

No. 698,224.

Patented Apr. 22, 1902.

S. H. RAYMOND.
CASTER.

(Application filed Feb. 3, 1902.)

(No Model.)

Fig. 1,

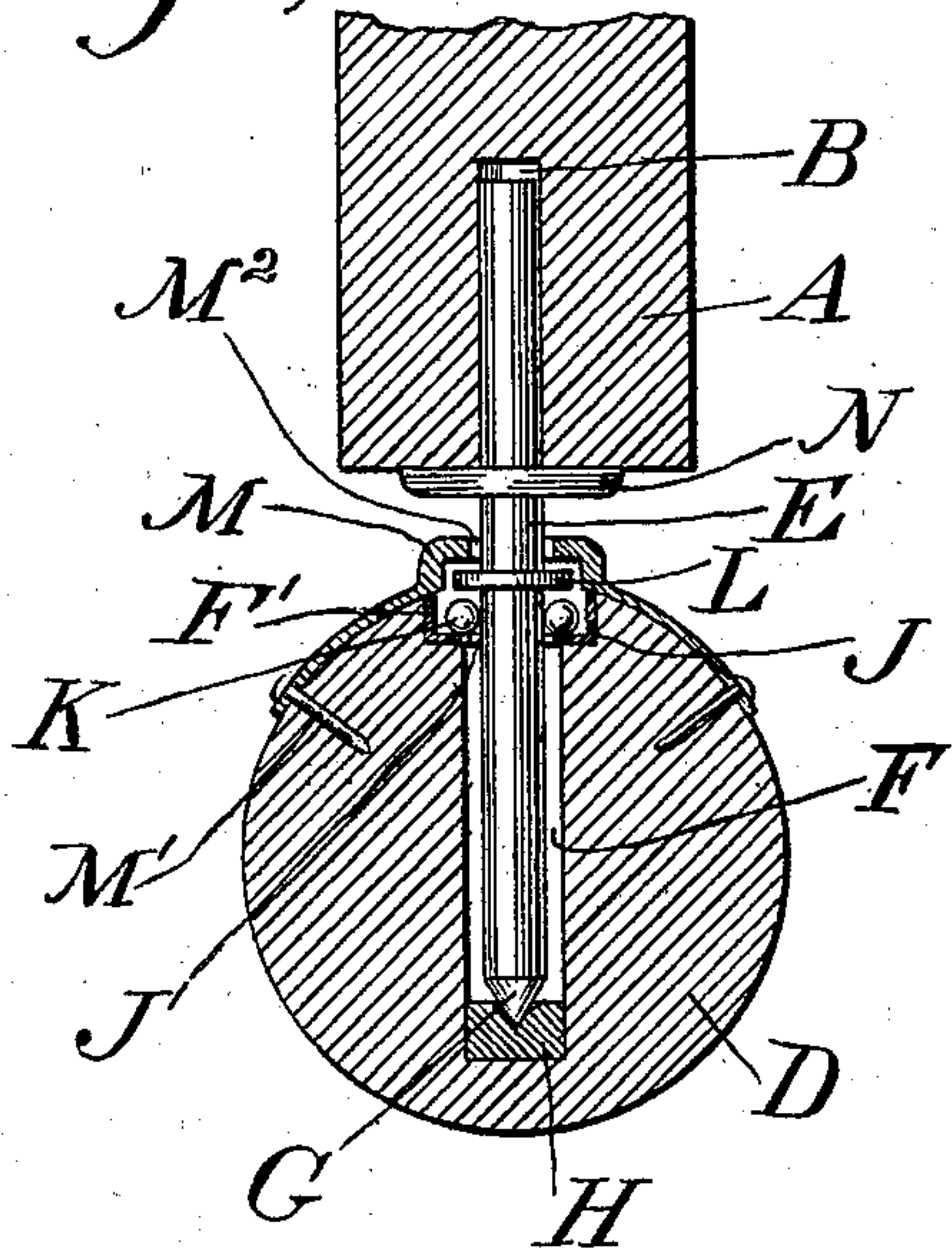


Fig. 2,

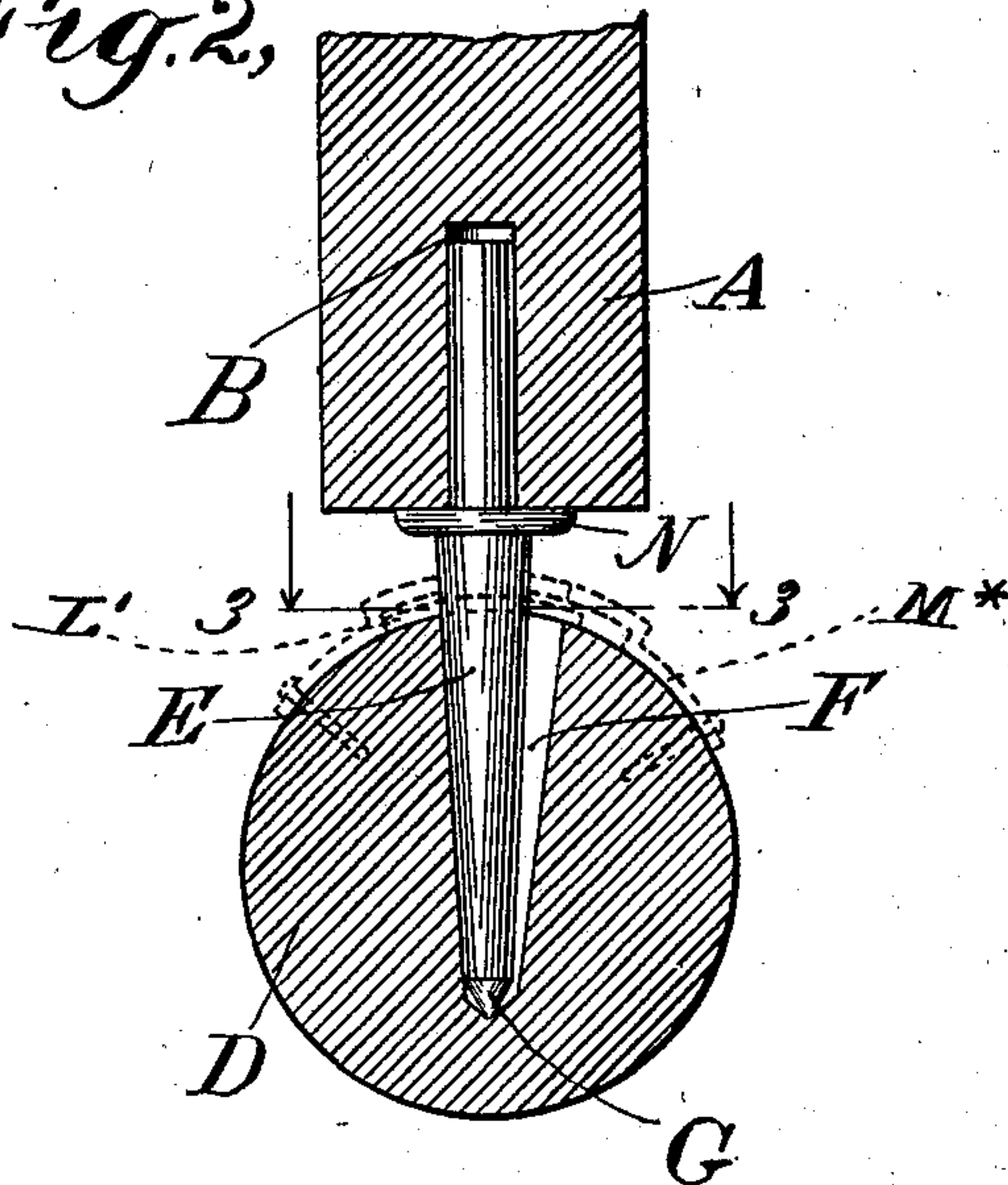


Fig. 4,

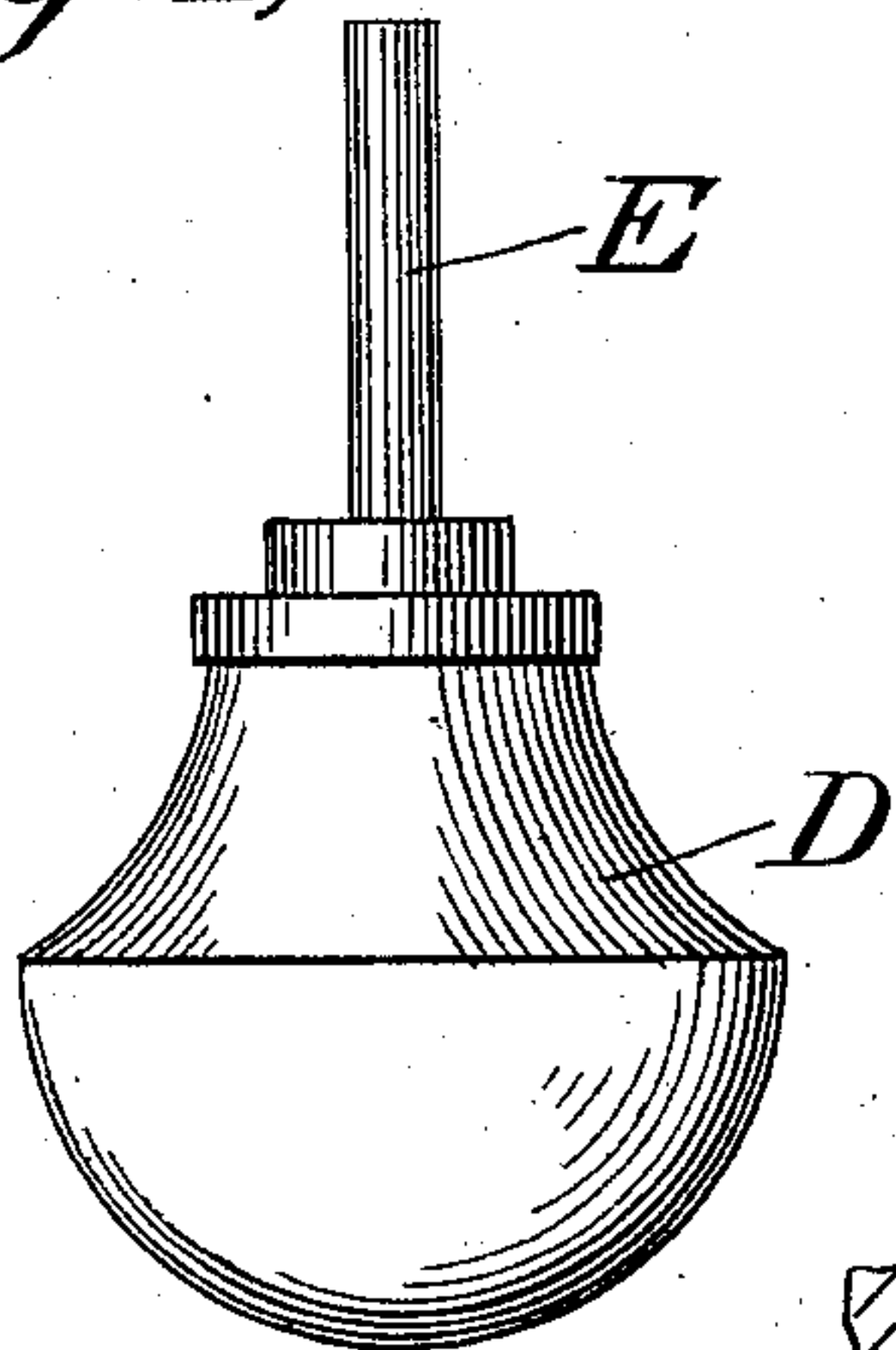


Fig. 3,

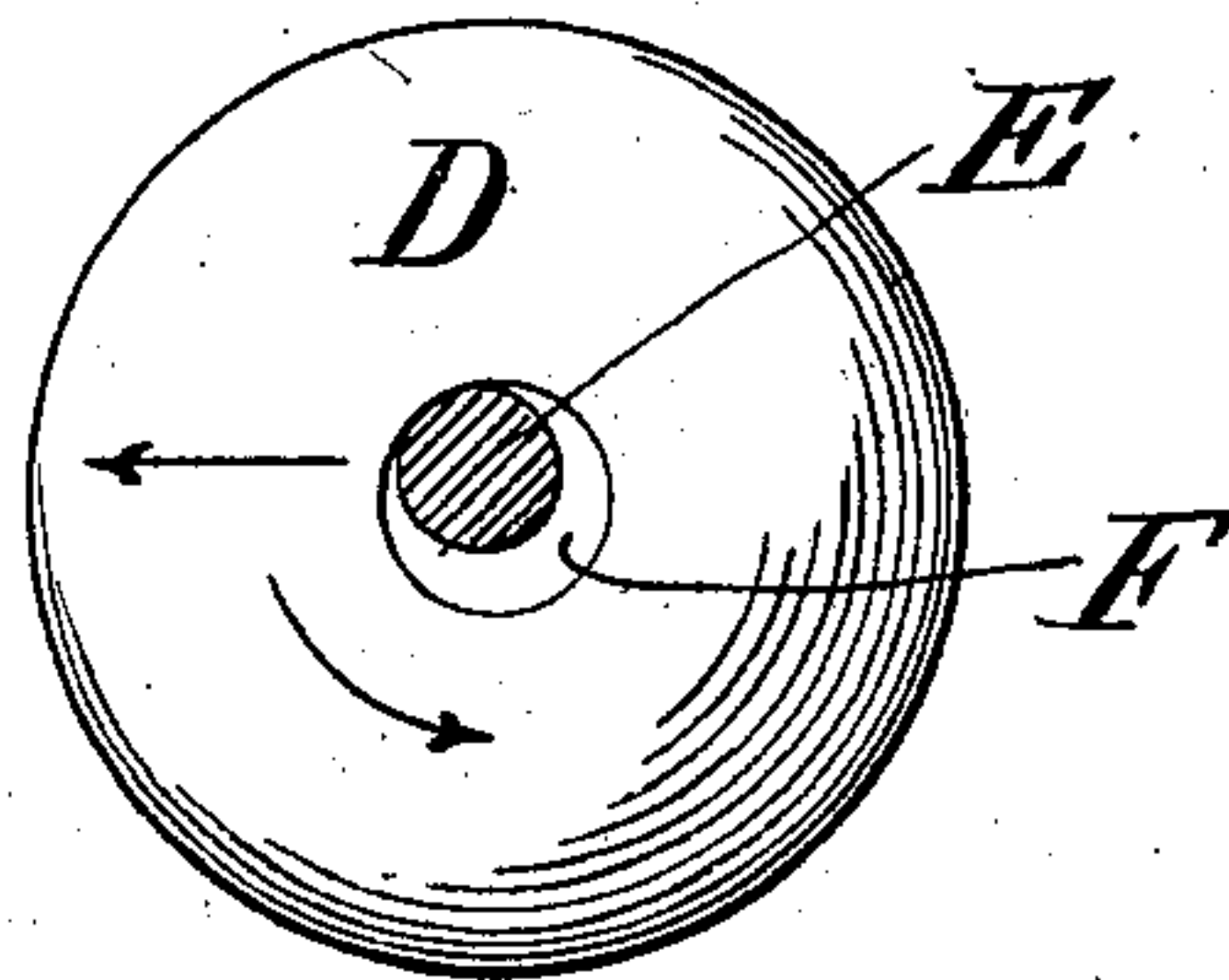
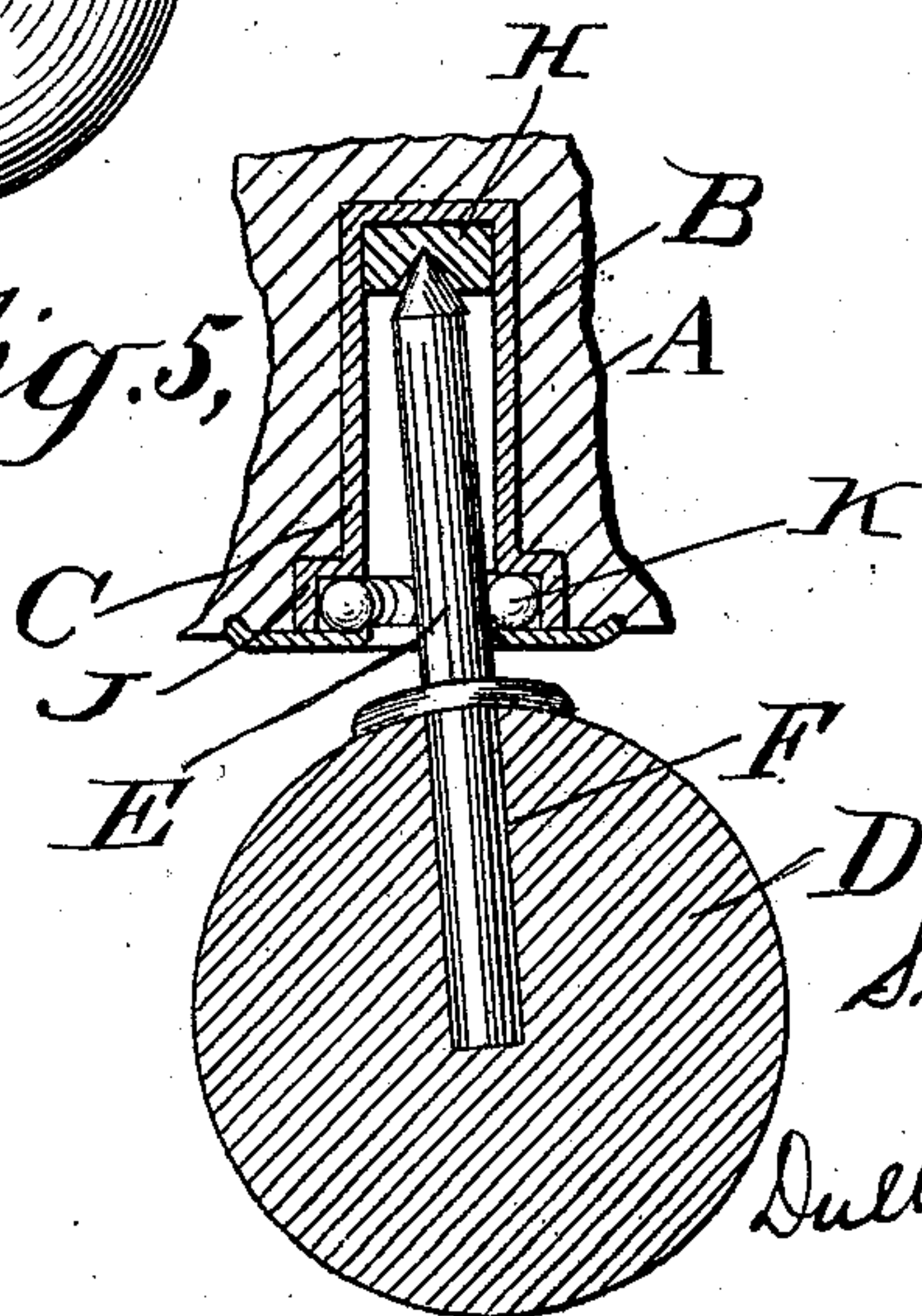


Fig. 5,



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CASTER.

SPECIFICATION forming part of Letters Patent No. 698,224, dated April 22, 1902.

Application filed February 3, 1902. Serial No. 92,255. (No model.)

To all whom it may concern:

Be it known that I, SILAS H. RAYMOND, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain

5 new and useful Improvements in Casters, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

10 This invention relates to furniture-casters; and it consists in certain peculiarities in the construction and arrangement of parts, which are hereinafter fully described, and particularly pointed out in the claims at the conclu-

15 sion of this specification.

The objects of the invention are to simplify and reduce the construction of the caster by making a caster that will move easily and with less friction than casters heretofore constructed.

20 Further objects will appear from the description set forth below.

The several objects of the invention are carried out by the constructions illustrated in

25 the accompanying sheet of drawings which forms a part of this specification.

Referring to the drawings, in which the same symbols of reference indicate the same parts in the several views, Figure 1 is a vertical

30 section of one form of my caster, showing the pintle thereof in an opening or socket in the leg of a piece of furniture, said leg being shown in section. Fig. 2 represents a modification of a simpler form of construction than is shown in Fig. 1. Fig. 3 is a section of Fig. 2,

35 taken on line 3 3. Fig. 4 shows a caster of a different shape than is shown in the other figures. Fig. 5 is a modification in which I have shown the pintle fastened in the ball of the

40 caster and the opening or socket in the leg of the piece of furniture enlarged to permit a bushing to be inserted, the upper end of the pintle being the bearing-point.

The part lettered A on the drawings represents the leg of a piece of furniture to which the caster is applied. B is an opening or

45 socket in the leg, in which the pintle of the caster is inserted. In Fig. 5 a bushing C is shown inserted in the socket.

50 D is the ball of the caster, and E is the pintle. The ball has an opening F therein to receive the pintle.

Referring now to Fig. 1, the pintle is shown with its lower end G pointed and resting on the bearing-piece H, inserted at the bottom of the opening or socket F. The only bearing-

55 surface of the pintle is at this end, and all the weight comes on the pintle at this point, which is substantially directly under the leg of the furniture. The bearing H is made of hard

60 material and is placed in the bottom of the socket in order to lessen friction, and thus to permit the ball to turn more easily. This bearing-piece may be dispensed with in some instances and the bottom of the socket hardened to form a bearing-surface for the end

65 of the pintle. If the ball is made of some hard material, it is not necessary to harden the material itself at this point, as the said material would be sufficiently hard to act as a bearing-piece for the pintle. The upper part F'

70 of the socket F is enlarged, and into this enlargement is fitted an antifriction-ball-bearing plate J, the balls being marked K. L is a flange on the pintle, which prevents the

75 pintle from dropping out of the ball when the plate M is fastened to the ball by the pins or nails M', for example. The bearing-plate has an opening J' therein, and the plate M also has an opening M', through which the pintle

80 passes, both of these openings being larger than the diameter of the pintle, so that the pintle will have considerable free play and will stand at an angle to the vertical axis of

85 the ball, and the end of the pintle will always be in front of the vertical axis of the ball when the caster is moved, and the ball will move in what might be termed a "wabby" direction. Of course the balls K are made

90 small enough so as not to fit close around the pintle, but will permit the pintle to have a free or wabby motion. The part lettered N is an ordinary washer around the pintle and rests against the lower surface of the end of the furniture-leg.

95 The parts are constructed and assembled as follows: The ball D has a socket F made therein, which socket is larger than the diameter of the pintle, and into the bottom of this socket is placed a bearing H, and into the

100 upper and larger part of the socket F' is placed the bearing-plate J. The balls K are then placed on this bearing-plate and the pintle inserted in the socket in the ball, the

lower end of the pintle resting on the plate H, and the plate M is then fastened to the ball, the pintle passing through the opening M² in this plate. The caster thus assembled is ready for use. When it is desired to place it in the leg of the furniture, the upper end of the pintle is inserted in the opening B in the leg A, the washer or flange N resting against the lower surface of the leg in the usual manner. In this construction I have shown the antifriction-balls surrounding the pintle. The use of these balls, however, is only necessary in heavy casters. For small chairs or light furniture where casters have little work to do these balls may be omitted.

In Fig. 2 I have shown a much simpler construction of caster than is shown in Fig. 1, and in this form of caster the socket F in the ball is made tapering, and the lower part of the pintle is also tapered to conform to the shape of the socket, and the lower end G rests directly against the ball, the bearing-piece H being dispensed with. In this construction it may be desirable to secure to the pintle the flange L' and a plate M*, both of which are shown in dotted lines in this figure, to prevent the ball and pintle being separated. This figure clearly shows that all the weight of the furniture comes on the end G of the pintle; and this end of the pintle moves in front of the axial line of the ball when the caster is in motion.

Fig. 4 needs no further description than what has already been given, as this figure is used simply to show that it is not necessary to make the ball round, as there are many shapes and styles that may be used and all work equally as well as a round ball; but the lower part must be substantially smooth and oval to produce the friction which propels the caster, the caster being propelled by the friction on the lower part of the ball coming in contact with the floor.

In the constructions that I have just described the ball is not fastened rigidly to the pintle, but is simply connected to the pintle, and it moves freely around it with a wobbly motion owing to the fact that the socket in the ball is of larger diameter than the diameter of the pintle, and the pintle has considerable free play in the upper end of this socket.

In Fig. 5 I have shown a modification in which the pintle is connected rigidly to the ball, so that when the ball turns the pintle will turn with it. In this construction the weight comes upon the upper end of the pintle. In order to permit the ball to have a wobbly motion and the end of the pintle on which the weight comes to move in front of the vertical axis of the ball, I have made the opening or socket in the leg of the furniture larger than in the other cases and inserted in this a bushing C, the upper end of which has the bearing-piece H, and the lower part is enlarged, as shown in Fig. 1, and the antifriction-balls are inserted in this enlargement.

In other words, I have substantially inverted the construction shown in Fig. 1—that is, made the upper end of the pintle the bearing-point instead of the lower end. In this same figure I may, as I have shown in the other cases, put a flange on the pintle E and attach a plate M to the lower end of the leg of the furniture and below the flange, so as to keep the roller and the bushing C together, if necessary.

While I have shown certain modifications of my device, others may be made by any one skilled in the art without departing from the spirit of my invention.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a caster, a ball having a socket therein and a pintle, one end of the pintle resting in and bearing against the lower end of the socket as and for the purpose set forth.

2. In a caster, a ball having a socket therein, a bearing-piece at the inner end of the socket, a pintle of less diameter than the diameter of the socket, one end of which is in contact with the bearing-piece and means for holding the pintle in the socket.

3. In a caster, a ball having a socket therein, the upper end of the socket being of larger diameter than the inner end, a pintle in the socket the inner end of which bears against the inner end of the socket, antifriction-balls in the enlarged part of the socket and surrounding the pintle, a flange on the pintle, a plate fastened to the ball having an opening therein of larger diameter than the diameter of the pintle and through which the pintle passes, said plate being adapted to bear against the flange to hold the pintle in the socket.

4. In a caster, a ball having a socket therein, a pintle in the socket of smaller diameter than the diameter of the socket, one end of the pintle resting against the inner end of the socket and supporting the weight brought on the caster, the parts being so arranged that this end of the pintle will be in front of the vertical axis of the ball when the caster is in use and that there may be a free or "wobbly" movement of the pintle in its socket.

5. In combination, a leg of a piece of furniture having a socket therein, a ball also having a socket therein, a pintle inserted in each of said sockets, one end of the pintle being rigidly secured in one of the sockets and the other end of the pintle moving free in the other socket as and for the purpose set forth.

6. In combination, a leg of a piece of furniture, having a socket therein, a ball also having a socket therein, a pintle inserted in each socket one end of the pintle being secured in one of the sockets and the other end of the pintle resting against the inner end of the other socket, which is tapered and of greater diameter than the diameter of the pintle, so that the end of the pintle which rests against the end of the socket will support the weight

brought upon the caster and when the caster is in motion that end of the pintle will be in advance of the vertical axis of the ball and the ball will be permitted to have a "wabbly" motion.

7. In combination, a leg of a piece of furniture having a socket therein, a vertical pintle having one end inserted in the socket, a ball directly under the leg of the furniture having a vertical socket therein of greater diameter than the diameter of the pintle, the lower part of the pintle inserted in the said socket, the lower end bearing directly against

the inner end of the socket and supporting the weight brought on the leg of the furniture, means for holding the ball and pintle together but to permit the ball to have a free or "wabbly" motion about the pintle as and for the purpose set forth.

In testimony whereof I affix my signature in the presence of two witnesses.

SILAS H. RAYMOND.

Witnesses:

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