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REPEATING FLASHGUN

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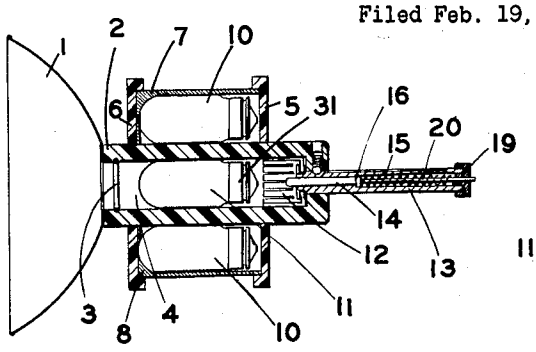


FIG. 1

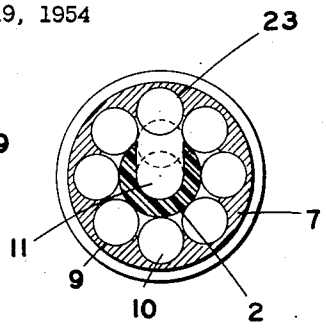


FIG. 2

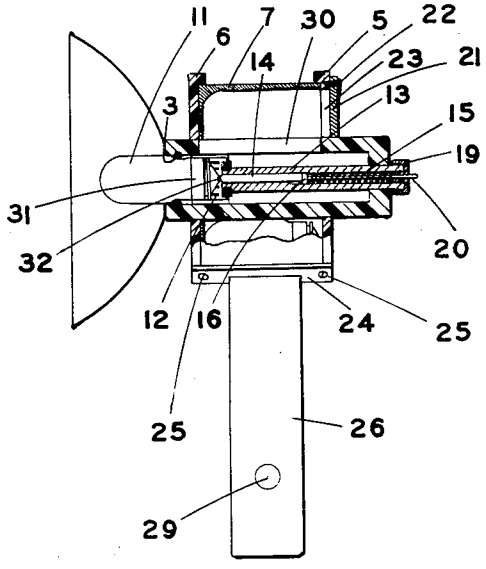


FIG. 3

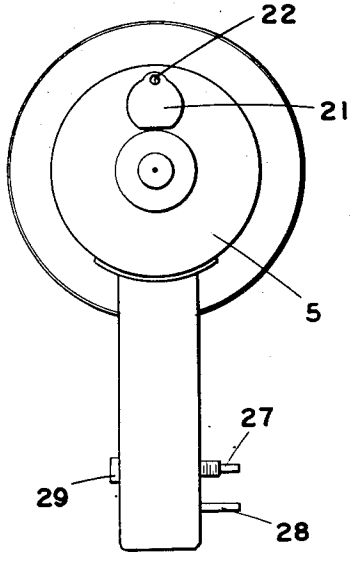


FIG. 4

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REPEATING FLASHGUN

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1 Claim. (Cl. 240—37)

This invention relates to photoflash lamps and to apparatus in which they are used. Such apparatus is generally called a flashgun.

Such flashguns have heretofore required expensive constructions and gearing to be effective, and were hence unsuitable for use with the simpler and cheaper types of camera. The object of the present invention is to provide a flashgun suitable for such types of camera, although it is not confined to such use.

In the embodiment of the invention described herein, a cylinder holding several flashbulbs is rotatable about a chamber into which the flashbulbs can be introduced through an opening therein and can be then moved longitudinally into position at the front of the chamber. At the rear of the chamber a rod is provided which can be pushed into the chamber to grasp the flashbulb and push it forward into place in a reflector, which is at the forward end of the chamber and in communication therewith.

Other objects, advantages and features of the invention will be apparent from the following specification, taken in connection with the accompanying drawings, in which:

Fig. 1 shows a plan view of the device, in section.

Fig. 2 shows a transverse section through the cylinder and chamber of Fig. 1.

Fig. 3 shows an elevation of the device, partly in section; and

Fig. 4 shows a rear view of the device.

In Fig. 1, the reflector **1** is attached to the chamber **2** at the latter's open front end, the reflector **1** having a central hole in register therewith, so that a bulb can move from the chamber into the reflector. The rubber ring **3** is set into the inside surface **4** of chamber **2**, a short distance inside the open end of said chamber **2**. The flanged plastic annular disks **5**, **6** are fixed to the chamber **2**. The cylinder **7** having one open end and one annularly closed end **8**, is rotatable around chamber **2** between the annular disks **5**, **6**. The cylinder **7**, shown in transverse section in Fig. 2, has the longitudinal grooves **9** in its inner surface and roughly parallel to the axis of the chamber **2**, the radial depth of the grooves **9** being about equal to half the outside diameter of the bulbs **10**. The bulbs **10** will thus be held between the cylinder **7** and the outside of the chamber **2**, where the latter passes through the cylinder **7**. The bulbs **10** are shown as in contact with the grooves **9** and the outside **11** of the chamber **2**, but actually there should be some clearance around the bulbs, to provide freer rotation and to allow for slight differences in bulb diameters.

The chamber **2**, when it passes through cylinder **7**, is open at its top, being somewhat U-shaped in cross section in that region, as shown in Fig. 2. Then when the bulb-filled cylinder **7** is rotated around chamber **2**, a bulb will drop into the chamber **2** on coming into register with the opening **30** in the top thereof. Bulb **11** is shown dropping into place, in the two positions shown in phantom.

Fig. 3 shows a side view of the device, with the bulb

11 in its forward position preferably at about the focus of the reflector **1**. The bulb is held by the holder **12**, the forward motion of the holder being limited by the cap **19**. The pin **14** projects out of the rod **13** being biased to do so by the coiled spring **15**. The pin **14** has a head **16** on its end inside rod **13**. The front portion of the rod **13** is drilled to a diameter sufficient to make a sliding fit with the body of pin **14** but not sufficient to allow the head **16** to pass through. The rear portion of the rod **13** is drilled to a diameter large enough to take the head **16** of pin **13**. The head **16** is kept biased in the forward direction by the coiled spring **15**, acting between head **16** and the cap **19** which is screwed onto the rear end of rod **13** closing the same. A smaller diameter portion **20** of pin **14** extends rearwardly from the head **16**, through the inside of the coiled spring **15** and through an opening in the cap **19**. A closure member **21**, pivoted on screw **22** extends across the opening **23** in the rear disc member **5**, affording a hole through which the bulbs can be put into the cylinder. A bracket **24**, attached to the members **6**, for example by screws **25**, is also attached to the battery case **26** of a type usual in the art. The battery case has the usual two pins **27**, **28**, for electrical and mechanical connection to a camera in the ordinary manner, with the aid of the clamping screw **29**.

The pins **27** and **28** are connected electrically to, respectively, the holder **12** and the pin **13**, the latter making contact with the center base contact **30** of the bulb, such contact sometimes being called the eyelet contact.

In operation, the flash bulbs **10** are loaded into the cylinder **7** one at a time, by pushing the closure member **21** aside to permit their entry into the cylinder. After each bulb is loaded in, the cylinder **7** is turned to the next position and another bulb inserted, until the entire cylinder is loaded. To put a bulb **10** into the chamber **2**, the rod **13** is pulled back, and the cylinder **2** turned until a bulb is just above the opening **30** in chamber **2**, thereby allowing the bulb to drop into the chamber.

The rod **13** is then pushed forward, without pushing on the smaller diameter portion **20**, until it grasps the side **31** of base **32**, the rubber ring **3** providing enough friction to hold the bulb tightly enough to cause the holder **12** to grasp it securely, but without preventing the bulb **10** from being pushed further forward after being grasped. The cap **19** limits the forward motion by bearing against the rear end of cylinder **2**. When the forward motion is thus stopped, the bulb should be at about the focus of the reflector **1**.

The bulb **10** is then ready for use, being in the proper position and in electrical contact with the holder **12** and the pin **13**. It will be flashed when the camera shutter is operated, in the synchronizing manner well-known in the art.

After the bulb is flashed, the pin **20** is pushed forward, while cup **19** is held in place, thus ejecting the bulb from holder **12** and allowing it to fall out of the reflector **1**. The cap **19** can then be pulled back and the cylinder **7** revolved until another bulb drops into chamber **2**, and the cycle repeated. The empty positions can be reloaded with bulbs as desired.

In the above description we have, for convenience, referred to the front and back or forward and rear, of the device. The front or forward part is the end containing the reflector **1**, and the back or rear is the other end. The device is intended to be held so that the battery chamber **26** is at the bottom.

The bulb **11** can also be ejected without ejection pin **20**, by merely retracting the loading rod **13**. The rubber ring **3** will prevent the bulb **11** from being retracted with the rod **13**, thus disengaging the holder **12** from the bulb base **31** and allowing the bulb to drop out, especially if

the gun is tilted downward. The device can thus be used with the pin **20** omitted. In that case, it is best to cause the part of the chamber in front of the rubber ring **3** to flare outward, to permit the freed bulb **11** to fall out more readily. The rubber ring **3** can be made larger in the cross-section of its rubber, or can be replaced by springs, or by pins biased into the chamber by springs. The bulb **11** will drop out more readily on ejection if greater clearance is provided between the bulb and the insert of the chamber **2**. When the ejection pin **20** is used, the additional clearance is unnecessary.

For best ejection, the base **31** or the portion of the bulb nearest the base should have a smaller diameter than that of the front part of the bulb **11**.

What we claim is:

A repeating photoflash gun for glass photoflash bulbs having a contact base comprising a reflector having a central opening, a hollow chamber fixed to said reflector, said chamber having an opening in register with the opening in the reflector to permit passage of a bulb from the chamber to the reflector, a rotatable annular cylinder extending around said chamber and being concentric therewith and having longitudinal bulb-receiving grooves in its inner surface, said chamber having a longitudinal opening through which a bulb can pass from said cylinder to said chamber when the cylinder is rotated to bring a bulb into register with said opening, means for grasping a bulb by said contact base and means for moving said grasping means longitudinally through said chamber into said reflector to hold said bulb in said reflector solely by the grasping of said contact base.

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