

No. 691,775.

Patented Jan. 28, 1902.

T. G. JOYCE.  
FIRE ESCAPE.

(Application filed June 28, 1901.)

2 Sheets—Sheet 1.

(No Model.)

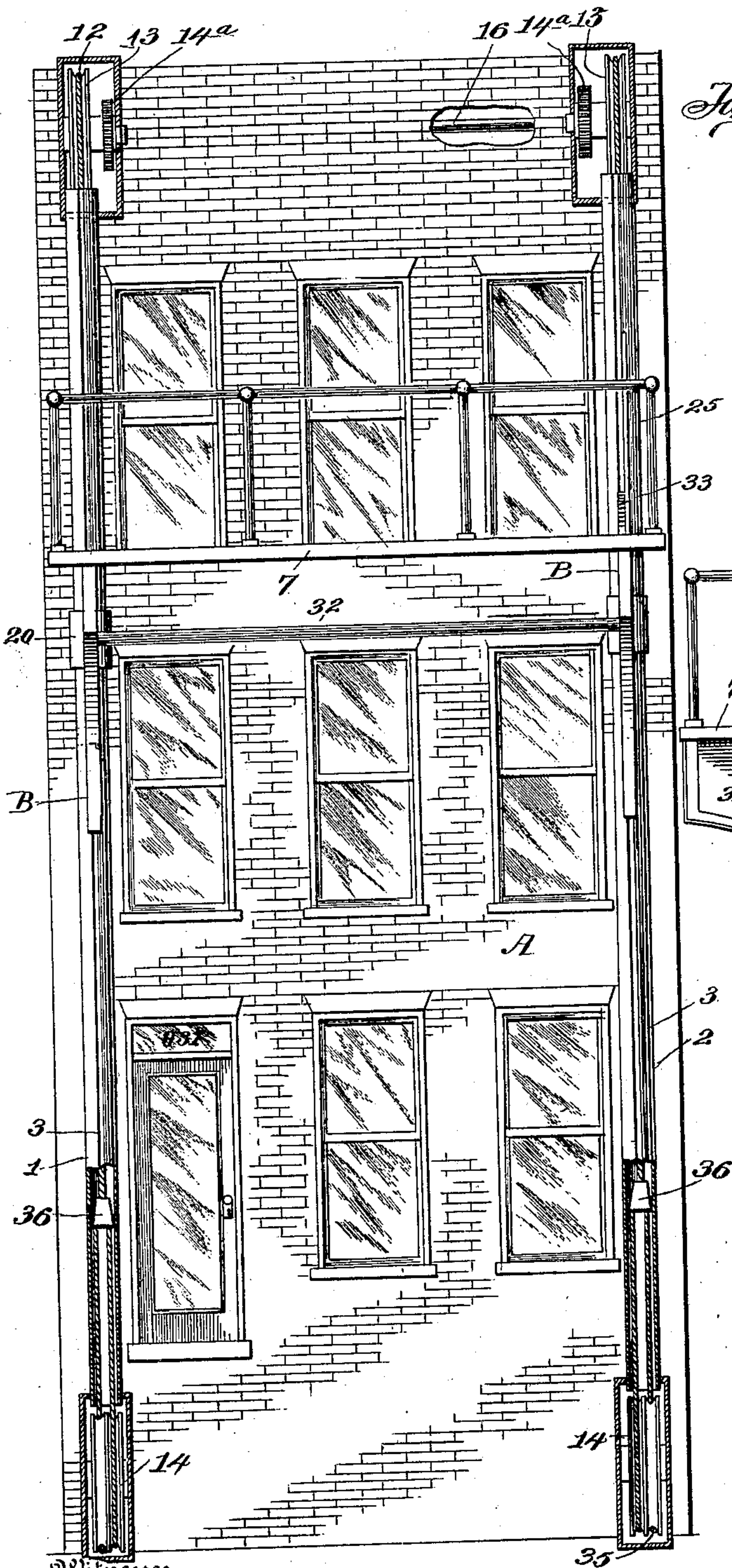


Fig. 1

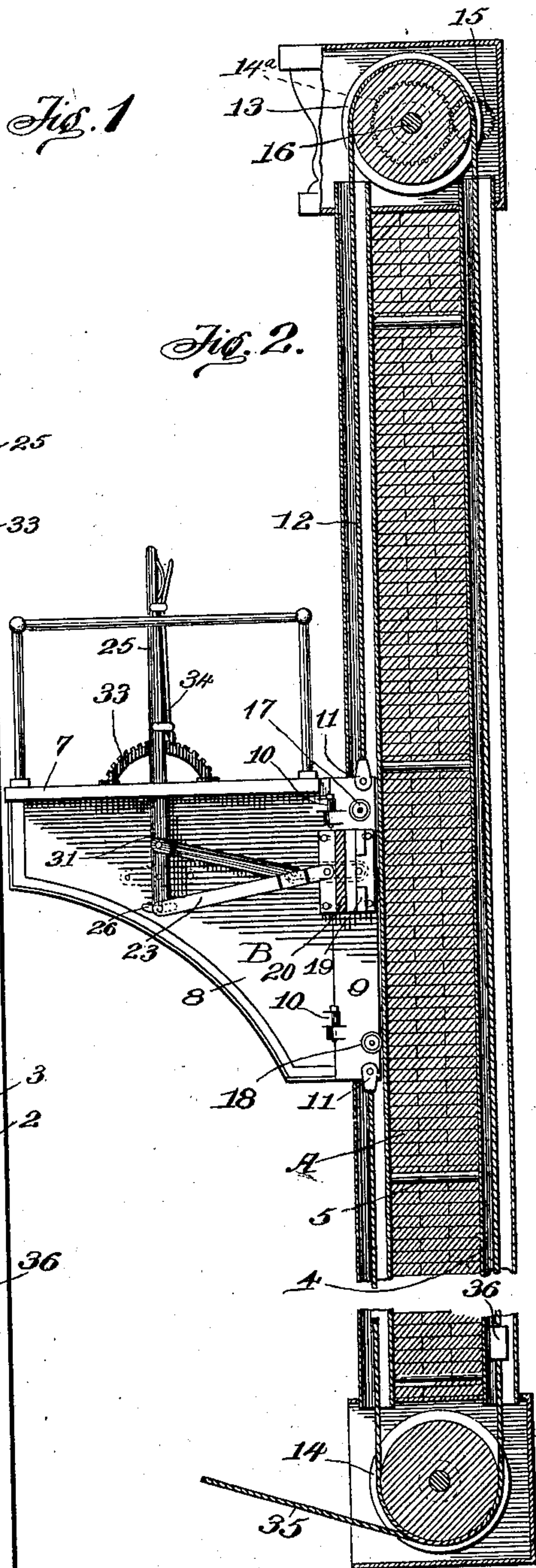


Fig. 2.

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Fig. 3.

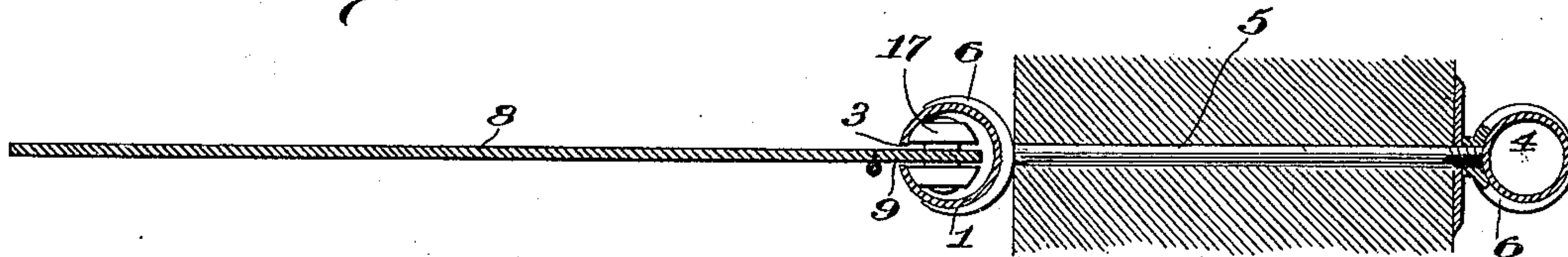


Fig. 4.

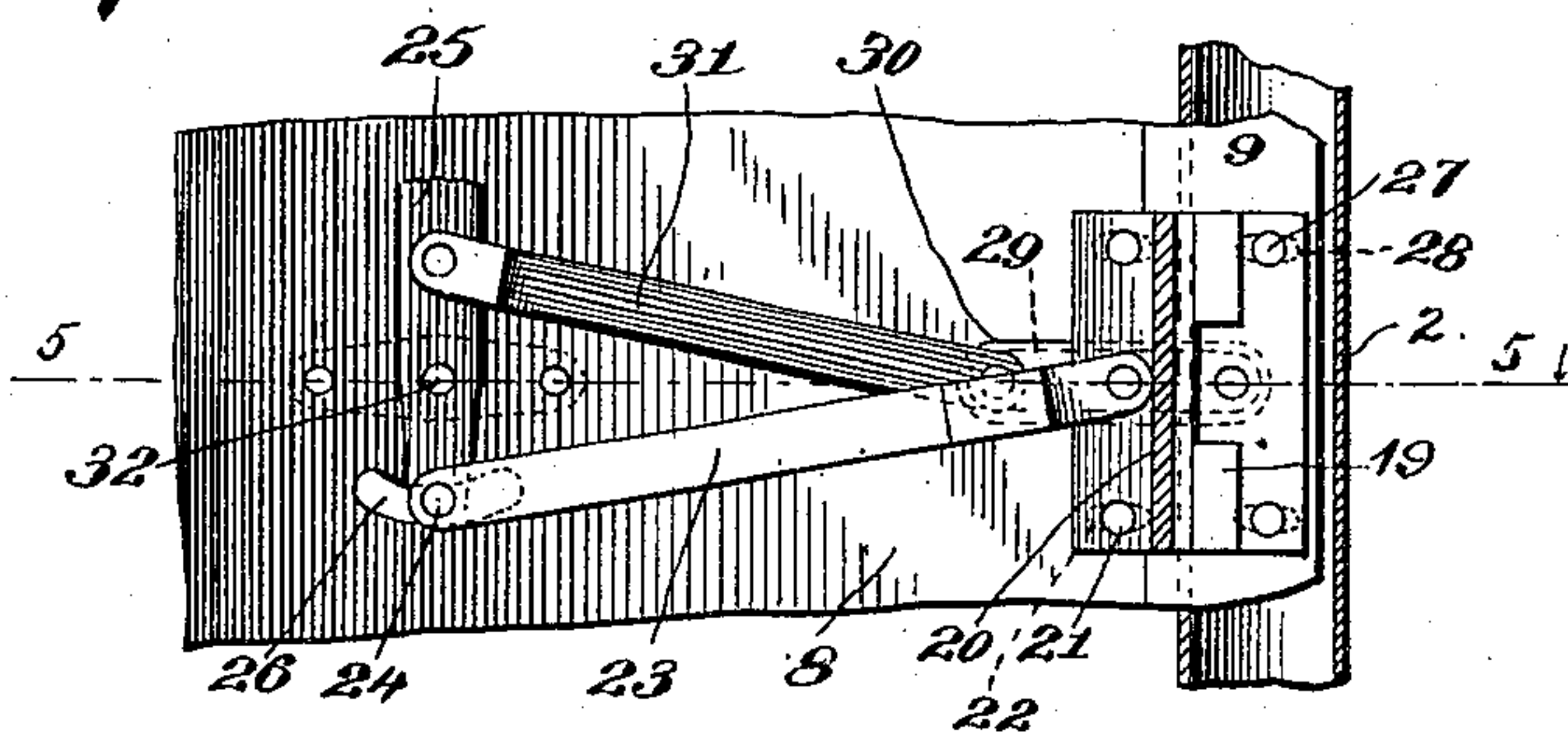


Fig. 5.

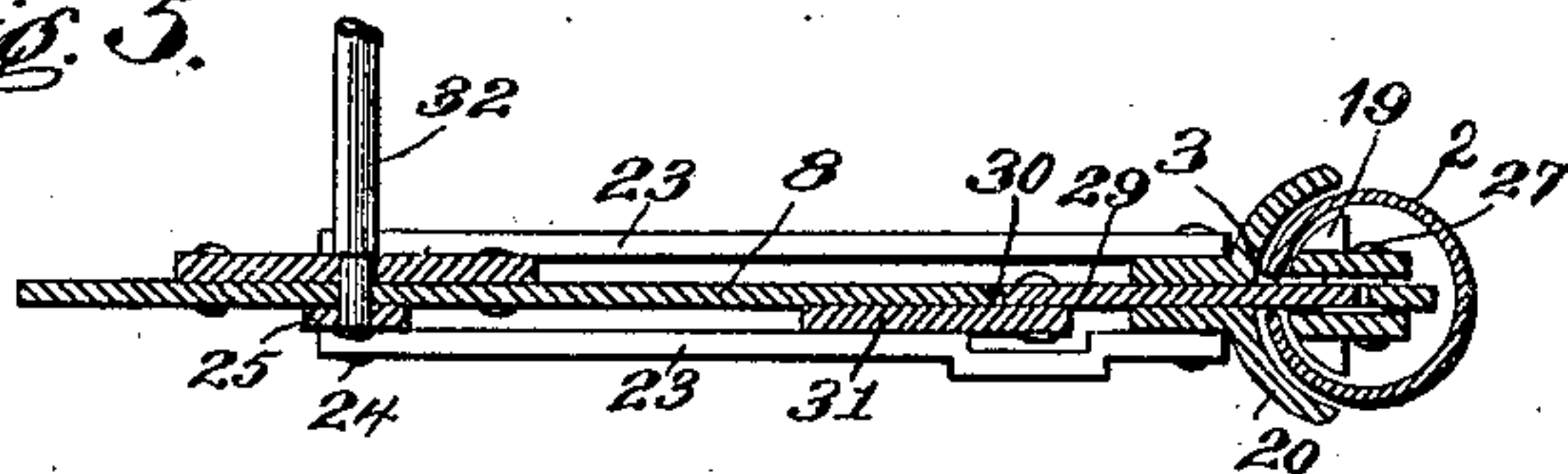
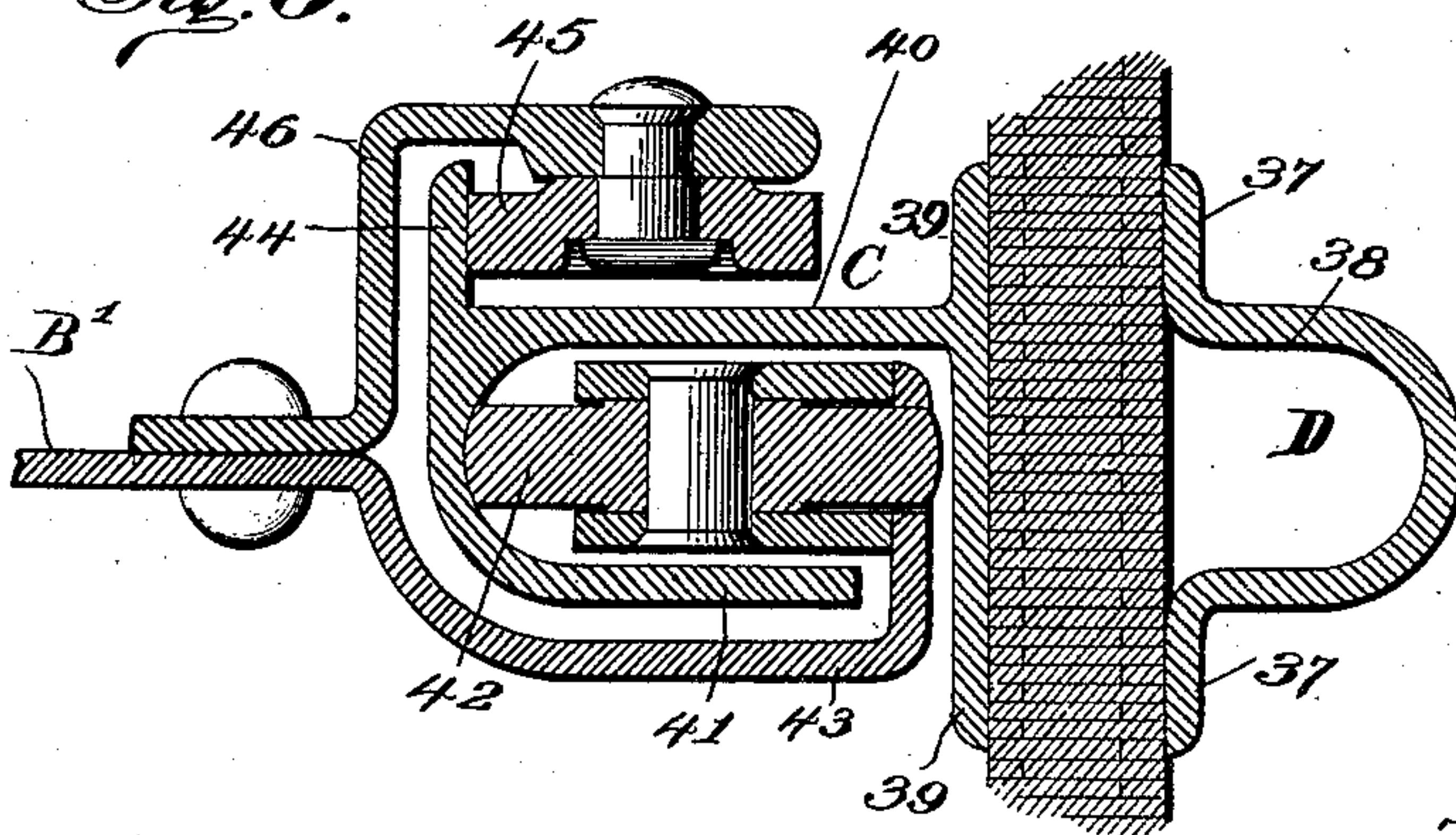


Fig. 6.



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# UNITED STATES PATENT OFFICE.

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## FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 691,775, dated January 28, 1902.

Application filed June 28, 1901. Serial No. 66,400. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS G. JOYCE, a citizen of the United States, residing at Scranton, in the county of Lackawanna, State of Pennsylvania, have invented certain new and useful Improvements in Fire-Escapes, of which the following is a specification.

This invention relates to improvements in fire-escapes, the construction and arrangement of which will be pointed out in the following specification.

In the accompanying drawings, which illustrate the invention, Figure 1 is a front view of the improved fire-escape arranged upon a building. Fig. 2 is a side view of the fire-escape, showing the wall of the building, guideways, and sheaves in section. Fig. 3 is a sectional view through one of the brackets and a pair of guide-tubes, showing the manner of securing the latter to the building. Fig. 4 is an enlarged detailed view showing the brake shoes and levers. Fig. 5 is a section on the line 5 5 of Fig. 4, and Fig. 6 is a sectional view illustrating guideways of different construction.

Referring to the drawings, A indicates the wall of the building, upon the outer side of which are arranged, at a suitable distance apart and on either side of one or more windows, a pair of tubular metal guideways 1 and 2, which are formed with a slot 3, extending longitudinally from end to end. Tubes 4 are vertically arranged on the inner side of the wall opposite to the tubes 1 and 2, and the inner and outer tubes are connected at suitable intervals by bars 5, which pass through the wall, these bars being provided at their ends with yokes 6, the arms of which are bent around the tubes. By means of these arms the tubes are securely held in position against the wall. In order to permit the bars to be passed through the wall, it is necessary to have at least one of the yokes removable. As shown in Fig. 3, the yoke upon the inner side of the wall is threaded onto the bar, and by tightening the inner yokes the outer guide-tubes may be drawn firmly against the wall. The inner tubes may then be secured in place by bending the arms of the yoke around them.

Extending transversely in front of the guide-tubes 1 and 2 is a platform 7, which

is supported by a pair of brackets B, which brackets extend into the guide-slots in the tube, as shown. Each bracket is preferably formed in two parts 8 and 9, which are removably connected together by suitable hinges 10, so that the parts 8, to which the platform is attached, may be removed, if desired, without removing the parts 9 from the guide-slots. Each bracket may, however, be made in a single piece. To the part 9 of each bracket, within the slotted tube, are connected by suitable eyes 11 the opposite ends of a rope or cable 12, which passes through the slotted tube and the corresponding tube upon the inner side of the wall, said rope extending around sheaves 13 and 14, arranged at the top and bottom, respectively, of the wall. These sheaves are suitably journaled centrally of the wall, and their diameters are such that the rope will extend centrally through the tubes. As the ends of the rope are joined to the brackets, they are thus made practically endless. The sheaves 13 are geared together, so that they will turn in unison. For this purpose gear-wheels 14<sup>a</sup> are rigidly secured to the sheaves or to the shafts upon which the sheaves are secured, and these gears 14<sup>a</sup> mesh with gears 15, secured upon the opposite ends of a shaft 16, journaled in the rear of the wall. As both of the sheaves 13 are thus geared together and are of the same diameter, the ropes which are attached to the brackets will travel in unison when the apparatus is in motion, and the platform will be prevented from tilting. Each bracket is provided at its upper end with pulleys 17, adapted to bear against the front wall of the slotted guide-tube, and similar pulleys 18 at the lower end of the bracket, which bear against the rear wall of the tube for the purpose of reducing friction and retaining the bracket within the tube. The form and arrangement of these pulleys is illustrated in Fig. 3.

Normally the fire-escape platform is held in its uppermost position opposite the top windows in the house, as shown in Fig. 1, by means of a brake which locks the brackets to the guide-tube. This brake consists of shoes adapted to bear against each of the guide-tubes and a hand-lever and suitable connections arranged to operate the shoes on each bracket at the same time. As illustrated in



Figs. 2, 4, and 5, a shoe 19 is arranged within each slotted guide-tube and adapted to bear against the inner face thereof, and a shoe 20 is adapted to bear against the outer face of the tube. The outer shoe 20, as shown, comprises two similar parts arranged upon opposite sides of the bracket, said parts being united by rivets 21, which are movable in horizontal guide-slots 22, formed in the bracket. This shoe is connected by links 23, arranged upon opposite sides of the bracket, to a pin 24 upon the lower end of a hand-lever 25, said pin passing through an arcuate opening 26 in the bracket. The inner shoe 19 is also made in two similar parts, which are connected by rivets 27, passing through horizontal guide-slots 28 in the bracket, and said shoe is operated by means of a bar 29, arranged within an opening 30 in the bracket and connected by a link 31 to the hand-lever 25 above the pivotal shaft 32. The shaft 32 extends from one bracket to the other, as shown in Fig. 1, and a similar arrangement of links and brake-shoes is arranged upon both brackets, so that the operation of the hand-lever operates the brakes upon both guide-tubes. A toothed segment 33 upon the platform and a suitable hand-operated pawl 34 afford a convenient means for locking or holding the lever in any desired position.

The operation of lowering the fire-escape will be readily understood from the drawings and the foregoing description. One or a number of persons may step out of the window onto the platform and by unlocking the brake and applying and maintaining sufficient pressure with the lever to prevent falling the platform may be lowered at any desired safe speed. In order to raise the platform, a hoisting rope or cable 35 is connected to each of the endless ropes 12 within the tubes 4 by a suitable attachment 36. As shown in the drawings, the lower sheaves 14 are each formed with two grooves, and the rope 35 in each tube fits into one of these grooves, while the endless rope 12 extends around through the adjoining groove. The hoisting-ropes are connected to the ropes 12 within the inner tubes or guideways at such points that when the platform is at the bottom the attaching-points in the ropes will be at the top of the wall. The hoisting-ropes may be operated by hand-power or by a winding-drum provided for the purpose, or they may be attached to drums journaled upon the same shafts as the sheaves 14 and operated by means of a suitable crank and gearing. In the drawings the hoisting-rope is shown extending outward from the lower sheaves to be operated by hand or an external winding-drum, no winding apparatus being shown, as such devices are well known.

When a fire occurs and the platform has been lowered to the ground by the proper handling of the brake, it may then be raised

by the first party who has used it or by other persons upon the ground by pulling or winding upon the rope 35 for the purpose of rescuing other persons, and after the platform has once been lowered it may be raised and lowered as often as necessary without the use of the brake by means of the hoisting-rope.

When not in use, the platform, which is provided with a suitable railing, as shown, may be used as a balcony in front of the windows on any floor. The apparatus may also be employed as an elevator for raising and lowering firemen and hose, goods, furniture, &c., and if it is desired at any time to dispense with the fire-escape the platform and the attached portions of the bracket may be removed by disconnecting the brake-levers and separating the brackets at the hinges. The guide-tubes upon the front of the wall need not be larger than the ordinary rain-spouts and are therefore not unsightly or particularly noticeable. The ropes, which may be of wire or fibrous material, are protected from the weather by the guide-tubes and will last indefinitely.

While the tubular form of guideways is preferable both for simplicity in appearance and economy in construction, other forms of guideways may be employed, such as that shown in cross-section in Fig. 6. In this figure, C represents a guideway for a bracket, and D the corresponding guideway for the rope upon the inside of the wall. The inner guideway consists simply of a metal bar substantially U-shaped in cross-section and having flanges 37 at the sides, which fit against the inner wall of the building. The rope travels within the space included between the bowed portion 38 and the wall of the building. The guideway C, as shown, has a base 39, adapted to fit against the outside of the wall, and both guideways are held in position against the wall by suitable bolts passing through the base 39 and flanges 37. A web extends outwardly from the base and thence curves inwardly, as shown at 41, to provide a journal or guideway, within which the rollers 42 upon the bracket-arm 43 and the rope which is attached to the bracket are movable. A flange 44 also projects at right angles to the web, and rollers 45, connected to a bracket-arm 46, engage the inner face of said flange. The bracket-arms may be united to the bracket in any suitable way. In the drawings the bracket-arm 43 is shown integral with the bracket B', and the arm 46 is connected thereto by a rivet.

While it is preferable to provide a pair of guideways upon the outside of the building in order that the platform may be made long and suitable for a balcony, the invention will be operative if only a single outer guideway and bracket are employed. The rope which is connected to the bracket will be termed an "endless" rope for convenience in the claims, it being immaterial whether the ends of the



rope are connected to the bracket or spliced together and the rope otherwise connected to the bracket, the result being the same.

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

1. In a fire-escape the combination with a building-wall, of a pair of guideways vertically arranged upon the outside of the wall, a platform having brackets movable within the guideways, sheaves arranged at the top and bottom of the wall adjacent to each guideway, connections between the sheaves of both guideways whereby said sheaves move in unison, and an endless rope in each guideway attached to the bracket and extending around said sheaves and along the inner side of the wall.

2. In a fire-escape, the combination with a building-wall, of a pair of guideways vertically arranged upon the outside of the wall, a platform having brackets movable within the guideways, sheaves arranged at the top and bottom of the wall adjacent to each guideway, connections between the sheaves of both guideways whereby said sheaves move in unison, an endless rope in each guideway attached to the bracket and extending around said sheaves and along the inner side of the wall, a brake for regulating the descent of said platform, and a hoisting-rope connected to the endless rope, substantially as described.

3. In a fire-escape, the combination with a building-wall, of a pair of guideways vertically arranged upon the outside of the wall, a platform having brackets movable within the guideways, sheaves arranged at the top and bottom of the wall adjacent to each guideway, an endless rope in each guideway attached to the bracket and extending around said sheaves and along the inner side of the wall, brake-shoes adapted to bear against each of said guideways, and a lever upon the platform for operating said brake-shoes.

4. In a fire-escape, the combination with a

building-wall, of a pair of guideways vertically arranged upon the outside of the wall, a platform having brackets movable within the guideways, sheaves arranged at the top and bottom of the wall adjacent to each guideway, an endless rope in each guideway attached to the bracket and extending around said sheaves and along the inner side of the wall, the sheaves of both guideways being connected so as to move in unison.

5. In a fire-escape, the combination with a building-wall, of a pair of guideways vertically arranged upon the outside of the wall, a platform having brackets movable within the guideway, sheaves arranged at the top and bottom of the wall adjacent to each guideway, an endless rope in each guideway attached to the bracket and extending around said sheaves and along the inner side of the wall, and guideways for said ropes upon the inside of the wall, said inner and outer guideways being connected together by rods passing through the wall.

6. In a fire-escape, the combination with a building-wall, of a pair of tubular slotted guideways vertically arranged upon the outside of the wall, a platform having brackets movable within the guideways, tubular guideways upon the inner side of the wall, sheaves at the top and bottom of the wall, gearing connecting the sheaves at the top of the wall, endless ropes attached to the brackets and extending around the sheaves through the inner and outer guideways, brake-shoes adapted to bear upon the slotted guideways, a lever for operating said shoes, and a hoisting-rope connected to the endless rope at the inner side of the wall.

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

THOMAS G. JOYCE.

Witnesses:

M. F. SANDO,  
J. W. SANDO.