

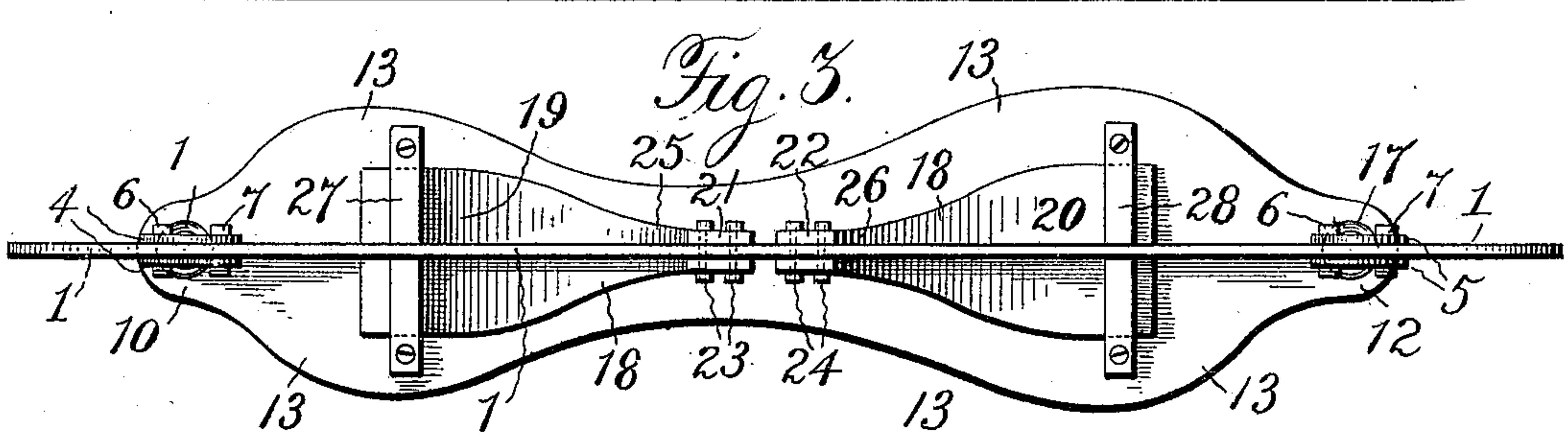
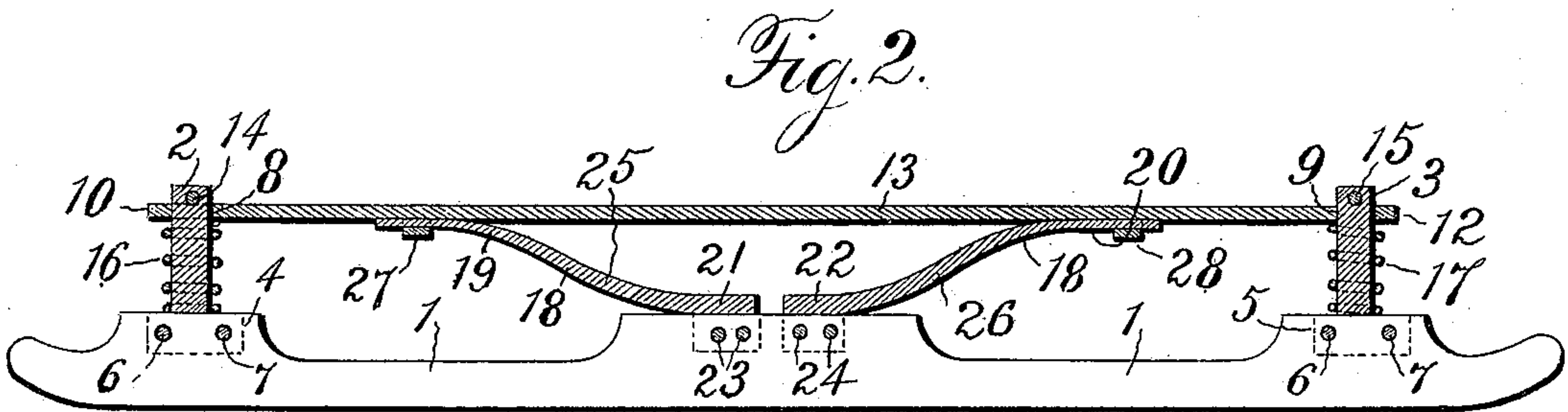
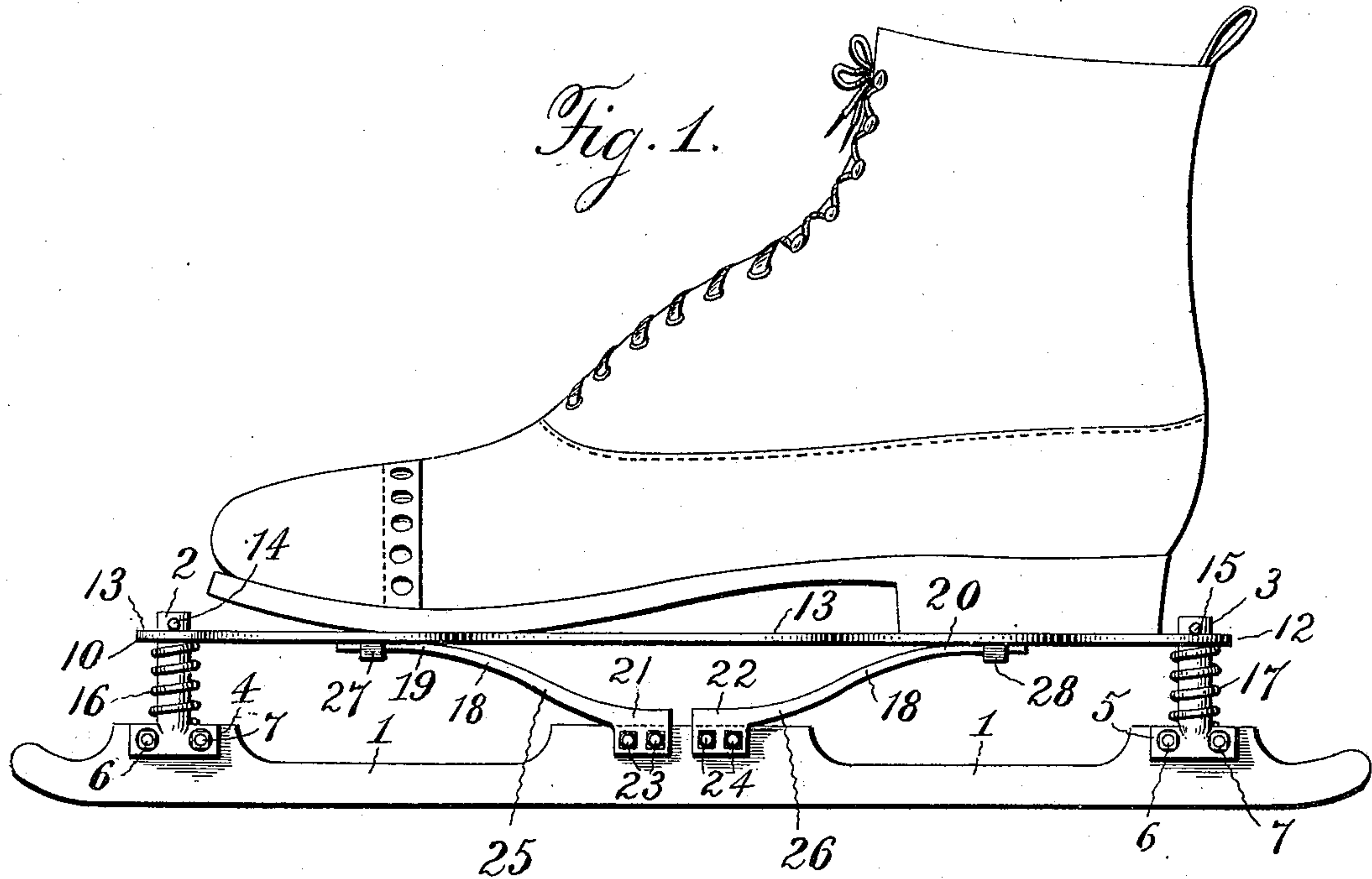
No. 618,780.

Patented Jan. 31, 1899.

R. BUSTIN.
ICE SKATE.

(Application filed Mar. 1, 1898.)

(No Model.)



WITNESSES
James Hutchinson.
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UNITED STATES PATENT OFFICE.

ROBERT BUSTIN, OF ST. JOHN, CANADA.

ICE-SKATE.

SPECIFICATION forming part of Letters Patent No. 618,780, dated January 31, 1899.

Application filed March 1, 1898. Serial No. 672,296. (No model.)

To all whom it may concern:

Be it known that I, ROBERT BUSTIN, a subject of the Queen of Great Britain, residing at St. John, New Brunswick, Canada, have
5 invented new and useful Improvements in Ice-Skates, of which the following is a specification.

This invention relates more particularly to ice racing-skates, although it is useful in connection with skates in general of that class which possess yielding foot pieces or plates.

The chief objects of my invention are to obtain an easy yielding motion of the foot-piece relatively to the runner; to obtain an easy
15 yielding motion fore and aft or at the front and rear extremities of the foot-plate; to provide a skate wherein the foot-plate is susceptible of yielding and the yielding motion is equalized uniformly from end to end thereof, so that
20 the skater is able to more equally balance himself; to provide a skate having a yielding foot-piece which is incapable of lateral tilting or tipping motions and is accurately guided in its yielding motions in a plane parallel
25 with the sides of the runner; to provide a skate with a yielding foot-plate which can be made of a thin plate of steel or other metal and be accurately guided in its yielding motions by rigid spindles which pass loosely
30 through orifices in the foot-plate at points in front and rear of the toe and heel of the skater, and, generally, to improve that type of ice-skate wherein springs are used to permit the foot-plate to yield while skating. To
35 accomplish all these objects my invention involves the features of construction, the combination or arrangement of parts, and the principles of operation hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1 is a side elevation of a skate constructed in accordance with my invention and representing a boot or shoe secured upon the foot-plate by binding-straps. Fig. 2 is a
45 longitudinal central sectional view of the skate, the shoe shown in Fig. 1 being omitted; and Fig. 3 is a bottom plan view for the purpose of more clearly illustrating the contour or shape of the equalizing spring or
50 springs intermediate the fore and aft springs.

In order to enable those skilled in the art to make and use my invention, I will now de-

scribe the same in detail, referring to the accompanying drawings, wherein—

The numeral 1 indicates the runner of a
55 skate, which may be of any desired form or shape, but is represented in the drawings as in the form of a well-known ice racing-skate, which, as usual, is of considerable length as compared to other ice-skates. The fore and
60 aft or front and rear end portions of the runner are provided with vertical spindles 2 and 3, having their lower ends constructed with T-shaped heads 4 and 5, which are slotted to embrace the upper edges of the runner
65 and to which they are rigidly secured through the medium of transverse bolts, rivets, or screws 6 and 7. The spindle 2 is what I term the "fore" or "front" end spindle, and the spindle 3 is the "aft" or "rear" end
70 spindle. The spindles, as shown, are circular in cross-section above their T-shaped heads 4 and 5 and project loosely through circular orifices 8 and 9, provided in front and rear contracted extensions 10 and 12 of the
75 foot-plate 13, which is preferably composed of sheet-steel or other metal suitable for the purpose in hand. The contracted extensions or prolongations 10 and 12, with their orifices 8 and 9, are so relatively arranged that the
80 foot of the skater will lie intermediate between the ends of the spindles which project above the upper surface of the foot-plate, and consequently the foot-plate can rise and fall on the spindles without the latter interfering
85 with or coming in contact with the foot of the skater. The foot-plate is retained in operative connection upon the spindles through the medium of locking keys or pins 14 and 15, passed through transverse orifices formed
90 in the upper ends of the spindle above the foot-plate. The spindles 2 and 3 are provided, respectively, with spiral springs 16 and 17, which encircle the spindles and bear directly at their upper ends against the lower
95 surface of the foot-plate, while the lower ends bear against the T-shaped heads 4 and 5 of the spindle or against the upper edge of the skate-runner. The rigid spindles properly support the spiral springs and guide the foot-
100 plate in its yielding motions (permitted by the springs) in a plane exactly parallel with the sides of the skate-runner, so that there is no possibility of lateral tilting or tipping of

the foot-plate relatively to the runner or of the runner relatively to the foot-plate.

In order to uniformly equalize the yielding motion of the foot-plate throughout its extent from front to rear, I provide an equalizing-spring 18, located between the rigid spindles 2 and 3 to act against the foot-plate 13, and which, as here represented, is made in two parts or sections formed with comparatively broad flattened free extremities 19 and 20, which bear, respectively, against the foot-plate directly beneath the heel and ball or fore part of the skater's foot. The parts or sections of the equalizing-spring are formed, respectively, with slotted heads 21 and 22, embracing the central portion of the upper edge of the skate-runner and rigidly attached thereto by means of transverse bolts, rivets, or screws 23 and 24. The comparatively broad flattened free extremities 19 and 20 are joined to the slotted heads 21 and 22 through the medium of narrow or contracted shanks 25 and 26, which promote the resiliency of the parts or sections composing the equalizing-spring and provide a neat and finished appearance. The comparatively broad flattened free extremities 19 and 20 contribute materially to preventing tilting or tipping of the foot-plate, and in addition thereto these spring parts or sections constitute an equalizing-spring by which the yielding motions of the foot-plate are uniformly equalized throughout its extent from end to end thereof, and consequently the skater is enabled to equally balance himself while skating. The fore or front end spring secures the desired yielding at the toe of the skate and the aft or rear end spring secures the desired yielding motion at the heel of the skate, while, as before stated, the yielding motion of the foot-plate is equalized by the intermediate equalizing-spring.

The broad flattened extremities of the equalizing-spring pass loosely between the under side of the foot-plate and guide-brackets 27 and 28, which are attached by screws or otherwise to the foot-plate and serve as efficient retaining-guides for the free extremities of the equalizing-spring and hold the latter in proper operative connection with the foot-plate.

The provision of the spindle-openings in the foot-plate, which accurately fit rigid spindles rising from the skate-runner, is desirable and important in that the foot-plate is accurately guided in its yielding motions and effectually prevented from any lateral tilting or tipping motions. The arrangement of the spindle-orifices in front and rear extensions or prolongations of the foot-plate at points in front and rear of the toe and heel of the skater's foot permits the spindles to project considerably above the upper surface of the foot-plate when the latter yields downward, and this construction also enables me to make the foot-plate of a comparatively thin plate of steel or other metal, which is impossible

where springs are housed in the foot-plate directly under the heel and ball or fore part of the foot of the skater.

The various parts of the improved skate are of such construction that they may be kept in stock, and therefore any broken or damaged portion can be conveniently and quickly replaced by a new one when occasion demands.

In the drawings I have represented the skate as attached to the boot or shoe of a skater through the medium of the usual binding-straps; but I do not wish to be understood as confining myself to any particular means for attaching the skate, as this may be effected through the medium of the well-known clamps employed on skates, or the foot-plate can be secured to the boot or shoe by screws or otherwise.

The improved skate is susceptible of being placed in any position and of being used in any manner that is possible with any known skate.

Having thus described my invention, what I claim is—

1. The combination with the foot-plate and runner of a skate, of independent fore and aft springs interposed between the ends of the foot-plate and the runner, an intermediate equalizing-spring having broadened, flat extremities bearing against and slidable upon the under side of the foot-plate and constructed with contracted shank portions rigidly secured to the runner, for uniformly equalizing the yielding motion of the foot-plate from the front to the rear extremities thereof, and guide-brackets secured to the under side of the foot-plate and in which the broadened, flat extremities of the equalizing-spring are movable, substantially as described.

2. The combination, in an ice-skate, of a runner having rigidly-attached spindles at its front and rear ends, a foot-plate having fore and aft orifices through which the spindles project, devices engaging the spindles above the foot-plate and serving to retain the latter on the spindle, springs encircling the spindles between the runner and the foot-plate, and an equalizing-spring located intermediate the springs on the spindles, attached to the runner and having free extremities bearing against the under side of the foot-plate, substantially as described.

3. The combination, in an ice-skate, of a runner having rigidly-attached spindles at its front and rear ends, a foot-plate having fore and aft orifices through which the spindles project, devices engaging the spindles above the foot-plate and serving to retain the latter on the spindles, springs encircling the spindles between the runner and the foot-plate, and an equalizing-spring located between the springs on the spindles, and composed of two parts or sections having broadened, flat extremities bearing against the foot-plate and contracted shank portions con-

structed with slotted heads secured to the runner, substantially as described.

4. The combination, in an ice-skate, of a foot-plate, having fore and aft orifices, spin-
5 dles extending through the orifices and having slotted heads at their lower ends which embrace and are rigidly attached to the skate-runner, devices engaging the spindles above the foot-plate and serving to retain the latter
10 on the spindles, and springs encircling the

spindles between the runner and the foot-plate, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ROBT. BUSTIN.

Witnesses:

ALBERT H. NORRIS,
F. B. KEEFER.