

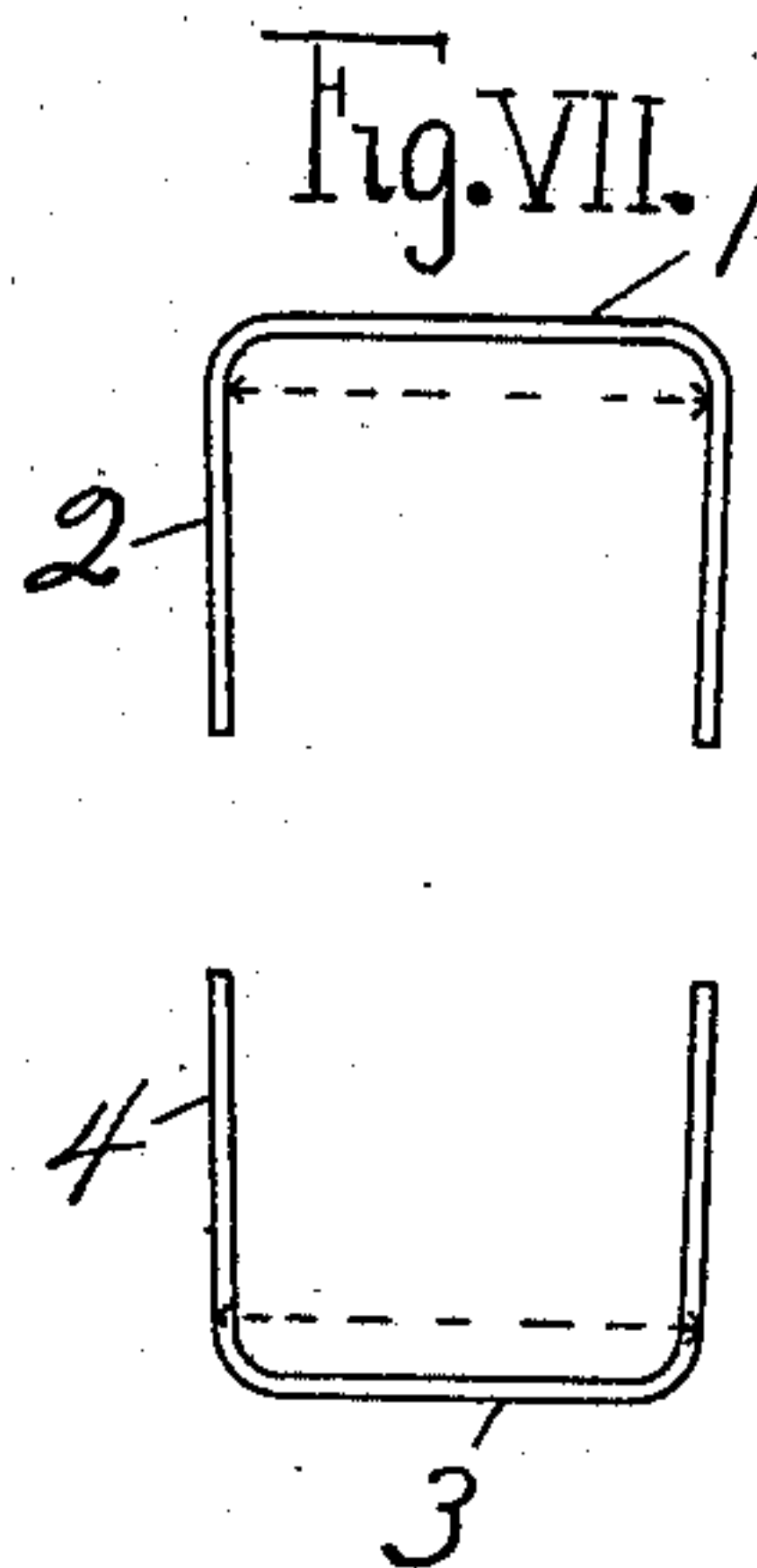
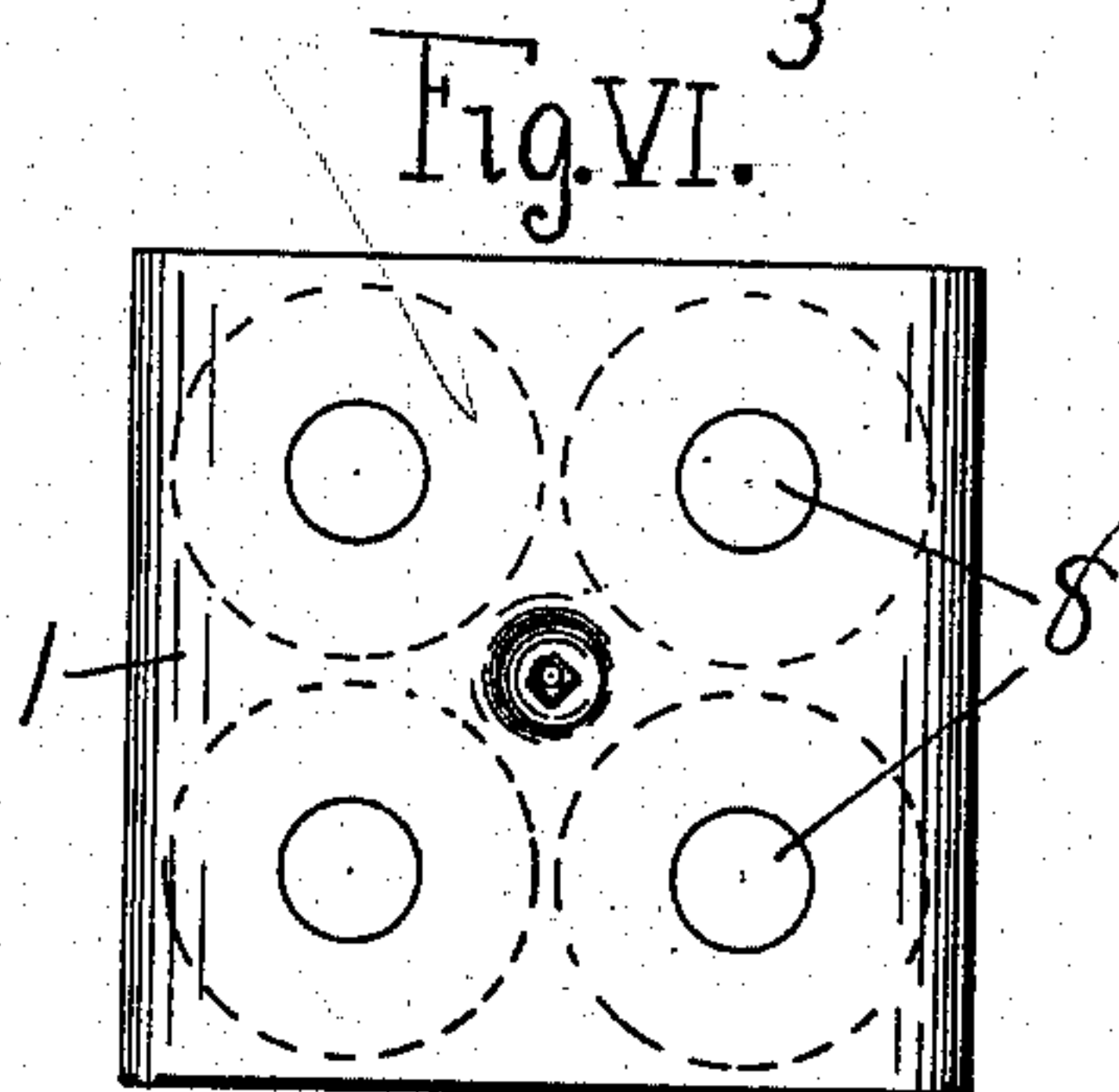
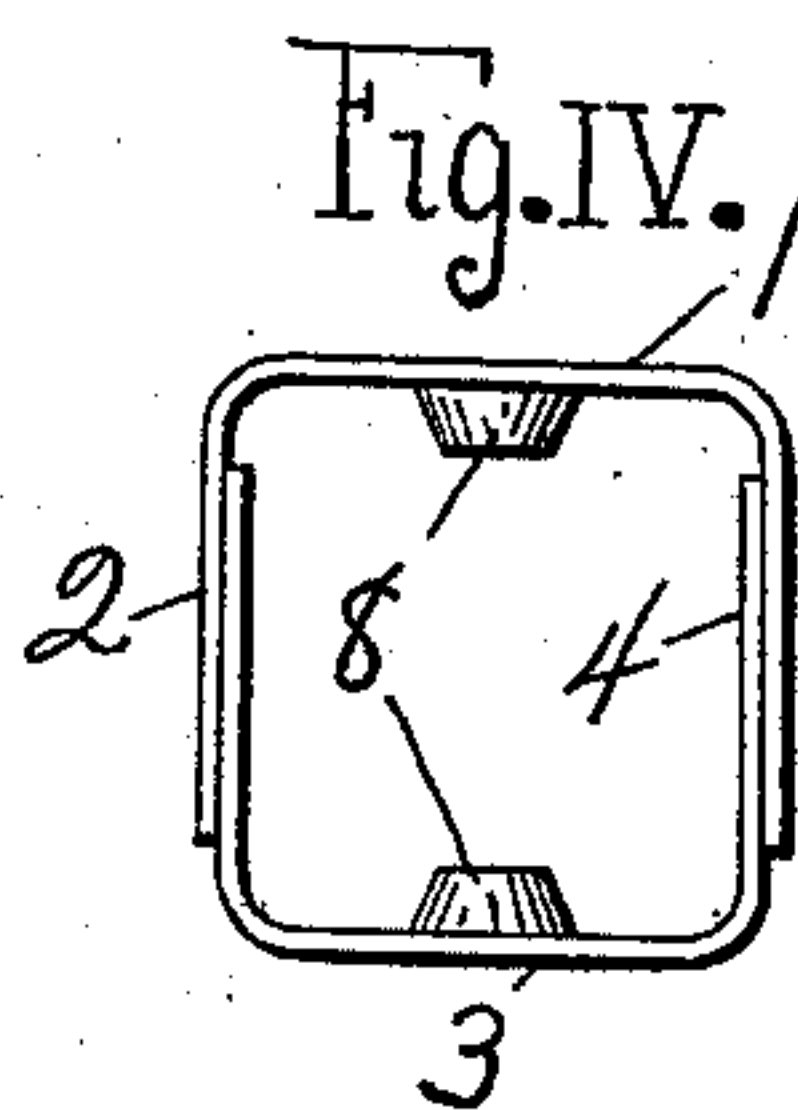
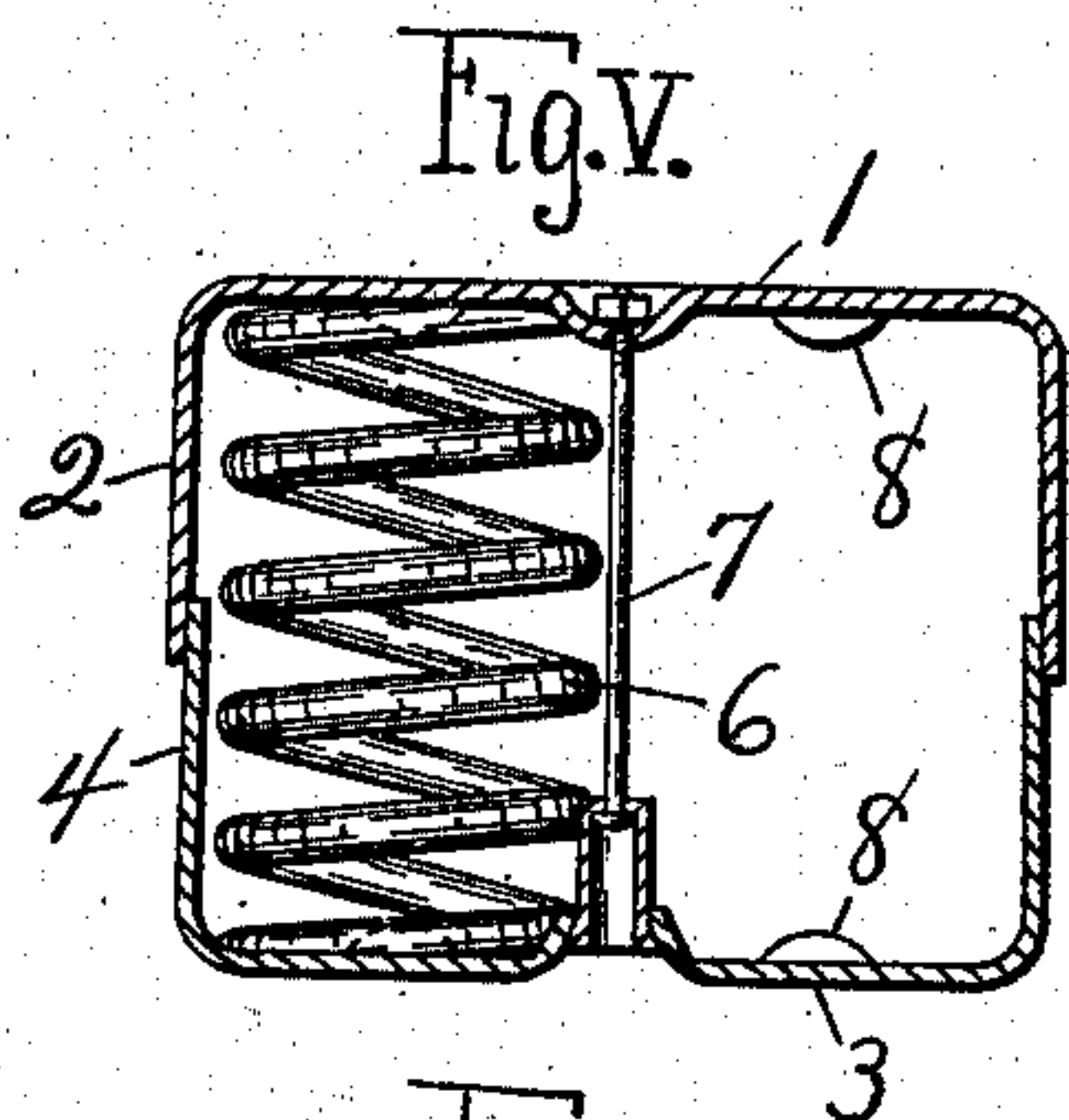
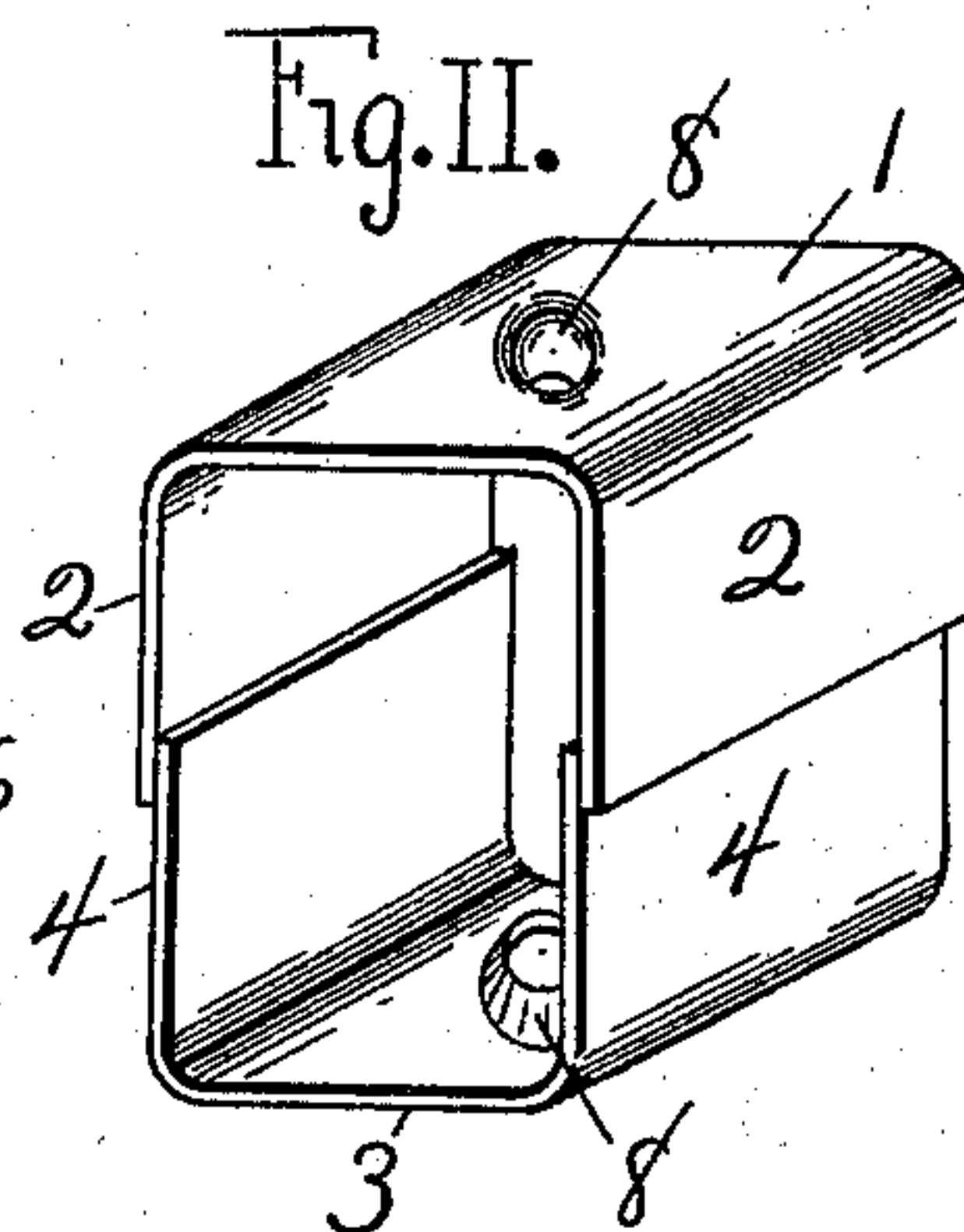
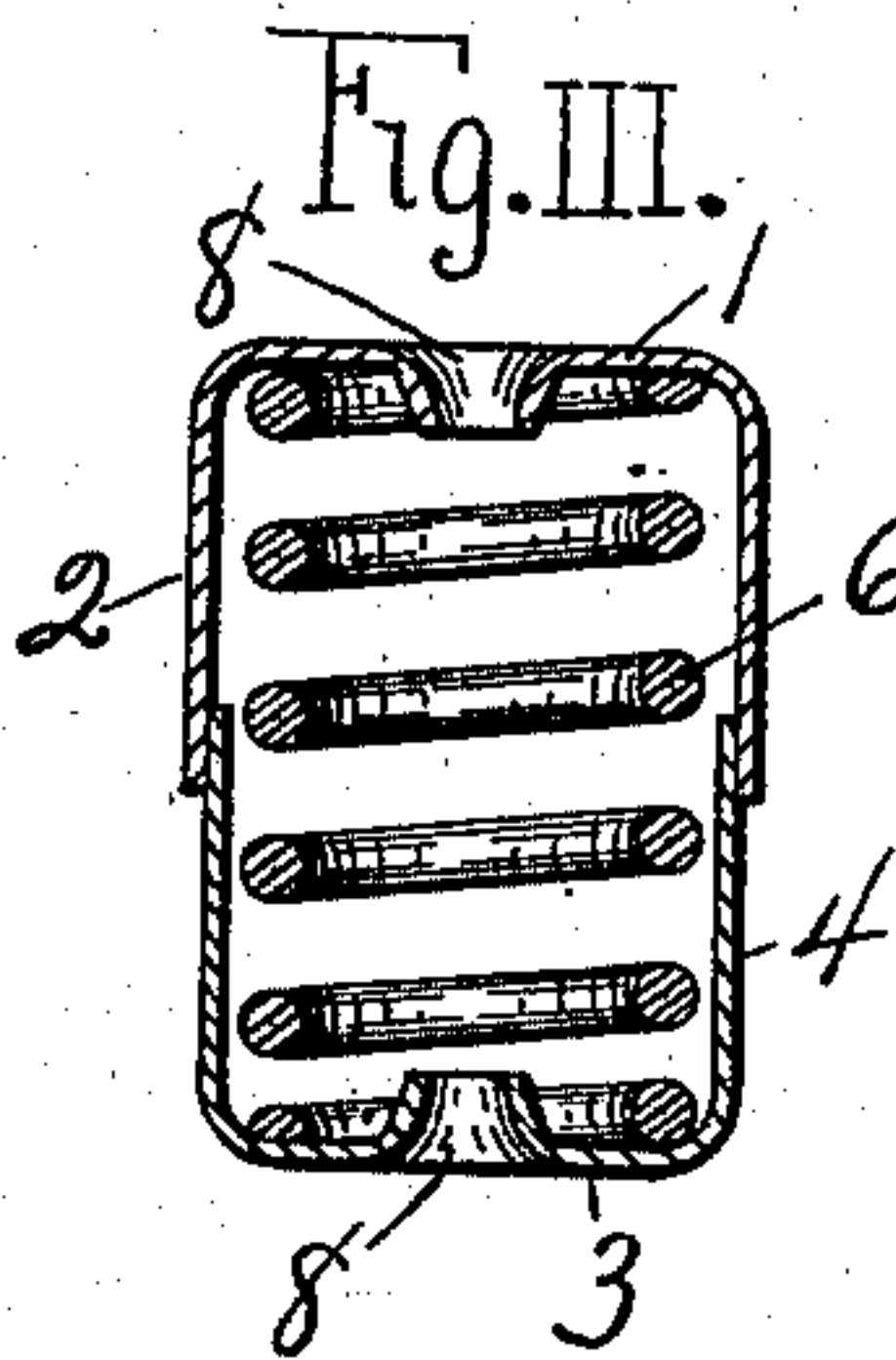
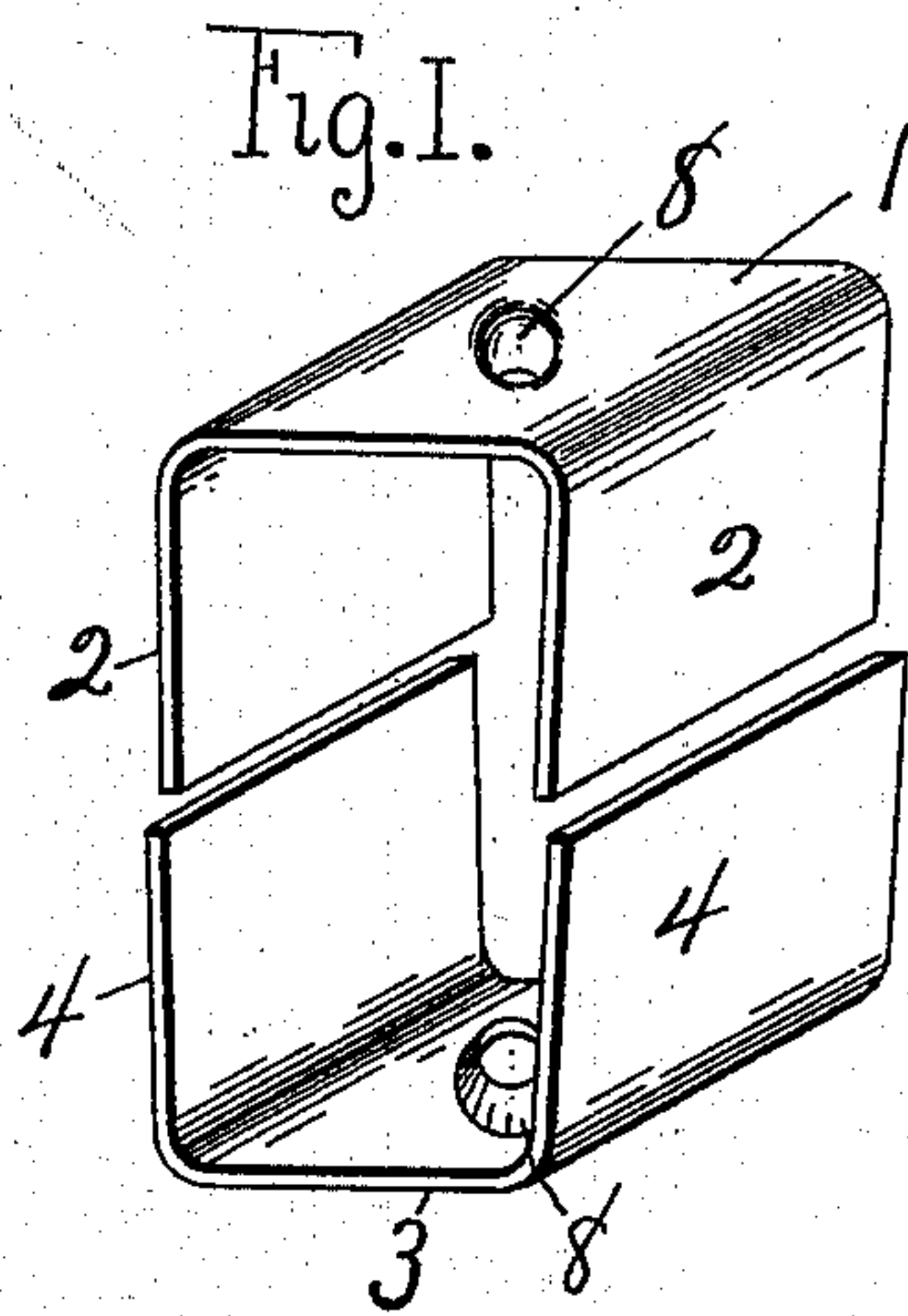
No. 714,752.

Patented Dec. 2, 1902.

T. A. SHEA.
CAR SPRING.

(Application filed Mar. 1, 1902.)

(No Model.)



WITNESSES:

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UNITED STATES PATENT OFFICE.

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CAR-SPRING.

SPECIFICATION forming part of Letters Patent No. 714,752, dated December 2, 1902.

Application filed March 1, 1902. Serial No. 96,279. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. SHEA, of Oswego, county of Oswego, and State of New York, have invented new and useful Improvements in Car-Springs, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to an improved construction of cap-plates for coil-springs, by which the spring is inclosed and protected and its recoil retarded. The cap-plates are made of any strong resilient metal, tempered spring-steel being the only kind now suitable from its physical character and cost, and are formed with straight flat bases and integral opposite side flanges arranged substantially at right angles to the base.

Two cap-plates are used to each spring, whether single, cluster, or multiple, with the flanges of one bent slightly in and of the other bent slightly out. By expanding the inwardly-bent flanges or compressing the other pair one pair may be introduced within the other pair a short distance and gripped as in a pair of jaws, whereby they firmly engage and retain the coil in position. When the spring so assembled is set in place on the car, the load compresses the coil and forces the cap-plates together, the adjacent faces of the opposite flanges being maintained in constant engagement by their own resiliency without the interposition of other force or other parts. Preferably the base of the cap-plate having the inwardly-arranged flanges should be slightly narrower than the base of the other, that the engaging flanges under all loads may stand substantially at right angles to their bases and parallel to each other, whereby substantially the whole of their adjacent surfaces are in close contact, and the greater the load the greater the surfaces in frictional contact to control the vibrations.

My invention is shown in the drawings herewith, in which the same numerals indicate the same parts in all the figures.

Figure I is an isometric view of the cap-plates before engagement; Fig. II, after engagement; Fig. III, a vertical section with the coil in place. Fig. IV shows the position of the cap-plates under heavy load; Fig. V,

a vertical section showing a multiple spring; Fig. VI, a top plan of a cap-plate for four coils. Fig. VII is a diagram to illustrate the difference in width of the bases.

In the figures, 1 is the cap-plate having the integral outwardly-to-be-arranged flanges 2 2; 3, the cap-plate having the inner flanges 4 4. These are formed substantially as in Fig. I, so that the flanges of the lower cap-plate, as there shown, must be compressed to be inserted within the upper flanges. Flanges 2 2 are expanded or flanges 4 4 compressed, so that they may be inserted within flanges 2 2, as shown in Figs. II and III, when the flanges engage by their own resiliency, retaining securely in position the coil, VI, without a bolt or other connecting means, though the bolt, VII, may be used, if desired.

8 8 are lugs to maintain the coils in position.

The bases of both cap-plates should be straight to fit flat and close on the bolster or other support, and the edges should be well rounded and not too sharp.

The friction and control of the vibrations are exactly proportioned to the load, because the greater the load the larger the friction-surfaces in contact, as in Fig. IV, and the reverse, as in Figs. II and III.

In Fig. VII the distance between the inner surfaces of the outer flanges 2 2 and the distance between the outer surfaces of the inner flanges 4 4 are substantially equal and the width of the bases correspondingly unequal, as indicated by the arrows.

Heretofore frictional control of coil-spring vibrations has been proposed by devices in which the engagement of the frictional surfaces was effected by the main coil or by auxiliary springs. In my present invention auxiliary springs or parts are not used, and the main coil has nothing to do with the engagement of the friction-surfaces, that being effected by their own resiliency, preferably of both pair of flanges, though the resiliency may be more in one pair. In my Patent No. 688,490 spring-steel cap-plates are used with engaging flanges, but of a different construction and operating on a different principle. There the bases are curved, and the pressure of the main coil itself on the bases forces the

flanges into engagement. Here the coils have no such function. In my present invention the cap-plates afford a simple and strong means for supporting the coils and retarding the vibrations. The flanges may be increased or diminished in size to increase or diminish the control of the recoil. The form of the parts may be varied without departing from the spirit of my invention and either cap-plate arranged above. It is adapted to locomotives and cars of all sorts, particularly to passenger-cars, where easy running is required, by its effective control of the vibrations, its sensitiveness, and pliability, so that it gives in a cheaper and more compact form all the advantages of elliptic springs. It is strong and durable and improves in operation by use, because the contact-surfaces are rubbed smooth, giving more intimate contact and more sensitiveness.

What I claim, and desire to secure by Letters Patent, is—

1. In a car-spring, the combination with one or more coil-springs, of upper and lower spring-steel cap-plates having integral, opposite, side flanges, the flanges being adapted to be subject to pressure, whereby one pair of flanges is arranged within the other pair and the flanges maintained in engagement solely by their own resiliency under all loads.

2. Cap-plates for coil-springs having flat bases and integral resilient flanges, the flanges of one cap-plate being adapted to be expanded to receive between them and grip the flanges of the other cap-plate.

3. Cap-plates for coil-springs made of tempered spring-steel with flat bases and integral opposite side flanges.

4. Cap-plates for coil-springs, having integral resilient flanges, the flanges of one cap-plate being adapted to be expanded, and the flanges of the other cap-plate being adapted to be compressed to be introduced within the expanded flanges, whereby the flanges are forced against each other to grip by their own resiliency.

5. In a car-spring, the combination with one or more coil-springs of upper and lower spring-steel cap-plates, having flat bases and integral opposite side flanges, the flanges being adapted to be subject to pressure, whereby one pair of flanges is arranged within the other pair, and the flanges maintained in engagement by their own resiliency under varying loads.

6. In a car-spring, the combination with a coil spring or springs, of upper and lower spring-steel cap-plates, having flat bases and integral side flanges, one base being slightly wider than the other base, and the flanges compressed so that one pair is received within the other, whereby the flanges are maintained in engagement by their own resiliency and substantially at right angles to the bases under varying loads.

7. In combination with a coil-spring, cap-plates made of tempered spring-steel and having resilient, integral, opposite, side flanges, said flanges being arranged substantially at right angles to their bases and being adapted to engage by their own resiliency and retain the coil in position under varying loads.

8. Cap-plates for coil-springs having flat bases and integral side flanges, the flanges of one cap-plate being resilient and adapted to engage by their own resiliency with the flanges of the other cap-plate.

9. The combination with a coil-spring, of upper and lower cap-plates having integral side flanges, the flanges of at least one cap-plate being resilient and adapted to engage by their own resiliency with the flanges of the other cap-plate.

In testimony whereof I have hereunto signed my name, before witnesses, this 15th day of February, 1902.

THOMAS A. SHEA.

Witnesses:

CLAUDE DENNIS,
FRED W. HARRIS.