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APR 21 1976

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APR 21 1976

GROUP 230

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Walter Thompson

In the Application of

JAMES R. DIEHR, II and THEODORE A. LUTTON

Serial No. 602,463

Filed August 6, 1975

April 19, 1976

For DIRECT DIGITAL CONTROL OF  
RUBBER MOLDING PRESSES

Group Art Unit 236

Examiner: Joseph F. Ruggiero

Commissioner of Patents and Trademarks

Washington, D. C. 20231

Dear Sir:

A M E N D M E N T

In response to the Official Action of January 26, 1976  
please amend the application as follows;

In the claims:

Please add the following claim:

Sub D4 11. A method of manufacturing precision molded  
articles from selected synthetic rubber compounds in an  
openable rubber molding press having at least one heated  
precision mold, comprising:  
a) heating said mold to a temperature range  
approximating a predetermined rubber curing temperature,  
(b) installing prepared unmolded synthetic rubber  
of a known compound in a molding cavity of a predetermined  
geometry as defined by said mold,

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1 (c) closing said press to mold said rubber to  
2 occupy said cavity in conformance with the contour of said  
3 mold and to cure said rubber by transfer of heat thereto  
4 from said mold,

5 (d) initiating an interval timer upon the closure  
6 of said press for monitoring the elapsed time of said closure,

7 (e) heating said mold during said closure to maintain  
8 the temperature thereof within said range approximating said  
9 rubber curing temperature,

10 (f) constantly determining the temperature of said  
11 mold at a location closely adjacent said cavity thereof  
12 throughout closure of said press,

13 (g) repetitively calculating at frequent periodic  
14 intervals throughout closure of said press the Arrhenius  
15 equation for reaction time of said rubber to determine total  
16 required cure time  $\underline{v}$  as follows:

17 
$$\ln v = cz + x$$

18 wherein c is an activation energy constant determined for  
19 said rubber being molded and cured in said press, z is the  
20 temperature of said mold at the time of each calculation of  
21 said Arrhenius equation, and x is a constant which is a function  
22 of said predetermined geometry of said mold,

23 (h) for each repetition of calculation of said  
24 Arrhenius equation herein, comparing the resultant calculated  
25 total required cure time with the monitored elapsed time  
26 measured by said interval timer,

27 (i) opening said press when a said comparison of  
28 calculated total required cure time and monitored elapsed  
29 time indicates equivalence, and

30 (j) removing from said mold the resultant precision  
31 molded and cured rubber article. ~

R E M A R K S

The Examiner is thanked for having graciously held an interview with Applicants' attorney, Robert E. Wickersham, on March 24, 1976, with Joseph D. Ekland (Manager, Manufacturing Systems, Manufacturing Engineering Services of the Assignee) and Jay Cantor (Mr. Wickersham's Washington Associate) present.

The application and the Office Action of January 26, 1976, were discussed. As the objection and rejection under 35 U.S.C. 112 were discussed, and Mr. Ekland took notes on the proper substance of an affidavit to rebut the objections noted. The enclosed Affidavit is the result, and it is believed that it shows that the application does disclose quite sufficient material to enable one skilled in the art to carry out the invention. Therefore, it is believed that the application does comply with 35 U.S.C. 112.

As to 35 U.S.C. 101, the Examiner indicated that he was writing for the decision in Dann v. Johnson, recently decided by the U. S. Supreme Court. That Court, however, did not decide the issue raised by 35 U.S.C. 101 but instead rested its opinion only on 35 U.S.C. 103, as to obviousness of that particular invention. An implication might be that the Court saw no reason to disturb the C.C.P.A.'s conclusions as to 35 U.S.C. 101. Note the Court's reliance on an issued computer patent without questioning that that patent was properly issued.

The attention of the Examiner is once again drawn to the fact that the opinion of Mr. Justice Douglas in Gottschalk v. Benson indicates clearly and specifically that transformation of an article to a different state or thing is the clue to the patentability of a process under 35 U.S.C. 101.

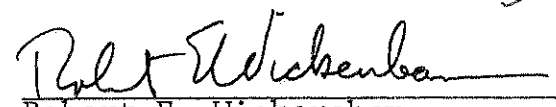
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1 This matter was also discussed with the Examiner at the  
2 interview.

3  
4 Newly presented claim 11 was shown to the Examiner  
5 at the interview. At that time he did not believe that it  
6 would help in overcoming the §101 rejection, but it is  
7 enclosed anyway so that he can reconsider it in the light of  
8 the present status of the law (after Dann v. Johnson).

9  
10 Applicants urge that the application should be  
11 allowed and request reconsideration by the Examiner.

12  
13 Respectfully solicited,

14 

15 Robert E. Wickersham  
16 Reg. No. 16,150  
17 Attorney for Applicants  
18 (415) 781-6361

19 Enclosure - Affidavit  
20  
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In the application of

Group Art Unit: 236

JAMES R. DIEHR, II and THEODORE A. LUTTON

Serial No: 602,463

Filed: August 6, 1975

For: DIRECT DIGITAL CONTROL OF RUBBER MOLDING PRESSES

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

Dear Sir:

AFFIDAVIT

I, Joseph D. Ekland, being first duly sworn, depose and say:

1. THAT I am a graduate of Rensselaer Polytechnic Institute, B.E.E. (Computer Design) and Purdue University, M.S.E.E. (Control Theory);
2. THAT I am a Registered Professional Engineer for Control Systems in the State of California;
3. THAT I have been professionally employed for the past 14 years in applying digital technology to the control of physical processes, including employment these last 2 1/2 years with Federal-Mogul Corporation, assignee of the subject invention as its Manager, Manufacturing Systems, Manufacturing Engineering Services, as previously stated in affiant's affidavit submitted in connection with now abandoned parent case Serial No. 472,595;
4. THAT during this 14 year time I have programmed computers in several languages, designed computer based systems, and managed groups that programmed and designed systems;
5. THAT one of the functions of my position is to estimate resources required to do the job assigned and I have considerable experience in doing this. Several references to program estimation are:

(A) The Economics of Computer Programming, A.M. Piertrasanta.

Brandon/systems press. 1969

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(B) FSD Programming Prospect Management Guide, P.W. Metzger.

I.B.M. Corporation 1970

(C) "Estimating Resources for Large Programming Systems",

J. D. Aron. Federal Systems Center, I.B.M. Corporation.

FSC 69-5013, 1969

(D) The Mythical Man-Month, F. P. Brooks, Jr., Addison-Wesley

Publishing Co., 1975

I believe a fair evaluation of the message conveyed by these authors in the above referenced publications is that while very large and somewhat standard programs are amenable to concise estimates, small and special program estimates are very subjective;

6. THAT I have often worked with installations in which the people assigned were not professional programmers. The rationale for these assignments is that application experience is more important than programming knowledge and that programming is a technique that may be acquired quickly by a person of logical thought;

7. THAT this was the case at the Federal-Mogul Corporation plant in Van Wert, Ohio where the subject invention was first implemented. The man chosen as the programmer was an Engineering Aide with a high school diploma and no further formal technical training. This man received three weeks formal computer training and was then assigned to the project as the programmer. Five months after his assignment, the programming was complete to control four presses doing both temperature regulation and end-point calculation and control. The key to this success was that the programmer took direction very well and did not try to superimpose his ideas over the system designer's but did exactly as instructed;

8. THAT the system as installed at the Van Wert, Ohio facility is considered an economic success in that Federal-Mogul Corporation has publically claimed a 20% increase in product and a 15% reduction in scrap rate.

9. THAT I am familiar with Fig. 3 A & B of the above identified application;

10. THAT from these figures and the written specifications of the above application, a reasonably skilled programmer would have no difficulty in preparing a computer program in any of the standard computer languages for



use in any standard computer of suitable capacity;

11. THAT I feel the project estimate given by Mr. James R. Diehr II and Theodore A. Lutton in their Rule 132 Affidavit dated 6 March 1975 and submitted with application amendment of August 5, 1975 is a fair and accurate estimate:

12. THAT to support the foregoing statements (9, 10, 11) I furnish the following narrative which such a programmer might first prepare, and an example of this program as translated into FORTRAN.

FLOWCHART NARRATIVE (REF: Fig. 3-A)

- 11) Hardware timer interrupts system and starts scan cycle.
- 12) Data on press status and analog temperature data read into press.
- 21) Test input bit switch to determine if press is closed. If yes, go to 31). If no, go to 41).
- 31) Add  $\Delta T$  time to accumulator associated with this press.
- 32) Fetch thermocouple data on temperature of this mold.
- 33) Calculate  $V = \text{Antilog } N (C * Z + X)$  where Z is value from 32) and C and X are constants.
- 34) Compare V with accumulator in step 31). If yes, go to 35). If no, go to 41).
- 35) If closure time (accumulator) were greater, open press.
- 41) Calculate  $e = \frac{\text{set point} - \text{measured value}}{\text{dead band}}$  and truncate at the decimal point.
- 42) If e has a value  $> 1$ , go to 43). If not, go to 51).
- 43) Test  $e = SP - MY$  for sign.  
If negative turn heater off.  
If positive turn heater on.
- 51) Test A switch to determine if there is a batch data entry.  
If yes, go to 52).  
If no, go to 61).
- 52) Calculate batch Arrhenius Constant C for the equation  $C = \frac{\ln V - X}{Z}$  and store with compound and batch numbers.
- 61) Check status word for Console Interrupt. If interrupt switch is Positive, go to 62). If negative, proceed to 71).

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- 62) Identify incoming data by press number and store data in press record location.
- 71) Check present press record number with press record end pointer. If press record number equals end pointer, go to 73). If press record number does not equal end pointer, go to 12).

A general FORTRAN type program to indicate method (not including dimension statements, etc.):

```

40   Enter   N = 0
50           N = N + 1
100          Call DI (IDA(N), IDI(N))
           Call AIS (6,IAIS(N))
           IF (IDI(N)) 200,400, 400
200          IACUMT(N) = IACUMT(N) - IDLT
           IZ = CALL TEMCON (IAIS(N))
           Z = CALL FLOAT (IZ)
           V = CALL EXP(C * Z * X)
           IV(N)= CALL FIX (V)
           IF (IACUMT (N) - IV(N)) 300, 400, 40
300          CALL DO (IDOA(N), IDO (N))
400          IE = (ISP(N) - IMV(N)/IDB(N))
           IF (IE) 500,600,700
500          CALL DO (IDOC(N), IDO1)
           GO TO 600
700          CALL DO (IDOC(N), IDO2)
600          IF (IB) 800,900,900
800          TEMP = CALL LOG N (V)
           C = (TEMP - X)/Z
900          IF (IC) 10, 20, 20
10          CALL DISPLAY SUBROUTINE
20          IF (N - 1 LAST) 30, 30, 40
30          CALL EXIT

```

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Further affiant saith not.

Joseph D. Ekland  
Joseph D. Ekland

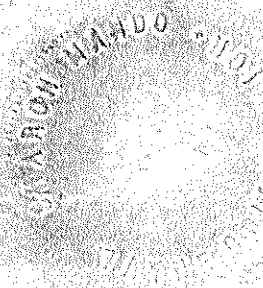
Subscribed and sworn to before me this 14<sup>th</sup> day of

April, 1976.

Sharon Mando  
Notary Public

My commission expires:

SHARON MANDO  
Notary Public Wayne County, Mich.  
Acting in Oakland County, Mich.  
My Commission Expires Aug. 23, 1977



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**U.S. DEPARTMENT OF COMMERCE  
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08/06/75 602,463 ]  
James R. Diehr, II Et Al ]

Paper No. 6

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JUL 8 1976

▼ Robert E. Wickersham▼  
Owen, Wickersham &  
Erickson  
433 Calif. St., 11th Flr.  
San Francisco, Calif. 94104

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This is a communication from the Examiner in  
charge of your application.

Commissioner of Patents  
and Trademarks

☒ This application has been examined.

☒ Responsive to communication filed APRIL 21, 1976

☒ This action is made final.

A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS ACTION IS SET TO EXPIRE

3 MONTH(S) \_\_\_\_\_ DAYS FROM THE DATE OF THIS LETTER.

**PART I**

The following attachments(s) are part of this action:

- a. ☐ Notice of References Cited, Form PTO-892. b. ☐ Notice of Informal Patent Drawing, PTO-948.  
c. ☐ Notice of Informal Patent Application, Form PTO-152. d. ☐

**PART II**

Summary of Action

1. ☒ Claims 1-11 are presented for examination.  
2. ☐ Claims \_\_\_\_\_ are allowed.  
3. ☐ Claims \_\_\_\_\_ would be allowable if amended as indicated.  
4. ☒ Claims 1-11 are rejected.  
5. ☐ Claims \_\_\_\_\_ are objected to.  
6. ☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.  
7. ☐ Claims \_\_\_\_\_ are withdrawn from consideration.  
8. ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 OG. 213.  
9. ☐ Since it appears that a discussion with applicant's representative may result in agreements whereby the application may be placed in condition for allowance, the examiner will telephone the representative within about 2 weeks from the date of this letter.  
10. ☐ Receipt is acknowledged of papers under 35 USC 119, which papers have been placed of record in the file.  
11. ☐ Applicant's claim for priority based on an application filed in \_\_\_\_\_ on \_\_\_\_\_ is acknowledged. It is noted, however, that a certified copy as required by 35 USC 119 has not been received.  
12. ☐ Other

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1. This action is responsive to applicant's communication filed April 21, 1976.
2. Claims 1-11 are now in this case.
3. Claims 1-11 are rejected under 35USC101 as being drawn to non-statutory subject matter as discussed in paragraph 5, paper no. 2. Now claim 11 is subject to the same deficiencies as claims 7-10 in that the so-called "physical" steps such as heating the mold, closing the press, heating the mold and opening the press are conventional and necessary to the process and cannot be the basis for patentability.
4. Applicant's arguments have been considered but are not convincing. As applicants correctly state, the Supreme Court in the case of *Dann v Johnston*, decided the case on the issue of obviousness under 35USC103 and did not discuss the issue raised by 35USC101. However, the Examiner cannot agree with applicant's conclusion that such action results in an implication that the Court was somehow acquiescing in the CCPA position on 35USC101. The Supreme Court's decision was actually a reversal of the CCPA decision which leaves standing the Board of Appeals decision regarding the patentability of the claims, i.e. that the claims are not patentable.
5. This action is made FINAL.

Ruggiero/jnb  
(703) 557-2871  
7/1/76

*Joseph F. Ruggiero*  
JOSEPH F. RUGGIERO  
EXAMINER  
GROUP ART UNIT 236

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