

No. 871,740.

PATENTED NOV. 19, 1907.

F. R. SPEAR.
BRAKE SHOE.

APPLICATION FILED JULY 3, 1907.

2 SHEETS--SHEET 1.

Fig. 1

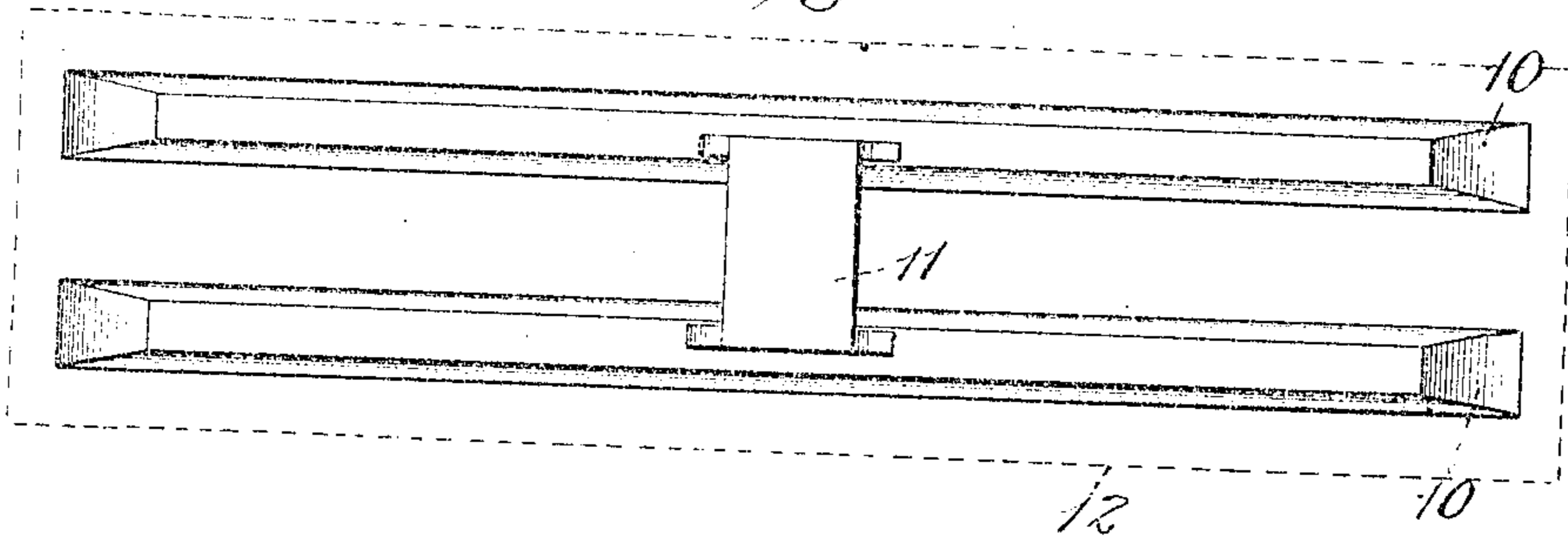


Fig. 2

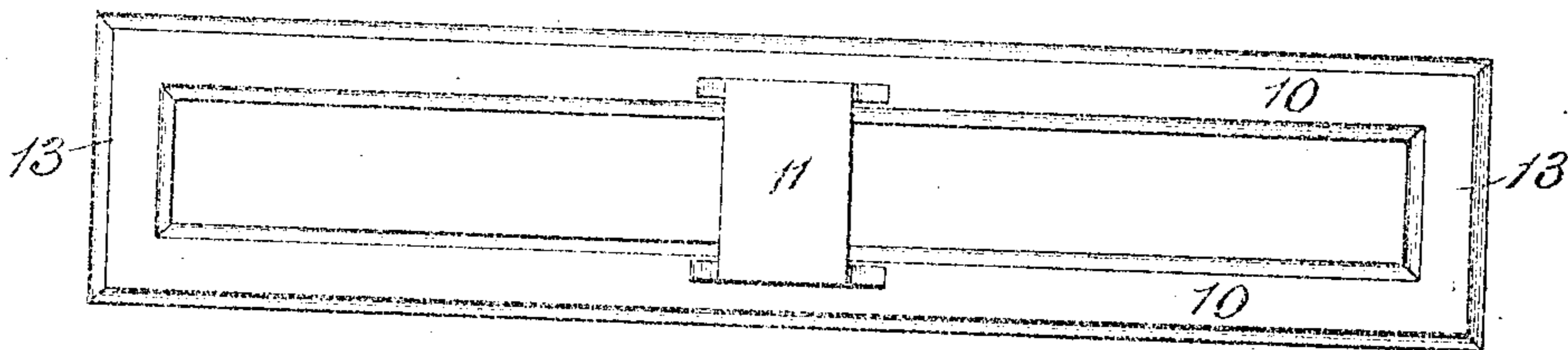


Fig. 3

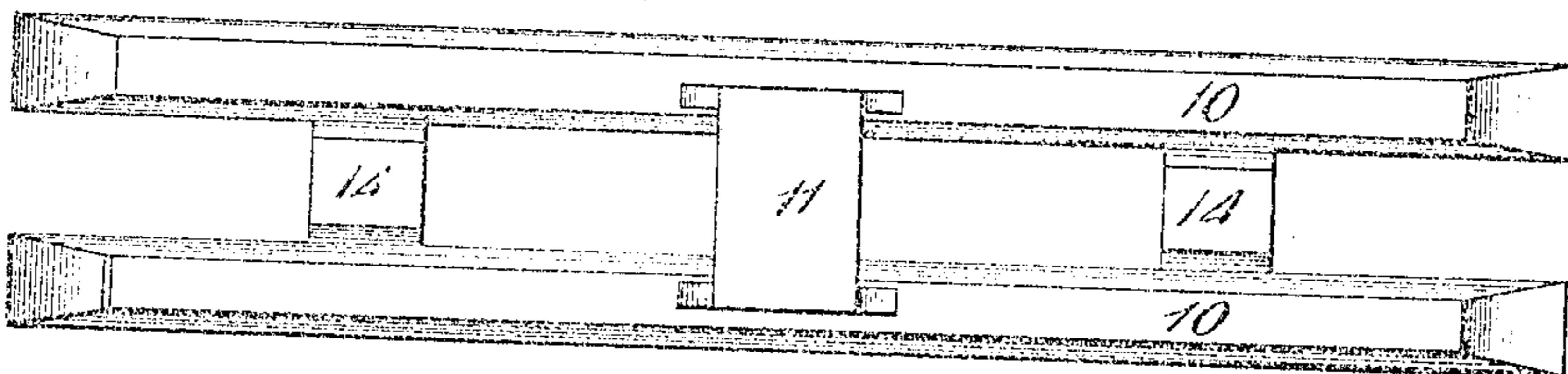
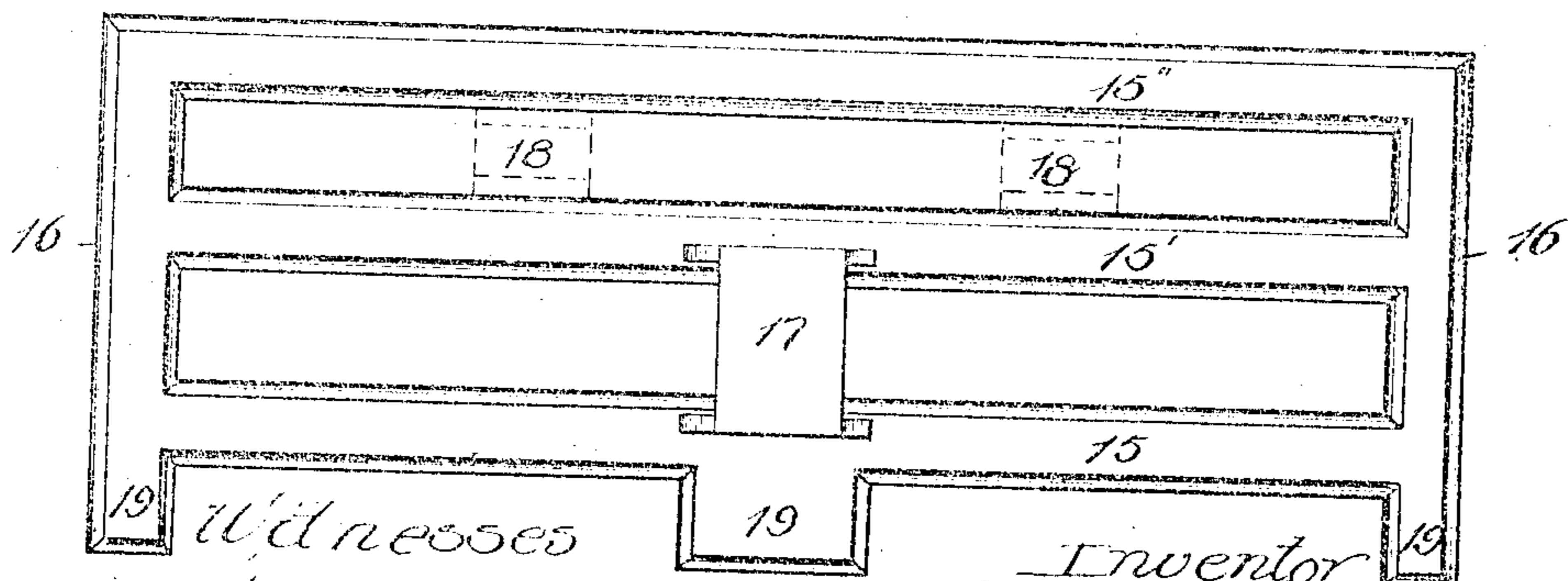


Fig. 4



Witnesses
Harry R. L. White
M. A. Kiddis

Inventor
Frank R. Spear

By *Wm. C. Belk* Atty

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2 SHEETS—SHEET 2.

Fig. 5

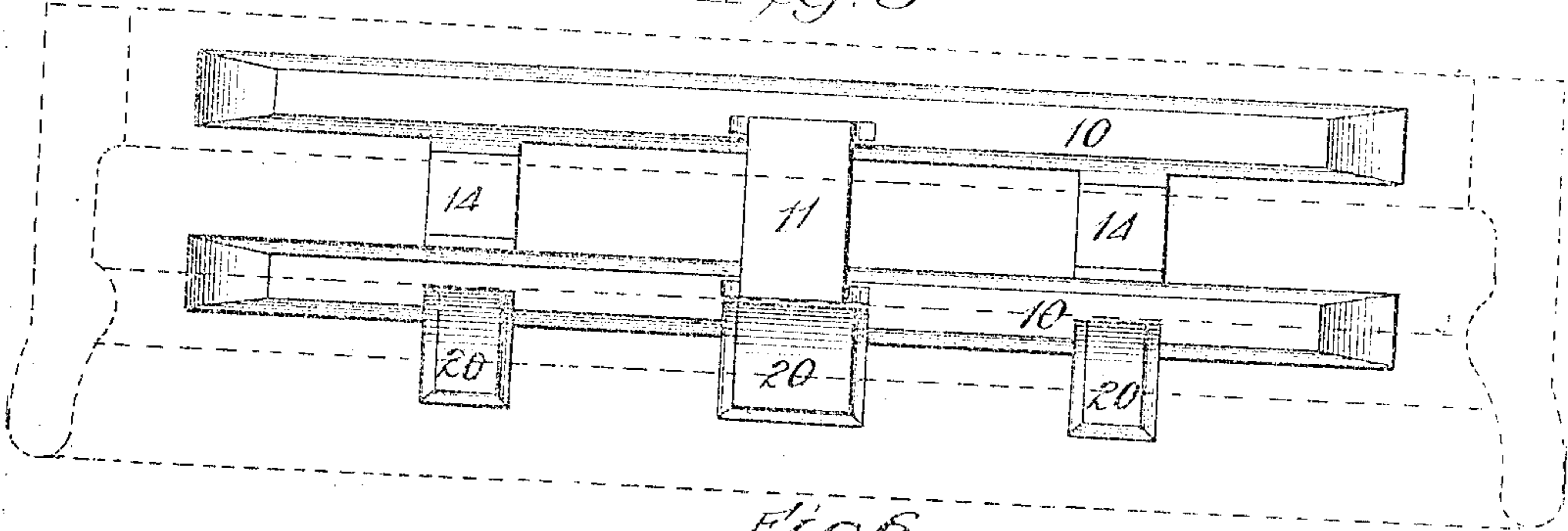


Fig. 6

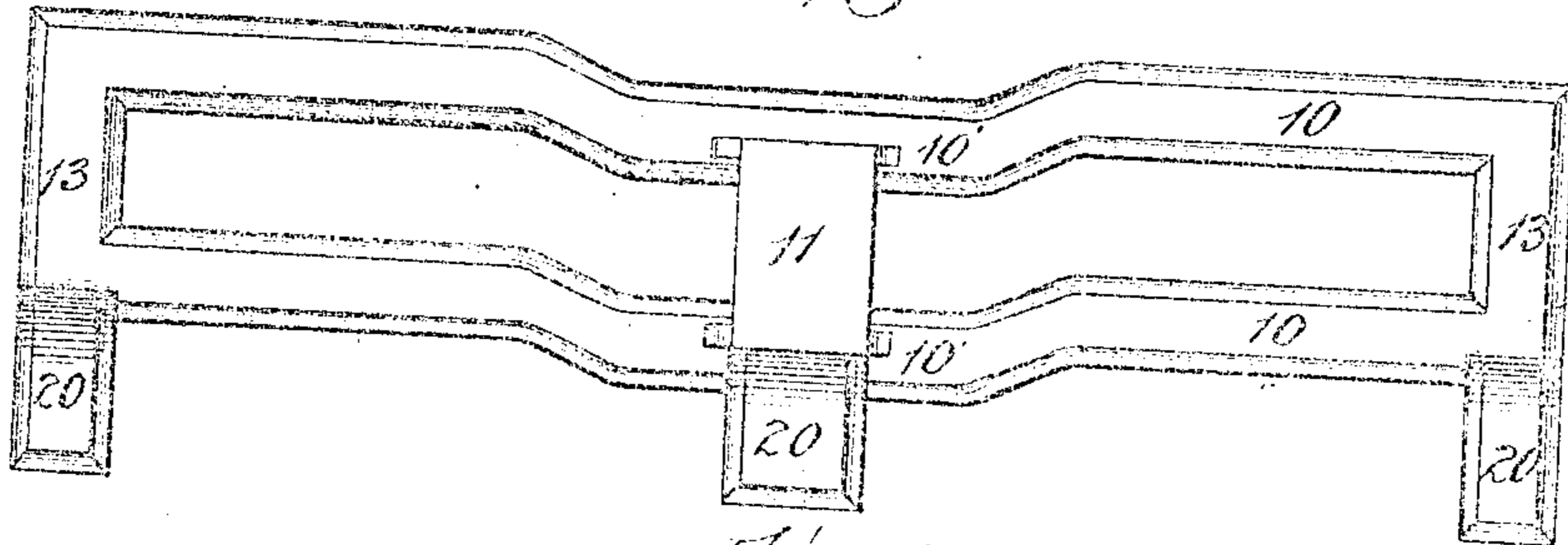


Fig. 7

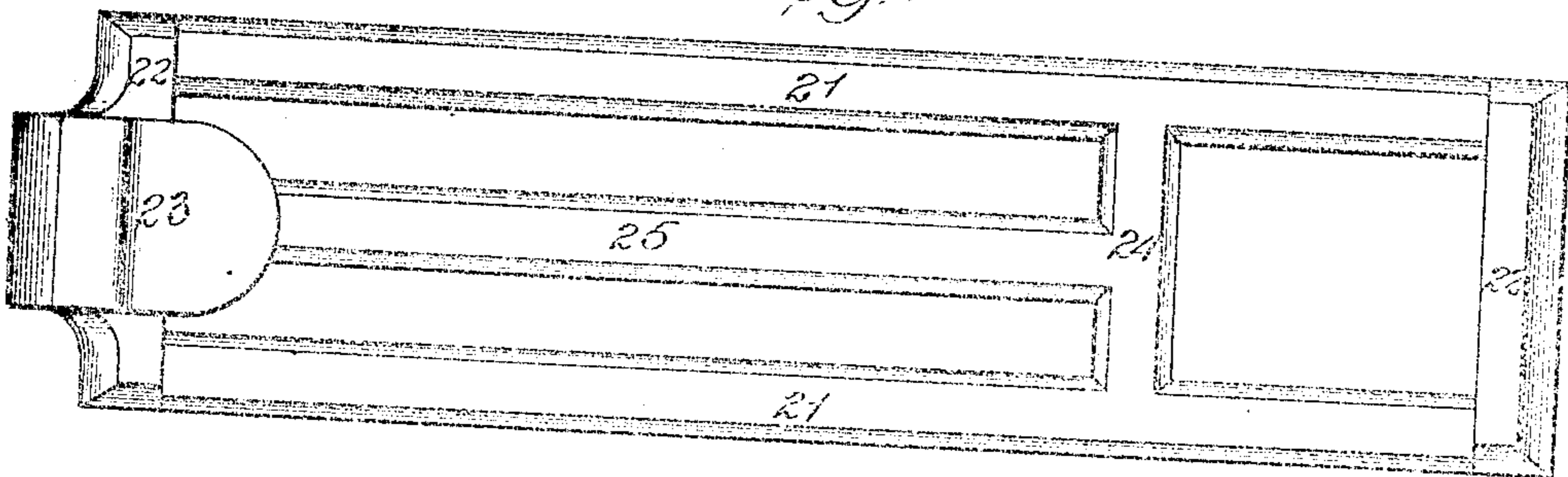
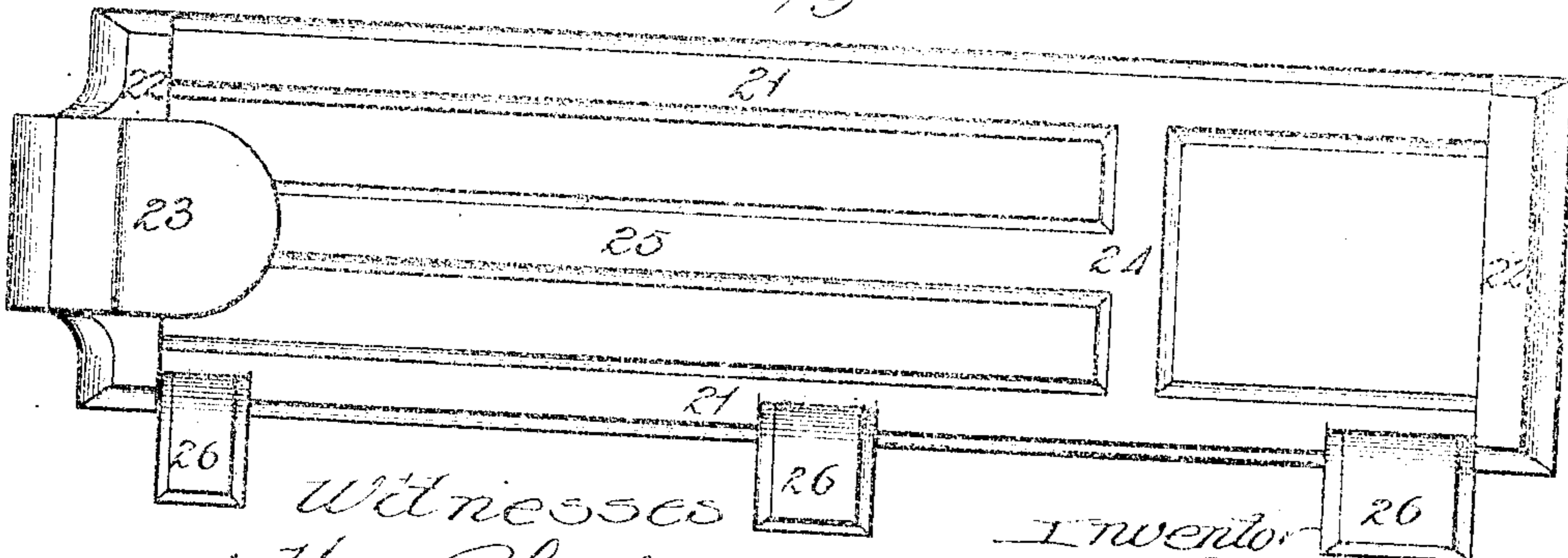


Fig. 8



Witnesses
Harry R. White
M. A. Kiddie

Inventor
Frank R. Spear
W. H. Belch, Atty.

UNITED STATES PATENT OFFICE.

FRANK R. SPEAR, OF CHICAGO, ILLINOIS.

BRAKE-SHOE.

No. 871,740.

Specification of Letters Patent.

Patented Nov. 19, 1907.

Application filed July 3, 1907. Serial No. 381,974.

To all whom it may concern:

Be it known that I, FRANK R. SPEAR, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Brake-Shoes, of which the following is a specification.

The object of this invention is to strengthen and reinforce a brake shoe in a superior and inexpensive manner by embedding in the shoe, at or adjacent to its back, a strong but light iron casting comprising a plurality of suitably connected rods or bars and made of cast malleable iron.

On October 2, 1906, Letters Patent No. 832,062 were granted to me for a brake shoe comprising a cast malleable iron plate secured to the body of the shoe at or adjacent to its back and this has been found to be very satisfactory, but the casting hereinafter described is lighter and less expensive than the plate, it can be easily cast in any desired form for any kind of shoe, and it reinforces and strengthens the shoe in an equally satisfactory manner.

The invention can be embodied in car shoes and locomotive driver shoes, solid, composite and composition, of all varieties, shapes and sizes.

In the drawings I have shown the invention embodied in a variety of forms for several different kinds of shoes and referring thereto Figure 1 illustrates the invention in a simple form particularly adapted for a car shoe which is indicated in broken lines. Figs. 2 and 3 illustrate other forms of the invention for car shoes. Fig. 4 illustrates a form of the invention particularly adapted for a locomotive blind driver shoe. Fig. 5 shows a form for a flanged car shoe, the outline of the shoe being indicated in broken lines. Fig. 6 shows another form for a flanged car shoe. Fig. 7 shows another form for a locomotive blind driver shoe. Fig. 8 shows a form for a flanged driver shoe.

The reinforcement, in whatever form it may be embodied, consists of a frame made of cast malleable iron, that is to say it is cast of high grade gray iron, in a mold according to ordinary foundry practice, and then subjected to an annealing process in a suitable oven.

It is well known that an ordinary gray iron casting is brittle and has very little tensile strength and hence a reinforcement for

brake shoes consisting of an ordinary gray iron casting would not be serviceable. But the annealing process toughens the gray iron casting, increases its tensile strength, takes away its brittleness and makes it somewhat elastic, so that it is admirably adapted for a reinforcing and strengthening means for brake shoes. The annealing process does not make the casting ductile so that it can be formed or shaped over a die like wrought iron or steel but gives to the casting a sufficient amount of elasticity to produce the best results in making the shoe and in practical use thereof. The cast iron reinforcement still remains a casting after the annealing process and will not injure a steel tire if it comes in contact therewith, the effect of the annealing process being only to change the casting from brittle to tough and from inelastic to somewhat elastic.

In Fig. 1 the reinforcement comprises two rods or bars 10 connected by a bridge 11 which forms the attaching lug of the shoe. The rods or bars and bridge are, of course, made integral in one casting as heretofore described and the body of the shoe, indicated by the broken lines 12 in Fig. 1, is cast on the reinforcing casting in a familiar manner so that the rods or bars will be wholly or partially embedded in the shoe at or adjacent to its back.

In Fig. 2 the rods are also connected at their ends by cross pieces 13 and in Fig. 3 the cross pieces 14 are located between the bridge 11 and each end of the reinforcing casting.

In Fig. 4 the reinforcing casting comprises three rods or bars all connected at their ends by cross pieces 16 and two, 15 and 15', also connected between their ends by a bridge 17. The bars 15' and 15'' may be connected between their ends by cross pieces 18 as indicated in broken lines in Fig. 4. The rod or bar 15 is provided with extensions 19, which may be located at the ends and at the middle thereof or otherwise.

In Fig. 5 the reinforcing casting is made in the form shown in Fig. 3 and provided with side lugs 20 upwardly curved to reinforce and strengthen the flange of a car shoe.

In Fig. 6 the reinforcing casting is made in the form shown in Fig. 2 and provided with side lugs 20 to reinforce and strengthen the flange of a car shoe. I have also shown in Fig. 6 that the rods or bars may be offset be-

tween their ends, as at 10', so that the casting will not lie, throughout its length, in the throat of the shoe.

Fig. 7 shows a form of reinforcing casting which may be used in a locomotive blind driver shoe and it comprises the side rods or bars 21 connected at their ends by cross-pieces 22, a hook 23 at one end of the casting, a cross piece 24 connecting the rods or bars 21 between their ends, and a rod or bar 25 extending from the hook end of the casting to the cross piece 24.

Fig. 8 illustrates a form of reinforcing casting made similar to the form shown in Fig. 7 and provided with side lugs 26 to reinforce and strengthen the flange of a flanged locomotive shoe.

As my improved reinforcement is a casting it can be readily made in any desired shape and form and at low cost. The rods or bars have beveled sides and ends and the reinforcing casting is embedded wholly or partly in the shoe body when the latter is cast and it not only reinforces and strengthens the shoe but holds the parts thereof together in case of fracture. As before mentioned the cast malleable iron reinforcing casting is particularly important because it will not injure the tire if it contacts therewith and for this reason the shoe can be worn down much thinner than has been possible heretofore with reinforcements of other metal.

What I claim and desire to secure by Letters Patent is:

1. A reinforcing and strengthening back for brake shoes consisting of a malleable iron

frame having a plurality of rods or bars connected together and all made in one casting, said rods or bars having beveled sides and ends.

2. A reinforcing and strengthening back for brake shoes consisting of a malleable iron frame having a plurality of rods or bars connected together at their ends, and a bridge connecting said rods or bars between their ends and adapted to form the attaching lug for the brake shoes and all made in one casting, said rods or bars having beveled sides and ends.

3. A reinforcing and strengthening back for brake shoes consisting of a malleable iron frame having a plurality of rods or bars connected together and offset between their ends and all made in one casting.

4. A reinforcing and strengthening back for brake shoes consisting of a malleable iron frame having a plurality of rods or bars connected together and lugs on one side of the frame and all made in one casting.

5. A reinforcing and strengthening back for brake shoes consisting of a malleable iron frame having a plurality of rods or bars offset between their ends and connected by a bridge adapted to form the attaching lug and by cross pieces on opposite sides of said bridge and having on one side thereof projecting lugs and all made in one casting.

FRANK R. SPEAR.

Witnesses:

WM. O. BELT,
M. A. KIDDIE.