

(No Model.)

E. F. EDGAR.

APPARATUS FOR BURNING HYDROCARBON OILS.

No. 410,826.

Patented Sept. 10, 1889.

Fig. 1.

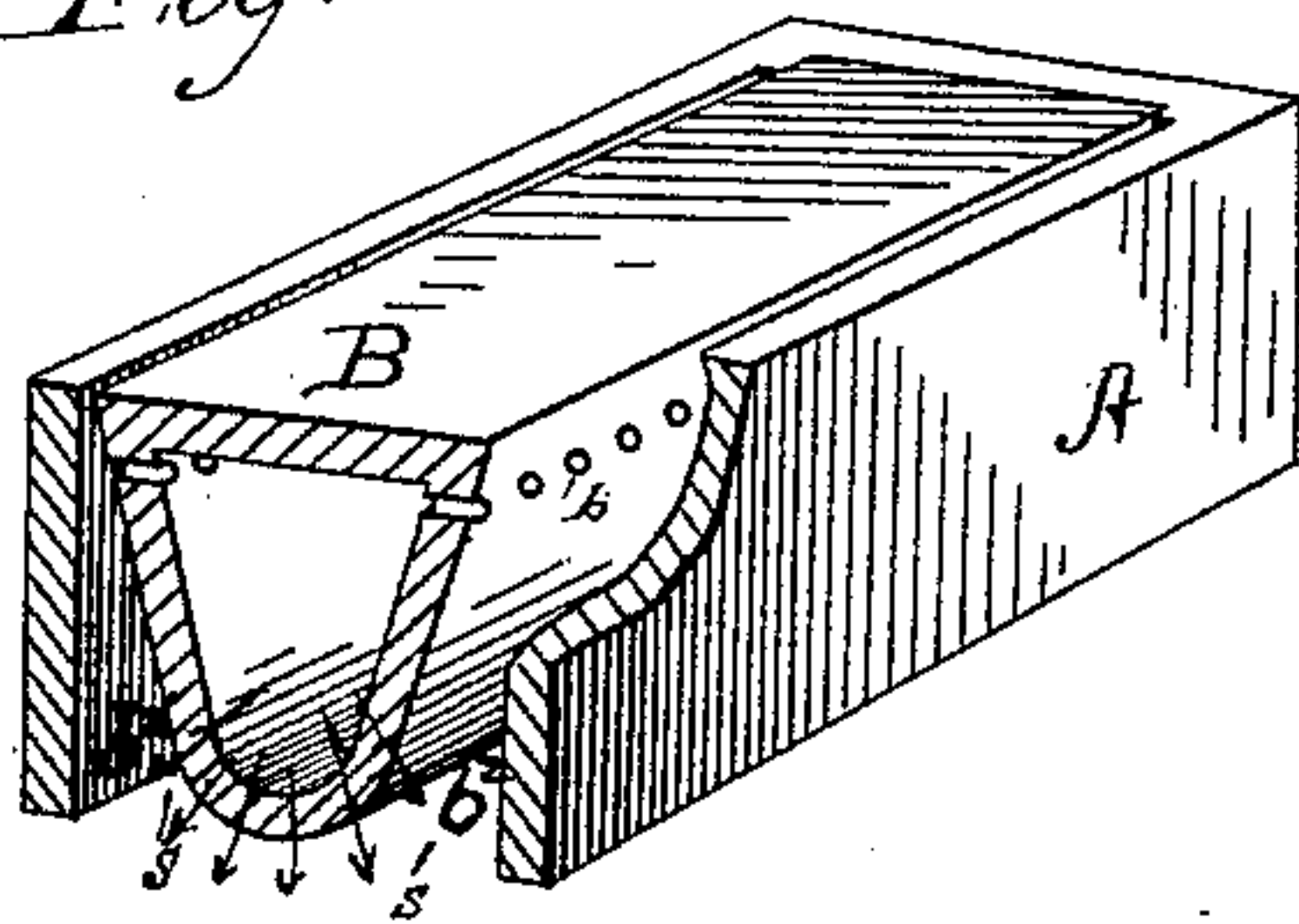


Fig. 2.

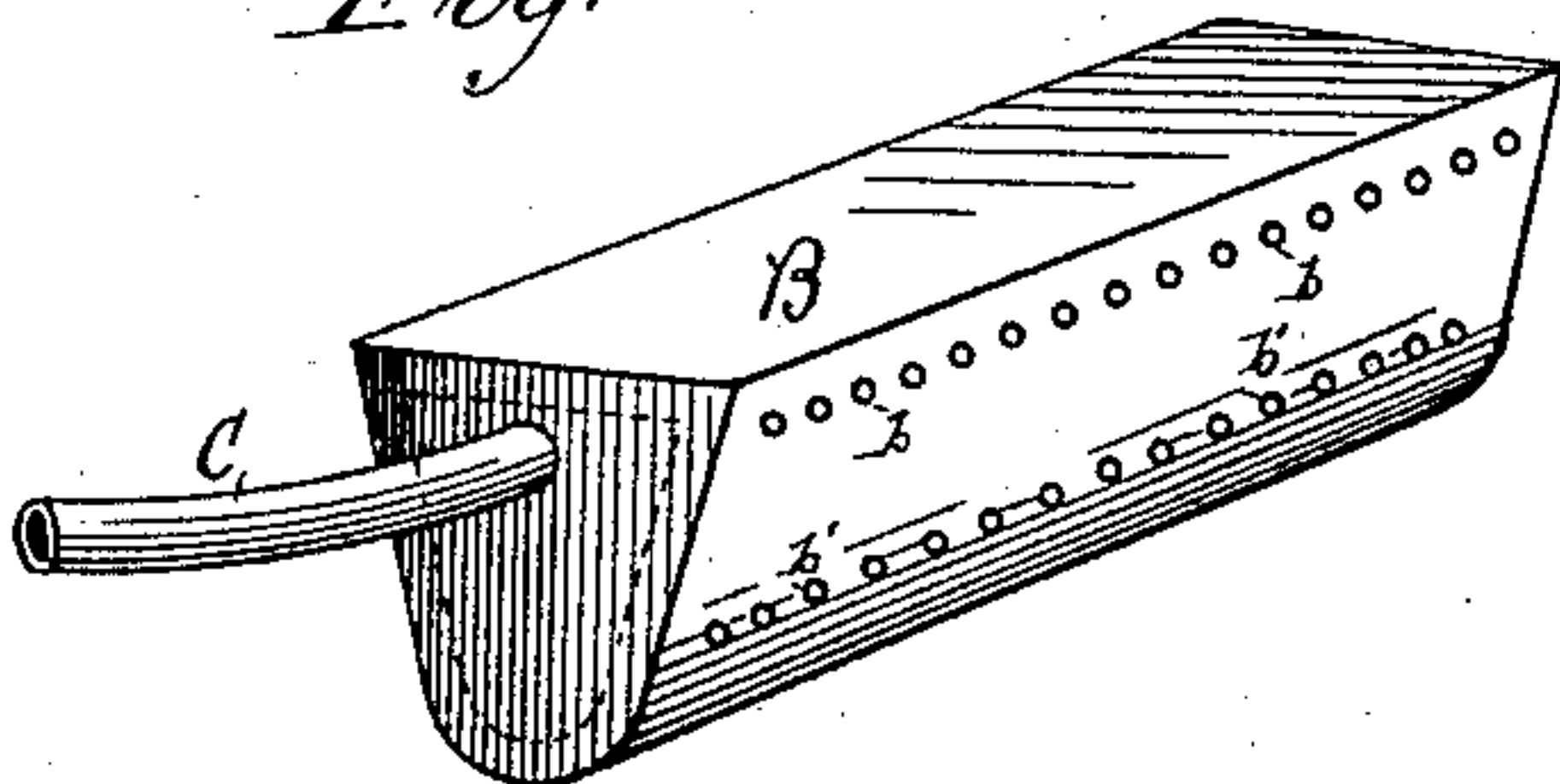
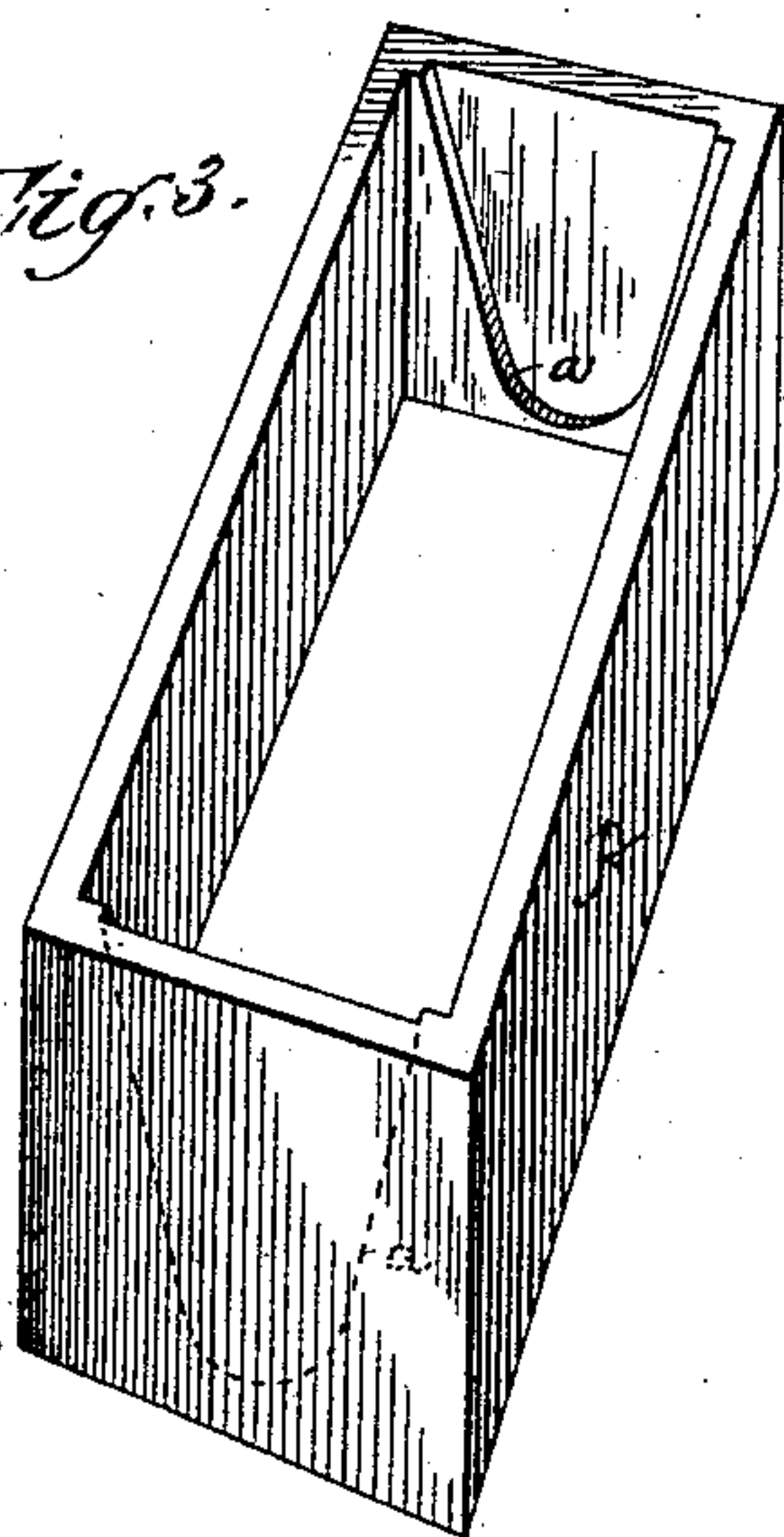


Fig. 3.



WITNESSES:

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APPARATUS FOR BURNING HYDROCARBON OILS.

SPECIFICATION forming part of Letters Patent No. 410,826, dated September 10, 1889.

Application filed February 11, 1888. Serial No. 263,688. (No model.)

To all whom it may concern:

Be it known that I, ELLIS F. EDGAR, of Woodbridge, in the county of Middlesex and State of New Jersey, and a citizen of the United States of America, have invented a new and useful Improvement in Apparatus for Burning Hydrocarbon Oils, of which the following is a specification, reference being had to the accompanying drawings, forming part of the same, in which—

Figure 1 is a perspective view of a device embodying my invention, one end and a part of the side having been broken away. Fig. 2 is a similar view of the inner part of such device slightly modified to permit the use of gas alone as fuel, and Fig. 3 is a view in perspective of the outer part or case of such device.

My invention relates to the burning of various kinds of fuel to produce heat, and the effective combination with the burning fuel of a sufficient quantity of air; and it consists, essentially, in having two points of combustion, one at a place where air has ready access, and a second where the flame from the first will reach, and where also air which has mingled with the vapor and unconsumed fuel from the first point of combustion will be commingled with the further supply of fuel at this second point, by the combustion of which combined material a very effective and economical result is attained. I also consider the apparatus shown for use in accomplishing my object possessed of novel and useful features.

In the drawings, A is a rectangular frame or box open at top and bottom and provided in the interior with supports for the second part B, which supports I prefer to make in the form of recessed seats *a*, arranged in the end walls of A, as shown, and conforming in outline to the outline of the end walls of B, the main walls of A being preferably left of a substantially uniform thickness.

B is a hollow chamber for receiving and distributing and sometimes serving as a reservoir for the fuel to be used. As shown, it consists of a vessel the top of which is rectangular in form, long enough to reach from end wall to end wall of A, and wide enough to fill the upper opening in A to within about

one-eighth of an inch at either side, thus leaving long narrow slots between their respective side edges at the top. The side walls of B approach each other regularly from its top downward, and its bottom is more easily formed when curved, as shown.

When used for burning oil, I usually make B of open-burning fire-clay and mineral fiber mixed together and burned as are brick.

In the side walls near the top of the chamber I form apertures *b*, and I sometimes find it desirable to make a second series of these apertures *b'* near the bottom of B.

C is the inlet-pipe for the fuel.

The operation of this device is as follows, oil being the fuel: A supply of fuel is introduced into B through C, and B is placed in the fire-box of a stove or such other position as may be desired, care being taken to so arrange it that air may enter passages *s* at their widest portion and pass out where they are substantially narrow slots, as stated. The oil quickly percolates through the porous walls of B, and is ignited at or near *b*². The draft is up through *s s*, and of course the flame heats B and converts a portion of the oil into vapor, which passes out through *b*. Air also is drawn into *s s*, combines with the flames at *b*² the unconsumed vapor and other products of this first combustion, is heated thereby, and forced onward, and combines with the vapor at *b*. The whole combination is ignited and a very hot flame issues from the narrow slots between the upper side edges of B and A. The arrangement thus of two points of combustion one above the other, and the conducting of the products of the combustion at the one point with the air which is drawn to that point all combined to the second point, produces a more nearly complete and perfect utilization of the fuel than I have otherwise been able to effect.

I do not intend to limit myself to the form of device shown, as many variations will at once suggest themselves, which are in no sense a departure from the main feature of the invention, and, indeed, this very device might be made in one piece or of other material; but I find that as the parts are not quite equally heated making B separate from A permits the expansion and contraction,

which are unavoidable, to take place, with less strain than if they were integral, and that supporting B on recessed seats renders it less likely that the supports will be broken off
5 and renders the frame A more convenient to fabricate.

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

1. A combined oil and vapor burner and
10 oil-vaporizer, consisting of a closed vessel or retort of non-combustible porous material, said vessel or retort having openings in one or more of its side walls for the escape of vapor and provided with an oil-supply aper-
15 ture, substantially as described, and for the purpose specified.

2. In a hydrocarbon-burner, the combination, with an open rectangular frame provided on its inner face with flanges forming sup-
20 ports, of an incombustible porous vessel provided with an oil-supply orifice and having openings in its side walls, said vessel being of a smaller diameter than the frame and adapted to rest upon the flange thereof,
25 whereby an air-passage is formed between its walls and the said frame, substantially as described.

3. In a hydrocarbon-burner, the combination, with an open rectangular frame pro-
30 vided on its inner face with flanges forming supports, of an incombustible porous vessel provided with an oil-supply pipe and having openings in its side walls near the top, said vessel being of a smaller diameter than the

frame and adapted to rest upon the flanges 35 thereof, whereby an air-passage is formed between its walls and the said frame, substantially as described.

4. In a hydrocarbon-burner, the combination, with an open rectangular frame pro- 40 vided on its inner face with flanges forming supports, of an incombustible porous vessel provided with an oil-supply pipe and having openings in its side walls, said side walls inclining inward toward the bottom and of a 45 much smaller diameter than the frame, said vessel adapted to rest upon the flanges of the frame, whereby a wedge-shaped air-passage is formed between the walls of the vessel and the frame, substantially as described. 50

5. In a hydrocarbon-burner, the combination, with an open rectangular frame provided on its inner face with flanges forming supports, of an incombustible porous vessel provided with an oil-supply pipe and having 55 openings in its side walls near the top, said side walls inclining inward toward the bottom and of a much smaller diameter than the frame, said vessel adapted to rest upon the flanges of the frame, whereby a wedge-shaped 60 air-passage is formed between the walls of the vessel and the frame, substantially as set forth

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Witnesses:

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