Some GERMAN SYSTEMS Below notes on various systems that are not in MCS, and extra points about some that are. Many of them are small sets that appeared in the decade following WW2 and were only produced for a few years. My thanks to Jeannot Buteux who sent much of the information, some of it from the *CONSTRUCTORAMA* archive. Many other details have been taken from *EISENZEIT* (EZ), the invaluable book reviewed in 14/377, and from data that Werner Sticht kindly sent. However, as will be seen, there are still many gaps and any additional information will be very welcome. Also with my limited German I may have misunderstood EZ in places, and so, as always, corrections will be much appreciated.

AKRON This set dates from the WW2 to the early 1950s period and there's a small photo of the lid, and some notes on it, in EZ. Under the name is Stahl-Leichtbau-Kasten (Steel Lightweight Building Set) and what I can understand of the note says that thin elastic steel Strips were used with holes in them at 5mm pitch. And there's mention of spiral springs, possibly used as the method of fixing?

ALPHA MCS has 2 systems of this name and from the start date of 1931 given, the notes in EZ refer to the second one in MCS, the one with the 12mm spacing. The end date is given as c1970 though unless this encompasses both there may have been 2 ALPHAs on sale at the same time. There were 4 main and 5 linking sets, plus a small 50-Pfennig outfit, and it was the first system to have parts made of coloured plastic. The models included such non-technical subjects as a Weightlifter, an Ibex and Dancing Hares.

AUKI The box lid of this early 1950s set is shown in EZ but without any details, and the model on it is too small to see.

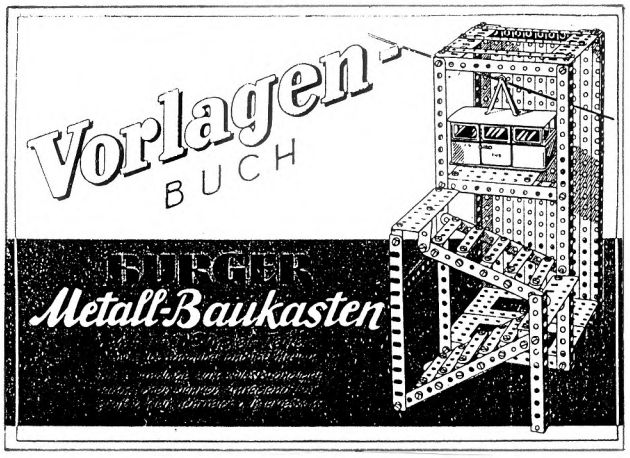
AUTO-CONSTRUKTOR This system is mentioned in EZ but no details are given. It may be the same as AUTO-CONSTRUCTEUR in MCS - that name came from a manual in Dutch, but the titles in the figures in it were still in German. EZ gives the start of production as 1928 and the maker as Curt Schrader of Eisenach, and from 1929 München. This firm had earlier made METALLO-TRIGON although it was called Stanzwerke GmbH at that time.

BAUFIX EZ gives the start date as 1932, and the maker as Saalheimer & Strauss, Nürnberg. It also refers to 'BAUFIX and **SIMPLEX**' as two cheap sets from that firm, but I'm not certain whether they were identical systems.

BENCO The start date isn't given in MCS - a set from around the early 1950s is shown in EZ.

BERGLAND Made by Willibald & Herbert Budde/Heinrich Wichmann, in Lüdenscheid from c1945 to about 1950. The manual cover with its mountain scene is shown at the foot of the last column; an inner page has two Nr.1 models that can also be made from Sets 0 + 0a. About 18 parts can be seen in the Crane, including Strips from 2 to 15 holes, a 5*11h Plate flanged along its longer sides, and a smaller one, probably 5*5h but sometimes it appears to be 6h long.

BURGER Probably from the 1950s, only one set is mentioned on the manual cover (below), and the text on it says that it contains 140 parts plus 100 Bolts and 150 Nuts. That might suggest that Threaded Rods were used as axles. Other parts that can be seen in the Cable Car Station on the cover are 5*11 Flanged Plates with the STABIL-style centre 7*3h cutout; 25,14 & 11h Strips and A/Gs; and 9 & 11h Flat Girders.



CONSTRUCTION EZ gives the start date as around 1965 and the original manufacturer as VEB (K) Metallwaren Schmerbach bei Gotha. From sometime between 1979 and 1982 production passed to VEB Ppaffschwende, and the original sets numbered from 100 upwards were replaced by the series starting with C01. KONSTRUKTION, the forerunner of CONSTRUCTION (see 8/181), isn't mentioned in EZ but the manufacturer given in MCS was from Gotha (a town near Erfurt).

Of the earliest parts EZ says that the Flanged Plates were sometimes painted, and the large plastic Circular Plates (Lochscheibe) was bright blue. This might have been the 50mm Ø Scheibe shown in MCS for CONSTRUCTION but it may be noted that for KONSTRUKTION a 70mm Lochscheibe is listed as well as a 50mm version. Both look as if they are metal, but the MCS entry may well not show the earliest parts.

DER KLEINE INGENIEUR EZ has 2 references to a system of this name and I'm not sure if they are one and the same. There's a photo of a small box lid from the WW2-early '50s period, with a model of a Ferris Wheel on it, and elsewhere talk of a DDR set with STABIL-like steel parts.

DER JUNGE KONSTRUKTEUR There is quite a bit about this DDR system in EZ. It was made by Hans Wünsch of Niederwiesa and appeared in 1959. The hole spacing was 12.5mm and the parts were black, of good quality, with plastic gears. As well as the outfits in MCS there was a theme set to make a Tractor, 3-Furrow Plough, Roller, and Harrow; and a Nr.1000 outfit with about 1000 parts. Later on (after 1966?) there were sets to make bridges and cranes; railway locos and wagons; and cars and other motor vehicles. No reference to the system is known after 1972.

DER KONSTRUKTEUR FMF A small set from the WW2-early '50s period. The box lid shown in EZ has 3 boys and a girl admiring a very simple model of an open-topped

DER JUNGE KONSTRUKTEUR (DJK from now on.) A brief note about this 12.5mm pitch East German system with all black parts was given in 15/412. More is now available from 4 sets to hand, a No.3, two No.33's, and an MTS; a few parts not from any of these (found in one of the No.33's); plus various photos, etc from Ebay, and from Joachim Kleindienst's website. Apart from details of the parts the other main items of interest are the contents of the 'standard' sets; more on the Gears outfit and the parts in it; and photos of a rare DJK Motor. In what follows items are dated from the 2 figures after the slash or hyphen in the PRs on boxes, documents etc, which are thought to indicate the year.

HISTORY DJK was made in Saxony by Hans Wünsch, Mühlenstrasse 2 und 20, Niederwiesa/Sa. The earliest known manual is from 1955, a year earlier than the 1956 date in Baukästen, and one outfit on Ebay was said to be from 1954. The sets mentioned in the 1955 Manual are 3, 33, 66, & MTS. The Nr.3 was the basic set; 33 & 66 were add-on outfits, and MTS (= Maschinen-Traktoren-Station – a repair facility for agricultural machinery) was a Tractor/Agricultural Implements theme set. A 3+33 from the 1950s is also known. By 1958 three new sets had been added: a Nr.0 with about half the number of parts in the Nr.3; the Getriebe- und Zahnrad-Kasten (Drive & Gears Set), another add-on set with plastic Gears running on special Flatted Axles; and Nr.1000 with all the parts, around a 1000, from Sets 3, 33, & 66, and enough of the other parts to allow the MTS models to be built. The Nr.0 is in a 1961 brochure but it isn't listed in the 1961 or later manuals. All the other sets are mentioned in the remaining manuals (the last from 1963). A set from 1964 is shown in Baukästen and 1972 is given as DJK's end point in Eisenzeit.

An MAS Set is mentioned in Baukästen, & in Eisenzeit both MAS & MTS Sets are referred to. MAS stands for Maschinen-Ausleih-Station, a depot which lent out agricultural machines, so possibly the MAS set might have been akin to the MTS outfit. Nothing more is known the later theme sets for bridges, cranes, rolling stock, & vehicles mentioned in OSN 15.

Another Gears set, said to be for schools, was offered on Ebay. It differs somewhat in content from the standard sets and includes a Worm & Worm Wheel.

THE STANDARD SETS

THE PARTS Below (Fig.1) the illustrations of the parts taken from the 3+33 manual (as in MCS), but without their German names (they are given in Fig.2, the Set Contents, on the next page). Also only one example is shown where there is more than one size of a particular part, but with the PNs of the others nearby on a blue ground. My English names for the parts are given below together with a few notes and dimensions.

The parts are mostly well made but some small variations in a few generally non-critical dimensions occur - in the metal outside the end holes in Strips for example, and the bend point in Brackets & other parts varies a little. The **thread** is M4. **Holes** are 4.2mm with a few 4.3 & the occasional one 4.1; their **pitch** 12.5mm. **Bosses** are 10.0mm Ø, single-tapped, with a 4.1mm bore. Ordinary Bolts are used as set screws but some 21mm Pulleys are fitted with a 6½mm long Grub Screw not listed anywhere as a DJK part. **Slotted holes**: except where stated they are 6.1-6.2mm long with large-radius ends.
#2-6 Strips 3, 5, 7, 11, 25h. They are 11.9-12.4mm wide (but typically 12.0-12.2) with very large, about 12-13mm, radius ends.

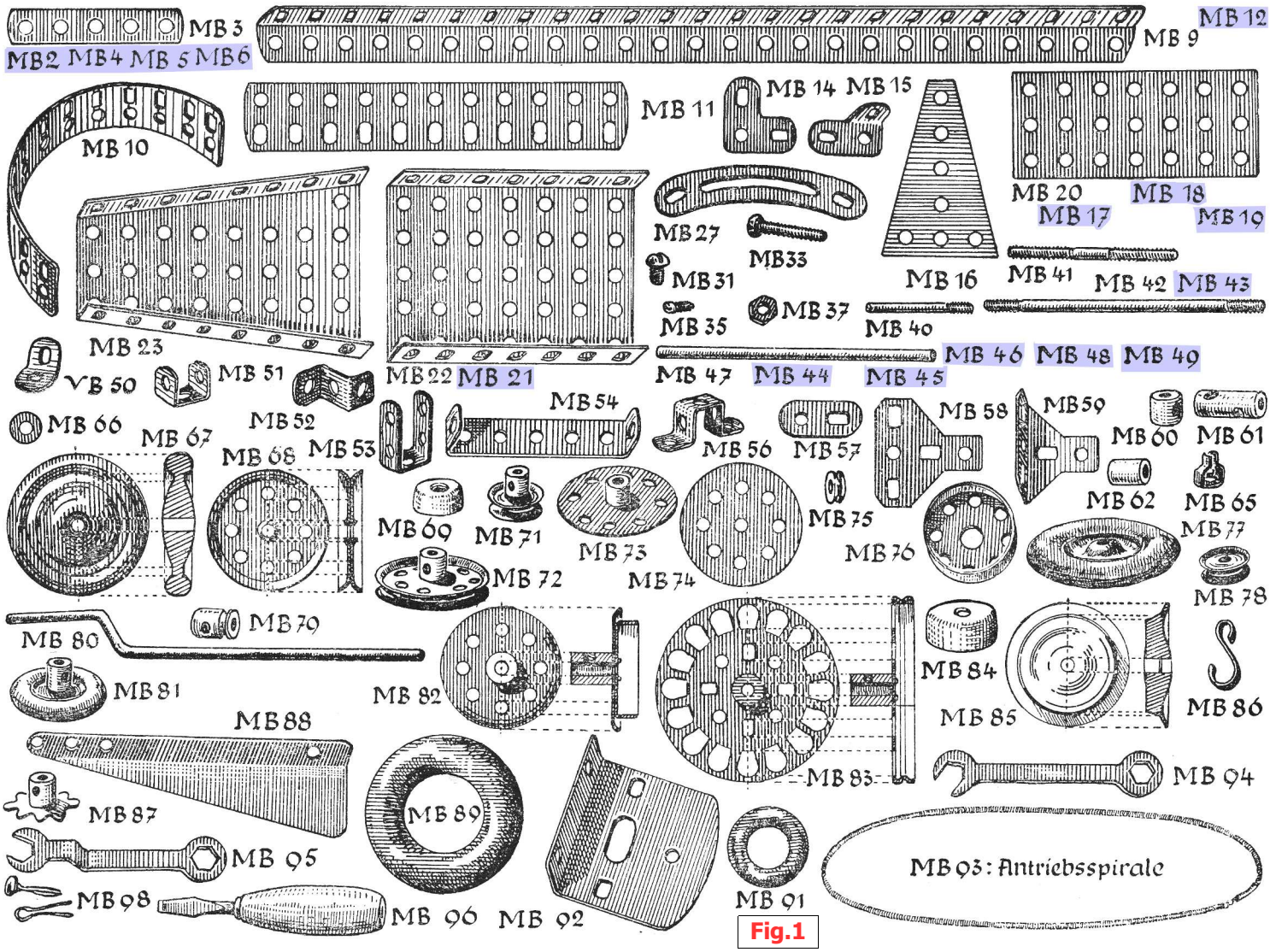


Fig.1

#9,12 A/Gs 25h (not seen), 11h. 13*13 to 12*14mm in section with large radius ends cut close to the end holes.
#10,11 Flat Girders. 11h long and 24.2mm wide, with ends like the A/G. #10 is formed into a semicircle.
#14,15 Corner Brackets with fully rounded ends.
#16 Triangular Plate. Not seen.
#17-20 Perf. Plates 5*5, 5*7, 4*7, 3*7h. Square corners.
#21-23 Flanged Plates, 11*5, 7*5h, with 7.6-7.7mm slotted holes, & 8h long Sector with flat ends and 7.5mm slots. All corners are square. Various examples of #21 & 22 are either about 61 or 62½mm wide o/a.
#27 Curved Strip with fully radiused ends & slots, the outer ones 7.6-7.7mm.
#31,33 Bolts, 6½ & 19½mm u/h with 7.2mm Ø RH. Flat-headed Bolts are called for in one of the MTS models & a few with cheeseheads, but otherwise similar to #31, were found; also a few countersunk Bolts, 6.9mm Ø & 6½mm long o/a.
#37 Nut, pressed, 6.9-7.1mm A/F, & 1¾mm thick. One 8mm Nut was found in one set, 7.9mm A/F & 2¼mm thick.
#40 Threaded Pin. A 3.96 Ø rod, 38mm long, threaded over 6mm at one end and with a screwdriver slot at the other.
#41-43 Screwed Rods. The 50mm is threaded over its whole length. The 90 & 120mm have about 38mm of thread at each end with the smooth centre 3.4-3.5mm Ø, too big to allow a Nut to pass from one end to the other.

#44-49 Axles, #80 Crank Handle. 3.95mm Ø with slightly chamfered ends. The 30 & 150mm Axles have not been seen. The **Crank Handle** is 145mm o/a with a 105mm shaft and a 27mm handle offset 15mm.
Bracketry. **#50 A/B**, **#51 D/B**, **#52 Rev A/B**, **#53 2h high D/B**, **#54 DAS**, **#56 Double Bent Strip**, **#57 Flat Bracket**. #57 is 25mm long and #50 is made from it. Both have fully rounded ends; those of the other parts are like the Strips. #51 & 53 are 15.1mm wide o/a. #54 is 65mm long o/a. #56 has base holes at 27mm pitch.
#58,59 Trunnions.
#60 Collar, #61 Coupling, #62 Spacer. All are 10.0mm Ø, single-tapped, and 10, 9, & 24mm long respectively. The 2 tappings in the Coupling are at 90° to each other, at about 13½mm centres.
#63,65 Axle Clips. #63, not seen, and only included in the No.0 set, is said to be an 'Elastik' Collar, so probably rubber. The MÄRKLIN style #65 is hard to push onto an Axle but grips it firmly.
#66 Washer. 12mm o.d. but 9mm in one Set.
#67 Road Wheel. As shown, 51mm Ø & 8½mm wide. It is made from 2 identical pressings joined by 4 spot welds around the 'neck'.
#68,72 43mm Pulleys. 43mm Ø. The discs are similar but in #68 they are belled out slightly at the centre. For #68 they are again spot welded together, but are held by the boss for #72.

MB-Nr.	Teil-Bezeichnung	Stückzahl enthalten im Kasten 0	3	33	66	MTS	1000
2	3-Lochschiene	6	10		4	6	14
3	5-Lochschiene	8	16	10	10	17	36
4	7-Lochschiene	4	4	8	5	5	17
5	11-Lochschiene	6	8	13	4	12	25
6	25-Lochschiene		6	4	4		14
9	25-Lochwinkelschiene				8		8
10	Doppel-Lochschiene, halbkreisförmig				4	4	4
11	11-Loch-Doppel-Lochschiene			2			2
12	11-Loch-Winkelschiene			4	8	1	12
14	Lochwinkel, plan		6	6			12
15	Lochwinkel, abgewinkelt			6		1	6
16	Lochplatte, konisch				4		4
17	Lochplatte, 5 × 5 Loch			1	2		3
18	Lochplatte, 5 × 7 Loch				2		2
19	Lochplatte, 4 × 7 Loch			1		1	1
20	Lochplatte, 3 × 7 Loch			2	2	2	4
21	Grundplatte, 11 Loch lang		1		1	1	2
22	Grundplatte, 7 Loch lang	1		1	2	1	3
23	Grundplatte, konisch, 8 Loch lang		2		2	2	4
27	Segmentband		4	4		3	8
31	Schraube M 4, kurz	30	46	40	75	108	240
33	Schraube M 4, lang	2	4	6	3	2	18
37	Sechskantmutter M 4; 7 oder 8 mm SW*	32	60	50	75	118	285
40	Gewindestift M 4, kurz						
41	Gewindestift M 4, 50 mm		6	2		3	8
42	Gewindestift M 4, 90 mm		1			1	1
43	Gewindestift M 4, 120 mm		2				2
44	Welle, 4 mm Ø, 30 mm lang						
45	Welle, 4 mm Ø, 50 mm lang						
46	Welle, 4 mm Ø, 70 mm lang	1	2	1	2		5
47	Welle, 4 mm Ø, 90 mm lang	2	2		2	3	4
48	Welle, 4 mm Ø, 120 mm lang	2	1		3	2	4
49	Welle, 4 mm Ø, 150 mm lang						2
50	Winkellasche	10	14	10	13	18	40
51	U-Bügel mit 3 Loch		2	4	2		8
52	Z-Winkel mit 3 Loch		2	1	1	1	4
53	Lagergabel mit 5 Loch	1	2	2		1	4
54	U-Bügel, 5 Loch lang	2	2	4	6	2	12
56	Brücke mit 5 Loch		2				2

* Bei Nachbestellung bitte angeben, ob 7 oder 8 mm SW

Nr.	Teil-Bezeichnung	0	3	33	66	MTS	1000
57	Lasche, plan	4	12	10	5	5	27
58	T-Blech, plan			4	4	6	8
59	T-Blech, gewinkelt			4	2	3	6
60	Stellring mit Gewinde M 4		4		2		6
61	Kupplung für 4-mm-Welle		1		1		3
62	Abstandshülse					8	8
63	Stellring, Elastik	10					
65	Stellring, federnd			10	6	8	16
66	Unterlegscheibe für 4 mm Bohrung		10	10		10	20
67	Laufrad für Fahrzeuge			4		4	4
68	Rillenrad, 43 mm Ø, o. Feststt.-Nabe			2			2
69	Spurkranz Becher, 17 mm Ø		4		2	3	6
71	Rillenrad, 21 mm Ø, mit Feststellnabe (ohne Bereifung)		4	4		1	8
72	Rillenrad, 43 mm Ø, m. Feststellnabe		2				2
73	Lochscheibe, 43 mm Ø, mit Feststell-nabe		2		2	1	4
74	Lochscheibe, 43 mm Ø, ohne Nabe	1	1				1
77	Traktor- bzw. Lkw-Rad				4	4	4
	mit aufgezog. Gummibereifung MB 89				4	4	4
78	Rillenrad, 21 mm Ø, ohne Nabe, ohne Bereifung	4	3		2	7	7
79	Schnurrolle, 12 mm Ø, feststellbar						
80	Kurbel, 4 mm Ø		1		1		2
82	Spurkranzrad				1	1	1
83	Rillenrad, 63 mm Ø, mit Lochung für Zahnrad, mit Feststellnabe			2	2	2	4
84	Becher		2	2			4
85	Eisenbahnrad			4	4		8
86	S-Haken		2	1	1	2	4
87	Zahnrad mit Feststellnabe				1	1	1
88	Windmühlenflügel				4		4
91	Gummireifen, aufgezogen auf Räder MB 71 bzw. MB 78	4	4	4		1	8
92	Seitenwand				2	1	2
93	Antriebsspirale						1
94	Mutterschlüssel, 8 mm SW, oder	1	1	1	1	1	3
95	Mutterschlüssel, 7 mm SW						
96	Schraubenzieher, komplett	1	1	1	1	1	3
98	Befestigungsklammer	10	20	21	20	10	
100/103	Bauanleitungen		1	1	1	1	4

Fig.2

#69,84 Bowls, 17 & 24mm Ø, 7 & 8½-10½mm deep.
#71,78 21mm Pulleys. The discs are similar, joined by the boss for#71, but riveted through the centre hole for #78.
#73 Bush Wheel & #74 Wheel Disc. Both use the 43mm disc which when formed is used for the 43mm Pulleys.
#75 Loose Pulley, a small Pulley not seen, and not in the Set Contents.
#76 Flanged Disc. #76, again not in the Set Contents, it is probably used as part of the Flanged Wheel #82.
#77 Tractor Wheel. 2 identical 33mm Ø formed discs spot welded together and fitted with a 59mm Tyre #89. Said Tyre is 14¼mm wide with a 4x V tread across its width, and HW moulded into one side wall. It would be very hard to remove.
#78, see #71.
#79 Pulley. Not seen and not included in the sets. As shown it looks smaller than #75.
#80 Crank Handle, see #44.
#81 Pulley with Tyre. This is the 21mm Pulley #71 fitted with the Tyre #91. The latter is either a 31½mm rubber ring, 6½mm wide, or, later no doubt, a 32½mm Tyre with a V tread and HW on one side wall.
#82 Flanged Wheel. A 43mm pulley disc and a flanged disc, #76 probably, joined by the boss.
#83 Grooved Wheel. 63mm Ø; the outer 16 'holes' mesh with the Gear #87.
#84 Bowl, see#69.
#85 Rail Wheel. 42mm Ø & 12¾mm wide at the centre, it is made from 2 pressings spot welded together.
#86 Hook. 27mm long and formed from 3¼mm wide strip.
#87 Gear, a thin disc 26.4mm o.d., with 8 sprocket-like teeth.
#88 Windmill Sail. Not seen.
#89 Tyre for the Tractor Wheel #77, q.v.
#91 Tyre for the 21mm Pulley with Tyre #81, q.v.
#92 End Plate, 50mm wide with holes at 25mm pitch in the flange. Used as a Lorry's radiator for example.
#93 Spring Cord. 2 lengths each about 30cm long and 1.7mm Ø were were found in one set. They had been ill-used and their ends had been crudely twisted together.
#94,95 Spanners. Only the #95 cranked pattern has been seen, 78mm long o/a, with openings for either 7 or 8mm Nuts. One example is the opposite hand to the illustration.
#96 Screwdriver. In one set it is 118mm long o/a with a 67mm wooden handle. In a later set it is 124mm long with a 73mm off-white, ribbed plastic handle.
#98 Clips. Nickeled (the only non-black part) and used to hold parts together in the boxes.

SET CONTENTS A leaflet or booklet with the contents of the standard outfits is sometimes found in sets. The 2 examples to hand, from 1960 & 1964, are identical and the details are shown in Fig.2. There are many gaps in the PNs and a few of the parts listed are not included in the any of the sets. These include the Threaded Pin #40 but 2 of these were found in a Nr.3 set and they are called for in some of the MTS models (though alternative parts are mentioned in one case). As already stated Sets 33 & 66 are add-on outfits and MTS is complete in itself. Apart from 8 Spacers & two 21mm Pulleys, the MTS models could be built with the parts in Sets 3+33+66.

PACKAGING It is often difficult to identify sets because the

Fig.3

same boxes were used for several sets and the small label giving their size has often fallen off. On cardboard boxes said label has been seen stuck to the top of the lid, as in Fig.3, on its apron, and on the side of the box. None of the few wooden boxes seen have such a label but on one the MTS name is rubber stamped in small letters inside the lid.

The first cardboard box, 22¼*34½*3¼cm, was used for Sets 3 & 33, and its lid is shown in Fig.3. Examples are known from 1954 (according to Ebay), and 1960 (dated from a manual with a Nr.3 set). The inside of the box is red with partitions and trays to give 8 compartments. It isn't known how the other sets from the 1950s were packed but most likely the 66 & MTS sets were in the wooden boxes used later. The 3+33 outfit mentioned earlier was in a 2-layer wooden box, 36*24*8½cm, with a sliding lid.

Fig.4

Four different boxes were used for the 11 sets in a 1961 brochure (9 sizes but with alternative suffixes for two of them: P for a cardboard box, and H for a wooden one). A 5 compartment card box, 23*19cm, was used for the Nr.0 (and also the Gears Set described later) while the Nr.3P & 33P box is like the 1954-60 one above (though it's size is given as 34*21cm). Identical 8 compartment wooden boxes, 22¼* 34½*4½cm were used for the 3H, 33H, 66, & MTS sets, and the Nr.1000 was packed in a 3-layer wooden box. The cardboard lid is shown in Fig.4. All the wooden lids have just the small triangular label (Fig.5) on them - the '1' is an official registration mark and not a set number.

In several of the sets seen 4 Road Wheels, 4 Rail Wheels, and 4x 21mm

Fig.5

Fig.6

Fig.7

Fig.8

Pulley with Tyres are clipped to suitable lengths of brown card, and Axles are pushed through the bent-up ends of short lengths of similar card. Other parts of a type are clipped together. The N&B are generally in a black or dark red 6¾cm Ø Bakelite box with a screw-on lid, but the 3+33 has a red, square version of this box.

THE MANUALS For Sets 3+33. The earliest manual known has the cover in Fig.6, and the four pages of it that have been seen are identical to four in the 1960s editions to be described next. These four pages are printed blue with touches of red, as are all the known manuals.

The contents of the two 1960s manuals to hand are identical but one (III/10/3 Kl 645/60 3000 923) has a slightly textured cover (Fig.7) while the second's (III/10/3 Kl 415/61 2000 645) is similar but smooth with a white ground. They have 20 pages plus covers, 208*146mm, and C2 is blank. The Intro on pp1-2 is followed by the Illustrated Parts on pp3-5. Then 33 Nr.3 models from Stern (a 2-D Star) on p6 to Gartenbank (Garden Bench) on p12, and 32 Nr.3+33 model from Licht- und Leitungsmast (Lighting Standard) on p13 to Dampfer (Steamship) on C3. C4 has a an ad for the DJK sets and the PR.

The models, even for the 3+33, are quite simple and the one blue shaded line drawing for each is adequate. There is a wide selection of models but relatively few vehicles, and none that look at all 'modern', a Jeep or a postwar Car for example. None of the wheels shown on the vehicles are fitted with Tyres, and the 63mm Pulley is shown as a bossed flanged disc with no face holes.

For the MTS Set Three examples are to hand and they too differ only in their covers (none of which have the DJK name on them). The earliest (III/10/3 Kl 299/55 2000 803) is shown in Fig.8, the next (3/10/3 Kl 69/61 2500 101) is the same design but on white paper with the bottom blue, like the 1961 3+33, and the last (III/10/3 Kl 374/63 2500 568) is the same but on light fawn slightly textured paper.

C2 has only a short note about looking after the parts by oiling them. Then there is a 4 page Intro about agricultural machinery, ending with an introduction to the first model on p5, the Traktor in Figs.9A & 9B. Next are 6 Implements, any one of which can be made from the Set as well as the Traktor, and can be attached to it. The first is a Dreischarpflug (3-furrow Plough) on p6 and the last an Ackerwagen (Trailer) on p10. The Mowing Machine on p5 is shown in Fig 10 above. Finally, 5 models which need parts from other sets, a Lorry on pp11-12, 2 Railway Wagons on p13, a Crane on p14, and an Exzenterpresse on p15. Only the Lorry has a Parts List. 4 of these model are shown in Fig.11 overleaf. p16 lists the other sets available and has the PR; C3-4 are blank, except that in the 1955 edition the PR is on C4.

There is a shaded line drawing for each model, often rather dark & blurry, and for the MTS ones, descriptive text, a parts list, and auxiliary views as necessary. Figs.9-11 are all natural size.

For Set 66 The only information to hand is a photo of an open manual shown by the Set in the Brochure. It shows the Lorry and the 2 Railway Wagons that were 'extra' models in

Fig.10

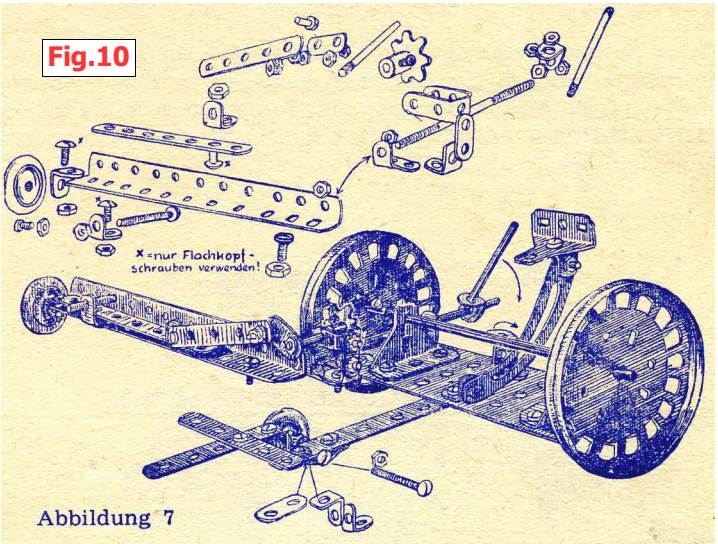


Abbildung 7

Stückliste für Mähmaschine

Teil-Nr.	Bezeichnung	Stückzahl	Teil-Nr.	Bezeichnung	Stückzahl
MB 3	5-Lochschiene	3	MB 50	Lasche, gewinkelt	9
MB 4	7-Lochschiene	2	MB 52	Z-Winkel (od. 1 Z-Winkel und 2 Winkellaschen)	2
MB 5	11-Lochschiene	1	MB 53	Lagergabel, 5 Loch	1
MB 15	Lochwinkel, gewinkelt	1	MB 57	Lasche, plan	3
MB 20	Lochplatte, 3 x 7 Loch	1	MB 59	T-Blech, gewinkelt	3
MB 27	Segmentband	1	MB 66	Unterlegscheibe	10
MB 31	Schraube M 4, kurz	29	MB 71	Rillenrad, 21 mm, mit Nabe	1
MB 33	Schraube M 4, lang	1	MB 78	Rillenrad, 21 mm, gepunktet	1
MB 37	Sechskantmutter M 4	37	MB 83	Rillenrad, 63 mm	2
MB 40	Gewindestift M 4, kurz (oder 2 Gewindestifte und 1 Schraube, kurz)	3	MB 87	Zahnrad	1
MB 42	Gewindestift M 4, 90 mm	1			

Fig.9A

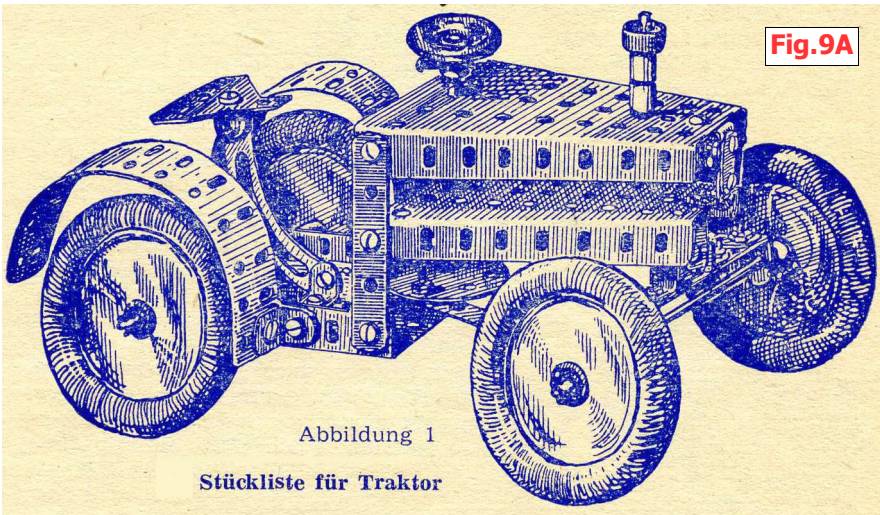


Abbildung 1

Stückliste für Traktor

Teil-Nr.	Bezeichnung	Stückzahl	Teil-Nr.	Bezeichnung	Stückzahl
MB 3	5-Lochschiene	2	MB 50	Lasche, gewinkelt	8
MB 4	7-Lochschiene	2	MB 53	Lagergabel aus 5-Lochschiene	1
MB 10	Doppellochschiene, 11 Loch gebogen	2	MB 54	U-Bügel aus 7-Lochschiene	1
MB 20	Lochplatte, 3 x 7 Loch als Seitenverkleidung (nicht gezeichnet)	2	MB 57	Lasche, plan	3
MB 22	Grundplatte, 7 Loch lang	1	MB 58	T-Blech, plan	2
MB 23	Grundplatte, konisch	2	MB 62	Abstandsring, 10 mm	2
MB 27	Segmentband	1	MB 65	Stellring, federnd	5
MB 31	Schraube, 6—8 mm lang	44	MB 69	Spurkranz, 17 mm Durchmesser	1
MB 34	Schraube, ca. 25 mm lang	1	MB 73	Lochscheibe mit Nabe, 43 mm Durchmesser	1
MB 37	Mutter M 4	48	MB 77	Traktorrad mit Gummibereifung	4
MB 40	Gewindestift, kurz	1	MB 81	Rad mit Nabe, 23 mm Durchm. mit Gummi	1
MB 47	Welle, 90 mm lang	1			
MB 48	Welle, 120 mm lang	2			

Fig.9B

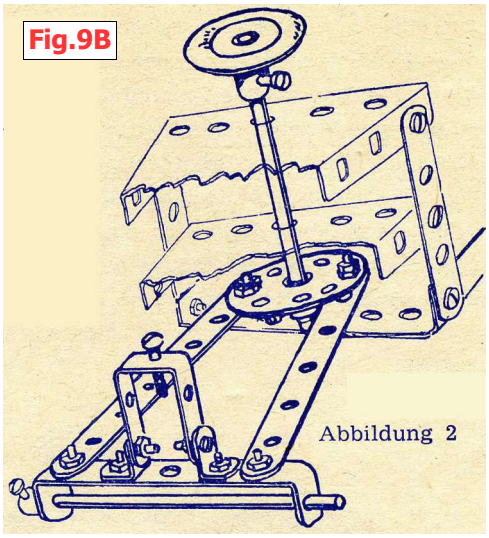


Abbildung 2

the MTS manual.

OTHER 'PAPER' A booklet about the size of the manuals and entitled 'Deine Forschungs-Werkstatt' (Your Research Workshop) has been seen in several Ebay sets as well as the usual manual. Those with Fig.6 manuals have a cover in the same style but in portrait format; those with Fig.7 manuals are in that style but again in portrait format.

Another booklet in one Ebay outfit is again about the size of the manuals and its cover is shown left. Perhaps it's a brochure; the 1961 one mentioned earlier is about the same size but the very large Builders Crane on it, about as high as a man, is a much more inspiring model (unfortunately the photocopy to hand is too dark to be able to see any details).

Fig.12

THE GEARS OUTFITS

First **the standard set**. The box is the same as the Nr.0

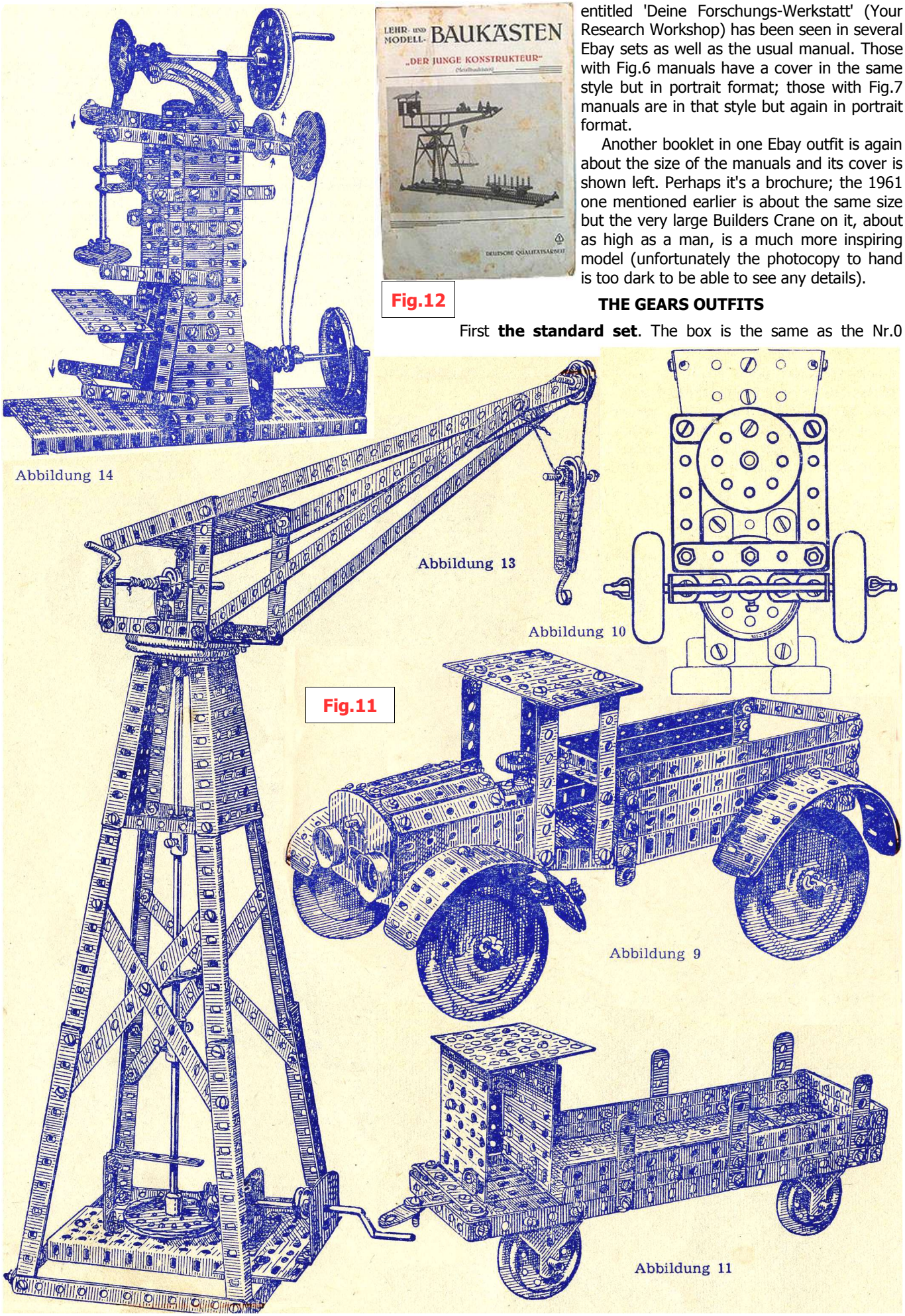


Fig.13

already described; its label in 1958 was similar to the blue & white 3+33 manual cover (Fig.7 apart from the colours), but later it was similar to the 1960s Nr.3 & Nr.33 sets (Fig.4 apart from the name of the set). The set's contents are as follows:

Strips: 2x #2, 3h; 3x #3, 5h.

Plates: Triangular: 4x #16; Perforated: 2 each #17, 5*5h, & #20, 3*7h; Flanged: 1 each #21, 5*11h, & #22, 5*7h.

NBW: 26x #31, Bolt; 18x #37, Nut; 14x #66, Washer; 1x #95, Spanner.

Brackets: 8x #50, A/B; 2x #59, Trunnion.

Axles: 1 each #151-155, 50,60,70,80,125mm Profilwelle (Flatted Axle); 1x #157, Kurbelwelle (Flatted Crank Handle).

Plastic Pulley & Gears with flatted bores: 2x #162, Rillenrad mit Profilbohrung (Pulley with Flatted Bore); 3x #165, Ritzel (Pinion); 3x #166, Zahnrad (Gearwheel); 2x #167 Kegelrad (Bevel).

Misc: 1x #60, Collar; 1x #61, Coupling; 2x #73, Bush Wheel; 18x #160, Elastik-Stellring (Elastic Collar).

The plastic Pulleys & Gears with flatted bore can be seen in the Fig.13 set. The Pulleys are blue and on a card with the Pinions; the Bevels are between the Gearwheels. Black Gearwheels and white Pinions are also known. The Pinion & Gear have 14 & 36 teeth, and are Mod. 1; the Bevel also has 14 teeth and, from the Fig.15 model, it has a boss.

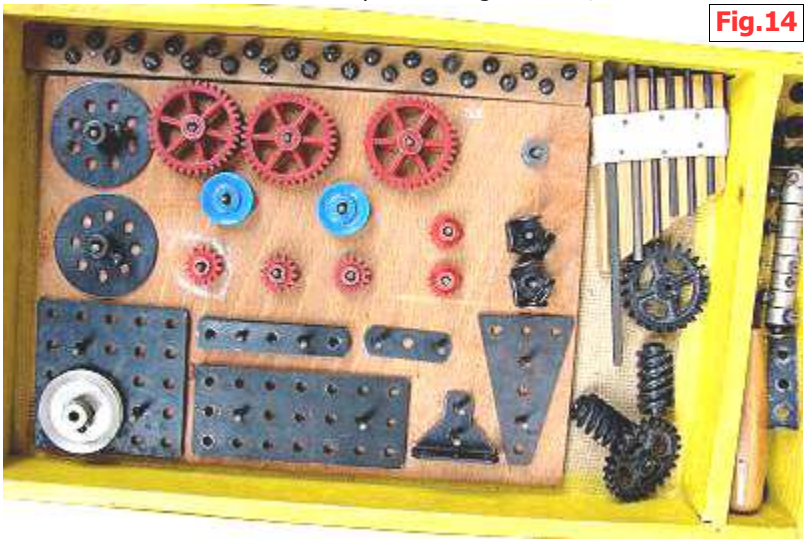
The manual to hand (III/10/3 KI 737/58 2000 1113) has 24 pages plus covers, the same size as the 3+33 manual, and the cover is in the same style as the blue & white version of the Fig.7 1961 3+33 cover. The Set Contents are given on C2 and the Intro on p1 includes the gear ratios obtainable. 14 Gearboxes are described from 1. Stirnrad-Getriebe (Spur Gear Drive) on pp2-3, to 14. Kranlaufwerk (Crane Drive) on p24 & C3. C4 has the list of DJK sets available and the PR.

In the models an Elastic Collar is used on either side of the Spur Gears & Pulley and presumably they are not a tight enough fit on the Axles to stay in place on their own. None of the models require any of the Gears to move along the Axles. The Bevels though are on the end of Axles and so must be a push fit (and the extra length from their bosses would help). All the Gearboxes are simply various combinations of 1, 2, or 3 gear reduction stages, with a right angle drive in some, and the output to the Pulley #162, or a winding drum made using the Bush Wheels. In the last 2 models the input drives 2 output shafts.

The models are shown as engineering drawings with one or two views for each, along with a Parts List and written instructions. The two below in Figs.15 & 16 are 75% of their original size.

The Schools Gears Set 3 of these were shown on Ebay as one lot, each packed in a yellow wooden tray, with an end compartment, as below. All the main parts in the normal Gears Set can be seen except the Flanged Plates, with most of them mounted on wooden boards. Loose in the Set are some extra parts: (i) At bottom left a silver metal Pulley with boss, about 3h Ø, and there are similar parts, but only 2h Ø, in the other 2 sets. (ii) Under the Axles 2 each of a black plastic Worm and a 4-spoke, 24t Gear, presumably a Worm Wheel. These parts are missing in one of the Sets. (iii) In the end compartment some metal tapped Collars, a 1*3*1h DAS, and a Screwdriver. The DAS can't be seen in the other Sets and in one the Screwdriver has a red plastic handle. One Set has a Spanner in it.

Fig.14



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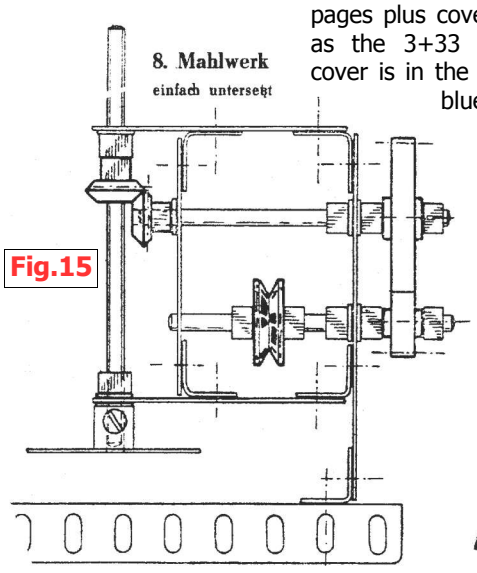

Fig.15

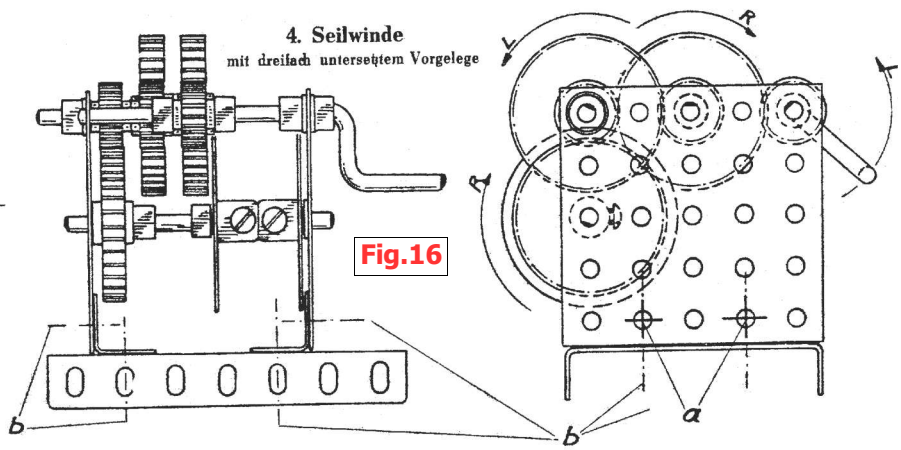

Fig.16


Fig.17A

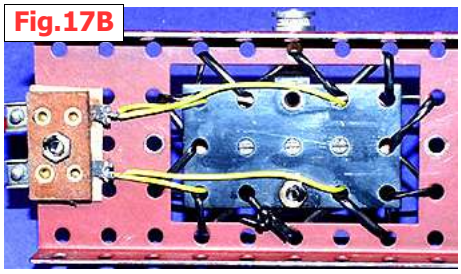
Fig.17B

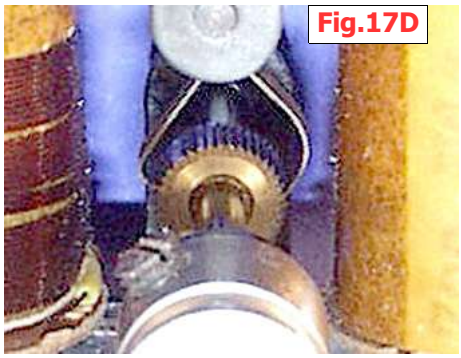
Fig.17D

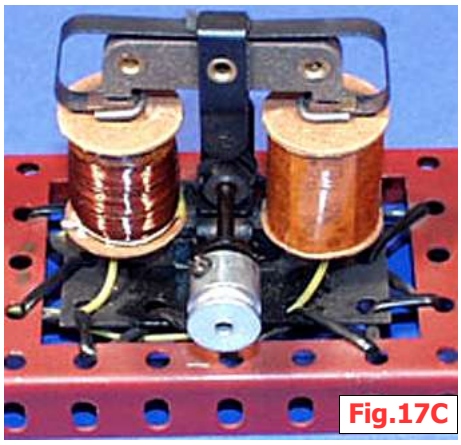
Fig.17C

THE MOTOR

The main parts of the Motor, 14*8*6cm overall, can be seen in the photos above. In Fig.17A the casing is held to the flanged plate by a bolt on either side, and its black base plate is suspended as shown (Fig.17B) to minimise vibration passing to the model. 4-10v A.C. is supplied to the coils which causes the T-Rotor to oscillate, and the 'pallets' attached to its foot to turn the fine-toothed wheel on the output shaft. These last two parts are best seen in Fig.17D – in Fig.17C the wheel, pallets, and the white disc/washer above them all look black, and are barely perceptible.

USING THE PARTS

The MTS Tractor & Mowing Machine took my eye and the final, somewhat modified version is shown in Fig.18A below. First though I made them as per the Manual (Figs.9 & 10). The Tractor was quite straightforward to build, but despite the Mower's gear drive working smoothly (when the mesh was correctly adjusted) there were some problems with the cutting blade. To start with the mounting of the Long Bolt that the blade passes under. Although the A/Bs to hand had various bend points there wasn't one which gave the blade clearance under said Bolt. A little filing cured this but then it was found that the blade didn't stay parallel to the A/G over its full travel. Various 'fixes' didn't improve matters greatly and eventually the method used in Meccano's 1924 Reaping Machine was cribbed. The long arm of a Trunnion passes from the rear between the bottom face of the A/G & a Strip suitably spaced from it (2x #12b A/Bs were used in the original instead of the Trunnion), and the blade is bolted to the Trunnion's apex hole. Then the blade slides smoothly along the front edge of the A/G. (In the MECCANO model the slotted end holes of the A/Bs allowed adjustment but this wasn't needed in the present case because I was lucky enough to have picked an A/G with exactly the right bend point).

'Improvements' to the Tractor were also felt to be worthwhile. Ackerman steering was fitted, operated by cords from a 3h Strip nutted to the end of the (relocated) steering column, see Fig.18B. Also the lower Flanged Sector Plate was removed and an imitation engine etc was added (Fig.18A), though a few of the the parts used for this were not in the MTS Set. The system's reasonably large range of Brackets helped in all these changes though a handed version of the #15 Corner Bracket would have been useful.

THANK YOU

to David Hobson for lending me the Gears manual, and to Joachim Kleindienst for permission to use material from his website www.baukastensammler.de/. This is a site with good photos of numerous OS sets as well as the Motor above, and is well worth a visit – DJK is listed under Hans Wünsch.


Fig.18B


Fig.18A