MOTEC This German system was made by Eberhard Pässler in Dresden, though exactly when is unsure and this will be discussed later. Most of MOTEC's 50 parts were conventional but the range did include two novel and useful features. Gearboxes with ratios of 1.5 to 180 could be made from Gears housed in a compact Gear-box Casing, & a Rubber Coupling plus metal T-piece was used to connect the Gearbox to a Motor.

MOTEC details from a manual were given in MCS, and the Gearbox was referred to in 3/33. MOTEC is not mentioned in Eisenzeit, and Baukästen has only a reference to MCS.

This account is largely based on a Nr.1 set to hand which has mainly aluminium parts, and, thanks to Jacques Pitrat, details of his Nr.5, the largest outfit, with a mix of aluminium & steel parts. Additional items are a Leaflet advertising the sets; & a few Ebay photos.

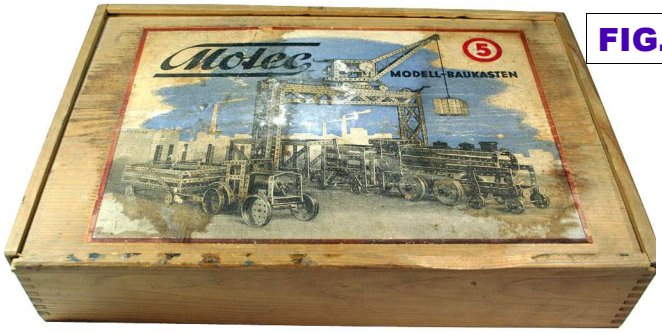


FIG.1

FIG.2

The PARTS Fig.4 is a condensed version of the Manual's Illustrated Parts and most of them can also be seen in the Nr.5 Set in Figs.2 & 3. The notes in the next paragraph apply only to Set 1 – significant differences in the Set 5 parts then follow and include notes on the Gear & Motor items – parts which were not included in the Nr.1.

FIG.3

SET 1 **Holes** are 4.1 to 4.2mm at 12.5mm pitch. **Slotted holes** are 7.6mm long and except in the Brackets #5 & 9, have large radius ends. **Strip parts** are 12.5mm wide. The **DAS** #30 has slotted holes in its lugs. **N&B** are M4 with hexagon Nuts. About half are aluminium with two types of Bolt. One has a 7mm Ø round head, the other an 8mm mush head. The Nut is 7.2mm A/F & only 1¼mm thick. The rest of the N&B are steel with a 7.9mm A/F blackened Nut, 2¼mm thick, and a Bolt dull plated with a 7mm round head. **Bosses** are 10mm Ø except 12¼mm for the 36mm Pulley, and they have bores of 4.1-4.2mm. All are single-tapped M3 (M4 in the 25mm Pulleys but they look to have been retapped). None were found with a **Set Screw** but there was one M3 Bolt among the N&B – 8mm u/h, nickelled with a 4.8mm Ø cheese head. The **Loose Pulley** #16 is 12mm o.d. and 3mm thick. The **Washer** #17 is blackened steel, 10mm Ø. The **Collar** #16 & **Spacer** #17 are 10mm Ø & 4¼mm wide, with the former single-tapped M3. Its **Grub Screw** is brass, 3mm long. **Axles** & the **Crank Handle** are steel, 3.8 & 3.95-4.05mm Ø respectively. Their ends are slightly tapered. **Parts missing** from the Set are the Hook and the Tools. The 2mm wide Screwdriver is needed for the Grubs in the Collar. Also in the Set, some **parts not in the Manual** and perhaps not original: 51mm Ø black Rubber Rings on the 36mm Pulleys, and 3 Axle Stops which look exactly like MÄRKLIN #35a.

SET 5 **The steel parts** are the Flanged Plates, the 25, 11, & 9h Strips, the 11h A/G, the 1*5*1h DAS, the Double Bent Strip, the Axles (4.0mm Ø), the Crank Handle, the 36 & 25mm Pulleys, the Gearbox Casing #20, & the N&B. The **Strips** are not nickelled and they look rather grey. The **Bolts** have pan heads: 7.0mm Ø for the nickelled 20mm S1 & 7.5mm for the dull grey 8mm S2. The **Nut**, 7.0mm A/F & 2.0mm thick is also nickelled. **In aluminium**: all the other parts including the Gears, the large Pulley, the Motor Mount #28, & the Collar. **Holes** are between 4.0 & 4.1mm and the Axles are a tight fit in some of them. The **bosses** are fitted with a 2.5mm Ø **Grub Screw**.

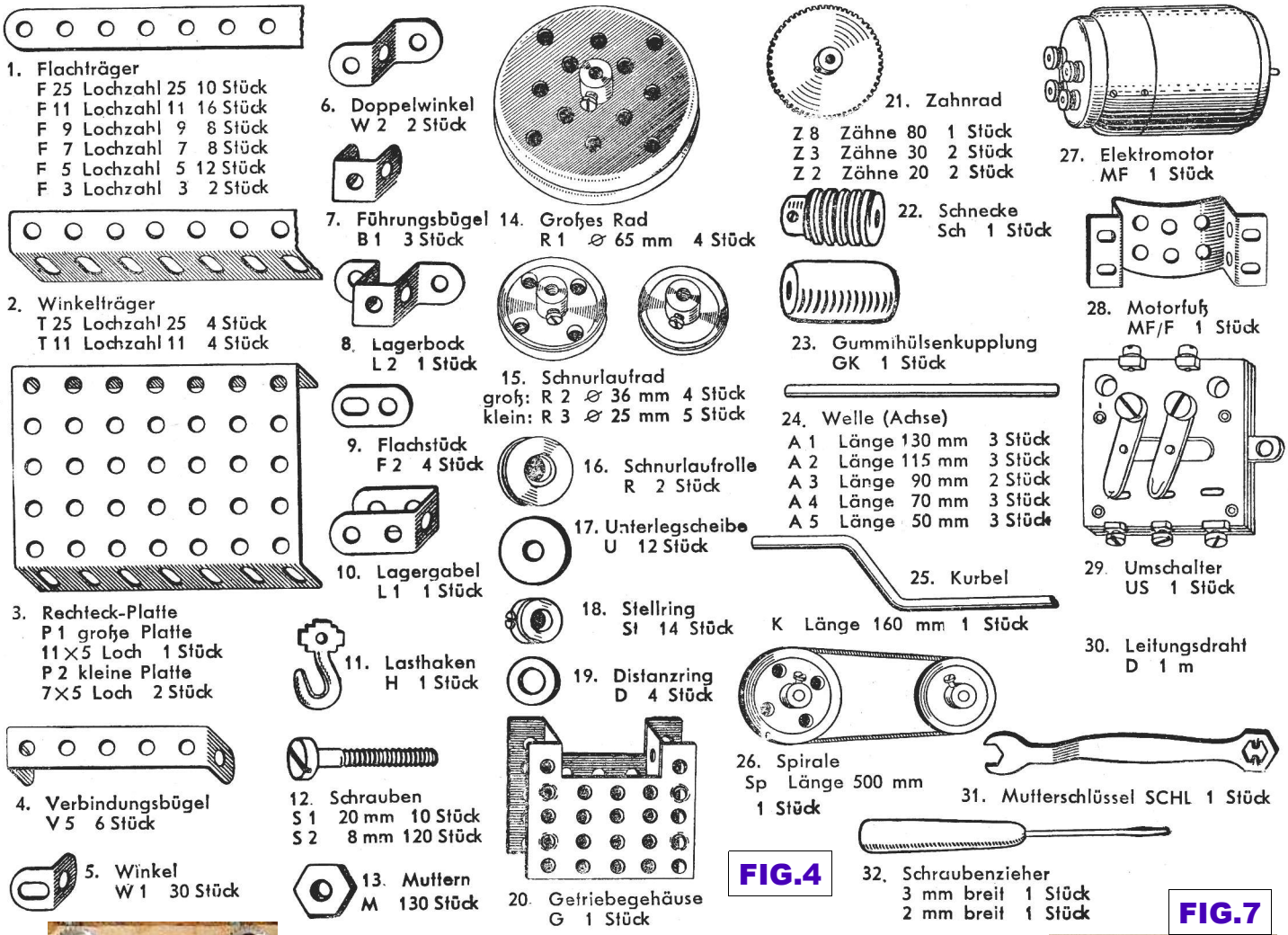


FIG.4

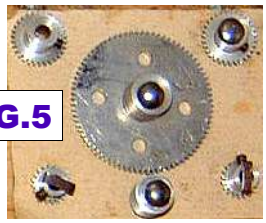


FIG.5

The **Gears** (left) have a Modulus of .5, so a quite fine pitch, with the 80t about 40mm diameter. The meshing distances can be seen below with the 20 & 30t running together in adjacent holes and the 20 & 80t at 25mm centres. The **Motor** has 2 tapped holes on its underside to allow it to be bolted to the Motor Mount #28, and 2 **Special Bolts** are included for this purpose – they are brass and smaller in diameter than the standard Bolts. The **Rubber Coupling** #23 is cylindrical, 9mm Ø & 15mm long. It is used with a flat metal **T-piece**, 11mm long, with a 4mm wide shank and a head 6mm wide. The shank is inserted into one end of the Coupling, and the protruding head engages with a slot in the end of the Motor's 9mm Ø shaft. The other end of the Coupling pushes onto the input shaft of the Gearbox. #30 is **Connecting Wire** for the Motor and the manual shows the Reversing Switch & Motor wired up to a 20v transformer. However in later editions this method is rubber stamped 'ungülig' (no longer valid) and a loose A5 size sheet shows a **Rectifier** between the transformer and the Switch. This part (right) is in Jacques' set & its bottom is the silver disc next to the Switch in Fig.3. The darkish **Plate** under the Screwdriver's shaft in Fig.2 is wooden with holes at 12.5 & 50mm pitch. It is not mentioned in the Manual and if original its purpose isn't clear.The only types of part missing from the No.5 are the spring cord Driving Band #26, the Spanner, & the narrow Screwdriver.

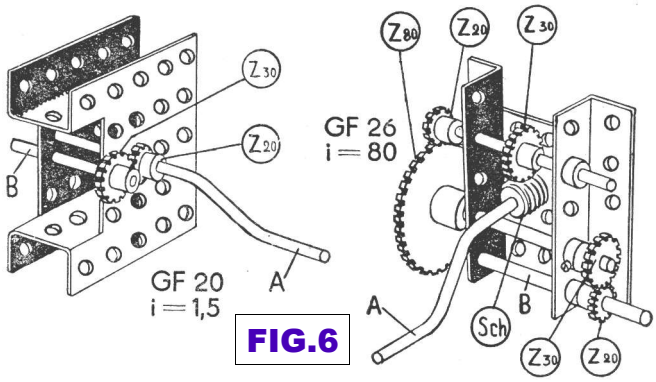


FIG.6

FIG.7

The SETS The **set structure** is rather unusual: the No.1 is the basic outfit, with (it is thought) all the parts for the 33 manual models except the Gear & Motor items; No.2 is an add-on Gears Set; No.3 is the Motor plus a few associated parts; No.4 is just Sets 2+3; & Set 5 is basically Sets 1+2+3. The Leaflet gives the total number of parts in the 5 sets as 450, 70, 4, 75, & 486. No examples of Sets 2, 3 & 4 are known and what is in the Nr.2 isn't clear – the leaflet speaks of 9 Gearboxes, presumably the 9 shown on p5 of the Manual, but if so only about a dozen parts would be needed including the Gearbox Casing & 6 Gears. As an add-on set the Nr.4 is quite understandable, but not so Sets 2 & 3 because as far as the manual models are concerned one can't be used without the other. Unless of course there were more models as yet unseen which could be made using the Nr.1 parts plus those 'unexplained' parts in the Nr.2.

The Nr.1 box is red, made of cardboard, and with a tray. It measures 34*24*8cm and the lid label is identical to the one in Fig.1, except for the stick-on label top right with the Set No. on it. Inside small card trays are used to give 8 compartments in the bottom of the box and 11 in the tray.

The Nr.5 box (Fig.1) is wooden, 39.5*25.5*8cm, with a sliding lid and again it has 2 layers. Figs.2 shows the bottom of

NR. 24 ZUGMASCHINE MIT ANHÄNGER

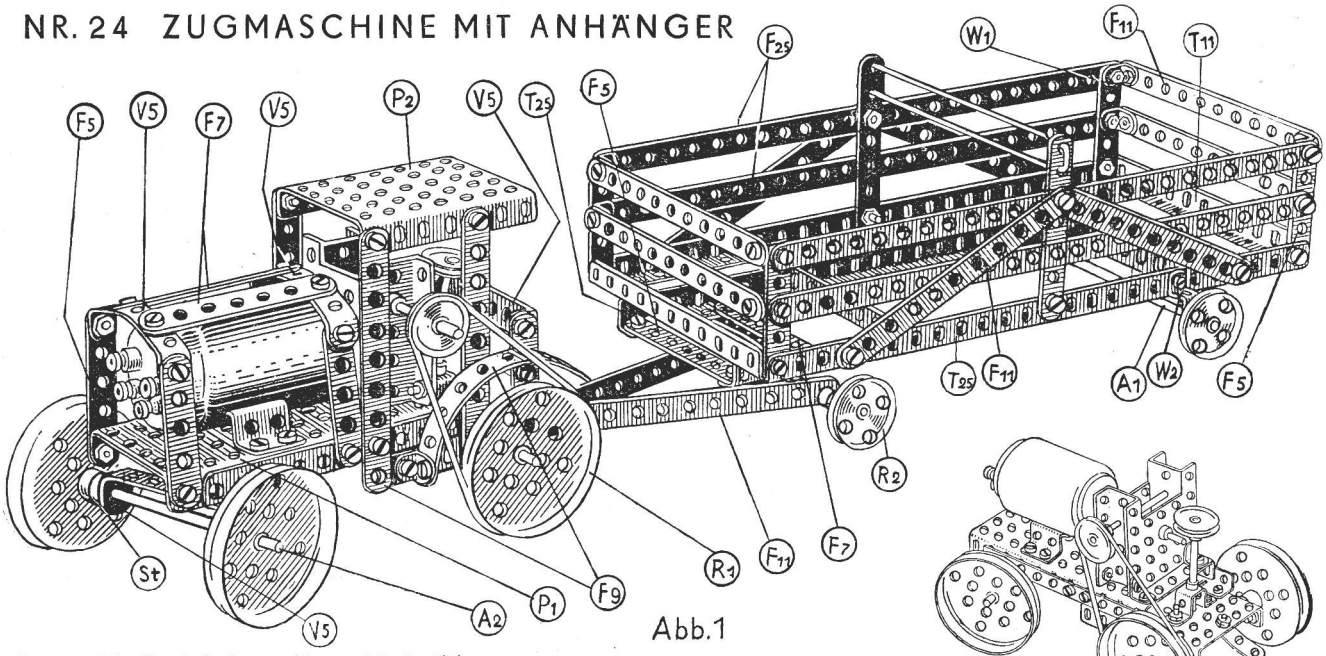


Abb.1

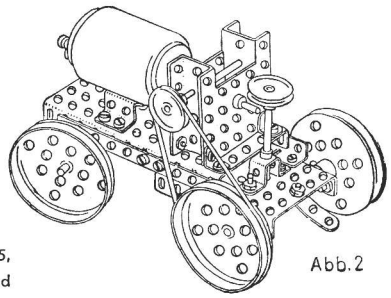


Abb.2

Baue zuerst das Chassis der Zugmaschine aus P 2 mit seitlich aufgesetzten Winkelträgern T 11, die vorn durch einen Flachträger F 5 miteinander verbunden sind. Die vordere Radachse ist in einem Verbindungsbügel V 5 gelagert, welcher drehbar nach GF 5 in der Mitte der vorderen Querstrebe F 5 befestigt ist.

Die Steuerwelle wird nach GF 9 eingebaut.

In das Chassis wird die Antriebseinheit nach GF 24 eingesetzt. Dann erfolgt der Aufbau des Führerhauses mit der Motorhaube nach Abbildung 1.

Das Chassis des Anhängers besteht aus vier Längsträgern T 25, die vorn und hinten mit F 7 verbunden sind. Im Abstand 5 Loch von vorn ist eine Querstrebe F 5 eingesetzt. An diese wird die vordere Radachse nach GF 5 mit V 5 drehbar gelagert. Der weitere Aufbau kann nach der Abbildung ausgeführt werden. Der Kasten wird mit den mittleren zwei Querstreben T 11 auf dem Chassis — ähnlich wie bei dem Lastwagen auf Seite 15 — mit Schrauben S 1 befestigt.

Hauptteile: Chassis
Karosserie
Antriebseinheit

FIG.8

Erforderliche Teile

Bezeichnung:	P 1	P 2	F 25	F 11	F 9	F 7	F 5	F 3	F 2	T 25	T 11	V 5	B 1	L 2	W 1	W 2
Stück:	1	2	4	12	6	8	12	1	4	4	4	6	1	1	18	2

Bezeichnung:	R 1	R 2	R 3	ST	D	S 1	S 2	M	A 1	A 2	A 3	A 5	Sp	G	Z 3	Sch
Stück:	4	4	3	6	4	5	99	116	2	2	2	1	1	1	1	1

Bezeichnung:	GK	MF	MF/F	US
Stück:	1	1	1	1

NR. 32 SPINNE

Hauptteile: Grundfundament
Antriebseinheit
Hauptwelle
Umkleidung

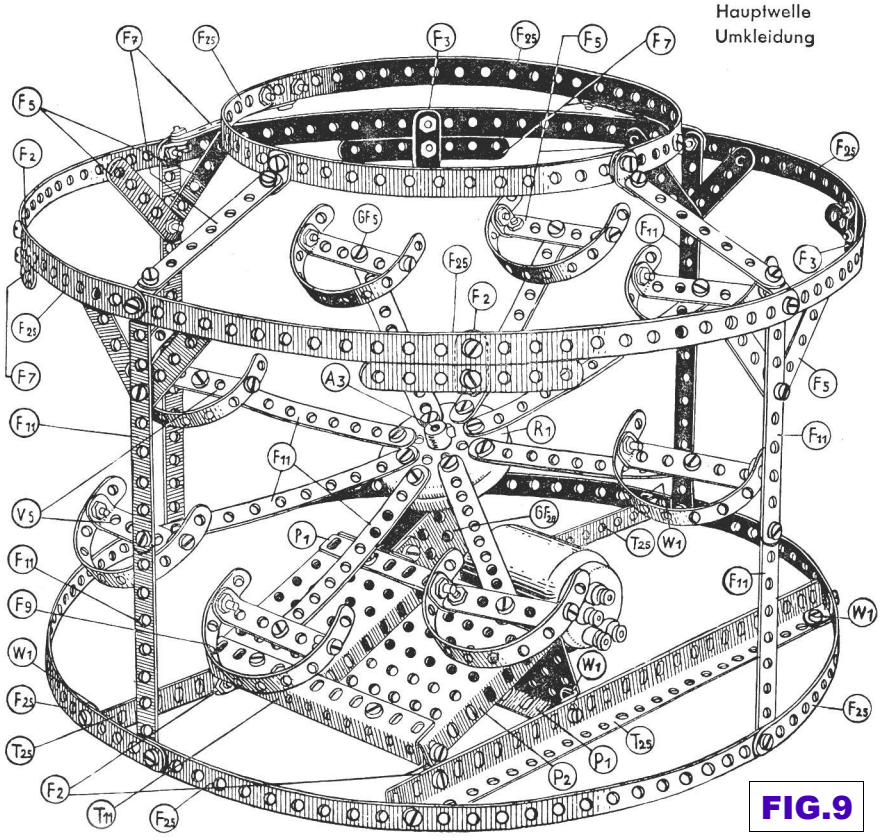


FIG.9

Baue zuerst die Antriebseinheit nach Seite 7 mit Getriebe GF 28. Die Antriebswelle A 3 des Getriebes ist zugleich die Hauptwelle der Spinne. An die schräggestellte Fundamentplatte P 1 der Antriebseinheit werden zwei Platten P 2 angeschraubt, die an der Gegenseite durch einen Träger T 11 miteinander verbunden sind. Das Maschinenfundament wird in zwei Längsträger aus T 25 eingesetzt. Der hintere, aus der Abbildung zum Teil nicht ersichtliche Längsträger ist aus zwei T 25 — mit 20 Loch überlappt — zusammengesetzt.

Das Spinnrad mit Speichen und Drehsitzen wird — wie die Abbildung zeigt — zusammengebaut und auf die Hauptwelle aufgesetzt und mit dieser verschraubt. Die Tragarme der Spinne sind etwas abgebogen, damit sich die Drehsitze leicht drehen können.

Nunmehr wird die Umkleidung fertiggestellt. Sie besteht aus zwei Ringen aus viermal F 25 mit 1 Loch überlappt zusammengeschraubt, die mit vier Längsstreben aus je zweimal F 9 verbunden werden. Als obere Abdeckung wird ein weiterer Ring aus zweimal F 25 und einmal F 5 eingeschraubt. Die Umkleidung wird an den Winkelträgern T 25 des Fundamentes mit Winkel W 1 befestigt.

Der Umschalter für den Motor kann ebenfalls mit am Fundament angeschraubt werden.

Erforderliche Teile

Bezeichnung:	P 1	P 2	F 25	F 11	F 9	F 7	F 5	F 3
Stück:	1	2	10	16	8	8	12	2

Bezeichnung:	F 2	T 25	T 11	V 5	W 1	R 1	St	S 1
Stück:	4	3	1	6	22	1	7	108

Bezeichnung:	M	A 3	A 4	A 5	G	Z 2	Z 3	Z 8
Stück:	108	1	2	1	1	2	2	1

Bezeichnung:	Sch	GK	Mf	Mf/F	US
Stück:	1	1	1	1	1

the box, and Fig.3 the tray (with a cutout for the Motor sitting in the base). The small parts are in the 3 cardboard boxes with fine white polka dots on their lids. The Set Contents are given in the Illustrated Parts.

The MANUAL Except for small changes the manuals with both the Nr.1 & Nr.5 sets are the same.

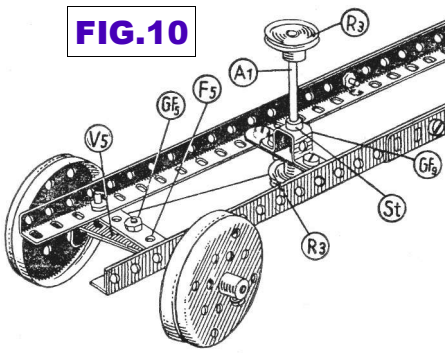
The 'Nr.1'. It is in German and has 32 pages, 297*205mm, plus covers. The front is identical to the Nr.5's in Fig.11 except

that MODELL-BAUKASTEN top right replaces EXPERIMENTIER-BAUKASTEN, and so matches the lid label. The other covers are blank except for the PR and the maker's name & address on C4 – these will be given later. p1 has an introduction & p2 the Illustrated Parts. p3 shows 10 basic constructions, p4 is about pulleys with 4 examples, & p5 is about gearing with the 9 Gearboxes already mentioned – they provide ratios of 1.5 to 180 and 2 are shown in Fig.6. p6 has a description of the Motor & p7 shows how to wire it to the Switch & transformer, and how to connect it the the Gearbox with the Rubber Coupling (though the T-piece isn't shown). 33 models are shown on pp8-31, each with one or more large line drawings, a parts list and, for all but the simplest, explanatory text. p32 has the table of contents of the manual.

Of the models 16 do not need the Motor and Gearbox and can therefore be made with Set 1. The first is 1. ROLLWAGON (Trolley) on p8, the last 17. DREHBANK (Lathe) on p12. Apart from the Lathe, a nice Bridge, and 5 small but quite attractive farm implements, most of the models are very simple. None fully exploit the many constructional parts in the Set

All of the other models, from 15. BOHRMASCHINE (Drilling Machine) on p11 to RIESENRAD (Big Wheel) on p31, are driven by the Motor through one or other of the 9 Gearboxes on p5, and all are larger, worthwhile models. They include the models on the manual cover, various other vehicles & cranes, 3 fairground attractions, a Lift, etc, etc. The Gearbox fits easily into most of the models but otherwise there is little mechanical refinement. For example, none of the crane jibs luff, and only two of the vehicles have steering (cord operated centre pivot as left). And all the vehicle are driven by a Spring Cord drive to the rear wheels, as in the Tractor in Fig.8 One curious feature of the models is that the Gears are only used in the Gearbox and never on their own.

FIG.10

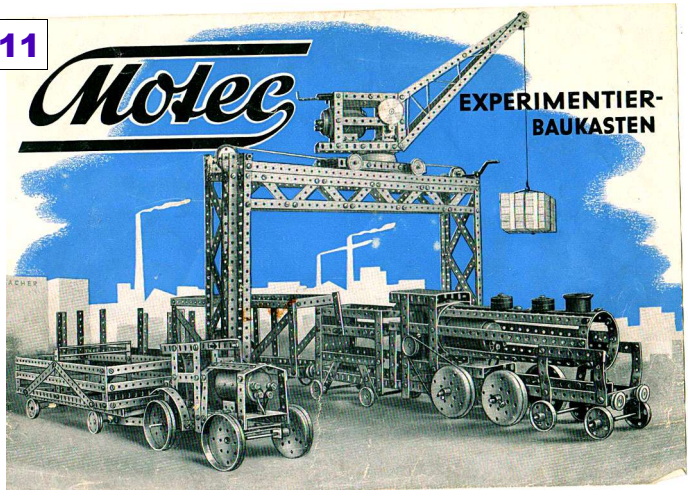


Two of the models are shown left. The Roundabout is about 75% of the original size and the Tractor with Trailer drawing is full-size but with the text much reduced. The Tractor's steering is said to be like that shown in Fig.10.

It isn't mentioned in the Manual but many of the models could, by omitting the Motor/Gearbox, and with a little adaptation, be made with Set 1, and operated by hand.

The 'Nr.5'. Apart for the name on the front cover (below) and some resetting of the text it differs from the 'Nr.1' only in the following respects. • 'Getriebe Patent angemeldet' (Gearbox patent pending) has been added on p5. However it is also on p32 of both editions. • As explained earlier p6 has been rubber stamped 'ungülig' (not longer valid). • The back cover has a different PR – details are given later.

FIG.11



The EBAY SETS **Nr.1.** The one set seen matches the present Nr.1, with MODELL-BAUKASTEN on both the lid & manual cover. It has 4 boxes for small parts, two of which are as those in the Nr.5 and two, of about the same size, have dark brown lids.

Nr.5. 3 other sets have been seen. **The first** matches Jacques' and like it has MODELL-BAUKASTEN on the lid and EXPERIMENTIER-BAUKASTEN on the manual. **The second** is similar but the manual & Motor parts are missing and some parts, including the Strips & 65mm Pulleys look to be black. **The third** has EXPERIMENTIER-BAUKASTEN on both the lid and the manual, and is in a different wooden box. It still has a sliding lid, but its tray is only about ¾ the length of the box. There are 12 compartments in the tray and 6 in the base, including 2 large ones with the Pulleys in them, attached to blue backing cards. The Pulleys are red; the other main parts are blue. The 3 small part boxes are red. There are no 65mm Pulleys but instead 4 of the 36mm are fitted with treaded Tyres, and their O.D. scales at about 65mm. In addition there are 10x 36mm & 5x 25mm Pulleys, with most fitted with Rubber Rings. However the box may have contained parts from more than one set because 2 Motor Mounts can be seen. Some parts are missing, the 5*7h Flanged Plates for instance, and there is no Rectifier. There is though a loose A5 sheet, too blurry to see any details but it does have drawings on it which are not the same as those on the Sheet with Jacques' Nr.5.

The EXPERIMENTIER-BAUKASTEN on the lid of the third set is a clear change but more evidence would be needed to be sure that the coloured parts and the other changes noted above are genuine and not just the work of an enthusiast.

DATES MOTEC was made by Eberhard Pässler, William-strasse 10, Dresden A 28. From Google, the firm, sometimes referred to as EPD (Eberhard Pässler Dresden), made toys, model steam engines up until 1963, and domestic appliances until 1990, but became VEB Elko Dresden when it was nationalised in 1972.

The PRs of the known documents are:
'Nr.1' manual: D31 1250 5 Selecta-Druck GmbH., Dresden
'Nr.5' manual: lll/9/31 651 5 Selecta-Druck GmbH, Dresden
The loose Motor sheet with the Nr.5: lll/9/152/551/2000
Leaflet: lll/9/31 O 2278

The existence of MOTEC after WW2 is shown by the Leaflet because there is an unused space for a price after each set but with DM (Deutsche Mark) printed before it, and the DM was introduced in the DDR in July 1948. So possibly the '1250', '651' & '551' in the first 3 PRs denote dates. No start date is known but a Google search gave several postwar, but no prewar references to either EPD or Selecta-Druck.

However MCS speaks of 'about 1930' and the 9/31 & D31 in the manual PRs could indicate 1931. Also the presentation of the set and the graphics do look typical of many sets made in the 1930s, as opposed to those made after WW2. And Jacques wrote that Pässler's introduction in the manual includes an almost lyrical description of the advantages of the technical progress made in the preceding years, and encourages the young to work as engineers to help to develop technical advances for the good of humanity. In the light of this it seems much more likely to have been written in the early 1930s than in a city which had so recently been devastated by man's 'technical progress'. Unless of course it was a question of the 'party line' at the time and the author was merely following it.

So pre- or post-WW2? Either way there seem to be anomalies in the PRs. One possible way forward is the 'Patent Applied For' in the manuals, if a record of the application or a subsequent Patent could be found.