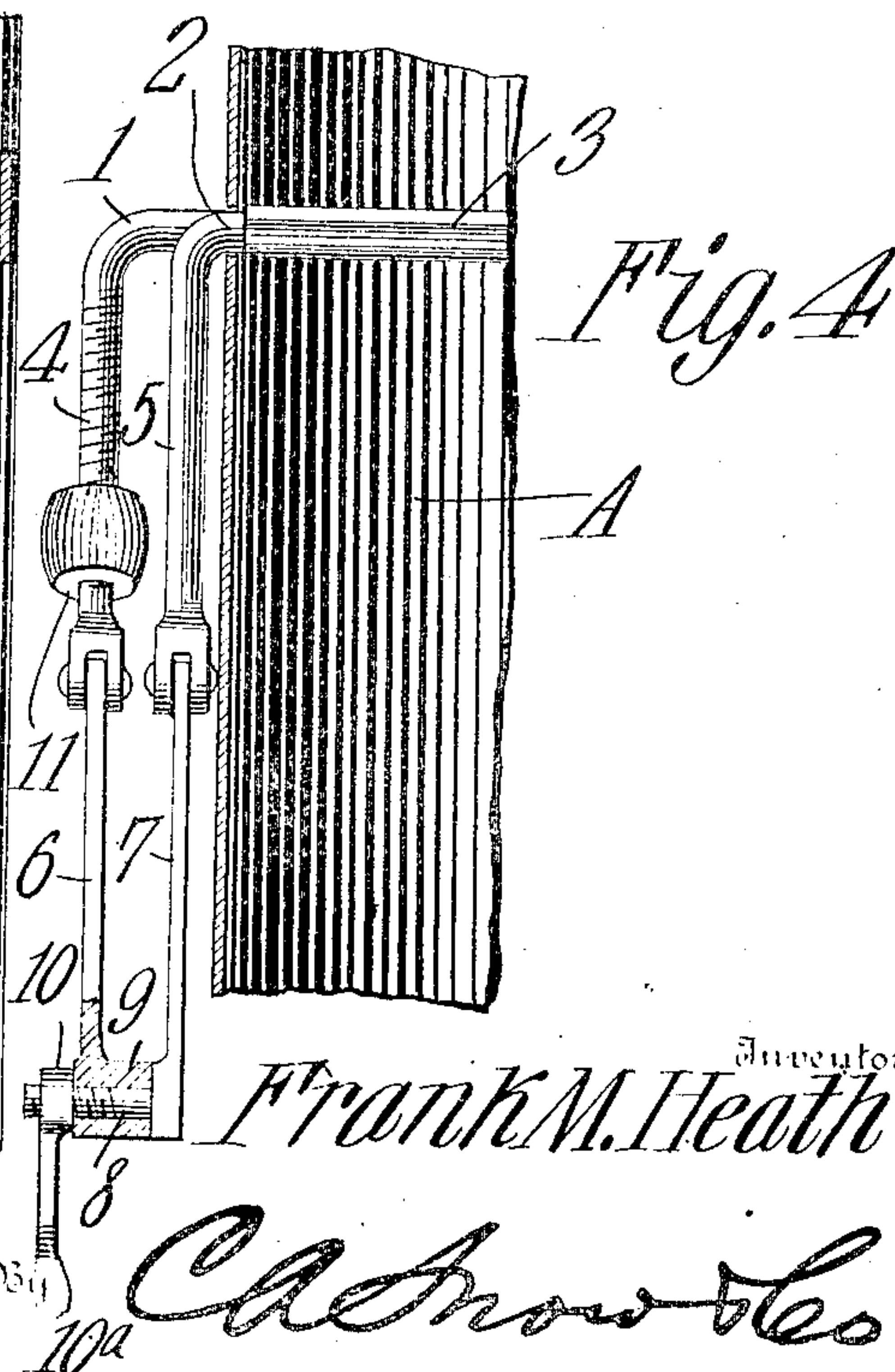
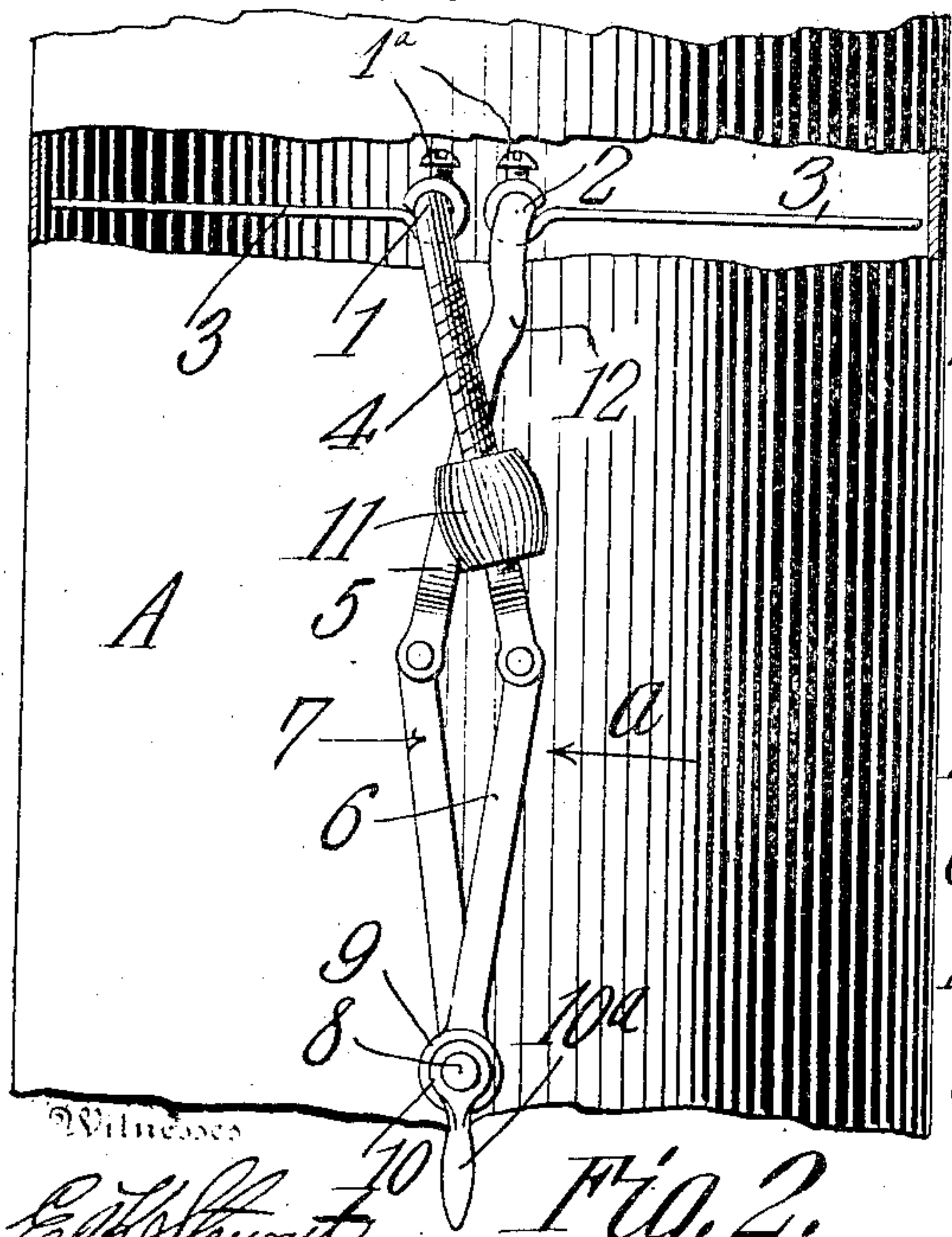
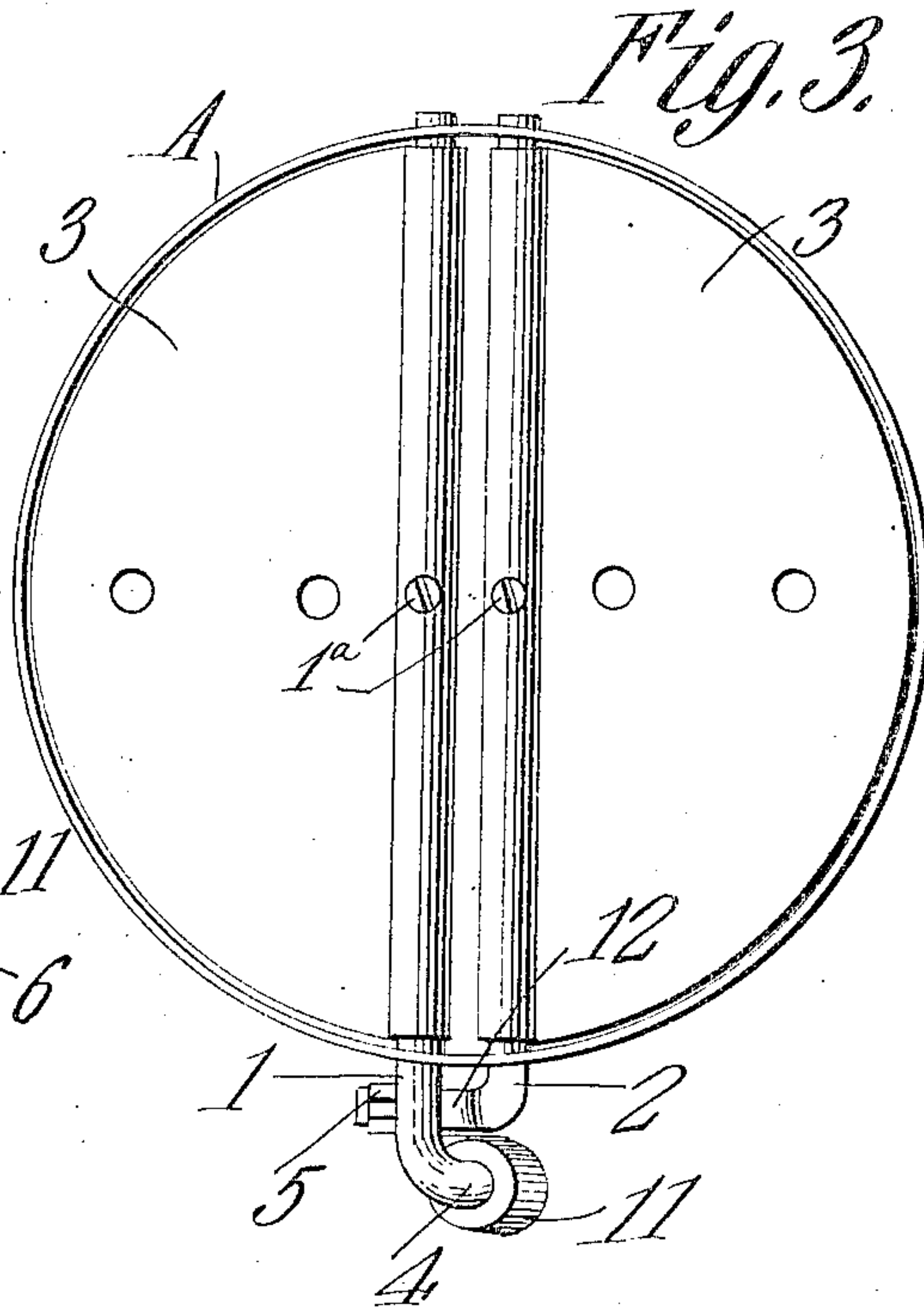
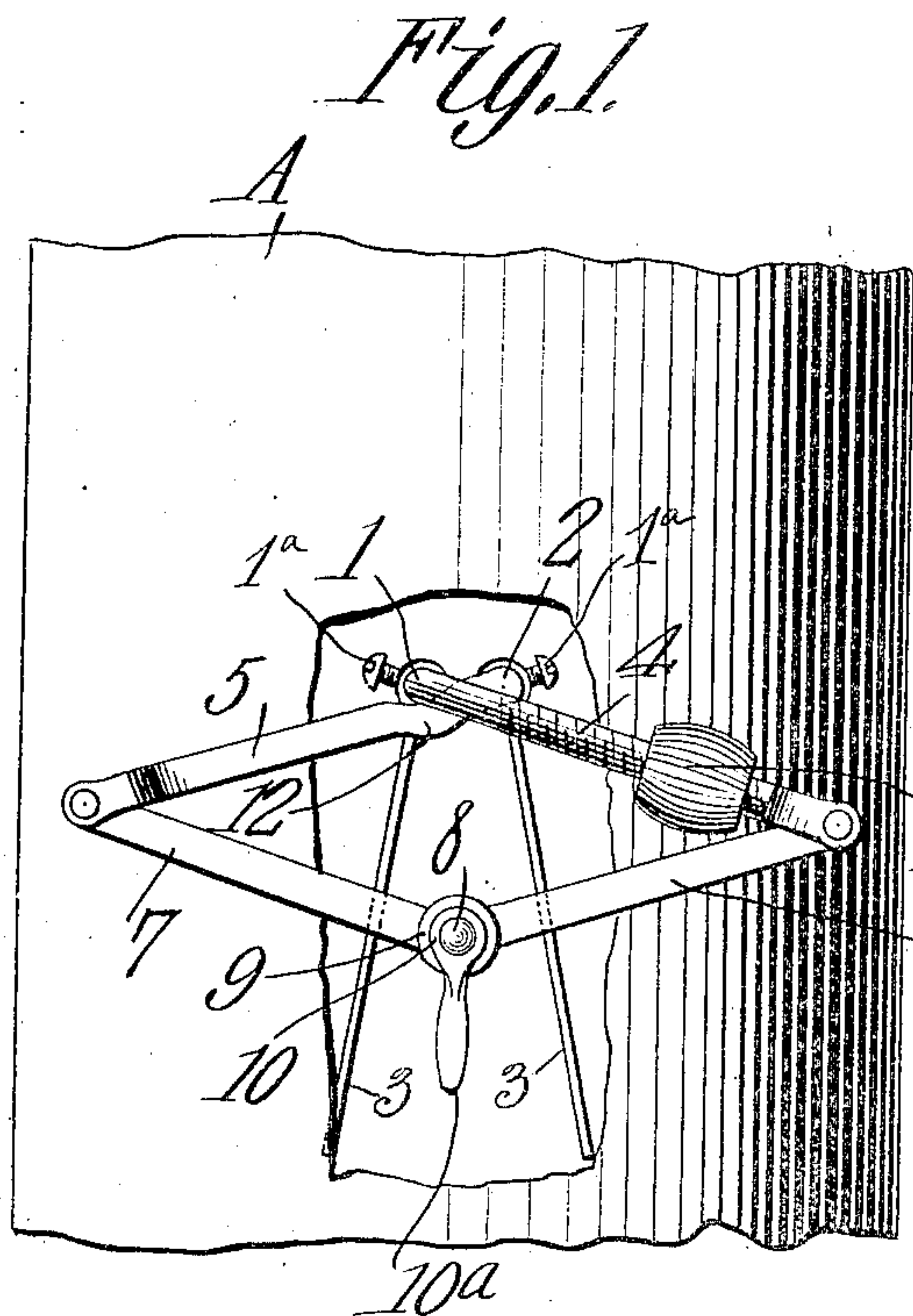


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F. M. HEATH.  
FLUE DAMPER.

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Witnesses  
*E. H. Stewart*  
*A. P. Helliwell*

Inventor  
*Frank M. Heath*

*C. A. Snow & Co.*  
Attorneys



# UNITED STATES PATENT OFFICE.

FRANK M. HEATH, OF PORTLAND, OREGON.

FLUE-DAMPER.

No. 883,878.

Specification of Letters Patent.

Patented April 7, 1908.

Application filed September 3, 1907. Serial No. 391,164.

*To all whom it may concern:*

Be it known that I, FRANK M. HEATH, a citizen of the United States, residing at Portland, in the county of Multnomah and State of Oregon, have invented a new and useful Flue-Damper, of which the following is a specification.

This invention relates to an automatic damper for stove pipes and other flues, the object being to provide means such as a plurality of co-acting damper plates mounted on rock shafts within the flue which automatically open and close the flue by the action of the draft which varies in strength as the heat generated in the stove decreases or increases in intensity. This damper may be adjusted to remain in a certain position when the normal quantity of heat is being radiated from the stove or heater, but any increase or decrease of heat will correspondingly change the strength of the draft and alter the position of the damper plates so as to bring the temperature once again to normal.

It is well known that when fuel is fed to the stove, especially wood burning stoves, heat is generated quite rapidly and with great intensity far beyond the requirements needed for heating a room or for cooking purposes. To obviate this, various forms of dampers have been used to reduce the quantity of air passing through the stove.

The herein described invention is simple in construction and very responsive to any variation in the strength of the draft passing through the smoke flue, and for this reason the radiation of heat is practically constant wherever this damper is used.

Referring to the accompanying drawing; Figure 1 is an elevation of a portion of a stove pipe partly broken away showing clearly the damper and its connecting mechanism in full open position. Fig. 2 is a similar view of the device showing the damper fully closed and the connecting mechanism in a different position. Fig. 3 is a plan view of the arrangement of parts illustrated in Fig. 2. Fig. 4 is an elevation of the damper mechanism in position shown in Fig. 2 looking in the direction of the arrow *a*.

Similar reference characters are used on all the figures to designate the same parts.

The letter A indicates a smoke flue pipe of any character such as a coal cooking or heating stove pipe, a furnace smoke flue, or a masonry flue for numerous purposes, but for the sake of clearness and simplicity, the

invention will be described in connection with an ordinary stove pipe.

Extending diametrically through a section of stove pipe A and in a plane perpendicular to the pipe are two rods 1 and 2, slightly separated, and journaled in holes made in the pipe. Attached to each rod by a screw 1<sup>a</sup> is a semicircular plate or leaf 3 which together form a circular damper closing the pipe.

On one side of the pipe A the rods 1 and 2 have an arm 4 and 5, respectively, exterior to the pipe and at right angles to their respective rods. The arms do not lie in the same vertical plane, the arm 4 being at a greater distance from the pipe A than the arm 5. They are of equal length and may be slotted in their lower ends for links 6 and 7, the link 6 being pivoted to the arm 4. Projecting forwardly from the lower end of the link 7 is a pin 8 which passes through a boss 9 on the rear of the link 6. The two links are pivotally connected and may be fastened by a nut 10 mounted on the threaded end of the pin 8, a projecting stem 10<sup>a</sup> on the nut 10 enabling the latter to be tightened by the fingers sufficiently to retain immovable the arms 4 and 5 and, hence, the plates or leaves 3 in any desired position.

It is sometimes necessary to vary the normal position of the plates or leaves 3. This is accomplished by threading one of the arms as 4 and mounting thereon a counterbalance weight 11 which, when moved in either direction, changes the balance of the parts. If the weight be moved towards the axis of the rod 1, both plates or leaves 3 will fall as they are connected together through the arms 4 and 5 and the links 6 and 7. An opposite movement of the counter-weight overbalances the plates 3 and they will rise. This adjustment is desirable among other reasons for positioning the plates 3 with respect to the normal draft of the chimney into which the stove pipe enters, some chimneys, as is well known, have a stronger draft than others.

To permit the arms 4 and 5 to rise sufficiently high to open the leaves or plates 3, the arm 2 has a depression at 12 where it passes under the rod 1.

When a fire is made in a stove provided with an automatic damper such as above described, the leaves 3 thereof will assume the position indicated in Fig. 1. As the fire increases, a stronger draft will pass through



the smoke flue, and as the temperature approaches the height required, the draft gradually causes the leaves 3 to swing outwardly until they reach the point where their weight balances the pressure of the upward draft, this being the normal position of the dampers. Should the heat decrease in the room, as it will through exhaustion of fuel, the dampers will fall, owing to the lessened strength of the draft, giving greater space for the passage of heated air and thus cause the fire to grow stronger. A reverse movement of the leaves from the normal, that is to say, closing them to the passage of air, will take place should something quickly combustible, such as resinous wood, or a large amount of very dry wood, coal-oil, and numerous other articles, be thrown upon the fire.

From the above description, it will be noted that as soon as the leaves have reached their normal position, they will substantially remain in said position with possibly a slight rise and fall as the fire changes. It will therefore be seen that the damper is automatic, keeping the stove while burning always at the same temperature and thereby effecting great saving in fuel.

It is well known that in windy weather, the draft in a chimney flue is much more intense than at other times, and, therefore, on these occasions, a greater quantity of fuel is burned than at other times. But with stoves equipped with the improved automatic damper, the consumption of fuel will be no greater with an intense wind blowing than at other times.

Having thus described the invention what is claimed is:—

1. An automatic damper for flues comprising a pair of plates or leaves adapted to swing on parallel horizontally disposed rods within the flue and extending across the center of the same, each of said rods having an arm on the same side of said flue, said arms crossing, and a link pivoted to each arm and the two to each other.

2. An automatic flue damper comprising a pair of plates or leaves fixed on parallel horizontal rods adjacent each other journaled in the walls of the flue and extending centrally across the same, an arm on each rod outside the flue, said arms being in different vertical planes and crossing each other, links pivoted to the arms and to each other to cause said leaves to vibrate in unison and close or open, more or less the passage through said flue.

3. An automatic flue damper comprising two semi-circular plates or leaves within the flue attached to parallel horizontal rods adjacent each other and journaled in the walls of the flue, an arm on each rod at a right

angle thereto, said arms crossing each other, flexible means connected to the ends of the arms to cause the damper plates or leaves to move in unison and preserve the ratio between the flue opening and the strength of the draft therethrough and means for positively changing said ratio.

4. An automatic flue damper comprising two semi-circular plates or leaves within the flue and adapted to close the same, said plates or leaves attached to parallel horizontal rods adjacent each other and journaled in the walls of the flue, an arm on each rod at a right angle thereto, said arms crossing each other, links connecting to said arms and to each other to cause the plates or leaves to move in unison and preserve the ratio between the flue opening and the strength of the draft therethrough, and a counterweight adjustably mounted on one of said arms for positively changing said ratio.

5. An automatic flue damper comprising two semi-circular plates attached by their straight edges to two adjacent parallel rods extending horizontally through the flue, an arm on the projecting end of each rod on the same side of the flue at a right angle thereto, links attached to said arms, and a clamping screw connecting said links to each other whereby the damper leaves may move automatically or be held in fixed position.

6. An automatic damper comprising a pair of parallel horizontal rocking rods adjacent to each other extending through a flue and each having fixed thereon a damper plate or leaf, an arm on the outside end of each rod and at a right angle thereto, said arms crossing each other and one having its exterior screw threaded, a movable weight on the threaded arm, and a link extending downwardly from each arm said links being pivoted together.

7. An automatic damper comprising a pair of parallel horizontal rocking rods extending through a flue and a damper plate fixed to each rod within the flue and movable with it, said damper plates together forming a damper adapted to close said flue, an arm on the outside of each rod and at a right angle thereto, said arms crossing each other, a link extending from the end of each arm, said links being pivotally joined at their lower ends, and a fastening at the joint to hold the damper leaves in any desired position.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

FRANK M. HEATH.

Witnesses:

C. L. McKENNA,  
JOHANNA LEACH.