THE MONOTYPE RECORDER

VOL. XXXIX NO. 3 SPRING 1951

TECHNICAL NUMBER

WITH AN ILLUSTRATED SUMMARY
OF
POST-WAR IMPROVEMENTS

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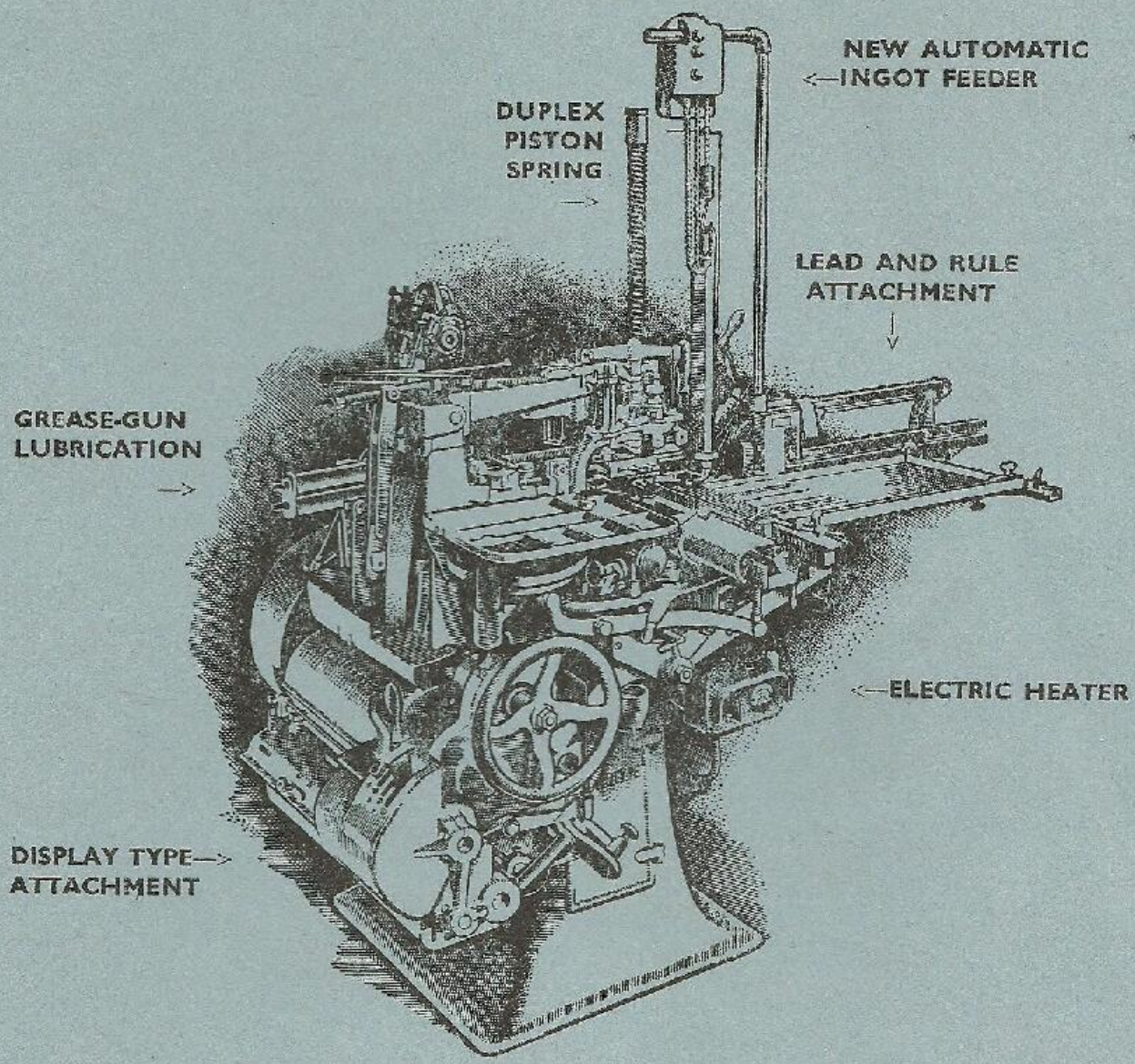

A post-war 'Monotype' Composition Caster
fitted with some of its optional attachments

THE MONOTYPE RECORDER

A JOURNAL FOR USERS AND POTENTIAL USERS OF
'MONOTYPE' MACHINES AND THEIR SUPPLIES

VOL. 39, No. 3 SPRING 1951

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INCLUDING AN ILLUSTRATED SUMMARY OF POST-WAR IMPROVEMENTS

THE NEW KEYBOARD MANUAL

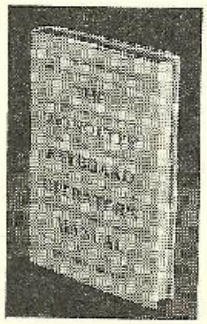
IN THE first year of this century, when Lanston's single-type composing machine was first introduced to the British printing trade, the needs of technical instruction for that trade were exercising the minds both of the employers and the leaders of organized labour, with understandable urgency. The century which had opened before the first power-driven printing machine was invented had ended with a series of profound technological changes.

For four and a half centuries "printing" in the current sense of multiplication of copies (multiplication on the press plus type composition and any other necessary preliminary) had been taught as an "art and mystery"— by allowing apprentices to watch, serve and try to imitate skilled men at their skilled tasks. The trade that made possible the very idea of learning a vocation from a text book remained itself loyal to the watch-and-do-likewise system of seven years' apprenticeship. Various manuals appeared from the seventeenth century onward, with useful summaries of what a future employing printer would have to know about composition, imposition, parts of the press, etc. before he took over the direction of that set of inter-linked handicrafts which was the printing office. But none of these authors gives the impression of addressing the apprentice.

The coming of the machine was chiefly, if not entirely responsible for the growth of the technical school as an adjunct to shop training. No sensible owner of a costly and vulnerable piece of machinery — one which is depreciating twenty-four hours a day, whether or not it is profitably productive for half that time — is at all anxious to see that machinery temporarily paralysed, and quite possibly put out of order, by a clumsy learner as long as there are experts in a nearby school ready to teach the lad on a similar machine dedicated to that one purpose. In every peacetime year since 1901 more outside schooling has been offered to printers' apprentices, and the total volume of training equipment has grown. But it has never quite kept pace with the demand, nor has the network of training centres ever stretched as far beyond the cities and large towns as has the printing trade itself.

In the early years of the century, in the building at Drury Lane which was the Corporation's first headquarters, the technique of operation was being worked out — one might even say puzzled out — by the relatively few people who had yet grasped the principles of the Keyboard and Caster. Experts, new customers, ex-compositors with a mechanical flair — all played their part in evolving the methods of training new operators. The "D" Keyboard of 1908, with its keys arranged on the universal typewriter system, opened up new possibilities for training Keyboard operators to "clean speed" by the touch system, and since those days the Monotype Corporation's schools in London, and also more recently in Bristol, have been successfully growing in the traditions established by their founder, Mr William Wigg, of individual "tutoring" for each student with due attention to the special problems with which his office will be concerned. This kind of instruction, which is provided without charge as part of the Corporation's service to its customers, differs as much from that of an ordinary training school class as does any instruction given personally by a tutor from that given to a whole class. Most of the best Keyboard and Caster instructors in technical and arts and crafts colleges

have been through the Corporation's school. The amount of practice equipment, and the quality and even method of the instruction, vary from school to school. At the worst it can be a case of too many lads waiting their turn for too few machines, under the instruction of some hard-working operator who has had the public spirit to mortgage what might have been his leisure hours to the task of instruction but has, of course, never had any training in pedagogics. At the other end of the scale is the admirable and up-to-date equipment, and expert staff of instructors, of the largest printing monotechnic in the world, the London School of Printing, where for many years past Mr V. F. May, one of Mr Wigg's earliest alumni, has been perfecting a system of instruction by graded exercises which are as significant and valuable in classroom or shop use as is the Corporation's own tutorial system in its own schools.



The need for standardizing a system of instruction was becoming evident to the London & District Monotype Users' Association even before the second world war, and soon after the close of that war, the Association, under the spirited leadership of Mr A. M. Shand took the first steps toward the preparation of a standard textbook for Keyboard operators. The need for such a book was emphasized by the fact that a considerable number of the printing offices of the country, which are equipped with 'Monotype' machines, are beyond reasonable travelling distance of any technical school that offers training on similar machines.

Ultimately Mr Shand as Chairman of the National Committee of the Monotype Users' Associations secured the support of the other District Associations for the idea and there has now appeared *The 'Monotype' Keyboard Operator's Manual*, a 204-page book worthily designed and produced at the Shenval Press and published at 11*s.*, including postage, by the National Committee of Monotype Users' Associations. The pioneer nature of the work — the fact that it emanates primarily from the users and only secondarily from the makers of the machines in question, explains why the quantity of the first edition was considerably less than the demand would have justified; it was to leave the fullest possible opportunity for revision and enlargement before the book came into general use.

The book is in sixty-nine sections with twenty-two half-tone, and numerous line, illustrations and diagrams, and thirty exercises: the latter, together with three sets of finger exercises, can be obtained separately on white cards, suitable for use in the copyholders of 'Monotype' Keyboards, at the cost of 3*s.*, including postage, for the thirty-three cards. The book itself opens with diagrams of the Keyboard and instructions on correct fingering; making up the Keyboard measure, and other details of straight composition. Then the student is introduced to the details of changing the layout; 'Monotype' paper; arrangement of the punches and the perforated ribbon; reading the perforations; care and cleaning of the Keyboard; and the "touch" and use of the space bar. Then come sections dealing with sorts casting on the Composition Caster; the line canceller; Keyboard and matrix-case arrangements; allowance for initials and blocks; unit wheel work (justifying a line with fixed spaces instead of variable spaces); and poetry. The almost inexhaustible possibilities of tabular work on a 'Monotype' Keyboard are approached step by step. Sections include casting-off tabular work; setting columns by the unit wheel method; the em-scale marker; ranging leaders with fixed or variable spaces; the justifying scale; justifying before reaching the justification area; justifying overset lines; balance sheet work; solid-dot leaders; allowance for rules; diamond leader work; multiple justification (the exercise for which is reproduced on p. 3 as *fig.* 1); the set and unit system; "turn-up" headings and em rule lines; measures over 65 set ems; wide-measure table-work, time-tables, ditto work and the use of the paper-feed lock.

Further sections, most of them accompanied by well-chosen exercise-examples, deal with programme work; intricate rule allowance; smaller type column headings; and brace pieces. A general section on the "justifying spaces, keys and scale in relation to the Caster" leads into sections on letterspacing, justified letter-spacing (e.g. in narrow measures around blocks) and unit adding (with a note on the unit-adding attachment). Typewriter composition is given three exercises, and others deal with setting two-line characters (e.g. small ads, displayed price figures in catalogue entries, etc.) and the use of the quadding and centring attachment and the tabular device. The nature and operation of the combined spacing attachment and the automatic leading attachment, two important developments of the inter-war years, are described, and the book ends with tables of point rule equivalents, pica equivalents, type set sizes and the 8½ set justifying scale. As an appendix there are five pages of "Questions", 125 in number, by which the student's understanding of the successive sections can be decided.

Readers of the Technical Number of the RECORDER will be glad to hear that the parallel *Caster Instruction Book*, with its wealth of illustrations and diagrams, is well on the way to publication. Like the Keyboard Manual described above, it will be issued at a price which will no more than cover its cost of production, so that no special discount can be allowed to either booksellers or schools.

Exercise Ten

MULTIPLE JUSTIFICATION

Measure: 42 ems 12-point, 8½ set, 2-point vertical rules

THE SUITABILITY OF THE MAIN PRINTING PROCESSES

Process	*Work for which suitable*	*Advantages*	*Limiting Factors*
LETTERPRESS	Type matter and line subjects in black or colours. Half-tone and three- and four-colour blocks on suitable paper.	Most widely used method. Very flexible for type arrangement or corrections particularly when alterations are necessary during a run. Illustration work of all kinds is reproduced with great clarity and crispness.	Illustrations on non-coated paper must be selected with care and suitable blocks used.
DIRECT LITHOGRAPHY	Full colour posters, show cards, cartons, labels, containers, etc.	Economical duplication when long runs are required. Full, rich colour effects.	Only comparatively coarse stipples can be reproduced commercially.
OFFSET LITHOGRAPHY	Showcards, packets and containers, posters, illustrated sales literature, and display matter. Reproductions of pencil sketches and wash illustrations. Tin printing.	Offset lithography may provide better impressions on rough and unfinished papers, with considerably higher output than direct lithography. For both processes of printing photographic methods can be used. Line and half-tone colour work may be undertaken.	The sharp crispness of letterpress is not possible especially in type printing, although the results produced by the deep-etch method compare very favourably.
COLLOTYPE	Facsimile reproduction in monochrome of colour, of works of art and botanical specimens.	The only process with practically no grain. Faithful and delicate reproduction of gradational tones.	Comparatively expensive for long runs.
PHOTOGRAVURE	Work of all kinds which includes reproductions of photographs or drawings in gradation in monochrome or colour.	A rich intensity combined with a delicacy in the high lights. The grain is almost invisible thereby giving a photographic effect. Latitude in choice of paper.	Comparatively expensive for short runs excepting from plates. It lacks the sharp detail required in high-grade letterpress printing.

Fig. 1: One of the Exercises from *The 'Monotype' Keyboard Operator's Manual* (p. 75)

THE SECTION "Multiple Justification" first explains the general principles involved, in the following words:

Multiple justification is the method of independently justifying with variable spaces different sections of the same line in order that each section fills its measure, and that the sum of these sections equals the total measure.

A line may contain as many of these sections or columns as desired providing the sum total of the columns does not exceed 60 pica ems. The justification figures for justifying the lines in each column are found by turning the justifying scale to the unit column corresponding to the number of units the line is short of the measure for the column or section. The column or section is then single justified. Single justification is the striking of an upper row key and then a lower row justification key. For example, if the justification for the column is 3/8, tap the 3 upper row and then the 8 lower row key. The striking of these keys may or may not have moved the em pointer past the mark-off for the next column, but in any case, before the next column can be set, the justifying scale pointer must be dropped to its lowest position, the em pointer placed on the mark-off for the next column, and a graved mark on the unit wheel placed in line with zero on the unit indicator. The justification figures for the final column are automatically shown and the column double justified.

The galley mechanism of the caster can, in a second or two, be adjusted so that either single or double justification perforations deliver a line on to the galley. If the caster is adjusted for double justification, the single justification perforations stop the pump for two revolutions of the caster while the justification wedges are moved into position, but they do not operate the galley mechanism. Therefore, as the columns are cast, they are assembled in the type channel until the double justification perforations of the next line are presented to the caster, when the complete line is delivered on to the galley as in straight composition. It is usual for the caster to be permanently set for double justification.

This is followed by specific instructions on the setting of the example shown above.

POST-WAR 'MONOTYPE' MACHINES

A RÉSUMÉ OF TECHNICAL PROGRESS

1945—1951

IN THE following pages we record and illustrate various important improvements which are now included in post-war 'Monotype' composing machines.

As with all manufacturing concerns during the War period, Government restrictions left only a small margin of working time for preparing for peace-time business, but as soon as hostilities ceased, the Corporation was ready to go full speed ahead with a prepared programme for the production of a machine with many important improvements for extending range of output and providing means for reducing wear on various quick-acting parts of the mechanism. Full technical details of most of this work are given in this issue of THE MONOTYPE RECORDER, but special reference to the more important improvements will not be out of place in this introductory notice.

Owing to extending the capacity of the matrix case by adding two more rows (a total of thirty extra matrices), attention had to be directed to providing more keybuttons to cover the extra matrix case positions. The result of these investigations was the provision of an extra left-to-right row of keybuttons on each keybank, giving fourteen rows instead of thirteen, and bringing the justification keys closer together so that each of these two rows now comprise fourteen keys instead of eleven. The net increase in the number of keys is twenty-eight.

The two rows of justifying keys have been brought lower down, (immediately above the roman cap. keys) to reduce arm movement when justifying.

Another advantage accruing from the increased key capacity is the possibility of arranging seven complete alphabets according to the universal typewriter layout.

On the caster the introduction of two additional rows of matrices might seem a simple matter to apply, but in practice many obstacles occurred. The original caster was so neatly and accurately designed to run a 225 matrix case at a pre-determined speed that the slightest increase in the weight of the matrix case, and the extra clearance required for the increase in the matrix case movement, set up many mechanical problems. The "balance" of the complete range of mechanisms affected by

matrix case positioning had to be revised, including the relative strength of the springs in the jaw tongs spring box to the stop rack springs as well. So well has this been undertaken that no reduction in running speed has been necessary.

Concentrated attention has been directed to improving the quality of type cast, and many important additions to the original range of products have been made.

I. POST-WAR KEYBOARDS

KEYBANKS

ON POST-WAR keyboards each keybank is equipped with an extra horizontal row of keys (*see fig.* 1), and on the left-hand keybank the keys of the two rows of justifying keys have been positioned closer together, so as to include fourteen justifying keys in each row in place of eleven. This leaves only the two No. "15" keys to be located on the right-hand keybank.

This arrangement provides for a total of 28 more key positions, and enables the standard typewriter key arrangement to be applied to seven complete alphabets.

Another important feature on English keyboards is the location of the justifying keys, the two rows of which have been placed just above the roman cap. alphabet, thus providing an economy of arm movement when justifying, and giving more clearance from the copyholder.

The small caps., being less frequently used than the justification keys, have been placed in the upper three rows of the left-hand keybank.

A further important improvement has been the placing of an additional justifying space key in a convenient position for use when composing small caps. and italics. This key is located in the lower row of the lower-case italic, and avoids the operator having to bring his hand down to the normal justifying space keys after every word of small cap. and italic copy.

These modifications have enabled us to make a "standard" keybank layout which has proved acceptable to practically all users.

The problem of accounting on these standard keybanks for individual variations of matrix case arrangements (inevitable between many different type faces), has been overcome by confining the corresponding key positions to the top left-hand row of keybuttons. The remaining key positions, with very few exceptions, always carry the same characters.

In order that no misleading information may be given by these top left-hand keybuttons, they do not carry any characters. The operator either marks or "button-caps" them to correspond with the layout he is using. To facilitate marking, the surface of these keybuttons has been slightly roughened.

The advantages of the standard typewriter key arrangement has been proved over many years. That facility has now been extended to include practically the whole of the keybuttons on our keybanks and its implications will not be overlooked by both management and operators.

KEYBUTTON COLOUR SCHEME

Roman CAPS and l.c... Black characters on white body
Italic CAPS.....White characters on blue body
Italic lower case.....White characters on black body
SMALL CAPS .....Black characters on blue body
Boldface.....White characters on green body

KEYBUTTON "TOUCH"

Key-depression has been considerably eased by giving more clearance between keybars and plunger valves.

Quick-action plunger valves have also been applied by the abolition of the collar adjoining the seating end of the valves.

Customers wishing to apply these modified valves to their pre-war keyboards must return the valve bank e41KC1K to our Works to have the valves specially fitted.

REVERSING ON LOWER RED KEYS

Composition time is sometimes saved by reversing when depressing a key on the lower justification key row.

Previously it was noticed that this practice damaged the unit wheel, as the compressed air from the .0005in. valve started to raise its punch lever piston at the same time as the restoring rocker arm link lever 24KB4K started to pull the unit rack out of engagement with the unit wheel.

The latter action is now in an improved sequence, as the units of the .0005in. key are first registered in the usual manner, followed by the compressed air pressure acting on the unit wheel driving rack (reversing) piston 37KB2.

KEYBARS

To provide for the inclusion of the extra keybars in each keybank all keybars have been reduced in thickness by about .005in., and the serrations in the guide bars, upper and lower, on each keybar frame have been made correspondingly closer. All keybar frames must be returned to our factory for conversion to post-war standard where a changeover has been decided on.

When ordering individual keybars give the layout number of the keybar frames to which they are to be applied.

EM SCALES

The Em Scales are now produced plainly marked in laminated phenol formaldehyde material (*see fig.* 2A). For

tropical use anodised aluminium scales are supplied. When marking off measures on these scales, operators are strongly advised to use only soft wax pencils, and not the usual hard "black lead" variety, which are apt to scratch the surface of any em scale, making the pencilling difficult to erase.

Should difficulty be experienced in obtaining suitable soft wax pencils they may be supplied by us.

EM SCALE MARKER ATTACHMENT (a35KU)

This is an attachment holding a number of pointed metal markers in front of the em scale, so that individual markers may be moved to any position along the em scale to indicate any required sub-measure in tabular composition, and thus avoid the use of pencils which in time score the surface of the em scales (*fig.* 3).

The attachment is fitted with a group of 9 markers, but if necessary more can easily be applied.

VALVE BANK PLUNGERS (a41KC12)

In order to give a livelier action to the general mechanism of the keyboard, and a lighter touch in operating, the valve bank plungers are now designed minus the collar adjoining the seating diameter of the valves.

PISTON LEVER STOPBARS (c31KC18)

These two stopbars, which limit the rise of the punch levers, have been strengthened, and stronger holding-down screws applied. This provides for the increasing use of combinations of more than two perforations where various attachments are applied to the caster, such as Extended Matrix Case Attachment, Quadding and Centring Attachment, Unit Adding Attachment, etc.

RESTORING ROCKER ARM (24KB1K)

A neat torsion spring has been applied to this part to give it a more "snappy" return at the end of the em rack reversal, thus ensuring the unit wheel pawl engaging the correct tooth of the unit wheel.

JUSTIFYING SCALE POINTER (g14KB1)

The improved space pointer is shaped to show nine horizontal readings on the justifying scale, and the pointer is calibrated 1 to 9 for quick reference when using the Quadding and Centring Attachment (*see fig.* 2B).

Provision has been made for adjusting the pointer to justifying scale, when the "constant" column is practically central to the view when the justifying scale is at rest.

This saves the operator moving the justifying scale back by hand, as frequently required when making use of quadding and centring attachment.

UNIT WHEEL (Xb35KB)

The unit wheel, unit vernier, and unit indicator are now dull chromium plated, and all em and unit lines are broadened and heavily blackened (*see fig.* 2C).

UNIT ADDING

An improved abutment has been provided for the return stroke of the unit rack d26KB1 to keep the unit distance piece b94KB1K steady by providing a more robust guide fitted to unit rack abutment bracket j27KB5.

LETTER SPACING

The 4-unit unit rack stop is now made in two sections, the upper section being held in position by spring tension. If, in setting letter-spaced matter, the 4-unit unit rack stop should strike against the lug on the unit rack d26KB1 the upper section of the unit rack stop will be held down against its spring pressure, permitting the required units to be registered without any hand adjustment.

LINE COUNTER (Xb23KB)

The new counter indicates for "line trip" only. It was observed that of the two readings given on the "Veeder" line counter only one was used or required. Accordingly, an improved type of counter (*see fig.* 2D). is now being supplied, the figures of which are larger and easier to read than on the old type. In addition, the counter is much more robust and easier to set to zero. In applying this counter the back plate is slid under the bell bracket clamp 1KB3, and secured by a screw 1KB4. The lever on the counter must be positioned for operating under pin a2KB10 on bell hammer lever bell crank a2KB6.

If the illuminator arm 61KB1 is already on the machine, suitable clearance must be made for the bell assembly.

COPYHOLDER (Xe4KA)

An improved copyholder enables copy to be inserted freely and squarely. The supporting bracket members have been strengthened, rendering the complete structure free of vibration (*fig.* 4).

PAPER TOWER TENSION ARM PISTON ROD (40KC1K)

A very important ruling has been laid down for adjusting the Paper Tower Tension Arm, in order to provide for efficient functioning of the unit wheel pawl latch, relieving it of any undue strain which might eventually result in fracture of the latch.

The adjustment of the Tension Arm is as follows:

With air supply turned off depress the tension arm by forcing it down hard by pressure applied by one hand immediately over the yoke 40KC2. With the other hand screw down the large stop nut 40KC10 until there is $\frac{1}{64}$ in. clearance between the unit wheel pawl latch 38KB6 and the unit rack slide shoe a29KB3. This clearance can be felt by pressing the unit wheel pawl a38KB1K upwards and releasing it alternately whilst continuing to hold down the tension arm.

JUSTIFYING SCALE ILLUMINATOR (34KU)

On account of the tendency of the filament of the small lamp 66KB1 to break, a larger and more robust lamp b66KB1 can now be supplied.

To permit this larger lamp to clear the illuminator cylinder an eccentric bushing has been provided. When applying this larger lamp for the first time this eccentric bushing must also be applied.

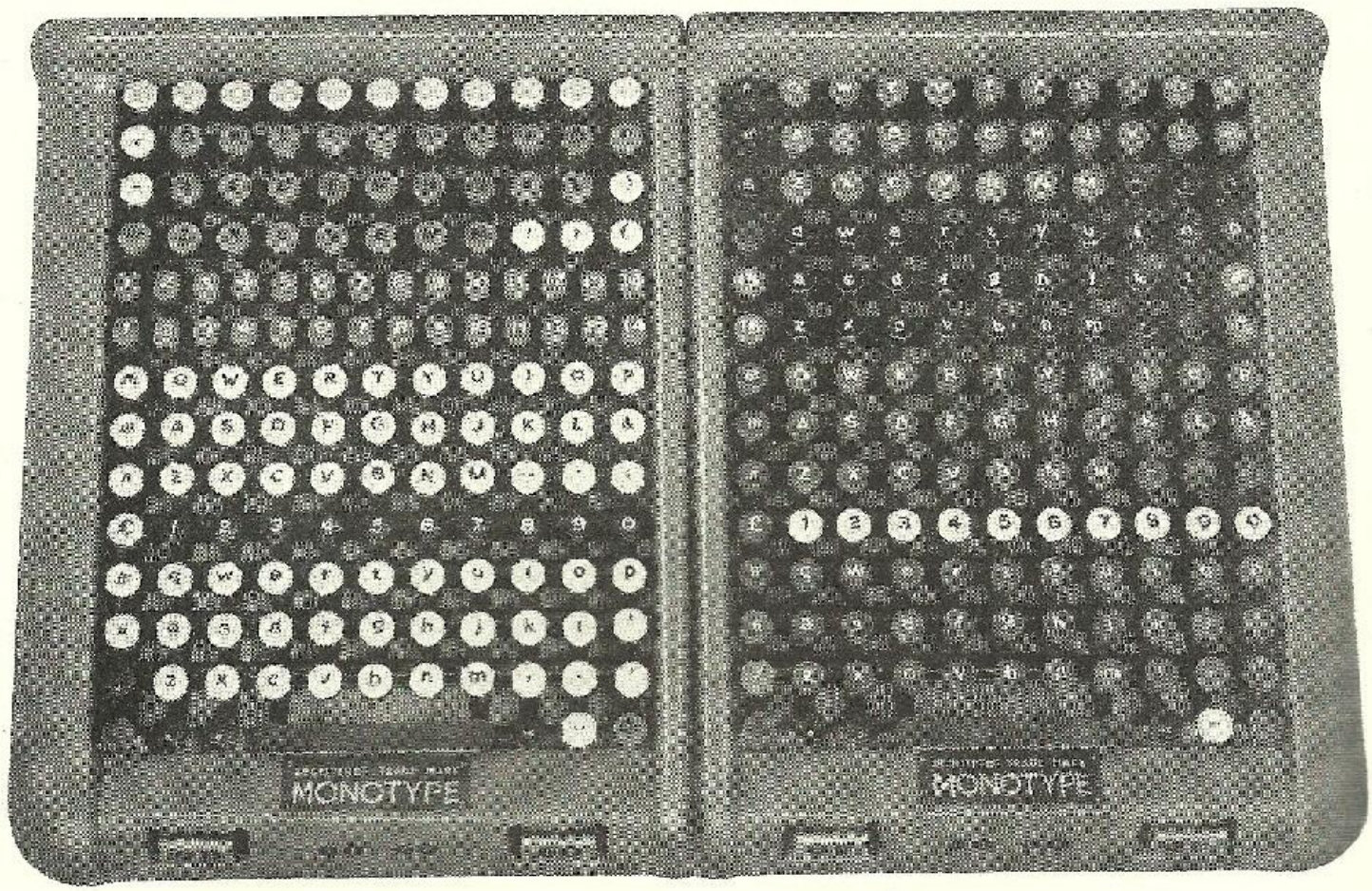


Fig. 1 (*above*): KEYBANKS of a post-war 'Monotype' Keyboard described on p. 5.

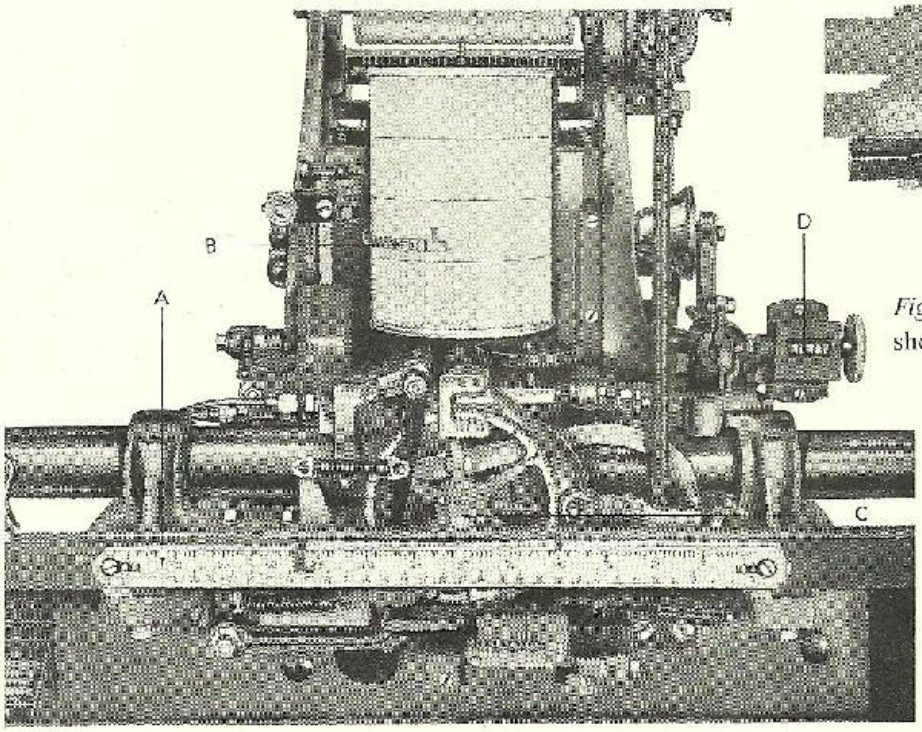


Fig. 2 (*left*): Detail of Keyboard, showing (A) improved EM SCALE; (B) new JUSTIFYING SCALE POINTER, shaped to show nine horizontal readings; (C) UNIT WHEEL, improved finish and markings; and (D) new LINE COUNTER.

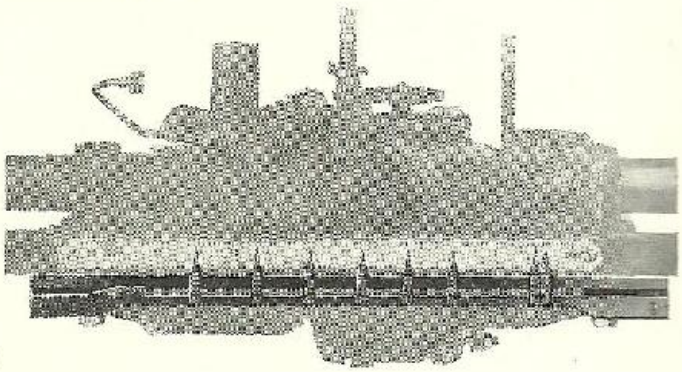


Fig. 3 (*above*): EM SCALE MARKER attachment.

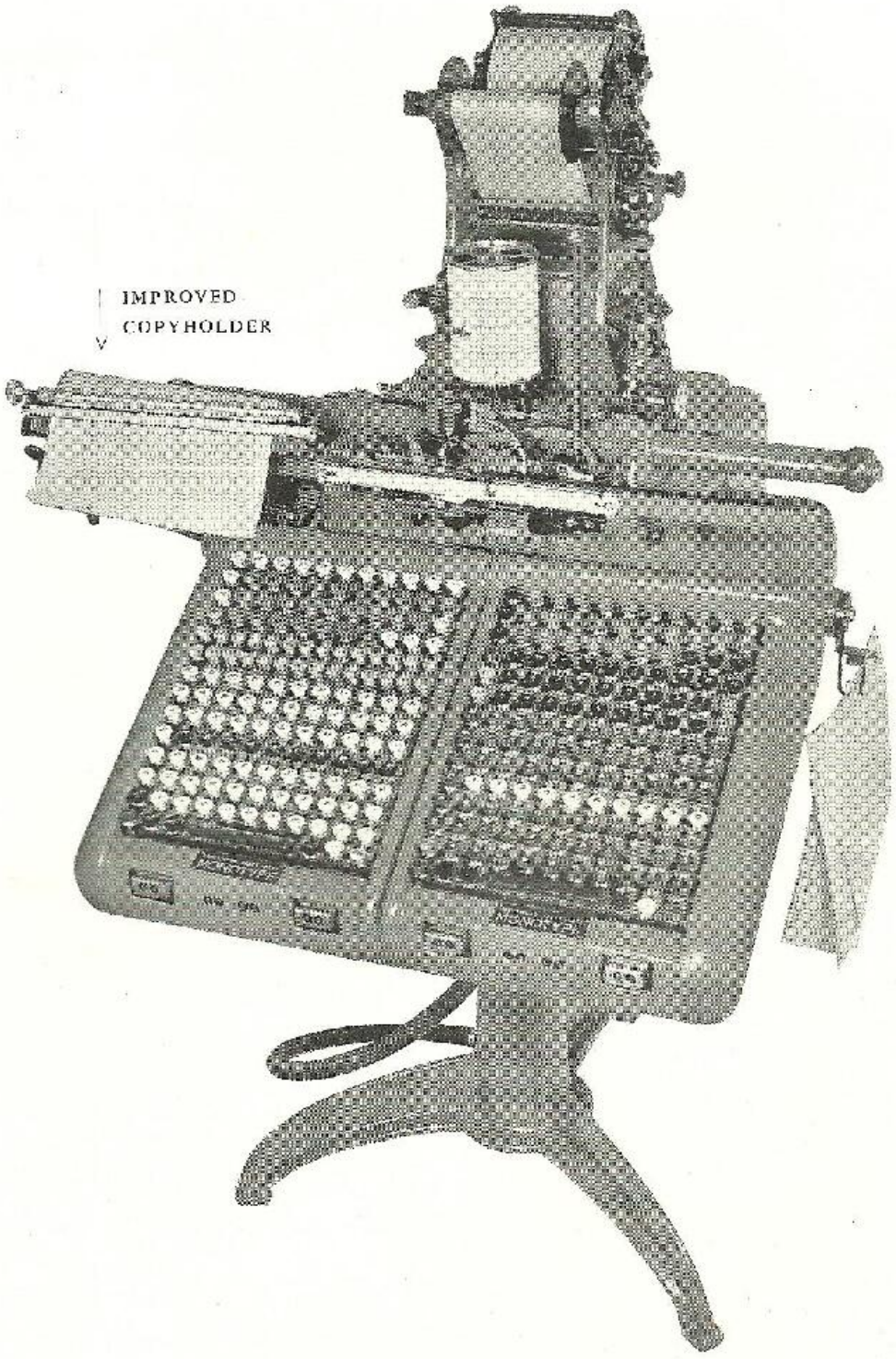


Fig. 4: general view of the post-war KEYBOARD, showing some of the improvements described on pp. 5 and 6. All 'Monotype' Keyboards are now attractively finished in battle-ship grey enamel.

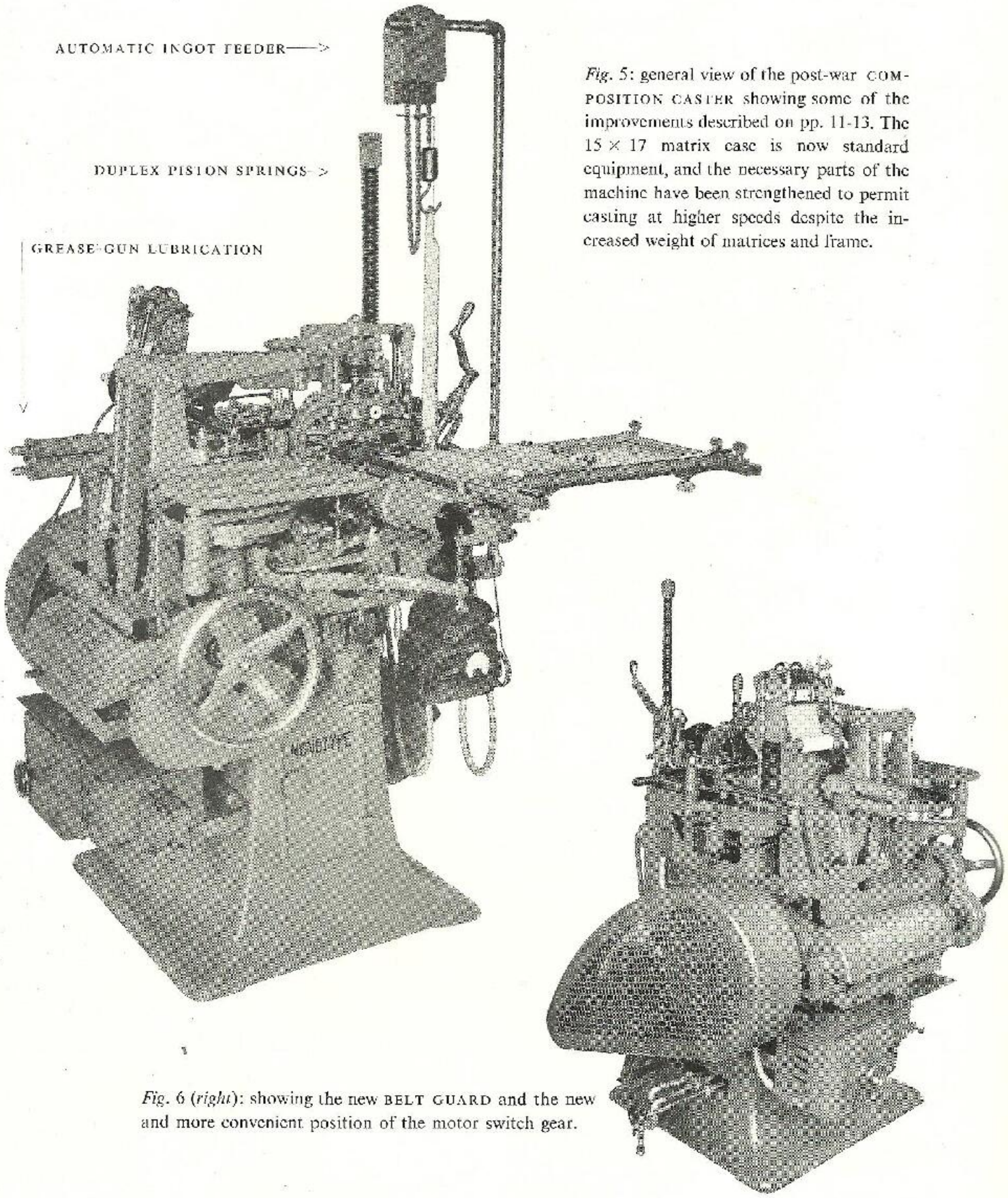
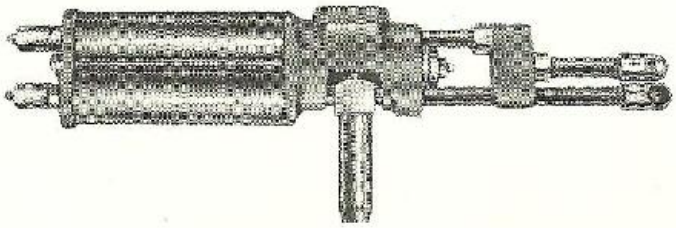


Fig. 5: general view of the post-war COMPOSITION CASTER showing some of the improvements described on pp. 11-13. The 15 × 17 matrix case is now standard equipment, and the necessary parts of the machine have been strengthened to permit casting at higher speeds despite the increased weight of matrices and frame.

Fig. 6 (right): showing the new BELT GUARD and the new and more convenient position of the motor switch gear.

Fig. 7:
JAW TONGS SPRING BOX



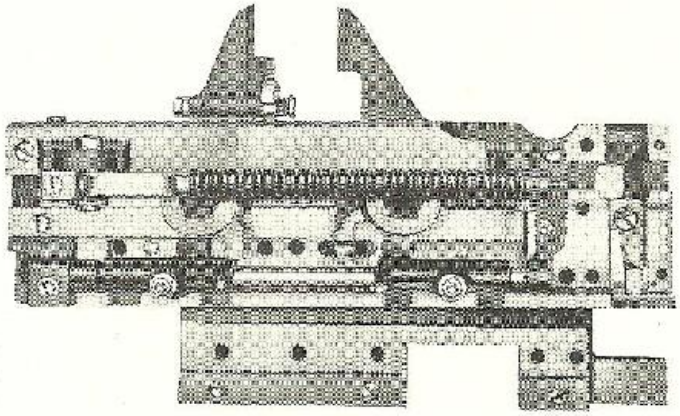
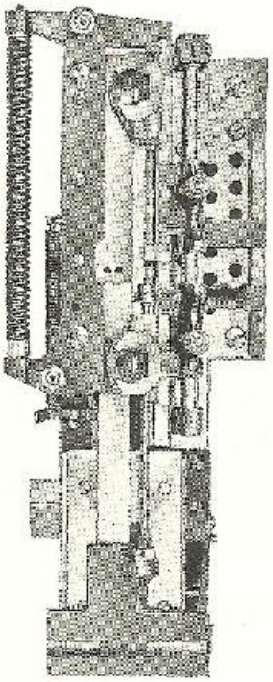


Fig. 8 (left):
front MATRIX JAW BUFFER

Fig. 9 (right):
rear MATRIX JAW BUFFER



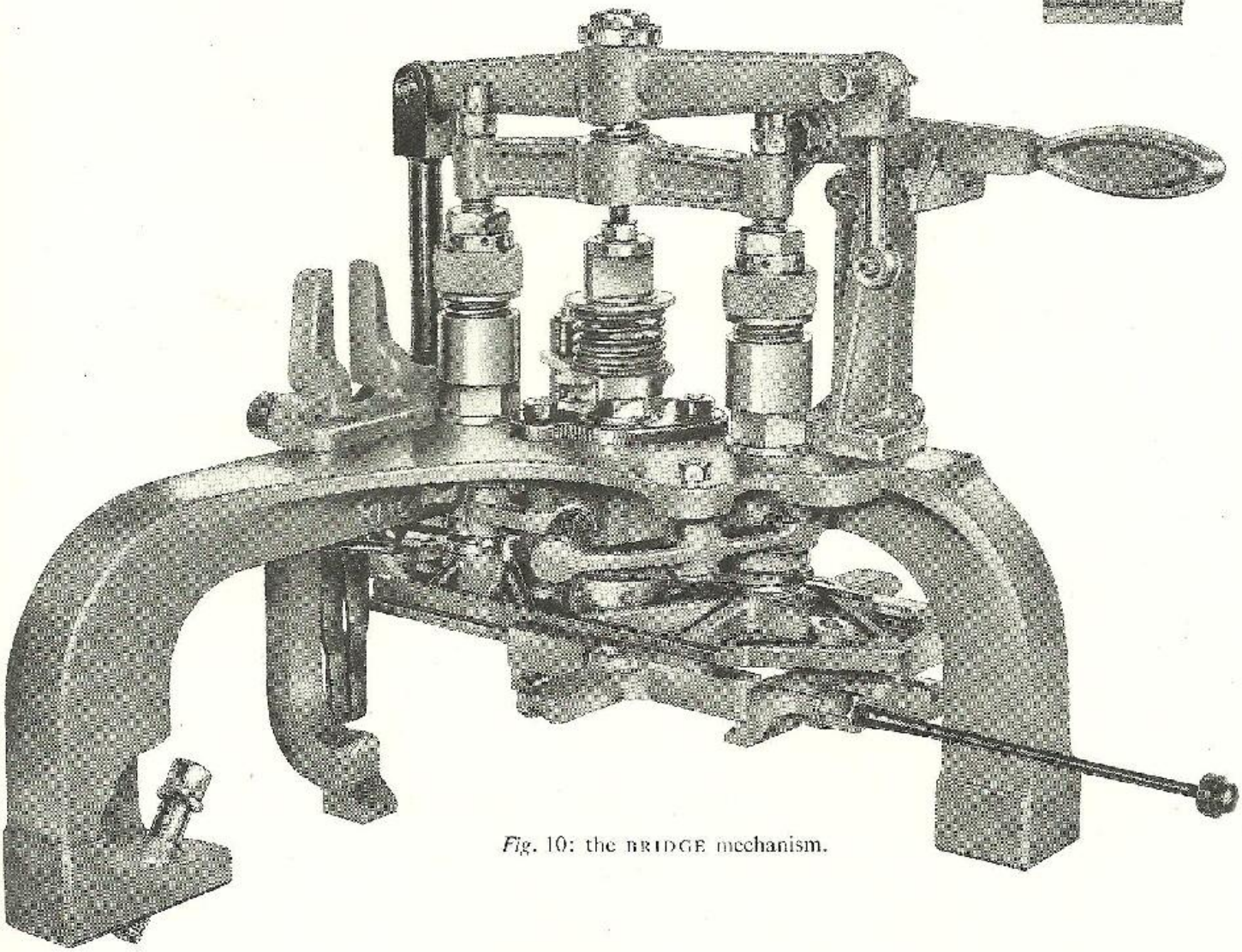


Fig. 10: the BRIDGE mechanism.

II. POST-WAR COMPOSITION CASTERS

On account of the standardization of the 15 × 17 extended matrix case much attention has been devoted to testing every section of the caster, in order to strengthen any part that appeared to need it for the purpose of securing an increase in output, and at the same time to run at the same speed as the machine fitted for 15 × 15 matrix case. This involved much testing and readjustment of many groups, and parts associated with the positioning of the matrix case, on account of the increased weight of the matrices and the frame in which they are enclosed.

RUNNING SPEEDS

Casters have been tested at higher speeds than those given below, but for reliability it is recommended that the following speeds should be accepted as maximum:

5, 6, 7 point	180 r.p.m.	10,800 per hour
8, 9, 10 point	160 r.p.m.	9,600 per hour
11, 12 point	150 r.p.m.	9,000 per hour
14 point	100 r.p.m.	6,000 per hour
18 point	60 to 80 r.p.m.	4,200 per hour average
24 point	50 to 60 r.p.m.	3,300 per hour average

LOCKING BARS AND STOP BARS

To enable the locking bars to have a more positive control of the stop racks a thorough overhaul of the matrix case assembly mechanism has been made.

The shape of the stop rack teeth has been altered to a sturdy stub design.

The pressure of the locking bar operating spring has been increased from 65 lb. to 90 lb. The pressure of the front locking bar spring has been increased from 32 lb. to 45 lb. and the rear from 22 lb. to 35 lb.

The yoke on the rear locking bar assembly has been widened and strengthened.

JAW TONGS SPRING BOX (Xc26E)

Much attention has been concentrated on the jaw tongs spring box and all parts connected with it, in order to secure most efficient positioning of the matrix case.

The groups of springs in the tubes have been strengthened to compensate for the increased inertia of the 15 × 17 matrix case.

The spring rods have been increased in diameter to permit their rear ends to be drilled, so that a grease gun 42CT1 can be applied for forcing grease between the wooden brakes at the left-hand end of the spring rods (*fig.* 7).

MATRIX CASE POSITIONING

The chief object of the matrix case positioning is to ensure that the matrix case remains perfectly stationary when the centring pin seats in the coned hole of matrix, as this guarantees accurate alignment and reduces wear on mould surface.

A test was made by fastening a piece of spool paper beneath the matrix cover plate, and having a needle fixed in place of the coned end of the centring pin, so that any vibration of the matrix case when the needle pierced that paper would be shown by an elongated perforation. After a prolonged run on copy it was found that every needle hole in the spool paper was perfectly made, without the slightest evidence of any tendency to drag against the needle, although the caster had been running at an unusually high speed.

MATRIX JAW BUFFERS

These provide for the absorption of force in the overthrow of the matrix case as the matrix jaws reach the end of their closing stroke. Also reduces possibility of damage of matrix case at the hook end, and dispenses with use of matrix jaw stop b11C (*see fig.* 8 and *fig.* 9).

BRIDGE LEVER FULCRUM ROD (c2A2)

This fulcrum rod has been altered completely in design and substantially strengthened. It is now in one piece, dispensing with the rod b2A2, the yoke 2A3, and one nut 2A4 (*fig.* 10).

NUT ENDS OF TRANSFER RODS STRENGTHENED

Provides for use of $\frac{3}{16}$ in. nuts instead of $\frac{5}{32}$ in. To apply this change to pre-war casters necessitates opening out the transfer tongs to correspond. This must be done at our Works.

BRIDGE CARRYING FRAME GUIDE ROD STOP NUTS (a4A2)

To ensure uniform adjustment of the carrying frame stops, external bushes have been provided to cage the springs, so that it can be seen that the down stroke of the bridge lever is arrested by both stops, and not, as must have often happened previously, by one stop only (*fig.* 10).

CARRYING FRAME AND SLIDING FRAME OF BRIDGE (c4AA, q9AA)

Longer bearing surfaces provided and lubricating pads applied (*fig.* 10).

MOULD BLADE ABUTMENT SLIDE ANVIL PLUNGER (a14C5)

This plunger is now radiused at each end, to cause only the centre of the plunger to reach the full depth of the groove in the normal wedge in use.

AIR PIN ANTI-CHIPPING TONGS

It had been observed on pre-war casters that the 5-unit, 6-unit and 7-unit air pins on the front air pin block were liable to become chipped by contact with the front right-hand air pin jaw.

The explanation is as follows: Assume the matrix jaws have begun to slow up just before the end of their closing stroke in moving the matrix case from extreme left to extreme right, causing the matrix case to be overthrown rather forcibly against the front right-hand matrix jaw. This causes the left-hand matrix jaw to fulcrum against the stop rack, and the leverage of the right-hand matrix jaw tong then very slightly reverses the jaw tongs spring box bell crank, and puts a sharp pull on the spring box spring rod c26E17 overcoming the resistance of the wooden brakes at the rear end of this rod. This instantly starts to reverse the right-hand air pin jaw, and should the air pin, which has at this period just been released, not have had time to reach its base, the closing air pin jaw will strike it with sufficient force to chip the top of the air pin or damage the under side of the air pin jaw. This action takes place only at the instant when the left-hand air pin jaw contacts its guide rod stop 19B, and thereby starts to release the pressure of the equalising spring from the right-hand air pin. All this is simply a chance action when the matrix case is being taken from extreme left to extreme right, and the risk of air pin chipping is due to a possible reverse flick on the right-hand air pin tong before the released air pin has had time to reach its base.

To counteract this action the right-hand air pin tong is now made in two sections (*see fig.* 11), the two being held in contact by spring pressure. Should there happen to be any reversing "flick" on the right-hand tong the force of it becomes absorbed by the spring 55E26 maintaining delayed contact with the raised air pin.

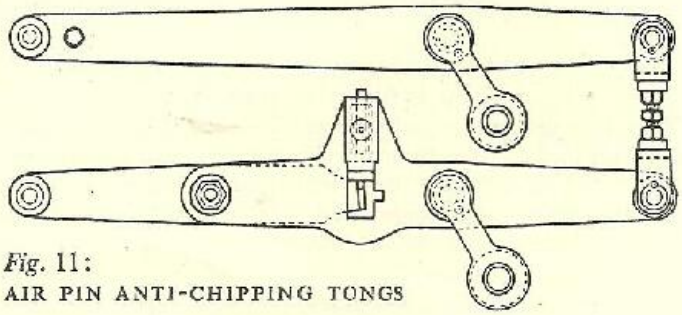


Fig. 11:
AIR PIN ANTI-CHIPPING TONGS

PUMP IMPROVEMENTS

Much attention has been devoted to all parts connected with the pump mechanism, with the main object of maintaining solid type with perfectly outlined face.

The improvements adopted include:

Pump Body Spring Rod Stop: This stop has been introduced to prevent overthrow of the pump body spring rod 31H1, which may happen at high speeds should the pump body spring a31H have become weakened by long usage.

It was noticed that any suggestion of downward overthrow of the pump body spring rod transferred pressure to the rear end of the pump body lever Xc24H, causing a slight upward movement to be imparted to the pump body, causing it to rise very slightly up the piston. This causes a slight "pip" to be ejected from the nozzle at the period in the machine's revolution when the previous type is being ejected from the mould.

Piston Lever Xc18H: An alteration has been made to this lever by lengthening the centre hole, so as to permit an increased movement on the pump lever connecting pin 32H1 in the event of the piston becoming seized in the pump body.

Piston Spring Xb20H: Owing to the increase in the volume of metal pumped through the various moulds, especially on the Super Caster and on the Display Type machine, it has been found necessary to increase the range of pump spring pressure, so that the pressure may be regulated according to the variation in the volume of metal to be forced into the mould. This is an important consideration when it is understood, for example, that a 36-point em absorbs 36 times more metal than a 6-point em, and a 72-point em absorbs 144 times as much.

To provide for this variation in volume and pressure demand, the pump piston is now operated by a two-piece spring, one within the other, and the pressure-adjusting nut at the top of the spring rod has greatly increased range of adjustment. The improvement in the type face and body, especially in the larger display founts, is instantly noticeable.

Pump Piston: The washer a17H14 at the base of the piston has been obsoleted, and the metal inlet is now regulated by the piston and retaining screw n17H11.

Swing Frame Post Screws a38H4, a38H5: These are now shaped with hexagon heads, so as to permit a spanner to be used in fixing or removing them.

Gas Burners: Not fitted on post-war casters, unless a dual gas-electric equipment is specially ordered, so as to prepare against failure in either gas or electric current supply.

Melting Pot: The metal capacity of a standard medium electric melting pot is 55 lb.

DOOR IN CASTER BASE

A stop has been applied to limit the opening of this door in order to guard against possible damage to the electrical heating equipment.

GALLEY TRIP LEVER (d45FF)

A latch has been provided for holding the trip lever release, thus providing for continuous action in taking short lines of type to galley.

JUSTIFICATION WEDGE LEVER ARM ROD 15D3 and TRANSFER WEDGE SHIFTER LEVER ARM ROD 57D4

The lower ends of the nuts at the top of these lifting rods are now coned to reduce the possibility of occasional breakage of the rods, caused by the radial stroke of the centring pin lever being at right angles to the radial stroke of the justification wedge levers X13D and X14D.

MOTOR SWITCH GEAR

Now placed in a more convenient position under the rear cam group (*see fig.* 6).

POST-WAR 'MONOTYPE' MACHINES

BELT GUARD

Now fitted on guide rails, permitting easy withdrawal for belt inspection (*fig.* 6).

WATER CIRCUIT

The water channel in main stand opposite the galley bracket is fitted with a copper bush.

On the water pipe connection block 47H on mainstand, inspection screws have been added, which can be removed to drill away any obstructions in the water channel, without removing the water pipe connection block 47H, and thus disturbing the joint.

WATER PIPES

Copper piping replaces the galvanised iron pipes, with simplified unions to permit pipes to be easily removed for inspection and cleaning.

DISCARDING RIGHT-HAND AND LEFT-HAND SCREW THREADS ON SMALL DIAMETER PIPES

Especially on the water pipe 44H, which is not very accessible. A short insertion section of piping enables the water-way to be easily made, where the right- and left-handed threads made it a matter of difficulty.

QUADDING AND CENTRING ATTACHMENT

All casters are now drilled and prepared ready to apply this attachment, so that all necessary piping may be easily applied at the customer's works, should the attachment be ordered later on.

MELTING POT AUTOMATIC METAL INGOT FEEDER (76CU)

An automatic metal ingot feeder has been applied, using 16-lb. long ingots conveniently suspended above the melting pot (*see fig.* 5). These are automatically lowered as the level of the metal in the pot becomes lowered, and automatically stopped when the metal reaches its intended level.

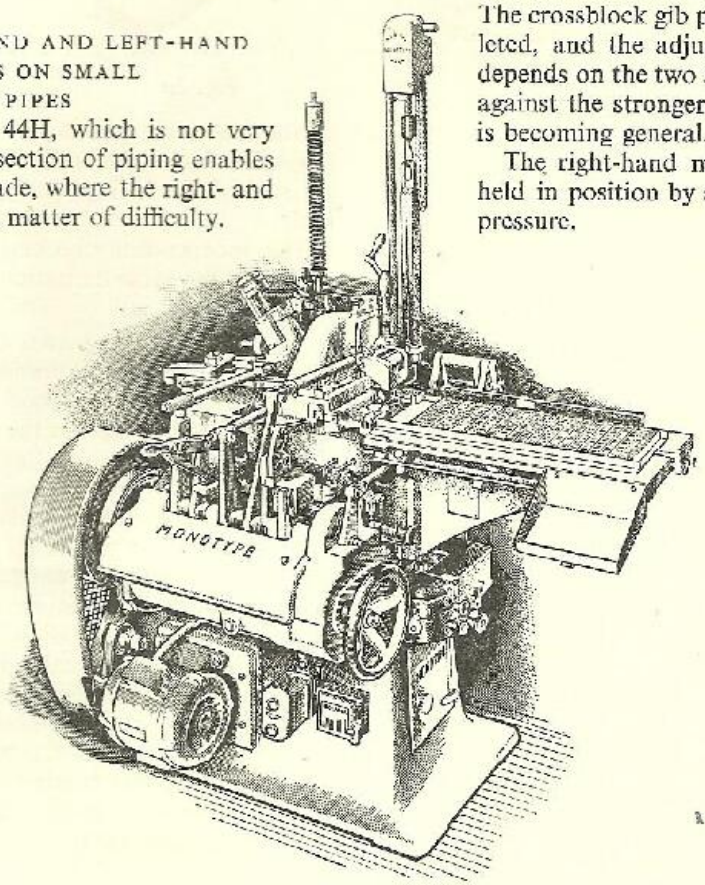
This attachment is especially useful on the Super Caster when casting furniture and heavy strip material.

MOULD IMPROVEMENTS

The crossblock gib plate spring pad has been obsoleted, and the adjustment of the gib plate now depends on the two adjusting screws. This provides against the stronger pump spring pressure which is becoming general.

The right-hand mould blade side block is now held in position by screw direct, and not by spring pressure.

R. C. E.



A 'MONOTYPE' SUPER CASTER

The range of the Super Caster's products has been increased to include TYPE up to 72 point, LEADS AND RULES (1 to 18 point), SPACING MATERIAL (quotations to 72 point, cored strip furniture), BORDERS (single-unit or strip), DASHES (French rules, etc.) and the new COMBINATION TWO-PIECE, TYPE-HIGH FOUNDRY FURNITURE. The increased capacity of the enlarged melting pot is 85 lb.

LINING GAUGES

A QUICKER AND SURER WAY TO ACCURATE ALIGNMENT

IN the Monotype Corporation's Technical Bulletin No. 11, it was stated that we propose to discontinue supplying a set mark with each fount of matrices, because of the more satisfactory alignment obtainable by using our type alignment slip gauges (*Fig. 2a*). The reasons governing this decision can best be illustrated by reviewing the alternative methods of obtaining type alignment.

The three most common methods of lining (apart from slips, of course) are:

the set mark;
the em rule; and
the "standard" character.

THE SET MARK

The set mark has been used for many years and is undoubtedly a good method, but there are reasons why a better method should be found.

In the first place, the set mark takes up a valuable position in the matrix-case. Secondly, type cast from alignment obtained from the set mark cannot be easily and independently checked, except at the time of casting, and then only by reference back to the set mark. Suppose, for instance, that two castings from different machines are found to vary in alignment. Which is the wrong alignment? Both may be wrong; but unless master set marks are kept it will be very difficult to prove.

THE EM RULE

The very popular em rule method of aligning is extremely easy and, for many founts, also quite a good method. But because it is not made for this purpose it is not always reliable.

It does happen that type aligned by using em rules usually proves perfectly aligned in those cases where the rule is so

jfx— jfx— jfx— jfx—

(Series 270) (Series 262) (Series 239) (Series 327)

Fig. 1

cut that it occurs exactly across the centre of the type body (and, therefore, usually across the centre of the matrix) — providing, of course, that the rule matrix is not worn. But in many instances, Gill, Times Roman, Bembo, Perpetua and so on, the em rule is *not* positioned in the centre of the type body (*see fig. 1*). In these faces it is related to the x-height

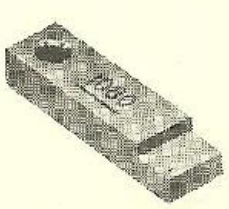


Fig. 2a

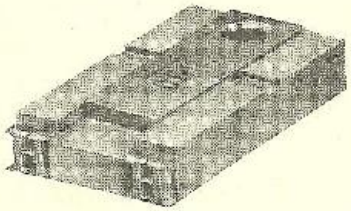


Fig. 2b

of the lower-case (usually positioned to the centre of the lower-case x), and if these series are aligned by using the em rule of the fount, some of the characters may cast off body.

The independent checking of type alignment is also subject to the same limitations as the set mark.

STANDARD CHARACTERS

Perhaps the nearest approach to the ideal method of obtaining and *keeping* good alignment (up to the introduction of lining slips) is the use of master characters (say a cap. "H" or lower-case "m"), to which fresh castings are always aligned.

The standard or master characters have, of course, first to be obtained — a great deal depends on initial accuracy — and there is always a danger that as the supply of characters runs out, a slight error may occur in casting fresh masters. The accumulation of these individual, minute, differences may eventually result in an appreciable discrepancy with the original alignment.

Nevertheless, this method does give an independent standard which can be referred to at any time. But, at its best, it is somewhat cumbersome, because stocks of master characters must be made, and maintained, for every point size of every face used.

LINING SLIPS

Our type alignment slip gauges suffer from none of the disadvantages inherent in the methods just described. They are not particularly new — they were first introduced in 1944 — so we have had plenty of time to judge their effectiveness. They are based on the *type line* of the character, which should not be confused with the *matrix line*.

The *matrix line* (which is the line given in the specimen book for all composition faces) can be taken as the measure-

ment from the top face of the matrix to the bottom serif line of the character (*fig.* 3).

The *type line* (not at present shown in our specimen sheets) is the measurement from the top of the *type* body to the bottom serif line (*fig.* 4). This measurement is taken to the nearest half-thousandth of an inch, and lining slips vary by increments of that amount.

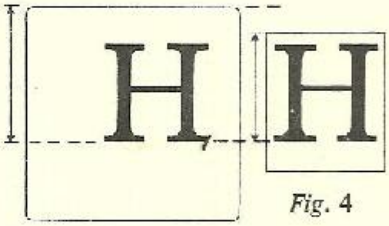


Fig. 3

Fig. 4

In some faces, however, the "serif line" is not at all easy to define. For instance, in freehand founts, such as Caslon 128, Bembo, and so on, there is a deliberate variation in the serif line of certain characters; and in some series (Garamond is one), the bottom serifs of the characters are cupped (*fig.* 5) so that the terminals of the serifs come below what we ordinarily call the serif line. For this reason, our lining slips give the measurement to the *lowest part of the cap.* "H". This must be remembered when lining up (*fig.* 2*b*).

Fig. 5

If, for any reason, the cap. "H" cannot be used (e.g. in Series 325, Tonic Sol-Fa, there is no cap. "H") the character to be used is indicated on our Information Sheet No. 116A, which charts particulars of most of our series and the slips to use with them.

In many instances it is possible, by using a simple formula, to convert accurately matrix line to type line, but because of these "difficult" faces it is advisable to ask the Corporation to supply the correct lining slip figures for any series not included in the chart.

Occasionally different alignment slip figures are shown for a roman and its related bold. In this case, when using the two faces together, the gauge of the roman fount should be used. Generally speaking, where two different alignments are used in the same matrix-case, use the alignment shown for the roman. If special long-descender characters are used, requiring the fount to be cast on a larger body size, the type alignment should be the same as for normal casting. Similarly, when using short-descender characters and casting on a smaller body, the gauge should be that for the normal body.

When casting on a body *larger* than normal, the correct alignment figure is obtained by adding *half* the difference between the two body sizes to the normal alignment figure, and taking the result to the nearest half-thousandth. For instance, the correct slip for series 327-10 pt. is .1030. If this is required to be run on a 12-pt. body, add half the difference between 10 and 12 pt. (i.e. 1 pt., .0138) giving .1168. To the nearest half-thousandth, this would be .1170, and this is the slip that should be used.

All sets of new matrices are now despatched labelled with their type line, and all new installations are supplied with lining slips for the matrices sent with the machines.

Point sizes for which slips are at present made, range from 4½ to 24-pt. composition.

ADVANTAGES

The general adoption by users of these lining slips must result in the creation of a common standard of alignment which should prove of immense benefit to the trade. This standard could, and should, be common to different machines in the same establishment; between one branch of a firm and another; between the trade-setters and their customers; and even between the trade-setting houses themselves.

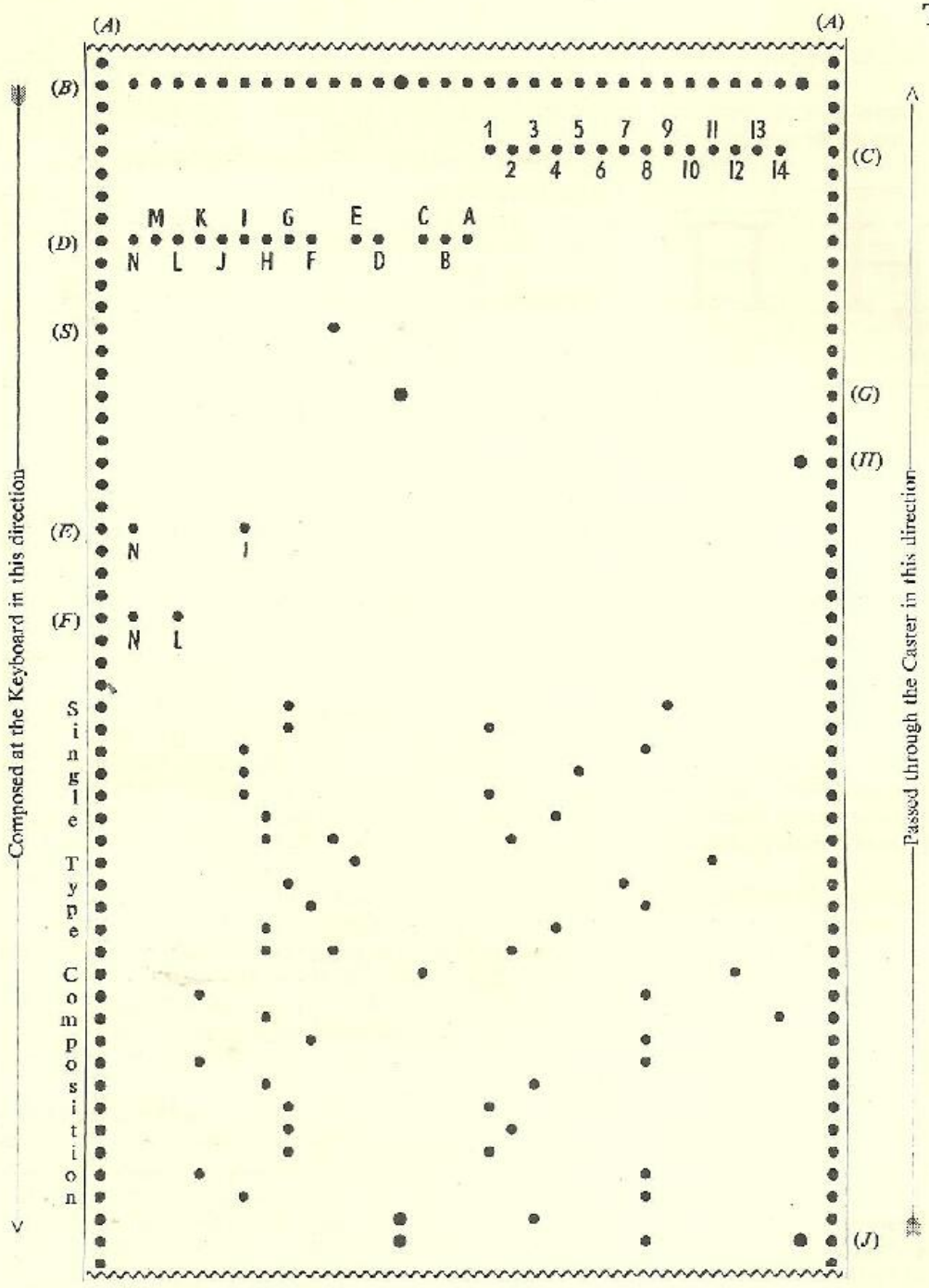
An absolutely independent check is available at any time, entirely without reference to when, or how, or by whom, the type was cast. And, once the system is installed, type for case can be cast absolutely without reference to existing type, providing, of course, that there are standing orders concerning the limit of height allowed for case-room type.

INSTALLING

When installing this system, it should be remembered that, despite their negligible price (1*s.* 9*d.* each) these slips are precision gauges, accurate to approximately a tenth of a thousandth, and they should be treated with care. They are best mounted on boards (which can be supplied) and, to assist quick identification and reduce the possibility of error, very clearly labelled.

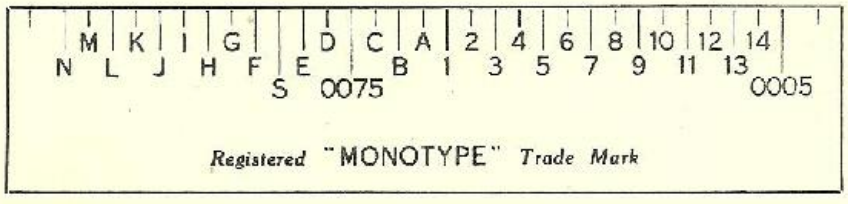
Charts should be prepared and hung in the casting room showing all the series and point sizes used, and their respective slips. Large installations should, of course, have more than one set of slips for those faces most commonly used.

Finally, *all* existing type should be carefully checked against alignment obtained from the slips, and it goes without saying that if the old type does not agree, then fresh type should be cast.



THE CONTROL RIBBON

of a 'Monotype' single-type composing machine. It is $4\frac{5}{16}$in. wide, with a row of perforations (*A*) near each edge to guide it through the Keyboard and Caster. The width between the guide perforations can receive 31 perforations (*B*), spaced $\frac{1}{8}$in. apart. Fourteen of these perforations (*C*) indicate the unit position to which the normal wedge must be taken so that the mould blade will be adjusted to cast the unit required; 14 perforations (*D*) indicate 14 columns of the matrix case at right angles to the unit rows; (*S*) space perforation; (*E*) perforations N and I in combination represent column 11 of the matrix case; N and L in combination represent L1 of matrix case; (*G*) cuts out pump and raises .0075in. justification wedge in path of matrix jaws; (*H*) cuts out pump and raises .0005in. justification wedge in path of matrix jaws; (*J*) end of line justification, .0075in. and .0005in. in combination with a (*C*) perforation to indicate position to which both justification wedges must be located; when .0075in. and .0005in. are *in combination* a completed line is drawn to the galley.



Left: The Perforation Reader and Type Scale is again available. On the reverse side are two scales, one showing the various type sizes from 4 to 36 point, the other a six-point rule for use in measuring six lines of type matter to find the point size.

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De Directie van
Gebr. van Moortwijk
Schie 21 A en B
S c h i e d a m

Mijne Heren,

'MONOTYPE'RECORDER XXXIX No 3

Aangezien het bovengenoemde nummer van de Recorder een opsomming bevat van verschillende technische verbeteringen die aan de na-oorlogse 'Monotype' machines werden aangebracht, werd besloten deze uitgave in de Nederlandse taal te laten verspreiden.

Dit nummer is zeker ook voor Uw technische medewerkers van belang en wij zenden daarom, behalve het nummer voor Uw archief, twee extra exemplaren die wij gaarne zien uitgereikt aan de voorman van Uw toetsenbordafdeling en aan die van de gieterij.

Mocht U nog een enkel extra exemplaar nodig hebben dan zullen wij U dat op Uw verzoek gaarne toesturen.

Inmiddels verblijven,

Hoogachtend
THE MONOTYPE CORPORATION LIMITED

A.Verkerk