



JOHN CONNELL ASSOCIATES

John Connell
(MAYFAIR) LTD

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JCA/AAJ/LB

21st November, 1963.

L. Bernstein, Esq.,
Personell Awaiting Trial,
Pretoria Local Jail,
Pretoria,
SOUTH AFRICA.

Dear Mr. Bernstein,

I have had the pleasure of meeting your sister, Mr. Brown and your lawyer and also the two gentlemen, Messrs. Steen who are interested in promoting your invention in the United Kingdom and elsewhere. Mrs. Sherwood has asked me to advise you on the procedure to adopt.

As you are aware there are some five basic divisions of responsibility for establishing a product of this nature:-

1. Engineering (including design.)
2. Production.
3. Selling.
4. Finance.
5. Promotion.

It is essential to see that all these elements are correctly handled and that your profit is effectively tied relative to one or more of these activities. Reviewing the activities I would comment as follows:

Engineering and design and Production

You have established a novel invention and you should get world patent cover as quickly as possible. This is the one operation that you should finance yourself. Any agreement you make with anyone must stipulate a royalty to the inventor, yourself regardless of any other business arrangement which may be made, and I would suggest in this

Agreed: Rae is acting on the patenting.
But what about costs!

L. Bernstein, Esq., Cont...

** case that you stipulated a royalty of 6%. If you wish to take a long-term view you can safely instruct a firm to produce the prototype to your specification, but before they proceed they should be asked to give you a quotation for the construction of the prototype alone.

I personally think it practical to have the prototype placed with a firm that is really interested in achieving a good result. They will be particularly interested in achieving a good result if they believe that you are going to give them the manufacturing rights for at least two years. I recommend making an arrangement with an engineering firm for the development of the prototype to the stage where working production drawings are available on the understanding that they will a) finance the tools and b) finance the production. A suitable clause entitling you to withdraw this manufacturing right must be written into the agreement in the event of them failing to give you a satisfactory prototype, satisfactory drawings or to produce the quantities you require within a reasonable time. Additionally a clause enabling you to purchase the tools at a previously agreed value will also be necessary.

agreed.
With regard to the profit that you yourself can obtain from the production activity I recommend that you do not seek to have any "cut" from this but that you stipulate that their profit should not exceed say 25% except by written agreement with yourself or the promoter which you may appoint. This will prevent the product from being priced out of the market.

Is this enforceable without a lot of letters.

Selling

Special care is needed in this area. To advise fully on the method you should adopt for sale is more than I can do in the time that I have available. Certainly it is logical to get a pre-production batch of say a half dozen and to use this pre-production batch for interesting effective sales organisations throughout the world. Firm orders could be obtained on the basis of the pre-production batch demonstration and there is a case for waiting until these prototypes are available before concluding any firm sales agreement with anyone. On the other hand the manufacturer may not feel disposed to finance production without the assurance that effective sales arrangements have been made and you need to be sure as to the manufacturer's reaction to any decision you may make in this respect.

** N.B. A firm exists which licences manufacturing and sales throughout the world but splits returns 50/50 with the inventor.

L. Bernstein, Esq., Cont...

AGENT-STOCKIST

I personally would suggest granting an agreement to an ~~agent~~ ^{stockist} in the United Kingdom provided I was sure that the agent believed in the product and was prepared to put time into developing the market. The fact that the agent was not a big business man would not be important by my standards provided only that he was astute and tied up in such a way that he could be dismissed if the results were not satisfactory, due to his own lack of attention. In this respect I would say that I conclude that the Steen brother who would be responsible for selling was both astute and honest. He was at pains to avoid making any statement about the size of the market or the degree of success that he would anticipate. Accordingly you should state the minimum sale you are prepared to accept as being satisfactory and you should notify the sales agent of the type of contract you would propose.

Finance

I have suggested that the prototype and engineering and manufacture (except for the patents) should be financed by the firm to whom you offer manufacturing rights. The sales can be financed by a sales agent, accepting responsibility for placing a firm order with the manufacturer for stock and this can be written into the agreement. The providing of the essential literature, boxes, display-stands if necessary, exhibition space, advertising will cost quite a sum and there is no doubt but that this expenditure must be faced if the project is to be successful. I have assumed throughout that the financial responsibility is something that you do not wish to undertake and this does necessitate the finding of interested parties who are prepared to find the finance in their businesses in the belief that they will be well repaid for their investment, and there is, of course, nothing unhealthy about this. Their interest stems from the fact that the activity should be rewarding to them.

Promotion

You have to decide whether you will be the promoter; that is the person who will carry out the management task of co-ordinating the design, production and selling and the providing of finance. You cannot, in my opinion delegate this in part: you must, if you do not do it yourself, delegate it entirely and I see no reason why you should not give the promotional responsibility to the Steen brothers (unless you have some positive reason for distrusting them), stipulating very firmly the terms on which you do this, including the results you require, the duration of the agreement and the overall profits you require, (apart from your royalty). My advice would be to make a generous agreement as this would provide the necessary degree of incentive for the promoter to put the maximum effort to

L. Bernstein, Esq., Cont...

make money for both himself and yourself. You would then assist the promoter drawing up the manufacturing sales agreements and would work through the promoter.

Alternatively you could find another promoter such as Mr. Brown and I have no doubt that he would handle this on your behalf admirably or else you could commission him to make a search for someone who would handle this.

Another alternative is to place the entire operation with a company on a royalty basis and I have no doubt that this could be arranged but usually your profits are rather smaller if you make such an arrangement.

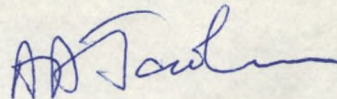
My colleague, Mr. Jackson suggested that a sound alternative would be to form a small company on which the manufacturing and selling principles would be represented and where you would retain control by holding the appropriate shares and a suitable contract. The decision to do this would depend on your future intentions.

To conclude I suggest you consider each of the activities referred to above and decide on the type of control you personally want over each activity and that you draw up a simple letter of instruction to your lawyer setting out these requirements. From this it will become clear whether you should have a company or whether you should promote or whether you should delegate to a promoter.

Whilst I have not investigated either the Steen brothers or Mildmay except on a superficial basis, at this stage I can see no reason at all why you should not let the Mildmay Engineering Company proceed and the Steen brothers work on your behalf if you have yourself safeguarded by a correctly worded manufacturing and selling agreement.

I conclude by wishing you well for the future and assuring you that we will do everything we can to look after your interests.

Yours sincerely,



A.A. JACOBSEN

3/3/64

L. Bernstein 13681/63.

30/3/1964.

Hilda, my dear,

Another of these silly chores for you, I'm afraid. Perhaps this one will prove to be less of a useless quirk than the others. At any rate, it represents an awful lot of hours which would otherwise have been merely wasted, and should be worth a try.

Would you do this for me?

- a) Type out my awful scrawled sheets, and keep one copy for the record.
- b) Get a copy - photocopy from UT or Peter, - of the sketch.
- c) Send the whole lot off with a British Posted Order for £1.0.0. (ignore the s/- figure in the form. The charge has since been revised!) REGISTERED, to IMP.

Sorry to put this on to you, but it may just pay off one day. Lets hope. No urgency about it - just when it is convenient.

My love, till I see you again,

Rusty

TELEPHONE DIALLING ATTACHMENT.

- PURPOSE:**
- 1) To relieve switchboard operators of the work of dialling out-going calls, and waiting for the call to be answered; during which period the operator is out of action for incoming calls.
 - 2) To enable accumulations of outgoing calls to be dealt with in rapid sequence, either through the switchboard or direct from any extension.

APPLICATION. In most large firms, especially those where the firm's principals spend a lot of time out of their offices, messages for the principals to "Please ring" accumulate with the switchboard operator, or principal's secretary.

When the principal wishes to attend to this accumulation of messages, either the switchboard operator or the secretary has to dial and wait for a response to each call before putting it through to the principal. During this time:

- i) the switchboard is either incapable of handling incoming calls, or is forced to interrupt the sequence of outgoing calls to attend to incoming.
- ii) the secretary is fully engaged as a telephonist, and unable to proceed with other work for the principal;
- iii) If the sequence of outgoing calls is interrupted at the switchboard, the principal's own work is constantly interrupted at intervals, forcing him to break off whatever else he may be doing in the intervals - dictating, interviewing, etc.

It is clearly in the interests of both switchboard efficiency and the principal's own work that, when a series of outgoing calls need to be made, these can be dialled automatically and in rapid dequence without interruption, unless so decided by the principal.

BASIC APPARATUS This consists of the following parts:

- i) **Recording Desk.** The desk consists of a roll of paper, divided into convenient sized 'leaves', on which the operator writes each message in regard to an outgoing call. As the message is written (or at convenient times thereafter) the number to be dialled is 'typed' alongside the message on a strip of recording tape. As each complete phone number is 'typed', the combined paper-tape roll moves forward under electrical power, into:
 - ii) **The Message Bank.** Here the leaves with the written message and typed number are stacked and stored in the sequence in which they are written, and remain until it is required to call the numbers recorded. When so required, the attachment is plugged into an open line on the switchboard,

and switched on the 'DIAL' position. The completed message leaves are now fed out of the bank to the:

iii) SCANNER. This scanner scans the typed number on the recording tape and translates each digit into electrical impulses of the type and duration made by a normal telephone dial. Each digit is scanned consecutively in the order in which it was typed, and the impulses fed into the open outgoing line. If this call is ~~xx~~answered, the answer is heard by the operator over the:

iv) SPEAKER, which can be either an open loudspeaker on the attachment, or an earpiece which the operator takes up when required. Simultaneously, the written portion of the message appears before the operator's eyes at the

v) MESSAGE SLOT of the attachment. The operator then ~~xxxxxx~~ deals with this call in the normal manner, either putting it through to the extension required, or taking the call himself and dealing with it. If however, the outgoing call is NOT answered, either because the line is engaged or there is no response, a pre-determined and set time limit will be allowed by the

vi) TIMING MECHANISM, at the end of which the message will be fed forward to the

vii) REFUSAL SLOT, and a buzzer or light signal will draw the operator's attention to this fact. While the next message is already being scanned, the operator will be able to removed this 'refused' message from the slot, and deal with it as seems appropriate; i.e., either by rewriting it on the top blank leaf of the desk for later re-use, or by filing it. From the speaker signal, the operator will know whether this call was 'Engaged' or 'Not answered'. Leaves for calls which are answered ~~xxx~~ feed through the Refusal Slot to a used-leaf storage bin, for filing or disposal as required. If the tape is re-usable, it will be recovered from this bin.

viii) FEED MECHANISM is only brought into action by the dialling switch. Once in operation, it is controlled by the action of the receiver ~~xxxxxx~~ ~~xxxxxx~~ on the outgoing end of the line. As soon as this receiver is replaced at the end of a call, the feed mechanism moves the next leaf from the bank into position under the scanner, and the next cycle of scanning and dialling commences immediately. This process continues automatically until the message bank is empty, when the feed and scanner automatically switch off.

APPARATUS PROPOSED

1. MESSAGE ROLL (Fig: 1) consists of two portions - a recording tape A, and a paper message-pad B. Both of these are scored at appropriate intervals to separate the message spaces, herein referred to as 'leaves', and also to facilitate folding into a 'message bank' F (Fig.3). The paper is perforated along each edge to grip sprocket wheels for the feed. If the recording tape is to be used more than once (see para 2 below), portions A and B should be on separate rolls, linked together by matching perforations engaging on a single sprocket wheel where they overlap. (See Fig 1 (ii)).
2. RECORDING TAPE could be either electro-magnetic type tape, or paper tape for punched perforating. Magnetic tape could be re-used, erasing its previous record as it is re-recorded. Punched tape would have to be discarded with the complete message leaf. In either case, the number to be called is typed on the Keyboard D (Fig 2), the digits being recorded one below the other on that strip of tape alongside the TOP LEAF ONLY of the desk EC. After each digit is typed, the paper moves forward automatically, to allow a full series of digits to be typed alongside a single leaf. If magnetic tape is used, each key will impose a corresponding number of electro-magnetic impulses; if perforating tape, either a number of holes, or a single hole, shape coded to re-produce that number when scanned.
3. RECORDING DESK C (Fig 2) This should have space for a number of leaves to appear, and to be suitably supported below the paper message pad, to allow the user to write down several separate messages before typing in the numbers. This would be necessary, for example, where a principal instructs the operator to phone several persons, whose numbers the operator will be able to look up in the directory only after all the message instructions have been written. The additional Key 'E' on the switchboard (Fig 2) is a safety precaution in case the number of such messages exceeds the space available on the desk, in which case depressing Key E would operate the mechanism to start stacking messages in position I (Fig 3) and bringing new, unused leaves onto the desk without moving untyped tape past the recording position. These stacked messages would be automatically brought forward into position for typed recording by the action referred to above (Para 2)
4. BANK, F (Fig 3). The paper leaves, and the accompanying recording tape, are stacked here in accordion fashion. This is a simple operation when the

leading edge is held in position, and where the roll has been previously folded or scored appropriately. If necessary, a simple mechanical aid can be introduced, on the principle shown in Fig. 4, 'A' being the leading ledge which is firmly held in position. The guide fingers B and C move, with the passing of every second leaf, from the positions shown in ~~Fig 4a~~^{4a} to positions in 4b - B moving up and down, C shuttling laterally back and forth.

5. SCANNER This depends upon the type of recording used, but will be either electro-magnetic, or, if perforating tape is used, spring-loaded pins to fit coded punched holes. It is positioned immediately beyond the message bank, alongside the message slot G. It will scan each recorded digit ~~xxxxxx~~ in the order that it was typed, and produce (and if necessary amplify) an electrical impulse identical to that produced by a normal telephone dial.

6. FEED MECHANISM Beyond the message bank, the feed mechanism is completely separated from the banking and typing feed. It is completely automatic, brought into operation by a switch. It feeds a single leaf from the bank to the message slot G, and then stops while scanning goes on. As scanning ends, a timer mechanism holds the leaf in position for a fixed delay period, say 30 seconds; if the call is then unanswered, the feed moves the leaf into the refusal slot H, thus drawing the next leaf forward, and immediately starting a new cycle of scan and delay. If the call is answered within this delay period, the feed mechanism remains motionless, holding the message in the message slot G. for the duration of the call. Only the replacement of the receiver on the receiving end re-activates the feed, and draws the next leaf into position for scanning. This process continues until the bank is exhausted when tension on the roll switches off feed and scanning mechanism.

7. TIMER The delayed timer mechanism is coupled to an alarm ~~xxxxxx~~ system alongside the Refusal Slot H. This could be either a light or buzzer alarm, and is brought into operation only by the completion of the delay cycle without answer at the outgoing end, and takes place as the unanswered call is fed into the Refusal Slot.

8. REFUSAL SLOT This slot should have the edge of the casing cut away, as in L (Fig 5) to enable the operator to grasp the edge of the leaf. The sides of the slot should have serrated cutting edges K (or a sliding cutter)

to enable the paper leaf to be torn out, for filming or re-writing. If the tape is re-usable, it should not be torn by this action.

POSSIBLE VARIATIONS

9) Firms with several principals will require either a series of recording desks, or a multiple-roll unit, with each roll reserved for a single principal. For such use, it is economically desirable that that portion of the desk beyond the bank - i.e., the portion containing the scanner and automatic feed, should be separated from the recording desk and bank, and capable of being plugged on to whatever channel of the unit is required to be used. For such multiple roll units, the keyboard will have to be adapted, and have a series of 'channel indicator' keys, to be depressed before any series of digits, to ensure that the recording is made only on the appropriate tape.

10) A visible typed number on the paper roll would have advantages, as, e.g., where a wrong number has been accidentally recorded; or where the firm wishes to keep a legible record of outgoing calls; or to save trouble in again looking up numbers for 'refused' messages leaves. This should be possible, operating simultaneously with the recording ~~xxxx~~ on the tape, and from the same keyboard, if cost warrants it.

11) The practice in many offices is for the principals to dial their own accumulated messages, in order to relieve switchboard operators of the chore of waiting for each call to be answered before in turn calling the principal and putting the call through. For such use, it is necessary that the whole attachment be capable of being plugged in to the principal's extension phone when required, as well as to the switchboard. It is thus also necessary for the whole attachment to be light and portable.

Original Idea and Description by

L. BERNSTEIN, M.I.A.,

Pretoria,

30 . 3 . 1964

 *Ideas Marketing Pool*
LIMITED

Telephone: MAYFAIR 8586-7-8.

6-7 & 8 OLD BOND STREET, LONDON, W. I.

JC/PB

27th April, 1964.

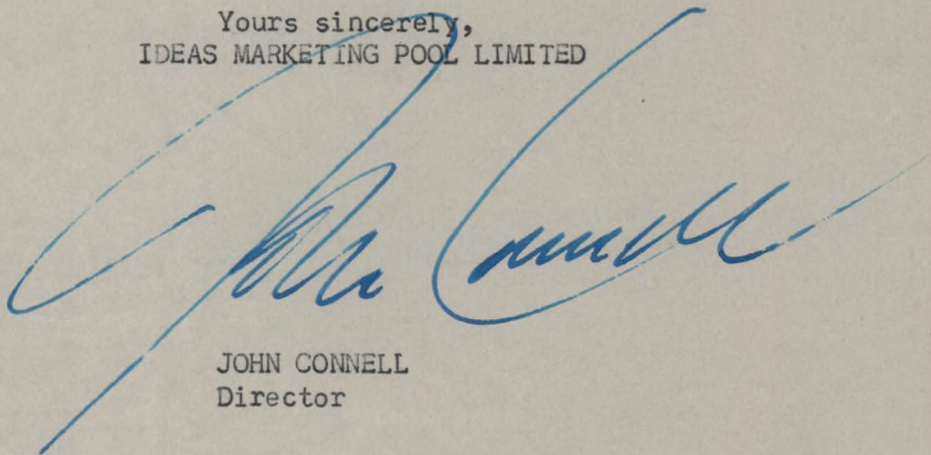
Mrs. H. Bernstein,
154 Regent Street,
Observatory,
Johannesburg.
SOUTH AFRICA.

Dear Mrs. Bernstein,

Idea No. 64/4/201/C20

Thank you for your letter dated 7th April sending the completed entry form. We will be showing this idea to a number of electronic firms but to assist us in this we should be glad to receive the original drawing as suggested.

Yours sincerely,
IDEAS MARKETING POOL LIMITED



JOHN CONNELL
Director

154 Regent Street,
Observatory,
Johannesburg,
South Africa.

19th May 1964

Mr. J. Connell,
Ideas Marketing Pool,
6 Bond St
London W.1,
England.

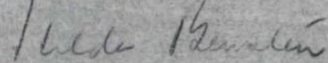
Your reference JC/PB

Dear Mr. Connell,

I enclose original drawing of the telephone device, as requested in your letter of 27th April.

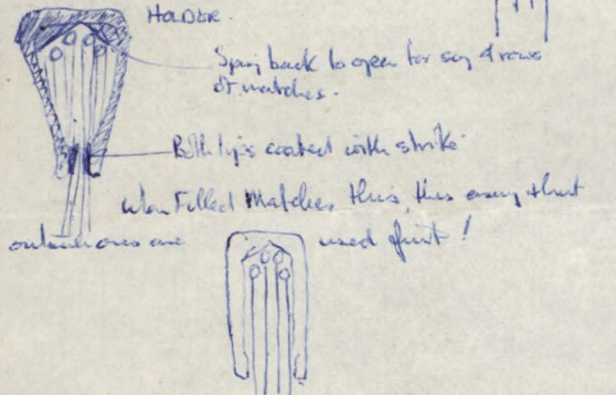
In case you do not know, I feel I should explain that my husband did the drawing and developed the idea in Pretoria Prison, where he is at present, and this accounts for the fact that the drawing is done in pencil and ball-point pen. He does not have facilities for making a more finished drawing at his disposal.

Yours sincerely,



(Mrs) H. Bernstein.

- Matches.
- 1) Coat heads of matches before cutting!
 - 2) Cut out circular ends followed by holder bar.
 - 3) Slide into table which drops 1/4 of length into lower level, a skew across length for rest 3/4, thus getting 4 rows packed with heads all 1 way.
 - 4) Still held by holder bar, slide into plastic holder after first pushing into V-formatic thin.



- Vis House:
- 1) If as above, could be extension, but would then need labelling in some way.
 - 2) If unchain mounted, not extension, could have unlabeled label & also have thin collapsible seat, & thus be slightly waterproof?
 - 3) If bent to give rollers, top should be flexible enough to be able to deflect one corner, & force that would up!

Roller Tray - trays - HTH

rolled bag to lower lowest corners with each movement.

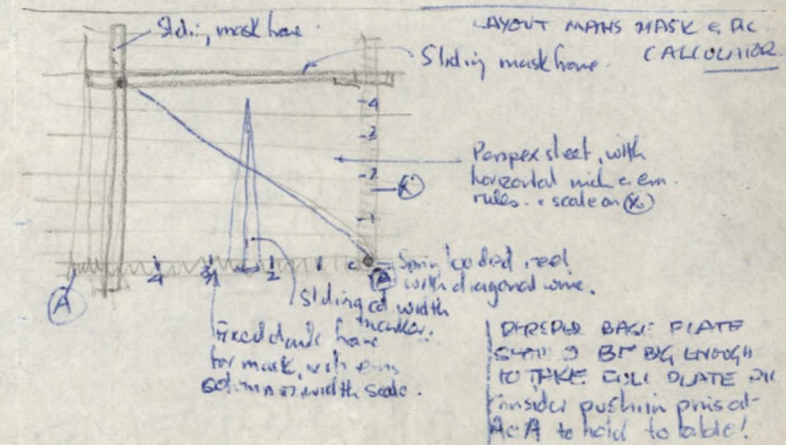
1/2 weight.

N.B. Containers either 29 heavy soluble or perhaps with pin hole, to give 24 hour explosive action to burst bags.

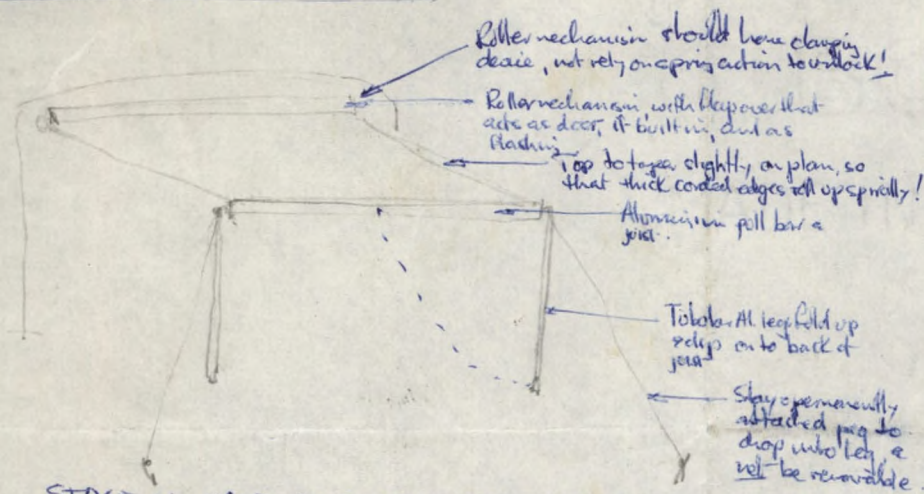
Bags filled with daily dose HTH

leave much play between bags for variation in water level!

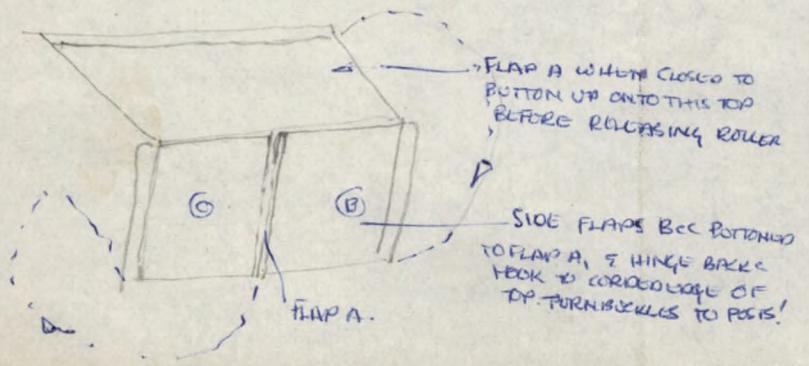
Fix whole GADGET TO WALL OF SWIMMING BATHWATER, OR IN SLUDGE TRAP, READING CONSTANT WATER LEVEL!



CAR & CARAVAN TENT



STAGE 1: USED AS SIMPLE PICNIC AWNING.



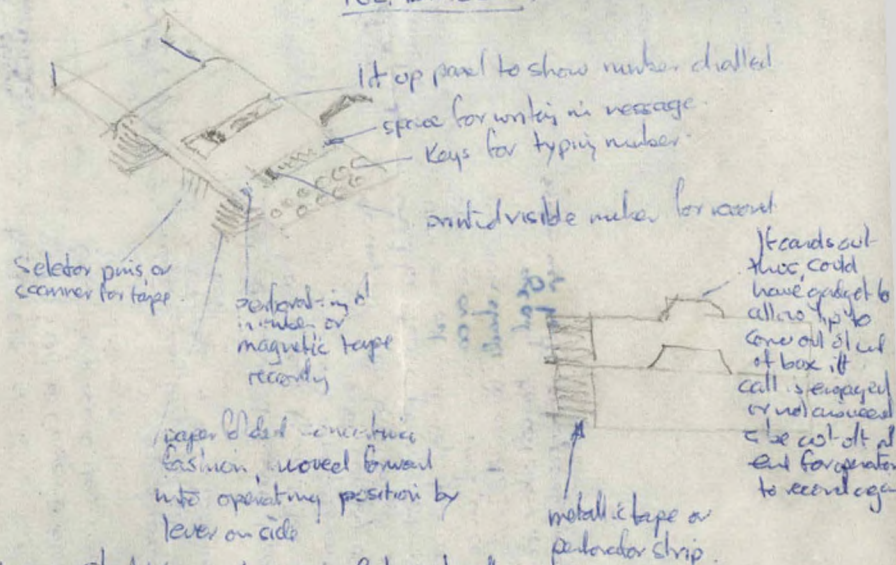
Variations:

Box for Roller can be: a) built into caravan side. Or b) Clamped to car roof top corner. Or c) On poles, with clays comedore, car top, to allow car to be removed when needed. Or d) Mounted on caravan roof, with rollers, sealing flaps for side, either by suction cups & stays back across roof, or as built-in hooks.

Tent:

- 1) Car tent should slope other way - i.e. from outside to car! thus getting usable height.
- 2) Loose extra poles could extend awning only to double size, by using A as awning.
- 3) For both caravan or car model could be loose perforated piece which rolls up & rolls out with top, but which is pulled over car or caravan roof, or cords & stays to give sun shade for car. Perforations for drainage only. Kept above roof by small suction up hooks, or haps or drainage chords.

T.E.L. DIALLER.



NOTE Should have clock pointer for interval call also make for record slips either - ENG or NOT ANSWERED.
 Control buttons: HOLD! DIAL! OPERATOR PHONE!

TELEPHONE DIALING ATTACHMENT.

- PURPOSE:
- i) To relieve switchboard operators of the work of dialling outgoing calls, and waiting for the call to be answered during which period the operator is out of action for incoming calls.
 - ii) To enable accumulations of outgoing calls to be dealt with in rapid sequence, either through the switchboard or direct from any extension.

APPLICATION. In most large firms, especially those where the firms principals spend a lot of time out of their offices, messages for the principals to "Please ring" accumulate with the switchboard operator, or principals secretary.

When the principal wishes to attend to this accumulation of messages, either the switchboard operator or the secretary has to dial and wait for a response to each call before putting it through to the principal. During this time, i) the switchboard is either incapable of handling incoming calls, or is forced to interrupt the sequence of outgoing calls to attend to incoming. Or

- ii) the secretary is fully engaged as a telephonist, and unable to proceed with other work for the principal.
- iii) If the sequence of outgoing calls is interrupted at the switchboard, the principal's own work is constantly interrupted at intervals, forcing him to break off whatever else he may be doing in the intervals - dictating, interviewing etc.

It is clearly in the interests of both switchboard efficiency and the principal's own work that, when a series of outgoing calls need to be made, these can be dialled automatically, and in rapid sequence without interruption unless so decided by the principal.

BASIC APPARATUS. This consists of the following parts:

i) Recording Desk: The desk consists of a roll of paper, divided into convenient sized 'leaves', on which the operator writes each message ~~for~~ in regard to an outgoing call. As the

message is written (or at convenient time thereafter) the number to be dialled is "typed" alongside the message, on a strip of recording tape. As each complete phone number is "typed", the combined paper-tape roll moves forward under electrical power, into:

: ii) The Message Bank: Here the leaves with written message and typed number are stacked and stored in the sequence in which they are written, and remain until it is required to call the numbers recorded. When so required, the attachment is plugged into an open line on the switchboard, and switched on to 'DIAL' position. The completed message leaves are now fed out of the bank to the

: iii) Scanner. This 'scanner' scans the typed number on the recording tape, and translates each digit into electrical impulses of the type and duration made by a normal telephone dial. Each digit is scanned consecutively in the order in which it was typed, and the impulses fed into the open outgoing line. If this call is answered, the answer is heard by the operator over the

: iv) Speaker, which can be either an open loudspeaker or the attachment, or an earpiece which the operator takes up when required. Simultaneously, the written portion of the message appears before the operators eyes at the

: v) Message Slot of the attachment. The operator then deals with this call in the normal manner, either putting it through to the extension required or taking the call himself and dealing with it. If however the outgoing call is NOT answered, either because the line is engaged or there is no response, a pre-determined and set time limit will be allowed by the

: vi) Timing Mechanism, at the end of which the message will be fed forward to the

: vii) Refusal Slot - and a buzzer or light signal will draw the operators attention to this fact. While the next message is already being scanned, the operator will be able to remove this "refused" message from the slot, and deal with it as seems appropriate, i.e. either by rewriting it on the top blank leaf of the desk for later re-use, or by filing it. From the speaker signal, the operator will know whether this call was 'ENGAGED' or

'not answered.' Leaves for calls which are answered feed through the Refusal Slot, to a used-leaf storage bin, for filing or disposal as required. If the tape is re-usable, it will be recovered from this bin.

viii) Feed mechanism is only brought into action by the dialling switch. Once in operation, it is controlled by the action of the receiver on the outgoing end of the line. As soon as this receiver is replaced at the end of a call, the feed mechanism moves the next leaf from the bank into position under the scanner, and the next cycle of scanning and dialling commences immediately. This process continues automatically until the message bank is empty, when the feed and scanner automatically switches off.

APPARATUS PROPOSED.

1. Message roll (FIG. 1) consists of two portions - a recording tape A, and a paper message pad B. Both of these are scored at appropriate intervals to separate the message spaces, herein referred to as "leaves", and also to facilitate folding into a 'message bank' F. (FIG. 3.) The paper is perforated along each edge to grip sprocket wheels for the feed. If the recording tape is to be used more than once (see par 2 below), portions A and B should be on separate rolls, linked together by matching perforations engaging on a single sprocket wheel where they overlap. (see FIG. I (ii)).

2. Recording Tape. could be either electro-magnetic type tape, or paper tape for punched perforating. Magnetic tape could be re-used, erasing its previous record as it is re-recorded. Punched tape ~~is~~ would have to be discarded with the completed message leaf. In either case, the number to be called is typed on the keyboard D (FIG. 2), the digits being recorded one below the other on that strip of tape alongside the TOP LEAF ONLY of the desk C. After each digit is typed, the paper moves forward automatically, to allow a full series of digits to be typed alongside a single leaf. If magnetic tape is used, each key will impose a corresponding number of electro-magnetic impulses; if perforating tape, either a number of holes, or a single hole, shape coded to reproduce that number when scanned.

3. Recording Desk. C (FIG. 2.) This should have space for a number of leaves to appear, and be suitably supported below the paper message pad, to allow the user to write down several separate messages

before typing in the numbers. This would be necessary, for example, where a principal instructs the operator to phone several persons, whose numbers the operator will be able to look up in the directory only after all the message instructions have been written. The additional key 'E' on the switchboard (FIG. 2) is a safety precaution in case the number of such messages exceeds the space available on the desk, in which case depressing key E would operate the mechanism to start stacking messages in position I (FIG. 3), and bringing new, unused leaves onto the desk without moving untyped tape past the recording position. These stacked messages would be automatically brought forward into position for typed recording by the action referred to above. (PAR 2.)

4. Bank F. (FIG 3) The paper leaves, and the accompanying recording tape, are stacked here in accordion fashion. This is a simple operation, when the leading edge is held in position, and where the roll has been previously folded or scored appropriately. If necessary, a simple mechanical aid can be introduced, on the principle shown in FIG. 4, 'A' being the leading edge which is firmly held in position. The guide fingers B and C move, with the passing of every second leaf, from the positions shown in 4a, to positions in 4b, - B moving up and down, C shuttling laterally back and forth.

5. Scanner. This depends upon the type of recording used, but will be either electro-magnetic, or, if perforating tape is used, spring-loaded pins to fit coded punched holes. It is positioned immediately beyond the message bank, and alongside the message slot G. It will scan each recorded digit in the order that it was typed, and produce (and if necessary amplify) an electrical impulse identical to that produced by a normal telephone dial.

6. Feed Mechanism. Beyond the message bank, the feed mechanism is completely separated from the banking and typing feed. It is completely automatic, brought into operation by a switch. It feeds a single leaf from the bank to the message slot G, and then stops while scanning goes on. As scanning ends, a timer mechanism holds the leaf in position for a fixed delay period, say 30 seconds; if the call is then unanswered, the feed moves the leaf into the refusal slot H, thus drawing the next leaf forward, and immediately starting a new cycle of scan and delay. If the call is

answered within this delay period, the feed mechanism remains motionless, holding the message in the message slot G. (5)

for the duration of the call. Only the replacement of the receiver on the receiving end re-activates the feed, and draws the next leaf into position for scanning. This process continues until the bank is exhausted, when tension on the roll switches off feed and scanning mechanism.

7. Timer. The delay timer mechanism is coupled to an alarm system alongside the Refusal Slot H. This could be either a light or buzzer alarm, and is brought into operation only by the completion of the delay cycle without answer at the outgoing end, and takes place as the unanswered call is fed into the Refusal Slot.

8. Refusal Slot. This slot should have the edge of the casing cut away, as in L (FIG. 5) to enable the operator to grasp the edge of the leaf. The sides of the slot should have serrated cutting edges K (or a sliding cutter) to enable the paper leaf to be torn out, for filing or re-winding. If the tape is reusable, it should not be torn by this action.

POSSIBLE VARIATIONS.

9) Firms with several principals will require either a series of recording desks, or a multiple-roll unit, with each roll reserved for a single principal. For such use, it is economically desirable that that portion of the desk beyond the bank, i.e. the portion containing the scanner and automatic feed, should be separated from the recording desk and bank, and capable of being plugged on to whichever channel of the unit is required to be used. For such multiple roll units, the keyboard will have to be adapted, and have a series of 'channel indicator' keys to be depressed before any series of digits, to ensure that the recording is made only on the appropriate tape.

10) A visible typed number on the paper roll would have advantages, as, e.g. where a wrong number has been accidentally recorded; or where the firm wishes to keep a legible record of outgoing calls; or to save trouble in again looking up numbers for 'refused' messages leaves. This should be possible, operating simultaneously with the recording on the tape, and from the same keyboard, if cost warrants it.

11. The practice in many offices is for principals to dial their own accumulated messages, in order to relieve switchboard operators of the chore of waiting for each call to be answered before in turn calling the principal and putting the call through. For such use, it is necessary that the whole attachment be capable of being plugged in to the principal's extension phone when required, as well as to a switchboard. It is thus also necessary for the whole attachment to be light and portable.

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