

April 21, 1931.

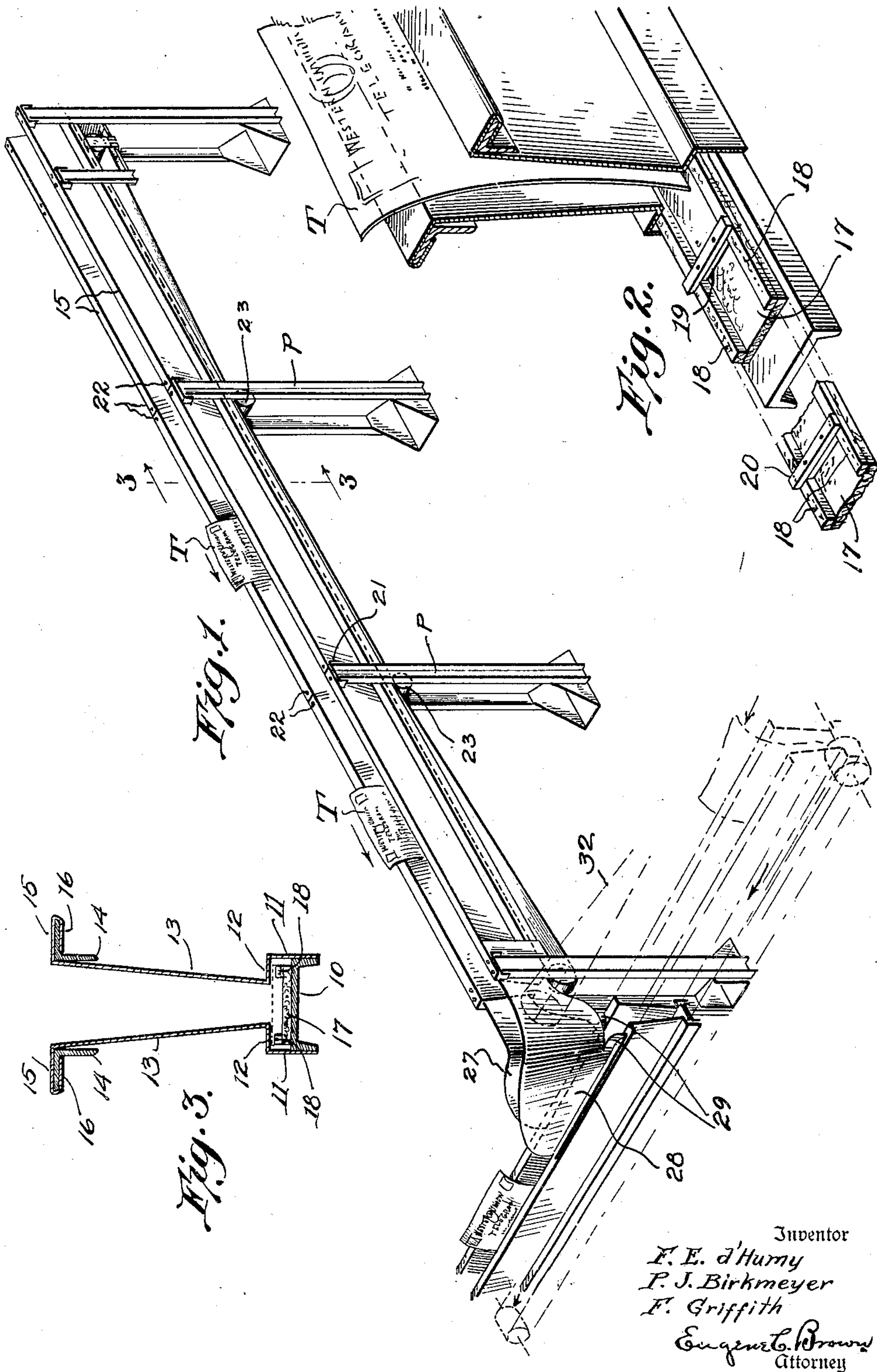
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BELT CONVEYER

Filed March 13, 1929

7 Sheets-Sheet 1



April 21, 1931.

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1,801,906

BELT CONVEYER

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7 Sheets-Sheet 2

Fig. 4.

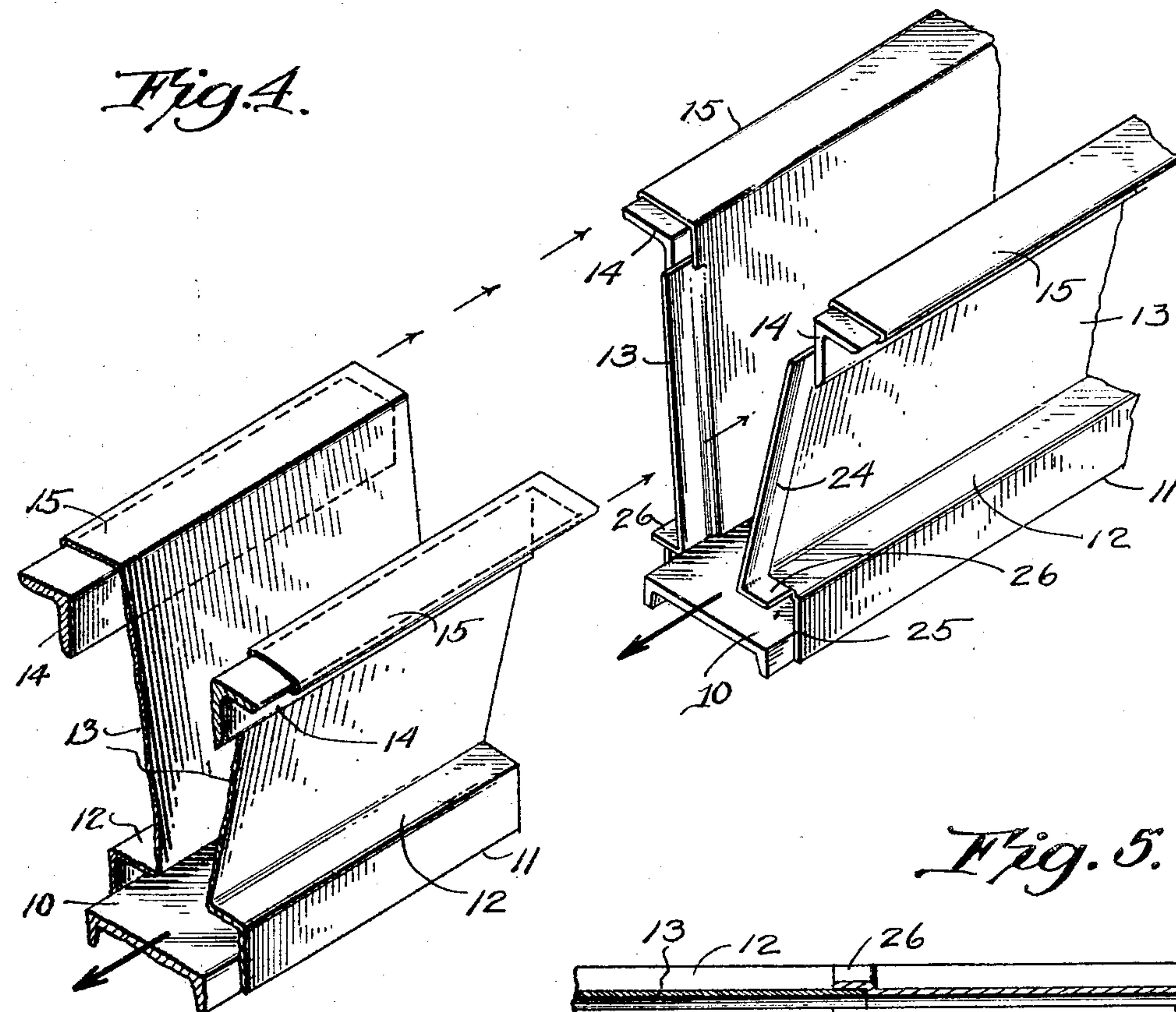


Fig. 5.

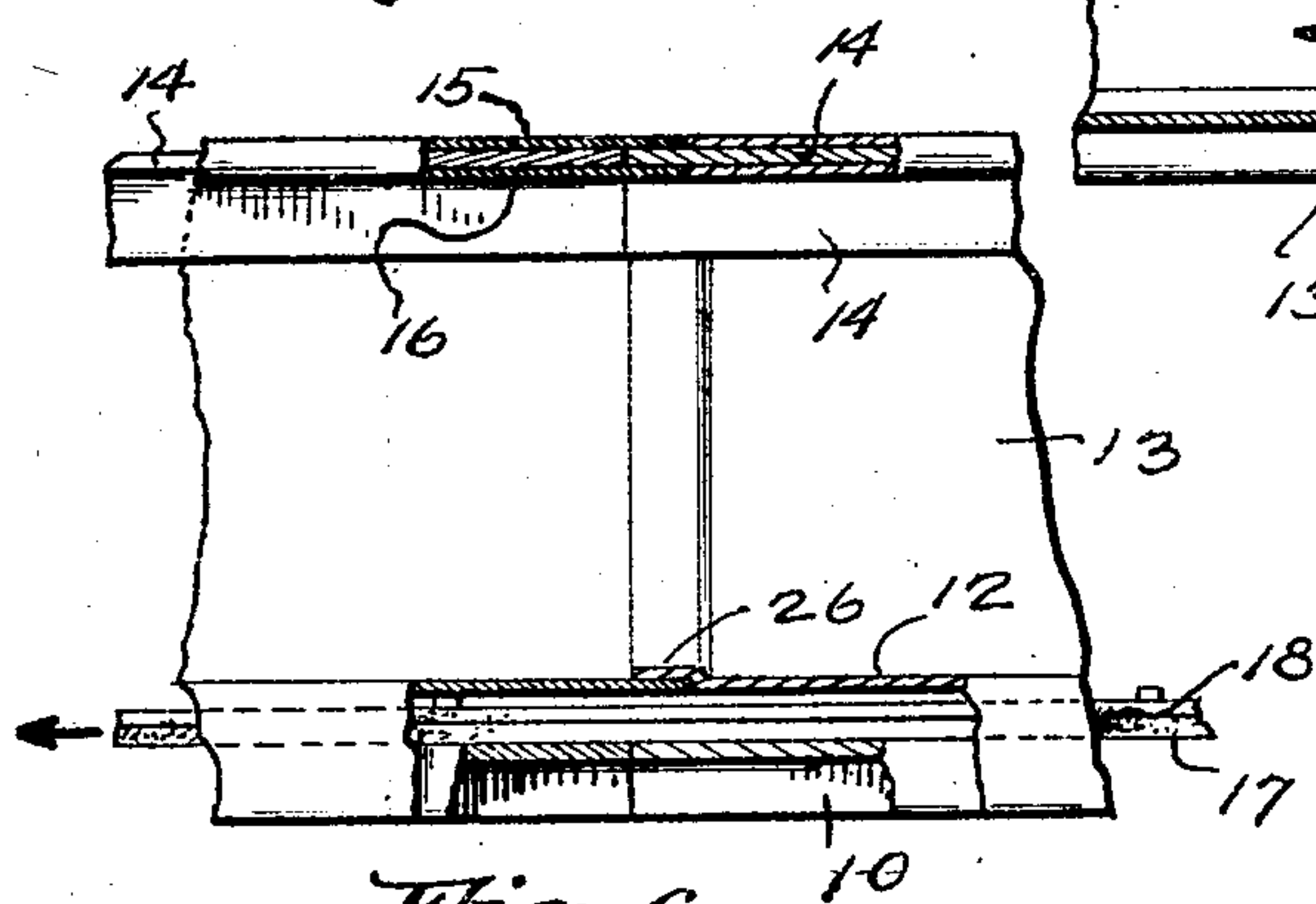
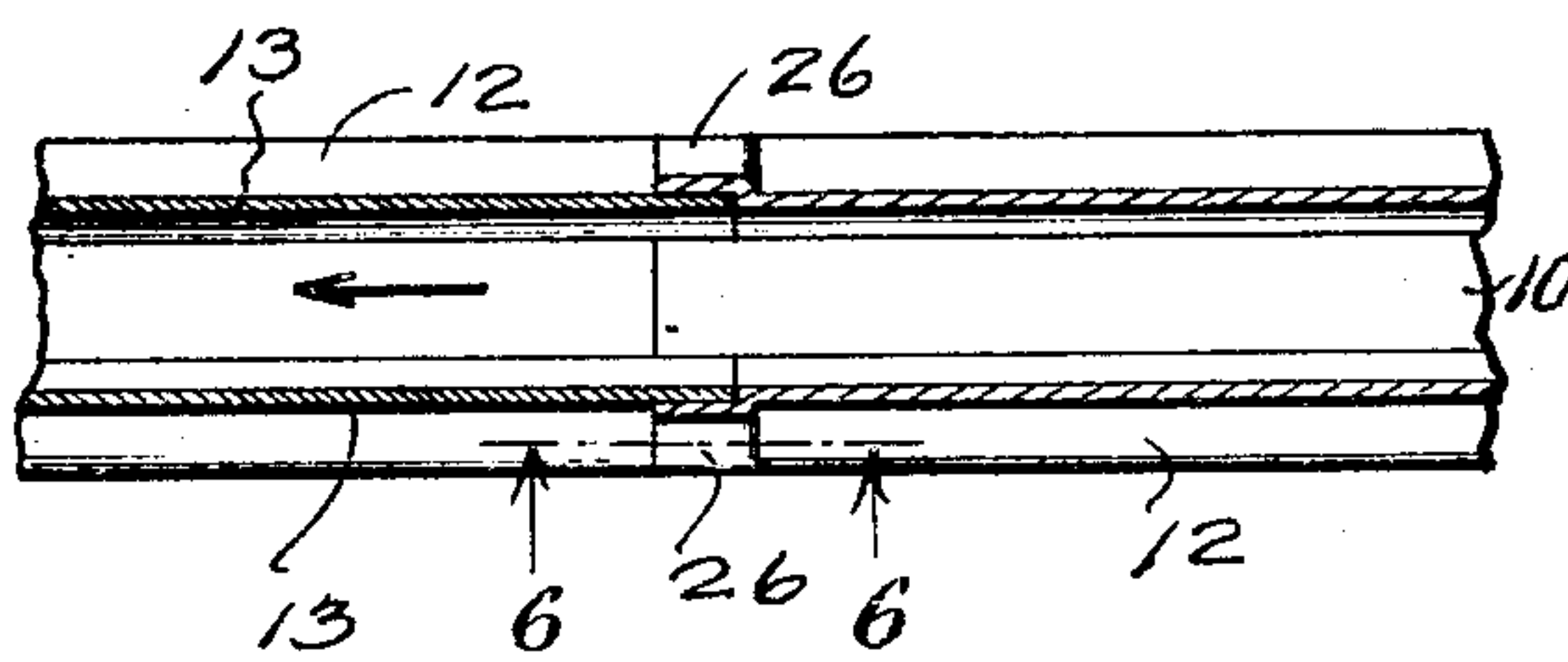


Fig. 6.

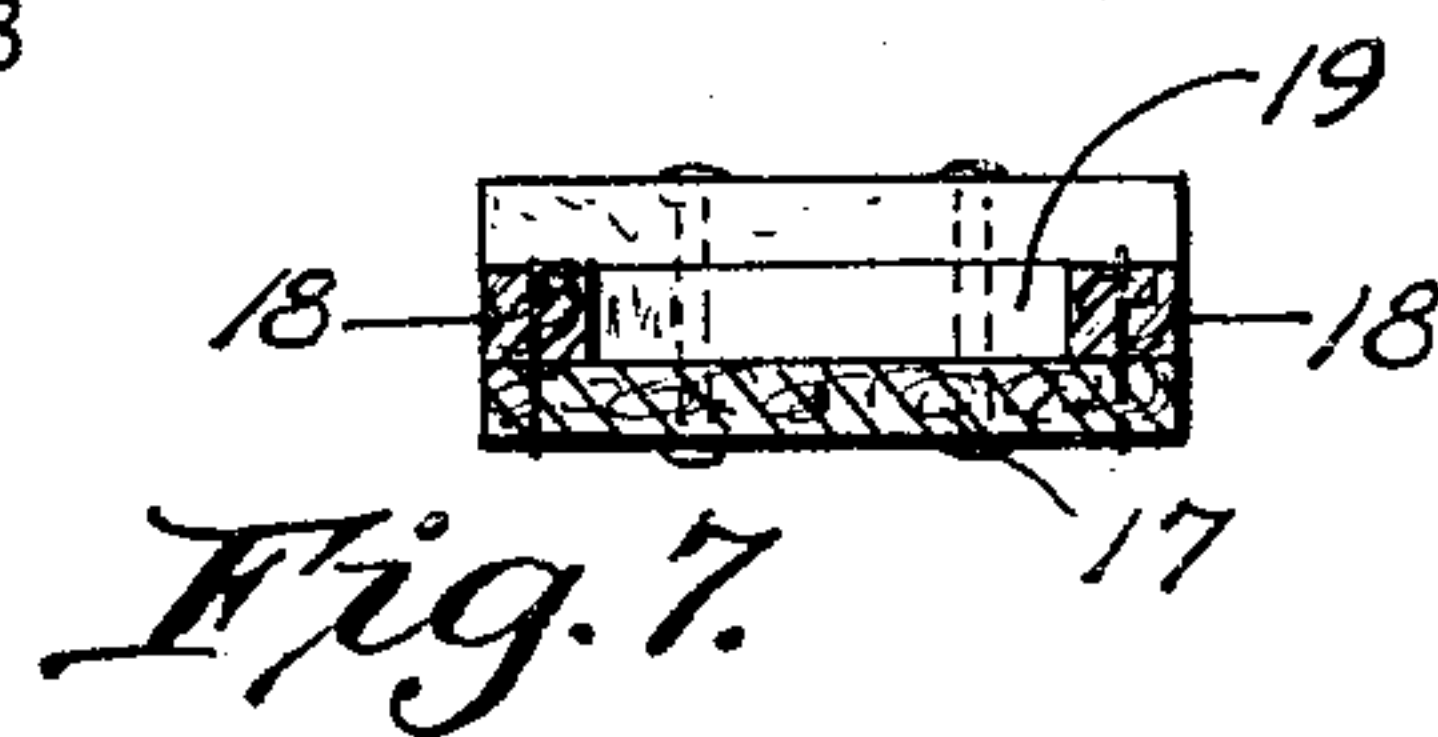


Fig. 7.

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7 Sheets-Sheet 3

Fig. 9.

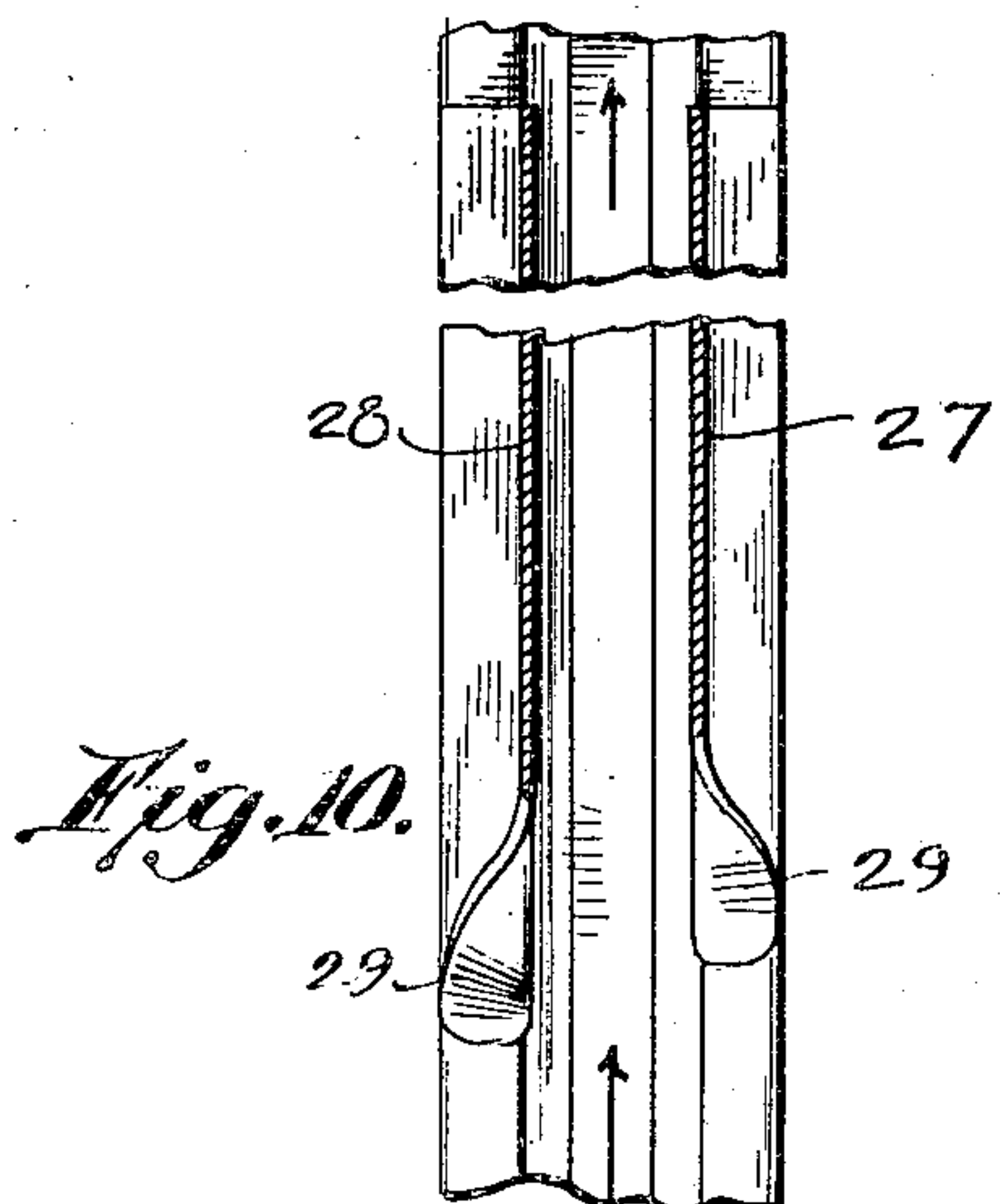
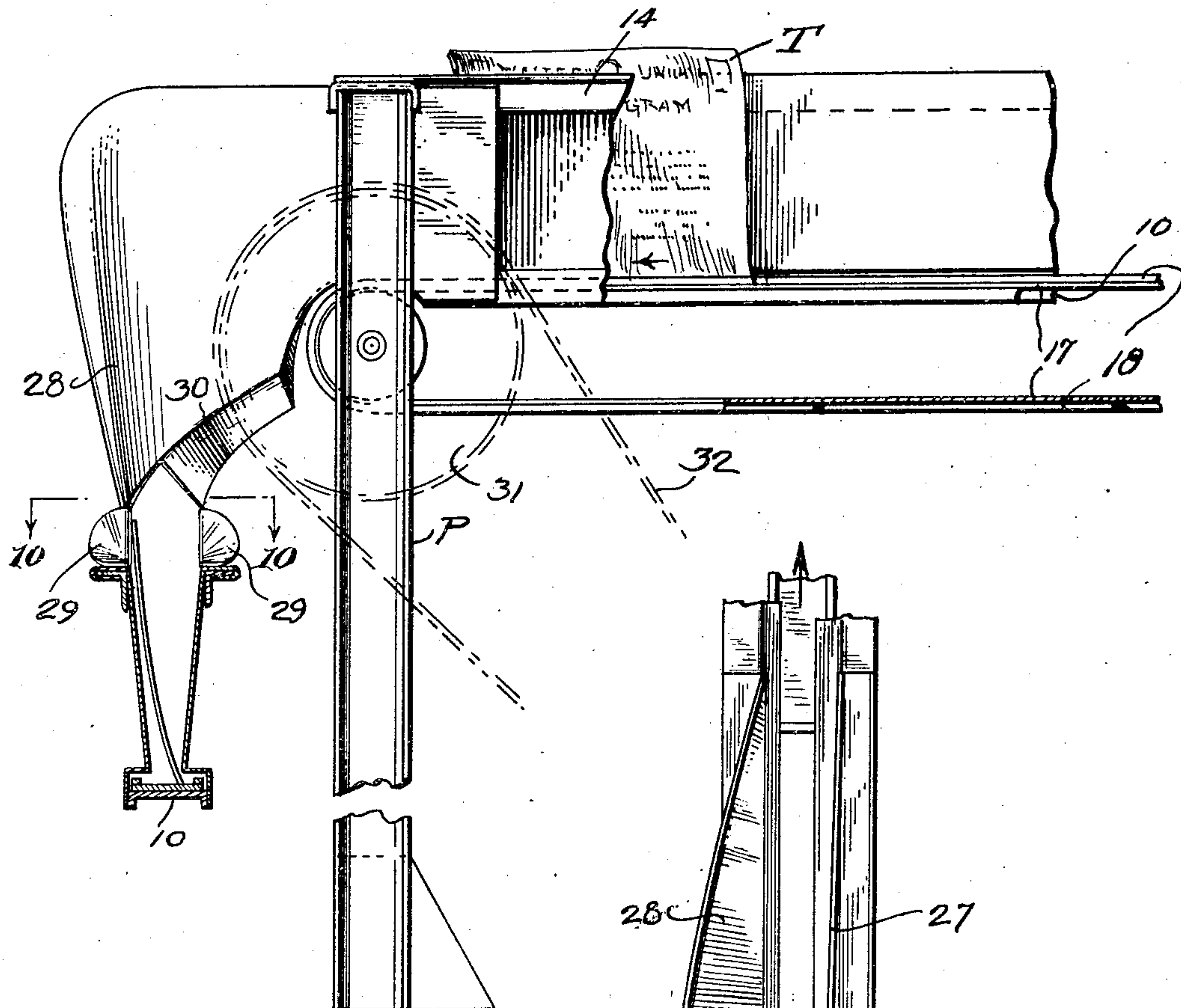


Fig. 10.

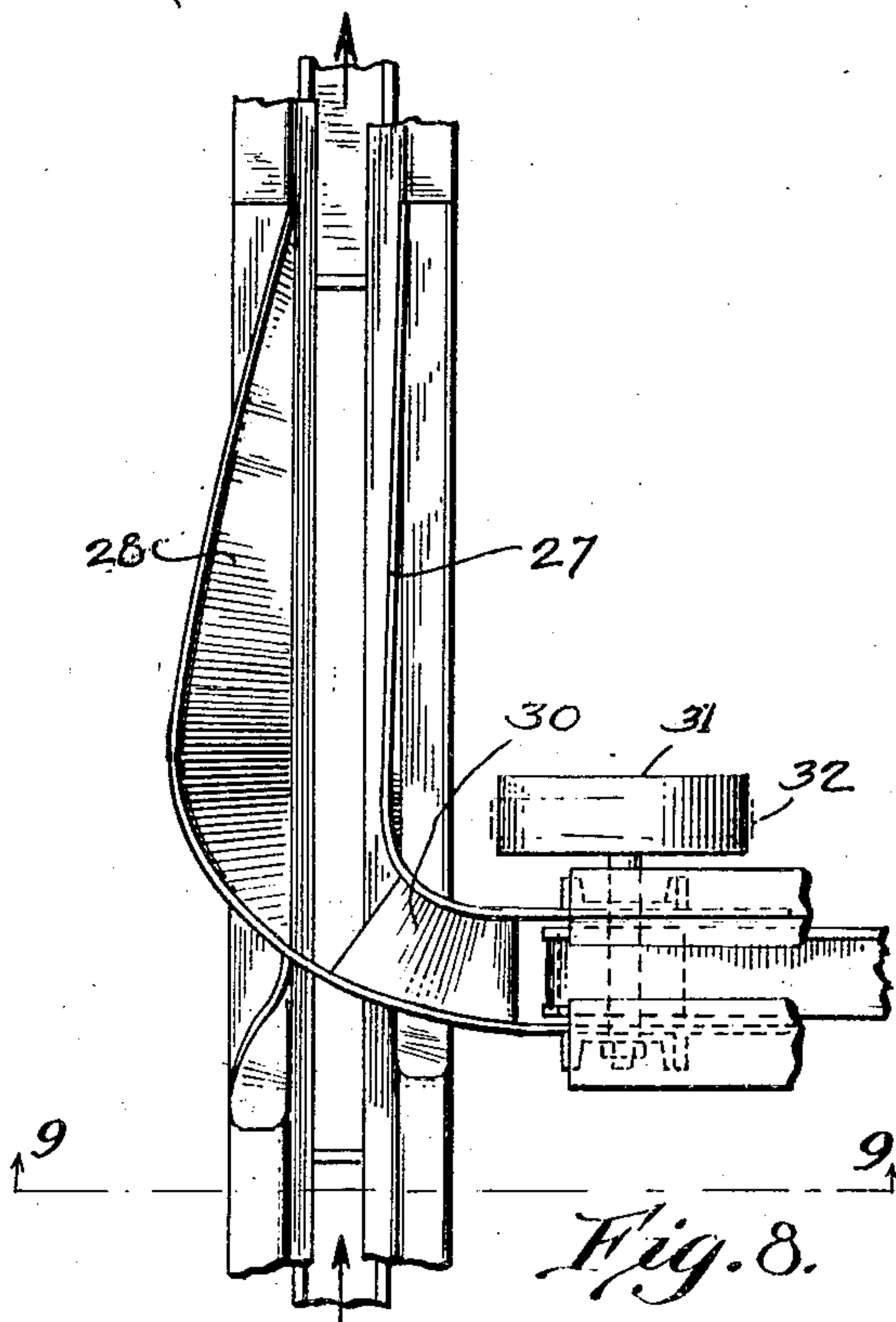


Fig. 8.

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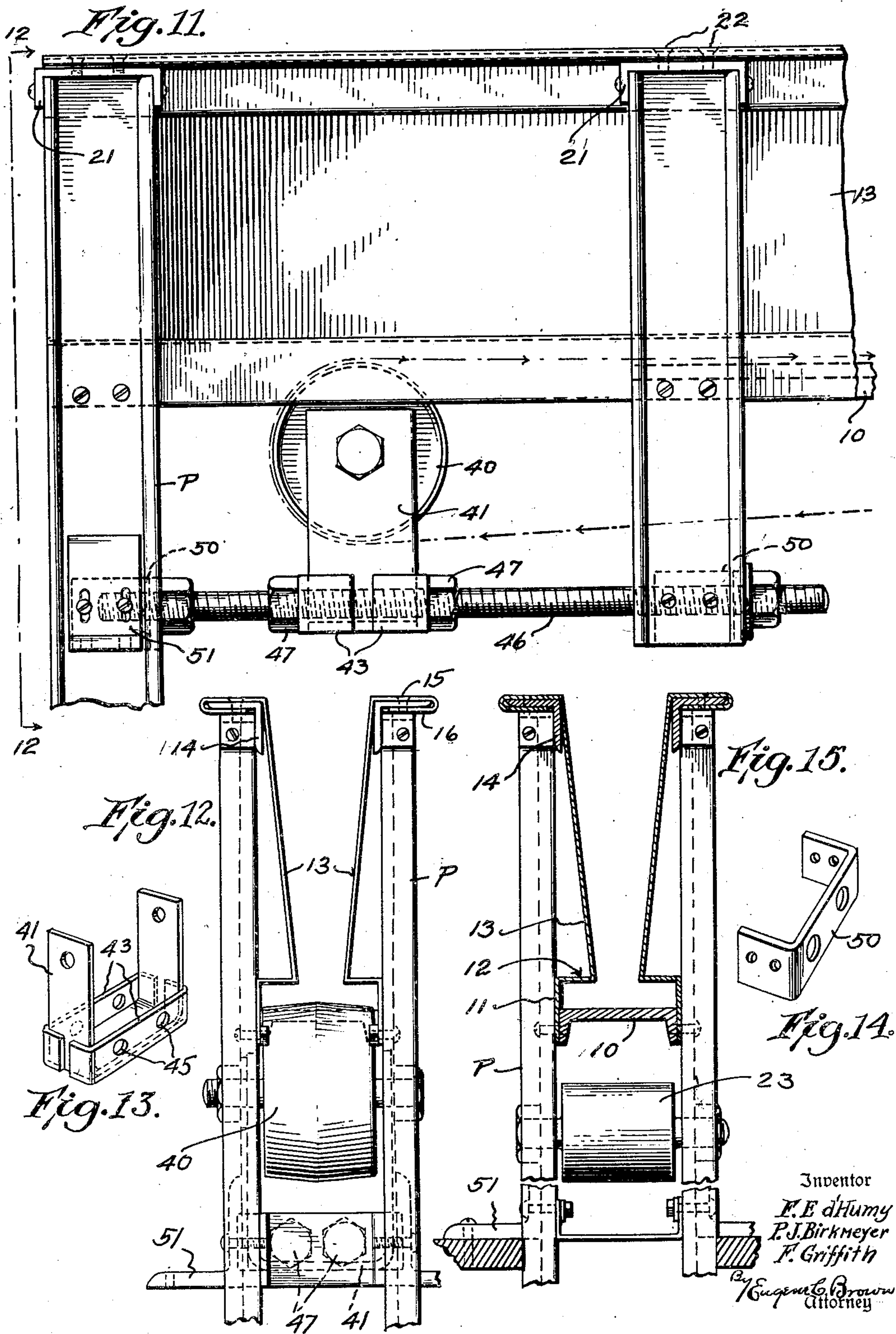
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7 Sheets-Sheet 4



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1,801,906

BELT CONVEYER

Filed March 13, 1929

7 Sheets-Sheet 5

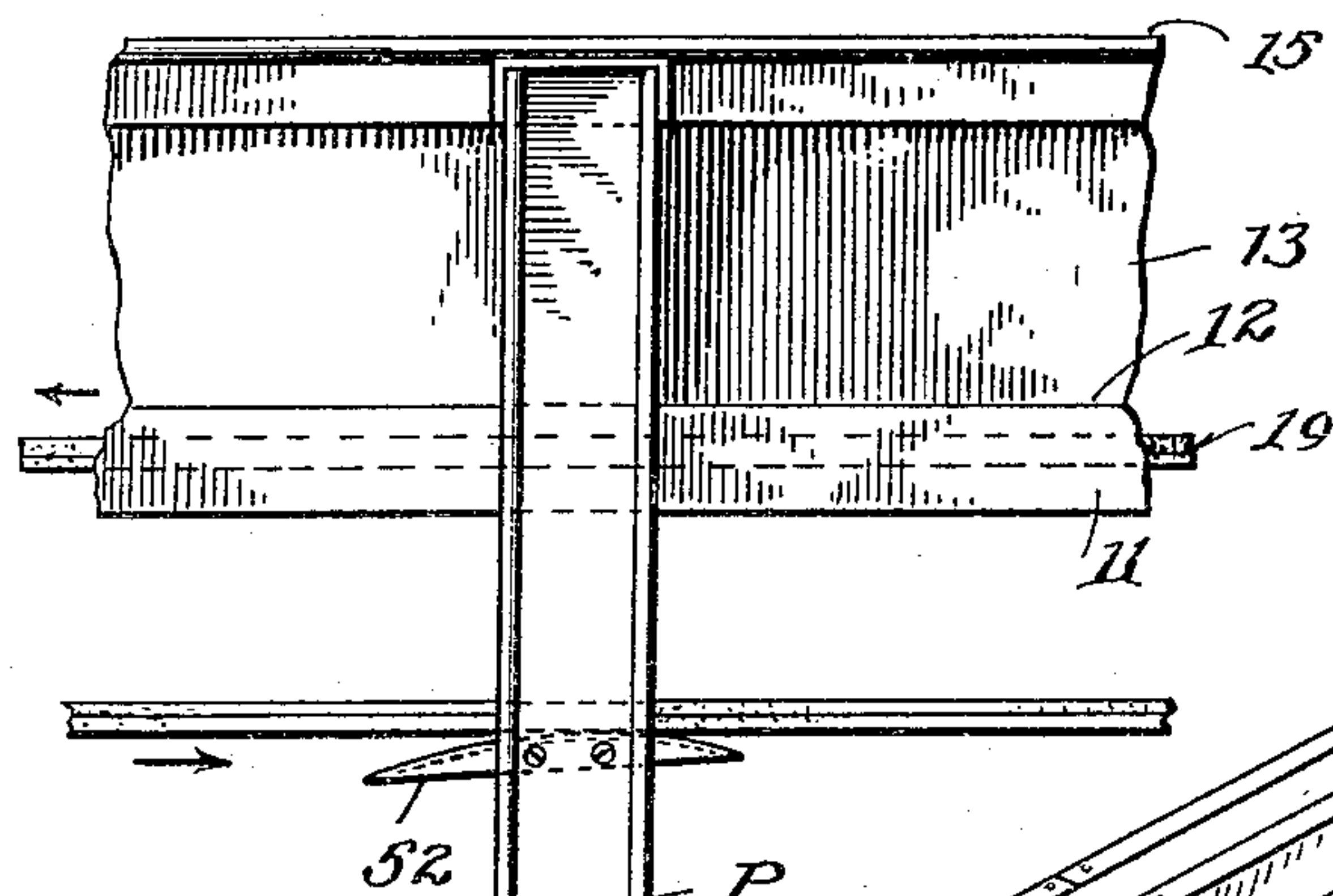


Fig. 16.

Fig. 17.

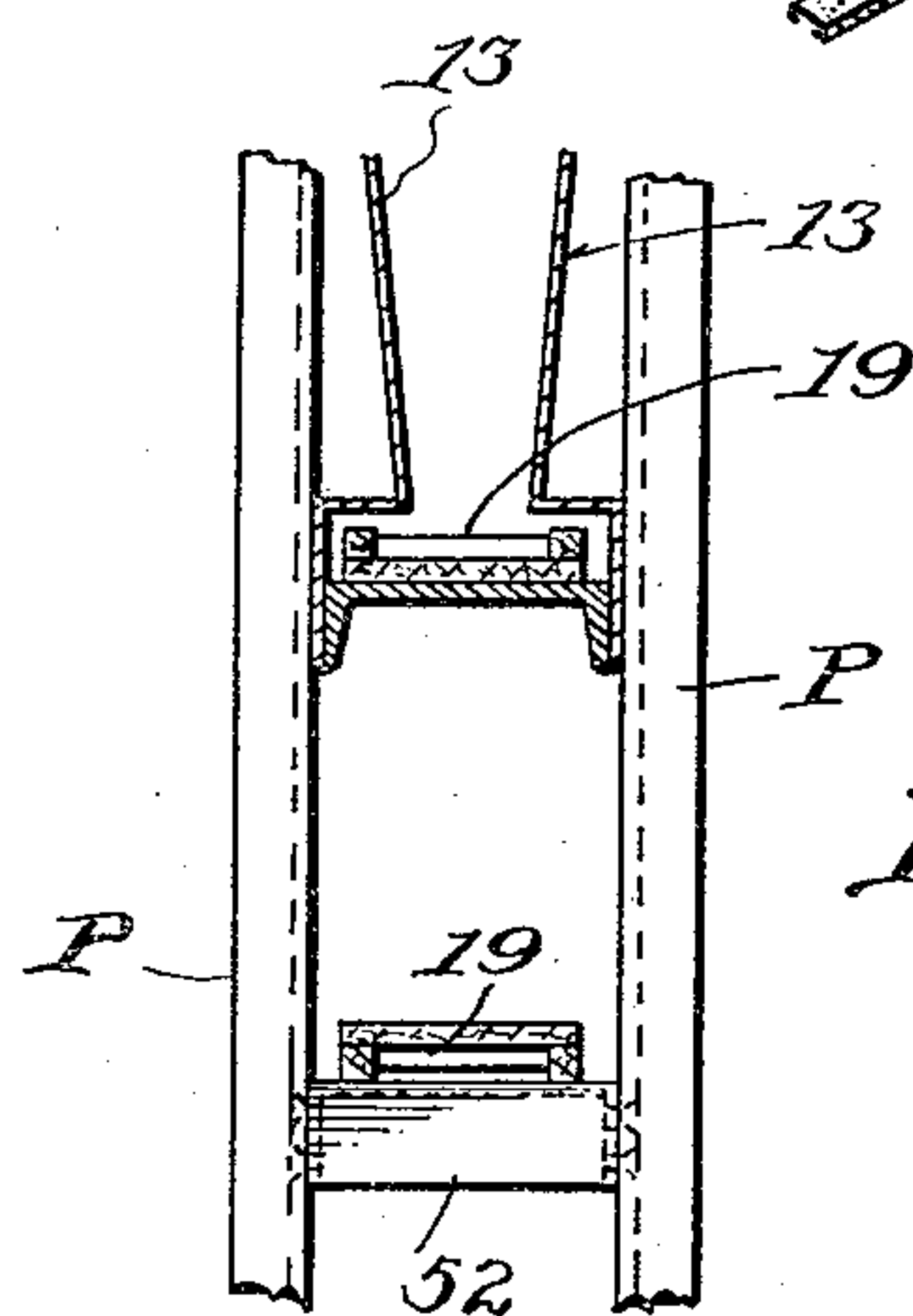


Fig. 18.

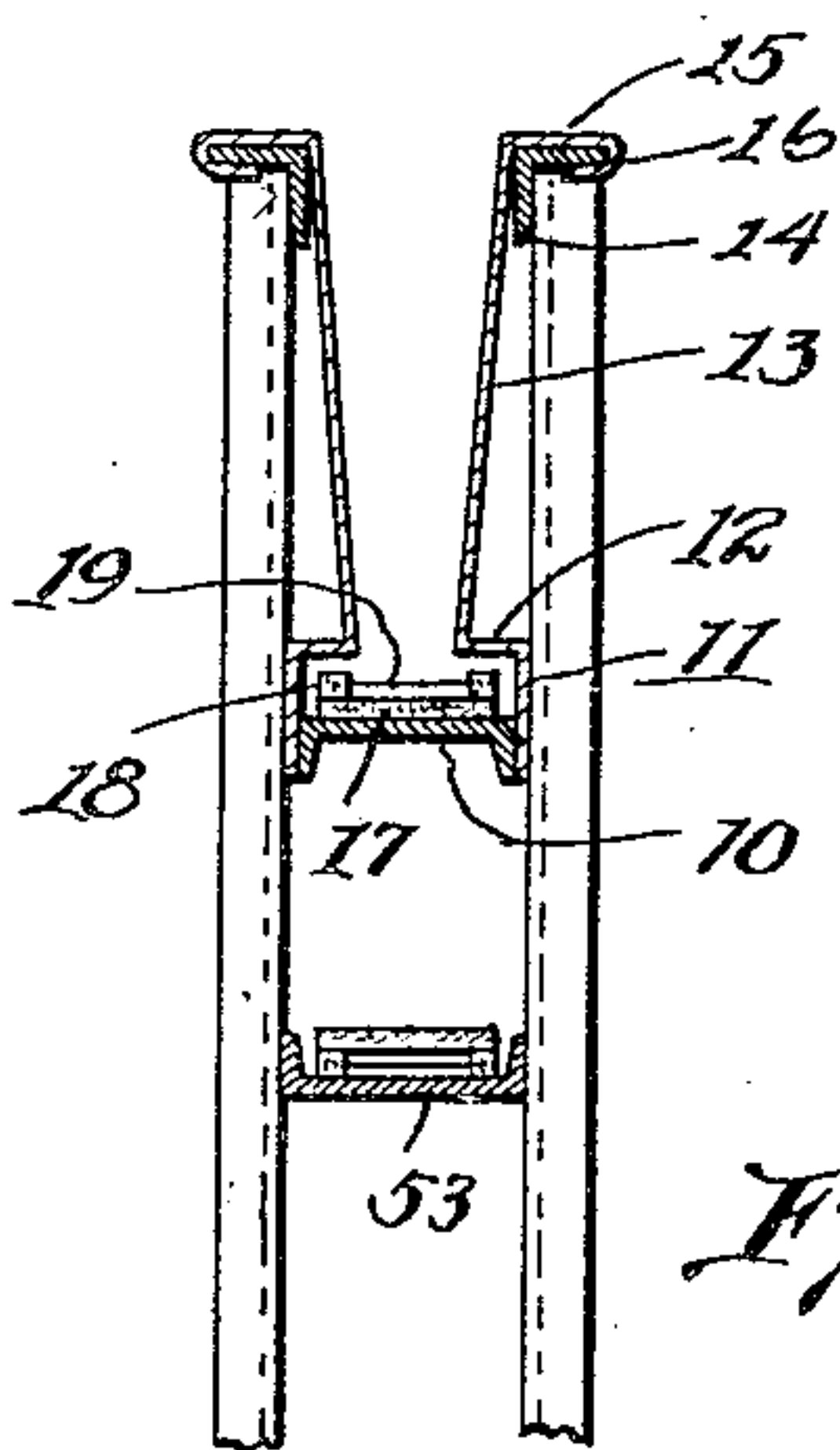


Fig. 19.

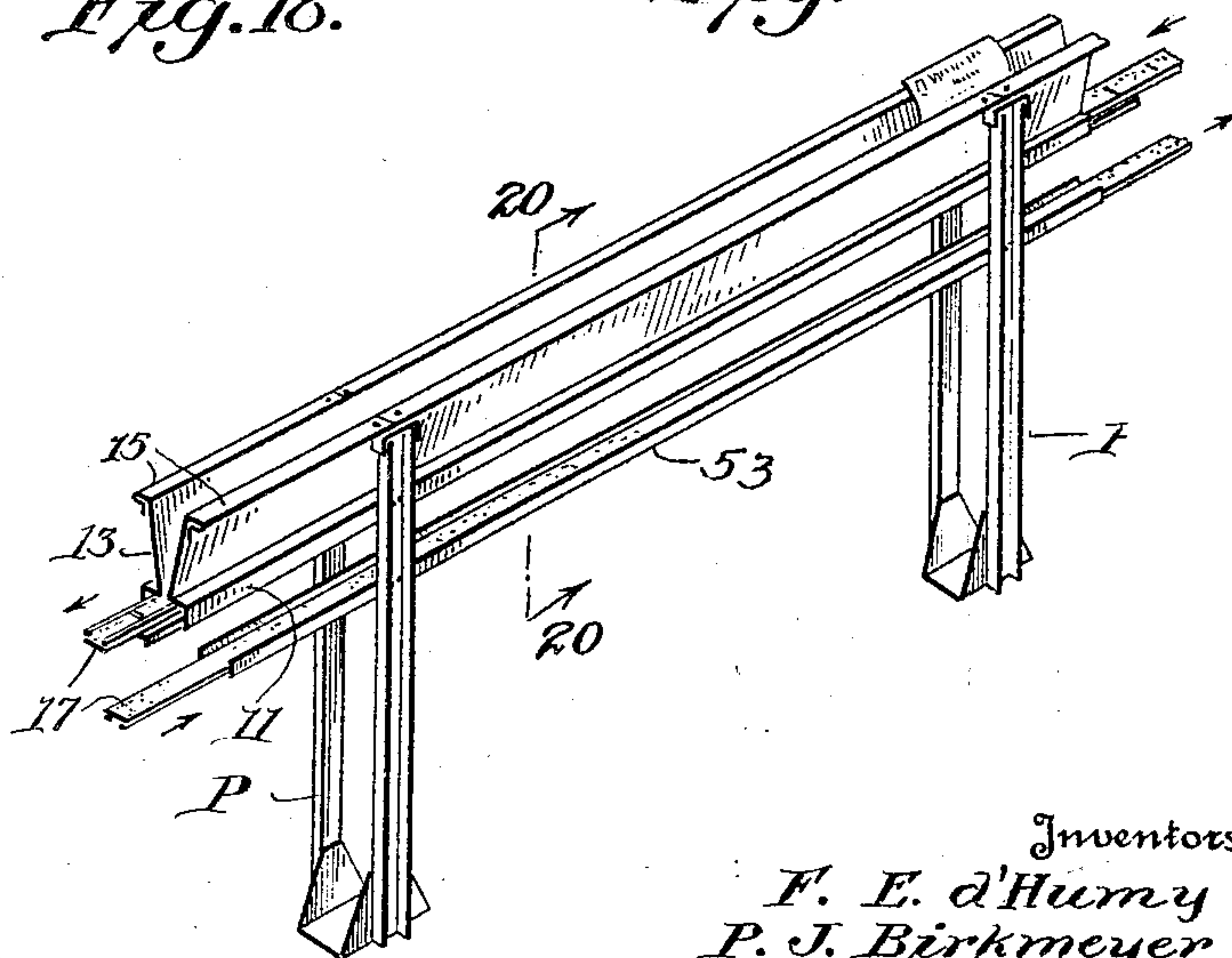
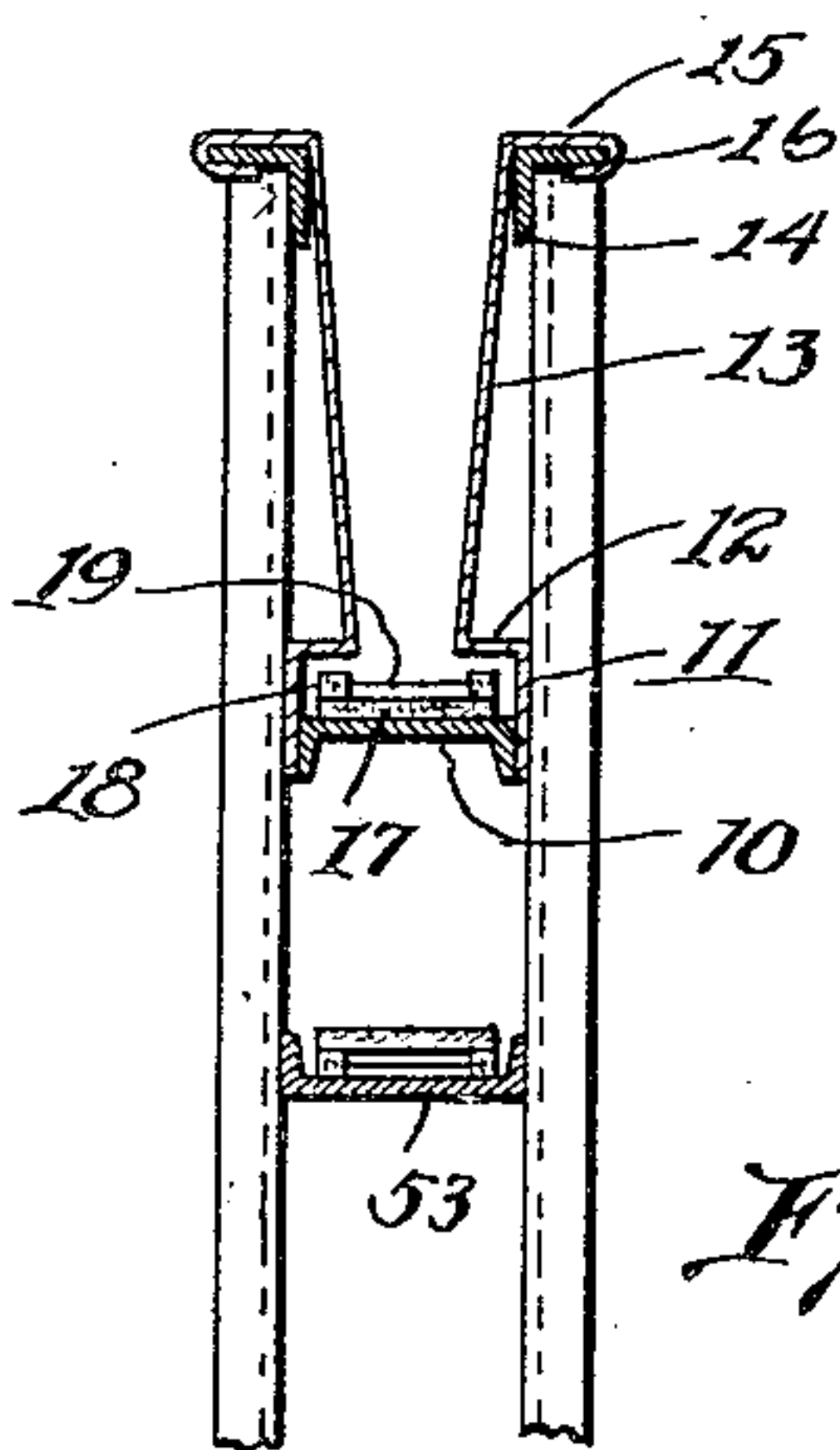


Fig. 20.



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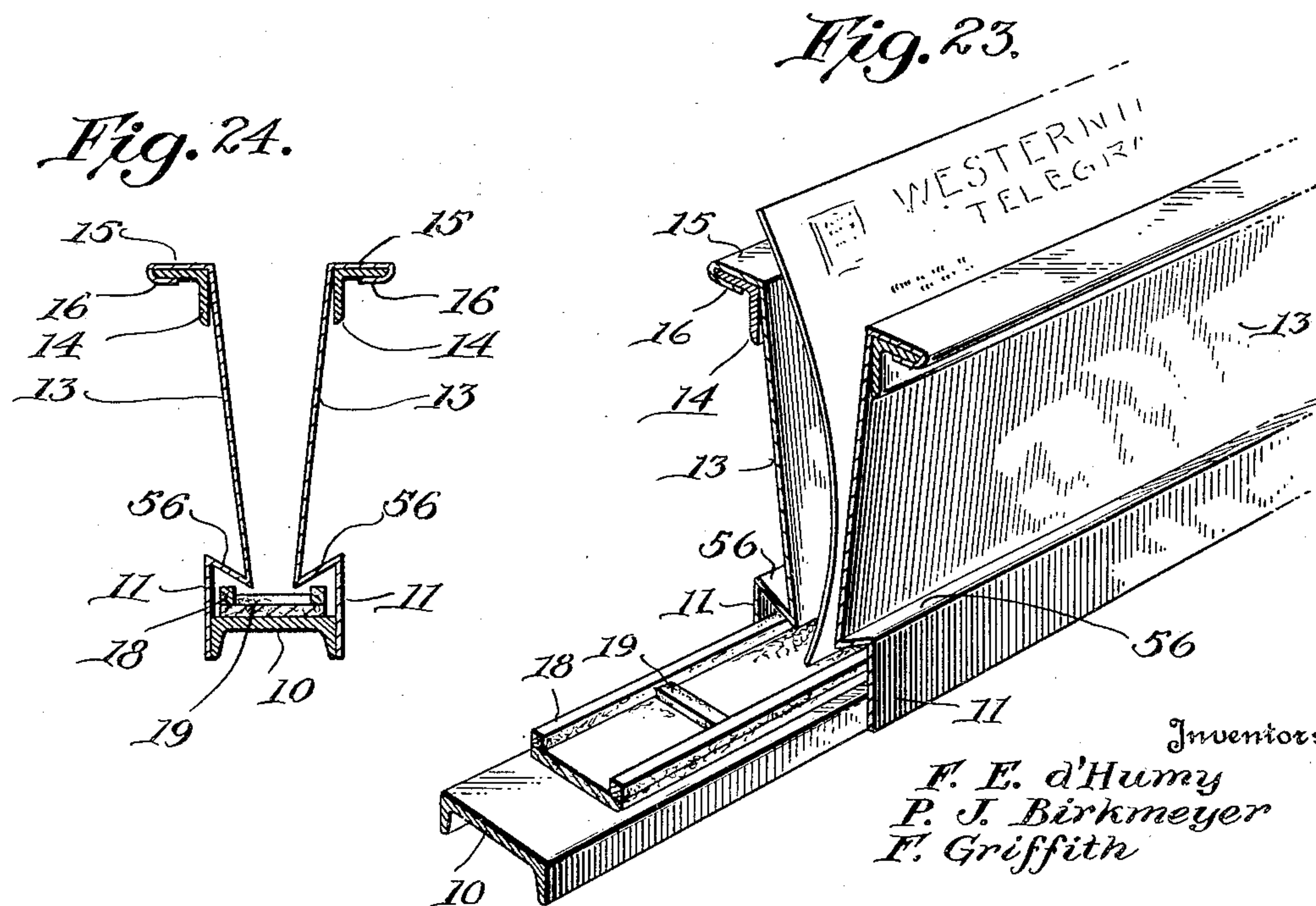
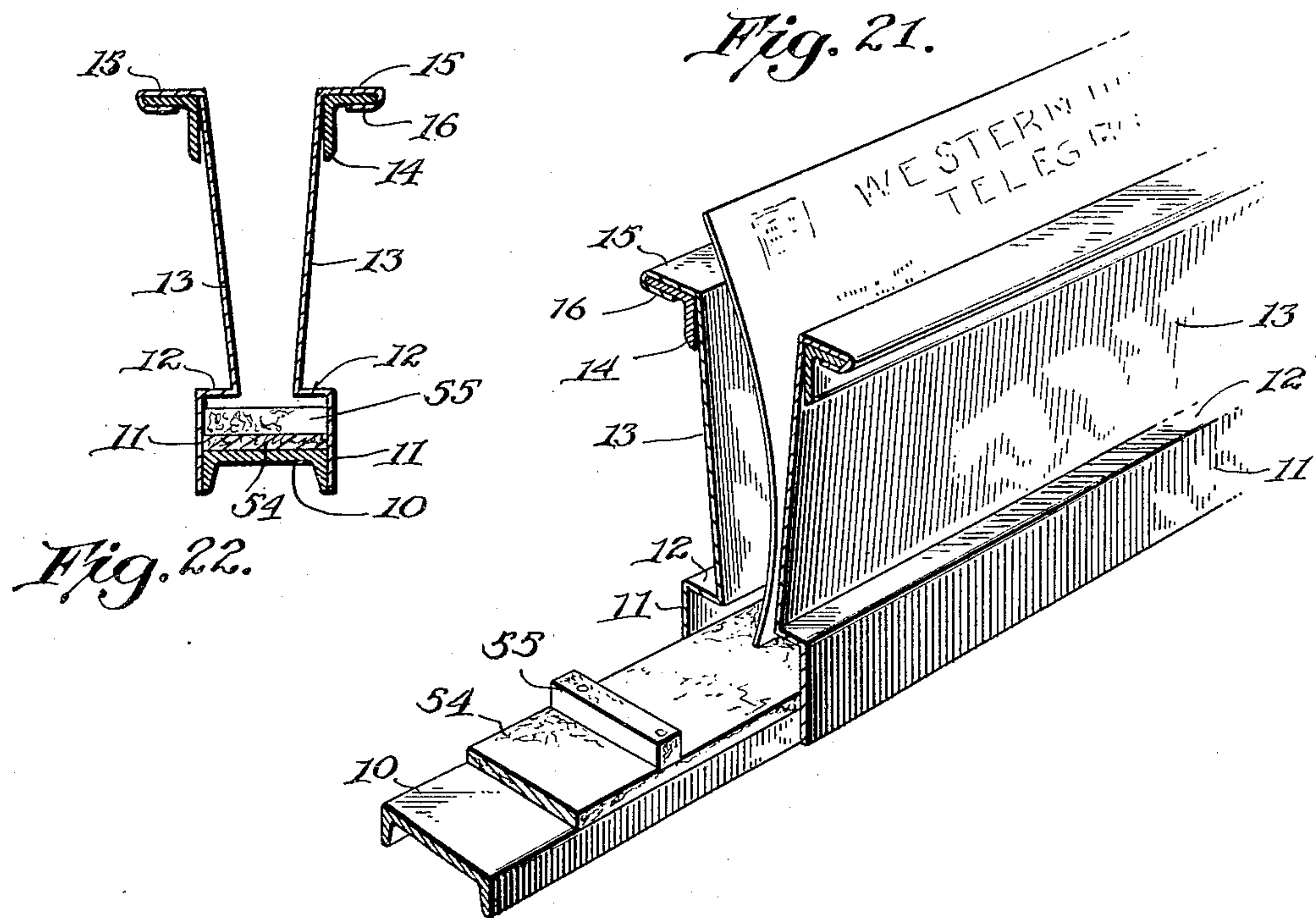
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BELT CONVEYER

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7 Sheets-Sheet 6



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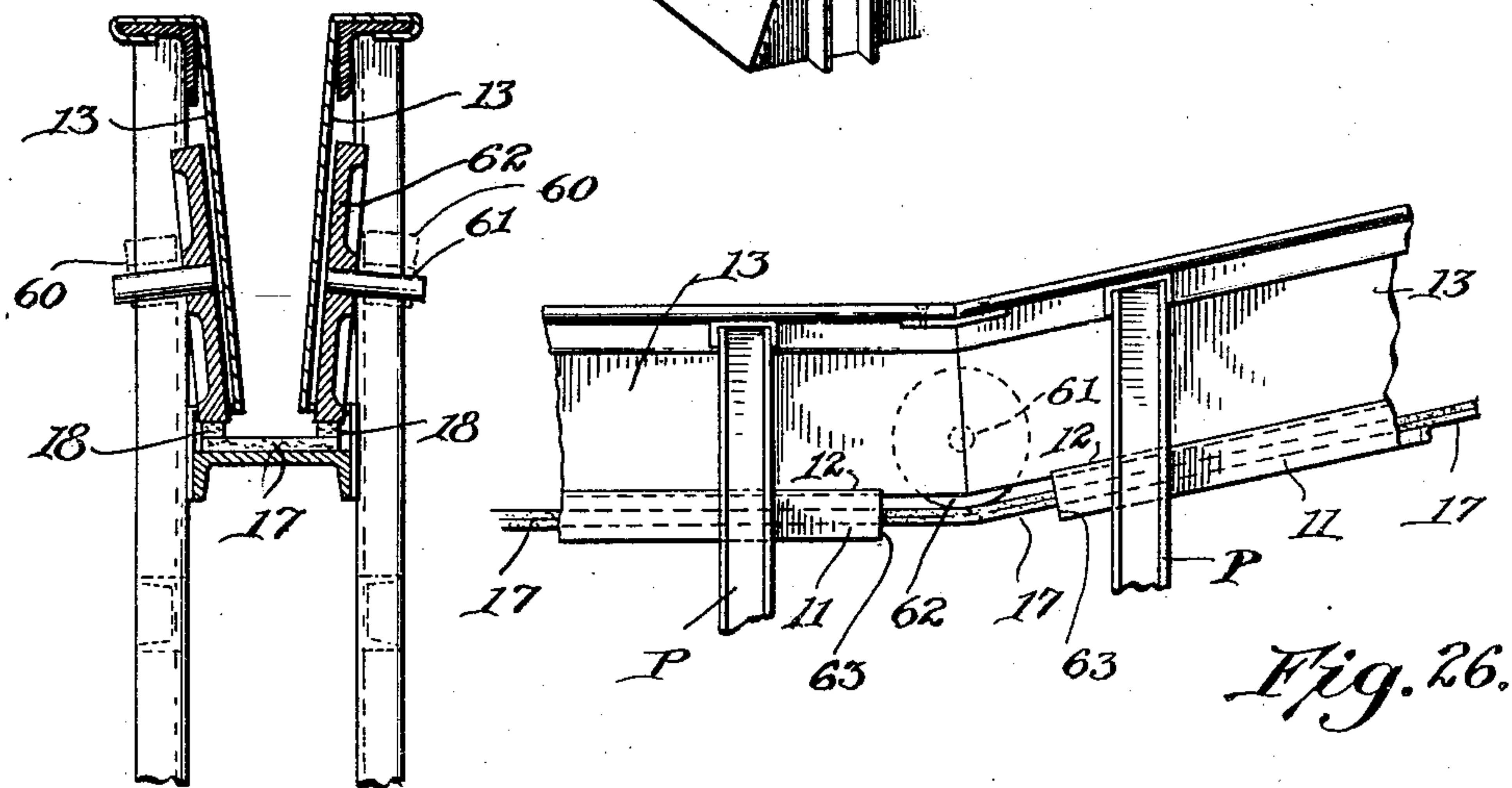
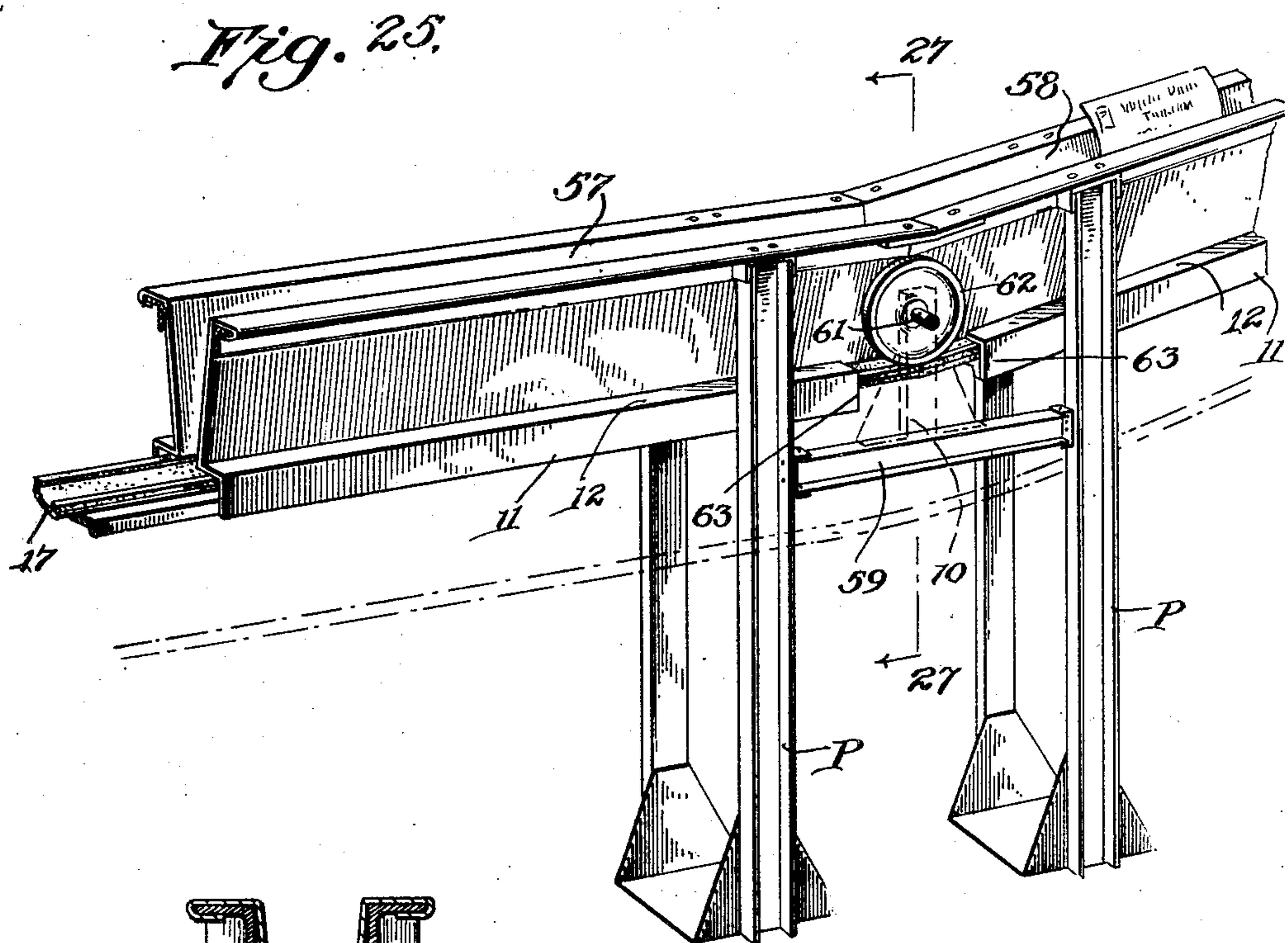
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BELT CONVEYER .

Filed March 13, 1929 7 Sheets-Sheet 7



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UNITED STATES PATENT OFFICE

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BELT CONVEYER

Application filed March 13, 1929. Serial No. 350,751.

This invention relates to conveyers and has special reference to a conveyer and transfer device for telegrams and the like.

In the handling of telegrams and the like it is frequently desirable to use open topped or trough conveyers so arranged that the telegrams or other like articles may be held in an upright position so that the addresses or other data may be read without removing the paper from the conveyer. Conveyers on which the papers lie flat are not well adapted for such use on account of the liability of the loose sheets being blown off. It is also desirable to have such conveyers constructed with the conveying belt or band so arranged that the paper cannot be caught beneath or at the side of the belt and thus torn or wrinkled and the sections of the trough joined in such manner that catching, tearing or wrinkling of the paper at such points is eliminated. Further, it is frequently desired, in handling telegrams to have certain feeder runs of the conveyer system angularly disposed with reference to the main or cross run conveyer and to have the telegrams fed in from the feeders to the main conveyer without interfering with the passage of telegrams along the main conveyer so that special connections are necessary between the feeders and main conveyer.

The principal objects of the present invention are to provide a novel and improved form of trough conveyer especially adapted for the conveyance of telegrams and the like; to construct the conveyer in such manner that the belt is prevented from tearing or wrinkling the telegrams; to construct the joints of the conveyer sections in an improved manner so that such joints are smooth on their inner sides and present an unbroken surface; and to provide an improved connection between two such conveyers angularly disposed.

With the above and other objects in view the invention will now be particularly described and specifically claimed, reference being had to the accompanying drawings, wherein:—

Figure 1 is a perspective view of a portion of a conveyer system constructed in accordance with this invention and including two

conveyer runs at right angles to each other.

Figure 2 is a perspective view of a portion of such a conveyer partly in section.

Figure 3 is a transverse section of such a conveyer on the line 3—3 of Figure 1.

Figure 4 is a perspective view of a joint between two sections with the parts disassembled.

Figure 5 is a horizontal section through such a joint.

Figure 6 is an enlarged section on the line 6—6 of Figure 5.

Figure 7 is a cross section through a preferred form of conveyer belt adapted for use herewith.

Figure 8 is a plan view of the connection between two runs of the conveyer system.

Figure 9 is a section on the line 9—9 of Figure 8.

Figure 10 is a section on the line 10—10 of Figure 9.

Figure 11 is a side-elevation of a take-up device for adjusting the tension on the belt.

Figure 12 is an end elevation taken on the line 12—12 of Figure 11.

Figure 13 is a perspective view of the yoke which supports the end pulley at the take-up end.

Figure 14 is a perspective view of the bearing plate for the outer ends of the take-up bolts and nuts.

Figure 15 is a vertical sectional view through the conveyer trough at one of the vertical supports.

Figure 16 is a perspective view of a portion of a conveyer constructed in accordance with this invention and showing a modified form of support for the return run of the conveyer.

Figure 17 is an enlarged side elevation of a portion of Figure 16.

Figure 18 is an enlarged section on the line 18—18 of Figure 16.

Figure 19 is a view similar to Figure 16 but showing a further modification of the support for the return run of the conveyer.

Figure 20 is a section on the line 20—20 of Figure 19.

Figure 21 is a perspective view of a portion of the invention showing the trough in

its usual form and in connection with a modified form of conveyer belt.

Figure 22 is a cross section of the form of invention shown in Figure 21.

5 Figure 23 is a view similar to Figure 21 but showing a modified form of trough as used with the conveyer belt of the type shown in Figure 18.

10 Figure 24 is a cross section through the modified form shown in Figure 23.

Figure 25 is a perspective view showing the arrangement used in passing from a horizontal to an inclined section of the conveyer.

15 Figure 26 is a side elevation of a portion of Figure 25.

Figure 27 is an enlarged section on the line 27—27 of Figure 25.

Each section of the individual conveyers in this system is provided with a base member 20 10 consisting of a channel iron having its flanges turned downwardly. To these flanges are secured the lower edge portions 11 of side plates, these portions extending perpendicularly above the channel. These side plates extend toward each other from the 25 tops of the portions 11 to form belt edge covering flanges 12, from which these side plates extend upwardly and divergently to form conveyer trough sides 13 at the top of which 30 are stiffening and supporting angles 14, having vertical depending legs and outwardly extending horizontal legs over which the side plates are extended outwardly as at 15 and bent around and under as at 16. There is 35 thus formed a narrow trough with flaring sides and having its bottom opening into a housing for a conveyer belt 17 provided with side flanges 18 housed beneath the overhanging side portions of the housing. With this 40 arrangement the telegrams T, dropped in the trough, will be carried along in an upright position as shown and the lower parts of these telegrams are protected by the overhanging side portions of the housing from 45 catching beneath the belt. At intervals this belt is provided with cross-strips or cleats which may lie wholly between the flanges as at 19, or may include an additional overlying strip which extends across the top of the 50 flanges, as at 20.

Supporting posts or standards P, which may be channel irons, are used to support these conveyers and each post is provided 55 with a channel cap 21, on which the flange formed by the parts 15 and 16 of the respective side plate and the horizontal leg of the angle 14 between these parts rests. The 60 down turned ends of the cap are first riveted to the flanges of the channel post and then the flanges 15 of the trough are riveted to the cap, as at 22. This construction provides a rigid support for the conveyer trough, without requiring the use of any rivets 65 through the sides of the trough.

The upper reach of the belt forming the

conveyer travels through the rectangular enclosure at the bottom of the trough and slides on the top of the channel bar 10 which forms the bottom wall of the enclosure. The lower 70 reach or return of the belt is carried over rollers 23 rotatably mounted between the channel bar supports below the trough.

Each conveyer belt is driven in any suitable manner, here typified by the pulley 31 and drive belt 32. Adjacent each end of a conveyer belt, the bottom wall 10 of the belt enclosure is discontinued and the belt passes 75 around a pulley. At the driving end the pulley is carried by the shaft of the driving pulley. At the other end of the conveyer the belt passes around a pulley 40, carried in a yoke support 41, which is adjustable lengthwise of the pulley to form a take-up for adjusting the tension of the belt. The bottom 80 of the yoke is clamped between a pair of oppositely disposed clamping plates 43, which are provided with apertures 45 to receive a pair of bolts 46. By adjusting the nuts 47, the yoke and pulley may be moved in one 85 direction or the other until the desired tension on the belt is obtained. The ends of the bolts are secured to plates 50 which are fastened between opposite posts. When the conveyer passes across the top of a table, the 90 posts may be secured to the table by means of angle irons 51. 95

The conveyers are usually of such length that it is necessary to make them in sections which may be readily assembled and when 100 erected will be rigid and will present a smooth unobstructed path throughout the length of the channel or trough. The preferable method of joining the sections is shown in Figures 4, 5 and 6, wherein it may be seen that one 105 end of one section has the portions 15 and 16 and the top corner of the portion 13 of each side plate cut away to permit projection of the angles 14, the remainder 24 of each trough side portion 13 being offset outwardly. Likewise the bottom portions 11 are cut back 110 as at 25 and the portions 12 are offset upwardly as at 26, the channel 10 terminating flush with the end edges of the angles 14. The abutting end of the adjacent section is constructed in the usual manner except that the 115 angles 14 and channel 16 terminate short of the end edges of the side plates and when the section ends are brought together, as shown in Figures 6 and 7, this construction will present a smooth and even interior surface which neither interferes with the operation of the belt nor with the telegrams in 120 their movement along the conveyer.

Where any such conveyer acts as a feeder 125 to a conveyer at an angle to the feeder, the delivery end of the feeder is arranged above the level of the other conveyer, called for convenience the main conveyer, as shown in Figures 1 and 9. At this delivery end and to the outside thereof, there is secured a pair of 130

side plates 27 and 28, one of which, 27, is perpendicular throughout and extends at its beginning in the direction of the feeder and is then curved and extended in the direction of travel of the main conveyer belt along the edge of one side of the main conveyer, this plate forming the inner side wall of a transfer chute. The other plate, 28, lies parallel to the plate 27, at its beginning and like it curves to lie in the same direction but over the other edge of the main trough. This plate differs from the first, however, because it flares outwardly at the bend and at the part extending along the main conveyer to form the outer side wall of the chute. The lower edges of the chute walls rest on the top edges of the main trough and at the rear these lower edge portions are formed with flaring guide tabs 29 for guiding the upper edges of telegrams passing along the main conveyer between the chute sides. Above these guide tabs 29, the chute is provided with an inclined floor or bottom 30, the upper end of which lies in position to have the telegrams from the feeder pass freely thereon so that such telegrams may pass down along this floor and drop through the open or unfloored end of the chute onto the main conveyer belt.

In the form of conveyer illustrated in Figures 16, 17 and 18 the construction is very similar to that shown in Figures 1, 2 and 3 but in place of the rollers 23 supporting the return run of the belt 17 there is employed between each pair of posts P a rest 52 having an arcuate upper surface over which the return run of the conveyer belt passes. This form is well adapted for use with the type of belt having side flanges 18 as this belt slides readily over the arcuate upper surfaces of the supports 52. In the form shown in Figures 19 and 20 the posts P carry a channel member 53 arranged with its flanges directed upwardly so as to form a trough for the return run of the conveyer belt.

In certain instances it is found that the side flanges of the conveyer belt may well be omitted but, when these flanges are omitted, it is advisable to make provision to prevent the bottom edges of the papers getting between the belt and the portion 11 of the trough. In such cases we preferably provide a wide belt 54, as shown in Figures 21 and 22, the width of the belt being such that it extends entirely across the space between the portions 11 and also this belt carries cleats 55 extending from edge to edge of the belt 54. As can be seen from Figure 22 this arrangement practically inhibits the movement of the lower edges of the telegrams into position along side of the belt.

Another arrangement which may be used for the purpose of preventing the lower edges of the telegrams from catching between the belt and the portions 11 is that disclosed in Figures 23 and 24 where the trough is modi-

fied so that the horizontal portions 12 are replaced by downwardly and inwardly directed portions 56 so that the lower edges of the sides 13 lie very closely above the cleats or cross pieces 19 and in fact these lower edges extend slightly below the top edges of the longitudinal ribs 18 of the belt. Otherwise the trough is identical with those previously shown and described and accordingly the same reference numerals have been used for the other parts.

It is desirable at times to arrange the conveyer so that it may carry the telegrams up or down an inclination and the arrangement for this purpose can be seen in Figures 25 to 27 inclusive. In these figures are disclosed the abutting ends of two conveyer sections 57 and 58, the details of which are substantially identical with the conveyer as shown in Figures 1, 2 and 3 and accordingly are referred to by the same reference characters. However, the conveyer 57 is shown as a horizontal conveyer and the conveyer 58 is inclined upwardly from its point of meeting or junction with the conveyer 57. Obviously, under this condition the upper run of the belt 17 would tend to lift at the junction of the two sections and would thus rub against the portions 12 of the conveyer trough and cause much wear to the belt. Moreover, the smooth conveying of the telegrams at this point would be interrupted. In order to provide for proper passage of the belt 17 from horizontal to inclined position the posts on the section 57 are connected to the posts on the section 58 by channel bars 59 which support bearings 60 wherein are journaled stub shafts 61 carrying disks 62, the shafts being inclined so that the disks 62 run parallel to the trough sides 13. Moreover, the portions 12 and 11 of the troughs of these sections are cut away as at 63 so that the lower parts of the disks 62 may pass below the level of the bottom edges of the trough sides 13 and thus engage the longitudinal ribs 18 of the belt 17 as clearly shown in the various figures. By this means the belt is held from dragging on the portions 12 while at the same time it is freely movable and is kept under proper tension.

In use telegrams are simply dropped into the conveyer with their headings uppermost and facing in the desired direction. They will then travel along the system being removed at any desired point along the way or being allowed to remain until they reach the delivery end of the system where they may be received in any convenient receptacle after passing off the conveyer belt. If a telegraph blank should be held in the channel for any cause, such as static or roughness, it can only remain for an instant until it is engaged by one of the cross strips or cleats 20, which will thereafter push it to the

end of the conveyer. These cleats are disposed at suitable distances along the belt.

The construction of the trough with outwardly inclined sides, the bottom edges overhanging the enclosed housing or channel for the traveling belt ensures the transmission of the message blanks without any danger of delay or mutilation. Moreover, the blanks are maintained throughout their travel on edge in an upright position. Our method of transferring the blanks from one conveyer to another also maintains the blanks in edgewise upright position so that they may always be discharged in the same manner.

We have described in detail the construction illustrated in the drawings for the purpose of clearly disclosing the invention but it will be evident to engineers that various changes may be made in the structural features while still embodying the essentials of the invention.

What is claimed, is:—

1. A conveyer having a trough open at the bottom, a housing beneath the trough wider than the trough bottom to project on each side thereof and opening centrally of its top to said trough, a conveyer belt traveling in said housing and having a greater width than the trough bottom whereby the side edges of the belt are housed in the projecting side portions of the housing, the upper side edges of the trough being extended into laterally projecting flanges, and longitudinally extending reinforcing angles fitted within and conforming to said flanges and secured thereto.

2. A conveyer having a trough open at the bottom, a housing beneath the trough wider than the trough bottom to project on each side thereof and opening centrally of its top to said trough, a conveyer belt traveling in said housing and having a greater width than the trough bottom whereby the side edges of the belt are housed in the projecting side portions of the housing, the upper side edges of the trough being extended into laterally projecting flanges, longitudinally extending reinforcing angles fitted within and conforming to said flanges and secured thereto, and supports for said trough terminating beneath said flanges and having the flanges and angles secured thereto.

3. In a conveyer, a base member consisting of a channel having a horizontal web and depending flanges, side plates having their lower edge portions secured to the outer sides of said channel flanges and projecting thereabove to form housing sides, said side plates being bent inwardly to overlie the channel at its sides and then bent upwardly to form trough sides flaring upwardly, the plates being bent outwardly at the upper edges of the trough sides to form flanges, and angles fitted within and con-

forming to said flanges and secured thereto.

4. In a conveyer, alined sections each including a base member consisting of a channel having a horizontal web and depending flanges, side plates having their lower edge portions secured to the outer sides of said channel flanges and projecting thereabove to form housing sides, said side plates being bent inwardly to overlie the channel at its sides and then bent upwardly to form trough sides flaring upwardly, the plates being bent outwardly at the upper edges of the trough sides to form flanges, and angles fitted within and secured to said plate flanges, the plate flanges and the upper corners of the trough sides at one end of each section being cut away to permit projection of the angles, the remainder of the trough sides at said end being offset outwardly, the housing side portions of the plates being also cut away at said end to permit projection of the channel, the housing top portions being offset upwardly, the adjacent section having its angles and channels terminating short of the side plates at its coacting end and abutting the angles and channel of the first section, the offset portions of the side plates of the first section fitting against the corresponding portions of the side plates of the second section.

5. In a conveyer system, a main conveyer, a feeder conveyer, each of said conveyers consisting of a narrow upper trough portion open at its bottom and a belt traveling longitudinally of the trough below said bottom; said feeder having its delivery end above the level of the main conveyer, a chute leading from the feeder and curved laterally to lie over the main conveyer and extend in the direction of travel of the main conveyer belt, the upper end of the chute having a floor inclined downwardly from the feeder toward the main conveyer and terminating in spaced relation to the top of the main conveyer, the remainder of the chute being open at its bottom above said main conveyer, and rearwardly extending guide tabs flaring outwardly from the rear end of the open bottom portion of the chute to guide articles traveling on the main conveyer into the space between the chute walls.

6. In a conveyer system, a main conveyer, a feeder conveyer, each of said conveyers consisting of a narrow upper trough portion open at its bottom, a housing below said trough open at its top to afford communication with the trough and extending laterally on each side beyond the trough sides, and a conveyer belt traveling in said housing; said feeder having its delivery end above the level of the main conveyer, and a chute leading from the feeder and curved laterally to lie over the main conveyer and extend in the direction of travel of the main conveyer belt, the upper end of the chute having a floor inclined downwardly from the feeder toward

the main conveyer and terminating in spaced relation to the top of the main conveyer, the remainder of the chute being open at its bottom above said main conveyer.

5 7. In a conveyer system, a main conveyer, a feeder conveyer, each of said conveyers consisting of a narrow upper trough portion open at its bottom, a housing below said trough open at its top to afford communication with the trough and extending laterally on each side beyond the trough sides, and a conveyer belt traveling in said housing; said feeder having its delivery end above the level of the main conveyer, a chute leading from the feeder and curved laterally to lie over the main conveyer and extend in the direction of travel of the main conveyer belt, the upper end of the chute having a floor inclined downwardly from the feeder toward the main conveyer and terminating in spaced relation to the top of the main conveyer, the remainder of the chute being open at its bottom above said main conveyer, and rearwardly extending guide tabs flaring outwardly from the rear end of the open bottom portion of the chute to guide articles traveling on the main conveyer into the space between the chute walls.

8. In a conveyer system for sheet material, 30 a main conveyer, a feeder conveyer, each of said conveyers comprising a narrow upper trough portion open at its bottom and a belt traveling longitudinally of the trough below said bottom whereby said sheet material will 35 be conveyed in a substantially vertical position; said feeder having its delivery end above the level of the main conveyer, and a chute leading from the feeder and curved laterally to lie over the main conveyer, the 40 upper end of the chute having a floor inclined downwardly from the feeder toward the main conveyer and terminating in spaced relation to the top of the main conveyer, the remainder of the chute being open at its bottom 45 above said main conveyer and extending a substantial distance beyond said bottom to permit said sheet material to drop into said main conveyer while maintaining it in a substantially vertical position.

50 In testimony whereof, we affix our signatures.

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