Sept. 29, 1925. 1,555,655

J. D. GIBSON

EXPLOSIVE MARKING DEVICE

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Fig. 1

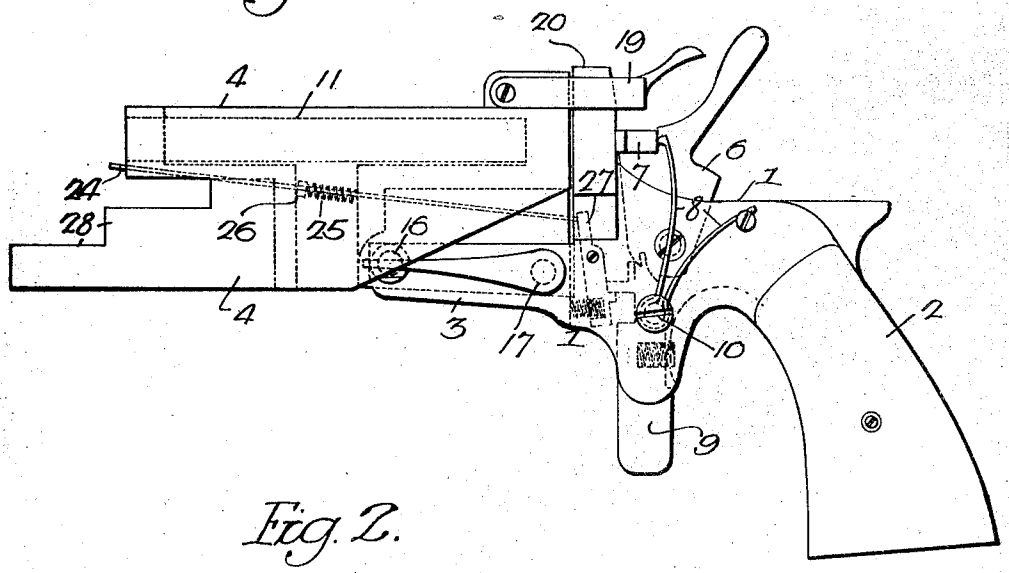
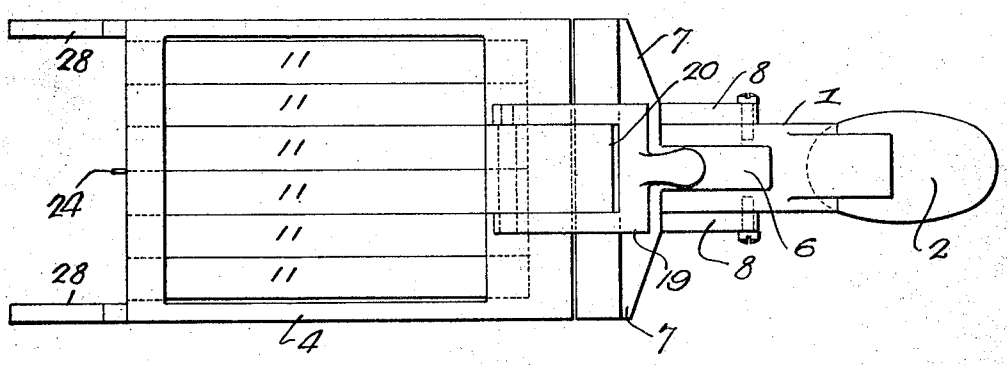


Fig. 2.



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Fig. 3.

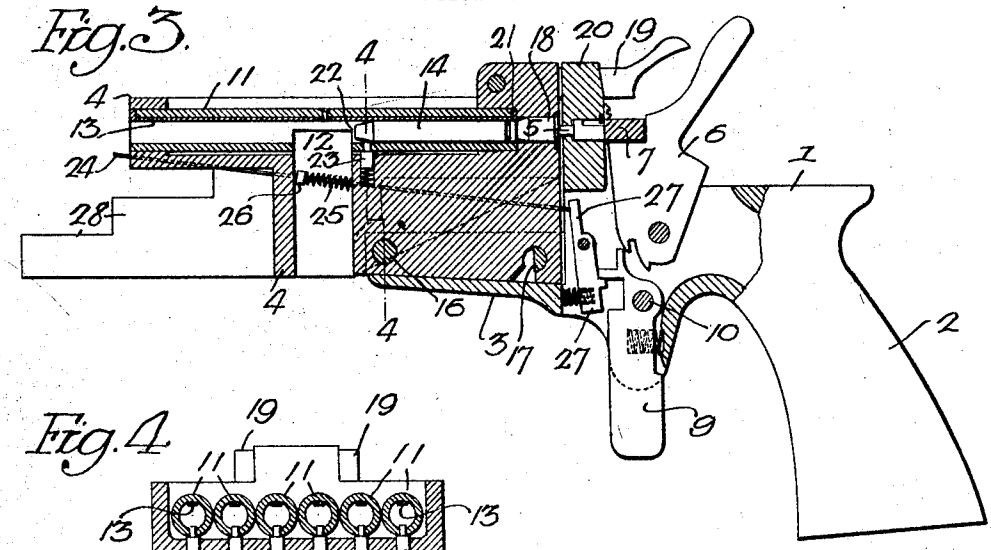


Fig. 4.

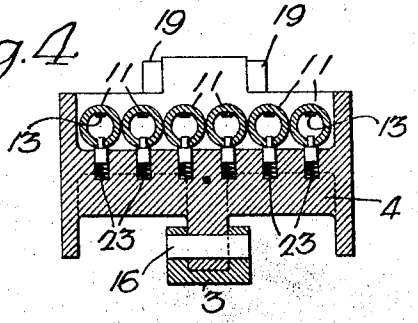


Fig. 7.

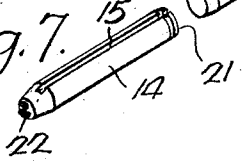


Fig. 8.



Fig. 6.

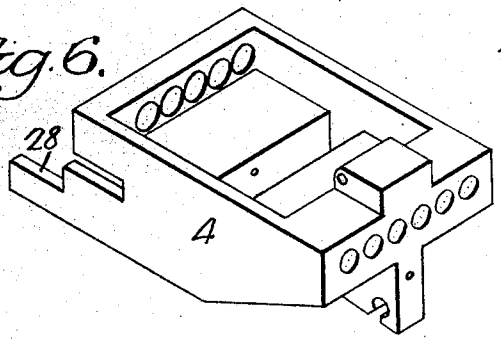
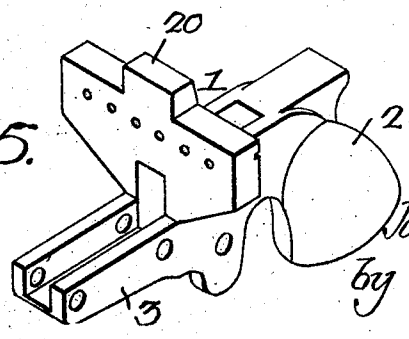


Fig. 5.



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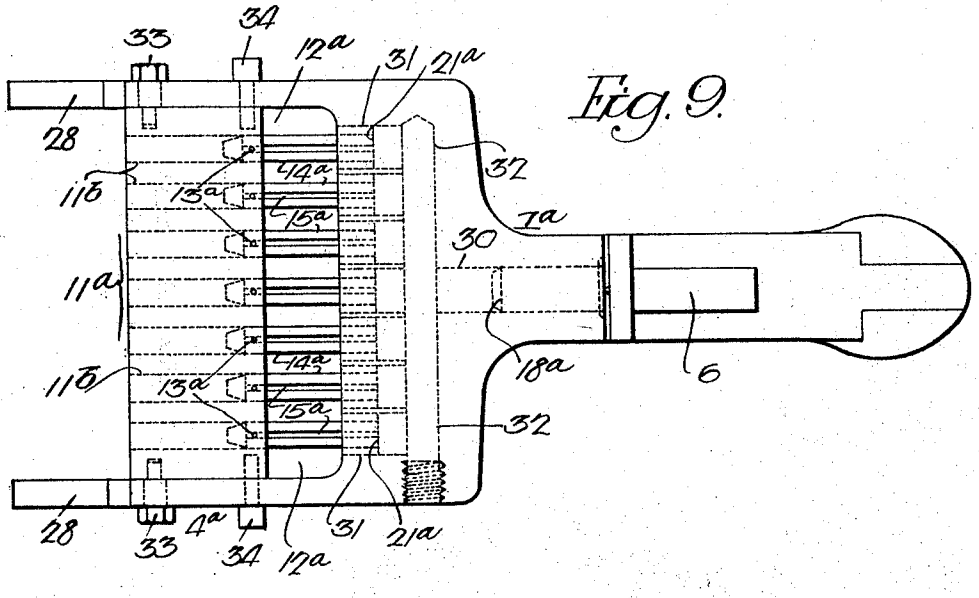


Fig. 9.

Fig. 10.

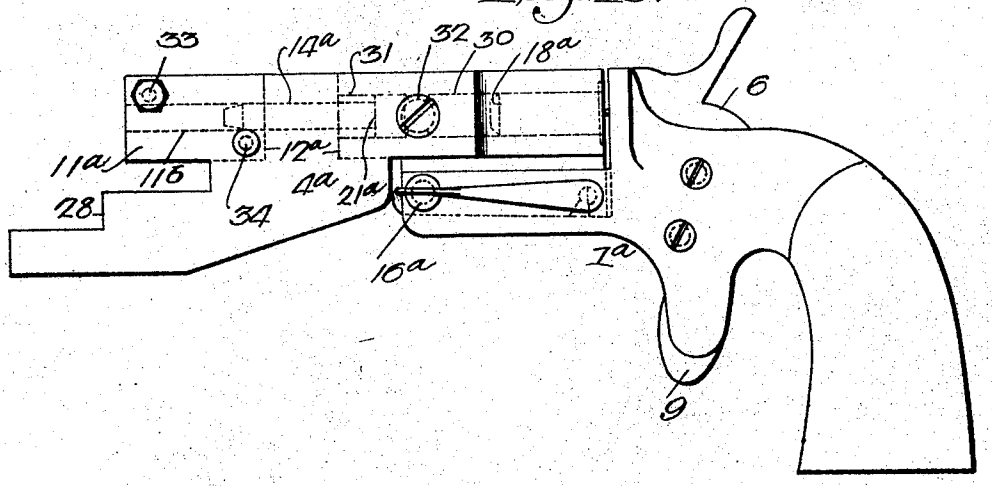


Fig. 11.



Inventor—
John Donald Gibson.
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Patented Sept. 29, 1925. 1,555,655

UNITED STATES PATENT OFFICE.

JOHN DONALD GIBSON, OF SWARTHMORE, PENNSYLVANIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO BRYANT SERVICE, INC.

EXPLOSIVE MARKING DEVICE.

Application filed November 1, 1923. Serial No. 672,112.

To all whom it may concern:

Be it known that I, JOHN DONALD GIBSON, a citizen of the United States, residing in Swarthmore, Delaware County, Pennsylvania, have invented certain Improvements in an Explosive Marking Device, of which the following is a specification.

The object of my invention is to provide a device for projecting dies by means of an explosive force so as to cause the dies to mark steel and other hard metallic parts.

The invention is especially adapted for use in permanently marking metallic parts of automobiles with the maker's number, or that of an insurance company, so as to make it difficult to obliterate a number in case of theft.

By my invention, the dies are arranged in series and are driven into the metal simultaneously.

In the accompanying drawings:

Fig. 1 is a side view of my improved device for projecting dies into objects to be marked;

Fig. 2 is a plan view;

Fig. 3 is a longitudinal sectional view;

Fig. 4 is a transverse sectional view on the line 4—4, Fig. 3;

Fig. 5 is a detached perspective view of the stock frame;

Fig. 6 is a detached perspective view of the barrel frame;

Fig. 7 is a perspective view of one of the dies;

Fig. 8 is a detached perspective view of one of the cartridges;

Fig. 9 is a plan view of a modification of the invention;

Fig. 10 is a side view of the same; and

Fig. 11 is a view of one of the dies used in the modification.

Referring to the drawings, 1 is a stock frame having a hand hold 2 and an extension 3, to which the barrel carrying the frame 4 is pivoted. Mounted in the breach piece of the stock frame 1 is a series of firing pins 5, shaped as shown in Fig. 3. Pivotally mounted in the frame is a hammer 6, which has lateral projections 7 that act upon all of the firing pins.

8—8 designate heavy springs for actuating the hammer when released by the trigger 9, which is pivoted to the frame at 10.

11—11 designate a series of barrels that are mounted in the barrel frame 4, as shown. Each barrel has an opening 12 some distance from its outer end to release the gases. In each barrel is a rib 13 that is held in place in any suitable manner. The die 14 has a groove 15 to receive the rib 13, which prevents the die turning in the barrel. As the dies are designed for use in numbering objects, it is essential that they be arranged so that the number will be properly positioned.

The barrel frame 4 is attached to the stock frame 1 by a pivot pin 16 and a draw pin 17. On removing the draw pin 17, the device can be broken and the barrel frame can be turned on the pivot to expose the breach of the barrel, allowing for the insertion of the cartridges 18 and the removal of the shells.

On the barrel frame 14 is a pivoted yoke 19, which is arranged to be passed over and to engage a projection 20 on the stock frame 1. This yoke holds the upper portion of the barrel frame in position.

Each die 14 has a head 21 and is tapered at the opposite end 22, as shown. In this end, the numeral, or other character, that is to be impressed in an object, is located, as shown in Fig. 7.

In order to hold the dies in place in the barrels before firing, spring-pressed plungers 23 are located in the frame 4 and project into each barrel a sufficient distance to engage the tapered portion of each die. When a die is projected, the plunger is depressed.

24 designates a safety rod, which projects beyond the ends of the barrels. A spring 25 is located between a shoulder 26 on the rod and the barrel frame 4. This rod engages a lever 27, which locks the trigger. When the rod is pushed in, so that the ends of the barrels rest upon the object, the lever 27 is disengaged from the trigger and the device can be fired.

In the present instance, the barrel frame 4 has two extensions 28, which are shaped to engage standard articles to be impressed, such as the front and rear axles of an automobile. By providing these extensions, the device can be held rigidly in position while being fired.

The operation is simple. The dies, having the predetermined numerals thereon, are placed in the device, as shown in Fig. 4. The cartridges are also located, one in each barrel. When the two frames are locked together, the barrels are brought in contact with the object to be numbered. The extensions of the frame hold the barrels in position. The safety rod 24 is pushed back, releasing the trigger, which is pulled thereby releasing the hammer, which fires all of the cartridges simultaneously, causing the dies to be projected into the article. As soon as the dies pass the openings in the barrel, the spent gases escape. In the present instance, each die makes a recess in the object and the numeral is raised within the recess.

Figs. 9 and 10 illustrate a modification, in which a single cartridge is used in connection with a series of dies. 1^a is the stock frame, 4^a is the barrel frame, which is pivoted to the stock frame at 16^a. In the barrel frame is a single chamber 30 for a cartridge 18^a and a series of chambers 31 for the heads 21^a of the dies 14^a, which are made as shown in Fig. 11. Back of the series of chambers is a transverse explosion chamber 32, which communicates with the cartridge chamber 30.

Pivoted at 33 to the frame 4^a is a barrel block 11^a, which has a series of chambers 11^b in line with the chamber 31. This block is held in position by pins 34. Between the block 11^a and the barrel frame is a space 12^a. The dies 14^a are of a length to bridge this space, as shown in Fig. 9. The chambers 11^b in the barrel block 11^a are less in diameter than the chambers 21 so that the heads 21^a of the dies will come in contact with the block and will limit the movement of the dies. Each die has a groove 15^a therein. Extending into each chamber 11^b is a pin 13^a, which acts as a guide for the die.

In this instance, the cartridge is preferably charged with nitro-cellulose as the explosive. When the cartridge is fired, the dies are projected simultaneously. When the heads of the dies pass into the space 12^a, the spent gases escape into the space.

From the foregoing description it will be clear that each barrel 11 may be considered as constituting a cylinder carried by the frame 4. The spaces in communication with the respective barrels for holding the passages 18 may be considered as receivers in communication with the barrels and the same may be said of the space for the cartridge 18^a, as shown in Figs. 9 and 10. The rear ends of each tool member 14, as shown in Figs. 3 and 7, and the heads 21, as shown in Figs. 9 to 11, may be considered as pistons movable in the aforementioned cylinders and adapted to be acted upon by the explosive force of the cartridge in the cooperating receiver. Each cylinder has an opening or port between its ends, which is so located as to be uncovered by the piston as it moves out.

I claim:

1. In a device of the character described, the combination of a frame; a tool movably mounted on the frame and adapted to operatively engage a piece of work while remaining in contact with the frame, the said tool being formed at its front end to mark the work in a definite predetermined manner; a receiver for an explosive cartridge; means for exploding a cartridge in the receiver; and means for transmitting the force of the explosion to operatively drive the tool against the work.

2. In a device of the character described, the combination of a frame; a tool movably mounted on the frame and adapted to operatively engage a piece of work while remaining in contact with the frame, the said tool being formed at its front end to mark the work in a definite predetermined manner; means connected with the frame and adapted to engage the work to assist in holding the frame in predetermined relation with the work; a receiver for an explosive cartridge; means for exploding a cartridge in the receiver; and means for transmitting the force of the explosion to operatively drive the tool against the work.

3. In a device of the character described, the combination of a frame having a cylindrical piston space provided between its ends with a port communicating with the atmosphere; a piston movable in the said space and adapted when in one position to uncover the said port; a tool formed to mark a piece of work in a definite predetermined manner, the said tool being mechanically connected with the piston and adapted to operatively engage the work when the piston is in the piston space with the port uncovered; a receiver for an explosive cartridge having the chamber in communication with the said piston space; and means for exploding a cartridge in the receiver.

4. In a marking device, the combination of a barrel; a die movable in the barrel and formed with a definite configuration at its operative end to mark a piece of work in a predetermined way; a cartridge receiver in communication with the barrel; and means for firing a cartridge in the receiver to drive the die against an object to be marked, the said die remaining partly in the barrel while engaging the work.

5. In a marking device, the combination, of a barrel; a die movable in the barrel and formed with a definite configuration at its operative end to mark a piece of work in a predetermined way; a cartridge receiver axially aligning with the barrel and communicating therewith; and means for firing a cartridge in the receiver to drive the die

against an object to be marked, the said die remaining partly in the barrel while engaging the work.

6. In a marking device, the combination of a barrel, having between its ends a port communicating with the atmosphere; a die movable in the barrel and formed with a definite configuration at its operative end to mark a piece of work in a predetermined way; a cartridge receiver in communication with the barrel; and means for firing a cartridge in the receiver to drive the die against an object to be marked, the said die remaining partly in the barrel while engaging the work, but uncovering the said port to permit the escape of gases.

7. In a marking device, the combination of a barrel; a die movable in the barrel and formed with a definite configuration at its operative end to mark a piece in a predetermined way; means in the barrel to prevent the die from turning therein; a cartridge receiver in communication with the barrel; and means for firing a cartridge in the receiver to drive the die against an object to be marked, the said die remaining partly in the barrel while engaging the work.

8. In a marking device, the combination of a barrel; a die movable in the barrel and formed with a definite configuration at its operative end to mark a piece of work in a predetermined way; a cartridge receiver in communication with the barrel; means for firing a cartridge in the receiver to drive the die against an object to be marked, the said die remaining partly in the barrel while engaging the work; and means releasably engaging the die to hold it in place in the barrel until firing occurs.

9. In a marking device, the combination of a barrel; a die movable in the barrel and formed with a definite configuration at its operative end to mark a piece of work in a predetermined way; a cartridge receiver in communication with the barrel; means for firing a cartridge in the receiver to drive the die against an object to be marked, the said die remaining partly in the barrel while engaging the work; a locking device for the firing means; and means engaging the work when the barrel is in operative relation thereto for releasing the said locking device.

10. In a marking device, the combination of a barrel; a die movable in the barrel and formed with a definite configuration at its operative end to mark a piece of work in a predetermined way; a cartridge receiver in communication with the barrel; means for firing a cartridge in the receiver to drive the die against an object to be marked, the said die remaining partly in the barrel while engaging the work; and means connected with the barrel and adapted to engage the work to assist in holding the barrel in predetermined relation with the work.

11. A multiple marking device comprising in combination, a series of parallel barrels; dies movable in the respective barrels and each formed with a definite configuration at its operative end to mark a piece of work in a predetermined way; receiving space for explosive material in communication with the said barrels; and means for firing explosive material in the said space to drive all of the dies simultaneously against an object to be marked, the said dies remaining partly in their respective barrels while engaging the work.

12. A multiple marking device comprising in combination, a series of parallel barrels; dies movable in the respective barrels and each formed with a definite configuration at its operative end to mark a piece of work in a predetermined way; a series of receivers in axial alignment with the respective barrels and communicating therewith; and means for simultaneously firing cartridges in all of the said receivers to drive all of the dies simultaneously against an object to be marked, the said dies remaining partly in their respective barrels while engaging the work.

13. A multiple marking device comprising in combination, a series of parallel barrels, each having between its ends a port communicating with the atmosphere; dies movable in the respective barrels and each formed with a definite configuration at its operative end to mark a piece of work in a predetermined way; a series of receivers in axial alignment with the respective barrels and communicating therewith; and means for simultaneously firing cartridges in all of the said receivers to drive all of the dies simultaneously against an object to be marked, the said dies remaining partly in their respective barrels while engaging the work but uncovering the respective ports to permit the escape of gases.

14. A multiple marking device comprising in combination a series of parallel barrels; dies movable in the respective barrels and each formed with a definite configuration at its operative end to mark a piece of work in a predetermined way; means in the several barrels to prevent the respective dies from turning therein; receiving space for explosive material in communication with the said barrels; and means for firing explosive material in the said space to drive all of the dies simultaneously against an object to be marked, the said dies remaining partly in their respective barrels while engaging the work.

15. A multiple marking device comprising in combination, a series of parallel barrels; dies movable in the respective barrels and each formed with a definite configuration at its operative end to mark a piece of work in a predetermined way; receiving space for

explosive material in communication with the said barrels; means for firing explosive material in the said space to drive all of the dies simultaneously against an object to be marked, the said dies remaining partly in their respective barrels while engaging the work; and means releasably engaging the several dies to hold them in place in the respective barrels until firing occurs.

16. A multiple marking device comprising in combination, a series of parallel barrels; dies movable in the respective barrels and each formed with a definite configuration at its operative end to mark a piece of work in a predetermined way; a series of receivers in axial alignment with the respective barrels and communicating therewith; means for simultaneously firing cartridges in all of the said receivers to drive all of the dies simultaneously against an object to be marked, the said dies remaining partly in their respective barrels while engaging the work; a locking device for the firing means; and means engaging the work when the several barrels are in operative relation thereto for releasing the locking device.

17. A multiple marking device comprising in combination, a series of parallel barrels; dies movable in the respective barrels and each formed with a definite configuration at its operative end to mark a piece of work in a predetermined way; a series of receivers in axial alignment with the respective barrels and communicating therewith; means for simultaneously firing cartridges in all of the said receivers to drive all of the dies simultaneously against an object to be marked, the said dies remaining partly in their respective barrels while engaging the work; and means connected with the several barrels and adapted to engage the work to assist in holding the barrels in predetermined relation with the work.

18. The method herein described of marking objects which consists in placing an explosive charge adjacent a die formed with a definite predetermined configuration at its operative end, and exploding said charge to force said die against the object to be marked.

19. The method herein described of marking objects by explosive action, said method consisting in arranging a series of dies having numerals or other symbols, placing an explosive charge back of the dies, and exploding the charge to cause the dies to penetrate the object and impress the numbers or other symbols thereon.

JOHN DONALD GIBSON.