Feb. 21, 1933. F. A. DAVIDSON 1,898,343

DIRT CHUTE

Filed June 27, 1930 3 Sheets-Sheet 1

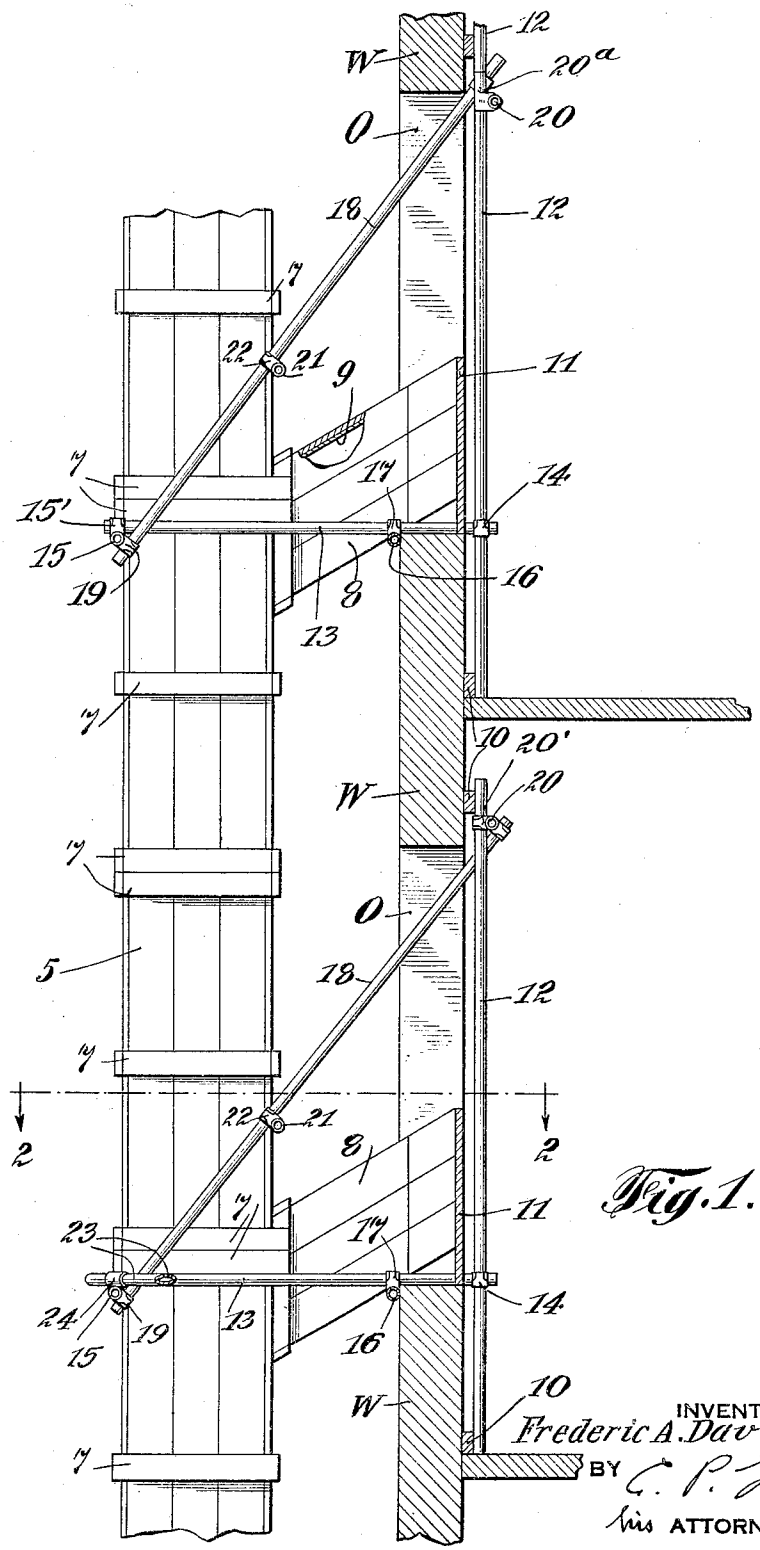


Fig. 1.

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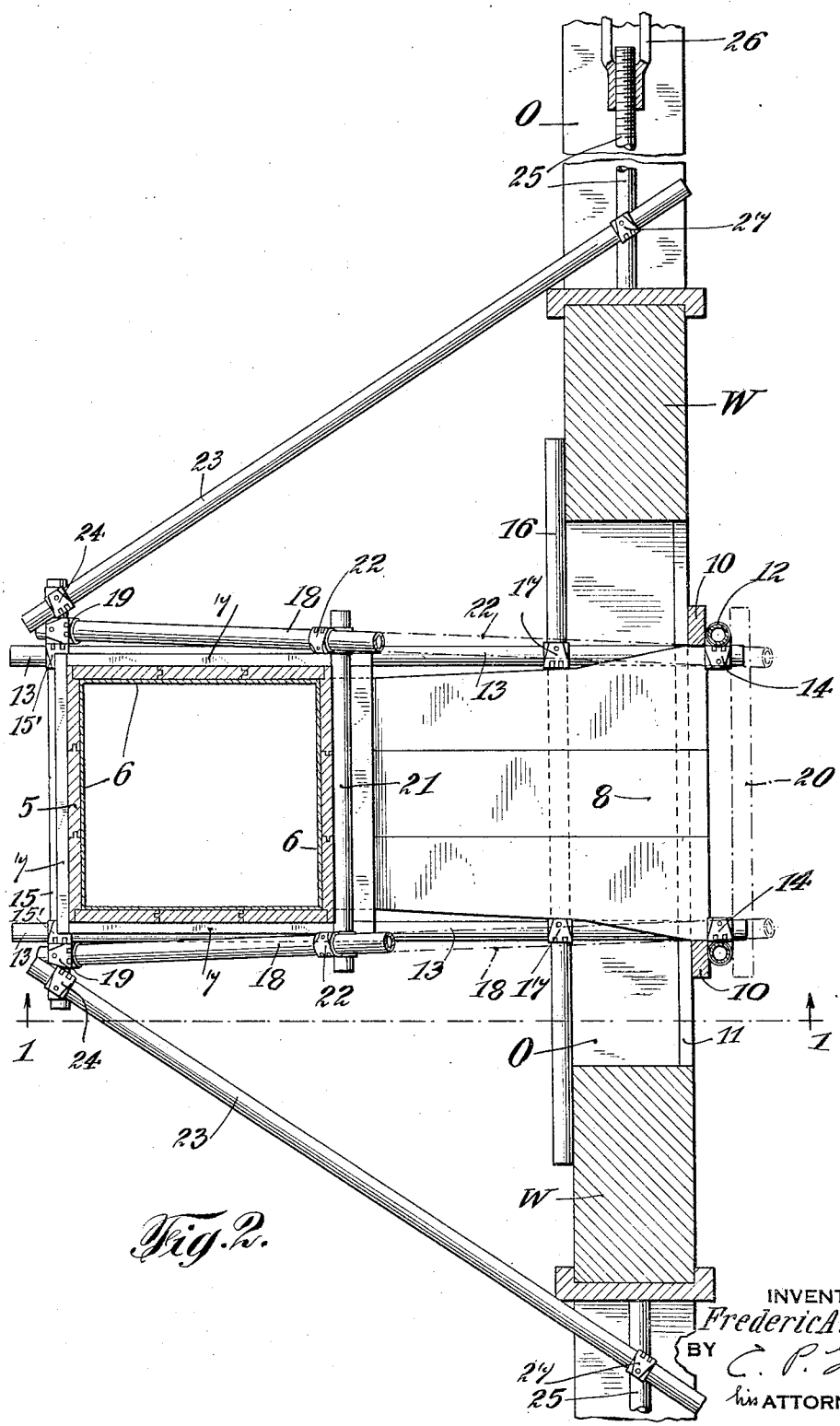


Fig. 2.

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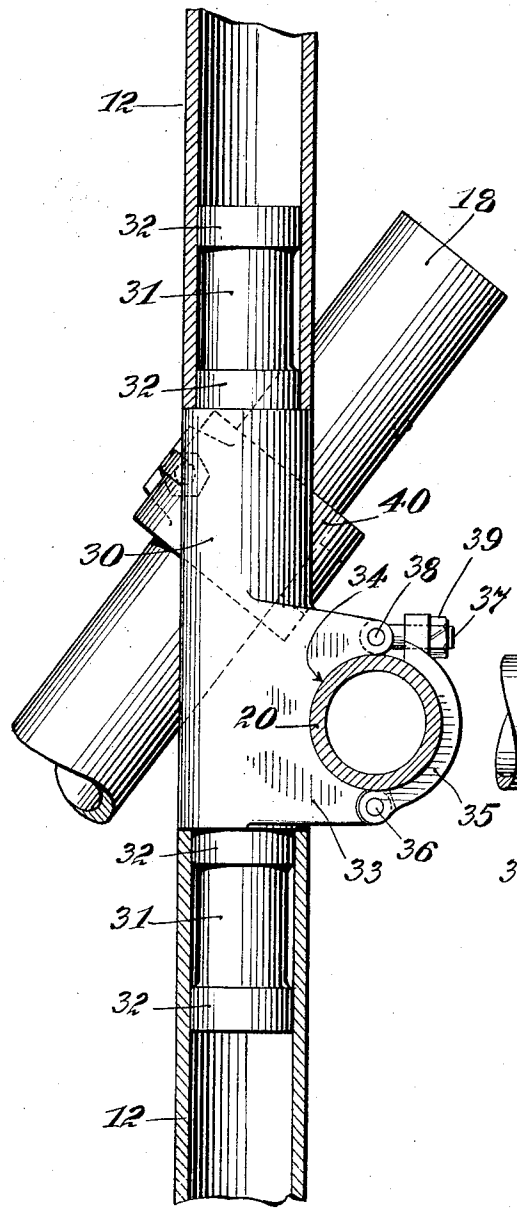


Fig. 3.

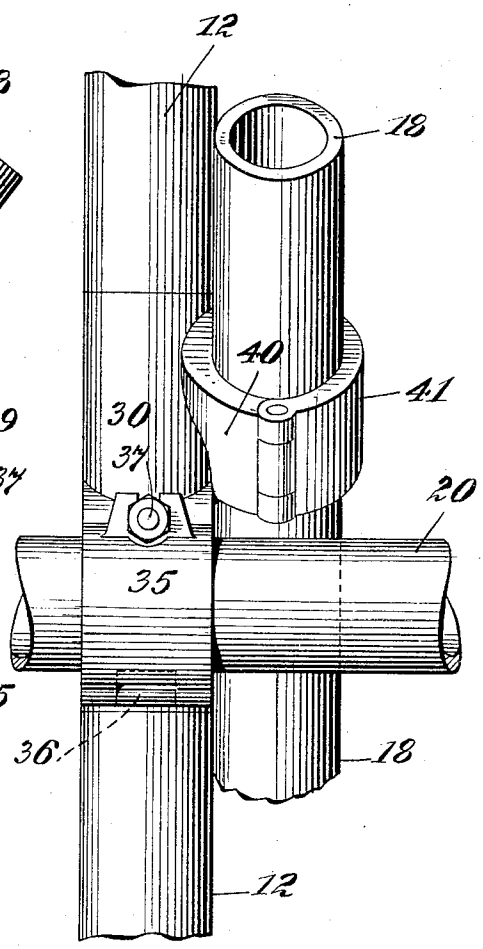


Fig. 4.

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UNITED STATES PATENT OFFICE

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DIRT CHUTE

Application filed June 27, 1930. Serial No. 464,172.

This invention relates to dirt chutes, of that character which are temporarily employed during the demolition or erection of a building for the purpose of conducting dirt, bricks and other débris or materials to a hopper from which it is discharged into a truck or other vehicle.

It is the primary object and purpose of my present invention to provide a conducting chute of this type which may be easily and quickly erected in sections to any desired height and adequately braced and supported by detachably coupled elements which enables the chute structure to be rapidly dismantled and together with the bracing means compactly arranged for storage or transportation in a relatively small space.

It is a further object of my invention to provide a chute structure and bracing or retaining means therefor which will be light in weight, substantially fire-proof and capable of production at nominal cost.

It is another detail object of the invention to provide an improved construction of coupling device for easily, quickly and rigidly connecting three tubular supporting and bracing members in definite predetermined relation to each other.

With the above and other objects in view, the invention consists in the improved dirt chute, and in the form, construction and relative arrangement of its several parts as will be hereinafter more fully described, illustrated in the accompanying drawings, and subsequently incorporated in the subjoined claims.

In the drawings, wherein I have illustrated one simple and satisfactory embodiment of my present invention, and in which similar reference characters designate corresponding parts throughout the several views,—

Figure 1 is a vertical sectional view through several floors of a building taken substantially on the line 1—1 of Fig. 2, and showing my improved chute applied thereto;

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

Fig. 3 is an enlarged detail view illustrating an improved unitary coupling device for rigidly connecting a plurality of angularly related supporting and bracing elements with each other, and

Fig. 4 is an elevation looking at right angles to Fig. 3.

Referring in detail to the drawings, the chute structure consists of a plurality of like sections indicated at 5, the side walls of which consist of wood planks or boards treated with a fire-proofing solution and internally lined with the metal sheeting indicated at 6. These chute sections may be of any desired predetermined length and cross sectional area, and I preferably reinforce and secure the boards or planks of the chute walls together at their opposite ends and at an intermediate point by the external cleats shown at 7.

As clearly shown in Fig. 1 of the drawings, these chute sections are adapted to be arranged adjacent the side wall of the building in superimposed vertical alignment, one end of each chute section having an opening through one side wall thereof to mate with a similar opening in a corresponding wall of an adjacent chute section for the purpose of receiving the outer end of the obliquely inclined chute sections 8. The chute sections 8 are of generally similar construction to the sections 5, being also internally lined with the metal sheeting 9. The inner ends of these inclined chute sections 8 project through the window openings O of the building wall W and are suitably secured to the vertical members of a rectangular wood frame 10 arranged against the inner face of the building wall, said vertical frame members preferably having the boards 11 extending laterally therefrom to the opposite sides of the opening O so as to prevent materials being accidentally thrown through the window opening instead of into the chute 8.

For the purpose of rigidly bracing and supporting the assembled chute sections 7 and 8 in position relative to the building wall, I provide metal tubes 12 extending vertically and in contact with each of the vertical side members of the frame 10. To these tubes 12, the inner ends of horizontal tubes 13 are connected by suitable coupling devices 14. The tubes 13 extend outwardly through

the window opening and in close contact with opposite sides of one of the chute sections 5 beneath an end cleat 7 thereof. The outer ends of these parallel metal tubes 13 are connected by the metal tube 15 detachably coupled therewith by the devices 15' and extending across the outer side of the chute. A relatively long metal tube 16 extends transversely beneath the chute section 8 closely adjacent to the outer face of the building wall W and projects beyond the opposite sides of the window opening O, said tube being detachably coupled to the tubes 13 by the devices shown at 17.

The bracing means for the chute structure further includes vertically extending obliquely inclined metal tubes 18, the lower outer ends of which are detachably coupled to the ends of the tube 15 by the devices 19 while their upper ends extend through the window opening O and are coupled to the opposite ends of a transverse tube 20 by coupling devices 20', 20[a] which connect the ends of said tube with the vertical members 12.

The coupling device 20[a], is of improved construction, designed for the purpose of connecting vertically aligned tubular supporting members 12 and the angularly related bracing members 18 and 20 with each other so as to effectively prevent any relative shifting movement between said members particularly after the floors of the building have been removed, or where there is no available fixed support upon which the lower ends of the vertical members 12 may be engaged. As shown in detail in Figs. 3 and 4 of the drawings, this coupling device comprises an elongated body 30 of substantially cylindrical form provided at its opposite ends with the reduced longitudinal extensions 31, each of which has end portions 32 connected by an intermediate portion of relatively smaller diameter. These end portions 32 of the extensions 31 are of such diameter that they will have a close frictional fit within the ends of the vertically aligned tubular members 12, the ends of said members being in close abutting contact with the opposite ends of the cylindrical body 30 and the parts 32 having bearing contact with the walls of the members 12 at longitudinally spaced points.

One end of the body 30 is formed with a lateral extension 33 provided with a concave seat 34 for the horizontal bracing tube 20. A curved clamping plate 35 is hingedly connected as at 36 at one of its ends with the extension 33, the other end of said plate being provided with a slotted lug to receive the bolt 37 swiveled upon the extension 33 as at 38 and provided with the adjustable nut 39. Thus, it will be understood that by adjustment of the nut 39, the plate 35 may be brought into tight clamping engagement against the opposite side of the tube 20.

At the other end of the body member 30, a two-part clamping sleeve 40 for the tubular bracing member 18 is provided, said sleeve having its axis disposed in predetermined oblique angular relation with respect to the longitudinal axis of the body member 30 and the seat 34 which receives the tube 20. This sleeve 40 may be of generally similar form to the clamping members of the tube 20, having one part thereof integral with the body member 30 which provides a seat for one side of the tubular member 18, and the pivoted or hinged part or clamping plate 41, the free end of which is adapted to be adjustably connected with the fixed part of the sleeve by a swivel bolt similar to the bolt 37 above referred to. Thus, it will be seen that by means of a unitary coupling device of this character, the three supporting and bracing members consisting of the vertically aligned tubular sections 12, the horizontal tube 20 and the obliquely extending tubular bracing member 18 may be quickly and rigidly connected with each other.

At the inner side of the chute section 5 extending above the inclined chute section 8, a transverse tube 21 is engaged with the wall thereof and detachably coupled at its opposite ends to the inclined tubes 18 by the devices 22.

In addition to the above, at every other floor of the building, I provide horizontally oblique metal tubes 23 detachably connected at their outer ends with the ends of the tubes 15 by means of the coupling devices 24. Across the lower ends of the window openings O horizontally adjacent to that through which the chute section 8 extends, a rod 25 is positioned. Preferably, this rod is made in two sections connected by a turn-buckle 26 whereby the outer ends of the rod sections may be tightly clamped against the opposite sides of the window frame. To one of the rod sections in each of these adjacent window openings, the inner ends of the tubes 23 are detachably connected by means of the coupling devices 27.

It will be evident from the above description that as the erection of the chute progresses, the several tubular metal bracing members may be easily and quickly arranged in place and coupled with each other. Since a part of the bracing at each window opening engages an end portion of the adjacent superposed chute sections, it will be apparent that said chute sections will be very strongly and rigidly braced and held against relative movement either from the impact of materials against the walls thereof, or by heavy winds. Such construction eliminates the necessity of applying and tightening a large number of bolts for connecting the abutting ends of adjacent chute sections and enables the structure to be erected to any desired height with a minimum expenditure of time

and labor. It will of course, be understood that the lower end of the chute leads into a discharging hopper (not shown) having a suitable manually operable gate whereby the collected materials therein may be discharged into a transporting truck or other vehicle. Since the chute sections are constructed of thoroughly fire-proofed wood and are metal lined, and the bracing means consists entirely of metal tubing, danger of ignition of any part of the chute structure is practically eliminated. Also, it will be appreciated that the chute sections are relatively light in weight so that they may be easily handled and arranged in proper superimposed relation. After the chute has served its purpose, it may be readily dismantled or knocked down by merely uncoupling the several bracing tube sections and then successively removing the superimposed sections of the chute. The vertical side members of the frame 10 may be easily detached from the side walls of the chute sections 8. Thus these frames together with the several chute sections and the tubular bracing elements may be very compactly arranged in a relatively small space for convenience in transportation or storage.

I have herein described and shown an embodiment of my present improvements, which has been found entirely satisfactory in practical use. Nevertheless, it is to be understood that insofar as the several novel features thereof are concerned, the same might be incorporated in various other structural forms, and I accordingly reserve the privilege of resorting to all such legitimate changes therein as may be fairly embodied within the spirit and scope of the invention as claimed.

I claim:

1. In a knock-down supporting frame for dirt conducting chutes, spaced vertically disposed members adapted to be arranged at the inner side of a window opening in a building wall, parallel members to extend outwardly through said opening across opposite sides of the chute, means detachably connecting said members at one of their ends to the vertical members, a transverse connecting member extending between the other ends of said parallel members to engage another side of the conducting chute and means for detachably connecting the engaged ends of said members with each other, a second transverse member extending between the parallel members adapted to be arranged adjacent the outer face of the building wall, and means for detachably connecting the ends of the latter member with said parallel members.

2. In a knock-down supporting frame for dirt conducting chutes, spaced vertically disposed members adapted to be arranged at the inner side of a window opening in a building wall, parallel members to extend outwardly through said opening across opposite sides of the chute, means detachably connecting said members at one of their ends to the vertical members, a transverse connecting member extending between the other ends of said parallel members to engage another side of the conducting chute and means for detachably connecting the engaged ends of said members with each other, vertically oblique bracing members having one of their ends disposed in intersecting relation to said parallel members adapted to extend upwardly therefrom through the wall opening, and means for coupling said bracing members at their upper and lower ends to said first named vertical members and to said transverse member respectively.

In testimony that I claim the foregoing as my invention, I have signed my name hereto.

FREDERIC A. DAVIDSON.