

The 'London' Aladdin Model 12 Burner

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The Model 12 burner brought the development of Aladdin centre draught burners to its peak and culmination. Unlike its predecessors, it was a burner that could be lit and immediately give useful light without the long warm-up time of previous models. Until very recently I believed that Aladdin's claim that it was an 'Instant Light Burner' was something of a marketing exaggeration, but after a recent experiment with an original mantle frame, I have been convinced that it was, indeed, a valid claim. Sadly, modern mantles need far more care to avoid over-heating and sooting of the mantle as the burner warms up.

The Model 12 was to remain in production from 1928 until long after its immediate successors, the A, B and SuperAladdin, were introduced, being sold in the UK until at least 1939 and, reportedly, in Australia until 1945 or 1946. J W Courter also states that Model 12 burners marked 'Nashville, Tennessee' were exported from the USA between 1949 and 1955.

When introduced, this burner had some significant flaws which seem to have been recognised in service, resulting in several small and some major changes being made to its construction. Because of chance opportunities to track those changes over many examples of the burner in and passed (dismantled) and of photographs provided a compendium of Aladdin knowledge (*Aladdin* in the text as *ATMNL*) and to other leaflets 1929 and 1939, illustrated spares lists and small selection of the thousands of lamp conclusions supported by good evidence. chance to see more examples. This is a 'wo

The Model 12 burner appeared on a series of metal table fonts which appeared in a known time sequence. It is probably sensible to start by describing these fonts so that references to them later in this article do not cause confusion; the central draught tube in the font is, in any case, an essential

Jan. 21, 1930.

C. W. DAVIS

1,744,298

BLUE FLAME MANTLE LAMP

Filed July 25, 1927

5 Sheets-Sheet 2

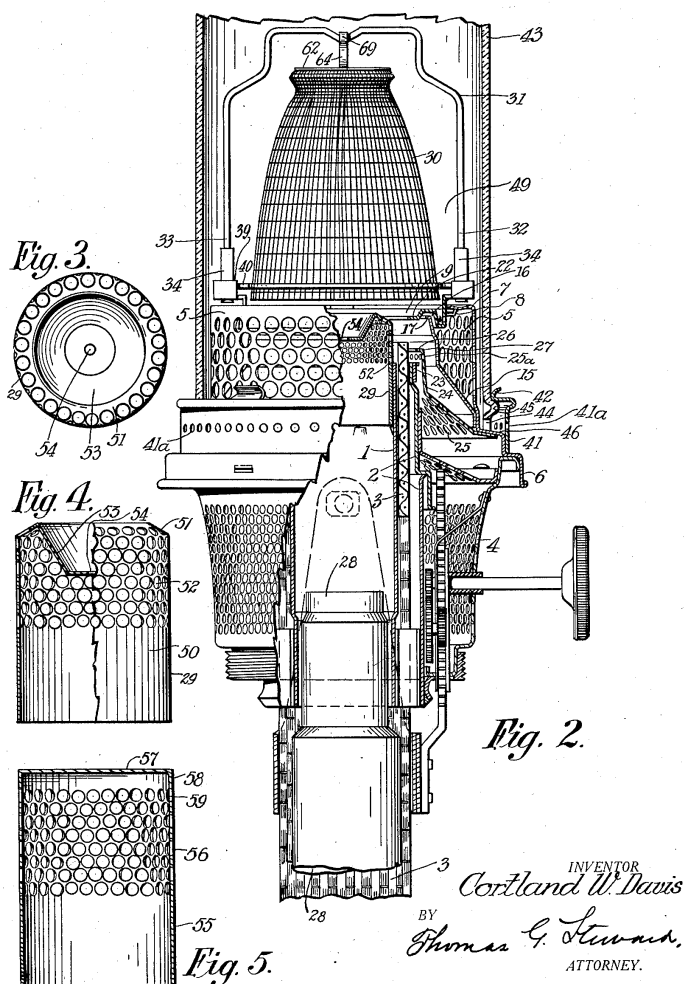


Fig 1: Original patent drawing for the Model 12



Fig 2: 11-12 hybrid

part of the burner. I am choosing only to consider the table fonts, and not the short fonts used in hanging, bracket and standard lamps, largely because I have seen very few examples of the short font.

The Model 12 burner seems first to have appeared on two different table fonts at the same time, or very nearly so. There seems little doubt that a number of Model 11 fonts were sold new with Model 12 burners. The Model 11 was in production for about 6 years. The burner was fairly robust, and its cost represented over one third of the cost of a complete lamp. Although there would have been some casualties in that time, it is irrational to suggest that any large number of customers would need or wish to buy the earliest version of the Model 12 burner as a replacement for a Model 11 burner, yet very large numbers of Model 11-12 hybrids are to be found today, at least in the United Kingdom. That is, of course, not to suggest that replacement did not occur. There are many of these hybrids with burners that are clearly not of the original pattern and therefore most unlikely to have been fitted to an obsolete font from new.

The second font is the first Model 12 font, usually called the 'straight-sided' font (Fig 3). This was available from 1928 and continued to be shown in US catalogues into 1931. It was replaced by the 'slant-sided' font (Fig 4). There are two different versions of this font. In one the central draught tube is as in the Model 11 and straight-sided fonts, in the other, later version it is taller, with a more stepped profile. Changes to burner markings suggest that this particular change occurred at about the same time as the award of the UK patent for the burner in October 1929.



Fig 3: Straight-sided font



Fig 4: Slant-sided font



Fig 5: 'Greenford' font

After the Greenford factory opened the 'London' burner was fitted to a slant-sided font (Fig 5), very similar to that used for the SuperAladdin lamp. However, this is *not*, as stated elsewhere, a modified SuperAladdin font with holes drilled around the foot. Careful examination reveals that the holes are pressed, not drilled, and the top plate is a different pressing from that used on any version of the SuperAladdin table font. To distinguish this from the slant-sided font I refer to it as the 'Greenford' font. The central draught tube in this font is slightly different from that in the second type of slant-sided font. The detail of the changes in the shape of the central draught tube is shown in the pictures on the following page. The tube in the straight-sided and earlier type of slant-sided fonts is shown in Fig 6. Fig 7 shows the tube in the later slant-sided font and Fig 8 the 'Greenford' font.

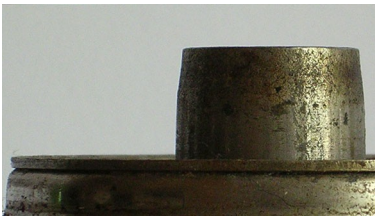


Fig 6: Early slant-sided

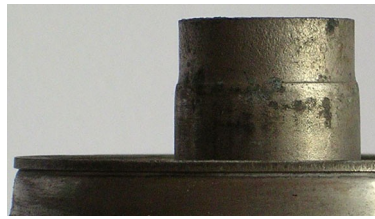


Fig 7: Later slant-sided

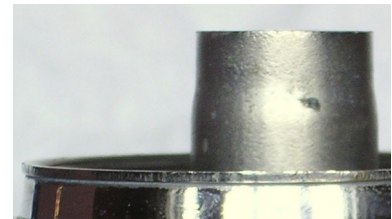


Fig 8: 'Greenford' font

It would seem from the above that the straight-sided font was available in the UK for about one year, followed by the first slant-sided font during 1929. The second version of the slant-sided font was to appear in about 1930, to be replaced by the UK-produced 'Greenford' font in 1931 or 1932.

Turning to the burners ...

The original Model 12 burner, without wick and mantle, was a collection of 28 parts assembled by a combination of soldering, punching, riveting and crimping. As far as the user was concerned, the burner broke down into 5 structural components: burner basket, wick carrier, air distributor/upper outer wick tube assembly (for simplicity, the outer wick tube), flame spreader, and gallery. I do not plan to discuss the consumables - the wick and mantle - although the mantle frame was, as noted above, an important element of the design of the burner. As an aside, the air distributor assembly

was referred to in Aladdin sales literature as the outer wick tube (OWT), but in reality the OWT is in two parts, the lower part in the burner basket and the upper part attached to the air distributor. I use the term 'fixed' OWT to mean the part in the burner basket.

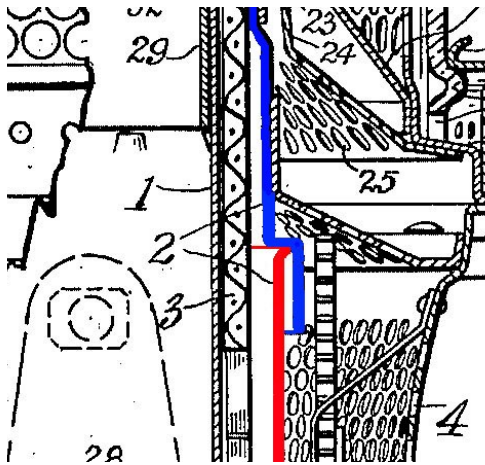


Fig 9: OWT joint

The original form of the burner has an OWT that locks by anti-clockwise rotation into the burner basket, making this burner unique among Aladdin burners. The locking action presses the flange of the OWT against the upper edge of the fixed OWT, providing a seal so that the centre draught comes solely through the draught tube in the font. This seal is highlighted in Fig 9, with the fixed part marked in red and the removable part in blue. This seal was one area of weakness in the original versions of the burner.

The wick raiser mechanism saw a substantial change from that fitted to models 7 to 11. The winding gearing was fitted to a more substantial bracket, held in place by solder and a single rivet, rather than the three rivets of the earlier design. The raiser itself was also more robust, but this mechanism introduced a new area of weakness.

The radical new element of the burner was the revised gallery, which included the burner cone. The cone had been part of the mantle in previous models since Model 3, because of the problem of the cone burning away in the earliest Aladdin lamps. The Model 12 saw carefully-designed control of air flow throughout the burner to, in turn, control temperatures to achieve optimal burning and maximum light output. The changes included the introduction of the Loxon mantle with ventilation control in the base of its support frame, and the Loxon chimney which allowed a metered flow of relatively cool area to pass between the foot of the chimney and the rim of the gallery, thus providing additional control of temperature in the space between the mantle and the chimney. This new gallery was an undoubted success, continuing in production for the models A, B and SuperAladdin until the Model 21 was introduced in 1953.

This then (Fig 10), was the burner that was a step change for centre draught burners. Despite its many new features it was, like previous burners, not an all-new design, but a development of the burners that had gone before. Although there were substantial changes from the Model 11, several parts of that burner saw service in the Model 12, some throughout its life. The burner basket stamping was the same, apart from the punchings for the winder mechanism and, at first, the OWT retention pips. The threaded mounting collar remained the same throughout the life of the burner, as did the knob and the inner wick tube brackets. The original pattern of bottom support plate (see later) was also taken straight from Model 11 production. This continuation of parts went on when Model 12 production stopped; the air distributor in the Model A used the same basic stamping, with a different tool used to form the centre opening for the wider upper OWT of the Model A.



Fig 10: Early 'London' burner

However, the burner was not perfect in its original form and it seems clear that some of the changes introduced over subsequent years were to correct faults discovered in service. One change was cosmetic, and others seem inexplicable. The inexplicable ones will probably stay that way without access to detailed factory records.

The most obvious change followed the granting of the UK patent (GB294530) in October 1929, which allowed the markings on the wick winder knob to change. It seems reasonable to suggest that this change took place near the end of that year, so we can probably talk about pre-1930 and post-1930 burners. The difference is obvious:



Fig 11: Pre-1930 cover



Fig 12: Post-1930 cover

The patent marking is 294530/27 because the application was made in 1927. There is more to be said about the knob covers, but I will return to them later.

Outer wick tube

As mentioned above, in its original form, the Model 12 air distributor locked by anticlockwise rotation. One version is illustrated in *ATMNL* and in Fig 13 has a shallow angle on the locking ramp, but on the basis of the burners I have seen this is relatively unusual in a 'London' marked burner. Most of the samples I have seen are as shown in Fig 14. Note the steep angle on the locking ramp, compared with the shallow version and the later, clockwise-locking version in Fig 15. These early air distributors seem to have been particularly vulnerable to fine cracking where the flange of the upper OWT fits over the fixed lower part of the OWT. Examples of these cracks are shown in Fig 16. It seems likely that cracking occurred because the fit of the vertical flange of the upper OWT on the fixed OWT was too tight. The later, clockwise-locking OWT has a slightly larger diameter and was, presumably, introduced to overcome this defect. However, cracking remained a problem for some time after this change was introduced.



Fig 13: Anticlockwise OWT shallow angle



Fig 14: Anticlockwise OWT steep angle



Fig 15: Clockwise OWT



Fig 16: Cracks in OWT

The initial change from anticlockwise to clockwise-locking OWT is also linked to a change in the shape of the flare at the upper end of the fixed part of the OWT. This change is illustrated in Figs 17 and 18. Notice the obvious flare in the OWT – much greater than in the first version.



Fig 17: OWT flare – type A



Fig 18: OWT flare – type B

These changes did not solve the problem of cracking in the OWT. I have seen several examples of this version of the burner, and about half have had cracks. The flare was reduced subsequently and this can be seen in Fig 19. This reduced flare continued into burners fitted to the 'Greenford' font, and seems to have greatly reduced the cracking. A fourth version then appeared with a return to a wider flare, but of a different form from the earlier wide flare. Although wider than type C, this flare is not as tight a fit in the bell of the upper OWT as type A in the anti-clockwise OWT or type B in the clockwise OWT.

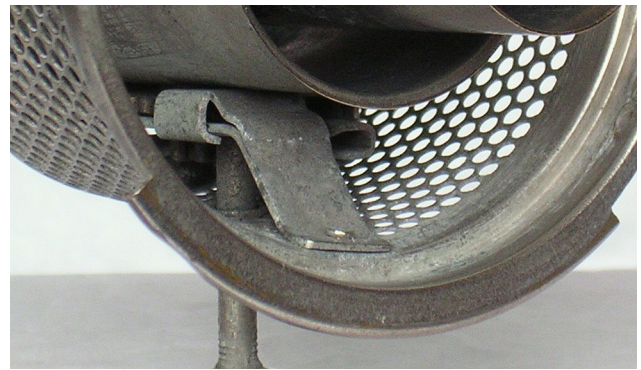


Fig 19: OWT flare – type C

Types A, B and D flares are illustrated in Figs 20 and 21 (I do not have an unserviceable burner with type C to dismantle). Note the change from almost no flare to a very abrupt flare, with the fourth version again being wide, but with a smoother curve to the flare. Also note the variation in height, with type D being appreciably taller.



Fig 20: Outer wick tubes.
Left to right - :types A, B and D

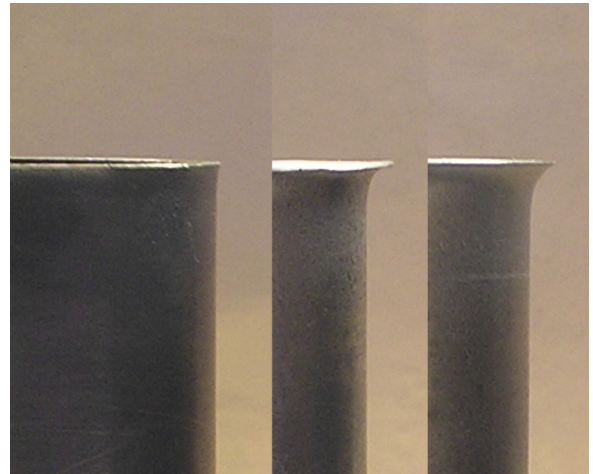


Fig 21: Outer wick tubes detail

While discussing the OWT, I should perhaps mention the lack of compatibility between the two types. The earlier version (lower in Fig 22) has a smaller internal diameter than the later version and will not fit over the flare of the later fixed OWT. In *ATMNL*, Courter suggests that the later version fits the earlier burners but it would be more accurate to say that it 'can be fitted to' an early burner. Pictures make the point. Note the angles made by the locking pips in the burner basket in Figs 23 and 24.



Fig 22: OWT comparison

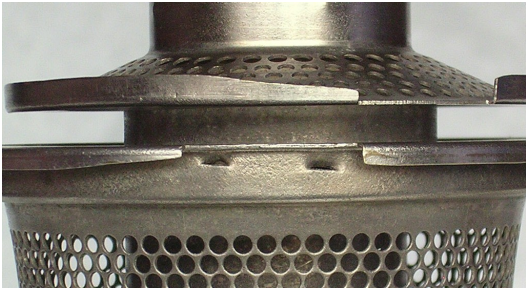


Fig 23: Anticlockwise lock

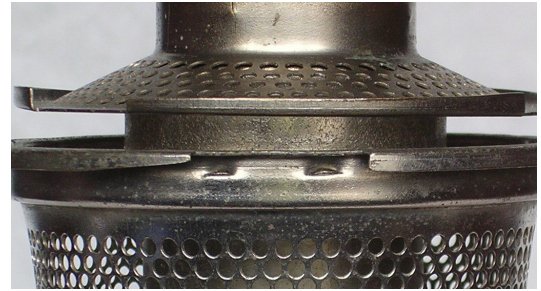


Fig 24: Clockwise lock

Wick raising mechanism

Figs 17 and 19 also illustrate part of the remedy for another defect, a weakness of the wick raising mechanism. The initial version of the wick raiser gear assembly was a simplification of the mechanism fitted to the Model 11. As I mentioned earlier, this was fitted using 3 rivets, whereas the simpler Model 12 design fits into a slot in the bottom of the burner, where it is soldered, and is held at the top by a single rivet. Although I have seen several early burners where this mechanism works perfectly, it does seem to have given such trouble that it was revised twice.

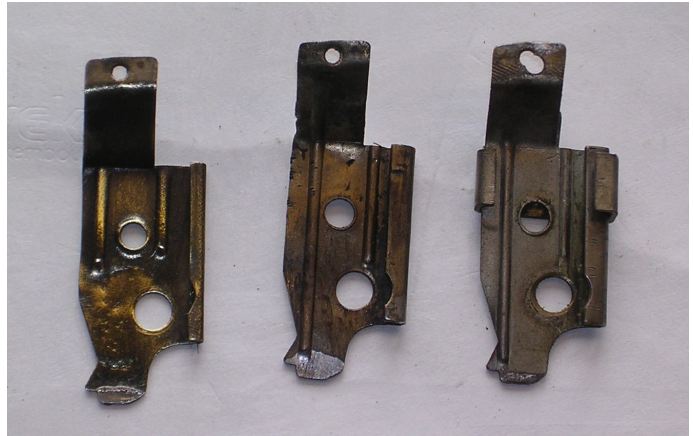


Fig 25: Winder mechanism brackets

The principal problem seems to have been longitudinal float in the shaft. Engagement of the gears depends on contact between the end of the shaft and the fixed OWT to prevent float. If the fit of the mechanism becomes poor because the gearing backplate bends or the OWT becomes dented, the end float becomes excessive and the gears slip. I have sad wrecks with both defects.

The backplate is ridged to increase rigidity, and the first attempt at fixing the problem was to stiffen it by modifying these ridges. The backplates are shown in Fig 25 with version 1 on the left and version 2 in the middle. Note how the two ridges in the plate have been extended downwards, and also the increase in the amount of metal in the fold on the right which forms the guide for the rack. At the same time the final drive cog which engages with the wick raiser rack was increased in thickness (Fig 27). Presumably Aladdin's investigation of the faults suggested slipping at this point. The version 2 cog continued into version 3 of the mechanism. The version 2 changes appear to have been introduced at the same time as the clockwise-locking OWT.



Fig 26: Winder shafts



Fig 27: Winder cogs

Clearly this modification failed to solve the problem and a reinforced version was introduced at or about the same time as the raiser knob cover was changed to show patent information. I have yet to see a reinforced mechanism with a pre-1930 knob cover or an unreinforced mechanism with a post-1930 cover. The revised version, shown in Fig 19 and Fig 25 (right hand), used the version 2 backplate fitted with a cover plate to provide an end bearing for the winder shaft,

thus no longer relying on the much thinner fixed OWT to perform this task. The change of bearing point also required a change in the tip of the gear shaft which changed from a ball end to a flat end (Fig 26), thereby allowing room between the end of the shaft and the OWT for the extra thickness of this cover plate. Note that, although the burner in Fig 19 shows the reduced OWT flare mentioned earlier, these changes were not simultaneous, as the reinforcing plate was introduced before the flare was reduced.

As an aside, I have noticed a manufacturing defect in this mechanism. The burner which contained the version 3 mechanism in the illustrations was sacrificed because its winder slipped and the wick could not be adjusted properly. First inspection revealed that the cog assembly which drives the rack was flopping vertically, losing engagement between the reduction gears. The shoulder on the rack drive cog (Fig 27) provides the bearing in the backplate hole, the 'shaft' is the stud to carry the reduction gear cog. On this example, the cog shoulder had not been machined down sufficiently to fit into the hole, so the stud was acting as a loosely-fitting axle. Perhaps a 'Friday afternoon' quality assurance problem! Also a reflection on consumerism: few buyers today would pay a week's wages for a lamp that did not work properly, and not take it back to the shop.

Wick raiser

Another change took place in the design of the wick raiser itself. This was appreciably more robust than the Model 11 raiser, with a thicker rack. I have only seen this early type of raiser with burners with the anticlockwise OWT. My experience of this early pattern is that it can be quite difficult to pry the raiser off the wick studs when removing an old wick.

A new style of raiser with ears added on each side was introduced early in production. This has one fewer tooth on the rack (18 instead of 19) and the metal of the rack is very slightly thicker than before, making it a tight fit in an early burner. I have been told (Fil Graff) that this design was introduced to improve the grip of the raiser on the wick; the ears make contact with the inner surface of the outer wick tube and are thus pressed into firmer contact with the wick studs. It also happens that I find that the ears make a wick change easier by giving better purchase for a thumbnail!



Fig 28: Early raiser



Fig 29: Later raiser

A third version is reported in *ATMNL*, with springs to restrict vertical travel, but I have not yet seen one of that type on a 'London' lamp. There is also a fourth type, a variant of the 'eared' wick raiser which has the 19-teeth rack of the earlier type. I have only one, which came from an early 'clockwise' burner.

Burner bottom-end assembly

The joint between the fixed part of the OWT and the burner basket is closed by a washer-shaped support plate, L-shaped in cross-section. There is a gap cut in the horizontal surface of this plate to make way for the wick raiser rack and the bottom attachment of the winder mechanism. In the earliest burners there is a straight, radial cut in the plate at both ends of the cut-out (Figs 30 and 31). This is identical to the same part in the Model 11 burner.



Fig 30: OWT support type 1

This support plate came from a burner already partially dismantled, I presume by someone trying to make a repair. I assumed that the hole in the bottom of the basket was a sad witness to his efforts (Fig 32). To my surprise, another burner then came to hand with the solder partly melted away, revealing that this scrappy cut-out was, in fact, the original form.



Fig 31: Type 1 assembled



Fig 32: Cut-out - early



Fig 33: Type 2

This first pattern of support plate was replaced by one with an oblique edge to the cut-out, forming the inner edge of the slot through which the rack passes (Fig 34). There may be a slight shoulder to this edge, but note that the angle of the other end of the cut-out (Fig 33) is the same as type 1. At the same time, the hole in the bottom of the burner basket was cut more neatly and with less loss of metal. Note also the change in the slot for the lower end of the wick raiser mechanism (Fig 35). The angle was changed and the slot was closed. Presumably this made assembly more accurate and somewhat easier.



Fig 34: Type 2 assembled

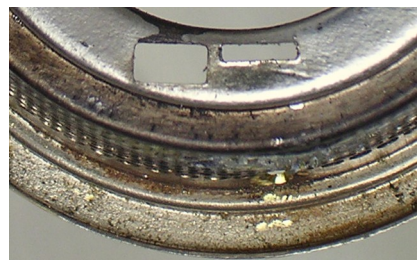


Fig 35: Cut-out - later



Fig 36: Type 3

These changes in bottom end construction seem to have been introduced with the clockwise-locking OWT.

Later burners have a third version of the support plate, shown in Figs 36 and 37. The main differences are in the cuts to make the gap for the winder rack and in the height of the support plate. In this third type the angled cut is deeper and has a much more prominent shoulder. Note also that the angle of cut at the other end of the cut-out changes from being radial to become parallel to the end of the cut-out for the wick winder.



Fig 37: Type 3 assembled



Fig 38: Support height

An edge view of the support plates (Fig 38) shows that type 3 (right) is taller than the earlier type 2 (left). This, of course, fits in with the increase in height of the type D fixed OWT (Fig 20), which must protrude more through the base of the burner to be at the right height to mate properly with the removable part of the OWT. All the burners I have seen with the second type

of inner wick tube (see below) have the type 3 support plate and usually, but not always, the type D OWT.

Inner wick tube

There were also changes of no apparent functional importance in the inner wick tube (IWT). One form is something of a curiosity and is undoubtedly rare (Fig 39). Note the crimp in the tube. It is difficult to see what purpose this might serve. I have seen this on only one lamp, in my collection. It is an early burner with a steep ramp angle anticlockwise-locking OWT, fitted to a straight-sided font.

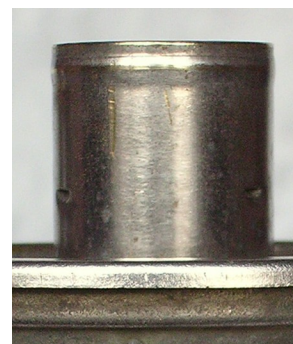


Fig 39: Crimped IWT

What appears to have been the standard pattern for much of the life of the burner is shown in Fig 40. This has three D-shaped indentations in the upper part of the tube to support the flame spreader. The later version has six parallel-sided indentations, as shown in Fig 41 and as also found in the later lamps produced in the Greenford and Pontardawe factories: SuperAladdin, Model 21 and Model 23. All of the burners I have seen with this second type of IWT have had post-1930 knob covers. One was on a Model 11 font and is, clearly, a replacement burner (this is a burner with type 3 support plate and type C OWT). One was a wreck, not on a font. The others have all been on 'Greenford' fonts.

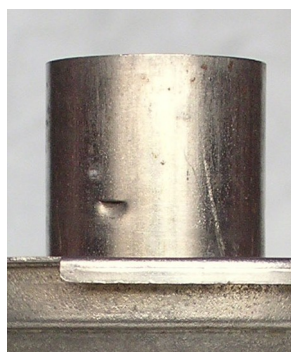


Fig 40: IWT version 1

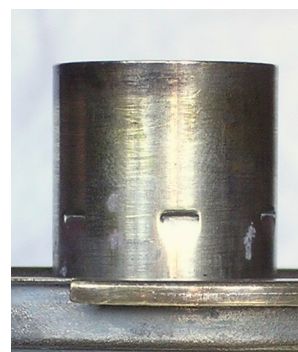


Fig 41: IWT version 2

Wick winder knob covers

Early in this article I mentioned the change that occurred in the knob cover when the UK patent was awarded. This component of the burner has more varieties than any other, and I must admit to finding it odd that such a minor component should show so much seemingly pointless change.



Fig 42: Cover A

The first version (Fig 42) was, of course, fitted to the burner with the anticlockwise-locking OWT. In particular, note the shape of the letters 'A' and 'n' in the script 'Aladdin'. Also note the proportions of the letters and numerals in 'MODEL 12'. The change from anticlockwise to clockwise-locking OWT not only brought in functional changes, it also saw a new cover (Fig 43) with changes in the shape of the lettering in 'Aladdin': a more upright 'A' and a reshaped tail of the 'n'; and the '12' much reduced in height.



Fig 43: Cover B

When we come to the post-1930 covers there is further variety, and an indication of change with time. Starting with the post-1930 slant-sided font, there are at least two versions of the cover. Note the differences in the form of the word 'Aladdin' and the relationships between letters in the 'Aladdin Industries Ltd' inscription around the rim and letters and numerals in the centre; for example, see how the '2' at the beginning of the patent number relates to the 'D' in Aladdin in cover C, and to 'AD' in cover D. Fig 44 (Cover C) appears to have come first, followed by Fig 45 (Cover D). Cover C can be found on burners with both type B and type C OWT flares; so far I have seen



Fig 44: Cover C



Fig 45: Cover D



Fig 46: Cover E



Fig 47: Cover F

these only on slant-sided fonts. Cover D appears on burners with the type C OWT flare, and with both types of IWT. Examples in my hands are either on Greenford fonts, used as a replacement on a model 11 font, or loose. Until I see many more examples I cannot be sure, but it seems likely that Cover D indicates a burner made after the Greenford factory opened in 1931.

I have no means yet of dating the final two forms of knob cover, found only on burners with the later type of IWT. They both have a new lettering style in the script 'Aladdin', with the loop in the 'l' starting to the left of the upright stroke. The text on cover E shown in (Fig 46) is a little bigger and bolder than on cover F (Fig 47) and the apex of the script 'A' is directly below the '9' in the patent number. In cover F the script 'A' is more oblique with its apex centred below the '94' character pair in the patent number. I have been unable to relate these two patterns to any distinguishing construction features, particularly the flare of the fixed OWT. Unfortunately, some of the photographs I have of these later burners were taken at different camera angles, thus making detailed comparison impossible.

Summary

From the lamps and burners I have seen to date, I have the following suggested sequence of changes. This is not intended to be definitive and is certainly subject to amendment in the light of further information:

Font	OWT	OWT flare	IWT	Support	Raiser	Gears	Cover
11 or Straight	Anticlockwise	A	3-indent	1	Round	1	A
Slant	Clockwise	B	3-indent	2	Ears (19 or 18 teeth)	2	B
Slant	Clockwise	B	3-indent	2	Ears	3	C
Slant	Clockwise	C	3-indent	2	Ears	3	C
Greenford	Clockwise	C	3-indent	2	Ears	3	D
Not known	Clockwise	C	6-indent	3	Ears	3	D
Greenford	Clockwise	C or D	6-indent	3	Ears	3	E or F

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Invitation

Do let me know if you discover anything different or new.

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The parts of the original Model 12 burner

(The terminology is not necessarily that used by Aladdin)

Basket		Outer wick tube:	Air distributor
Threaded mounting collar			Upper outer wick tube
Shaft bush			Outer wick tube flange
Winder assembly:	Backplate	Flame spreader	
	Shaft	Gallery:	Inner baffle
	First cog		Cone
	Second cog		Outer baffle
	Third cog		Chimney retaining ring
	Rivet	Wick raiser:	Rack
	Knob		Frame
	Knob cover		Rivets (x2)
Bottom support plate			
Fixed (lower) outer wick tube		Added later:	
Inner wick tube brackets (x2)		wick gearing reinforcing plate	
Inner wick tube			



Late Model 12 burner (less one rivet), but spot the deliberate mistake.