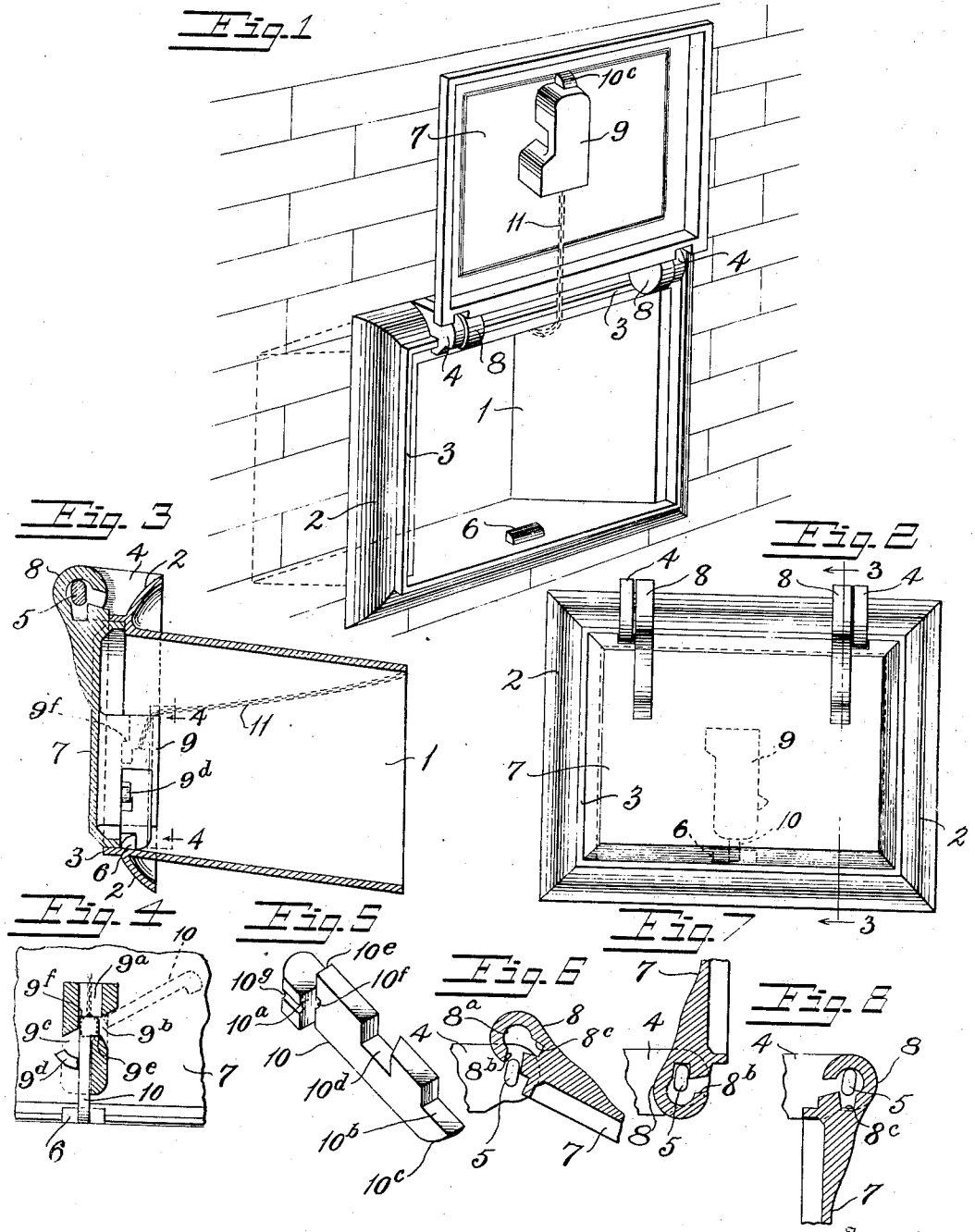


J. E. HYATT AND H. J. MOEN.
 COAL CHUTE.
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1,343,675.

Patented June 15, 1920.



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To all whom it may concern:

Be it known that we, JOHN E. HYATT and HANS J. MOEN, citizens of the United States, residing at Stevens Point, in the county of Portage and State of Wisconsin, have invented certain new and useful Improvements in Coal-Chutes, of which the following is a specification.

This invention relates to coal chutes and especially to chutes of the type adapted to be built into the wall of a building.

The general objects of the invention are: to provide a coal chute having a simplified form of construction; to reduce the cost of producing structures of this character; and to produce a coal chute that is convenient and efficient in use.

Other objects, more or less ancillary or incident to the foregoing, are: to reduce the number of parts of the apparatus; to eliminate practically all machine work in the production of the apparatus; to provide a structure that can be assembled easily and quickly; to provide a chute having the foregoing characteristics with a door that can be locked shut from the outside but unlocked only from the inside, and that can be readily locked in open position so as to protect the wall of the building at points adjacent the chute opening.

In order that the nature of our improvements may be fully understood, we show in the accompanying drawings a preferred form of construction embodying the same.

In the drawings,

Figure 1 is a perspective view of the chute positioned in a wall with the chute door locked in open position.

Fig. 2 is a front elevation of the chute with the door closed.

Fig. 3 is a section on the line 3—3 of Fig. 2.

Fig. 4 is a fragmentary section on the line 4—4 of Fig. 3.

Fig. 5 is a perspective view of the lock bolt.

Figs. 6, 7 and 8 are fragmentary detail views of one of the hinges with the door in different positions.

Referring in detail to the construction illustrated, 1 designates the chute proper which has the usual rectangular cross section and is of a length suitable to extend through the wall in which it is to be used. At its outer end the chute is formed with a continuous outwardly turned flange form-

ing a frame 2 which is adapted to engage the outer face of the wall in which the chute is set. The frame 2 is formed on its face with an outstanding flange 3 which surrounds the chute opening. 4, 4 are hinge lugs formed on the upper side of the frame 2. Each of these lugs carries a hinge pintle 5 which is elongated in cross section with its long sides flat and parallel and its short sides rounded, as shown. On the inner bottom wall of the chute 1 is formed an up-standing lock lug or keeper 6, the inner side of which is flat and vertical while the outer side is beveled or rounded, as shown.

The parts so far described, that is to say the chute proper 1, frame 2, flange 3, lugs 4, pintles 5 and keeper 6, are preferably cast in one.

The chute door 7, which is preferably convex or dished, as shown, is of a size and shape to fit within the flange 3 of the chute frame. At its upper side the door carries hinge lugs 8, 8 and each of these lugs is formed with a cylindrical socket 8^a of a diameter slightly greater than the longer transverse dimension of the hinge pintle 5. Each of the sockets 8^a has its wall cut away to form a slotted opening 8^b of a width slightly greater than the thickness of the hinge pintle 5. Also each of the sockets 8^a is formed at one side with an approximately rectangular extension 8^c which is also of a width slightly greater than the thickness of the hinge pintle. The slot 8^b is formed in the inner side of the hinge lug 8, while the socket extension 8^c is formed at the lower side of the socket. (See Fig. 3.)

With the hinge parts constructed in the manner set forth, the door can be operatively mounted on the chute frame by simply bringing the door to the partially open position indicated in Fig. 6 whereupon the slots 8^b of the hinge lugs 8 on the door are in a position to pass over the hinge pintles 5 so as to bring the latter into the cylindrical sockets 8^a whereupon the door is free to swing into any position within a range of approximately 180°. If the door is swung outward and upward to an approximately vertical position, the socket extensions 8^c in the hinge lugs of the door are brought into alinement with the length of the hinge pintles 5 so that the door can be slightly lowered, as indicated in Fig. 7, and is then locked in its upright position by the interaction of the pintles 5 and the socket exten-

sions 8°. The door is shown locked in this open position in Fig. 1, and it will be observed that the door is not only held in full open position so that the chute opening is entirely clear, but it is supported out of contact with the adjacent wall of the building and at the same time acts as a shield to prevent the coal being thrown against the wall above the chute.

On the inner side of the door 7 is a lock casing 9 in which is mounted a sliding bolt 10 which is adapted to cooperate with the lug or keeper 6 on the chute to secure the door in closed position. The lock casing is formed with a longitudinal chamber 9^a to receive the bolt 10. At one side the casing 9 is formed with an inclined aperture 9^b while the opposite wall of the casing is formed with an alining opening 9^c. Below the latter opening the wall of the casing is in the form of an arcuate lug 9^d, the wall being cut away at points beneath said lug. The width of the chamber 9^a is less in its lower part than in its upper part, said parts being separated by the inwardly projecting shoulder 9^e. Also one of the walls of the upper part of the chamber 9^a is formed with an inwardly projecting shoulder 9^f. The lock casing 9, as well as the hinge lugs 8, 8, are preferably cast in one with the door 7.

The lock bolt 10 is of peculiar form indicated in Fig. 5. At its upper end the bolt is thickened to form a shoulder 10^a which, when the bolt is in position in its casing, cooperates with the shoulder 9^e. At its lower end the bolt is cut away to form a vertical outer face 10^b while its inner face at points opposite the vertical face 10^b is beveled or rounded as at 10^c. Intermediate its two ends the bolt is formed on its outer side with a notch 10^d and near its upper end with a shoulder 10^e. Preferably the bolt is formed with a hole 10^f and a groove 10^g passing around the head of the bolt in alinement with the hole 10^f.

The bolt is inserted by bringing it into the position indicated by dotted lines in Fig. 4 whereupon it can be inserted through the openings 9^b and 9^c of the lock casing until the notch 10^d of the bolt alines with the lug 9^d whereupon the bolt can be swung into the upright position shown in full lines in Fig. 4. When the bolt is in the last named position, its shoulder 10^a is in position to engage the shoulder 9^e of the bolt casing so that the downward movement of the bolt is thus limited. Its movement in the reverse direction, as when the door is swung to the open position shown in Fig. 1, is limited by the engagement of the shoulder 10^e of the bolt with the shoulder 9^f of the casing. It will be observed that when once the bolt has been brought to its upright position, in assembling, gravity tends at all times to maintain such upright position, and in addition

it is so held, except in one position, by the lug 9^d.

In order that the lock bolt 10 can conveniently be operated from the inner side of the wall, a chain or the like 11 can be attached to the upper end of the bolt, so that by pulling on the chain the bolt is lifted and the door can be swung open. The chain can be attached to the bolt by a wire loop or the like passing around the head of the bolt in the curve 10^g and through the hole 10^f. Of course the chain is not essential inasmuch as the lower part of the bolt is exposed and can, in ordinary cases, be reached and actuated either by the hand or by means of any suitable implement.

The manner of assembling and using the chute will readily be understood. The bolt 10 is introduced in its casing and the door mounted on its hinges in the ways described above. With the parts thus assembled the door is locked securely in its closed position so that it is impossible to open it from the outside, but when the bolt is drawn from the inside, the door can be swung open and is readily locked in the open upright position of Fig. 1 where it serves, in the manner previously described, to protect the adjacent wall from flying coal. When the coal has all been passed through the chute the door can be readily closed by first lifting it slightly so as to draw the hinge extensions 8^c, 8^c out of engagement with the hinge pintles 5, 5, whereupon the door swings freely to its closed position. As the door approaches its closed position the beveled or rounded face 10^c rides over the lug or keeper 6 on the chute and then drops by gravity into the locking position shown in Fig. 3.

It is to be observed that while the extensions 8^c of the hinge sockets 8^a are disposed in alinement with the elongated pintles 5 when the door is in closed position, the door is nevertheless held against upward displacement by the engagement of the flange 3 of the chute frame with the upper side of the door.

As we have already remarked, the chute proper 1, frame 2, flange 3 and hinge parts 4 and 5 are cast in one, as are also the door 7, its hinge lugs 8 and lock casing 9. It will therefore be seen that our improved chute consists essentially of but three parts. Furthermore, these parts require no machining operations, can be quickly and easily assembled without the use of any tools, while the structure is of course entirely free of any screw or bolt connections liable to loosen and cause trouble and annoyance.

Those skilled in the production of apparatus of this character will understand that numerous changes can be made in the embodiment and carrying out of our various improvements, the specific construction herein set forth being for the purpose of ex-

planation and illustration and in no sense intended to limit the scope of our invention.

What we claim is:—

1. In a coal chute apparatus, the combination of a chute frame, a door to close the frame opening, a lock keeper cast in one with the chute frame, a lock casing cast in one with the door, and a rigid integral lock member mounted in said casing to cooperate with the keeper, said casing and lock member being formed to permit their operative assembly and insure the maintenance of the lock member in operative position in the casing regardless of the position of the door and without employment of any supplemental means.

2. In a coal chute apparatus, the combination of a chute frame adapted to engage a wall, a door to close the frame opening, hinge pintles on the upper side of one of the aforesaid parts, and cooperating hinge sockets on the upper side of the other part, each pintle having a flat side and each socket having a lateral opening to permit entrance of its pintle and a lateral flat walled extension adapted, when the door is swung upward to an open position adjacent the wall, to pass over its pintle and lock the door in said open position.

3. In a coal chute apparatus, the combination of a chute frame adapted to engage a wall, a door to close the frame opening, hinge pintles on the upper side of one of the aforesaid parts, cooperating hinge sockets on the upper side of the other part, each pintle having a flat side and each socket having a lateral opening to permit entrance of its pintle and a lateral flat walled extension adapted, when the door is swung upward to

an open position adjacent the wall, to pass over its pintle and lock the door in said open position, and means supplemental to the hinge connection between the frame and door to prevent lateral displacement of the door when it is in closed position.

4. In a coal chute apparatus, the combination of a chute frame, a door to close the frame opening, hinge pintles cast on one of the aforesaid parts, and cooperating hinge sockets cast in the other of said parts, said pintles and sockets being formed to permit their operative assembly, a lock keeper cast in one with the chute frame, a lock casing cast in one with the door, and a rigid integral lock member mounted in said casing to cooperate with the keeper, the casing and lock member being formed to permit their operative assembly and insure the maintenance of the lock member in operative position in the casing regardless of the position of the door and without employment of any supplemental means.

5. In a coal chute apparatus, the combination of a chute frame adapted to engage a wall, a door to close the frame opening, hinge pintles cast on one of the aforesaid parts, and cooperating hinge sockets cast in the other of said parts, the cooperating hinge members being formed to permit their assembly with the door in an open position and being adapted to prevent their separation when the door is in other positions and to lock the door in its upright open position adjacent the wall.

In testimony whereof we affix our signatures.

JOHN E. HYATT.
HANS J. MOEN.