the table then focal point is adjusted to get the right beam spot size on the object. Then a program is being load on the computer and frequency are being set on the computer for desired result. Once the setup is ready we only adjust power according to the dept required. Then the command is given on the computer for marking on the object through the galvo's by laser beam.

Galvo's provided with frequency generator laser scanning lenses the frequency lenses can be design as per laser marking required by the customer.

F-Theta lenses have been designed for Laser Marking, Engraving, Printing, Graphic Art, Mirco-machining, Trimming, Guaging, and Surface Cleaning. These High Quality Air-Spaced F-Theta Lenses are designed to provide diffraction limited performance and low F-Theta distortion.

A table showing the spot size according to area is given as under.

Wavelength (nm)	Focal Length (mm)	Scan Area (mm)	Spot Size (um)
1064	56	20 x 20	5
1064	80	56 x 56	15
1064	100	60 x 60	14
1064	100	60 x 60	14
1064	100	60 x 60	12
1064	125	64 x 64	12
1064	125	64 x 64	12
1064	160	98 x 98	25
1064	160	98 x 98	25
1064	160	100 x 100	23
1064	160	110 x 110	23
1064	163	110 x 110	31

1064	163	100 x 100	31
1064	163	100 x 100	18
1064	164	100 x 100	29
1064	164	100 x 100	29
1064	181	72 x 72	24
1064	181	72 x 72	24
1064	235	106 x 106	31
1064	235	106 x 106	31
1064	240	168 x 168	30
1064	240	168 x 168	30
1064	254	160 x 160	22
1064	254	160 x 160	22
1064	295	254 x 254	30
1064	300	212 x 212	30
1064	300	212 x 212	30
1064	300	212 x 212	20
1064	330	225 x 225	40
1064	330	225 x 225	40
1064	350	220 x 220	33
1064	410	250 x 250	34
1064	420	285 x 285	50
1064	420	285 x 285	50
1064	810	500 x 500	55
820	401	220 x 220	25
780	88	40 x 40	8
780	296	180 x 180	30
780	508	330 x 330	22
633/670	88	40 x 40	8
633/670	156	70 x 70	32
633/670	156	70 x 70	12
633	105	30 x 30	9
633	155	70 x 70	13
532	56	18 x 18	6
532	100	50 x 50	10
532	94	55 x 55	10
532	94	55 x 55	10
532	102	53 x 53	7
532	102	53 x 53	7
532	159	100 x 100	14
532	159	100 x 100	14
532	163	80 x 80	20
532	254	150 x 150	18
532	250	150 x 150	11
532	300	175 x 175	18
532	410	225 x 225	30
532	508	350 x 350	15
532	810	500 x 500	30

488	508	330 x 330	22
355	254	100 x 100	21
355	810	400 x 400	30
308	254	100 x 100	21
10600	120	76 x 76	250
10600	157	100 x 100	325

The power ranging to 10 watts to 200 watts for different types of heads are available for different types of markings to get generated at different speeds. Laser lamps and rods & source of generating LASER are provided as per the design of the head use for manufacturing of the lasers.

In many cases there are several laser lamps available for any given laser type. Laser lamps will provide, were possible, the lamps from the manufacturer of your choice. Laser lamps are continuously being improved so that all times provide the laser lamps best suited for a given laser system and application. There are thousands of laser lamps that can readily provided. Our extensive cross-reference list should identify the compatible laser lamp model number.

Thus the apparatus has got a varsalite application in the field of metal, ceramic, plastic, jewellary, orthopedic, medical, pilferproof, optical industries, & high precision tools & equipment manufacturing.

The unique marking device by the laser technology which has a very wide range of application is generating very good demand in local as well as the market abroad. The inventor has done lot of research to improve upon the machine as well as the marking technology. Several modifications by changing the galvo's, scanning head, Q-switch, mirror, beam benders are possible on different types of materials for marking/engraving as well as designing. By deep engraving, cutting of material is also possible by a multi pass means of working.

The machine is user's friendly does not require any great skill for handling the job. This is an embodiment several modifications are possible which may be considered with the spirit & ambit of this invention.

I CLAIM :-

1. A process of marking, etching & engraving by using laser beam technology on metals & non-metals consisting of a laser head comprising a head, mirror mount, apparatura mount, beam bender, rail, through power supply, RF Driver, heat exchanger & chiller to generate a laser beam connected with a programmable computer system to generate the laser beam for marking & engraving the required design on the substance placed on the table through the Galvos. This process consisting of the following steps.

1. Selecting a design for marking.
2. Programming the said design of Step 1 in the computer.
3. Setting the object on the table for the focal length.
4. Setting the intensity of the laser beam.
5. Adjusting the frequency & speed in the computer according to the substance & design requirement.
6. Commanding the computer to complete the job which is completed automatically for the multiple pieces also.

2. A process of marking, etching, engraving & drilling by using laser beam technology on metals & non-metals as claimed in claim 1 which is used for Gold, Silver, Stainless Steel, Cutleries, Gold & Silver Ornaments & Jewellaries like chains, bracelets, necklace, bangles, jewellary boxes, rings, ear

rings, cuff links, spectacle frames, designer pens, buttons, precision & semi-precision stones like hametite, melakite, pearl, diamond, ruby, saphirre and etc orthopadic inplants, precision tools, measuring tools, tool holder, heart walves, cutting blades, knifes, pens all typed of plastic keyboard for computer & machineries & contact lenses, Holographic sheet, labels and transfers.

3. A laser marking & engraving machine consisting of the laser head comprising of head, mirror mount to mount the mirror, Q-switch to mount the Q-switch for apparative mount to regulate the apparature so as to vary the intensity of the Laser Beam, which is further provided with a beam bender for positioning the beam in a required direction which is supported in a rail & connected to a control panel provided with power supply, RF Driver, Heat Exchanger, Chiller to generate a laser beam of required intensity for marking/etching, engraving, scrubbing, cutting as per the required design programmable through a computer on metals & non-metals through beam steared galvo's & flat field galvo's/scanning heads.

4. A process of marking, etching & engraving by using a laser beam technology on metals and non-metals as claimed in claim 1 wherein the machine is connected through electronic circuit consisting of main (1) which is connected through the

programmable computer (3) through stabilizer (2) in series. Another phase from the main is supplied to the laser head. through a chiller, the input of a computer (3) is provided to scanning head (5) through a RF Driver (6) for directing the laser beam on required area on the object place on the table (8).

5. A process of marking, etching & engraving by using a laser beam technology on metals and non-metals wherein the laser head is provided with adjustable rods & lamps of various sizes can be provided on the laser heads for handling different types of materials where the hardness of the material is vastly differs.

6. A process of marking, etching & engraving by using a laser beam technology on metals and non-metals as claimed in claim 1 wherein the machine can be provided with different power supply as per the need of different industries which may be range from 10 watts to 200 watts (out put power).

7. A process of marking, etching & engraving as claimed in claim 1 and substantially herein described

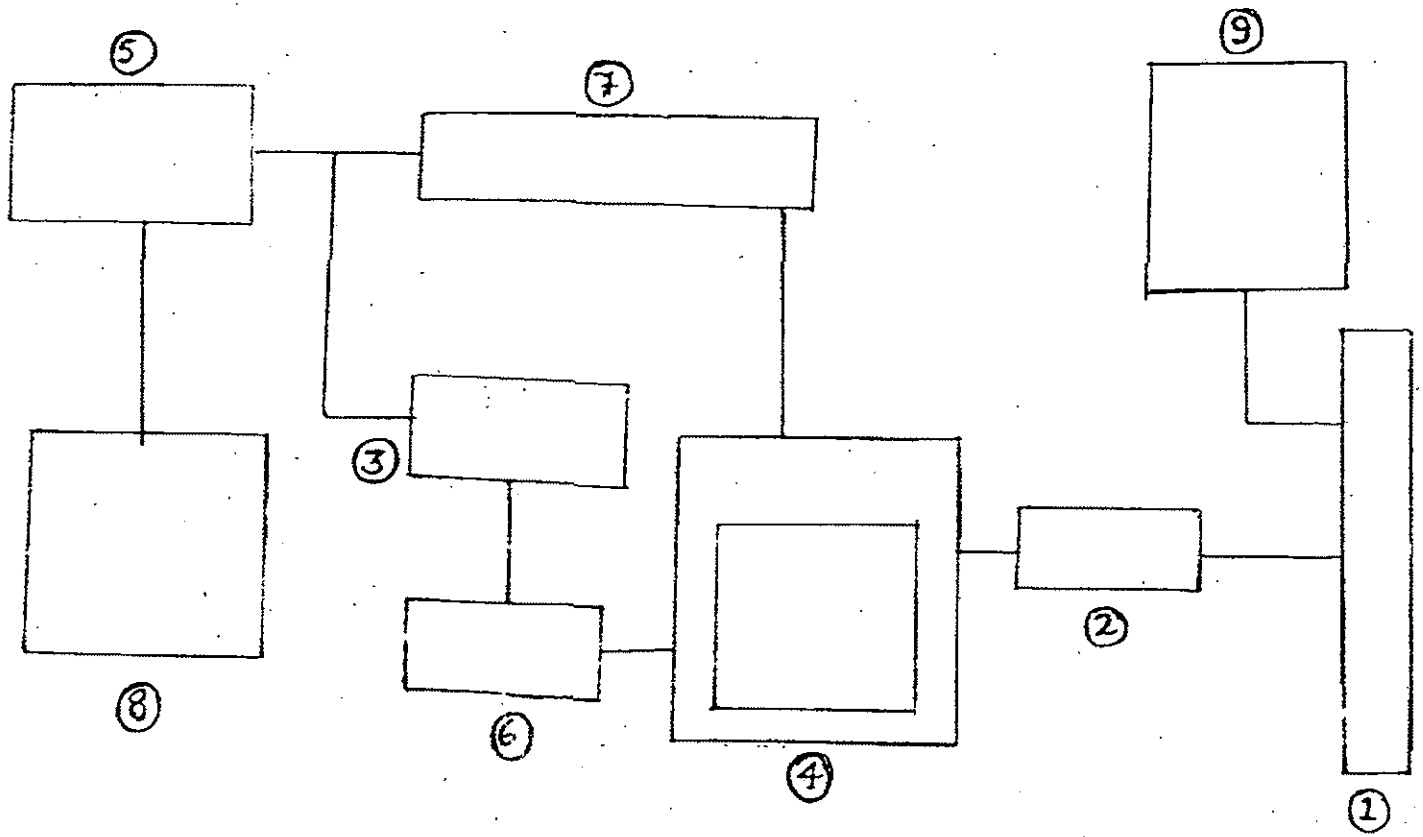
Dated on 14th September, 1998.

RMID - 2

CHANDRAKANT M. JOSHI
AGENT FOR
BHARAT BHOGILAL PATEL

NAME OF APPLICANT : BHARAT BHOGILAL PATEL
APPLICATION NO. : 610 /BOM/98

NO OF SHEETS :2
SHEET NO. :1



RMID - 2

21 SEP 1998

FIG.1

CHANDRAKANT M. JOSHI
AGENT FOR
BHARAT BHOGILAL PATEL

NAME OF APPLICANT : BHARAT BHOGILAL PATEL
APPLICATION NO. - 610/BOM/98

NO OF SHEETS :2
SHEET NO. :2

RMID - 2

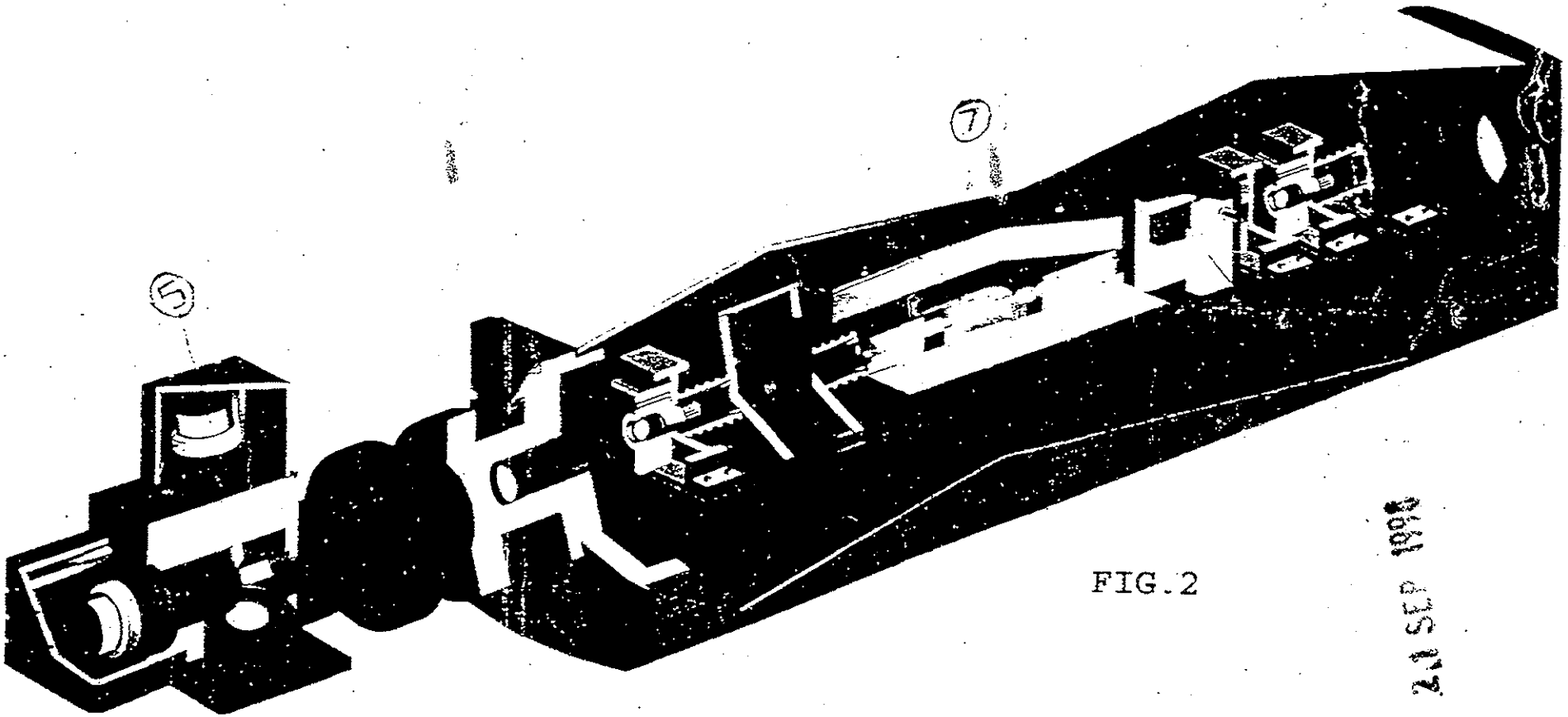


FIG.2

21 SEP 1998

FIG.3

CHANDRAKANT M. JOSHI
AGENT FOR
BHARAT BHOGILAL PATEL

ABSTRACT

A process of marking, etching & engraving by using laser beam technology on metals & non-metals consisting of a laser head comprising a head, mirror mount, apparature mount, beam bender, rail, through power supply, RF Driver, heat exchanger & chiller to generate a laser beam connected with a programmable computer system to generate the laser beam for marking & engraving the required design on the substance placed on the table through the Galvos. This process consisting of the following steps.

1. Selecting a design for marking.
2. Programming the said design of Step 1 in the computer.
3. Setting the object on the table for the focal length.
4. Setting the intensity of the laser beam.
5. Adjusting the frequency & speed in the computer according to the substance & design requirement.
6. *Commanding the computer to complete the job which is* completed automatically for the multiple pieces also.

P-10
D-P

FORM 3 A

THE PATENTS ACT, 1970
COMPLETE SPECIFICATION

(See Section 10)

A PROCESS OF ~~MANUFACTURING CUTLERY AND GOLD ORNAMENTS~~ Marking, Etching & Engraving
THROUGH LASER TECHNOLOGY

BHARAT BHOGILAL PATEL of 1/41 JUHU GOLD MIST, JUHU GULMOHAR ROAD, J.V.P.D. SCHEME, VILE PARLE (W), MUMBAI - 400 049 India, INDIAN national

The following specification particularly describes and ascertains the nature of this invention and the manner in which it is to be performed : -

A PROCESS OF MANUFACTURING ENGRAVED DESIGN ARTICLES ON METALS AND NON METALS

The invention relates to a process of manufacturing engraved design articles on metals and non metals.

More particularly the invention relates to marking & engraving on metals and non-metals by use of Laser Beam Technology.

Conventionally these work was carried out by printing & then etching by means of mechanical as well as chemical means. The prior process of printing of required design on the object itself is a lengthy process such as making of a artwork, making of pattern, drawings, logos, symbols which is then photographed and developed to get a positive and negatives then the master copy is prepared and alternatively printing with a acid resistive ink and subsequently the etching process. The prior process has got its limitations for the Finner works & on the shape of the object and all types of metals can not be etched with this process. Apart from the difficulty in printing on the substance the process of etching is also a tedious. Conventionally as all metals are not easily dissolve by the acid treatment. The process itself is a tedious, lengthy and hence costly. To develop a intricate design on some metals or non-metals where the precision is of the prime need or the substance itself is very costly or the shape of the object is such (round or cylindrical) it is difficult to have a proper marking/etching effect in the prior process.

Due to high manufacturing and disposal cost of the inkjet markers &

& environmental concerns make acid etching chemistry to costly. Due to the cost in creating, storing, & replacing stencils or to avoid mutli-step process the inventor has done lot of research on a laser marking & engraving machine & came up with a unique laser marking system which can provide with a unique combination of speed, performance, especially imaging properties & a benefit of computer control which can lead to a clean, simple to use, one step process for making virtually any text or graphic image on almost any metals or non-metallic materials.

OBJECT OF THE INVENTION:

1. The primary object of the invention is to provide a process of marking, etching & engraving by using laser beam technology on metals & non-metals which gives improved marking quality.

2. The another object of the invention is to provide a process of marking, etching & engraving by using laser beam technology on metals & non-metals to reduce the maintenance cost.

3. The further object of the invention is to provide a process of marking, etching & engraving by using laser beam technology on metals & non-metals which eliminates secondary processes.

4. A still further object of the invention is to provide a process of marking, etching & engraving by using laser beam technology on metals & non-metals which is safe, easy to handle, economic.

5. Still further object of the invention is to provide a process of marking, etching & engraving by using laser beam technology on metals & non-metals which has treeability to identify through monograms, logos Batchnumber, Barcode, Codenumber & pilferproof marking on the substance through this technology.

6. Still further object of the invention is to provide such an improved machine where the marking is pilferproof which is universally acclaimed for laser marking on the substance itself for export purposes.

Accordingly there is provided a process of marking, etching & engraving by using laser beam technology on metals & non-metals consisting of a laser head comprising a head, mirror mount, apparature mount, beam bender, rail, through power supply, RF Driver, heat exchanger & chiller to generate a laser beam connected with a programmable computer system to generate the laser beam for marking & engraving the required design on the substance placed on the table through the Galvos.

The instrument is further provided with mirror mount for the mounting of plurality of mirrors. Q-switch mount for Q-switch. Apperture mount for apperture. Head which is got gold cavities, lamps source (CO_2 and Nd: VAG) & etc.

The system is connected by the electronic circuit through a power supply. The description will now be claimed from the following figure 1,2,3 in the accompanying specification.

Fig. 1 is a schematic diagram of a laser marking machine.

Fig. 2 is a sectional elevation of laser head.

Fig. 3 is a sectional elevation of Galvo's.

Referring to Fig. 1 to 3 the power supply (1) main is connected to stablilizer (2) in series which is connected to the computer (3) through a control panel in series which gives input to the Galvo steared beams (5) through a RF driver; input from control panel (4) generate laser beam on the laser head (7) which is used through a galvo's consisting of beam steared galvo & flat field galvo which rotates the beam as per the required design/markings. The substance is kept below the galvo. On some table (8) which is adjustable for focusing the length of the beam. The apparatus is further provided with a chiller for chilling primary circuits in the laser head as well as deionised water cooling for the laser head internally as well as externally. The object is placed on

the table then focal point is adjusted to get the right beam spot size on the object. Then a program is being load on the computer and frequency are being set on the computer for desired result. Once the setup is ready we only adjust power according to the dept required. Then the command is given on the computer for marking on the object through the galvo's by laser beam.

Galvo's provided with frequency generator laser scanning lenses the frequency lenses can be design as per laser marking required by the customer.

F-Theta lenses have been designed for Laser Marking, Engraving, Printing, Graphic Art, Mirco-machining, Trimming, Guaging, and Surface Cleaning. These High Quality Air-Spaced F-Theta Lenses are designed to provide diffraction limited performance and low F-Theta distortion.

A table showing the spot size according to area is given as under.

Wavelength (nm)	Focal Length (mm)	Scan Area (mm)	Spot Size (um)
1064	56	20 x 20	5
1064	80	56 x 56	15
1064	100	60 x 60	14
1064	100	60 x 60	14
1064	100	60 x 60	12
1064	125	64 x 64	12
1064	125	64 x 64	12
1064	160	98 x 98	25
1064	160	98 x 98	25
1064	160	100 x 100	23
1064	160	110 x 110	23
1064	163	110 x 110	31

1064	163	100 x 100	31
1064	163	100 x 100	18
1064	164	100 x 100	29
1064	164	100 x 100	29
1064	181	72 x 72	24
1064	181	72 x 72	24
1064	235	106 x 106	31
1064	235	106 x 106	31
1064	240	168 x 168	30
1064	240	168 x 168	30
1064	254	160 x 160	22
1064	254	160 x 160	22
1064	295	254 x 254	30
1064	300	212 x 212	30
1064	300	212 x 212	30
1064	300	212 x 212	20
1064	330	225 x 225	40
1064	330	225 x 225	40
1064	350	220 x 220	33
1064	410	250 x 250	34
1064	420	285 x 285	50
1064	420	285 x 285	50
1064	810	500 x 500	55
820	401	220 x 220	25
780	88	40 x 40	8
780	296	180 x 180	30
780	508	330 x 330	22
633/670	88	40 x 40	8
633/670	156	70 x 70	32
633/670	156	70 x 70	12
633	105	30 x 30	9
633	155	70 x 70	13
532	56	18 x 18	6
532	100	50 x 50	10
532	94	55 x 55	10
532	94	55 x 55	10
532	102	53 x 53	7
532	102	53 x 53	7
532	159	100 x 100	14
532	159	100 x 100	14
532	163	80 x 80	20
532	254	150 x 150	18
532	250	150 x 150	11
532	300	175 x 175	18
532	410	225 x 225	30
532	908	350 x 350	15
532	810	500 x 500	30

488	508	330 x 330	22
355	254	100 x 100	21
355	810	400 x 400	30
308	254	100 x 100	21
10600	120	76 x 76	250
10600	157	100 x 100	325

The power ranging to 10 watts to 200 watts for different types of heads are available for different types of markings to get generated at different speeds. Laser lamps and rods & source of generating LASER are provided as per the design of the head use for manufacturing of the lasers.

In many cases there are several laser lamps available for any given laser type. Laser lamps will provide, were possible, the lamps from the manufacturer of your choice. Laser lamps are continuously being improved so that all times provide the laser lamps best suited for a given laser system and application. There are thousands of laser lamps that can readily provided. Our extensive cross-reference list should identify the compatible laser lamp model number.

Thus the apparatus has got a varsalite application in the field of metal, ceramic, plastic, jewellary, orthopedic, medical, pilferproof, optical industries, & high precision tools & equipment manufacturing.

The unique marking device by the laser technology which has a very wide range of application is generating very good demand in local as well as the market abroad. The inventor has done lot of research to improve upon the machine as well as the marking technology. Several modifications by changing the galvo's, scanning head, Q-switch, mirror, beam benders are possible on different types of materials for marking/engraving as well as designing. By deep engraving, cutting of material is also possible by a multi pass means of working.

The machine is user's friendly does not require any great skill for handling the job. This is an embodiment several modifications are possible which may be considered with the spirit & ambit of this invention.

ABSTRACT

A process of marking, etching & engraving by using laser beam technology on metals & non-metals consisting of a laser head comprising a head, mirror mount, apparature mount, beam bender, rail, through power supply, RF Driver, heat exchanger & chiller to generate a laser beam connected with a programmable computer system to generate the laser beam for marking & engraving the required design on the substance placed on the table through the Galvos. This process consisting of the following steps.

1. Selecting a design for marking.
2. Programming the said design of Step 1 in the computer.
3. Setting the object on the table for the focal length.
4. Setting the intensity of the laser beam.
5. Adjusting the frequency & speed in the computer according to the substance & design requirement.
6. Commanding the computer to complete the job which is completed automatically for the multiple pieces also.

NAME OF APPLICANT : BHARAT BHOGILAL PATEL
APPLICATION NO. : 610/BOM/98

NO OF SHEETS : 2
SHEET NO. : 2

RMID - 2

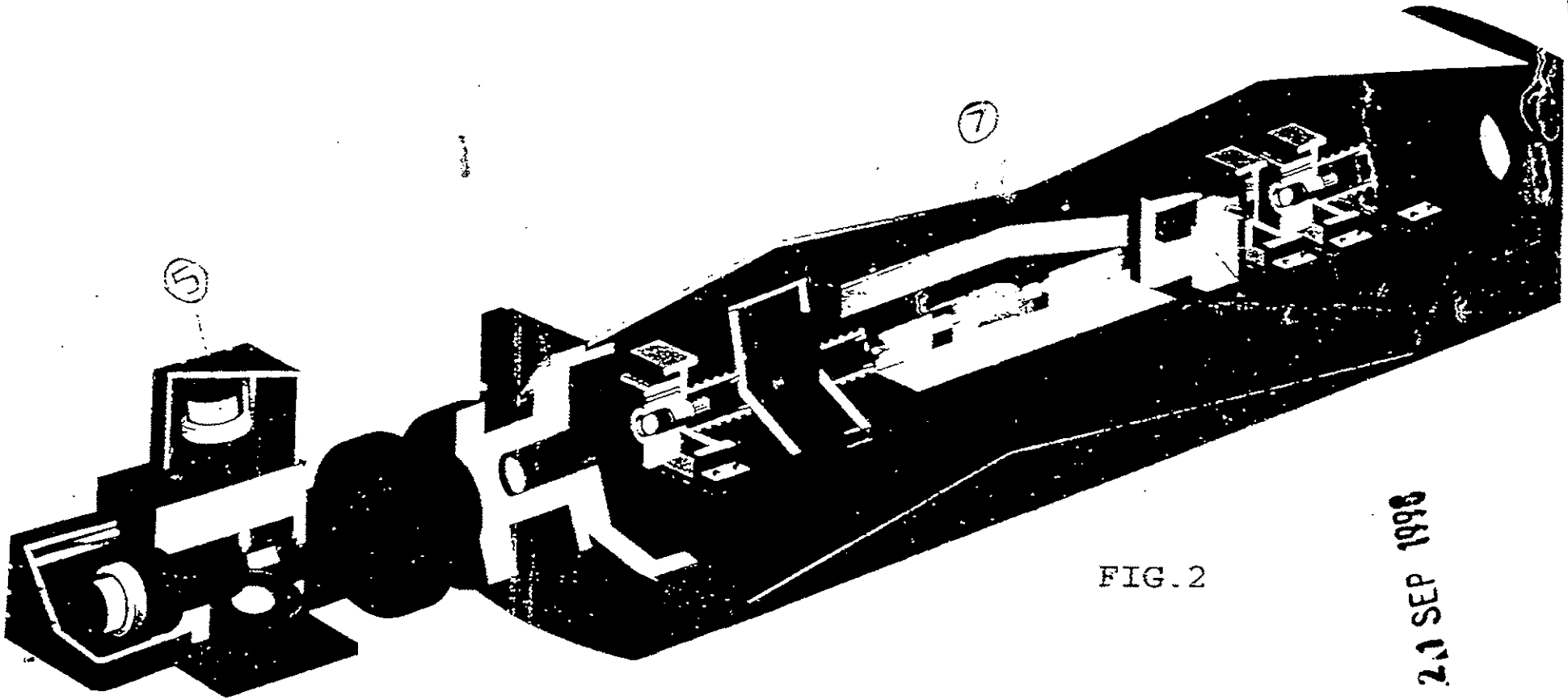


FIG.2

FIG.3

21 SEP 1998

CHANDRAKANT M. JOSHI
AGENT FOR
BHARAT BHOGILAL PATEL

FORM 3 A

THE PATENTS ACT, 1970
COMPLETE SPECIFICATION

(See Section 10)

A PROCESS OF MANUFACTURING ENGRAVED DESIGN ARTICLES ON METALS OR NON-METALS

BHARAT BHOGILAL PATEL of 1/43 JUHU GOLD MIST, JUHU GULMOHAR ROAD, J.V.P.D. SCHEME, VILE PARLE(W), MUMBAI - 400 049, MAHARASHTRA, India, INDIAN national

The following specification particularly describes and ascertains the nature of this invention and the manner inwhich it is to be performed : -

FORM 3 A

THE PATENTS ACT, 1970
COMPLETE SPECIFICATION

(See Section 10)

A PROCESS OF MANUFACTURING ENGRAVED DESIGN ARTICLES ON METALS OR NON-METALS

BHARAT BHOGILAL PATEL of 1/43 JUHU GOLD MIST, JUHU GULMOHAR ROAD, J.V.P.D. SCHEME, VILE PARLE(W), MUMBAI - 400 049, MAHARASHTRA, India, INDIAN national

The following specification particularly describes and ascertains the nature of this invention and the manner inwhich it is to be performed : -

Dpcl
30/Bom/98
21/09/98

RMID - 2

FORM 3 A

THE PATENTS ACT, 1970
COMPLETE SPECIFICATION

(See Section 10)

A PROCESS OF MANUFACTURING ENGRAVED DESIGN ARTICLES ON METALS OR NON-METALS

BHARAT BHOGILAL PATEL of 1/43 JUHU GOLD MIST, JUHU GULMOHAR ROAD, J.V.P.D. SCHEME, VILE PARLE(W), MUMBAI - 400 049, MAHARASHTRA, India, INDIAN national

The following specification particularly describes and ascertains the nature of this invention and the manner inwhich it is to be performed : -

IPR
810/Bom/98
21/09/98

RMID - 2

FORM – 3A

THE PATENTS ACT, 1970

COMPLETE
SPECIFICATION

SECTION 10

TITLE : A PROCESS OF MANUFACTURING ENGRAVED DESIGN ARTICLES ON METALS OR NON-METALS

APPLICANT:- BHARAT BHOGILAL PATEL.OF 1/43 JUHU GOLD MIST, JUHU GULMOHAR ROAD, J.V.P.D. SCHEME, VILE PARLE (W), MUMBAI 400 049, MAHARASHTRA, INDIA. AN INDIAN NATIONAL.

The following Specification particularly describes and ascertains the nature of this invention and the manner in which it is to be performed : -

PROCESS OF MARKING, ETCHING & ENGRAVING BY USING LASER BEAM TECHNOLOGY ON METALS & NON-METALS

The invention relates to a process of marking, etching & engraving by using laser beam technology on metals & non-metals. More particularly the invention relates to marking & engraving on metals and non-metals by use of Laser Beam Technology.

Conventionally these work was carried out by printing & then etching by means of mechanical as well as chemical means. The prior process of printing of required design on the object itself is a lengthy process such as making of a artwork, making of pattern, drawings, logos, symbols which is then photographed and developed to get a positive and negatives then the master copy is prepared and alternatively printing with a acid resistive ink and subsequently the etching process. The prior process has got its limitations for the Finner works & on the shape of the object and all types of metals can not be etched with this process. Apart from the difficulty in printing on the substance the process of etching is also a tedious process. Conventionally as all metals are not easily dissolve by the acid treatment. The process itself is a tedious, lengthy and hence costly. To develop a intricate design on some metals or non-metals where the precision is of the prime need or the substance itself is very costly or the shape of the object is such (round or cylindrical) it is difficult to have a proper marking/etching effect in the prior process.

Due to high manufacturing and disposal cost of the inkjet markers

I CLAIM :-

1. A process of marking, etching & engraving by using laser beam technology on metals & non-metals consisting of a laser head comprising a head, mirror mount, apparatura mount, beam bender, rail, through power supply, RF Driver, heat exchanger & chiller to generate a laser beam connected with a programmable computer system to generate the laser beam for marking & engraving the required design on the substance placed on the table through the Galvos. This process consisting of the following steps.

1. Selecting a design for marking.
2. Programming the said design of Step 1 in the computer.
3. Setting the object on the table for the focal length.
4. Setting the intensity of the laser beam.
5. Adjusting the frequency & speed in the computer according to the substance & design requirement.
6. Commanding the computer to complete the job which is completed automatically for the multiple pieces also.

2. A process of marking, etching, engraving & drilling by using laser beam technology on metals & non-metals as claimed in claim 1 which is used for Gold, Silver, Stainless Steel, Cutleries, Gold & Silver Ornaments & Jewellaries like chains, bracelets, necklace, bangles, jewellary boxes, rings, ear

Priority document

FORM 1

THE PATENTS ACT, 1970

DUPLICATE

APPLICATION FOR PATENT WHEN THE TRUE AND FIRST INVENTOR IS THE SOLE OR JOINT APPLICANT

(See Section 7)

I BHARAT BHOGILAL PATEL of 1/41 JUHU GOLD MIST, JUHU GULMOHAR ROAD, J.V.P.D. SCHEME, VILE PARLE (W) MUMBAI - 400 049 India, INDIAN national hereby declare : -
Maharashtra.

i) that I am in possession of an invention for A PROCESS OF MARKING, ETCHING & ENGRAVING ~~~ THROUGH LASER TECHNOLOGY ;

ii) that I the said BHARAT BHOGILAL PATEL claim to be the true and first inventor thereof;

iii) that the complete specification filed with this application is and any amended specification which may hereafter be filed in this behalf will be true of the invention to which this application relates;

iv) that I believe that I am entitled to a patent for the said invention having regard to the provisions of the Patents Act, 1970;

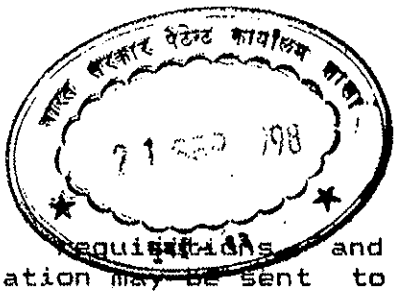
v) that to the best of my knowledge, information and belief the facts and matters stated herein are correct and that there is no lawful ground of objection to the grant of patent to me on this application.

I request that a patent may be granted to me for the said invention.

610 मुंबई BOM 1998

21 SEP 1998

RMID - 2



I request that all the notices, requisitions and communications relating to this application may be sent to :-

CHANDRAKANT M. JOSHI
PATENT & TRADE MARK ATTORNEYS,
501, "VISHWANANAK" , CHAKALA ROAD,
ANDHERI (EAST), MUMBAI - 400 099.

Dated this 2nd day of September 1998.

Bharat Patel

BHARAT BHOGILAL PATEL

To
The Controller Of Patents,
The Patent Office,
Mumbai

RMID - 2

FORM 1

THE PATENTS ACT, 1970

APPLICATION FOR PATENT WHEN THE TRUE AND FIRST INVENTOR IS THE SOLE OR JOINT APPLICANT

(See Section 7)

DUPLICATE

I BHARAT BHOGILAL PATEL of 1/41 JUHU GOLD MIST, JUHU GULMOHAR ROAD, J.V.P.D. SCHEME, VILE PARLE (W) MUMBAI - 400 049 India, INDIAN national hereby declare : - Maharashtra.

i) that I am in possession of an invention for A PROCESS OF MARKING, ETCHING & ENGRAVING THROUGH LASER TECHNOLOGY ;

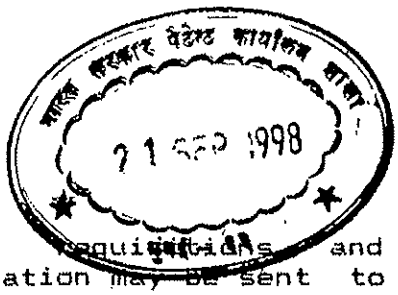
ii) that I the said BHARAT BHOGILAL PATEL claim to be the true and first inventor thereof;

iii) that the complete specification filed with this application is and any amended specification which may hereafter be filed in this behalf will be true of the invention to which this application relates;

iv) that I believe that I am entitled to a patent for the said invention having regard to the provisions of the Patents Act, 1970;

v) that to the best of my knowledge, information and belief the facts and matters stated herein are correct and that there is no lawful ground of objection to the grant of patent to me on this application.

I request that a patent may be granted to me for the said invention.



I request that all the notices, requisitions and communications relating to this application may be sent to :-

CHANDRAKANT M. JOSHI
PATENT & TRADE MARK ATTORNEYS,
501, "VISHWANANAK" , CHAKALA ROAD,
ANDHERI (EAST), MUMBAI - 400 099.

Dated this 2nd day of September 1998.

Bharat Patel

BHARAT BHOGILAL PATEL

To
The Controller Of Patents,
The Patent Office,
Mumbai

RMID - 2

I CLAIM :-

1. A process of marking, etching & engraving by using laser beam technology on metals & non-metals consisting of a laser head comprising a head, mirror mount, apparature mount, beam bender, rail, through power supply, RF Driver, heat exchanger & chiller to generate a laser beam connected with a programmable computer system to generate the laser beam for marking & engraving the required design on the substance placed on the table through the Galvos. This process consisting of the following steps.

1. Selecting a design for marking.
2. Programming the said design of Step 1 in the computer.
3. Setting the object on the table for the focal length.
4. Setting the intensity of the laser beam.
5. Adjusting the frequency & speed in the computer according to the substance & design requirement.
6. Commanding the computer to complete the job which is completed automatically for the multiple pieces also.

2. A process of marking, etching, engraving & drilling by using laser beam technology on metals & non-metals as claimed in claim 1 which is used for Gold, Silver, Stainless Steel, Cutleries, Gold & Silver Ornaments & Jewellaries like chains, bracelets, necklace, bangles, jewellary boxes, rings, ear

rings, cuff links, spectacle frames, designer pens, buttons, precision & semi-precision stones like hametite, melakite, pearl, diamond, ruby, saphirre and etc orthopadic inplants, precision tools, measuring tools, tool holder, heart walves, cutting blades, knifes, pens all typed of plastic keyboard for computer & machineries & contact lenses, Holographic sheet, labels and transfers.

3. A laser marking & engraving machine consisting of the laser head comprising of head, mirror mount to mount the mirror, Q-switch to mount the Q-switch for apparative mount to regulate the apparature so as to vary the intensity of the Laser Beam, which is further provided with a beam bender for positioning the beam in a required direction which is supported in a rail & connected to a control panel provided with power supply, RF Driver, Heat Exchanger, Chiller to generate a laser beam of required intensity for marking/etching, engraving, scrubbing, cutting as per the required design programmable through a computer on metals & non-metals through beam steared galvo's & flat field galvo's/scanning heads.

4. A process of marking, etching & engraving by using a laser beam technology on metals and non-metals as claimed in claim 1 wherein the machine is connected through electronic circuit consisting of main (1) which is connected through the

programmable computer (3) through stabilizer (2) in series. Another phase from the main is supplied to the laser head. through a chiller, the input of a computer (3) is provided to scanning head (5) through a RF Driver (6) for directing the laser beam on required area on the object place on the table (8).

5. A process of marking, etching & engraving by using a laser beam technology on metals and non-metals wherein the laser head is provided with adjustable rods & lamps of various sizes can be provided on the laser heads for handling different types of materials where the hardness of the material is vastly differs.

6. A process of marking, etching & engraving by using a laser beam technology on metals and non-metals as claimed in claim 1 wherein the machine can be provided with different power supply as per the need of different industries which may be range from 10 watts to 200 watts (out put power).

7. A process of marking, etching & engraving as claimed in claim 1 and substantially herein described

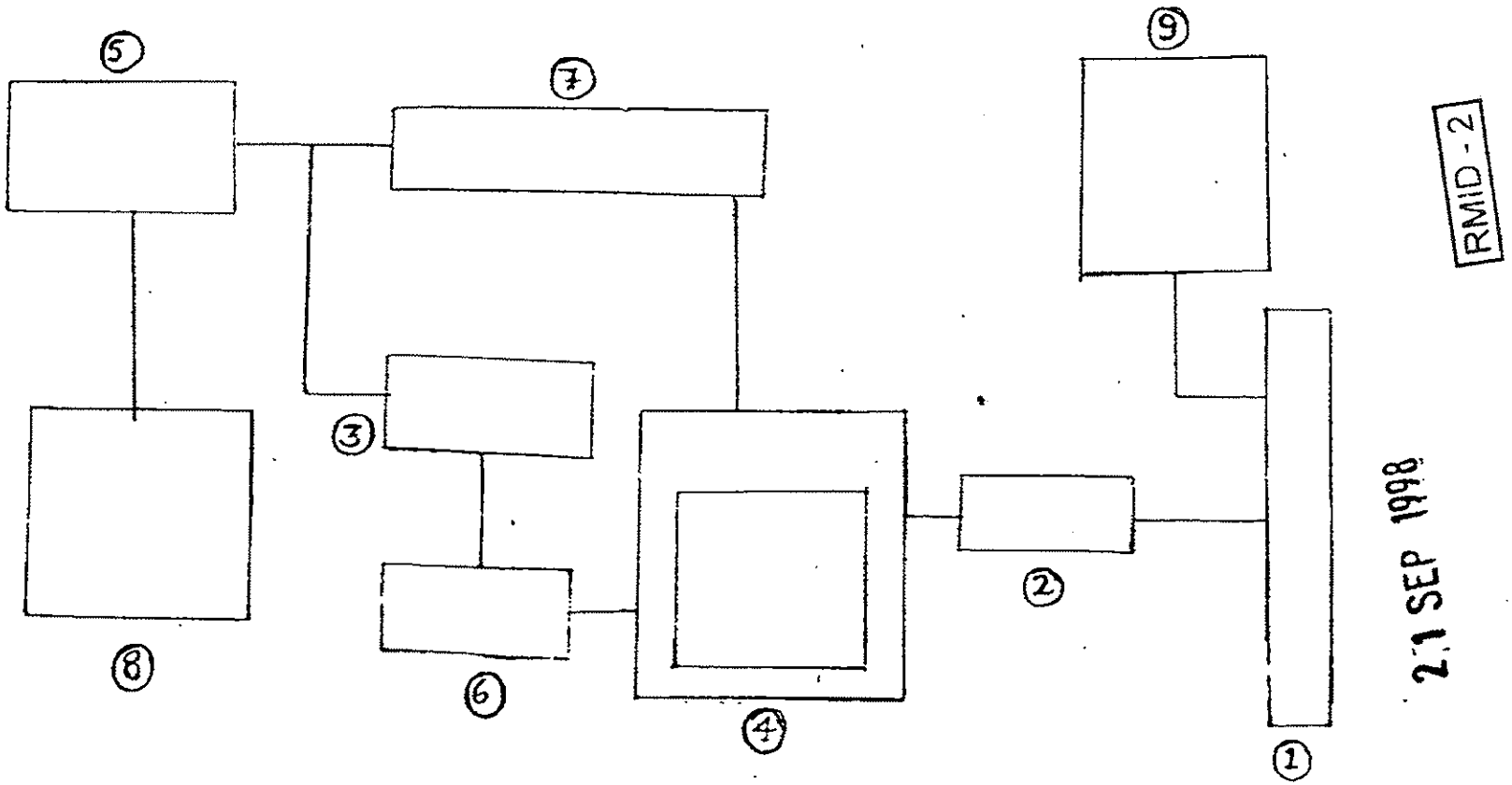
Dated on 14th September, 1998.

RMID - 2

CHANDRAKANT M. JOSHI
AGENT FOR
BHARAT BHOGILAL PATEL

NAME OF APPLICANT : BHARAT BHOGILAL PATEL
APPLICATION NO. : 610/BOM/98

NO OF SHEETS :2
SHEET NO. :1



RMID - 2

21 SEP 1998

FIG.1

CHANDRAKANT M. JOSHI
AGENT FOR
BHARAT BHOGILAL PATEL

NAME OF APPLICANT : BHARAT BHOGILAL PATEL
APPLICATION NO. : C/O /BOM/98

NO OF SHEETS :2
SHEET NO. :2

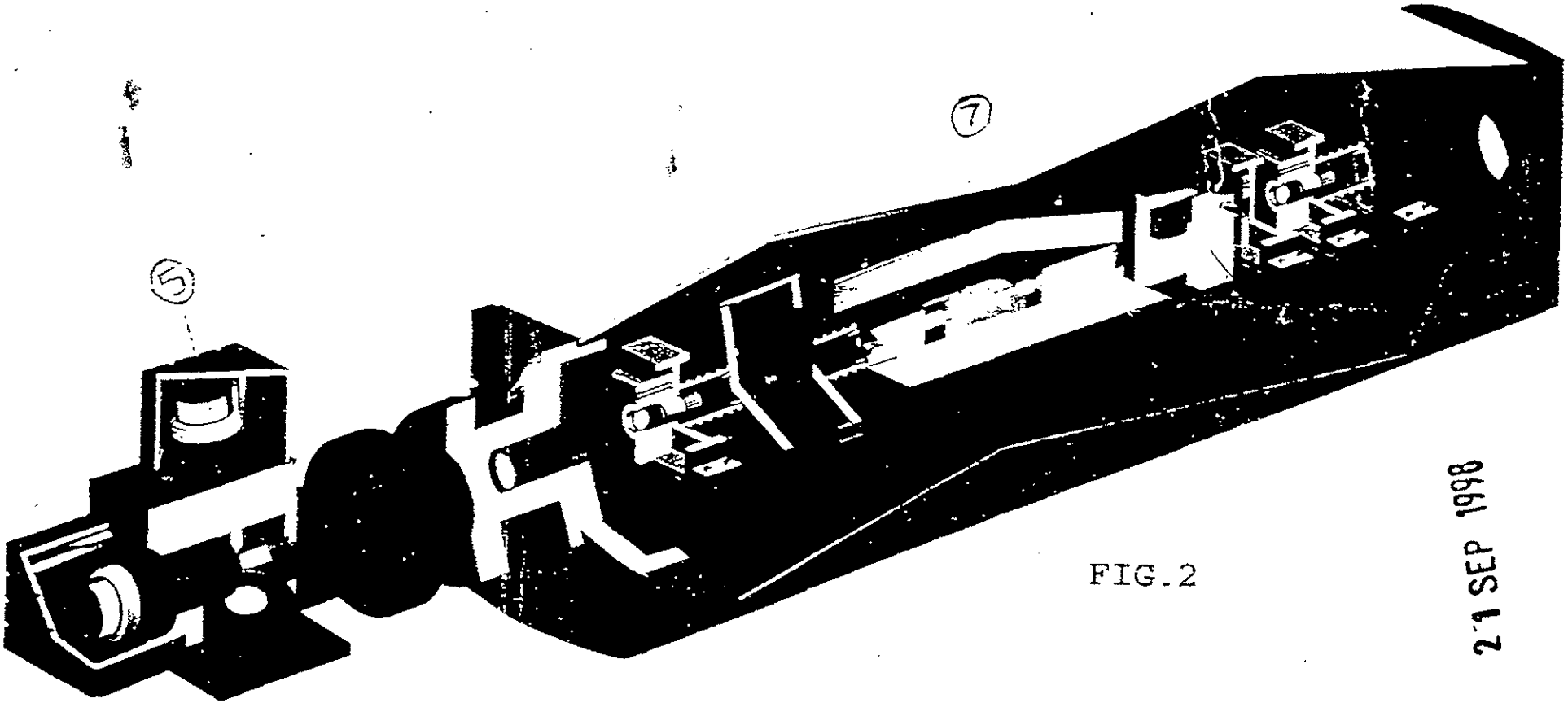


FIG.2

FIG.3

RMID - 2

21 SEP 1998

CHANDRAKANT M. JOSHI
AGENT FOR
BHARAT BHOGILAL PATEL

I CLAIM :

1. A process of manufacturing engraved design articles on metals or non-metals using laser beam technology consisting of

   a. marking the required design on metal or non-metal;

   b. etching the outer and inner area of the design;

   c. engraving the etched area and finally drilling the engraved area by means of laser beam through sequential command from a computer to obtain ornamented design on precious metals and non-metals.

2. A process as claimed in claim 1 wherein the metal and non-metals are Gold, Silver, Stainless Steel, Cutleries, Gold & Silver Ornaments & Jewellaries like Chains, bracelets, necklace, bangles, jewellary boxes, rings, ear rings, cuff links, spectacle frames, designer pens, buttons, precision & semi-precision stones like hametite, melakite, pearl, diamond, ruby, saphirre and etc orthopedic inplants, precision tools, measuring tools, tool holder, heart walves, cutting blades, knifes, pens all typed of plastic keyboard for computer & machineries & contact lenses, Holographic sheet, labels and transfers.

3. A process of maanufacturing engraved designed article as claimed in claim 1 and substantially herein described.

Dated this 14th day of September, 1998.

HIRAL CHANDRAKANT JOSHI
AGENT FOR
BHARAT BHOGILAL PATEL

RMID - 2

rings, cuff links, spectacle frames, designer pens, buttons, precision & semi-precision stones like hametite, melakite, pearl, diamond, ruby, saphirre and etc orthopadic inplants, precision tools, measuring tools, tool holder, heart walves, cutting blades, knifes, pens all typed of plastic keyboard for computer & machineries & contact lenses, Holographic sheet, labels and transfers.

3. A laser marking & engraving machine consisting of the laser head comprising of head, mirror mount to mount the mirror, Q-switch to mount the Q-switch for apparative mount to regulate the apparature so as to vary the intensity of the Laser Beam, which is further provided with a beam bender for positioning the beam in a required direction which is supported in a rail & connected to a control panel provided with power supply, RF Driver, Heat Exchanger, Chiller to generate a laser beam of required intensity for marking/etching, engraving, scrubbing, cutting as per the required design programmable through a computer on metals & non-metals through beam steared galvo's & flat field *galvo's/scanning heads.*

4. A process of marking, etching & engraving by using a laser beam technology on metals and non-metals as claimed in claim 1 wherein the machine is connected through electronic circuit consisting of main (1) which is connected through the

programmable computer (3) through stabilizer (2) in series. Another phase from the main is supplied to the laser head. through a chiller, the input of a computer (3) is provided to scanning head (5) through a RF Driver (6) for directing the laser beam on required area on the object place on the table (8).

5. A process of marking, etching & engraving by using a laser beam technology on metals and non-metals wherein the laser head is provided with adjustable rods & lamps of various sizes can be provided on the laser heads for handling different types of materials where the hardness of the material is vastly differs.

6. A process of marking, etching & engraving by using a laser beam technology on metals and non-metals as claimed in claim 1 wherein the machine can be provided with different power supply as per the need of different industries which may be range from 10 watts to 200 watts (out put power).

7. A process of marking, etching & engraving as claimed in claim 1 and substantially herein described

Dated on 14th September, 1998.

CHANDRAKANT M. JOSHI
AGENT FOR
BHARAT BHOGILAL PATEL

RMID - 2

ABSTRACT

A process of marking, etching & engraving by using laser beam technology on metals & non-metals consisting of a laser head comprising a head, mirror mount, apparature mount, beam bender, rail, through power supply, RF Driver, heat exchanger & chiller to generate a laser beam connected with a programmable computer system to generate the laser beam for marking & engraving the required design on the substance placed on the table through the Galvos. This process consisting of the following steps.

1. Selecting a design for marking.
2. Programming the said design of Step 1 in the computer.
3. Setting the object on the table for the focal length.
4. Setting the intensity of the laser beam.
5. Adjusting the frequency & speed in the computer according to the substance & design requirement.
6. Commanding the computer to complete the job which is completed automatically for the multiple pieces also.

I CLAIM :

1. A process of manufacturing engraved design articles on metals or non-metals, consisting of
   a. marking the required design on metal or non-metal;
   b. etching the outer and inner area of the design;
   c. engraving the etched area and finally drilling the engraved area by means of laser beam through sequential command from a computer to obtain ornamented design on precious metals and non-metals.

2. A process as claimed in claim 1 wherein the metal and non-metals are Gold, Silver, Stainless Steel, Cutleries, Gold & Silver Ornaments & Jewellaries like Chains, bracelets, necklace, bangles, jewellary boxes, rings, ear rings, cuff links, spectacle frames, designer pens, buttons, precision & semi-precision stones like hametite, melakite, pearl, diamond, ruby, saphirre and etc orthopedic inplants, precision tools, measuring tools, tool holder, heart walves, cutting blades, knifes, pens all typed of plastic keyboard for computer & machineries & contact lenses, Holographic sheet, labels and transfers.

3. A process of marking, etching & engraving by using a laser beam technology on metals and non-metals as claimed in claim 1 wherein the machine is connected through electronic circuit consisting of main (1) which is connected through the programmable computer (3) through stabilizer (2) in series. Another phase from the main is supplied to the laser

Duplicate

RMID - 2

head, through a chiller, the input of a computer (3) is provided to scanning head (5) through a RF Driver (6) for directing the laser beam on required area on the object place on the table (8).

4. A process for marking, etching & engraving by using a laser beam technology on metals and non-metals wherein the laser head is provided with adjustable rods & lamps of various sizes can be provided on the laser heads for handling different types of materials where the hardness of the material is vastly differs.

5. A process of marking, etching & engraving by using a laser beam technology on metals and non-metals as claimed in claim 1 wherein the machine can be provided with different power supply as per the need of different industries which may be range from 10 watts to 200 watts (out put power)

6. A process of marking, etching & engraving as claimed in claim 1 and substantially herein described.

Dated this 14th day of September, 1998.

HIRAL CHANDRAKANT JOSHI
AGENT FOR
BHARAT BHOGILAL PATEL

RMID - 2

I CLAIM :

1. A process of manufacturing engraved design articles on metals or non-metals, consisting of
   a. marking the required design on metal or non-metal;
   b. etching the outer and inner area of the design;
   c. engraving the etched area and finally drilling the engraved area by means of laser beam through sequential command from a computer to obtain ornamented design on precious metals and non-metals.

2. A process as claimed in claim 1 wherein the metal and non-metals are Gold, Silver, Stainless Steel, Cutleries, Gold & Silver Ornaments & Jewellaries like Chains, bracelets, necklace, bangles, jewellary boxes, rings, ear rings, cuff links, spectacle frames, designer pens, buttons, precision & semi-precision stones like hametite, melakite, pearl, diamond, ruby, saphirre and etc orthopedic inplants, precision tools, measuring tools, tool holder, heart walves, cutting blades, knifes, pens all typed of plastic keyboard for computer & machineries & contact lenses, Holographic sheet, labels and transfers.

3. A process of marking, etching & engraving by using a laser beam technology on metals and non-metals as claimed in claim 1 wherein the machine is connected through electronic circuit consisting of main (1) which is connected through the programmable computer (3) through stabilizer (2) in series. Another phase from the main is supplied to the laser

head, through a chiller, the input of a computer (3) is provided to scanning head (5) through a RF Driver (6) for directing the laser beam on required area on the object place on the table (8).

4. A process for marking, etching & engraving by using a laser beam technology on metals and non-metals wherein the laser head is provided with adjustable rods & lamps of various sizes can be provided on the laser heads for handling different types of materials where the hardness of the material is vastly differs.

5. A process of marking, etching & engraving by using a laser beam technology on metals and non-metals as claimed in claim 1 wherein the machine can be provided with different power supply as per the need of different industries which may be range from 10 watts to 200 watts (out put power)

6. A process of marking, etching & engraving as claimed in claim 1 and substantially herein described.

Dated this 14th day of September, 1998.

HIRAL CHANDRAKANT JOSHI
AGENT FOR
BHARAT BHOGILAL PATEL

RMID - 2

ORIGINAL

भारत सरकार पेटेन्ट कार्यालय मुंबई
21 SEP 1998

FORM 1

THE PATENTS ACT, 1970

APPLICATION FOR PATENT WHEN THE TRUE AND FIRST INVENTOR IS THE SOLE OR JOINT APPLICANT

(See Section 7)

I BHARAT BHOGILAL PATEL of 1/41 JUHU GOLD MIST, JUHU GULMOHAR ROAD, J.V.P.D. SCHEME, VILE PARLE (W) MUMBAI - 400 049 MAHARASHTRA India, INDIAN national hereby declare : -

i) that I am in possession of an invention for A PROCESS OF MARKING ~~ETCHING~~ ENGRAVING drilling THROUGH LASER TECHNOLOGY ;

ii) that I the said BHARAT BHOGILAL PATEL claim to be the true and first inventor thereof;

iii) that the complete specification filed with this application is and any amended specification which may hereafter be filed in this behalf will be true of the invention to which this application relates;

iv) that I believe that I am entitled to a patent for the said invention having regard to the provisions of the Patents Act, 1970;

v) that to the best of my knowledge, information and belief the facts and matters stated herein are correct and that there is no lawful ground of objection to the grant of patent to me on this application.

I request that a patent may be granted to me for the said invention.

610/Bom/98
21.9.98

610 | मुंबई BOM | 1998
21 SEP 1998

Received Rs. 300/- in Cash
Vide Entry No. 5128 ... to the Register of ... Stamps.
21/9/98

RMIU - 2

ORIGINAL

FORM 3 A

THE PATENTS ACT, 1970
COMPLETE SPECIFICATION

(See Section 10)

CANCELLED

A PROCESS OF MARKING, ETCHING, ENGRAVING & drilling
THROUGH LASER TECHNOLOGY

BHARAT BHOGILAL PATEL of 1/41 JUHU GOLD MIST, JUHU GULMOHAR ROAD, J.V.P.D. SCHEME, VILE PARLE (W), MUMBAI - 400 049, MAHARASHTRA India, INDIAN national

The following specification particularly describes and ascertains the nature of this invention and the manner in which it is to be performed : -

I CLAIM :-

1. A process of marking, etching & engraving by using laser beam technology on metals & non-metals consisting of a laser head comprising a head, mirror mount, apparature mount, beam bender, rail, through power supply, RF Driver, heat exchanger & chiller to generate a laser beam connected with a programmable computer system to generate the laser beam for marking & engraving the required design on the substance placed on the table through the Galvos consisting of the following steps;

   1. Selecting a design for marking;
   2. Programming the said design of Step 1 in the computer;
   3. Setting the object on the table for the focal length;
   4. Setting the intensity of the laser beam;
   5. Adjusting the frequency & speed in the computer according to the substance & design requirement;
   6. Commanding the computer to complete the job which is completed automatically for the multiple pieces also;

2. A process of marking, etching, engraving & drilling by using laser beam technology on metals & non-metals as claimed in claim 1 which is used for Gold, Silver, Stainless Steel, Cutleries, Gold & Silver Ornaments & Jewellaries like chains, bracelets, necklace, bangles, jewellary boxes, rings, ear

RMID - 2

rings, cuff links, spectacle frames, designer pens, buttons, precision & semi-precision stones like hametite, melakite, pearl, diamond, ruby, saphirre and etc orthopadic inplants, precision tools, measuring tools, tool holder, heart walves, cutting blades, knifes, pens all typed of plastic keyboard for computer & machineries & contact lenses, Holographic sheet, labels and transfers.

3. A laser marking & engraving machine [illegible] of the laser head comprising of head, mirror mount to mount the mirror, Q-switch to mount the Q-switch for apparative mount to regulate the apparature so as to vary the intensity of the Laser Beam, which is further provided with a beam bender for positioning the beam in a required direction which is supported in a rail & connected to a control panel provided with power supply, RF Driver, Heat Exchanger, Chiller to generate a laser beam of required intensity for marking/etching, engraving, scrubbing, cutting as per the required design programmable through a computer on metals & non-metals through beam steared galvo's & flat field galvo's/scanning heads.

4. A process of marking, etching & engraving by using a laser beam technology on metals and non-metals as claimed in claim 1 wherein the machine is connected through electronic circuit consisting of main (1) which is connected through the

programmable computer (3) through stabilizer (2) in series. Another phase from the main is supplied to the laser head. through a chiller, the input of a computer (3) is provided to scanning head (5) through a RF Driver (4) for directing the laser beam on required area on the object place on the table (8).

5. A process for marking, etching & engraving by using a laser beam technology on metals and non-metals wherein the laser head is provided with adjustable rods & lamps of various sizes can be provided on the laser heads for handling different types of materials where the hardness of the material is vastly differs.

6. A process of marking, etching & engraving by using a laser beam technology on metals and non-metals as claimed in claim 1 wherein the machine can be provided with different power supply as per the need of different industries which may be range from 10 watts to 200 watts (out put power).

7. A process of marking, etching & engraving as claimed in claim 1 and substantially herein described

Dated on 14th September, 1998.

RMID - 2

CHANDRAKANT M. JOSHI
AGENT FOR
BHARAT BHOGILAL PATEL

I CLAIM :

1. A process of manufacturing engraved design articles on metals or non-metals, using laser beam technology consisting of

   a. marking the required design on metal or non-metal;

   b. etching the outer and inner area of the design;

   c. engraving the etched area and finally drilling the engraved area by means of laser beam through sequential command from a computer to obtain ornamented design on precious metals and non-metals.

2. A process as claimed in claim 1 wherein the metal and non-metals are Gold, Silver, Stainless Steel, Cutleries, Gold & Silver Ornaments & Jewelleries like Chains, bracelets, necklace, bangles, jewellary boxes, rings, ear rings, cuff links, spectacle frames, designer pens, buttons, precision & semi-precision stones like hametite, melakite, pearl, diamond, ruby, saphirre and etc orthopedic inplants, precision tools, measuring tools, tool holder, heart walves, cutting blades, knifes, pens all typed of plastic keyboard for computer & machineries & contact lenses, Holographic sheet, labels and transfers.

3. A process of marking, etching & engraving by using a laser beam technology on metals and non-metals as claimed in claim 1 wherein the machine is connected through electronic circuit consisting of main (1) which is connected through the programmable computer (3) through stabilizer (2) in series. Another phase from the main is supplied to the laser

head, through a chiller, the input of a computer (3) is provided to scanning head (5) through a RF Driver (6) for directing the laser beam on required area on the object place on the table (8).

4. A process for marking, etching & engraving by using a laser beam technology on metals and non-metals wherein the laser head is provided with adjustable rods & lamps of various sizes can be provided on the laser heads for handling different types of materials where the hardness of the material is vastly differs.

5. A process of marking, etching & engraving by using a laser beam technology on metals and non-metals as claimed in claim 1 wherein the machine can be provided with different power supply as per the need of different industries which may be range from 10 watts to 200 watts (out put power)

6. A process of ~~marking, etching & engraving~~ as claimed in claim 1 and substantially herein described.

Dated this 14th day of September, 1998.

HIRAL CHANDRAKANT JOSHI
AGENT FOR
BHARAT BHOGILAL PATEL

RMID - 2

PROCESS OF MARKING, ETCHING, ENGRAVING & DRILLING BY USING LASER BEAM TECHNOLOGY ON METALS & NON-METALS

The invention relates to a process of marking, etching, engraving & drilling by using laser beam technology on metals & non-metals. More particularly the invention relates to marking & engraving on metals and non-metals by use of Laser Beam Technology.

Conventionally these work was carried out by printing & then etching by means of mechanical as well as chemical means. The prior process of printing of required design on the object itself is a lengthy process such as making of a artwork, making of pattern, drawings, logos, symbols which is then photographed and developed to get a positive and negatives then the master copy is prepared and alternatively printing with a acid resistive ink and subsequently the etching process. The prior process has got its limitations for the finner works & on the shape of the object and all types of metals can not be etched with this process. Apart from the difficulty in printing on the substance the process of etching is also a tedious process. Conventionally as all metals are not easily dissolve by the acid treatment. The process itself is a tedious, lengthy and hence costly. To develop a intricate design on some metals or non-metals where the precision is of the prime need or the substance itself is very costly or the shape of the object is such (round or cylindrical) it is difficult to have a proper marking/etching effect in the prior process.

Due to high manufacturing and disposal cost of the inkjet markers

I CLAIM :

1. A process of manufacturing engraved design articles on metals or non-metals consisting of

a. marking the required design on metal or non-metal;

b. etching the outer and inner area of the design;

c. engraving the etched area and finally drilling the engraved area by means of laser beam through sequential command from a computer to obtain ornamented design on precious metals and non-metals.

2. A process as claimed in claim 1 wherein the metal and non-metals are Gold, Silver, Stainless Steel, Cutleries, Gold & Silver Ornaments & Jewellaries like Chains, bracelets, necklace, bangles, jewellary boxes, rings, ear rings, cuff links, spectacle frames, designer pens, buttons, precision & semi-precision stones like hametite, melakite, pearl, diamond, ruby, saphirre and etc orthopedic inplants, precision tools, measuring tools, tool holder, heart walves, cutting blades, knifes, pens all typed of plastic keyboard for computer & machineries & contact lenses, Holographic sheet, labels and transfers.

3. A laser marking & an engraving machine for carrying out the process as claimed in claim 1 as comprising of the laser head comprising of head, mirror mount to mount tc regulate the apparatus so as to vary the intensity of the Laser Beam, which is further provided with a beam bender for positioning the beam in a required direction which is supported in a

rail & connected to a control panel provided with power supply, RF Driver, Heat Exchanger, Chiller to generate a laser beam of required intensity for marking/etching, engraving, scrubbing, cutting as per the required design programmable through a compute on metals & non-metals through beam steared galvo's & flat field galvo's/scanning heads.

4. A process of marking, etching & engraving by using a laser beam technology on metals and non-metals as claimed in claim 1 wherein the machine is connected through electronic circuit consisting of main (1) which is connected through the programmable computer (3) through stabilizer (2) in series. Another phase from the main is supplied to the laser head, through a chiller, the input of a computer (3) is provided to scanning head (5) through a RF Driver (6) for directing the laser beam on required area on the object place on the table (8).

5. A process for marking, etching & engraving by using a laser beam technology on metals and non-metals wherein the laser head is provided with adjustable rods & lamps of various sizes can be provided on the laser heads for handling different types of materials where the hardness of the material is vastly differs.

RMiD - 2

6. A process of marking, etching & engraving by using a laser beam technology on metals and non-metals as claimed in claim 1 wherein the machine can be provided with different power supply as per the need of different industries which may be range from 10 watts to 200 watts (out put power)

7. A process of marking, etching & engraving as claimed in claim 1 and substantially herein described.

Dated this 14th day of September, 1998.

HIRAL CHANDRAKANT JOSHI
AGENT FOR
BHARAT BHOGILAL PATEL

RMID - 2

DUPLICATE

FORM 3 A

THE PATENTS ACT, 1970
COMPLETE SPECIFICATION

(See Section 10)

A PROCESS OF ~~MANUFACTURING CUTLERY AND GOLD ORNAMENTS~~ Marking, Etching & Engraving
THROUGH LASER TECHNOLOGY

BHARAT BHOGILAL PATEL of 1/41 JUHU GOLD MIST, JUHU GULMOHAR ROAD, J.V.P.D. SCHEME, VILE PARLE (W), MUMBAI - 400 049 India, INDIAN national

The following specification particularly describes and ascertains the nature of this invention and the manner in which it is to be performed : -

PROCESS OF MARKING, ETCHING & ENGRAVING BY USING LASER BEAM TECHNOLOGY ON METALS & NON-METALS

The invention relates to a process of marking, etching & engraving by using laser beam technology on metals & non-metals. More particularly the invention relates to marking & engraving on metals and non-metals by use of Laser Beam Technology.

Conventionally these work was carried out by printing & then etching by means of mechanical as well as chemical means. The prior process of printing of required design on the object itself is a lengthy process such as making of a artwork, making of pattern, drawings, logos, symbols which is then photographed and developed to get a positive and negatives then the master copy is prepared and alternatively printing with a acid resistive ink and subsequently the etching process. The prior process has got its limitations for the Finner works & on the shape of the object and all types of metals can not be etched with this process. Apart from the difficulty in printing on the substance the process of etching is also a tedious process. Conventionally as all metals are not easily dissolve by the acid treatment. The process itself is a tedious, lengthy and hence costly. To develop a intricate design on some metals or non-metals where the precision is of the prime need or the substance itself is very costly or the shape of the object is such (round or cylindrical) it is difficult to have a proper marking/etching effect in the prior process.

Due to high manufacturing and disposal cost of the inkjet markers

I CLAIM :

1. A process of manufacturing engraved design articles on metals or non-metals consisting of
   a. marking the required design on metal or non-metal;
   b. etching the outer and inner area of the design;
   c. engraving the etched area and finally drilling the engraved area by means of laser beam through sequential command from a computer to obtain ornamented design on precious metals and non-metals.

2. A process as claimed in claim 1 wherein the metal and non-metals are Gold, Silver, Stainless Steel, Cutleries, Gold & Silver Ornaments & Jewellaries like Chains, bracelets, necklace, bangles, jewellary boxes, rings, ear rings, cuff links, spectacle frames, designer pens, buttons, precision & semi-precision stones like hametite, melakite, pearl, diamond, ruby, saphirre and etc orthopedic inplants, precision tools, measuring tools, tool holder, heart walves, cutting blades, knifes, pens all typed of plastic keyboard for computer & machineries & contact lenses, Holographic sheet, labels and transfers.

3. A laser marking & an engraving machine for carrying out the process as claimed in claim 1 as comprising of the laser head comprising of head, mirror mount to mount to regulate the apparatus so as to vary the intensity of the Laser Beam, which is further provided with a beam bender for positioning the beam in a required direction which is supported in a

rail & connected to a control panel provided with power supply, RF Driver, Heat Exchanger, Chiller to generate a laser beam of required intensity for marking/etching, engraving, scrubbing, cutting as per the required design programmable through a compute on metals & non-metals through beam steared galvo's & flat field galvo's/scanning heads.

4. A process of marking, etching & engraving by using a laser beam technology on metals and non-metals as claimed in claim 1 wherein the machine is connected through electronic circuit consisting of main (1) which is connected through the programmable computer (3) through stabilizer (2) in series. Another phase from the main is supplied to the laser head, through a chiller, the input of a computer (3) is provided to scanning head (5) through a RF Driver (6) for directing the laser beam on required area on the object place on the table (8).

5. A process for marking, etching & engraving by using a laser beam technology on metals and non-metals wherein the laser head is provided with adjustable rods & lamps of various sizes can be provided on the laser heads for handling different types of materials where the hardness of the material is vastly differs.

RMID - 2

6. A process of marking, etching & engraving by using a laser beam technology on metals and non-metals as claimed in claim 1 wherein the machine can be provided with different power supply as per the need of different industries which may be range from 10 watts to 200 watts (out put power)

7. A process of marking, etching & engraving as claimed in claim 1 and substantially herein described.

Dated this 14th day of September, 1998.

HIRAL CHANDRAKANT JOSHI
AGENT FOR
BHARAT BHOGILAL PATEL

INTELLECTUAL
PROPERTY **INDIA**
बौध्दिक सम्पदा भारत
एकस्व /अभिकल्प /व्यापार चिन्ह /
भौगोलिक संकेत
PATENTS / DESIGNS /
TRADEMARKS /
GEOGRAPHICAL INDICATIONS

सत्यमेव जयते
भारत सरकार /GOVERNMENT OF INDIA
पेटेन्ट कार्यालय / THE PATENT OFFICE
बौध्दिक सम्पदा भवन, मुंबई-४०००३७
Boudhik Sampada Bhavan
Near Antop Hill Post Office, S.M.Road ,
MUMBAI-400037

दूरभाष Tel 022-24137701
फॅक्स Fax 022-24130387
Emai mumbai-patent@nic.in
Website www. ipindia.nic.in

THE PATENTS ACT, 1970

IT IS HEREBY CERTIFIED THAT, the annex is a true copy of the Complete Specification of the applicant, BHARAT BHOGILAL PATEL, 1/41 JUHU GOLD MIST, JUHU, GULMOHAR ROAD, J.V.P.D. SCHEME, VILE PARLE (W), Mumbai – 400 049, Maharashtra, India, An Indian National and as accepted by this Office in respect of Patent Application No.610/BOM/1998 and notified under Serial No.189027.

This certificate is issued under the powers vested in me under Section 147 (1) of Patents Act, 1970.

Dated this day of 2008.

(A.T. PATRE)
ASSTT. CONTROLLER OF PATENTS & DESIGNS.

FORM - 2

(19)

THE PATENT OFFICE
2nd M.S.O.BUILDING,
234/4,ACHARYA JAGADISH CHANDRA BOSE ROAD,
CALCUTTA-700 020

INDIAN PATENT SPECIFICATION

(51) Int. Cl : B 23 K– 26/18,

(52) Ind. Cl.: 154 C[XXXVII (1)]

A

(11) Document No. IN
Date of document: 21.09.1998

(42) Date of Publication :

(21) Application No. 610 BOM 1998

(22) Date of filing: 21.09.1998

(71) Applicant : BHARAT BHOGILAL PATEL,OF 1/41 JUHU GOLD MIST, JUHU GULMOHAR ROAD, J.V.P.D. SCHEME, VILE PARLE (W), MUMBAI 400 049, MAHARASHTRA, INDIA. AN INDIAN NATIONAL.

(72) Inventors:
-IDEM-

(74) Agent: CHANDRAKANT M. JOSHI

Claims: 03
Text : 10 Pages: Drgs . 02 Sheets

EXAMINER: DR.B.K.SINGH

(54) Title : A PROCESS OF MANUFACTURING ENGRAVED DESIGN ARTICLES ON METALS OR NON-METALS

(57) Abstract:

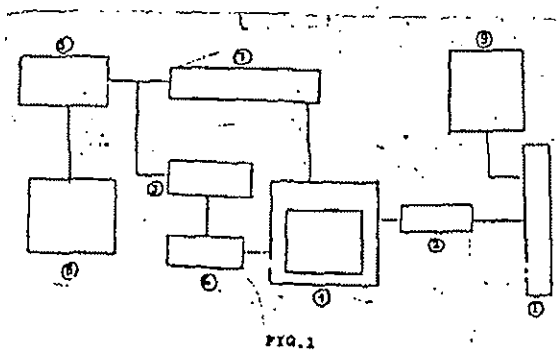


FIG.1

A process of marking, etching & engraving by using laser beam Technology on metals & non-metals consisting of a laser head comprising a head, mirror mount, apparature mount, beam bender, rail, through power supply, RF Driver, heat exchanger & chiller to generate a laser beam connected with a programmable computer system to generate the laser beam for marking & engraving the required design on the substance placed on the table through the Galvos. This process consisting of the following steps.

1. Selecting a design for marking.
2. Programming the said design of step 1 in the computer.
3. Setting the object on the table for the focal length.
4. Setting the intensity of the laser beam.
5. Adjusting the frequency & speed in the computer according to the substance & design requirement.
6. Commanding the computer to complete the job which is completed automatically for the multiple pieces also.

PRICE : THIRTY RUPEES

NOTIFICATION

IND. CL.	:	154 C [XXXVII (1)]
INT. CL.	:	B 23 K– 26/18
TITLE	:	A PROCESS OF MANUFACTURING ENGRAVED DESIGN ARTICLES ON METALS OR NON-METALS
APPLICANT & INVENTORS	:	BHARAT BHOGILAL PATEL,OF 1/41 JUHU GOLD MIST, JUHU GULMOHAR ROAD, J.V.P.D. SCHEME, VILE PARLE (W), MUMBAI 400 049, MAHARASHTRA, INDIA. AN INDIAN NATIONAL.
APPLICATION NO	:	610/BOM/1998 FILED ON 21.09.1998

APPROPRIATE OFFICE FOR OPPOSITION PROCEEDINGS (RULE 4, PATENTS RULES 1972), PATENT OFFICE BRANCH, MUMBAI - 13.

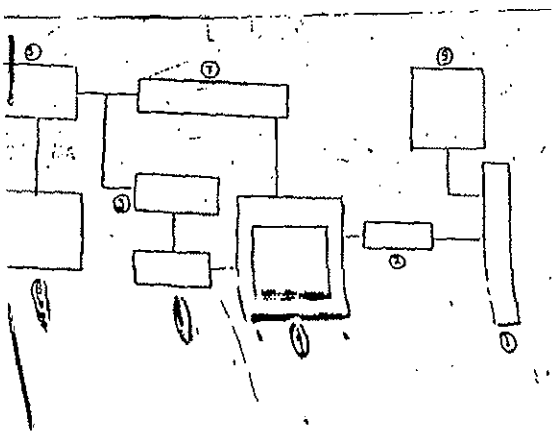
03CLAIMS

A process of manufacturing engraved design articles on metals or non-metals using laser beam Technology consisting of

a. marking the required design on metal or non-metal;

b. etching the outer and inner area of the design;

c. engraving the etched area and finally drilling the engraved area by means of laser beam through sequential command from a computer to obtain ornamented design on precious metals and non-metals.



Drawings 02 sheets

RMID - 2

CODING SHEET

11 Document Number			IN
40 Publication Date			
21 Application Number	610 BOM 1998		
22 Application Date	21.09.1998		
Priorities	I	II	III
33 Country			
32 Date			
31 Number			
60 Related Documents			

For INPADOC's use only

Please send completed forms to INPADOC

Moellwaldplatz 1040 Wien AUSTRIA

71, 75 Applicant(s): PATEL BHARAT BHOGILAL

72 Inventor(s): -IDEM-

54 Title: A PROCESS OF MANUFACTURING ENGRAVED DESIGN ARTICLES ON METALS OR NON-METALS

51 Int. Cl. Symbol(s): B 23 K- 26/18

750502/INP/CS/001/01

RMID - 2