Dec. 20, 1960 M. J. SHOELSON ET AL 2,965,004

TRIPLE-SPROCKET TWIN-BARREL GUN

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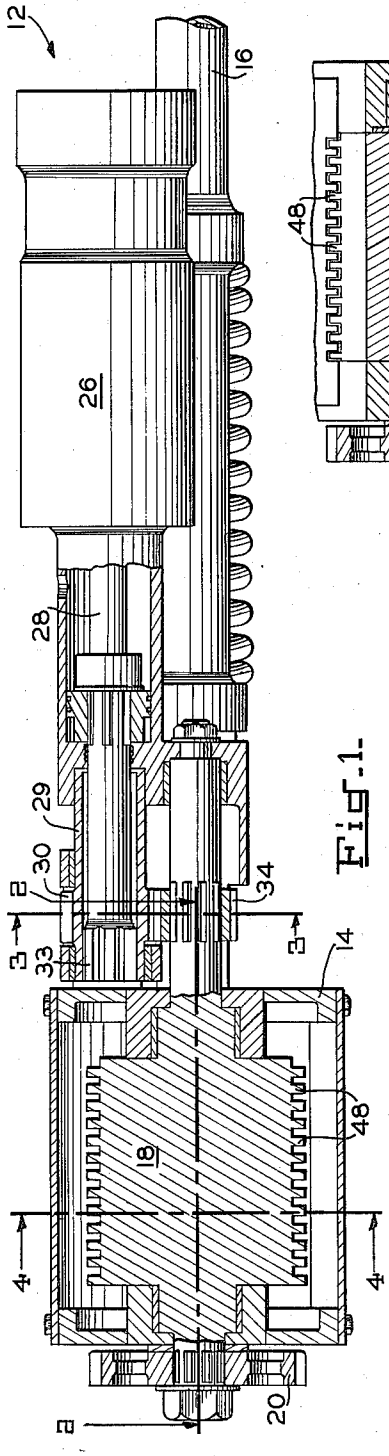

Fig. 1.

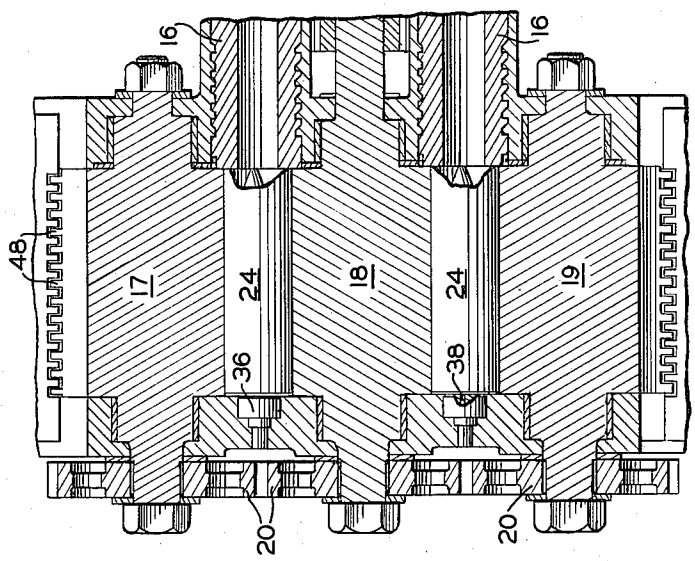

Fig. 2.

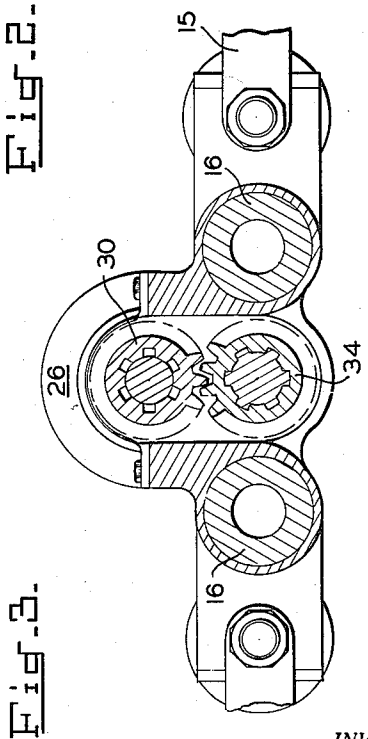

Fig. 3.

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Fig. 4.

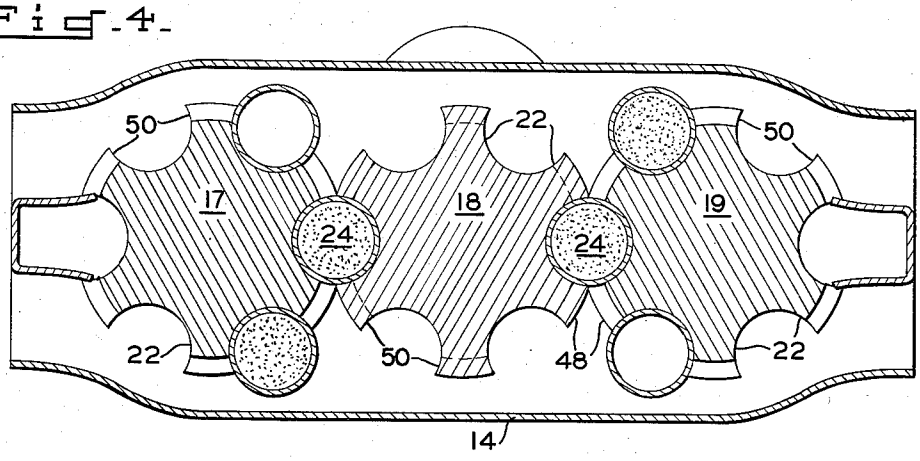


Fig. 5.

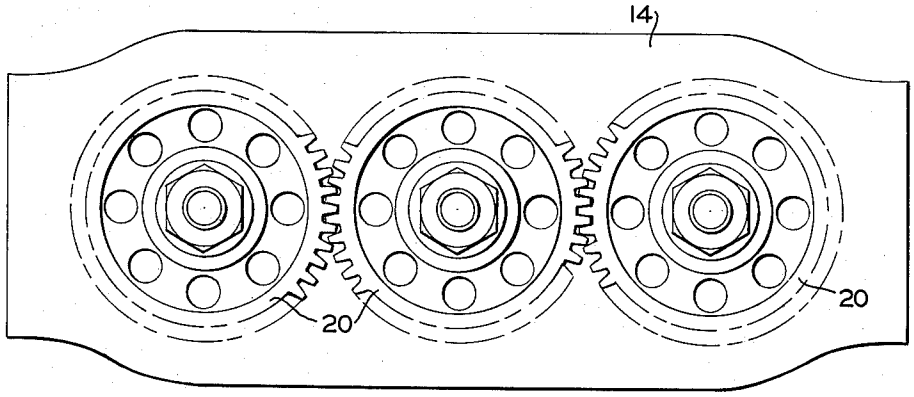
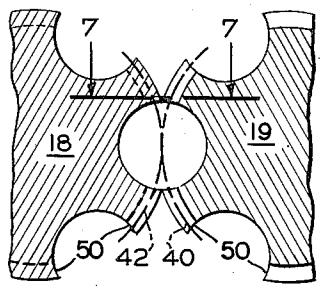


Fig. 6.



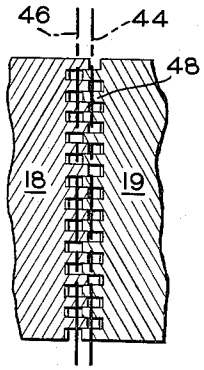


Fig. 7.

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TRIPLE-SPROCKET TWIN-BARREL GUN

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1 Claim. (Cl. 89—126)

Our invention relates to an automatic gun and more particularly to such a gun including pairs of sprockets disposed in meshed relation to inclose cartridges for discharge thereof.

An object of our invention is to provide such a gun with a chamber device including sprockets meshed to feed cartridges to firing stations in axial alignment with the barrels of the gun and disposed to form firing chambers in the firing station for discharge of the cartridges therein.

Another object of our invention is to provide such a device with the sprockets geared together for simultaneous operation.

A further object of our invention is to provide such sprockets with interengaging portions to secure cartridges in the firing station for the discharge.

Other aims and objects of our invention will appear from the following explanation.

In carrying out our invention a gun having a receiver and a pair of barrels transversely spaced therein is provided with a shaft disposed for rotation responsive to discharge gases from the discharge of cartridges in the barrels, and triple sprockets geared together to simultaneously convey cartridges to a pair of firing stations in axial alignment with the barrels responsive to the rotation and disposed to form chambers to inclose the firing station cartridges for discharge thereof.

The sprockets are provided with radial portions longitudinally spaced for interengagement thereby forming cylindrical retainer surfaces for the cartridge to resist the forces of the discharge.

In carrying out our invention reference is directed to the following description and the accompanying drawings in which:

Fig. 1 is an elevation partly in section of a gun incorporating our invention;

Fig. 2 is a view along line 2—2 of Fig. 1;

Fig. 3 is a view along line 3—3 of Fig. 1;

Fig. 4 is a view along line 4—4 of Fig. 1;

Fig. 5 is a rear view of the gun;

Fig. 6 is a view similar to Fig. 4 with the cartridges removed; and

Fig. 7 is a view along line 7—7 of Fig. 6.

Accordingly, a gun 12 is provided with a receiver 14 disposed for recoil on a support 15 and a pair of barrels 16 laterally spaced in receiver 14. Sprockets 17, 18 and 19 are disposed for rotation about spaced axes disposed in axial coplanar relation with the axes of barrels 16 and provided with meshed gears 20 for simultaneous rotation. Sprockets 17, 18 and 19 include six semicylindrical recesses 22 which are arranged in diametrically-opposed pairs and are disposed for cooperation to convey cartridges 24 to firing stations in axial alignment with barrels 16 and form firing chambers to inclose the cartridges for simultaneous discharge thereof.

Any suitable gas operating gun mechanism 26 for converting the energy of discharge gases bled from the barrels 16 to rotation of a shaft 28 in such gas operating gun mechanism is mounted to receiver 14. Shaft 28 is engaged by splines 33 to axially fixed countershaft 29 for rotation thereof. Countershaft 29 includes a gear 30 for engagement with a gear 34 secured to sprocket 18 for rotation thereof responsive to the rotation of shaft 28. Anvils 36 disposed in receiver 14 adjacent the respective firing stations include firing pins 38 for electrical discharge of cartridges 24.

If the sprockets for carrying the cartridges to the firing station and for forming chambers for their discharge therein were provided with smooth outer surfaces, such surfaces would be engageable, as shown by the phantom arcs 42 and 40 in Fig. 6. Whereby, when the sprockets are aligned at the firing stations, there would be open areas, as shown between the phantom lines 44 and 46 in Fig. 7, on opposite sides of the cartridges and along the full length thereof, which would leave the cartridges unsupported at such areas and subject to rupture when discharged. For a gun having sprockets of six-inch diameter, the unsupported areas of a two-inch diameter cartridge case would be substantially 5/16 of an inch wide.

Sprockets 17, 18 and 19, however, are provided with longitudinally-spaced peripheral flanges 48 which extend radially for interengagement, as best shown in Fig. 7, and which are terminated at both ends by end portions 50. Whereby, the clearance spaces between the longitudinal edges of the cooperating recesses 22 are divided into offset rectangular openings to reduce the size of the units of area of the cartridges which are subjectable to the discharge forces and thereby provide suitable support for the cartridge cases when fired.

Thus, when gun 12 is in battery, a pair of the recesses 22 in sprocket 18 are aligned with cooperating recesses in sprockets 17 and 19 to form a pair of chambers at the firing stations of the barrels 16 for the discharge of the cartridges which had previously been carried to the firing stations by sprockets 17 and 19. The chambered cartridges are discharged by electrical current applied to the firing pins 38 with the cartridge cases being safeguarded against rupture by the interengagement of the flanges 48 along the line of engagement of sprocket 18 with the sprockets 17 and 19. The gases from the discharges are bled from the barrels 16 to gas operating gun mechanism 26 for rotation of shaft 28 which rotation is transferred by countershaft 29 to sprocket 18 by gears 30 and 34 and from such sprocket to sprockets 17 and 19 by gears 20. Sprockets 17 and 19 are synchronized to sprocket 18 so that cartridges are simultaneously carried by the recesses 22 in the sprockets 17 and 19 from a feeding mechanism (not shown) to the firing stations wherein a pair of the recesses 22 in sprocket 18 are aligned with the recesses in sprockets 17 and 19 to cooperate therewith for chambering such cartridges for discharge.

Although a particular embodiment of the invention has been described in detail herein, it is evident that many vairations may be devised within the spirit and scope thereof and the following claim is intended to include such variations.

We claim:

In a gun provided with a pair of laterally spaced barrels for receiving at the rear ends thereof the projectiles of cartridges discharged in the gun and a gas operating gun mechanism rotated by the discharges, the combination including a first sprocket spaced intermediate the barrels adjacent the rear ends thereof and connected to the gas operating gun mechanism for rotation thereby, a pair of second sprockets connected to said first sprocket for synchronized rotation thereby, said second sprockets being disposed on opposite sides of said first sprocket and in lateral alignment therewith, a plurality of semi-cylin-

drical recesses disposed in said first sprocket in diametrically-opposed pairs for simultaneous co-axial alignment with the barrels, a plurality of semi-cylindrical recesses disposed in each of said second sprockets for carrying the cartridges into simultaneous alignment with the barrels and for cooperation with said semi-cylindrical recesses in said first sprocket to form chambers for the discharge of the cartridges when in alignment with the barrels, a plurality of longitudinally spaced peripheral flanges formed on said first sprocket so as to extend arcuately between said semi-cylindrical recesses therein, a plurality of peripheral flanges formed on said second sprockets so as to extend arcuately between said semi-cylindrical recesses therein and longitudinally spaced for insertion between

said flanges on said first sprocket, and end portions terminating said flanges on said first sprocket and said second sprockets, said end portions being disposed for engagement with the barrel aligned cartridges in said chambers to assist in supporting the cartridges at the junctions of said first and second sprockets.

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