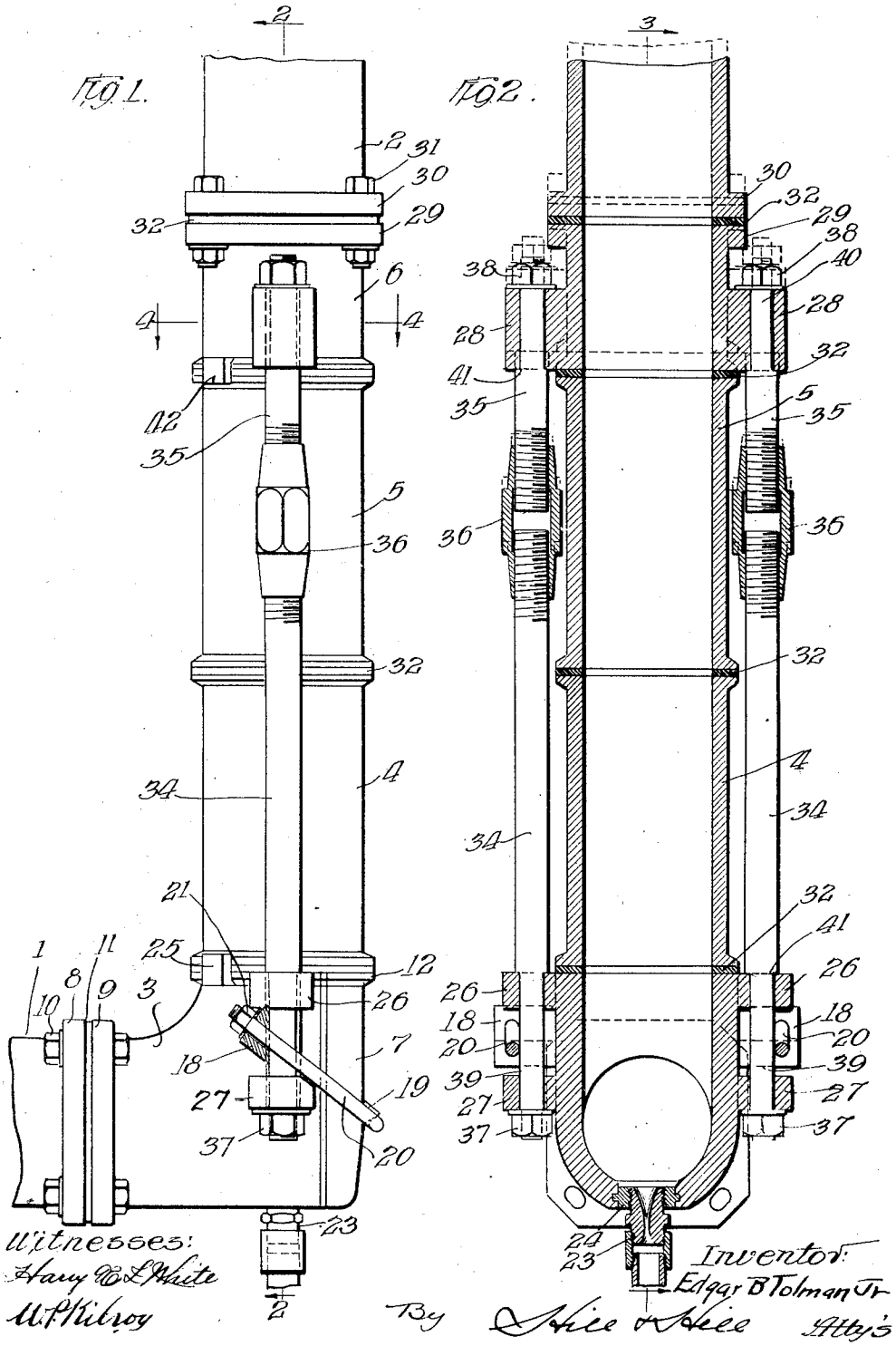
Aug. 21, 1928. 1,681,381

E. B. TOLMAN, JR

CONVEYER

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E. B. TOLMAN, JR

CONVEYER

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Fig. 3.

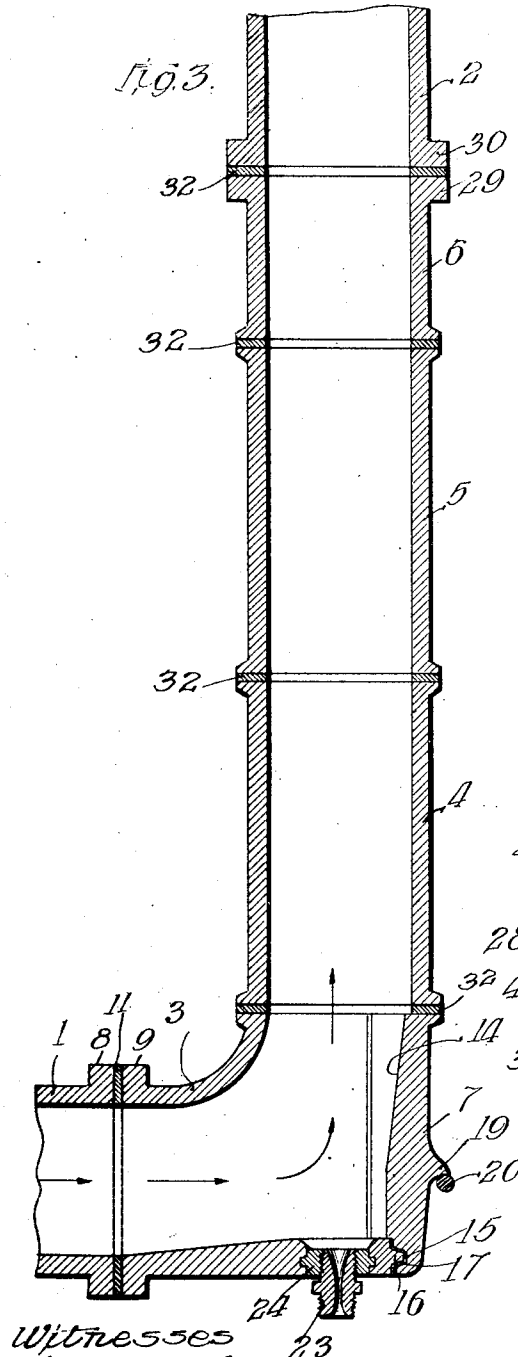


Fig. 4.

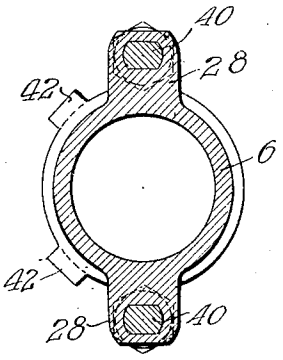
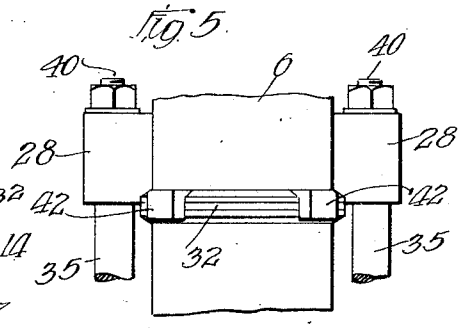


Fig. 5.



Witnesses
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CONVEYER

Filed July 5, 1924 3 Sheets-Sheet 3

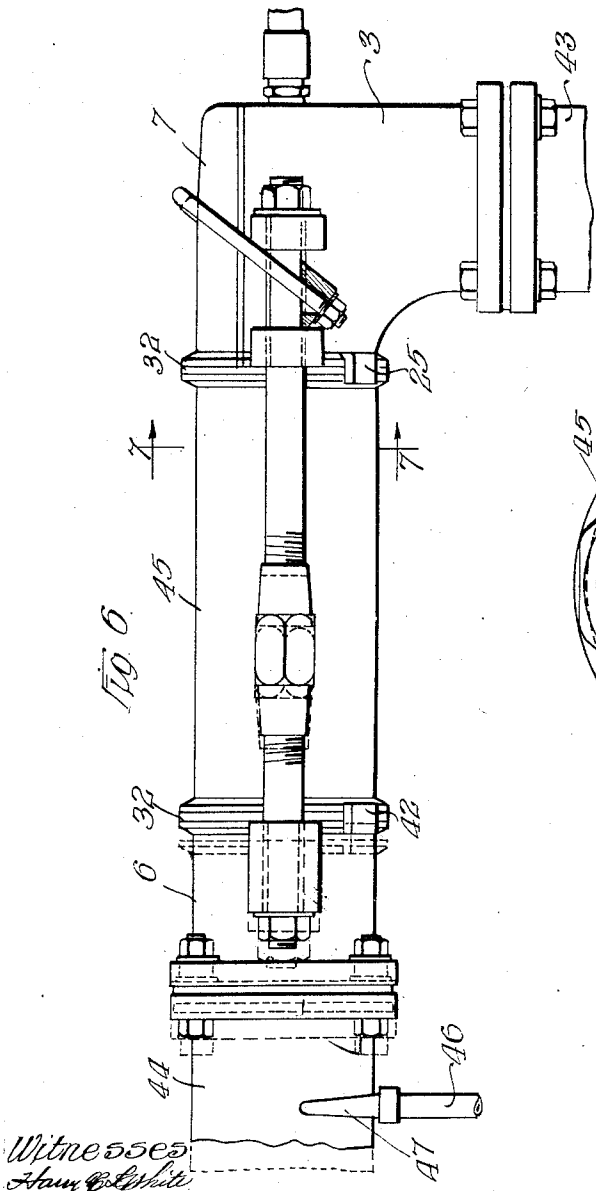


Fig. 6

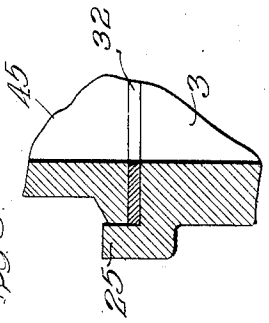


Fig. 8

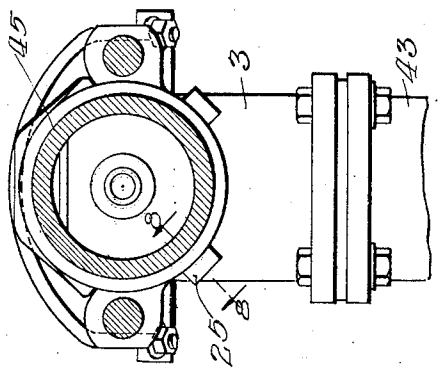


Fig. 7.

Witnesses
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By

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Patented Aug. 21, 1928. 1,681,381

UNITED STATES PATENT OFFICE.

EDGAR B. TOLMAN, JR., OF CHICAGO, ILLINOIS.

CONVEYER.

Application filed July 5, 1924. Serial No. 724,473.

My invention belongs to that general class of devices known as conveying systems, and relates more particularly to a conveyer of the type in which ash or other similar material is conveyed through a system of piping between desired points by a suction or a head of steam, air, or the like. The present invention more particularly relates to certain pipe fittings and pipe to be used in such a system. The invention has among its objects the production of devices of the kind described which are simple, compact, convenient, durable, efficient, and satisfactory for use wherever found applicable. More particularly the same has as an object the production of fittings which will readily permit the renewal of parts with a minimum of difficulty and effort and with a saving of time. Many other objects and advantages of the construction herein shown and described will be obvious to those skilled in the art from the disclosures herein given.

To this end my invention consists in the novel construction, arrangement and combination of parts herein shown and described, and more particularly pointed out in the claims.

In the drawings, wherein like reference characters indicate like or corresponding parts:

Fig. 1 is a side elevation of a portion of a system;

Fig. 2 is a sectional view taken substantially on line 2—2 of Fig. 1;

Fig. 3 is a sectional view taken substantially on line 3—3 of Fig. 2;

Fig. 4 is a sectional view taken substantially on line 4—4 of Fig. 1;

Fig. 5 is a view in elevation of a portion of the construction shown in Fig. 1;

Fig. 6 is a side elevation illustrating a different arrangement of the fittings;

Fig. 7 is a sectional view taken substantially on line 7—7 of Fig. 6; and

Fig. 8 is a sectional view taken substantially on line 8—8 of Fig. 7.

Referring to the drawings, in which the preferred embodiment of the invention is shown, 1 is a conveying pipe connected by the fittings to a continuing conveyer pipe 2, in the particular case illustrated, pipe 1 being horizontal and pipe 2 extending at right angle thereto, for example, vertically, the particular angle and direction not necessarily being as illustrated, as will be clear from the description hereinafter given.

In Fig. 1, pipes 1 and 2 are shown connected by the fittings 3, 4, 5 and 6, part 3 being the elbow having a renewable wearback 7, as it is termed, suitably secured to the part 3. Part 3 may be secured to the pipe 1 in any satisfactory manner, the usual construction consisting of flanges 8 and 9 on the respective parts secured together by bolts 10, 11 representing suitable packing at the joint. Fittings 4, 5 and 6 are also provided with what may be termed flanges, but the securing means, however, connecting parts 3 and 6 and thereby securing the other parts together will be hereinafter described.

As most clearly shown in Fig. 3, the wearback 7 is preferably formed with an inclined surface 14 at the inner side, the degree of inclination being as desired and found most satisfactory for the purpose. Generally, it is preferred to construct parts 3 and 7 so that they interlock at their juncture and wearback 7 thereby accurately seated so that a tight joint is provided and displacement prevented. I have illustrated part 7 provided with a groove 15 and part 3 with a tongue or bead 16, 17 representing suitable packing arranged between the parts. The part 7 is secured to part 3 in a particularly simple, as well as efficient manner, so that while the same is at all times held rigidly and securely in place, it may be quickly and easily detached for purposes of inspection and renewal. As shown, lugs 18 are provided on the part 3 and a lug 19 on part 7, and the two parts secured together by a U-shaped bail or bolt 20 which engages part 7 under the lug 19 at the loop with the ends extended through the lugs 18, nuts 24 being provided for securing the parts together. Lock nuts or washers may be provided at the ends of the U-shaped bolt if desired.

I have shown the elbow 3 provided with a nozzle 23 secured in place in any suitable manner. As shown, this engages with the threaded insert 24 provided in the part 3. The method of securing the nozzle to the elbow, however, forms no part of the present invention and need not be described in detail.

It will be noted by referring to Fig. 1 that the fitting part 3 is provided with lugs 25 and the part 6 likewise provided with lugs 42, these being preferably as illustrated in Fig. 5, in which the lugs 42 are shown. The purpose of these lugs will be more fully ex-

plained hereinafter, but it may be mentioned, however, that in the assembly of the parts, as shown in Fig. 1, the same form guides for the proper setting of the intermediate sections on the fittings 3 and 6 respectively.

The fitting 6 may be secured to the pipe 2 in any suitable manner, the same being illustrated as substantially similar to the connection of the fitting 3 to the pipe 1, 29 and 30 representing flanges on the respective parts which are connected by the bolts 31. To distinguish the several fittings 3 and 6 may be designated as pipe fittings and the intermediate conveying means 4 and 5 designated as intermediate fittings or nuts. Between all of the fitting parts, I generally prefer to provide a packing ring 32 of suitable material, which will afford a tight joint between the parts. As most clearly shown in Figs. 1, 2 and 4, the fitting 3 is provided with lugs on opposite sides, generally with two sets 26 and 27, while the fitting part 6 is provided with lugs 28 on the opposite sides. While there may be any desired number of lugs, I have found that ordinarily two sets on opposite sides of the fitting are sufficient for the purpose. Parts 3 and 6 are connected by bolts 34—35 and adjustable turn buckles 36. As shown, bolt 34 is connected and extends through the lugs 26 and 27 and provided with nuts 37 at the lower end. The bolts 35 extend through the lugs 28 and are provided with nuts 38 at the upper end. I prefer to arrange the shank portions 39 and 40 extending through the respective lugs so that the bolts 34 and 35 are non-rotatably secured to the fittings so that when the turn buckles 36 are operated, as will be described, the bolts do not turn. The usual lock washers or lock nuts may be employed with the nuts 37 or 38, if desired. When the parts are assembled, as shown in Figs. 1 and 2 parts 3, 4, 5 and 6 may be tightly and securely locked together by means of the bolts 34, 35 and turn buckles 36 so that the same to all intents and purposes form a unitary structure. There may be one or more of the intermediate fittings or units 4 and 5. In the event that it is desirable to inspect the intermediate portions 4 or 5 or to renew the same when worn, the turn buckles may be operated so as to release these parts and at the same time they serve as jacks, lifting parts 2 and 6 and the conveying pipes and fittings beyond or positively separating the same from the part 3 so that these parts 4 and 5 may be easily slipped out or returned or replaced. In this connection, it will be noted that I prefer to provide shoulders 41 on the bolts 34 and 35 so that a positive action is secured. It will thus be seen that the part of the system beyond 6 is substantially jacked away from the part 3 and maintained separated therefrom although the parts are always connected and remain in alignment and may be quickly brought back to place. It is unnecessary to provide other packing means or support as pipes 2 and 1 are securely maintained against displacement at all times and may be positively separated or brought together in a minium of time and with a minimum of labor. While this feature is particularly desirable in the case of connecting a vertical riser 2 to the pipe 1, it is also desirable where both pipes extend horizontally or at any other angle. It will be noted that this method of connection is not limited to a right angle elbow similar to the elbow 3 shown, nor is the wear-back retaining means limited to such a fitting. The same may be employed with equal advantage on other styles of fittings, and may be employed in many cases for other installations than on ash or like conveying systems.

In Fig. 6, 43 represents a riser and 44 a substantially horizontally extending pipe, it being understood that the pipes may be arranged at any desired angle, the fittings being correspondingly designed. In this case, the same fitting 3 with the wear-back 7 and fitting 6 may be employed. In this particular arrangement, however, I generally prefer to employ but one intermediate unit or section 45 in place of the two sections 4 and 5, as shown in Fig. 1. I have also shown a supplemental support 46 provided with a yoke 47, this support being either temporary or permanent as may be desired. With this particular construction, when it is desired to replace or remove part 45, parts 3 and 6 are jacked apart in the manner previously described, whereupon the part 45 may be removed. It will be noted that the lugs 25 and 42 serve to conveniently support the section 45 between the fittings when the fittings are jacked apart. It is thus unnecessary for the repair man or mechanic to support a heavy fitting 45 while operating the turn buckles. While the turn buckle bolts connecting the parts 3 and 6 together will, to a large extent, support the fitting 6 and pipe 44, the supplemental support 46, if employed, takes some of the strain off of the parts. This is particularly true where the line of piping 44 may be of considerable length. Obviously, any equivalent, such as a hanger suspended from above or from the side would serve the same function.

From the preceding, it will be seen that I have provided an exceedingly convenient, as well as an economical construction. In the particular case illustrated, I have shown a shortened elbow so that the body will receive no wear from the rebound of the material from the wear-back. The securing of the wear-back section by the U-bolt construction shown makes possible the easy and quick removal of the wear-back for inspec-

tion or replacement. It will be particularly noted with this construction that it is so convenient to control the jacking of the parts away from each other that the intermediate wear sections can be renewed or they can be inverted or interchanged at certain periods so that wear is distributed over the entire surface. While one or more sections can be used, there are no bolt lugs and bolt holes on the two sections, so that the neutral metal is small, the jacks making the changing of the sections very simple. The lugs referred to provide for easy centering or alignment of the parts, and also provide a convenient support when the line pipe is horizontal, as shown in Fig. 6.

As previously mentioned, I do not wish to be understood as limiting myself to the particular type of fittings shown, to-wit, a straight and right angle fitting, as this is immaterial in so far as the construction herein illustrated and described is concerned.

The fittings 4, 5 and 45 are extremely simple and may be economically manufactured. It will also be noted that the time required in connecting up or disconnecting the pipes to renew or replace parts is materially shortened as only two turn buckles are required, while in Fig. 2, if flanges and bolts were provided between the several fittings, for example, four bolts at each joint, there would be twelve bolts and nuts to handle as compared with the two turn buckles and bolts shown. With this construction, the parts are always connected together, while in the other it is necessary to align the bolt holes, etc.

Having thus described my invention, it is obvious that various immaterial modifications may be made in the same without departing from the spirit of my invention; hence I do not wish to be understood as limiting myself to the exact form, construction, arrangement and combination of parts herein shown and described or uses mentioned.

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

1. Connecting fittings for conveying system pipes consisting of a pipe fitting for the adjacent ends of each of two pipes, an intermediate fitting arranged between said fittings, means on said pipe fittings for aligning said intermediate fitting, each pipe fitting provided with rods non-rotatably carried thereby and extending toward the other fitting, said rods provided with threads at their adjacent ends, extending in opposite directions, and connecting members in threaded engagement with said adjacent ends and connecting the said rods for forcibly separating or contracting the fittings to release or secure the said intermediate fittings.

2. Connecting fittings for conveying system pipes consisting of a pair of fittings, one for the adjacent ends of each of two pipes, said fittings provided with means for securing the same to said pipes, an intermediate fitting unit arranged between said fittings, means on said pipe fittings for aligning said fittings and unit, each pipe fitting provided with a rod non-rotatably carried thereby and extending toward the other pipe fitting, said rods oppositely threaded at their adjacent ends, and means connecting said rods and in threaded engagement therewith whereby to forcibly separate or contract the pair of fittings to secure or release the intermediate fitting unit.

In testimony whereof, I have hereunto signed by name.

EDGAR B. TOLMAN, Jr.