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**MECCANO**®



Chiming Clock Assembly  
Kit. 2

## Method of Assembly

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This clock is made up of four functional units, A, B, C & D, as shown on the left. The Part Numbers and the quantity required of each part are shown for each unit and a complete list of parts is given on the right reverse of this Leaflet. Using this complete list, it is advisable to sort out the parts for each unit as you come to it.

Begin construction with the Frame Assembly (diagram A on right). Make the front frame and tighten up. Likewise, make the centre and back frames, then connect these frames by the four side Angle Girders (9) and diagonal Strips (2). Secure together at the top by the Double Angle Strip (48d). Make sure that the whole frame is perfectly square, then **tighten the Nuts and Bolts**.

Later, when the interior mechanisms of the Clock are fitted into the frame, the positions of the axles in the frame can be adjusted slightly, as necessary, by slackening appropriate Bolts in Strips (1a & 1b) and Wheel Discs (24a), and by then moving the axles in the direction indicated by the orange arrows to ensure free-meshing of gears. The black numbers and red-coloured holes in the diagrams identify the location of axles and this guide should be followed when fitting the units in the frame.

Overleaf are shown details of the gear trains. Work methodically through these, treating each numbered sub-assembly as a unit. Select the correct axle; insert in frame and fit the appropriate parts. Position all parts correctly on the axle, allowing the axle slight end-play.

When you have installed the timing movement it is best to make sure it runs freely and correctly before proceeding further. Fit the driving Cord to the ratchet drive [1a], making  $1\frac{1}{2}$  turns around the Pulley (20c). When the Cord is pulled, the mechanism should now run freely with no binding. If any binding occurs, the cause must be traced and rectified. The most probable cause will be out-of-line bearings for one or more of the Rods, causing excessive friction and/or incorrect meshing of gears. Attach the pendulum [21] and weights [19] & [20]; hang the clock square and adjust the Pallet Pins to give an even beat. (The face should not be fitted for this test).

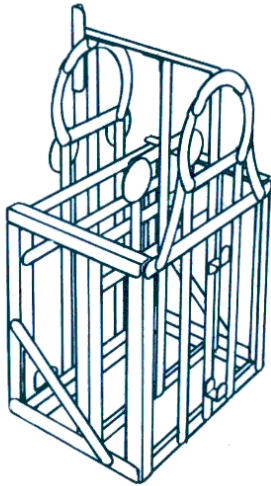
When you have proved correct operation of the timing mechanism, remove the weights and Cord and put aside until the Clock is finished.

The striking movement should next be assembled in the frame, working methodically through each numbered unit as before. As with the timing movement, the chime should be independently tested for free-running. Fit the ratchet drive [9a] with  $1\frac{1}{2}$  turns of Cord around appropriate Pulley (20c); hang the clock and attach the weights [17] & [18]. The clock hands should be turned until the strike check lever [16] releases the chime wheel [8], when chiming should begin. The minute and hour hands should of course be set on the correct hour to agree with the number of chimes.

It is desirable to lightly oil all bearings.

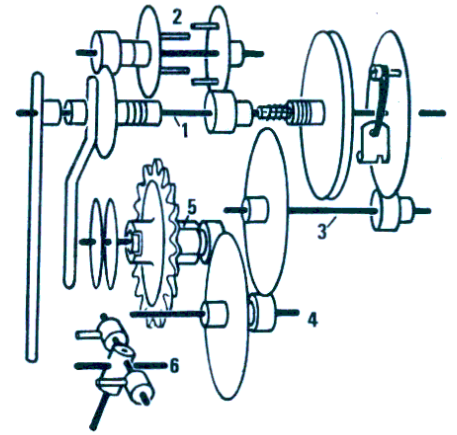
### A Frame Parts

2 - 1	1 - 12b
6 - 1a	4 - 24a
5 - 1b	92 - 37a
2 - 2	92 - 37b
3 - 3	12 - 38
1 - 8	1 - 48d
9 - 8b	6 - 89a
4 - 9	2 - 89b
1 - 9c	2 - 108
1 - 11	1 - 125
1 - 12a	



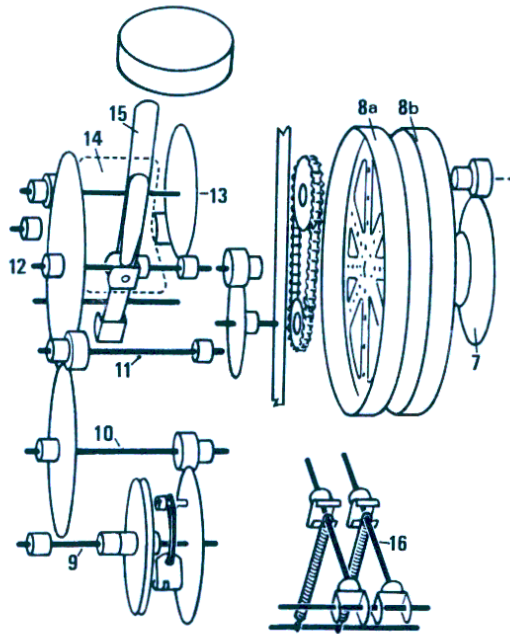
### B Timing Movement Parts

1 - 15b	1 - 109a
1 - 16	3 - 111
1 - 16a	8 - 111a
4 - 16b	1 - 120b
1 - 18a	1 - 179
1 - 20c	2 - 186
1 - 24	1 - 212a
2 - 24a	1 - 213
4 - 26	1 - 235b
1 - 26c	1 - 235d
1 - 27a	20 - 69a
3 - 27c	1 - P78
1 - 27d	1 - P96
2 - 35	2 - 251
19 - 37a	1 - 254
2 - 37b	1 - 264
19 - 38	1 - 265
7 - 59	
1 - 63	
1 - 109	



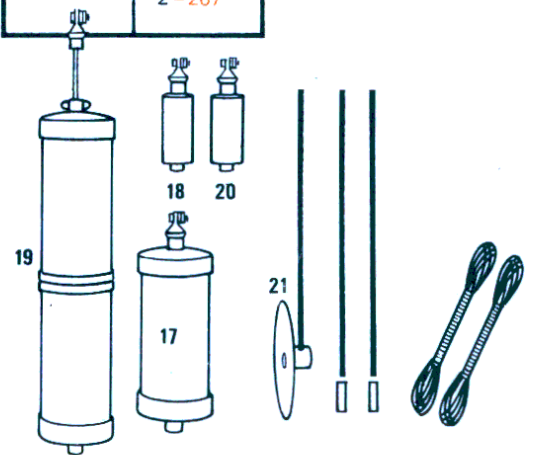
### C Striking Movement Parts

2 - 2	2 - 50
1 - 6	6 - 59
1 - 11	2 - 69
3 - 15a	25 - 69a
7 - 16	1 - 95a
2 - 16a	1 - 96a
1 - 18a	1 - 109
3 - 18b	1 - 109a
1 - 20c	3 - 111
1 - 24	8 - 111a
2 - 24a	1 - 111c
5 - 26	1 - 111d
1 - 26c	3 - 116
1 - 27b	2 - 118
4 - 27c	2 - 186
1 - 27d	3 - 194
10 - 35	4 - 212a
50 - 37a	1 - 213a
28 - 37b	1 - 213b
48 - 38	1 - 260
3 - 43	12 - 266
	1 - 562
	1 - 532



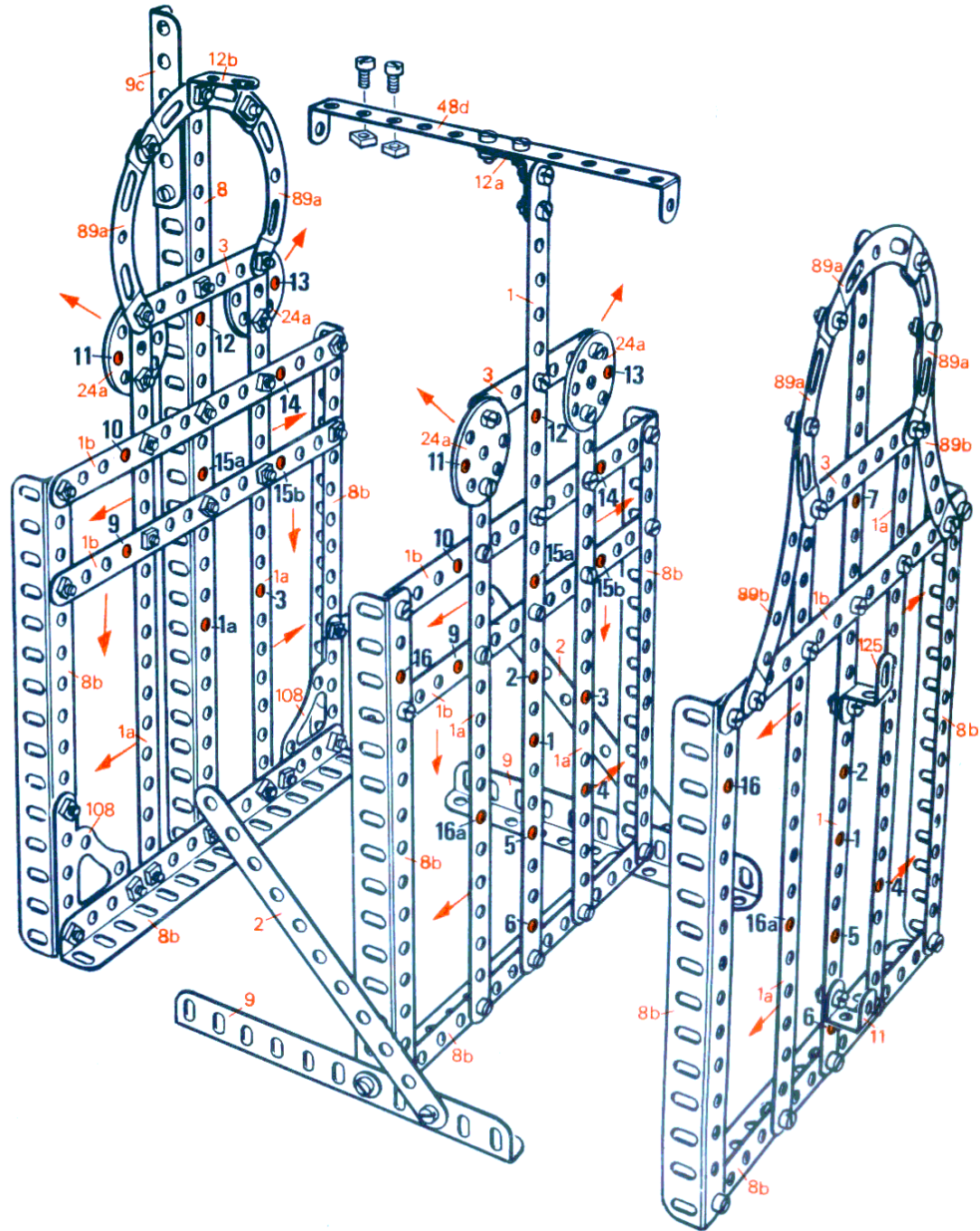
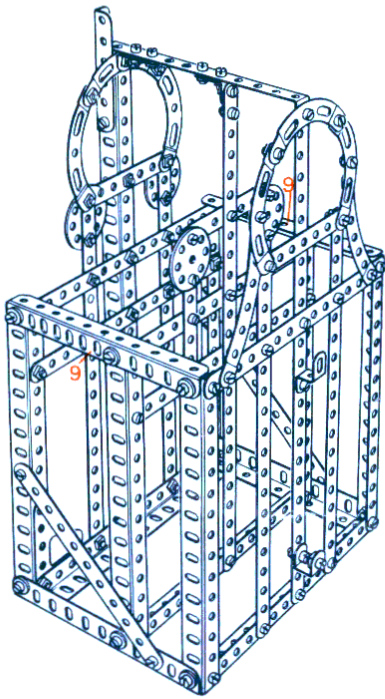
### D Driving Unit Parts

1 - 13	1 - 109
1 - 14a	1 - 111a
2 - 16a	4 - 111c
1 - 24a	2 - 137
2 - 35	2 - 162
14 - 37a	1 - 162b
6 - 37b	2 - 163
4 - 38	4 - 164
4 - 38d	4 - 166
5 - 59	2 - 213
9 - 69a	3 - 252
	2 - 267



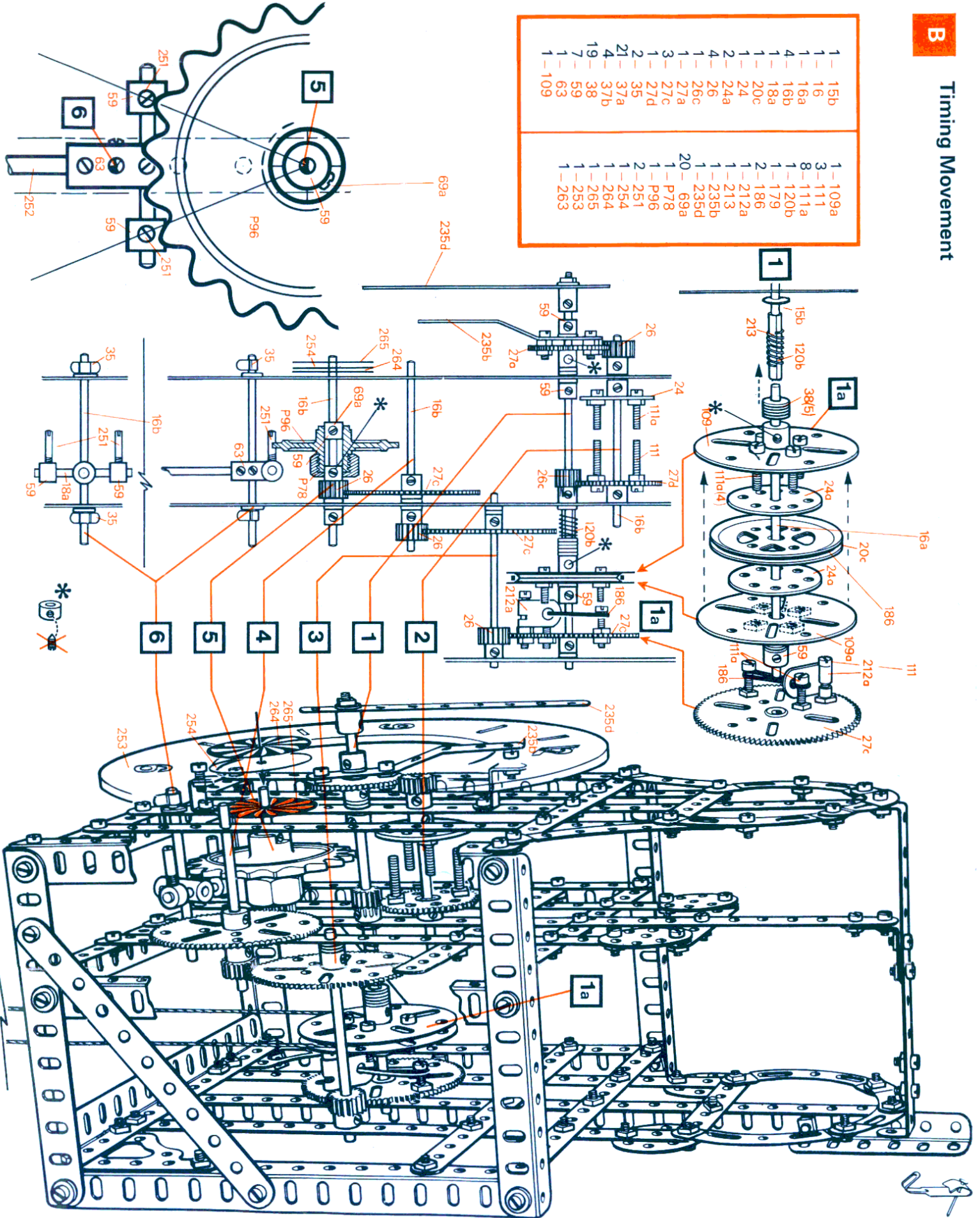
**A**

**Frame Assembly**



2 - 1	1 - 12b
6 - 1a	4 - 24a
5 - 1b	92 - 37a
2 - 2	92 - 37b
3 - 3	12 - 38
1 - 8	1 - 48d
9 - 8b	6 - 89a
4 - 9	2 - 89b
1 - 9c	2 - 108
1 - 11	1 - 125
1 - 12a	

1-109a	1-109
3-111	1-63
8-111a	1-59
1-120b	7-38
1-179	19-37b
1-186	21-37a
1-20c	4-38
1-24	1-263
1-212a	1-263
1-213	1-263
1-235b	1-263
1-235d	1-263
20-69a	1-263
1-P78	1-263
1-27a	1-263
3-27c	1-263
1-27d	1-263
2-35	1-263
2-37a	1-263
1-37b	1-263
1-38	1-263
7-59	1-263
1-63	1-263
1-109	1-263



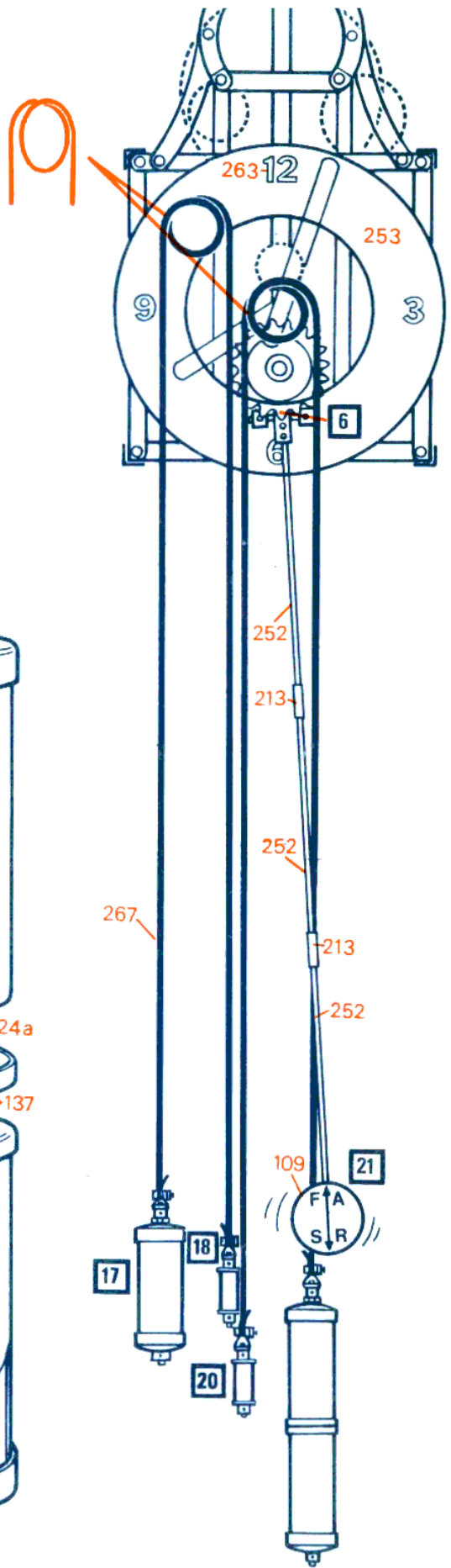
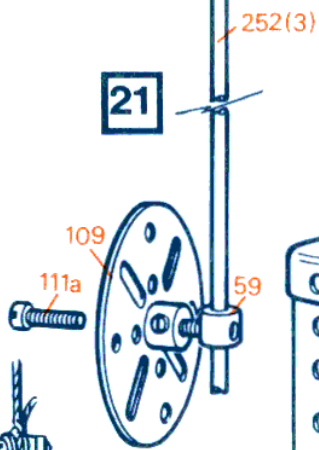
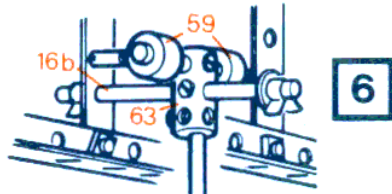
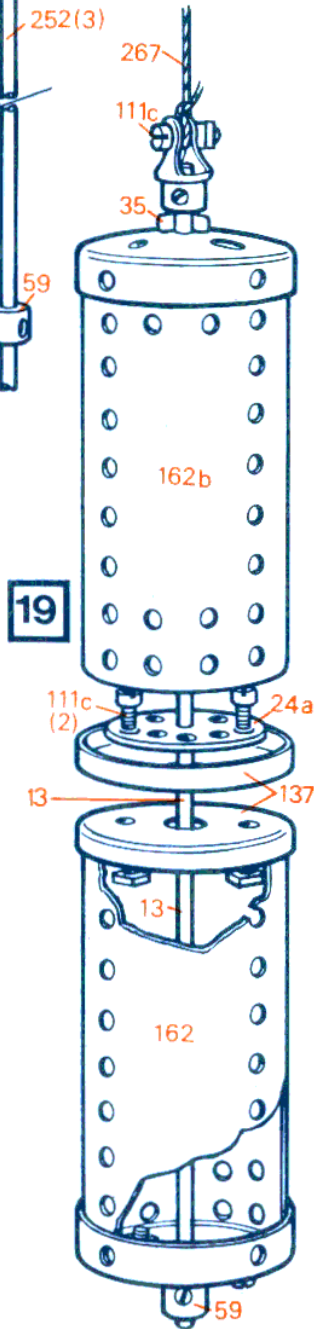
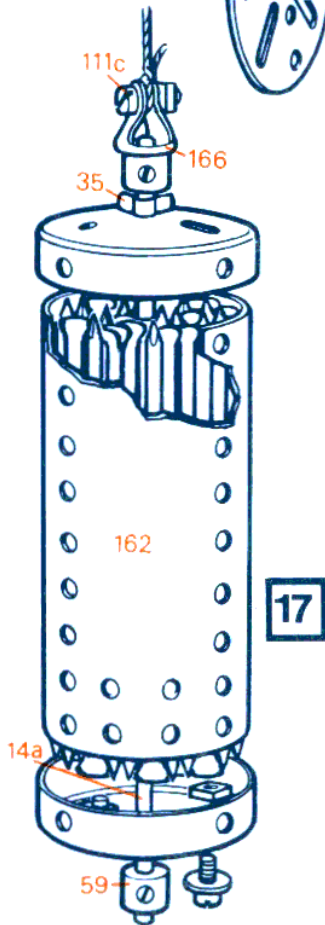
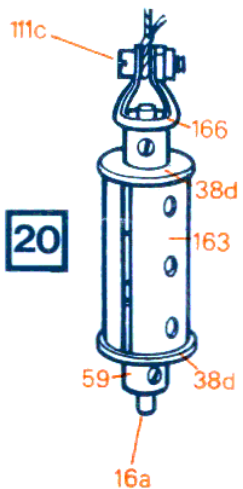
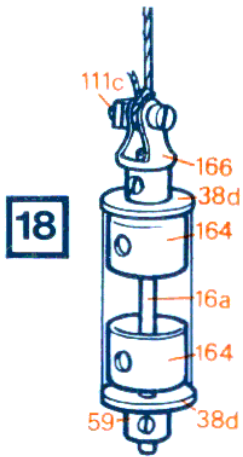
- 6
- 5
- 4
- 3
- 1
- 2



# D

## Driving units

1 - 13	1 - 109
1 - 14a	1 - 111a
2 - 16a	4 - 111c
1 - 24a	2 - 137
2 - 35	2 - 162
14 - 37a	1 - 162b
6 - 37b	2 - 163
4 - 38	4 - 164
4 - 38d	4 - 166
9 - 69a	2 - 213
5 - 59	3 - 252
	2 - 267



## Assembly notes

### B Timing movement

Begin by fitting axle [1] with the parts indicated, then insert axle [2a] through back Girder[8]. Fit indicated parts to this axle, then insert into Rod Connector(213). It is important to fit part(186)to (20c)at the start of assembly of the driving pulley, using an axle to align the pulley assemblies. Part(212a)must pivot freely on Bolt(111). Now fit axle [2]: setting the cam Bolts in part(24)at 90° to the Bolts in part(27d), then next add the appropriate parts to axles [3] to [6] working through the axles in numerical order. Insert and secure Pinion(26)within the collet of escapement Sprocket Wheel (P96), tightening the Collet Nut (P78) before fitting to axle [5]. Fit the escapement pallet to axle [6], setting the Pallet Pin (251) parallel to the axle. The Pallet Pin centres should be approx. 1 in. (26 mm.) apart and equally spaced from the centre Coupling (63). Each swing of the pendulum should release one tooth of the escapement wheel (P96) and the bottom end of the pendulum should swing through an arc of between 3 and 4 ins. (77-103 mm.).

It is important that Grub Screws are omitted where indicated with an asterisk (\*).

### C Striking movement.

First fix the stationary gear unit [7] to the frame, aligning the holes with an axle, then bolt Bush Wheel (24) to the chime wheels [8a & 8b], again making sure that the holes are in line. The chime wheel unit [8] requires precise positioning of the Angle Brackets (266). Lay the wheels over the diagram and secure each one accurately in its place. Now fit the Rod and Strip Connectors (212a) in the correct position on the inner wheel so that the cylindrical portion of each Connector is in line with the centre of the appropriate slot in the wheel. Add Sprocket Wheels (95a) & (96a) to Rods (18b); position the Rods in the chime wheel; fit Washers and then secure Strip(21)in place, using Bolts (111.) Fit Sprocket Chain (260), Gear (27d) and Pinion (26). Now insert another axle (18b) through assembly [7]: fit a Washer, then push the axle into the centre of the chime wheel. From the rear, then fit the parts indicated to axle [2] and mount the axle in position, noting that it must extend into the Strip (2) attached to the chime wheel. Assemble the strike check levers and fit axles [16] & [16a], then build assembly [15] and fit axles [15a], [15b] & Bell(562). The striking hammer arm should be curved so that the hammer clears the Bell by  $\frac{1}{8}$ ". Fix the appropriate parts to the remaining axles.

### D Driving units

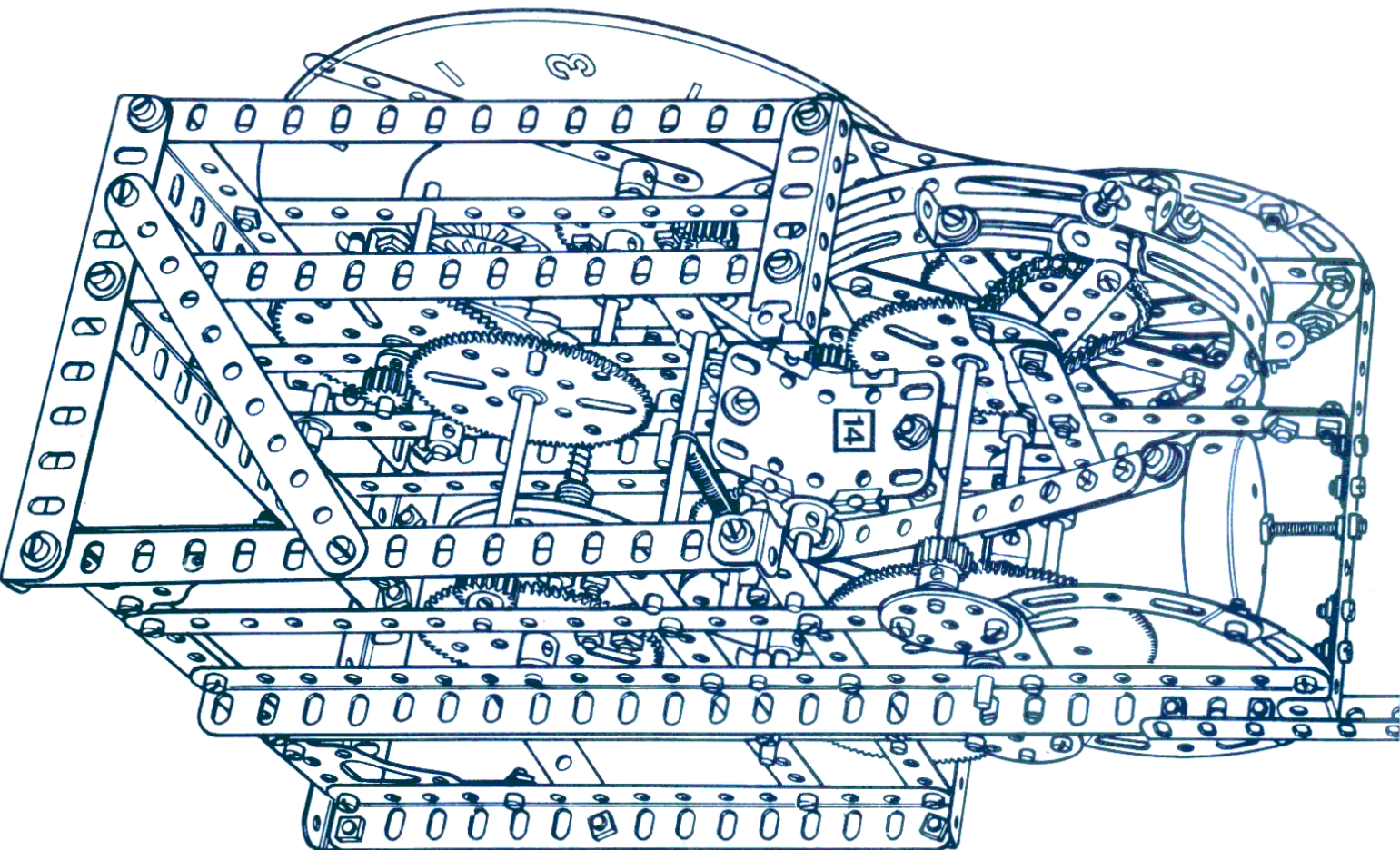
The driving weight for unit [7] should weigh 2½ lbs. when properly loaded with 4" oval nails as illustrated, but other ballasts of comparable weight may be used. The driving weight to unit [9] should weigh 4½ lbs.

These weights are sufficient to drive a freely-running clock, but additional weight may be required to overcome any increased friction resulting from inaccurate assembly of the Clock. The driving cord arrangements should follow the diagram (extreme right). The optical adhesive discs (264 & 265) are mounted with the coloured disc (264) fixed to the frame and the transparent disc (265) fixed to the circular plastic disc (254).

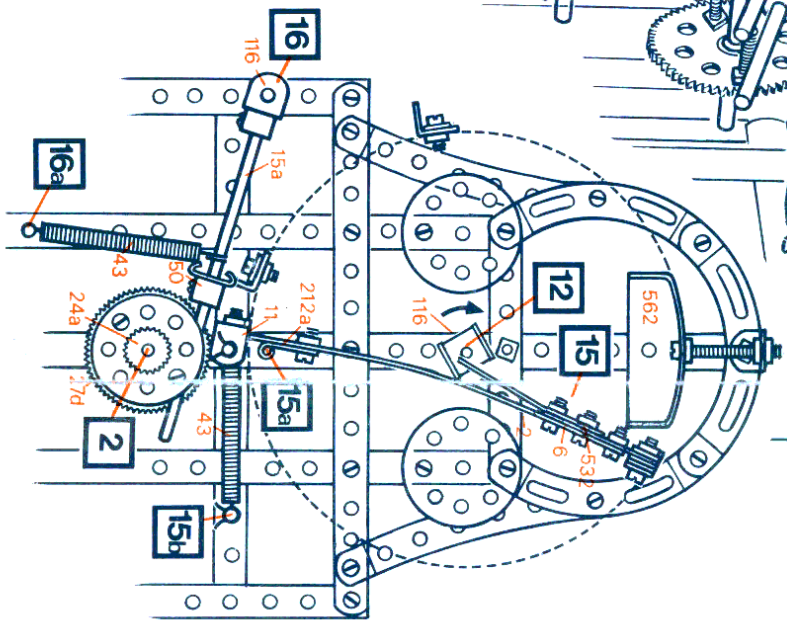
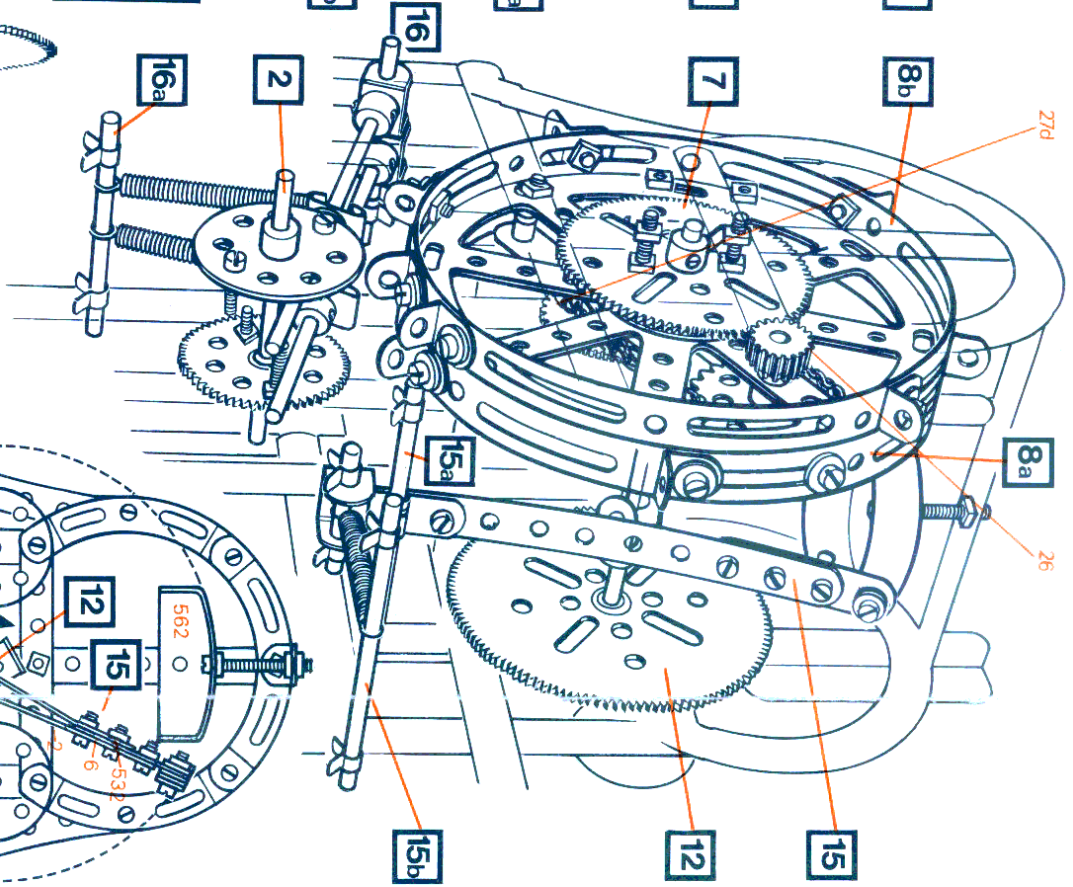
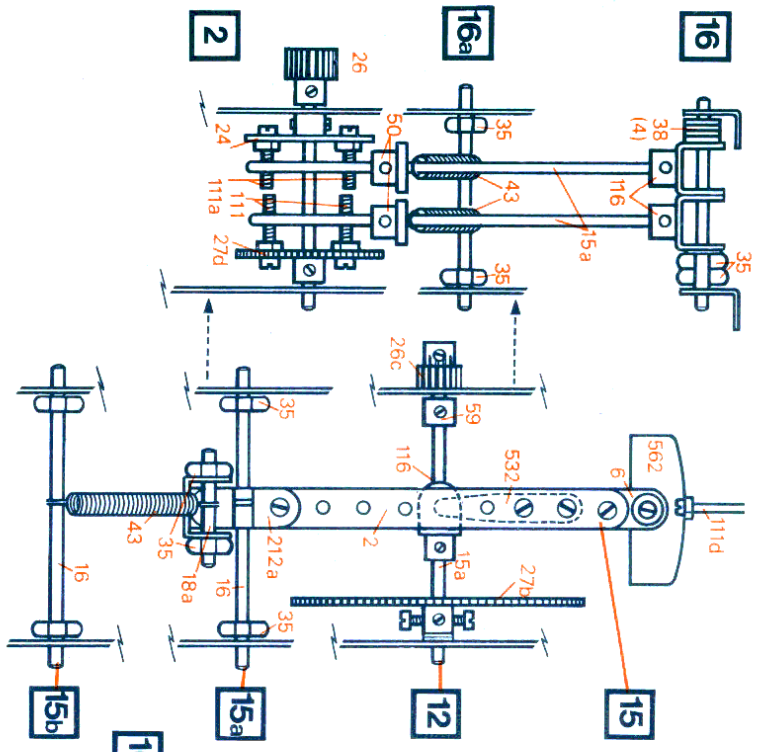
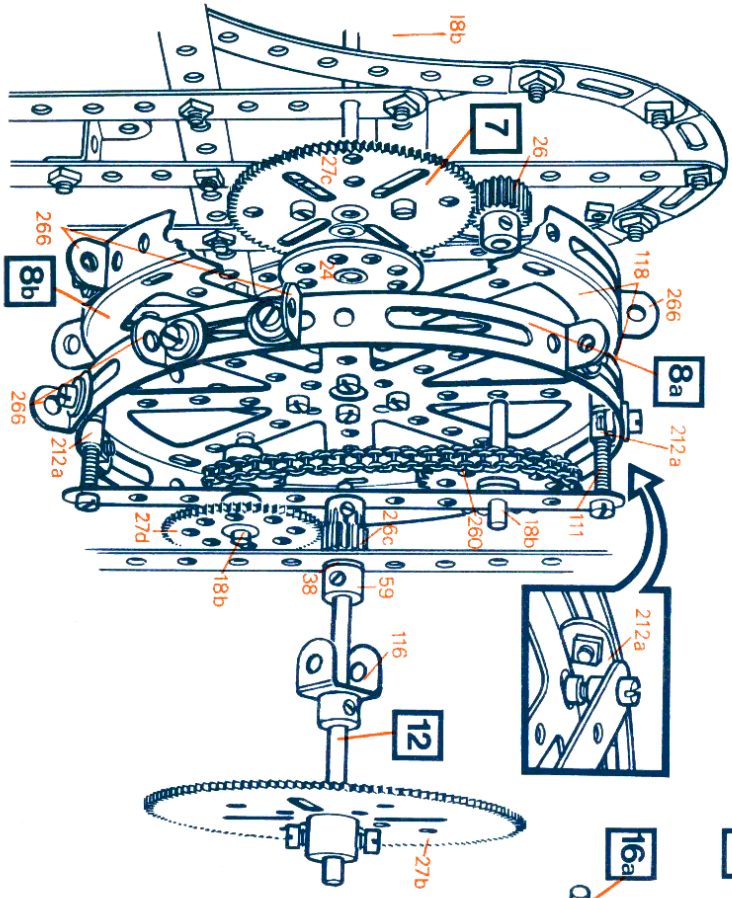
### Regulation

Hang the assembled clock and fit the pendulum and weight. Set the clock square, then start the pendulum swinging and listen for the tick. It should give an even beat but, if not, move the bottom of the clock slightly to left or right until the beat becomes even. If the clock gains time, lower the pendulum bob weight [21] and, if it loses time, raise the bob weight.

Finally the numbers should then be fixed to the clock face and the face bolted to the frame brackets (125) and (11).







## Contents of Meccano No. 2 Clock Kit

Part No.	Description	Quantity	Part No.	Description	Quantity
1	Perforated Strip 12½" : 318 mm.	2	69a	Grub Screw	66
1a	" " 9½" : 242 mm.	6	89a	Curved Strip Stepped 3" : 76 mm.	6
1b	" " 7½" : 191 mm.	5	89b	Curved Strip Stepped 4" : 102 mm.	2
2	" " 5½" : 140 mm.	4	95a	Sprocket Wheel 1½" : 38 mm.	1
3	" " 3½" : 89 mm.	3	96a	" " ¾" : 19 mm.	1
6	" " 2" : 51 mm.	1	108	Corner Gusset	2
8	Angle Girder 12½" : 318 mm.	1	109	Faceplate 2½" : 64 mm.	3
8b	" " 7½" : 191 mm.	9	109a	" without Pummel 2½" : 64 mm.	2
9	" " 5½" : 140 mm.	4	111	Bolt ¾" : 19 mm.	6
9c	" " 3" : 76 mm.	1	111a	" ½" : 12 mm.	18
11	Double Bracket ½" × ½" : 12 × 12 mm.	2	111c	" ¾" : 9½ mm.	5
266	Angle " ½" × ½" : 12 × 12 mm.	12	111d	" 1" : 28½ mm.	1
12a	" " 1" × 1" : 25 × 25 mm.	1	116	Fork Piece	3
12b	" " 1" × ½" : 25 × 12 mm.	1	118	Hub Disc 5½" : 140 mm.	2
13	Axle Rod 11½" : 292 mm.	1	120b	Compression Spring ⅞" : 14 mm.	1
14a	" " 5½" : 140 mm.	1	125	Reversed Angle Bracket ½" : 12 mm.	1
15a	" " 4½" : 114 mm.	3	137	Wheel Flange	2
15b	" " 4" : 102 mm.	1	162	Weight Cylinder, Complete	2
16	" " 3½" : 89 mm.	8	162b	Cylinder	1
16a	" " 2½" : 64 mm.	5	163	Sleeve Piece 1½" × ⅞" : 38 × 17 mm.	2
16b	" " 3" : 76 mm.	4	164	Chimney Adaptor ⅝" × ½" : 16 × 12 mm.	4
18a	" " 1½" : 38 mm.	2	166	End Bearing	4
18b	" " 1" : 25 mm.	3	179	Rod Socket	1
20c	Pulley 2" : 51 mm. dia. without Pummel	2	186	Driving Band 2½" : 64 mm.	4
24	Bush Wheel 1⅜" : 34 mm.	2	194	Plastic Plate 2½" × 1½" : 64 × 38 mm.	3
24a	Wheel Disc 1⅜" : 34 mm.	9	212a	Rod & Strip Connector Right Angle	5
26	Pinion 19 Teeth ½" × ¼" : 12 × 6 mm.	9	213	Rod Connector	3
26c	" 15 Teeth ⅞" × ¼" : 11 × 6 mm.	2	213a	" " 3-way	1
27a	Gear Wheel 57 Teeth 1½" : 38 mm.	1	213b	" " 3-way with Pummel	1
27b	" " 133 Teeth 3½" : 89 mm.	1	235b	Narrow Strip 3½" × ⅞" : 90 × 9 mm.	1
27c	" " 95 Teeth 2½" : 64 mm.	7	235d	" " 4½" × ⅞" : 115 × 9 mm.	1
27d	" " 60 Teeth 1⅝" : 41 mm.	2	251	Pallet Pin	2
34	Spanner	1	252	Pendulum Rod 9" : 228 mm.	3
35	Spring Clip	14	253	Clock Dial	1
36a	Screwdriver	1	254	Plastic Disc	1
37a	Nut	186	259	Hook & Nail	1
37b	Bolt ⅞" : 5 mm.	136	260	Sprocket Chain 12" : 305 mm.	1
38	Washer ⅝" : 10 mm.	90		Bottle of Oil	1
38d	" ¾" : 19 mm.	4	263	Numeral Sheet	1
267	Hank of Cord	2	264	Spiral – Fixed (Self-Adhesive Disc)	1
43	Tension Spring	3	265	" Moving (Self-Adhesive Disc)	1
48d	Double Angle Strip 5½" × ½" : 140 × 12 mm.	1	P78	Collet Nut	1
50	Slide Piece	2	P96	Sprocket Wheel 20 Teeth	1
59	Collar	18	532	Wiper Arm	1
63	Coupling	1	562	Bell	1
69	Set Screw	2		Instructions Folder	1

# Complete List of Meccano No. 2 Clock Kit Parts

**PERFORATED STRIPS**  
 1 - 12½"; 318mm    2 - 5½"; 140mm  
 1a - 9½"; 242mm    3 - 3½"; 89mm  
 1b - 7½"; 191mm    6 - 2"; 51mm

**ANGLE GIRDERS**  
 8 - 12½"; 318mm    9 - 5½"; 140mm  
 8b - 7½"; 191mm    9c - 3"; 76mm

**DOUBLE BRACKET**  
 11 - ½" × ½"; 12 × 12mm

**ANGLE BRACKETS**  
 266 - ½" × ½"; 12 × 12mm  
 12a - 1" × 1"; 25 × 25mm  
 12b - 1" × ½"; 25 × 12mm

**AXLE RODS**  
 13 - 11½"; 292mm    16a - 2½"; 64mm  
 14a - 5½"; 140mm    16b - 3"; 76mm  
 15a - 4½"; 114mm    18a - 1½"; 38mm  
 15b - 4"; 102mm    18b - 1"; 25mm  
 16 - 3½"; 89mm

**PULLEYS**  
 20c - 2"; 51mm without pummel

**WHEEL DISC**  
 24a - 1½"; 34mm

**BUSH WHEEL**  
 24 - 1½"; 34mm

**PINIONS**  
 26 - ½" × ½"; 12 × 6mm  
 26c - ¾" × ½"; 1,1 × 6mm

**GEAR WHEELS**  
 27a - 1½"; 38mm  
 27b - 3½"; 89mm  
 27c - 2½"; 64mm  
 27d - 1¾"; 41mm

**COUPLING**  
 63

**COLLAR WITH SCREW**  
 59

**SPANNER**  
 34

**SCREWDRIVER**  
 36a

**SPRING CLIP**  
 35

**BOLT**  
 37b - ¾"; 5mm

**NUT**  
 37a

**WASHERS**  
 38 - ¾"; 10mm  
 38d - ½"; 19mm

**HANK OF CORD**  
 267

**TENSION SPRING**  
 43

**DOUBLE ANGLE STRIP**  
 48d - 5½" × ½"; 140 × 12mm

**FORK PIECE**  
 116

**GRUB SCREW**  
 69a

**SPROCKET WHEEL**  
 P96

**COLLET NUT**  
 P78

**SLIDE PIECE**  
 50

**CURVED STRIP (STEPPED)**  
 89a - 3"; 76mm  
 89b - 4"; 102mm

**COMPRESSION SPRING**  
 120b - ¾"; 14mm

**SPROCKET CHAIN**  
 (12"; 305mm)  
 260

**SPROCKET WHEELS**  
 95a - 1½" - 38mm  
 96a - ¾" - 19mm

**CORNER GUSSET**  
 108

**FACE PLATES**  
 109 - 2½"; 64mm  
 109a - 2½"; 64mm without pummel

**BOLTS**  
 111 - ¾"; 19mm  
 111a - ¾"; 12mm  
 111c - ¾"; 9½mm  
 111d - 1½"; 28½mm

**HUB DISC**  
 118 5½"; 140mm

**REVERSED ANGLE BRACKET**  
 125 - ½"; 12mm

**WHEEL FLANGE**  
 137

**PALLET PIN**  
 251

**WHEEL DISC**  
 137

**ROD SOCKET**  
 179

**BELL**  
 562

**ROD AND STRIP CONNECTOR**  
 212a

**ROD CONNECTORS**  
 213a, 213b

**WIPER ARM**  
 532

**SLEEVE END**  
 164 - ¾" × ½"; 16 × 12mm

**WEIGHT CYLINDER COMPLETE**  
 162

**CYLINDER ONLY**  
 162b

**PLASTIC PLATE**  
 194 - 2½" × 1½"; 64 × 38mm

**END BEARING**  
 166

**DRIVING BAND**  
 186

**PENDULUM ROD**  
 252

**PAPER DISC**  
 265

**PLASTIC DISC**  
 254

**NARROW STRIPS**  
 235b - 3½" × ¾"; 90 × 9mm  
 235d - 4½" × ¾"; 115 × 9mm

**WALL HOOK**  
 259

**DIAL NUMERALS**  
 263

**PLASTIC DIAL**  
 253