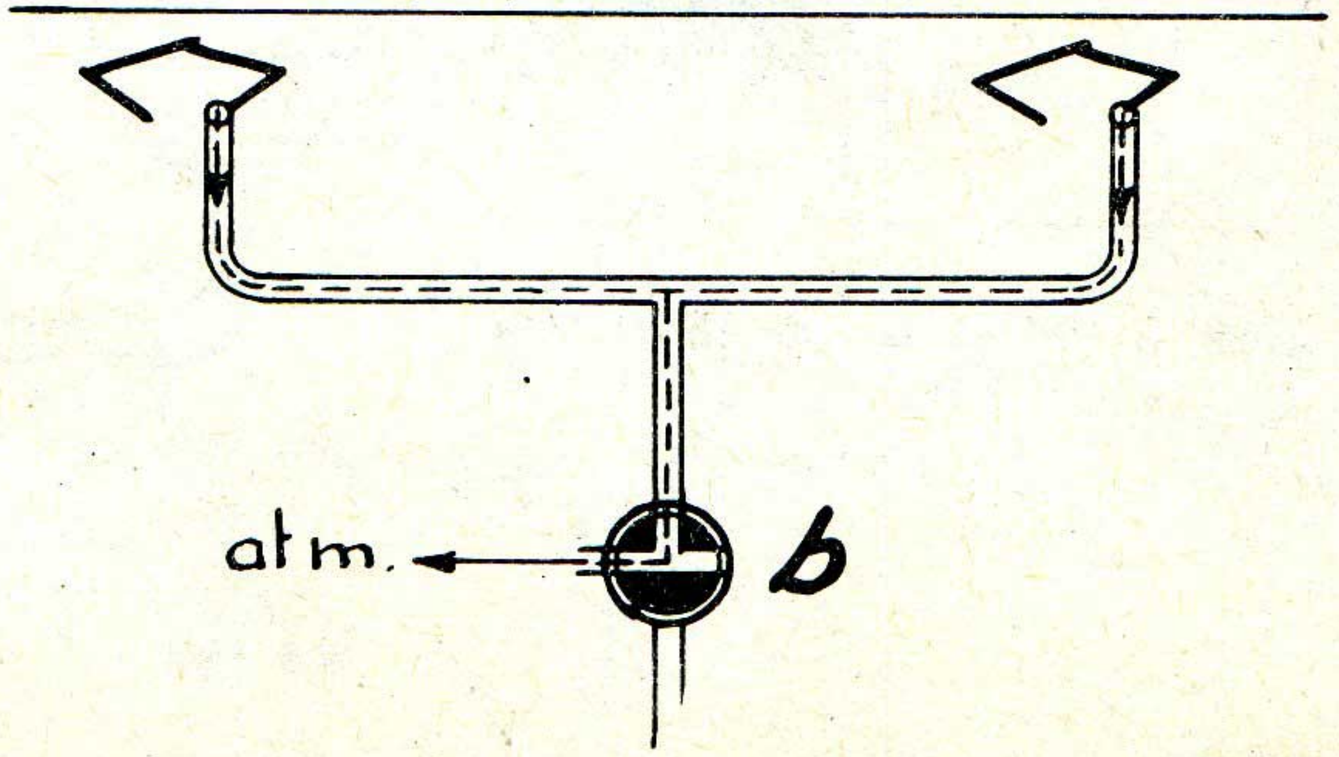
Fig. 62.29

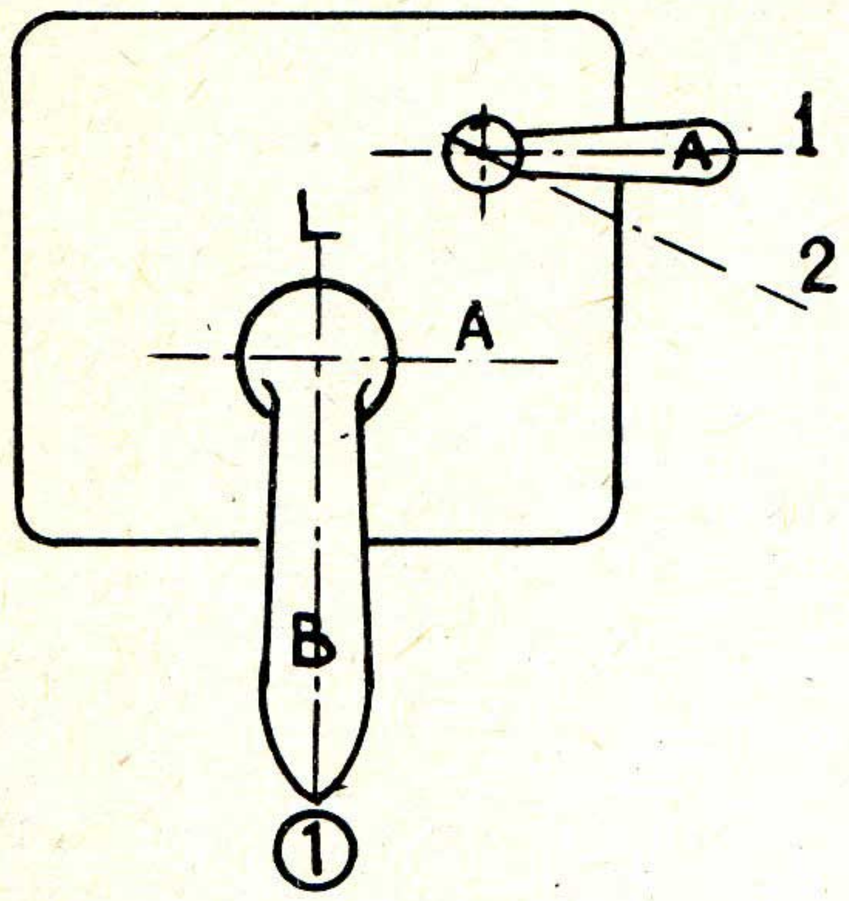



Pantographes levés.




Pantographes abaissés.



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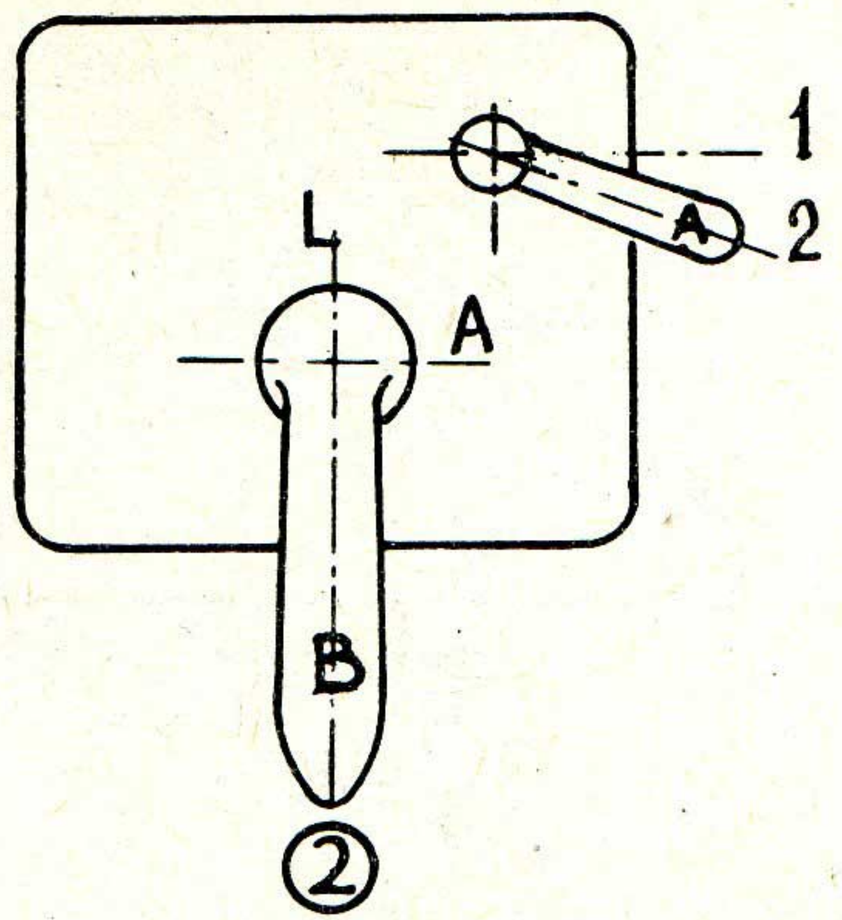


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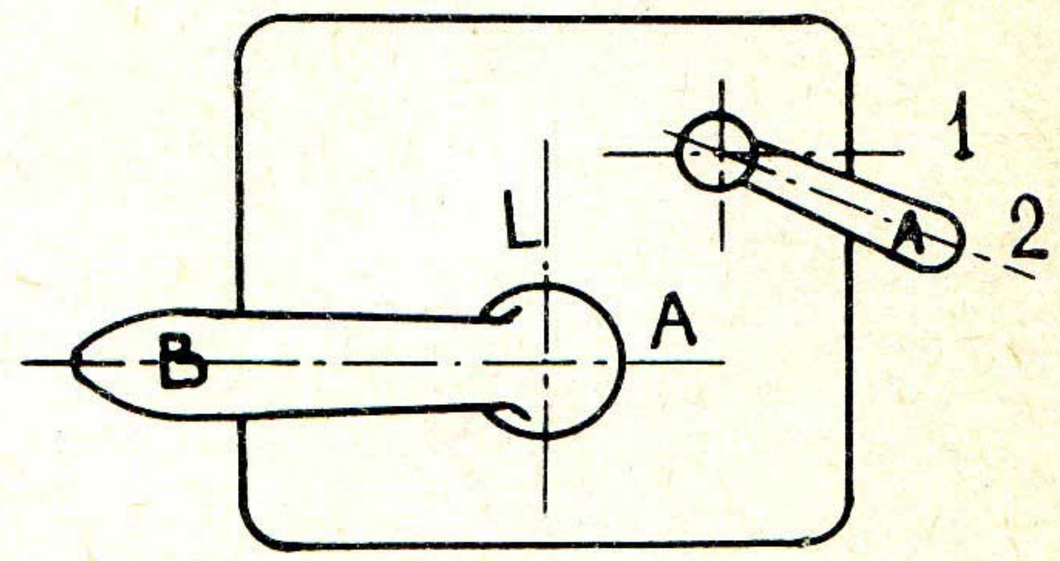


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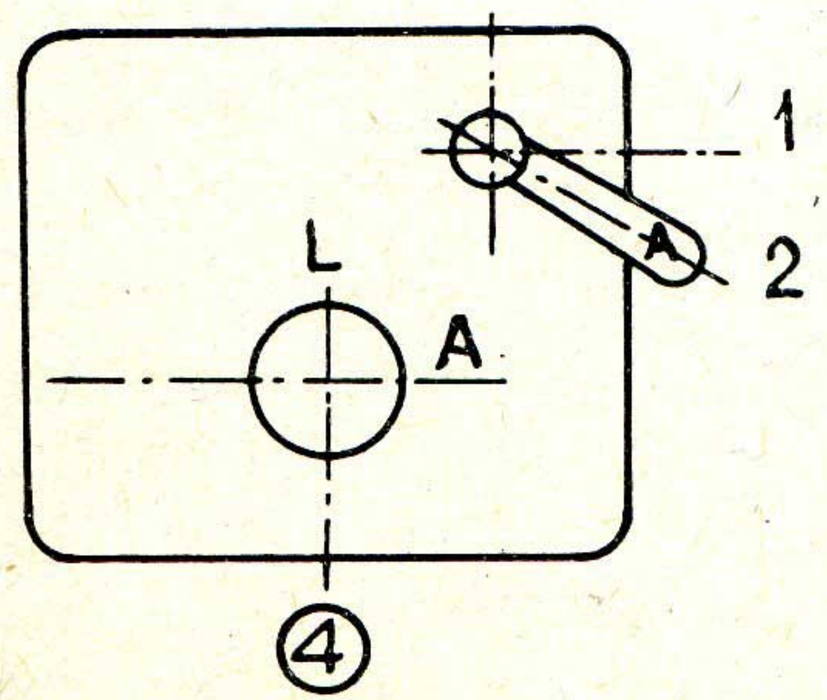


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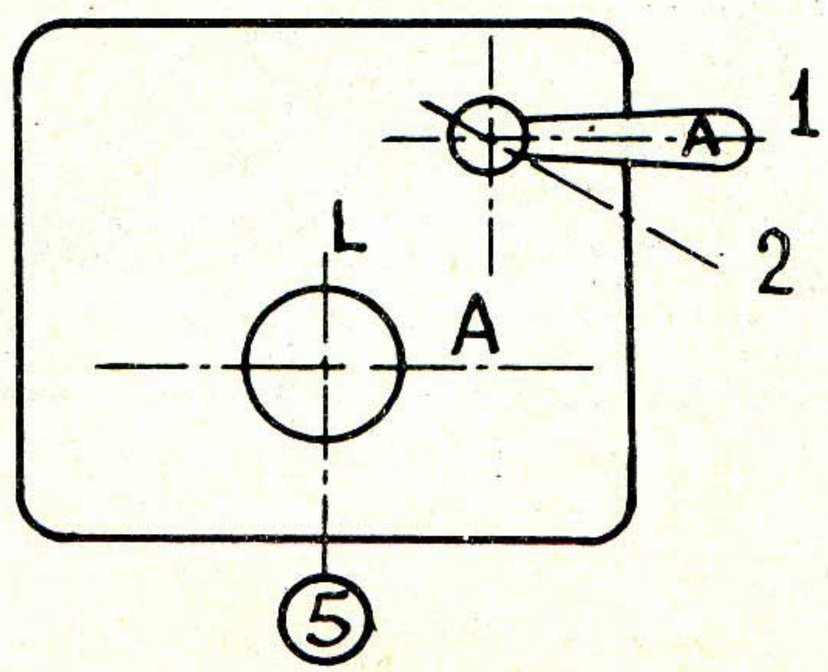
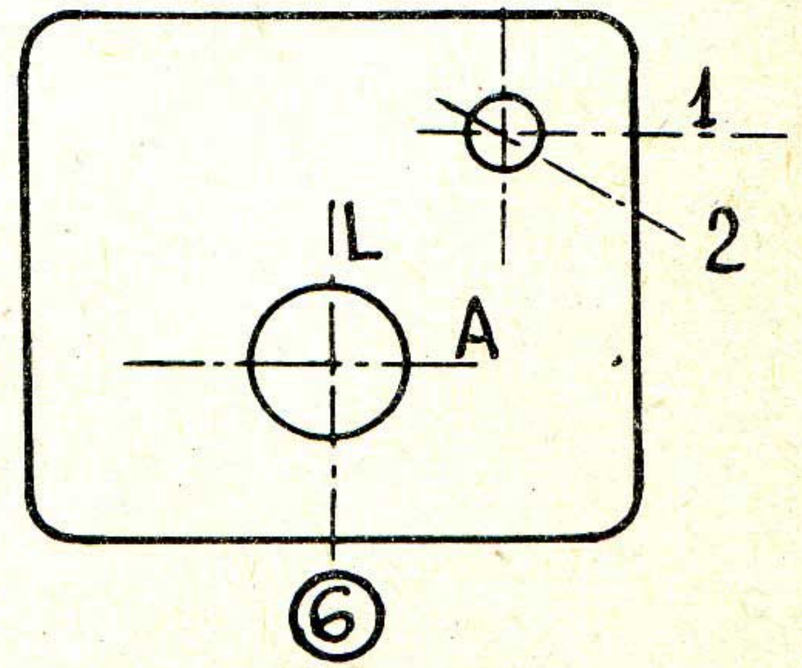



⑤




⑥

Fig. 30

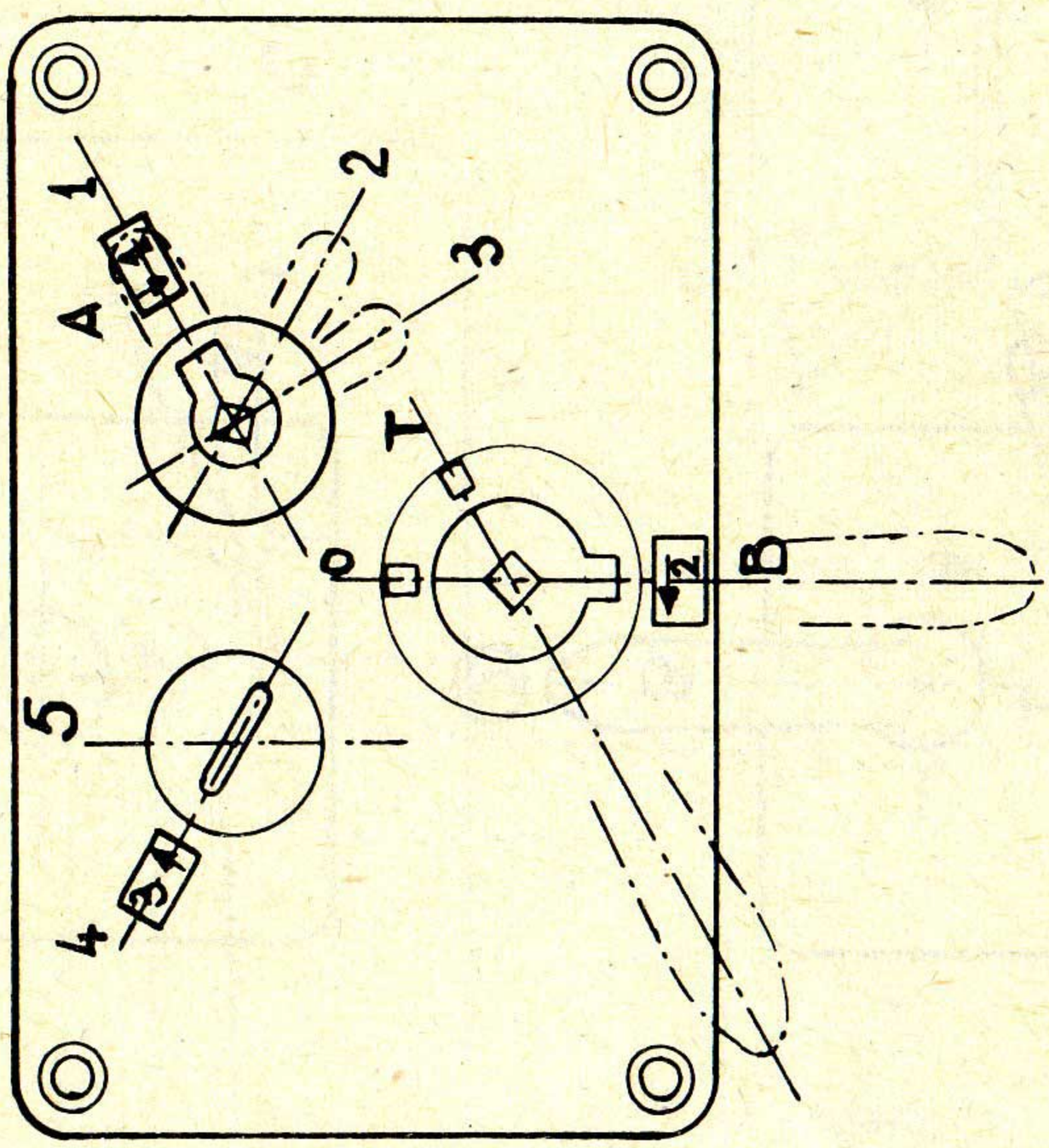
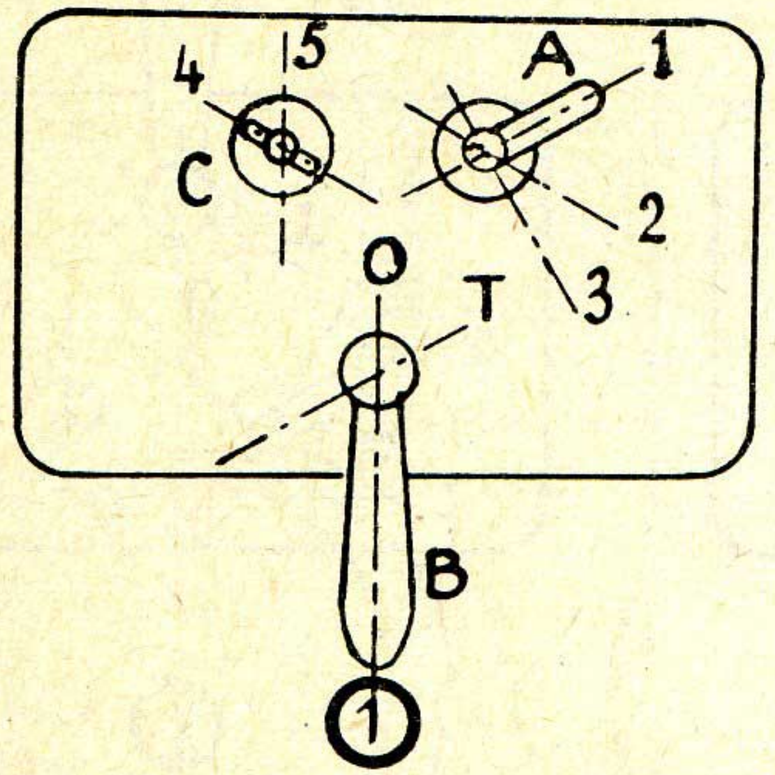
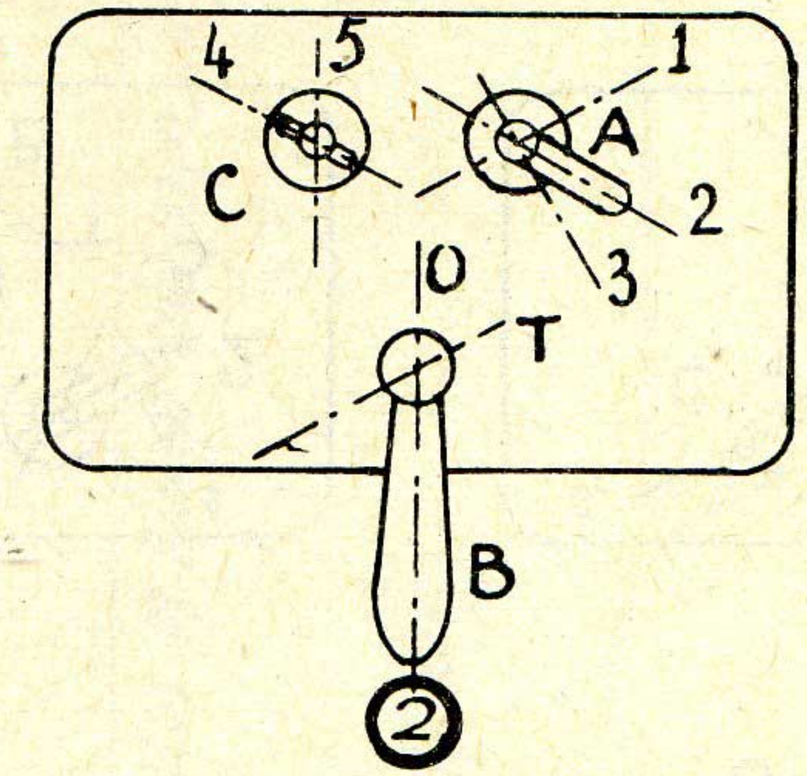
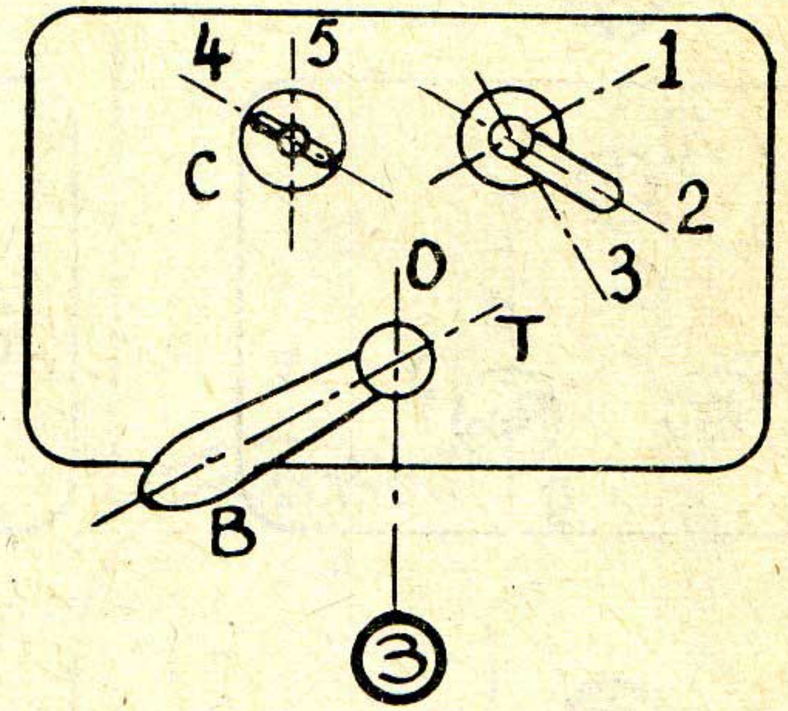


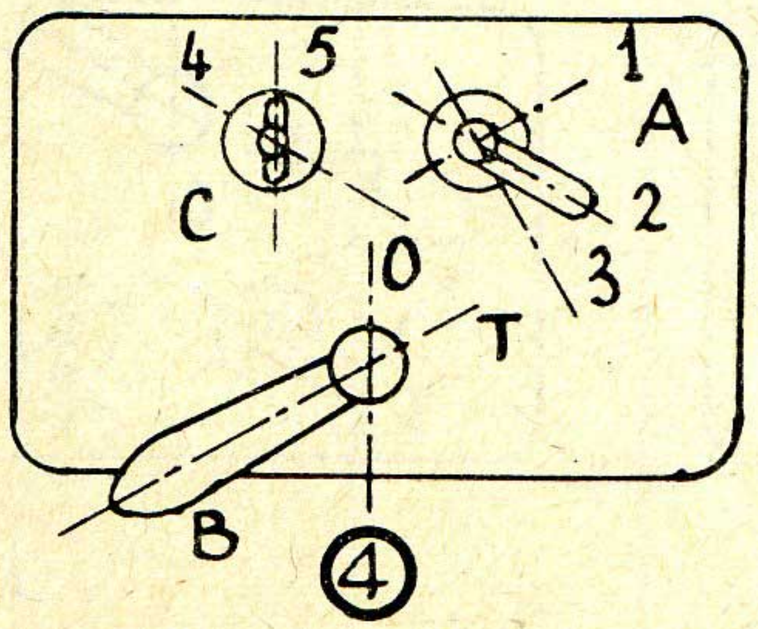

Fig. 31

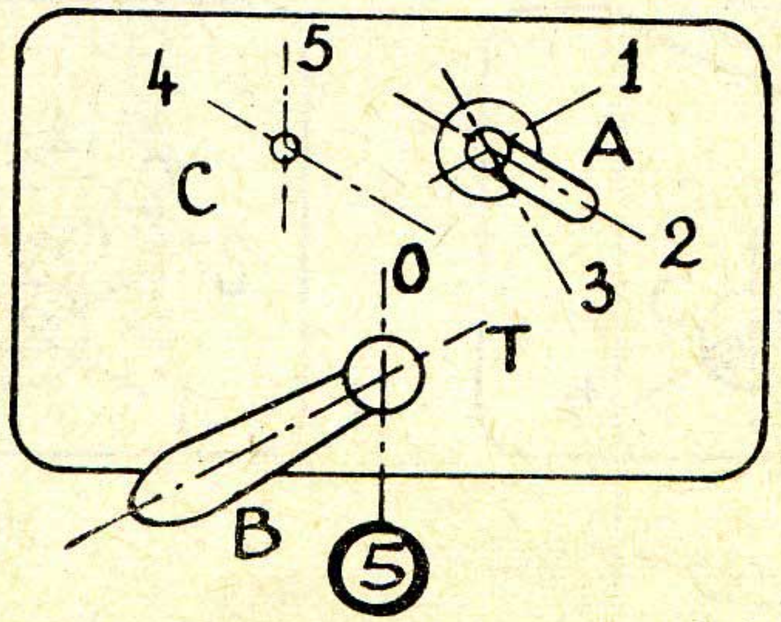
Mise à la terre.



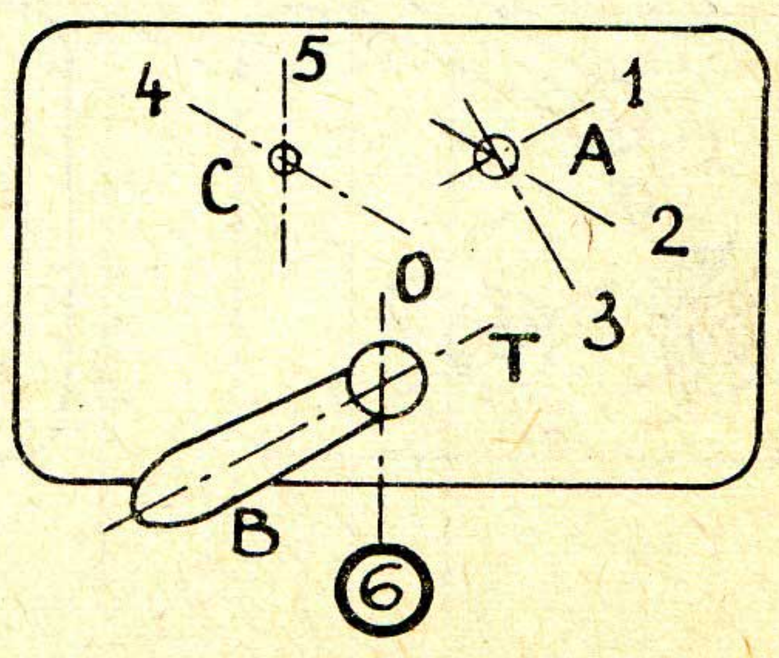
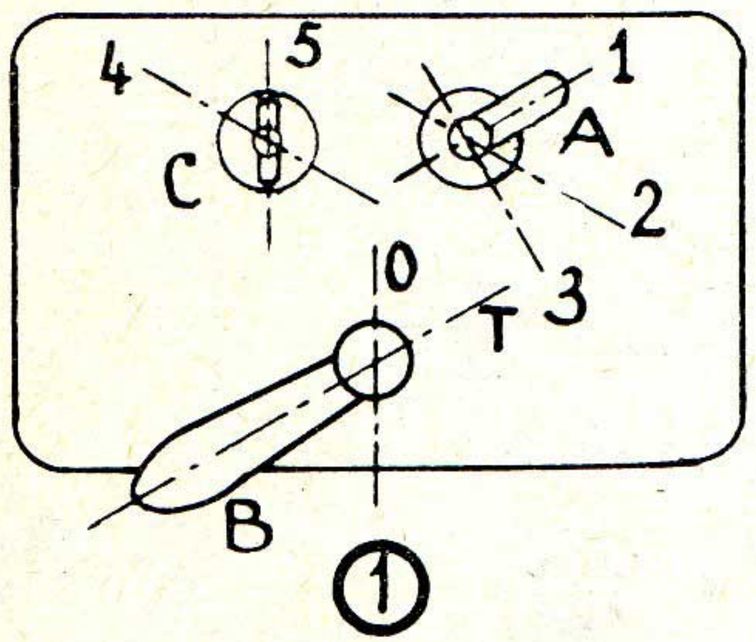
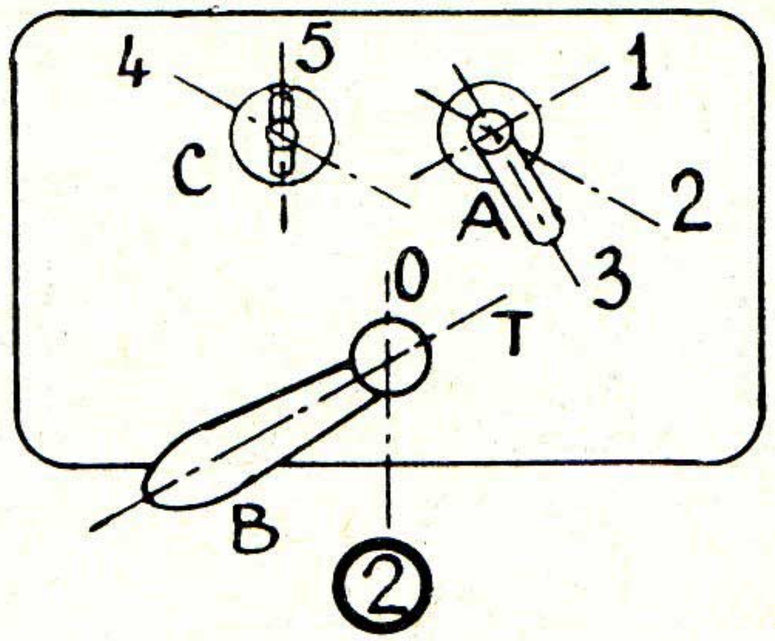
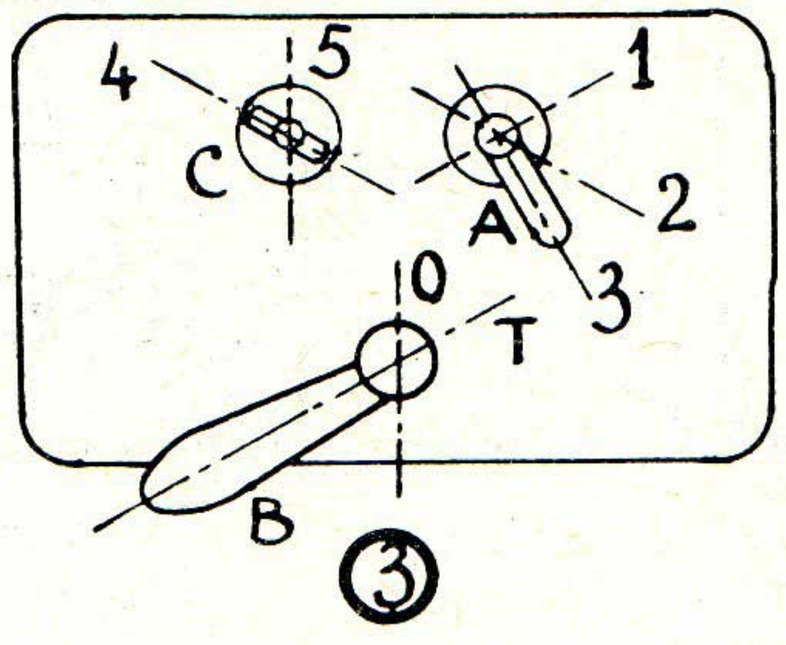



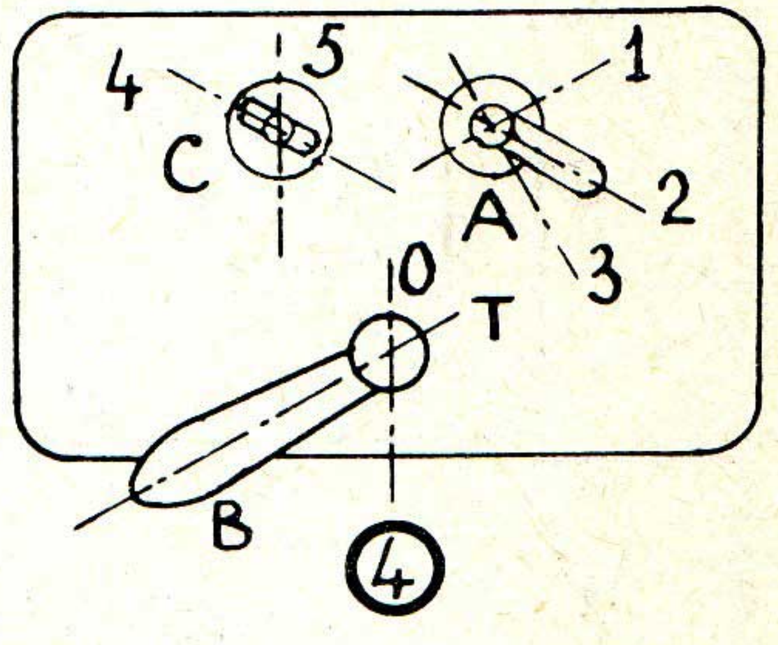

Fig. 32

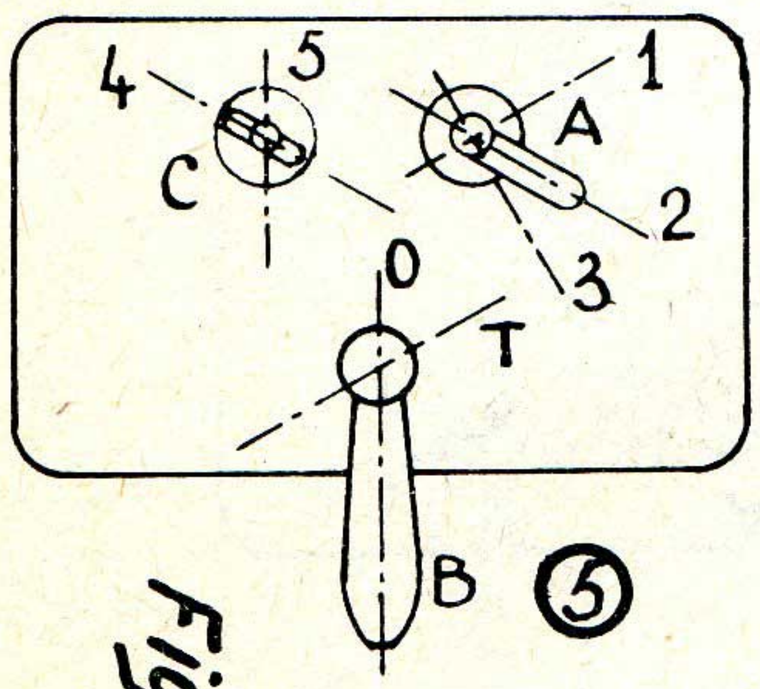
## *Remise en position normale.*

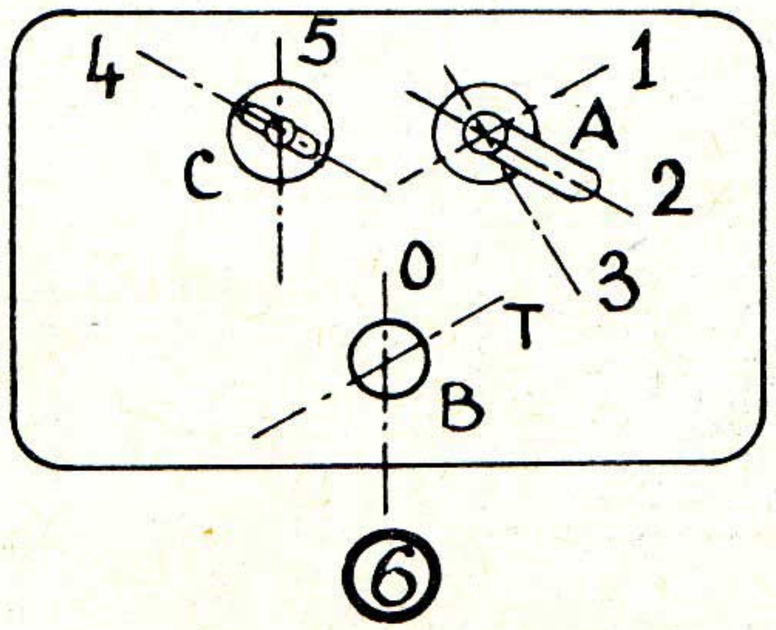


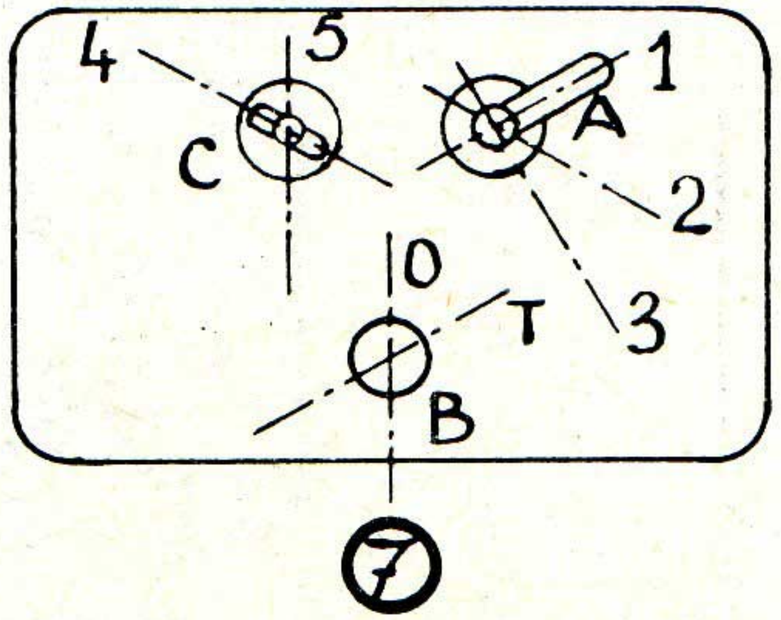



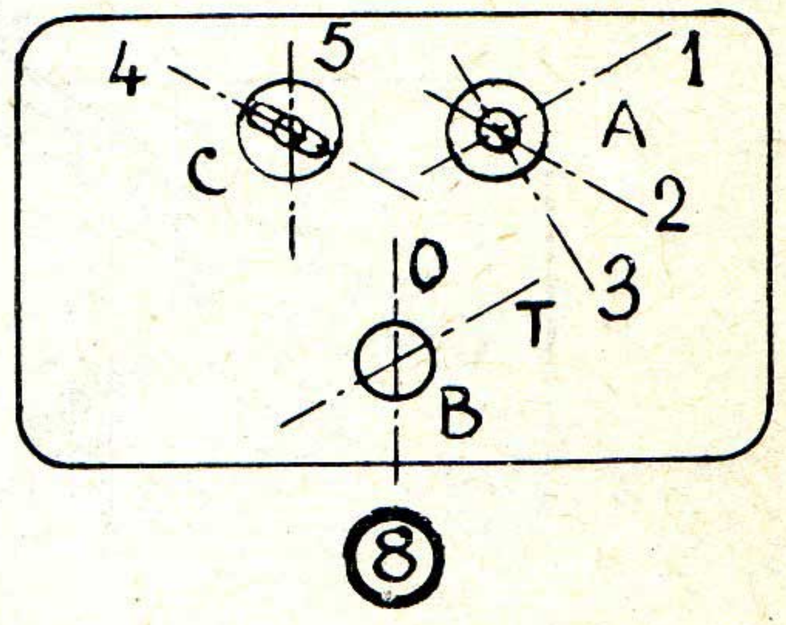
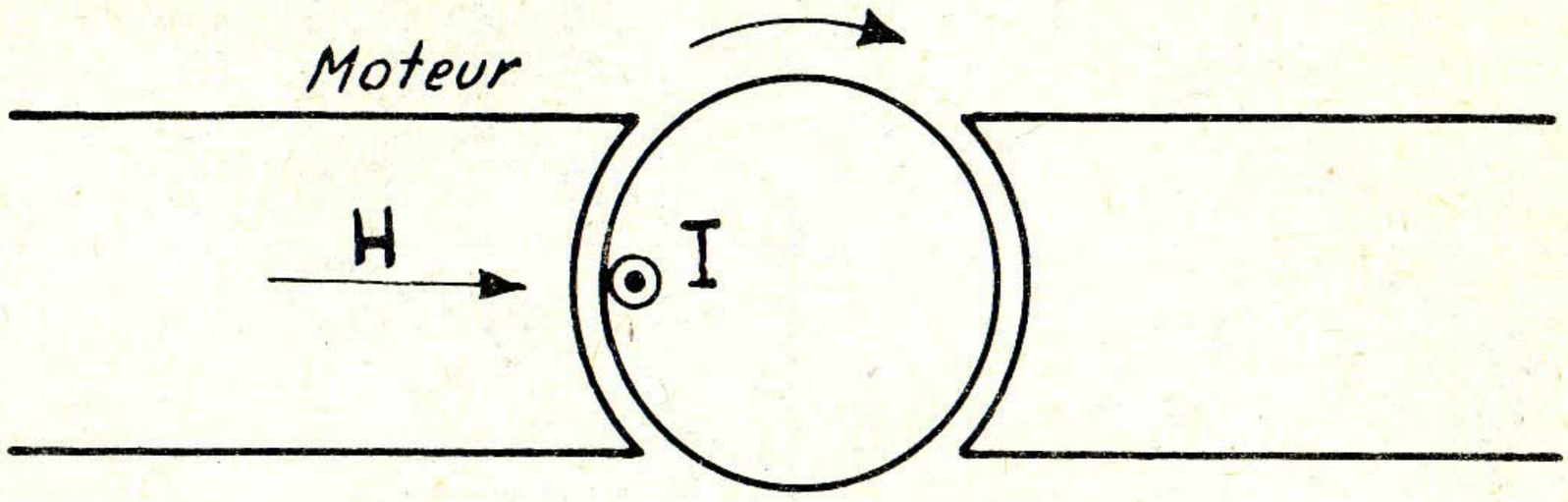




*Fig. 33*

## Circulation dans le même sens.



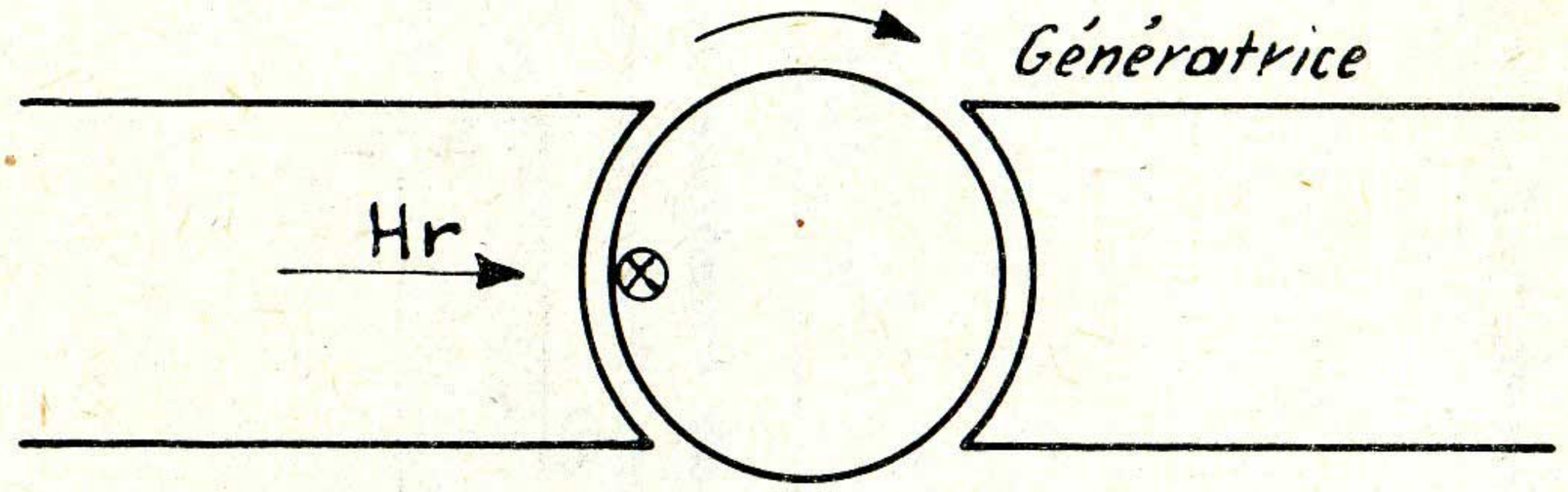
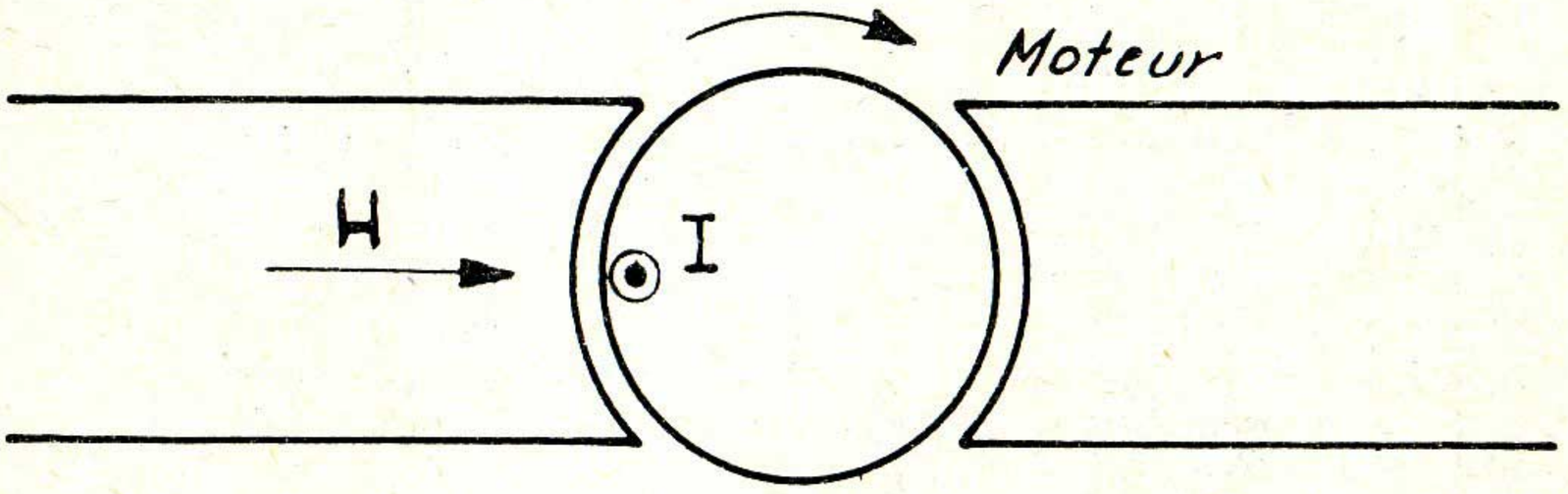




Fig. 34

## Circulation dans le sens contraire.



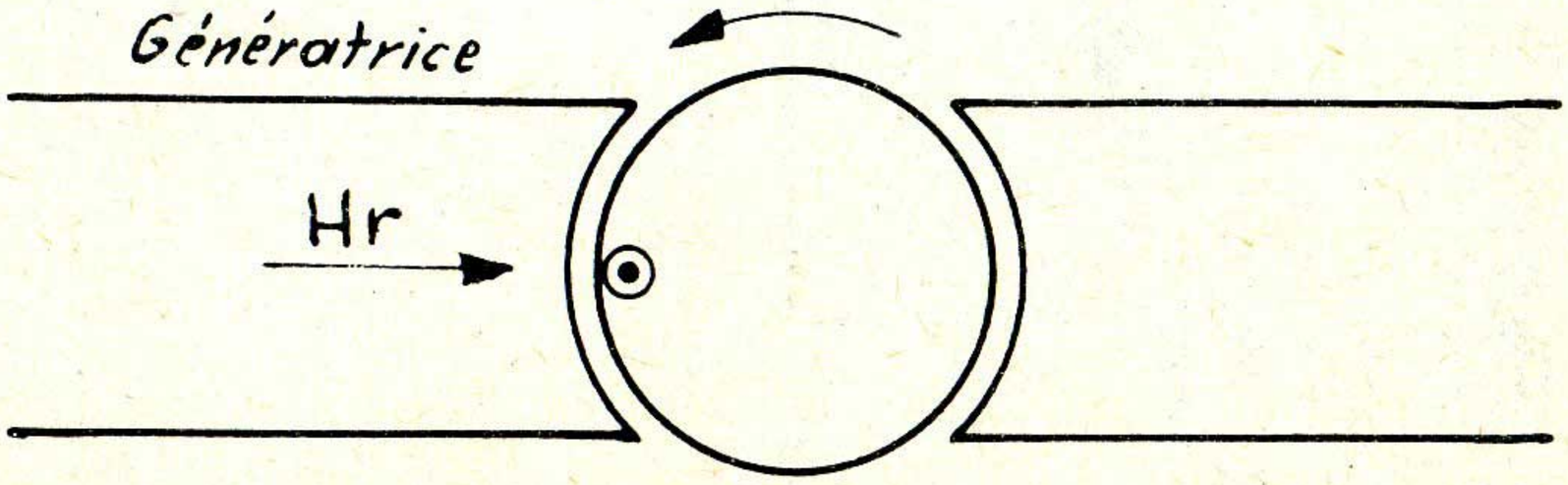




Fig. 35

## Poste de conduite occupé.

## Automotrice d'ou l'on conduit ou automotrice accouplée.

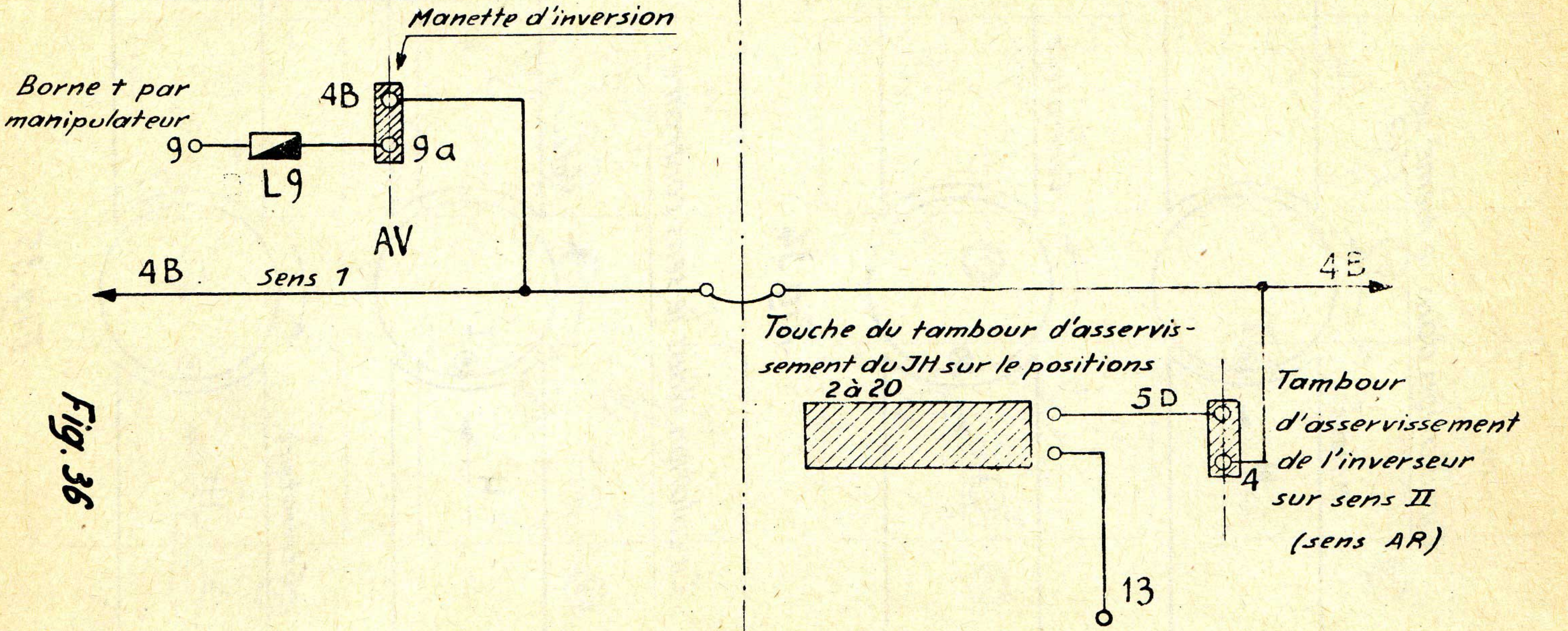
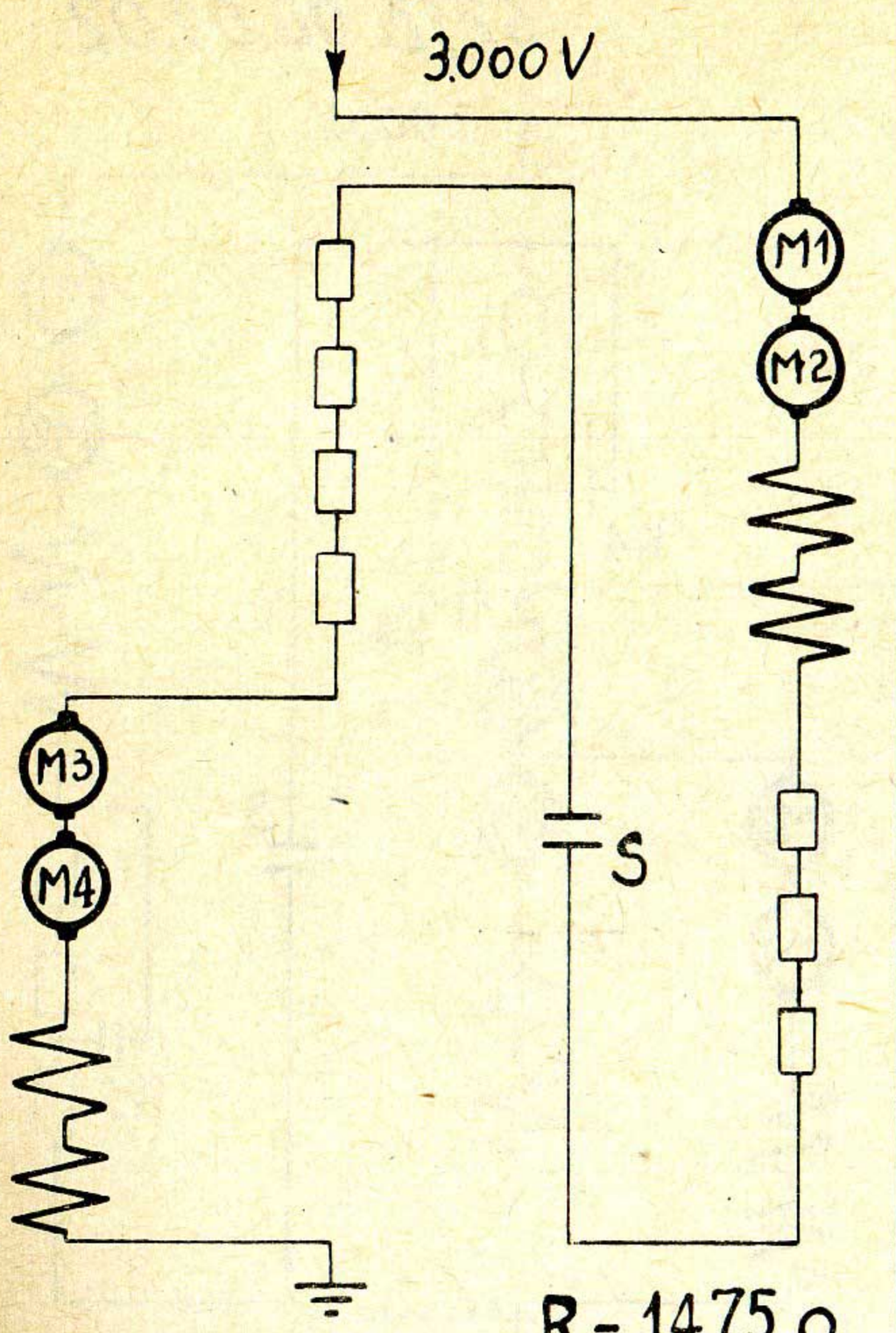
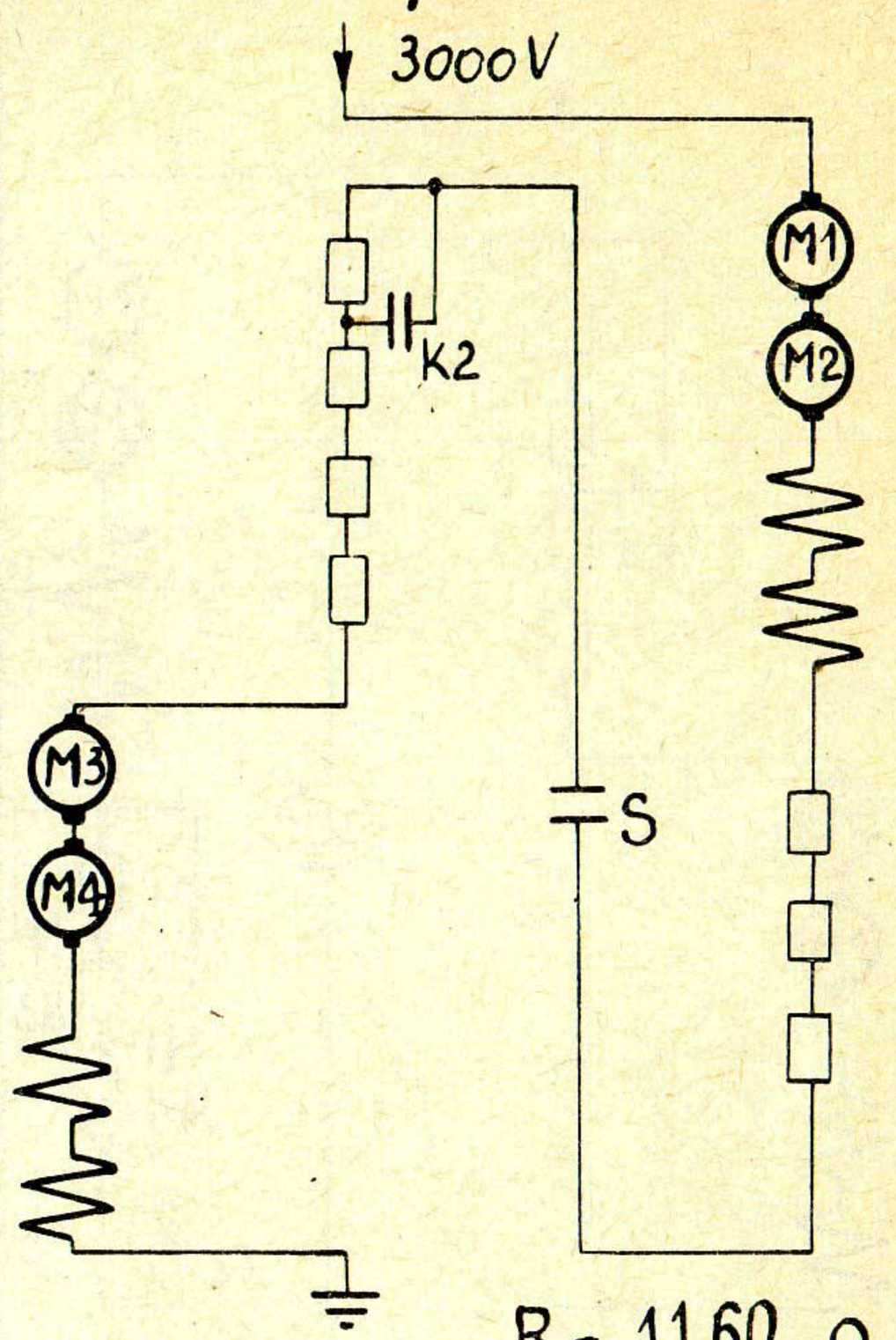



Fig. 36

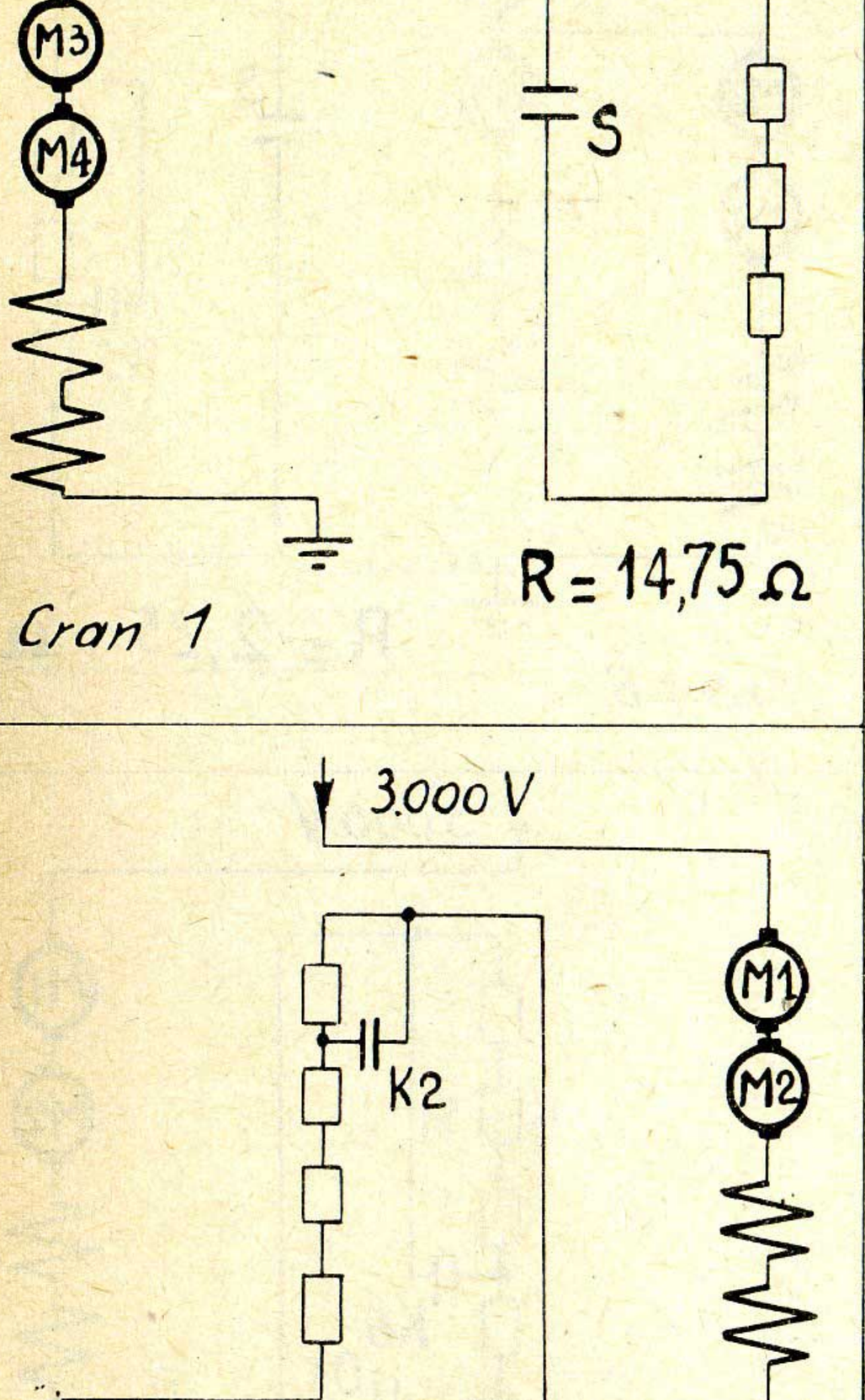
62/B.00.01.01



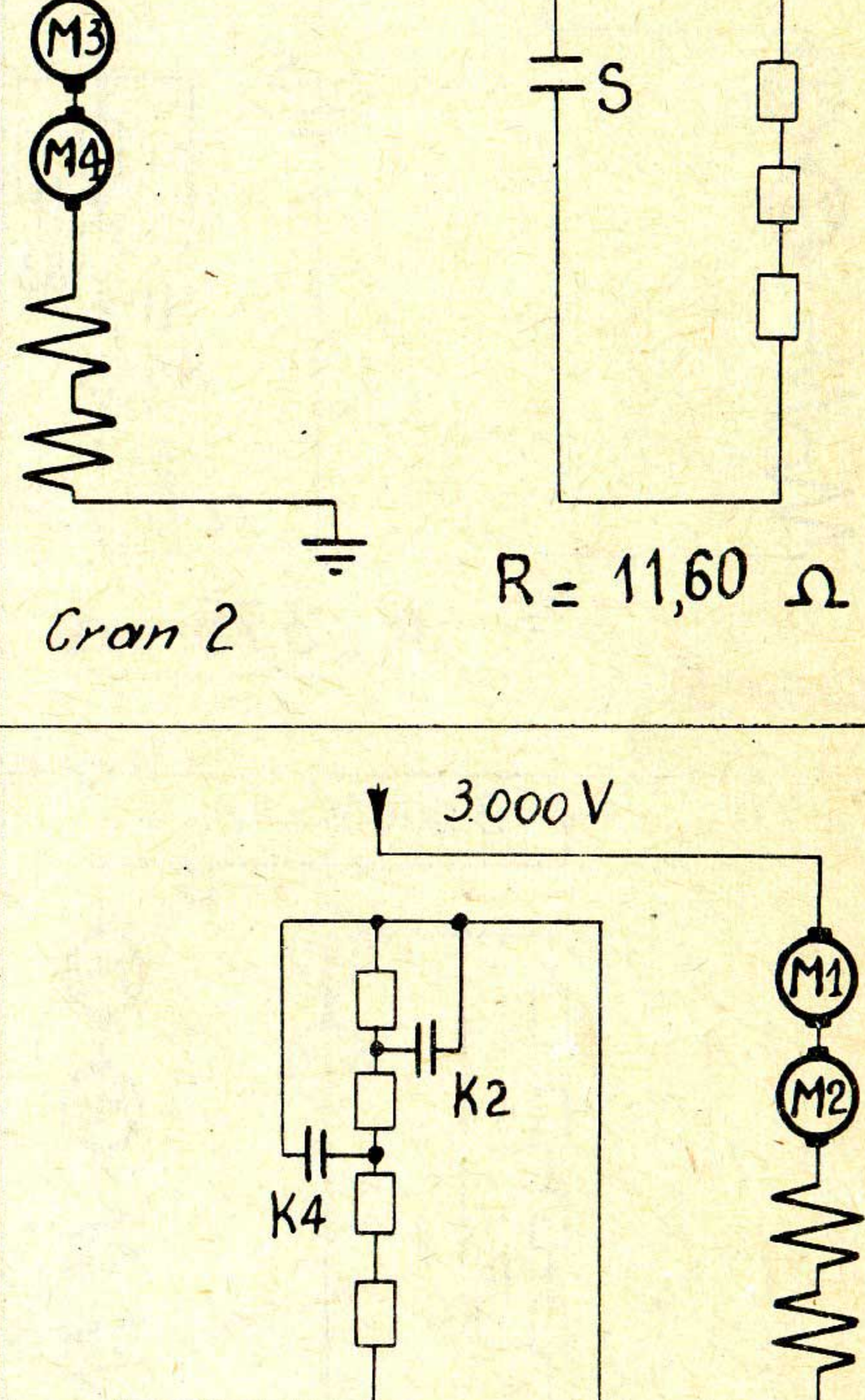

Cran 1




Cran 2

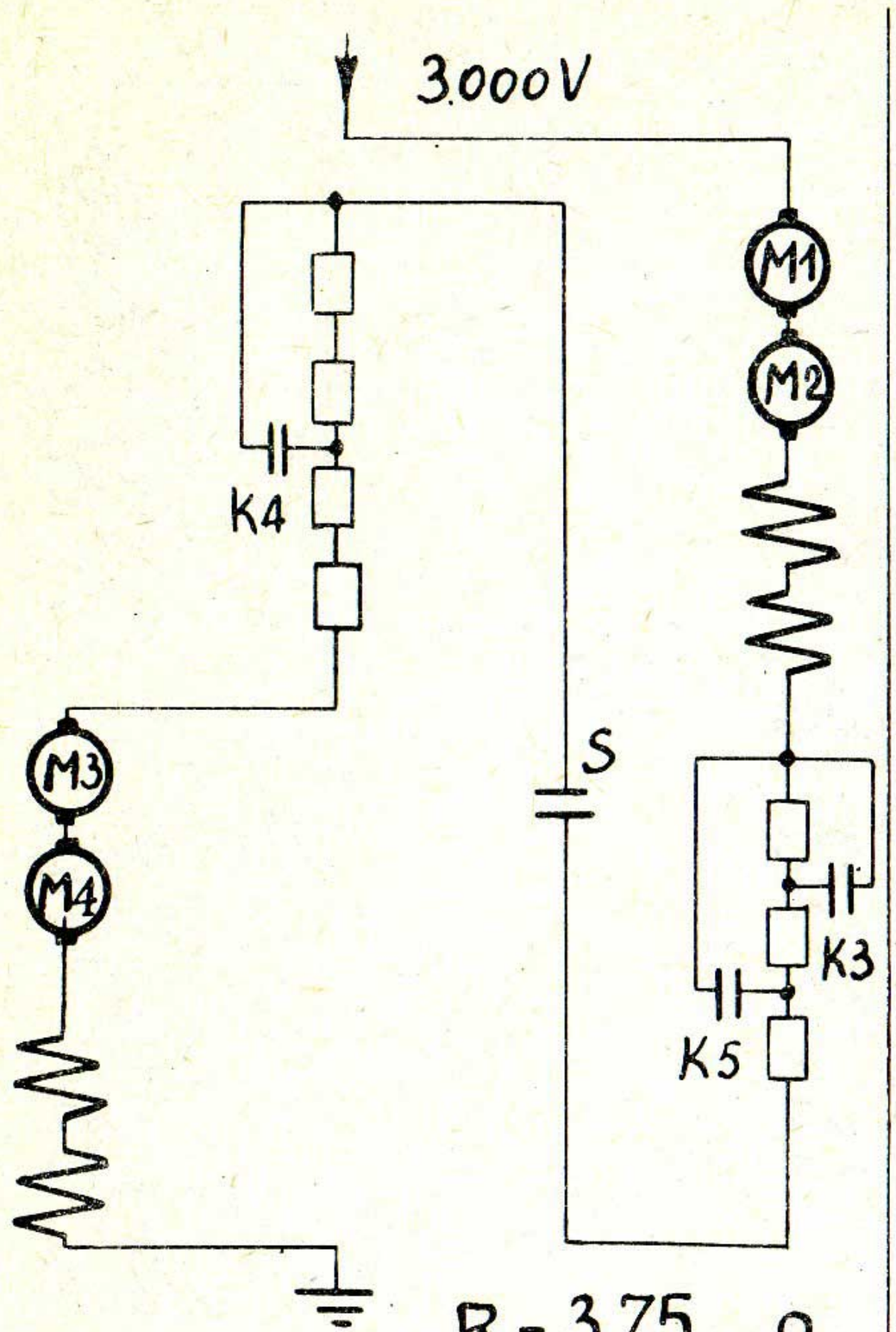



Cran 3



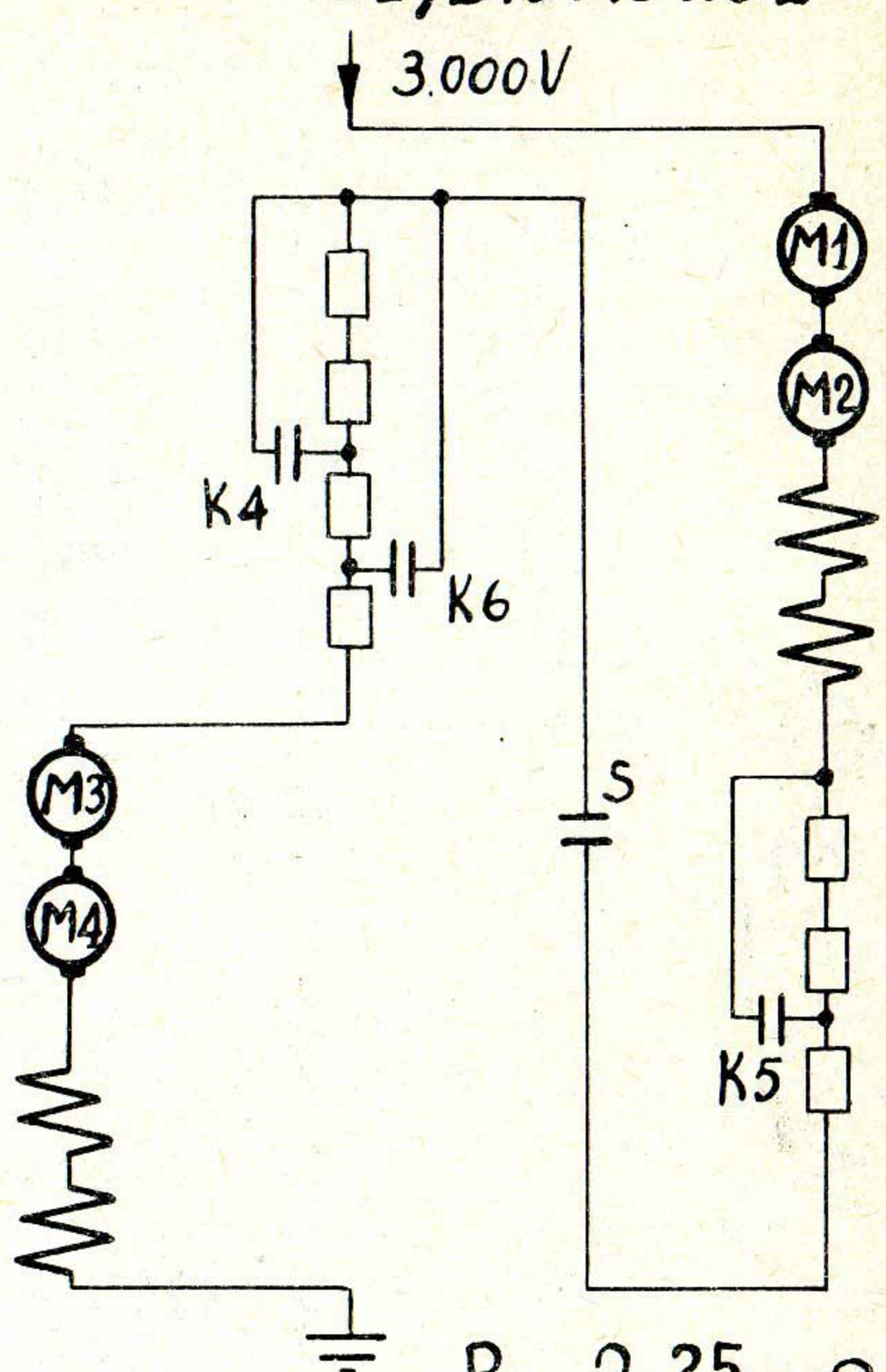

Cran 4

62/B.00.01.02



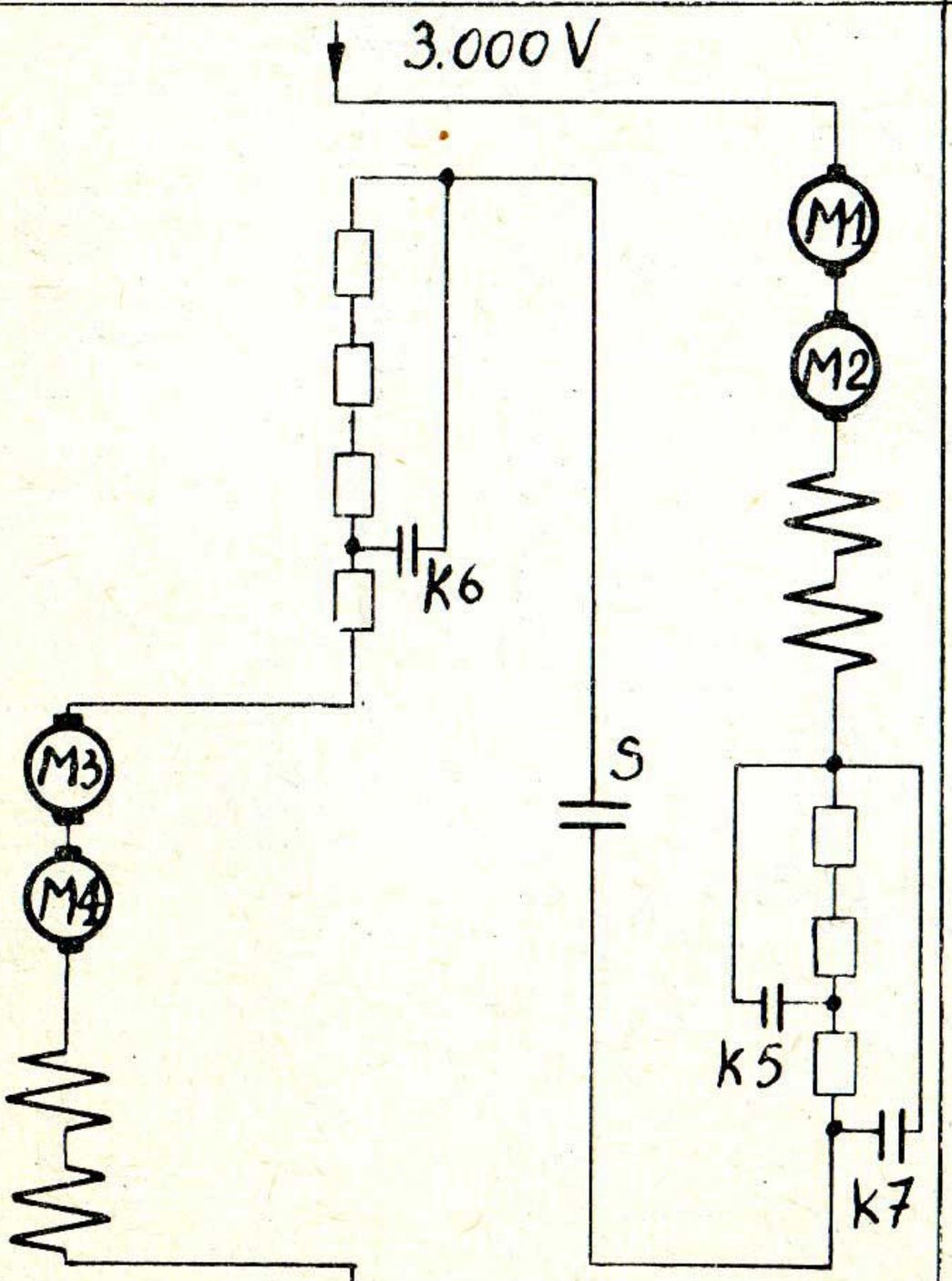

R = 3,75 Ω

Cran 5



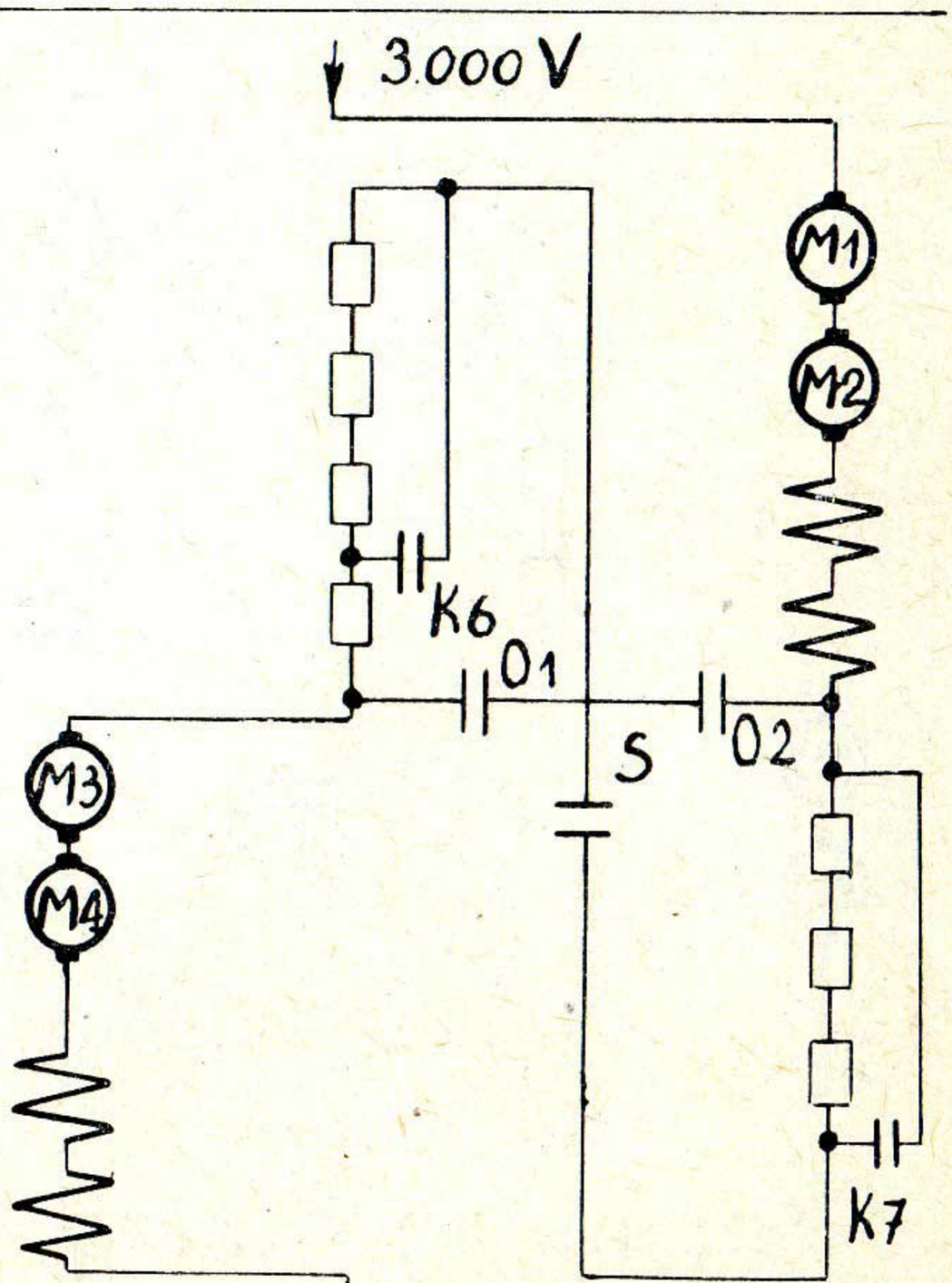

R = 2,25 Ω

Cran 6




R = 0,75 Ω

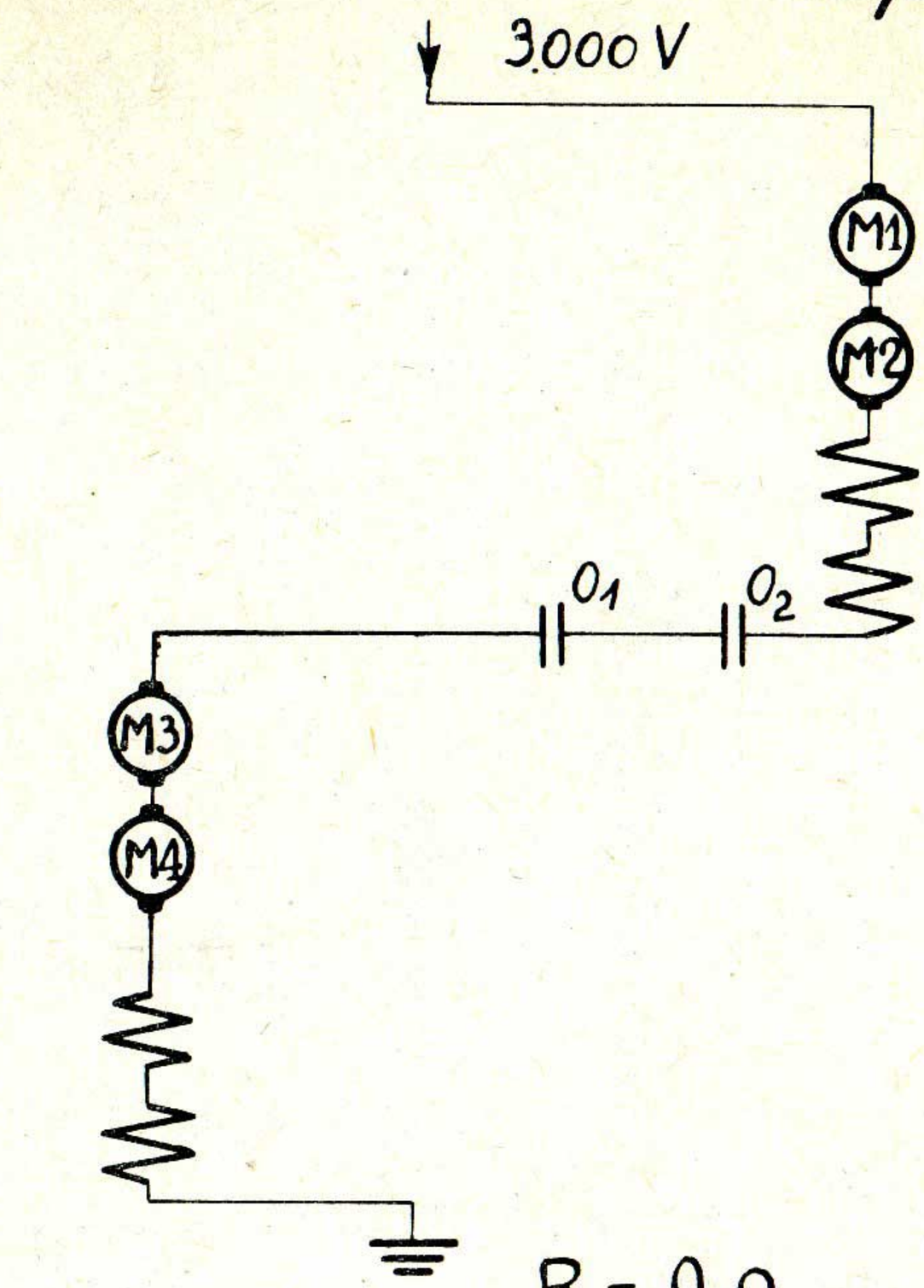
Cran 7



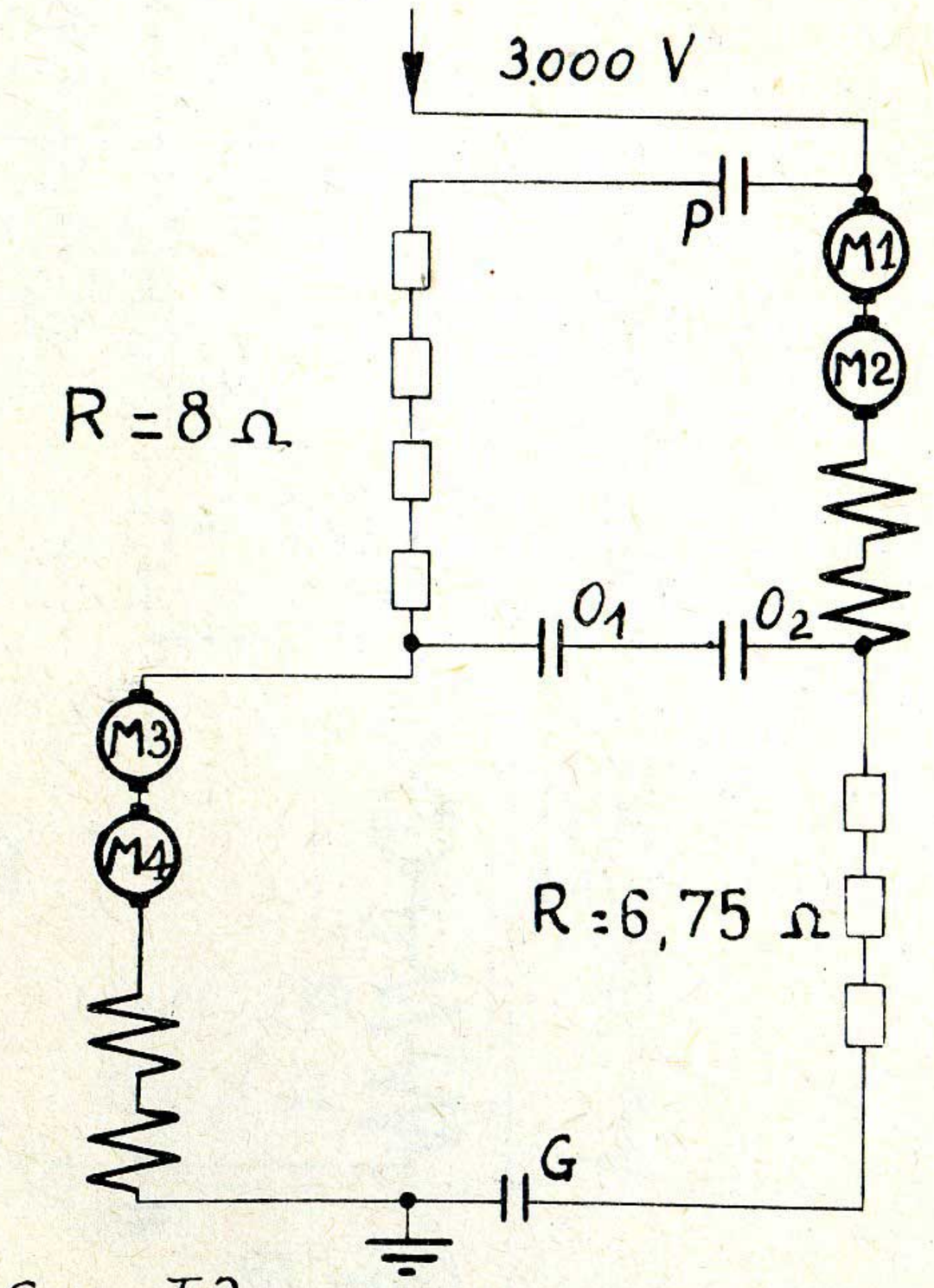

R = 0 Ω

Cran 8

62/B.00.01.03

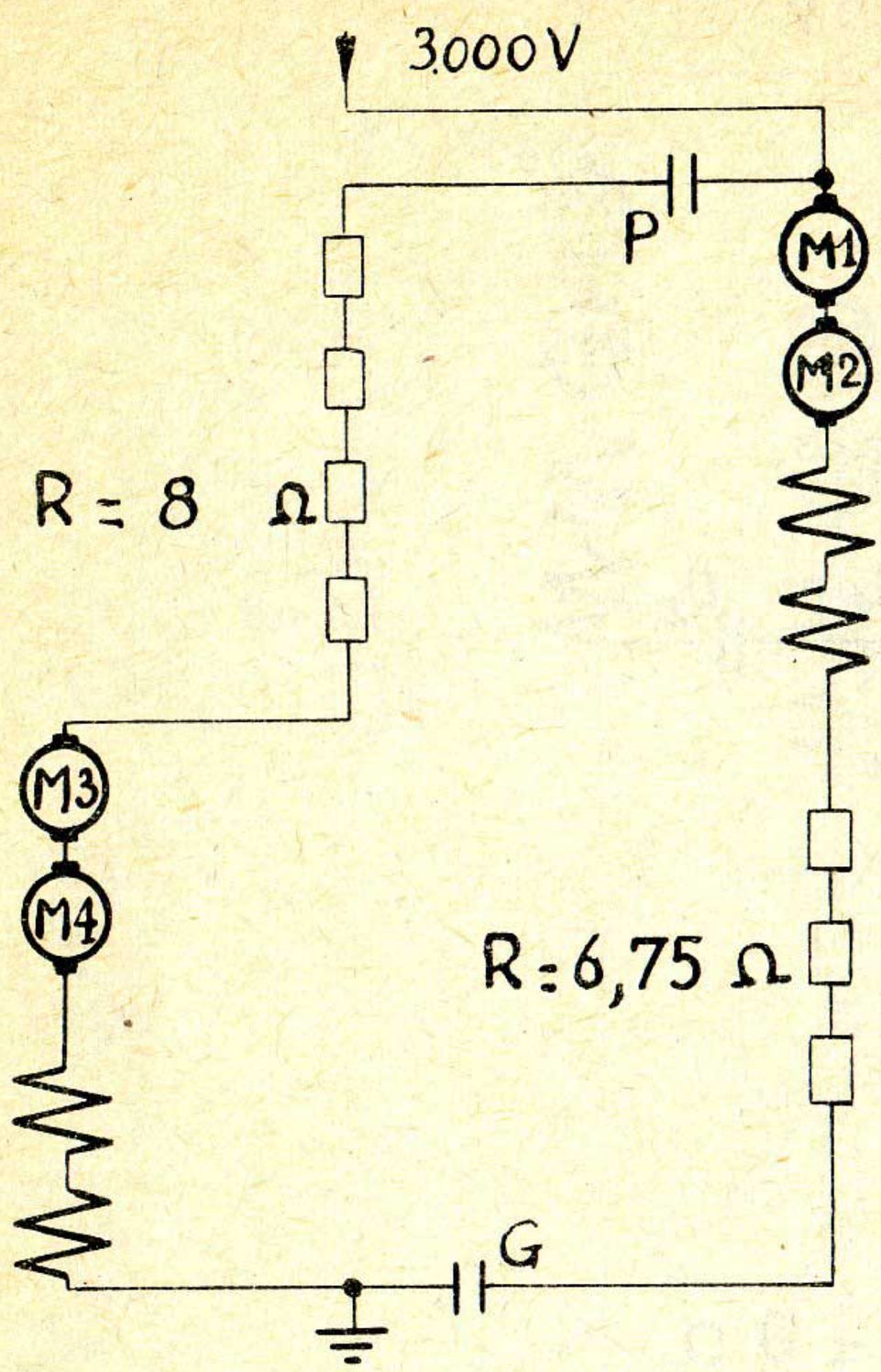



Cran T1

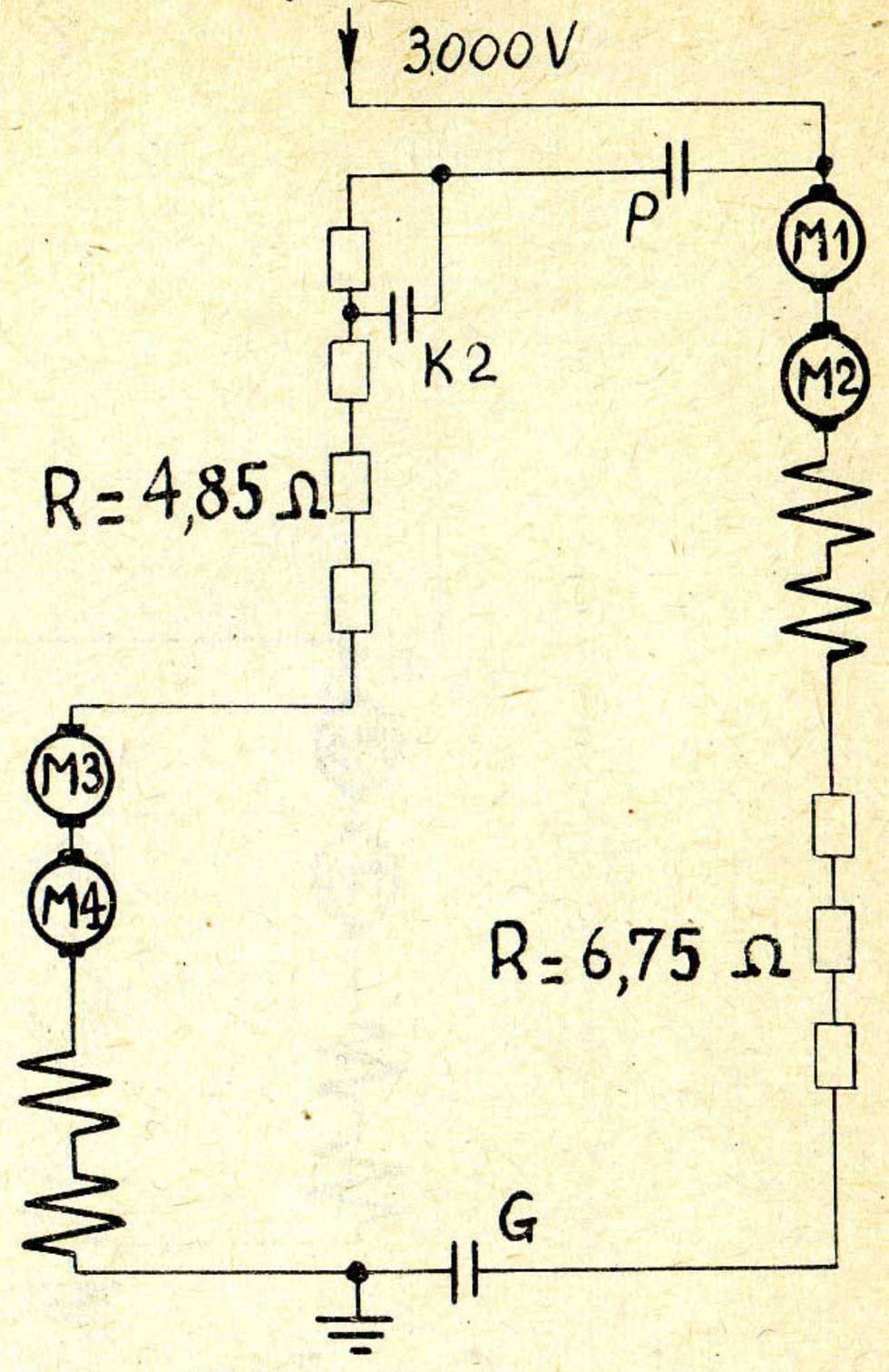



Cran T2

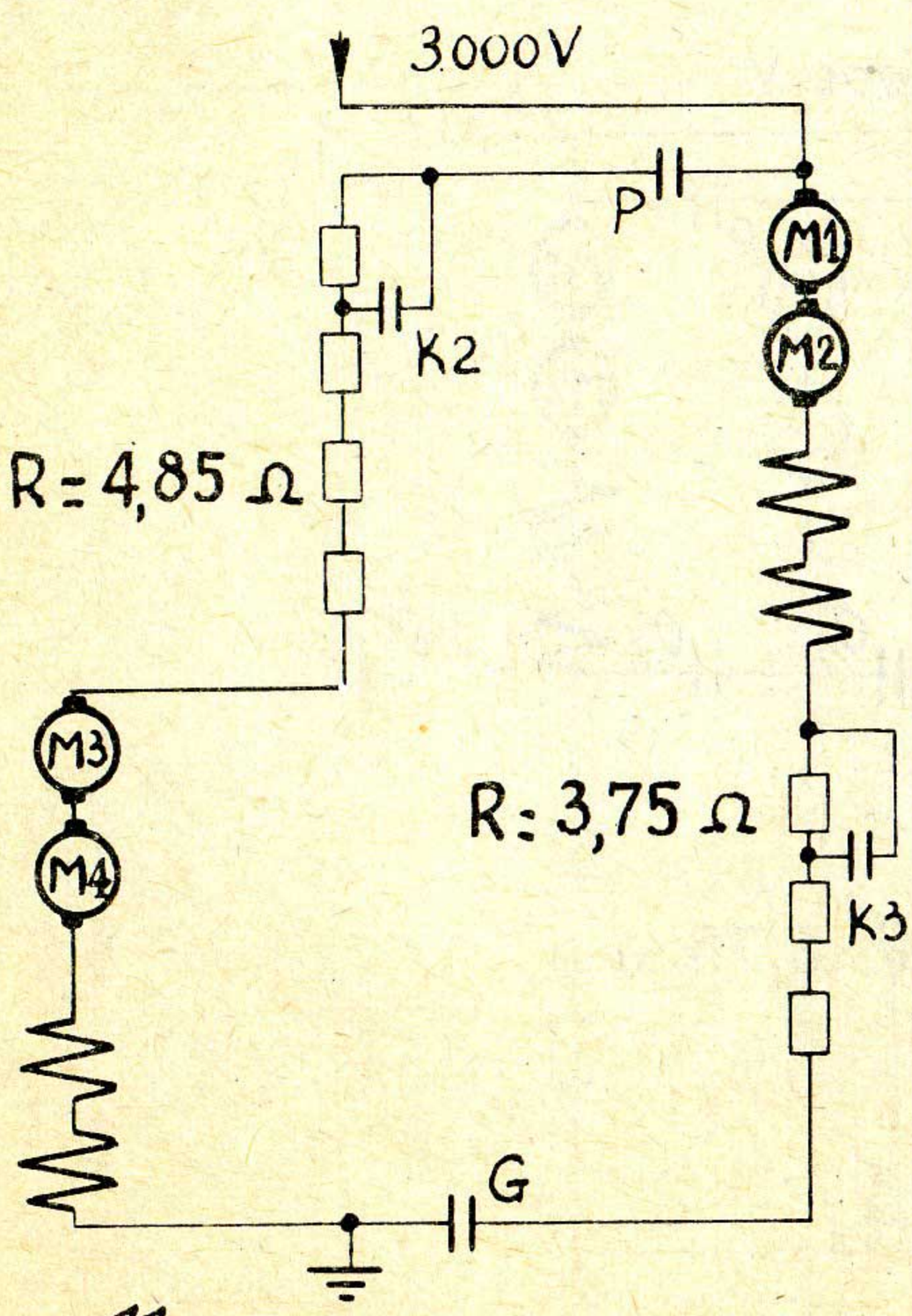
62/B.00.01.04



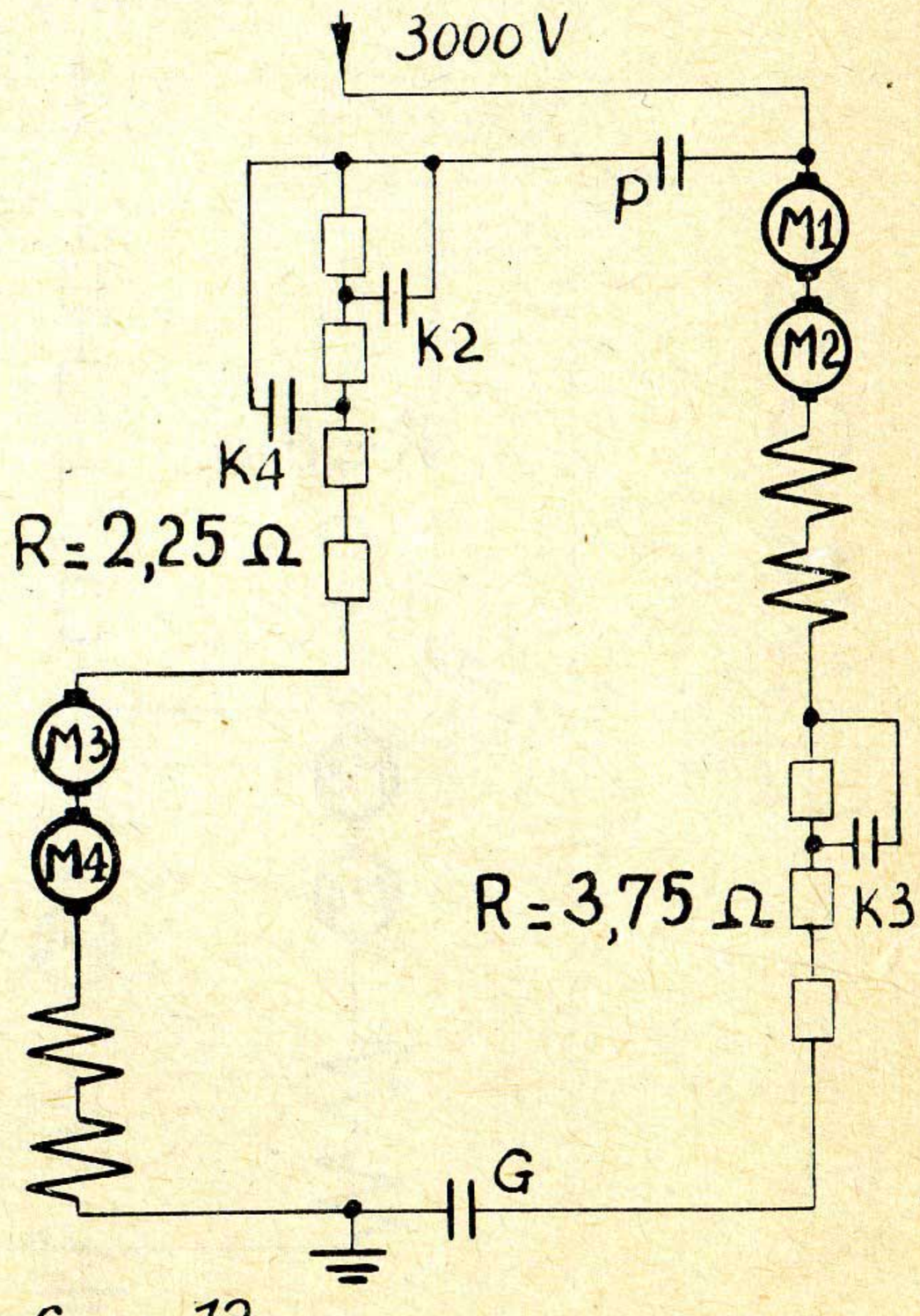

Cran 9



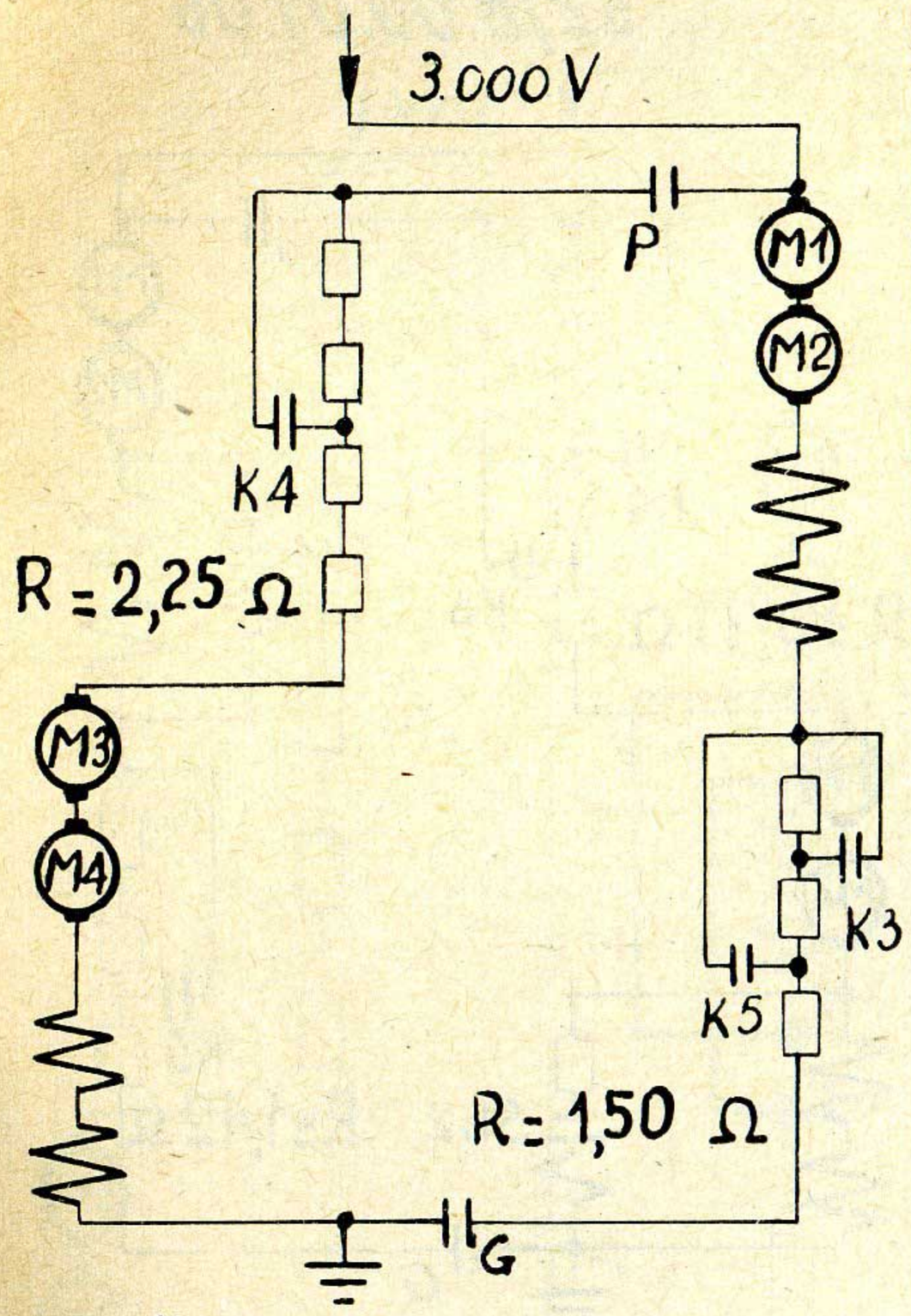

Cran 10



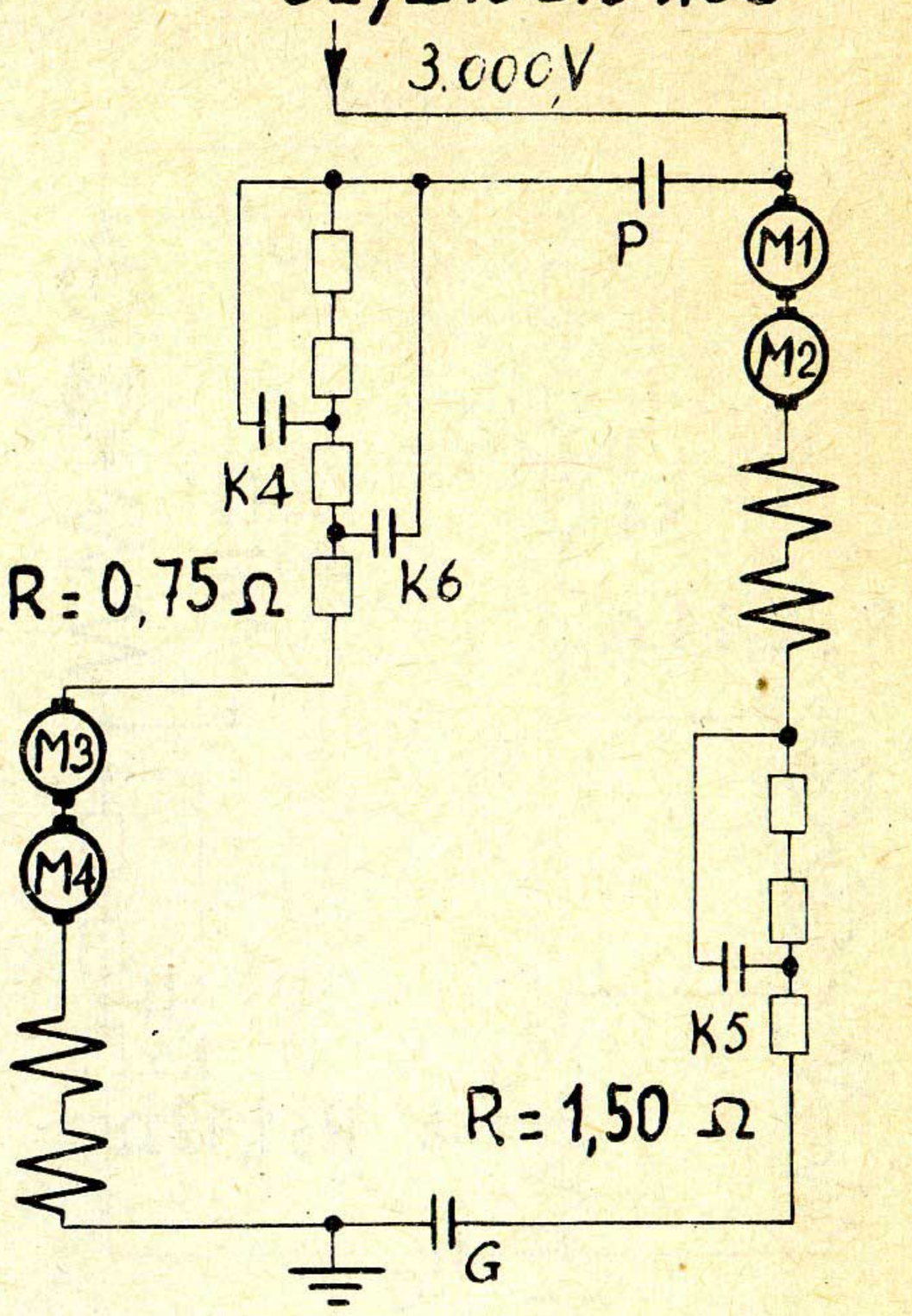

Cran 11



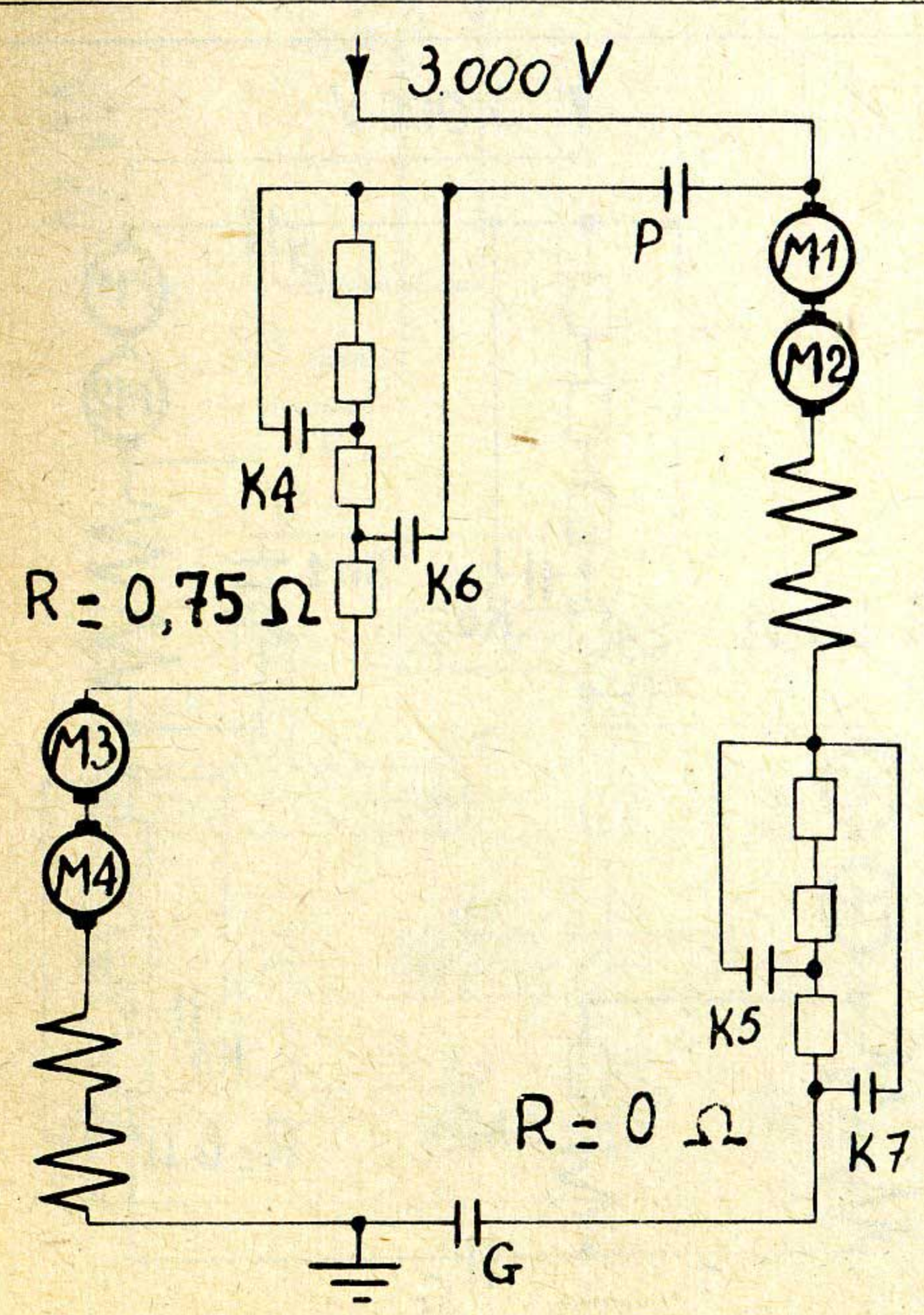

Cran 12



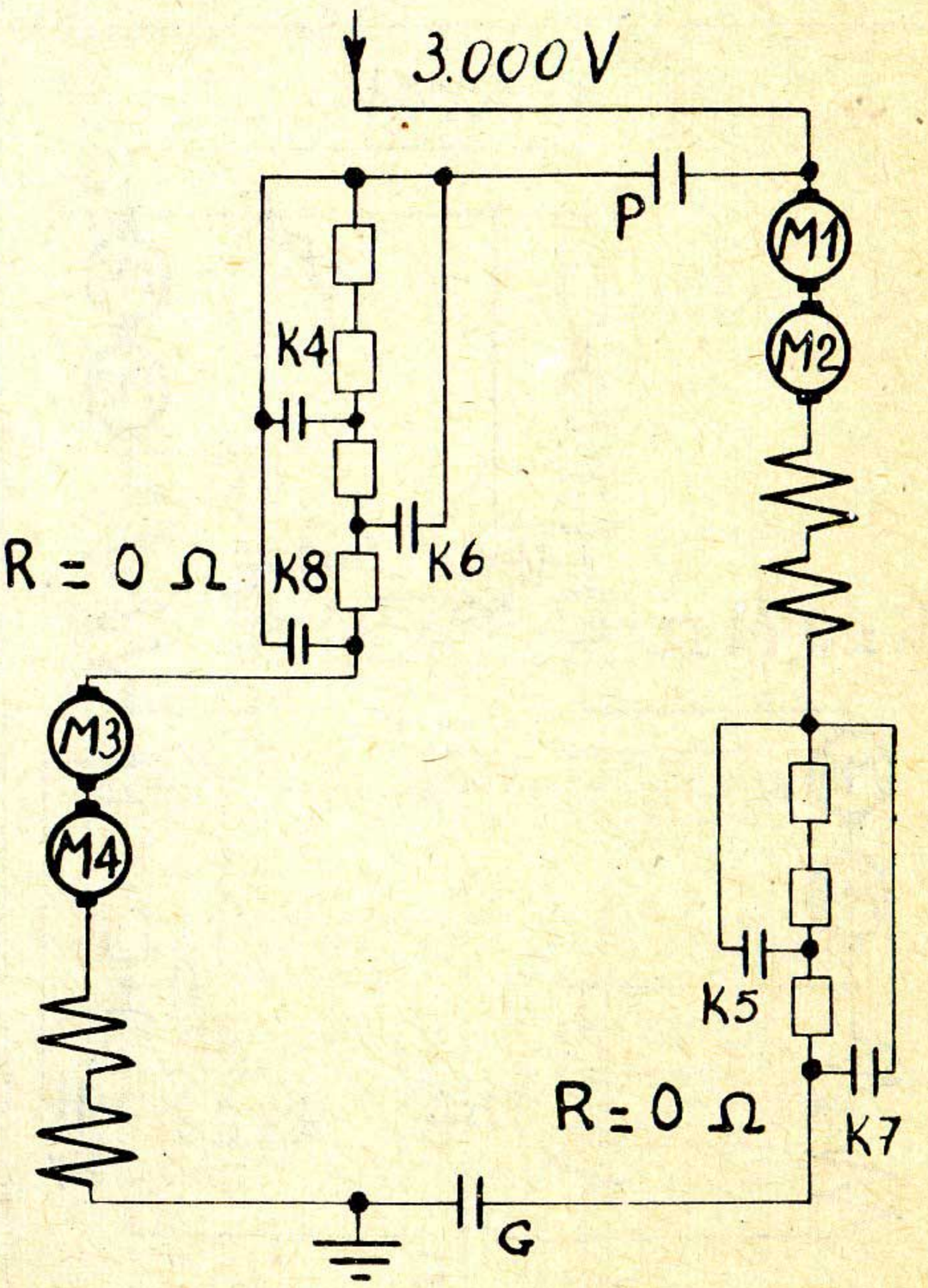

Cran 13



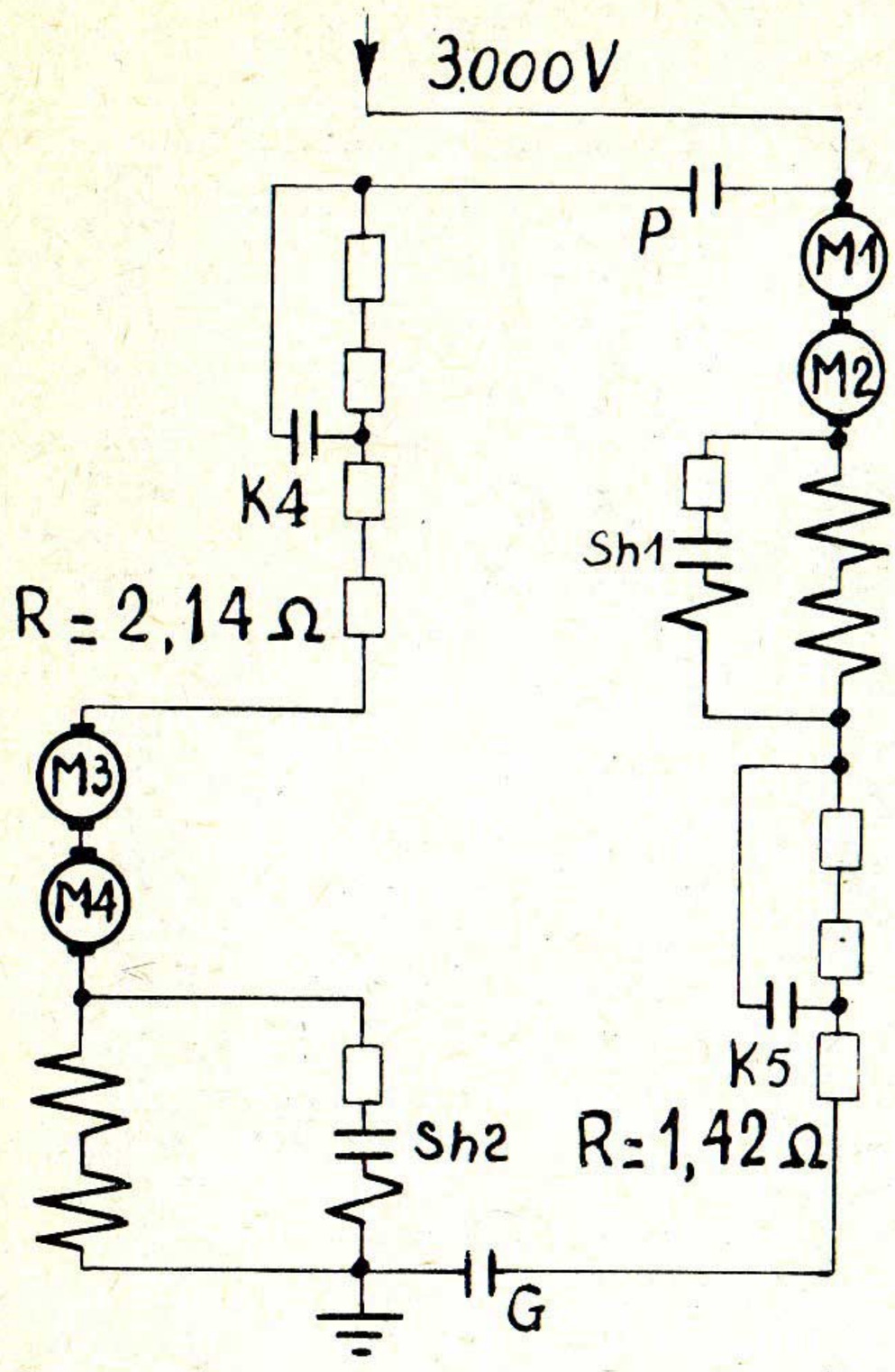

Cran 14



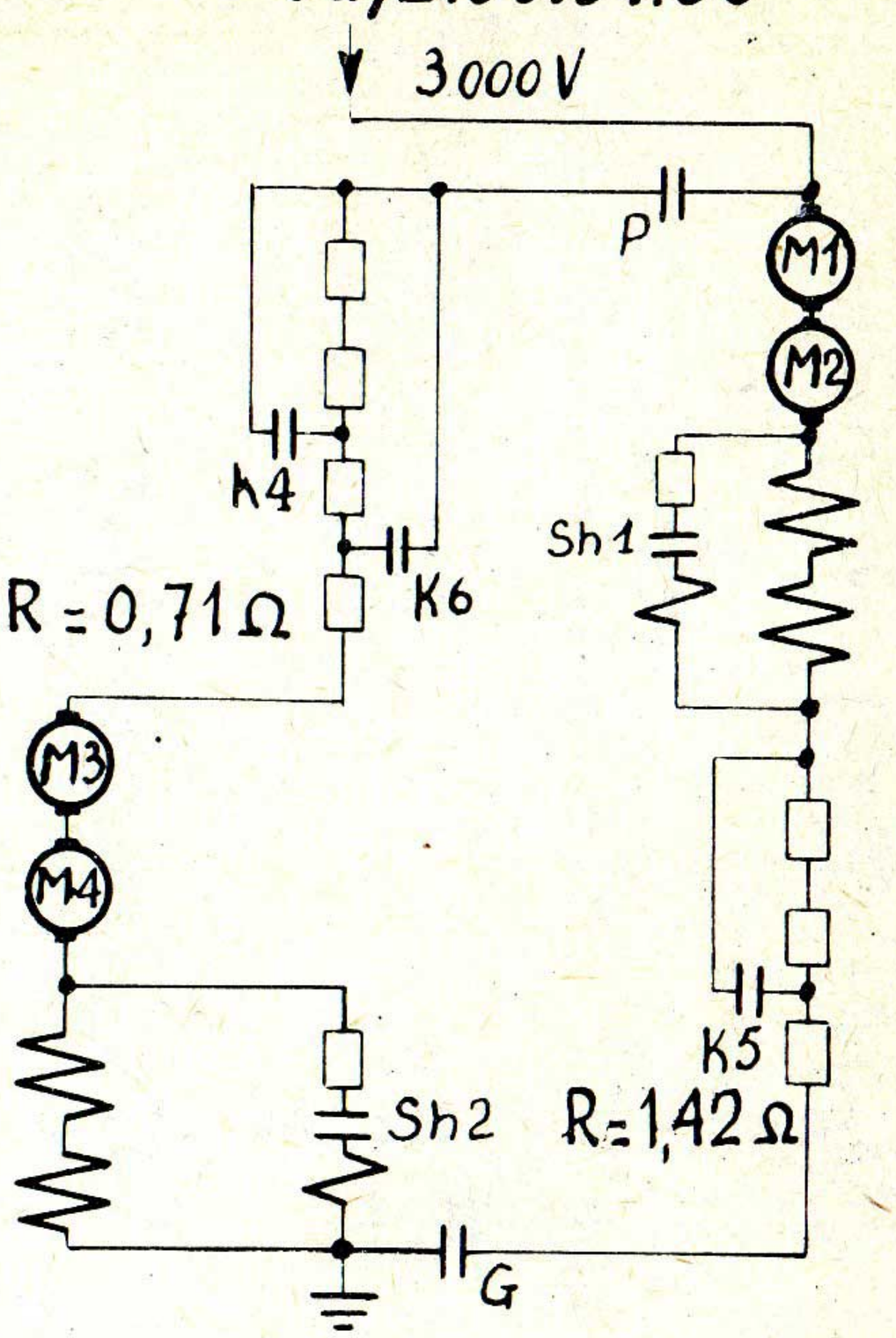

Cran 15




Cran 16




Cran 17

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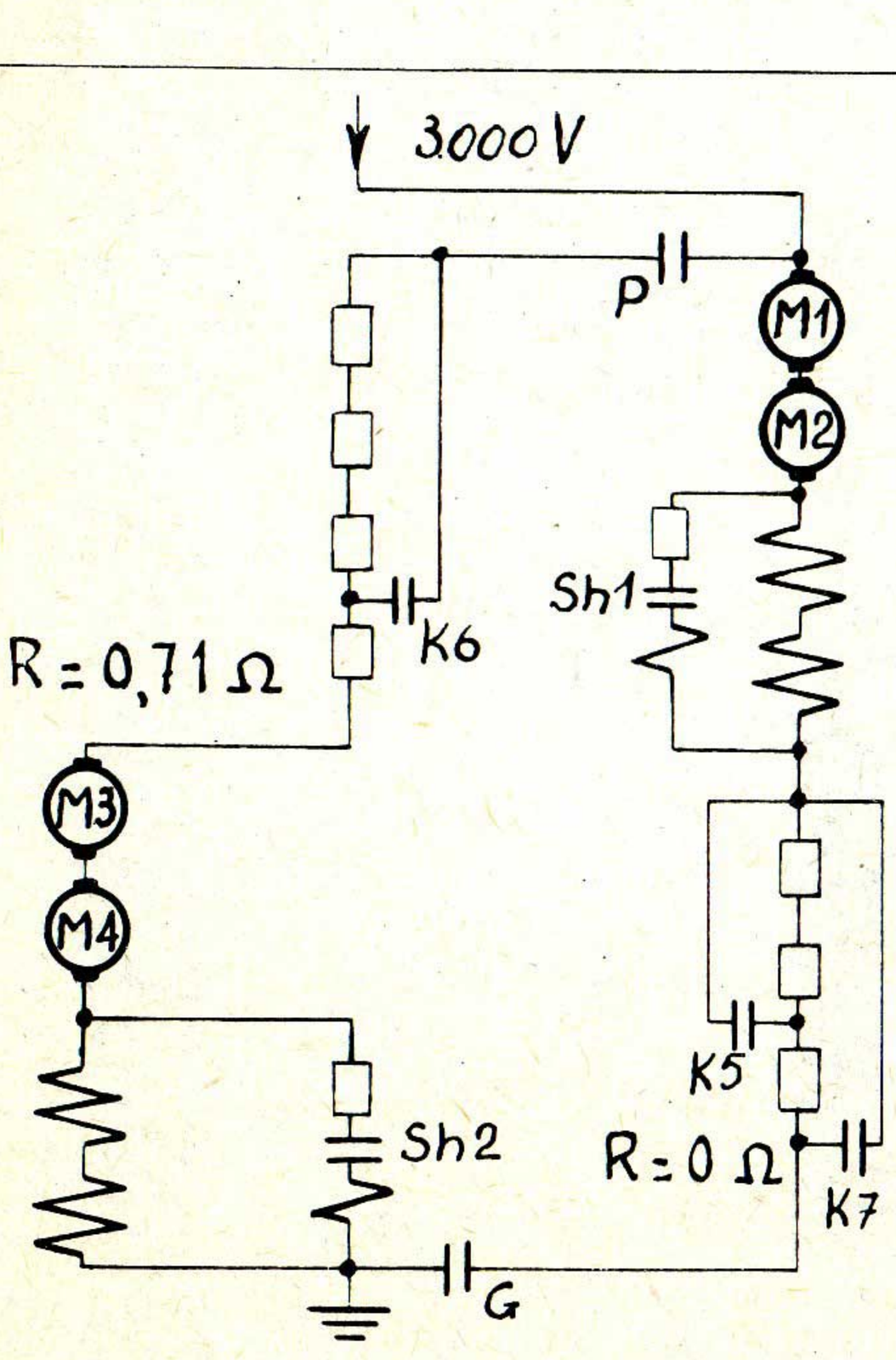
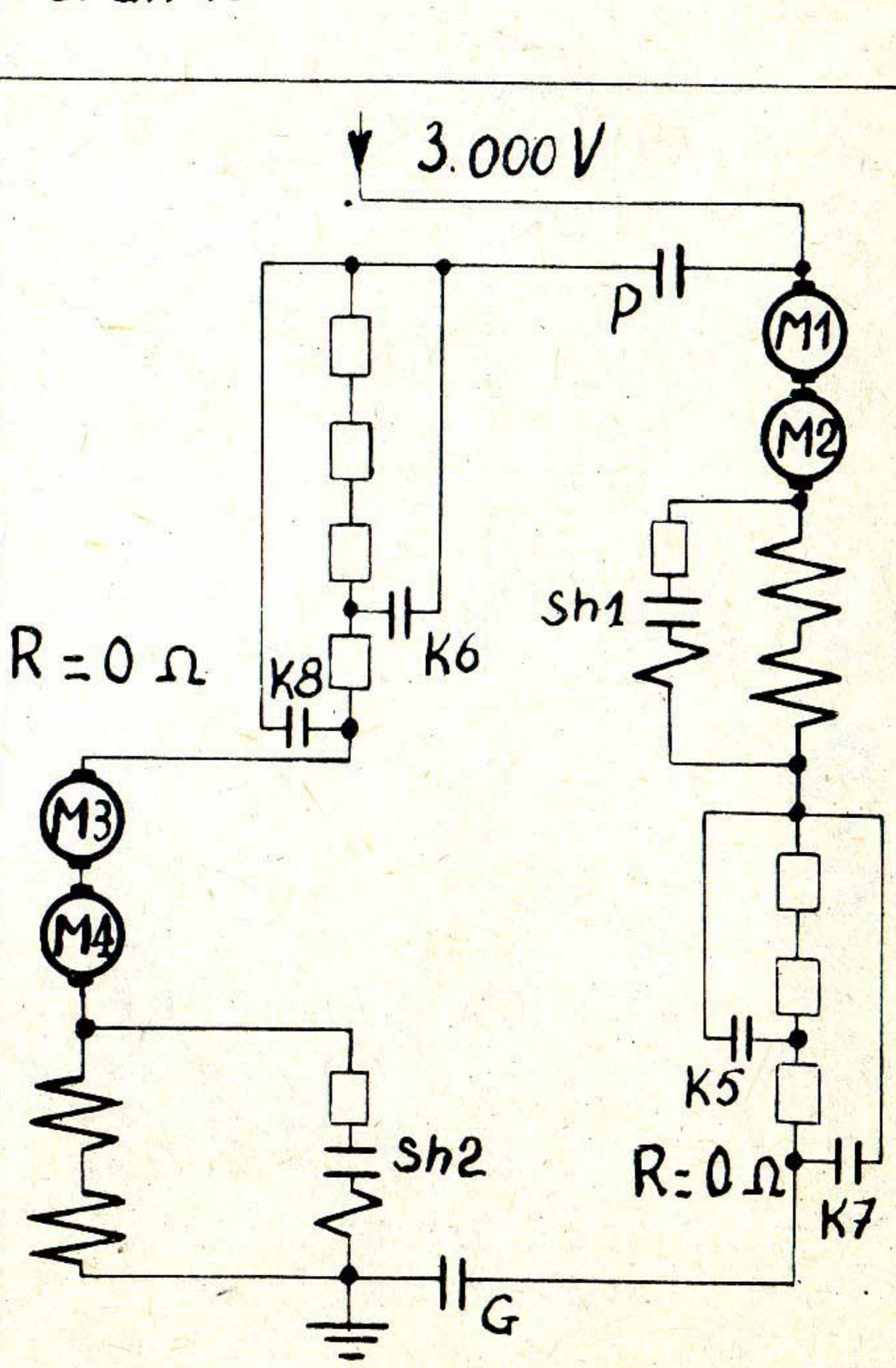



Cran 19

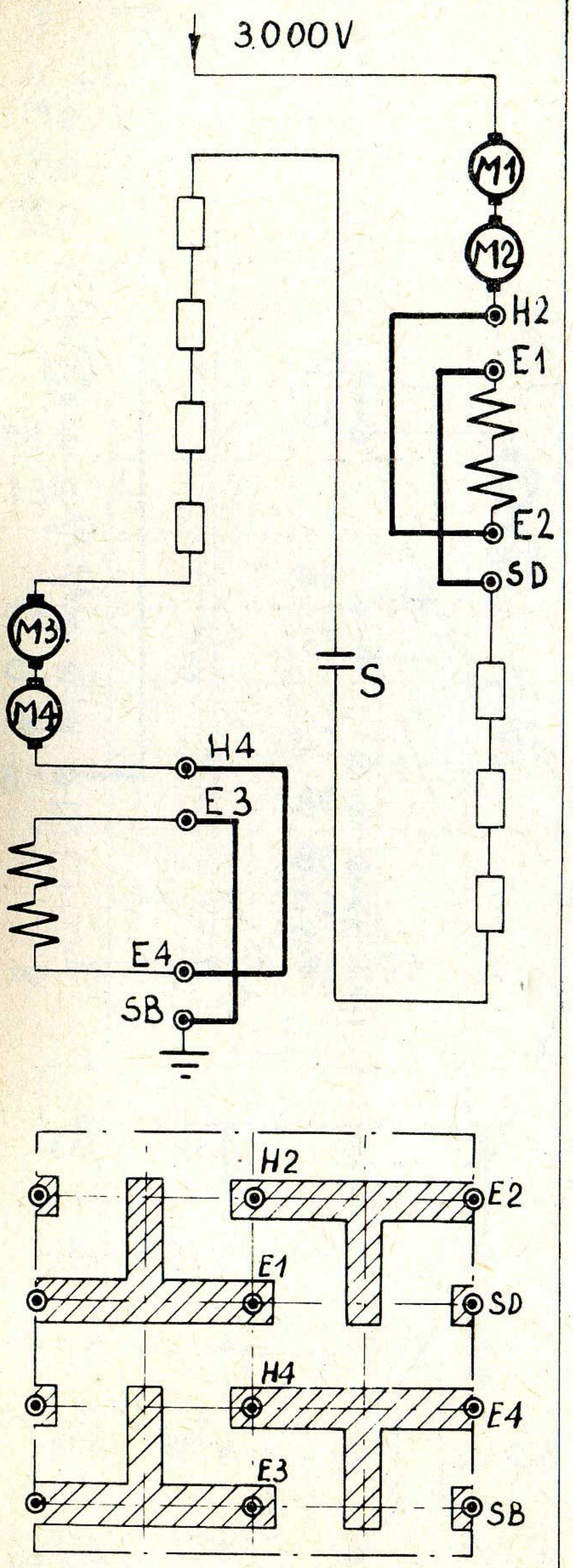



Cran 20

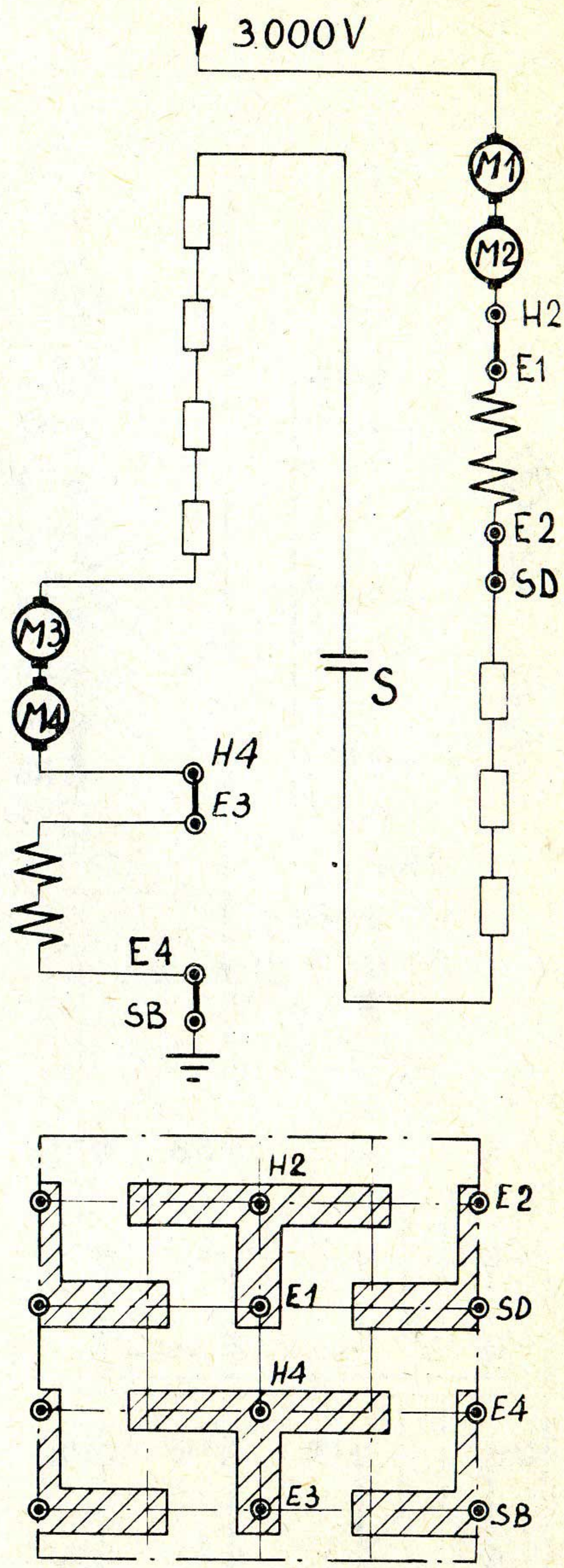
62/B.00.01.07

# Inverseur de marche.

Sens I

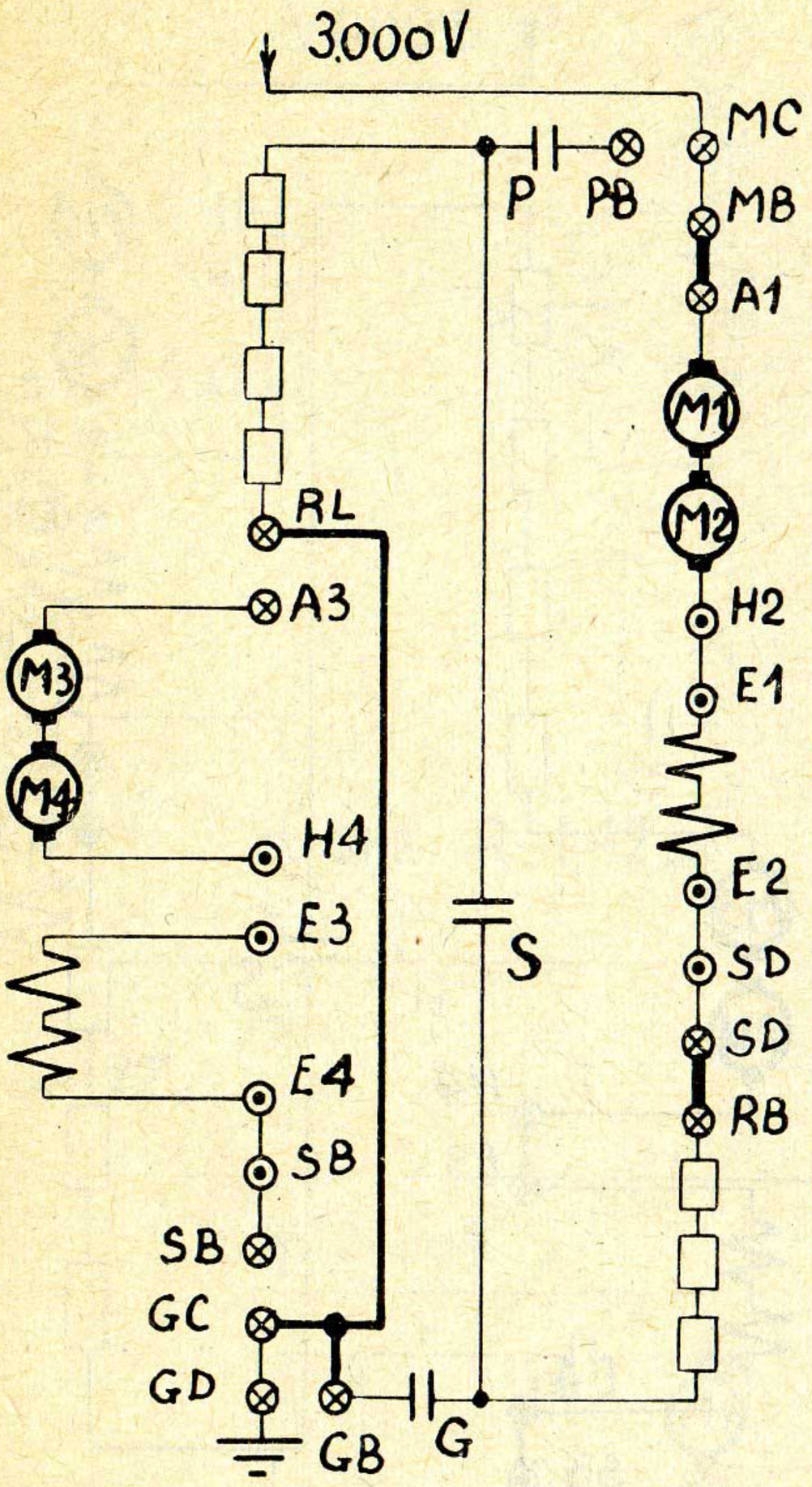


Sens II

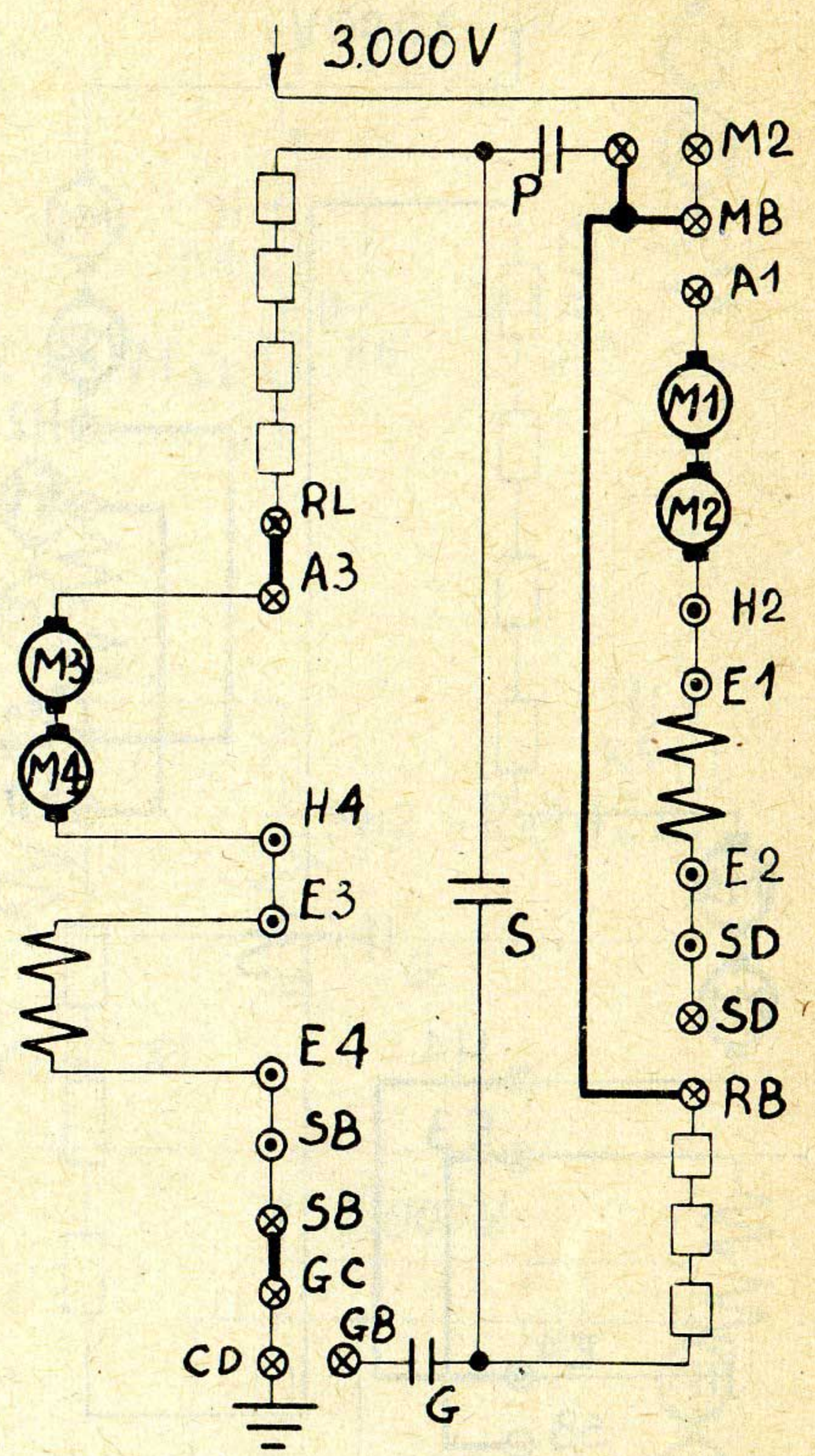


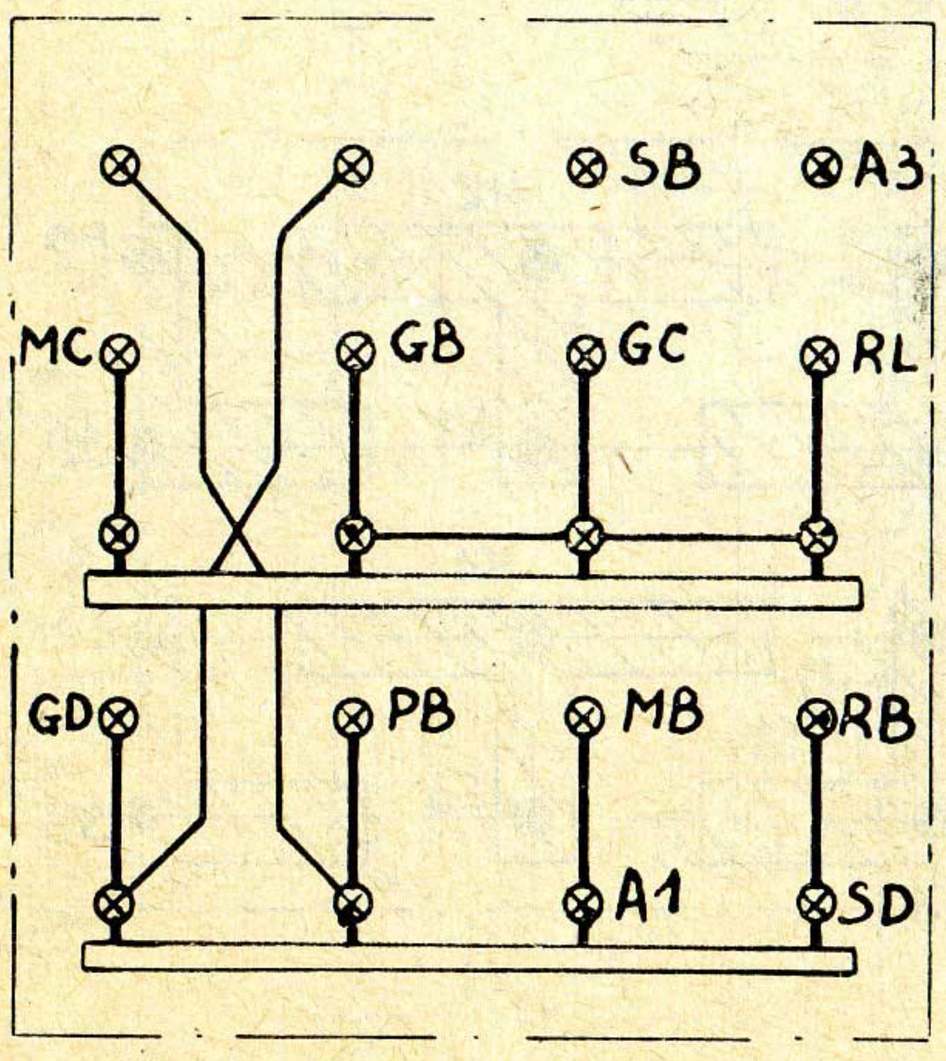
# 62/B.00.01.08

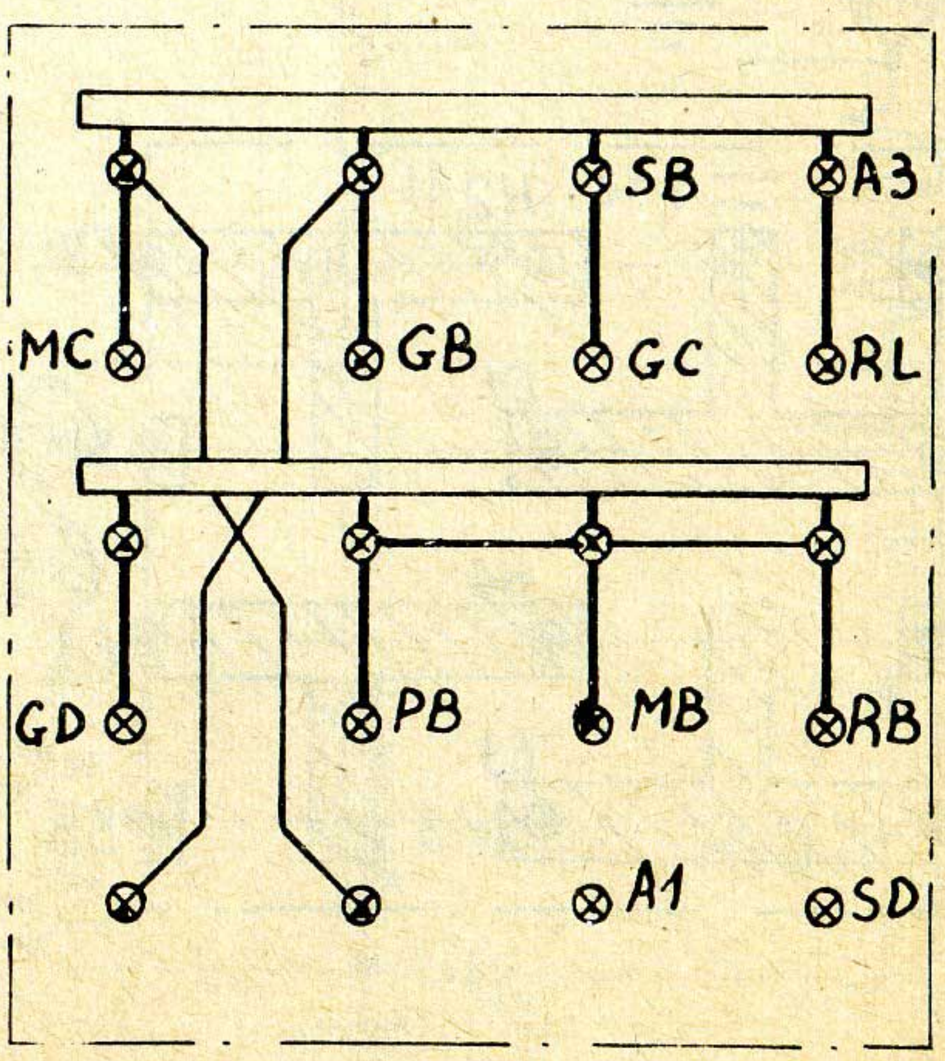
Moteurs 1et 2 en service




Moteurs 3 et 4 en service



62/F.02.01.11

# Aut. 1962 - 3000/2 V.

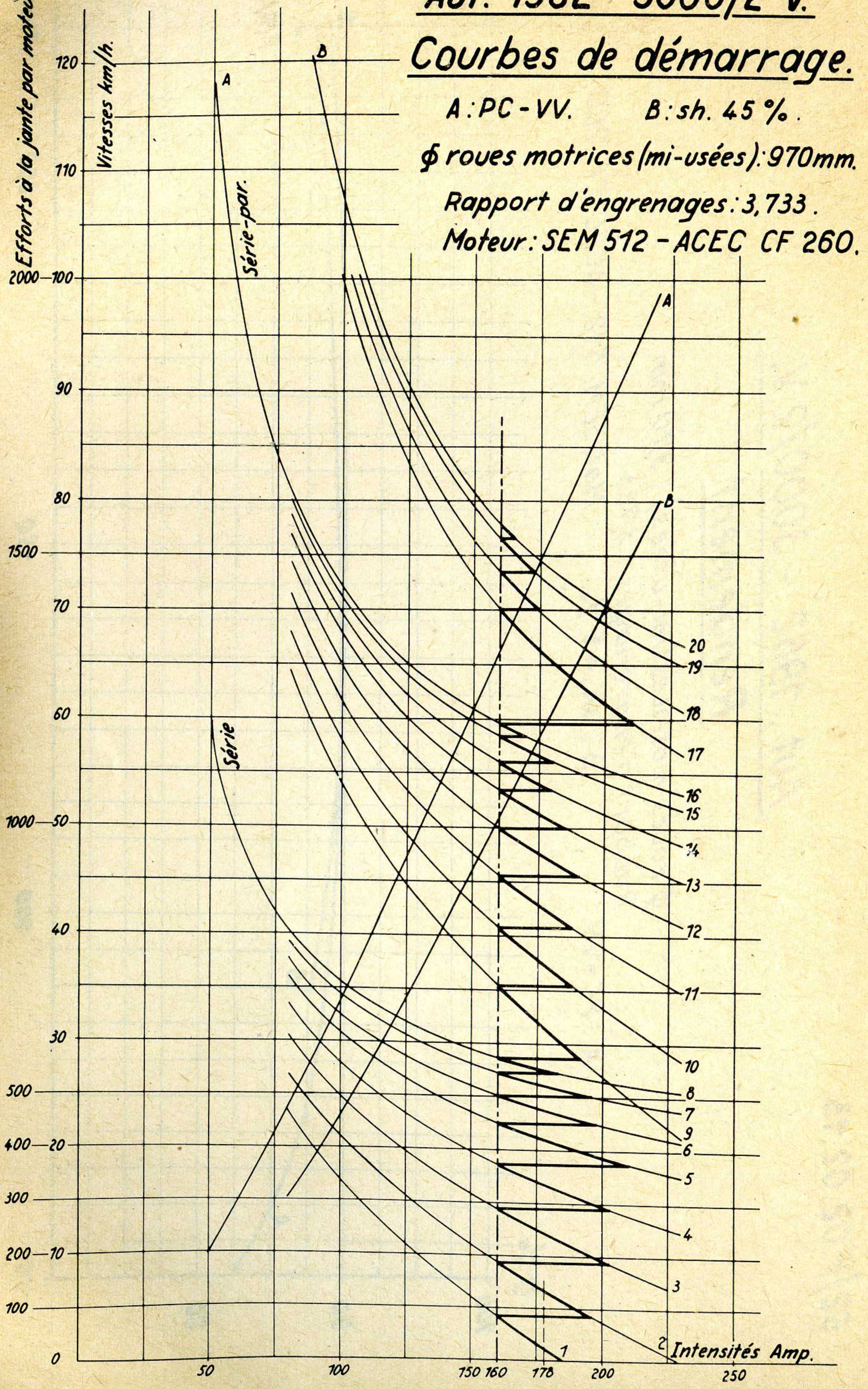
## Courbes de démarrage.

A : PC - VV. B : sh. 45 %.

ϕ roues motrices (mi-usées) : 970mm.

Rapport d'engrenages : 3,733.

Moteur : SEM 512 - ACEC CF 260.

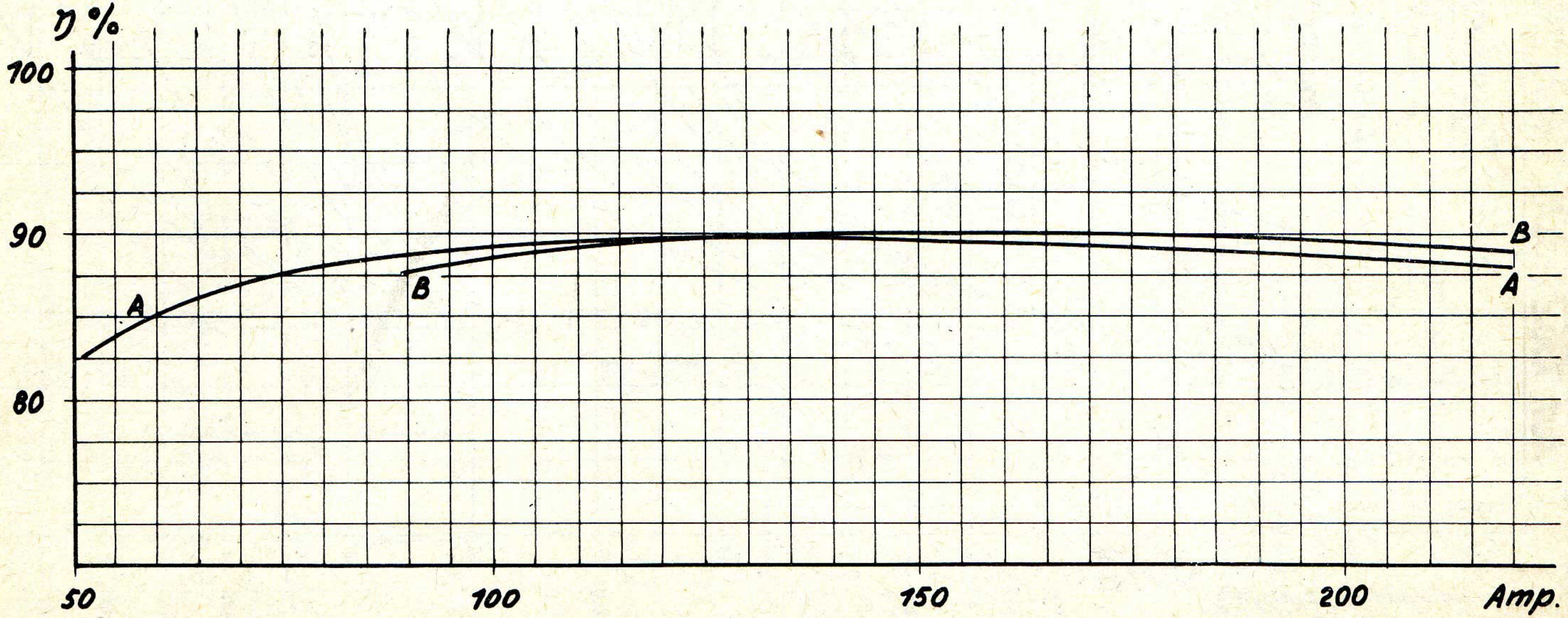


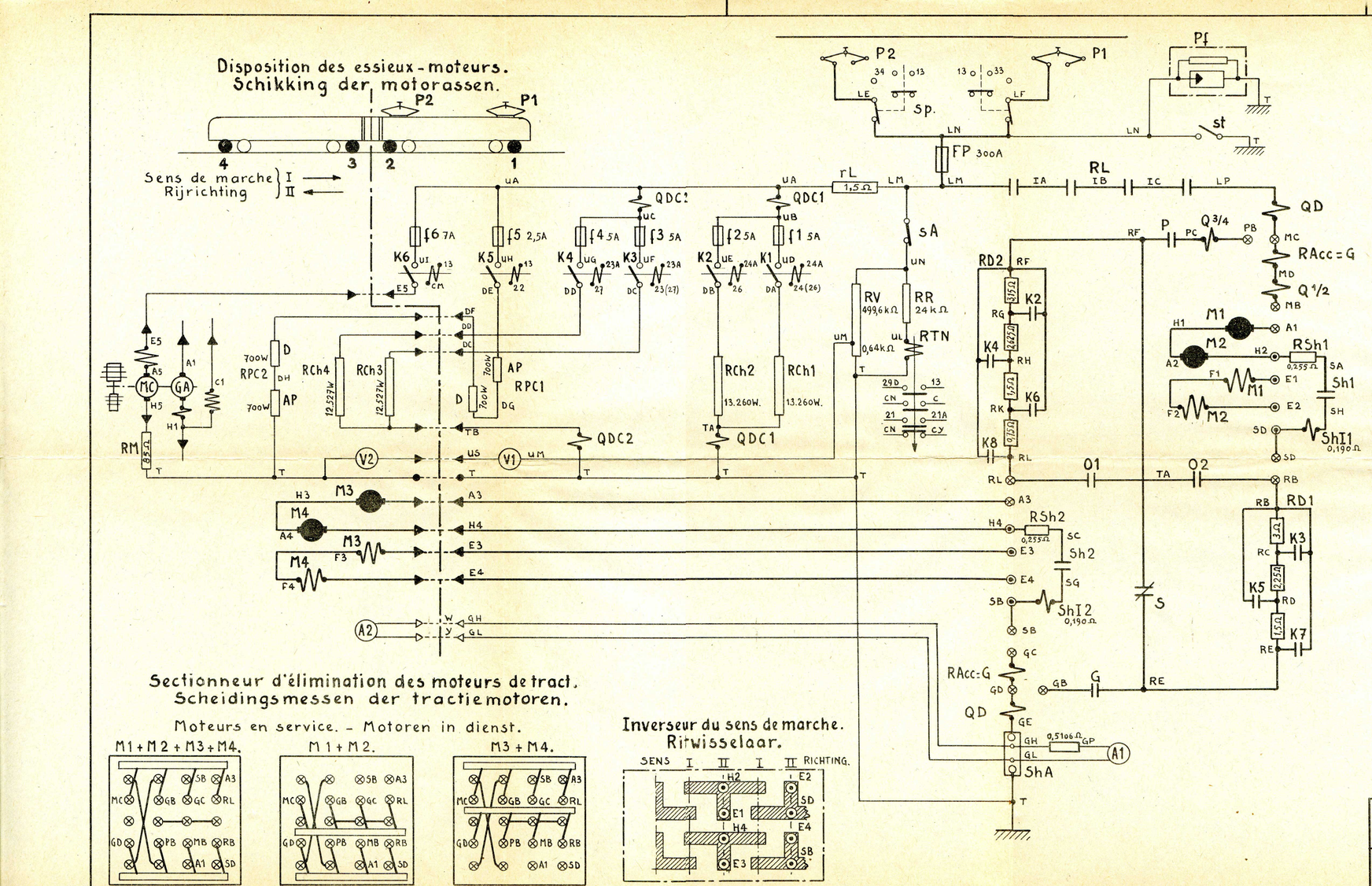
62/F.02.02.13

# Aut. 1962 - 3000/2 V.

## Rendement.

$\phi$ roues motrices (mi-usées) : 970 mm
Rapport d'engrenages : 3,733
A : PC - VV. B : sh. 45 %. Mot. SEM. 512 - ACEC CF 260.






| Légende. | Indication. Aanduiding. | Verklaring. |
|---|---|---|
| Ampèremètres de traction. | A1 - A2 | Ampèremeters tractiekring. |
| Fusibles des circuits auxiliaires HT. | f1 à f6 | Smeltzekeringen der HS-hulpkringen. |
| Fusible principal. | FP | Hoofdsmeltzekering. |
| Contacteurs circuits auxil. HT. | K1 tot K6 | Contactoren der HS-hulpkringen. |
| Moteurs de traction. | M1 à M4 | Tractiemotoren. |
| Groupe moteur- générat.- compress. | MC + GA | Motor-dynamo-compressie-groep. |
| Pantographe. | P1 - P2 | Stroomafnemer. |
| Parafoudre. | Pf | Bliksemafleider. |
| Relais différentiel de traction. | QD | Differentieelrelais der tractie. |
| „ „ de chauffage. | QDCh1 - QDCh2 | „ „ der verwarm. |
| „ d'accélération G. | RAcc = G | Versnellingsrelais G. |
| Rupteur de ligne. | RL | Lijnschakelaar. |
| Résistance de démarrage M1 à M4. | RD1 - RD2 | Aanloopweerstanden M1 tot M4. |
| „ de limitation circ. auxil. | rL | Beperkingsweerst. hulpstroomketens. |
| „ de démarrage MC. | RM | Aanloopweerst. MC. |
| „ de shuntage M1 à M4. | RSh1 - RSh2 | Shuntingsweerstanden M1 tot M4. |
| „ de chauff. cab. de cond. | RPC1 - RPC2 | Verwarmingsweerst. verwarm. cab. |
| AP : air pulsé ; D : dorsal. | | AP : met perslucht ; D : straling rug. |
| Shunt Ampèremètres. | ShA | Shunt der amperemeters. |
| „ inductif. | ShI | Inductieve shunten. |
| Sectionneur auxil. - circ. de mesure. | SA | Hulpscheidingsmes (meetkringen.) |
| „ des pantographes. | Sp | Scheidingsmes der stroomafn. |
| „ de mise à laterre (verrouil.) | St | Aardingsmes met grendeling. |
| Voltmètres HT. ; résist. des V-mètres. | V1-V2 ; RV | HS-voltmeters ; weerst. der V-meters. |
| Relais de tension nulle ; résist. RTN. | RTN - RR. | Nulspanningsrelais ; weerst. RTN. |

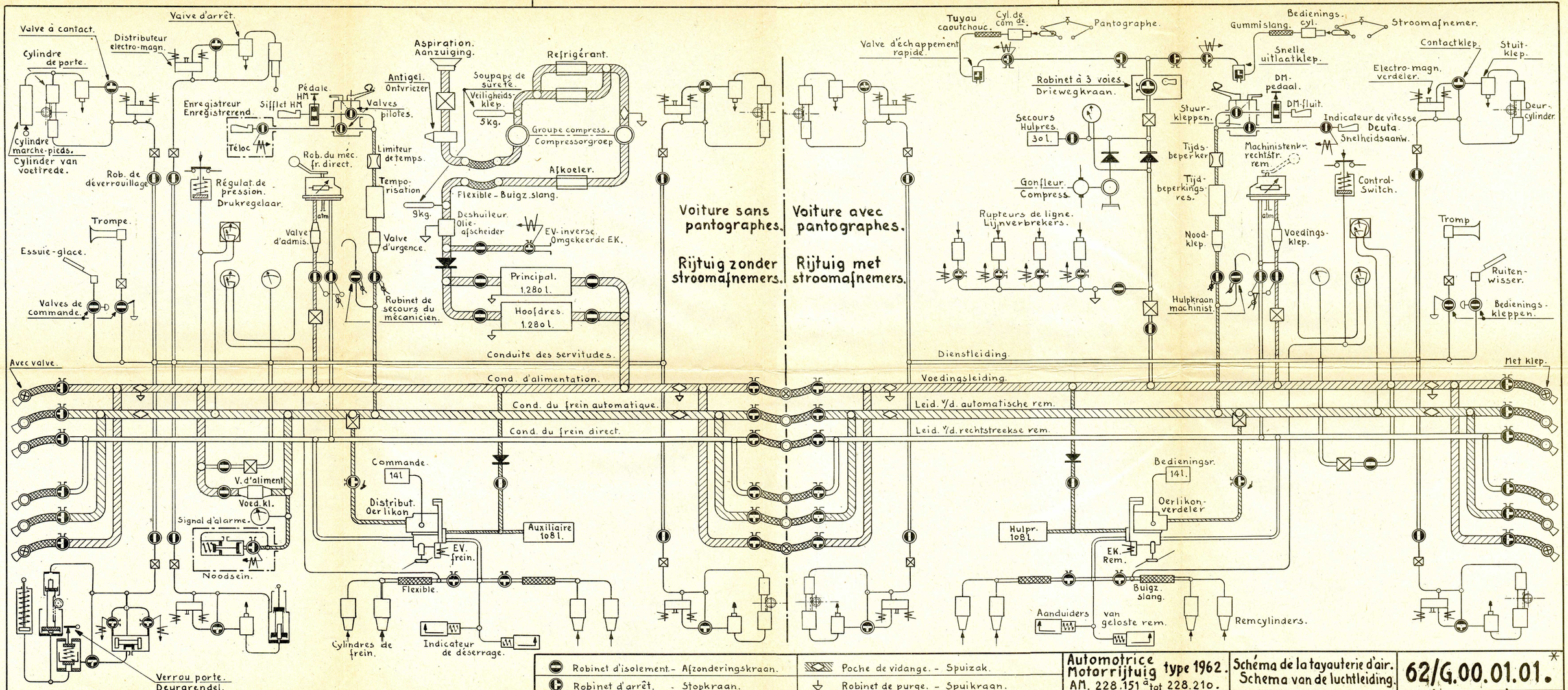
Fonctionnement des contacteurs JH.
Werking der JH-contactoren.

| Trans. Standen. | Contacteurs-Contactoren | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sh 1 | Sh 2 | K 3 | K 5 | K 7 | G | K 2 | K 4 | K 6 | K 8 | P | S | 01 | 02 |
| - 1 | | | | | | | | | | | • | | | |
| 1 | | | | | | | | | | | • | | | |
| 2 | | | | | | | • | | | | • | | | |
| 3 | | | • | | | | • | | | | • | | | |
| 4 | | | • | | | | • | • | | | • | | | |
| 5 | | | • | • | | | | | | | | | | |
| 6 | | | • | | | | | • | | | | | | |
| 7 | | | • | • | | | | | • | | | | | |
| 8 | | | • | | | | | | • | | | | | |
| T1 | | | | | | | | | | | | | • | • |
| T2 | | | | | | • | | | | | | | • | • |
| 9 | | | | | | • | • | | | | | | | |
| 10 | | | | | | • | • | | | | | | | |
| 11 | | | • | | | • | • | | | | | | | |
| 12 | | | • | | | • | • | • | | | | | | |
| 13 | | | • | • | | • | | | | | | | | |
| 14 | | | • | | | • | | • | | | | | | |
| 15 | | | • | | | • | | • | • | | | | | |
| 16 | | | • | | | • | | • | • | | | | | |
| 17 | • | | • | | | • | | • | | | | | | |
| 18 | • | | • | | | • | | • | | | | | | |
| 19 | • | | • | | | • | | | • | | | | | |
| 20 | • | | • | | | • | | | • | | | | | |
| | • | • | | | | | | | | | | | | |

Clasp-connector.
Câble nu - hors connexion.
Naakte kabel - buiten verbinding.
Boîte d'accouplement entre voit.
Verbindingsdoos tussen rijtuigen.
Borne de l'inverseur.
Klem van ritwisselaar.
Borne sectionneur d'élimin. mot. de tract.
Klem scheidingsmes tractiemotoren.

| | | |
|---|---|---|
| Automotrice type 1962. Motorrijtuig AM. 228.151 a tot 228.210. | Circuits de puissance et auxiliaire à 3000 V. Hoofd- en hulpstroomketens op 3000 V. | 62/A.00.01.01.* |
| Modifications. Wijzigingen. | | |

MA 24/13 - 58. 1-12-61. VL.




| | | | |
|---|---|---|---|
| Robinet d'isolement. | Afzonderingskraan. | Poche de vidange. | Spuizak. |
| Robinet d'arrêt. | Stopkraan. | Robinet de purge. | Spuikraan. |
| Electro-valve. | Electroklep. | Filtre. | Filter. |
| Clapet de retenue | Weerhoudingsklep. | Réservoir. | Reservoir. |

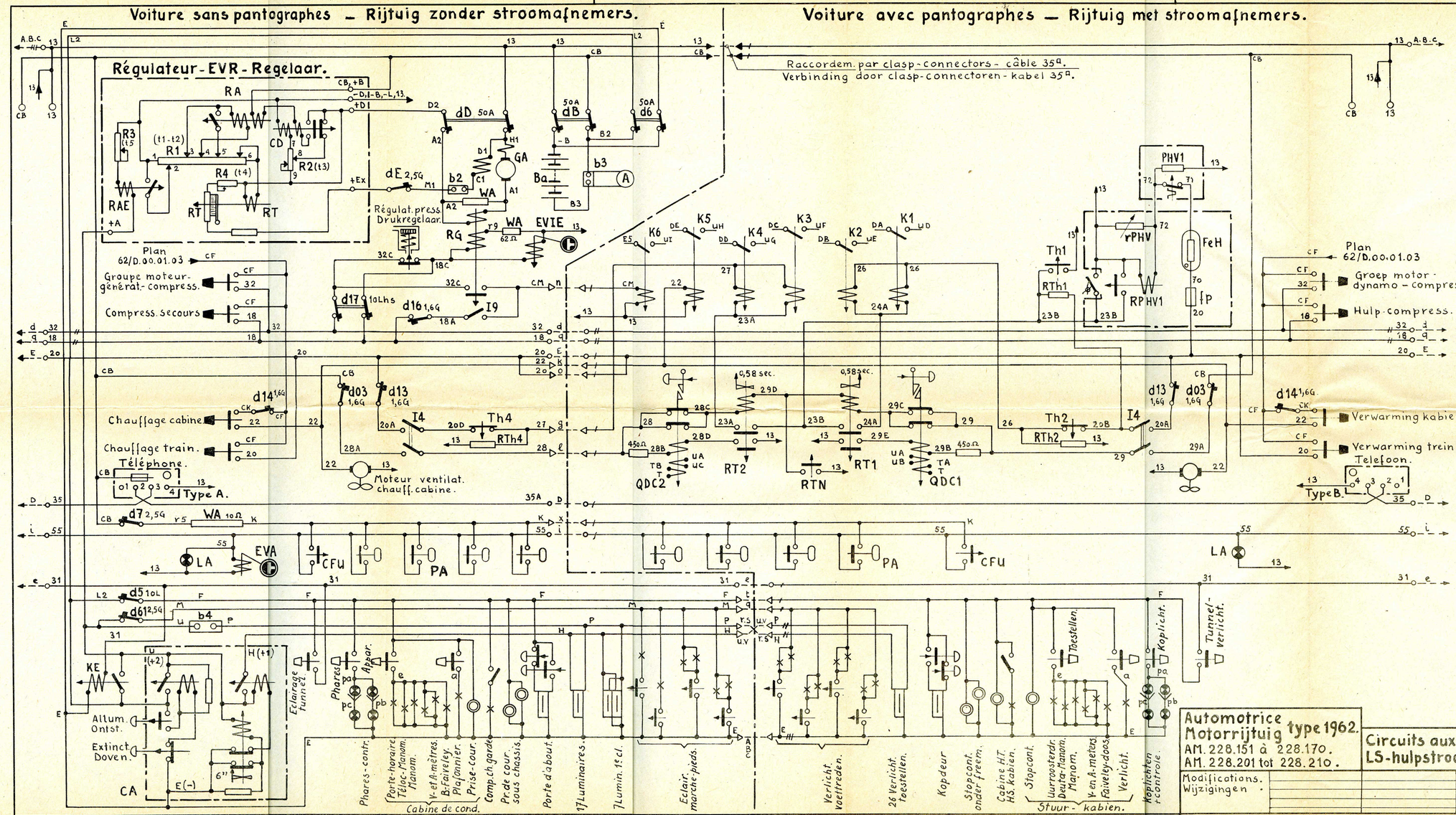
**Automotrice Motorrijtuig type 1962.**
AM. 228.151 à tot 228.210.

Modifications. Wijzigingen.

**Schéma de la tayauterie d'air. Schema van de luchtleiding.**

**62/G.00.01.01.** *

MA - 24/13 - 5.8. VR 1-12-61.




| Indicat. | Légende. |
|---|---|
| CD | Conjoncteur - Disjoncteur. |
| CFU | Cont. frein d'urgence. |
| EVA | Electro-valve frein d'urgence. |
| EVIE | EV-inverse pr mise à l'échapp. compress. |
| FeH | Stabilisat. tension et signal. pulsateur. |
| K1 à K4 | Contacteurs de chauff. train. |
| K5 | " " " cabine. |
| K6 | " groupe mot.-générat.-comp. |
| KE | " éclairage tunnel. |
| PA - LA | Poignée et lampe du signal d'alarme |
| QDC1-QDC2 | Relais différentiel de chauff. |
| RA | Régulateur auxiliaire. |
| RAE | Relais auxiliaire écl. tunnel. |
| RG | " du contact. du groupe (K6). |
| PHV1 | Pulsateur (sur toit.) |
| rPHV-RPHV1 | Résist. de réglage et relais du pulsat. |
| RT1-RT2 | Relais temporisé de protect. chauff. tr. |
| RTh1 à ..4. | Résist. de sensibilisation thermost. |
| RTN | Relais de tension nulle. |
| Th1 à ..4. | Thermostats. |
| | Interrupt. boîte Faiveley : non verrouillé. |
| | " " " : verrouillé. |

| Aanduid. | Verklaring. |
|---|---|
| CD | In-en uitschakelaar. |
| CFU | Contact van noodrem. |
| EVA | Electroklep noodsein. |
| EVIE | Omgek. EK. vr op ontsnapp. stelling. comp. |
| FeH | Spanningsregel. en signalisat. pulsat. |
| K1 tot K4. | Contactoren treinverwarm. |
| K5 | Contactor cabineverwarm. |
| K6 | " groep mot.-dyn.-comp. |
| KE | " tunnelverlichting. |
| PA - LA | Handgreep en lamp van noodsein. |
| QDC1-QDC2 | Differentieelrelais treinverwarming. |
| RA | Hulpregelaar. |
| RAE | Hulprelais tunnelverlichting. |
| RG | Relais van contactor groep (K6) |
| PHV1 | Pulsator (op dak. |
| rPHV-RPHV1 | Regelweerst. en relais van pulsator. |
| RT1-RT2 | Tijdgeregeld beschermrel. treinverwarm. |
| RTh1 tot ..4 | Weerst. gevoeligheidsmak. thermost. |
| RTN | Nulspanningsrelais. |
| Th1 tot ..4. | Thermostaten. |
| | Schakel. Faiveley-doos : niet gegrend. |
| | " " " : gegrendeld. |

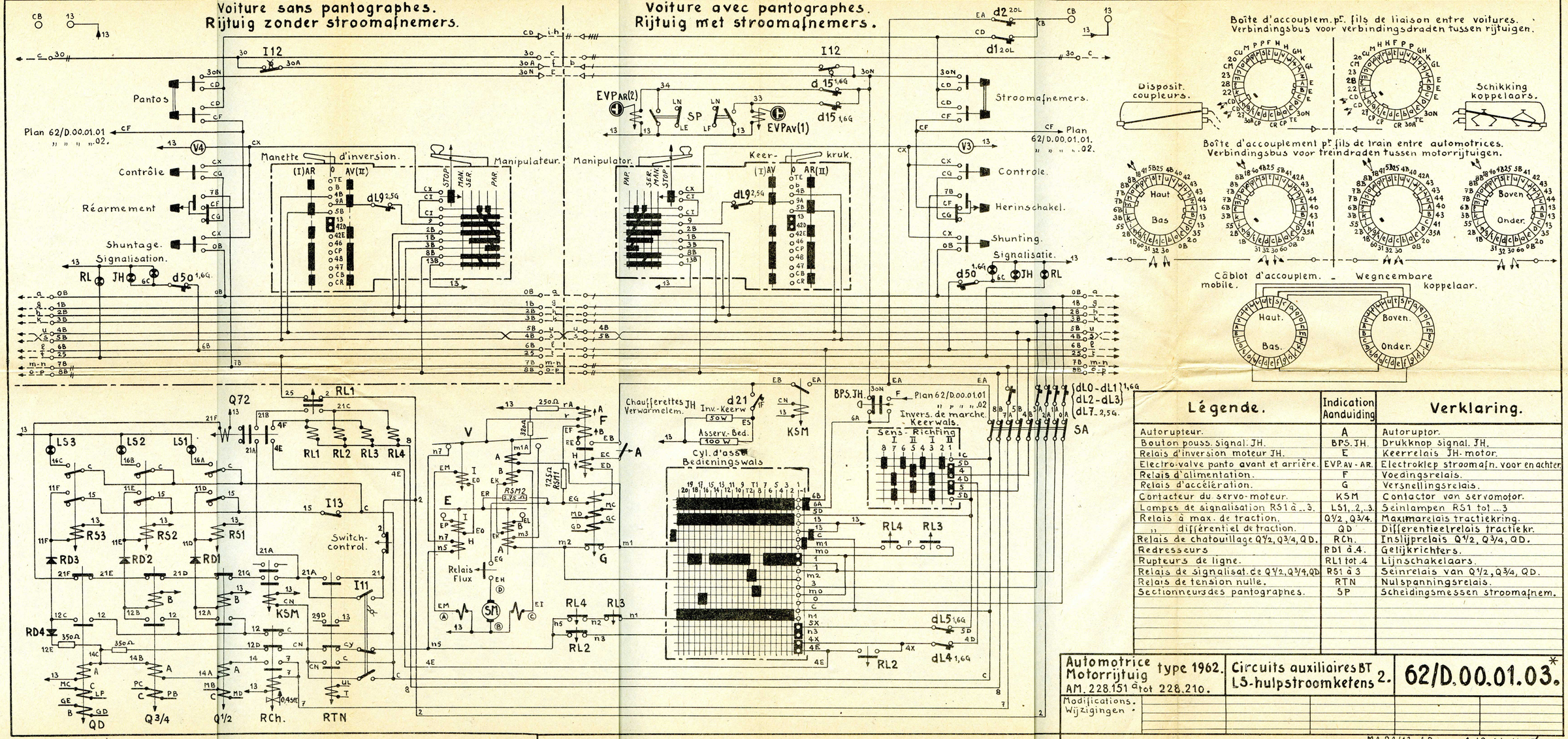
Automotrice
Motorrijtuig type 1962.
AM. 228.151 à 228.170.
AM. 228.201 tot 228.210.

Modifications.
Wijzigingen.

Circuits auxiliaires BT
LS-hulpstroomketens 1.

62/D.00.01.02.*

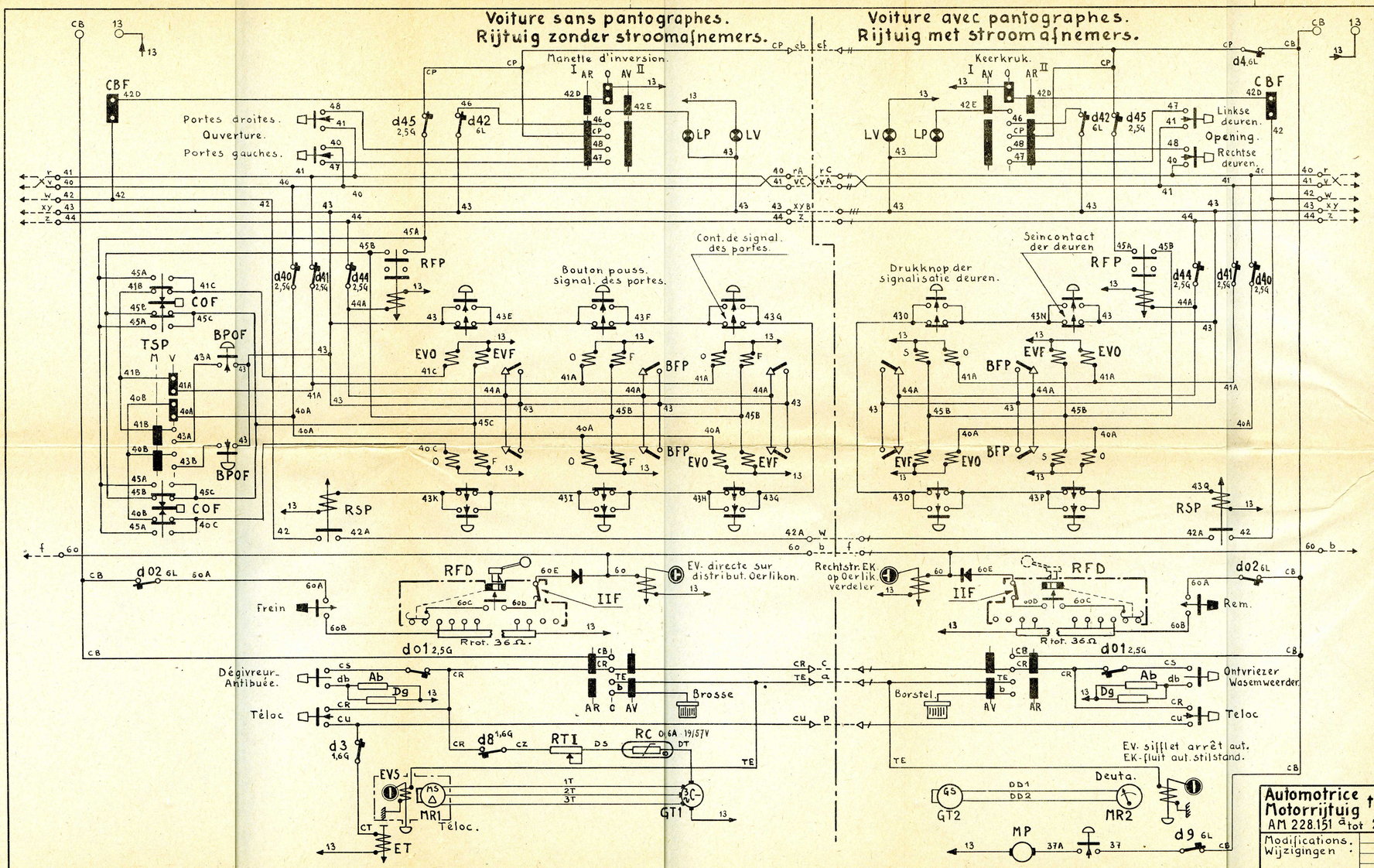
MA 24/13 - 58. 1-12-61. R. [illegible].




| Légende. | Indication Aanduiding | Verklaring. |
|---|---|---|
| Autorupteur. | A | Autoruptor. |
| Bouton pouss. signal. JH. | BPS. JH. | Drukknop signal. JH. |
| Relais d'inversion moteur JH. | E | Keerrelais JH-motor. |
| Electro-valve panto avant et arrière. | EVP. AV - AR. | Electroklep stroomafn. voor en achter. |
| Relais d'alimentation. | F | Voedingsrelais. |
| Relais d'accélération. | G | Versnellingsrelais. |
| Contacteur du servo-moteur. | KSM | Contactor van servomotor. |
| Lampes de signalisation RS1 à ..3. | LS1, ..2, ..3. | Seinlampen RS1 tot ..3 |
| Relais à max. de traction. | Q1/2, Q3/4. | Maximarelais tractiekring. |
| " différentiel de traction. | QD | Differentieelrelais tractiekr. |
| Relais de chatouillage Q1/2, Q3/4, QD. | RCh. | Inslijprelais Q1/2, Q3/4, QD. |
| Redresseurs | RD1 à 4. | Gelijkrichters. |
| Rupteurs de ligne. | RL1 tot 4 | Lijnschakelaars. |
| Relais de signalisat. de Q1/2, Q3/4, QD | RS1 à 3 | Seinrelais van Q1/2, Q3/4, QD. |
| Relais de tension nulle. | RTN | Nulspanningsrelais. |
| Sectionneurs des pantographes. | SP | Scheidingsmessen stroomafnem. |

| | | |
|---|---|---|
| Automotrice type 1962. Motorrijtuig AM. 228.151 a tot 228.210. | Circuits auxiliaires BT LS-hulpstroomketens 2. | 62/D.00.01.03.* |
| Modifications. Wijzigingen : | | |

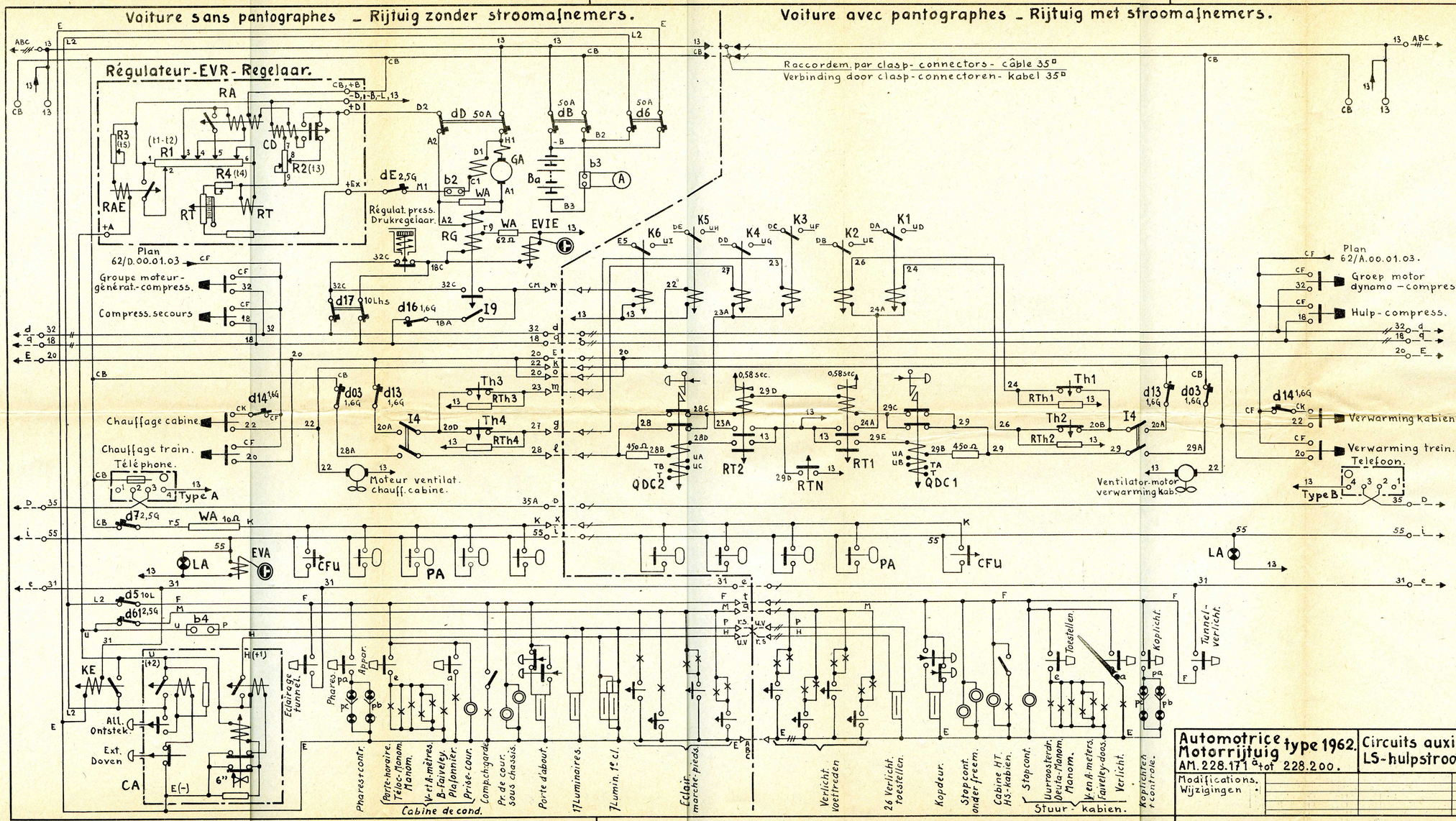
MA 24/13-58. 1-12-61. W




| Légende. | Indicat. Aanduid. | Verklaring. |
|---|---|---|
| Pare-brise chauffant - 19,26 Ω . 375 W | Ab | Verwarmende voorruit. 19,26 Ω . 375 W |
| Valve à cont. fermeture portes. | BFP | Contactklep - sluiting deuren. |
| Bouton pouss. ouvert. portes PW. | BPOF | Drukknop opening PW-deuren. |
| Cont. sur boîte d'acc. entre aut. | CBF | Cont. op verbind. bus tussen motorr. |
| Commut. ouvert. portes PW (ext.) | COF | Commutat. opening deuren PW (uitw). |
| Dégivreur (manipulat.) 130 Ω . 150 W | Dg | Ontvriezer (manipulat.) 130 Ω . 150 W. |
| Electro-aimant pointage Téloc. | ET | Puntings-electromagn. Teloc. |
| EV. sur distribut. portes - fermeture. | EVF | EK. op verdeler deuren - sluiting. |
| „ „ „ „ - ouverture. | EVO | „ „ „ „ - opening. |
| EV - sifflet du Téloc - arrêt aut. | EVS | EK - Teloc - fluit - aut. stop. |
| Transmetteur Hasler | GT1 | Overbrenger Hasler. |
| Transmett. magn. perman. Deuta. | GT2 | Perman. magn. overbrenger Deuta. |
| Interrupt. d'isolem. frein électro-pneumatique (sur robinet.) | IIF | Afzonderingsschakelaar electro-pneumat. rem (op kraan.). |
| Lampe de signal. portes. | LP | Seinlamp der deuren. |
| Lampe de vigilance. | LV | Waakzaamheidslamp. |
| Moto-pompe du pantogr. | MP | Compressortje van stroomafn. |
| Récepteur Hasler (Téloc). | MR1 | Ontvanger Hasler (Teloc). |
| „ Deuta (indicat. de vitesse) | MR2 | „ Deuta (snelh. aanwijzer) |
| Régulat. courant GT1 (lampe stabilisat) | RC | Stroomregelaar GT1 (Stabilisat-lamp) |
| Relais de fermeture portes | RFP | Sluitingsrelais deuren. |
| Relais de signalisat. portes (ferm) | RSP | Seinrelais der deuren (gesloten.) |
| Résistance de réglage GT1 | RTI | Regelingsweerst. GT1. |
| Tambour de sélection portes PW | TSP | Selectietrommel PW-deuren - |
| M = marchandises ; V = voyageurs. | | M = goederen ; V = reizigers. |
| Rob. du mécan. frein direct et electrom. | RFD | Mach. kraan rechtstr. en electrom. rem. |

| | | |
|---|---|---|
| Automotrice Motorrijtuig type 1962. AM 228.151 a tot 228.210. | Circuits auxiliaires BT 3 LS-Hulpstroomketens | 62/D.00.01.04.* |
| Modifications. Wijzigingen : | | |

MA-24/13-58. 1-12-61. R.




| Indicat. | Légende. |
|---|---|
| CD | Conjoncteur - Disjoncteur. |
| CFU | Cont. frein d'urgence. |
| EVA | Electro-valve frein d'urgence. |
| EVIE | EV-inverse pr mise à l'échapp. compress. |
| K1 à K4 | Contacteurs de chauff. train. |
| K5 | „ „ „ cabine. |
| K6 | „ groupe mot. générat. comp |
| KE | „ éclairage tunnel. |
| QDC1-QDC2 | Relais différentiel de chauff. |
| RA | Régulateur auxiliaire. |
| RAE | Relais auxiliaire ecl. tunnel |
| RG | „ du contact. du groupe (K6) |
| RT | Régulateur de tension. |
| RT1-RT2 | Relais temporisé de protect. chauff. tr. |
| RTh1 à . 4. | Résist. de sensibilisation thermost. |
| RTN | Relais de tension nulle. |
| Th1 à . 4 | Thermostats. |
| PA - LA | Poignée et lampe du signal d'alarme. |
| CA | Coffret d'allum. l. fluoresc. |
| | Interrupt. boîte Faiveley; non-verrouillé |
| | „ „ „ : verrouillé. |

| Aanduid. | Verklaring. |
|---|---|
| CD | In- en uitschakelaar. |
| CFU | Contact van noodrem. |
| EVA | Electroklep noodsein |
| EVIE | Omgek. EK. v. op ontsnapp. stelling comp. |
| K1 tot K4 | Contactoren treinverwarm. |
| K5 | Contactor verwarm. cabien. |
| K6 | „ groep mot.- dyn.- comp. |
| KE | „ tunnelverlichting. |
| QDC1-QDC2 | Differentieelrelais der treinverwarm |
| RA | Hulpregelaar |
| RAE | Hulprelais tunnelverlicht. |
| RG | Relais van contactor groep (K6) |
| RT | Spanningsregelaar. |
| RT1 - RT2 | Tijdgeregeld beschermrel. treinverwarm |
| RTh1 tot..4 | Weerst. gevoeligheidsmak. thermost. |
| RTN | Nulspanningsrelais. |
| Th1 tot .. 4 | Thermostaten. |
| PA - LA | Handgreep en lamp noodsein. |
| CA | Koffer der ontsteking fluor.-verlicht. |
| | Schakel. Faiveley-doos: niet gegrend. |
| | „ „ „ : gegrendeld. |

| | | |
|---|---|---|
| Automotrice Motorrijtuig type 1962. AM. 228.171 à tot 228.200. | Circuits auxiliaires BT LS-hulpstroomketens 1. | 62/D.00.01.01.* |
| Modifications. Wijzigingen : | | |

MA 24/13-58. 1-12-61. K.