

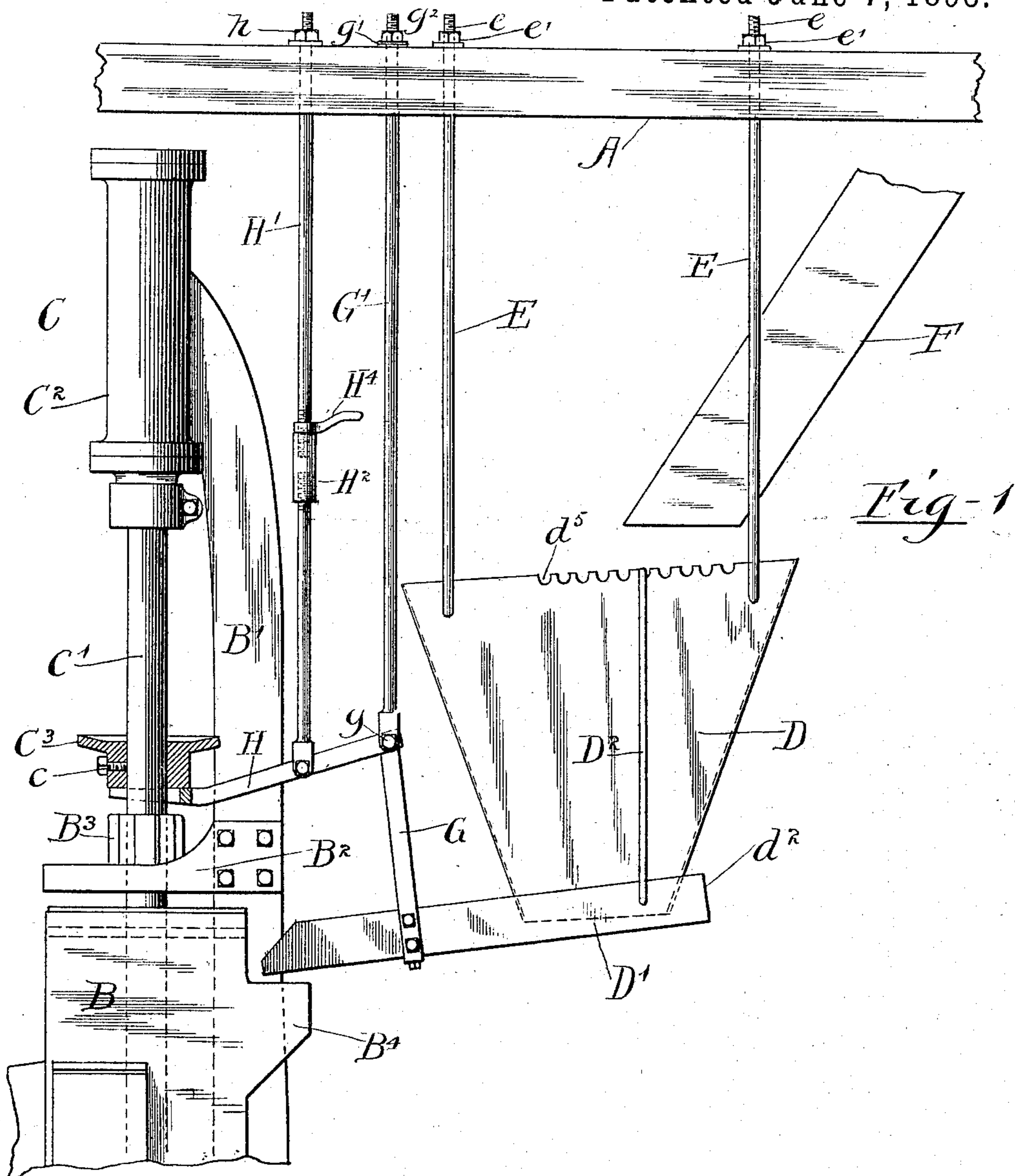
(No Model.)

2 Sheets—Sheet 1

G. WOOD.
FEEDER FOR STAMP MILLS.

No. 605,266.

Patented June 7, 1898.



Witnesses
Harold G. Barnett,
William L. Hall

Inventor
George Wood
by Pool & Brown
his Attys.

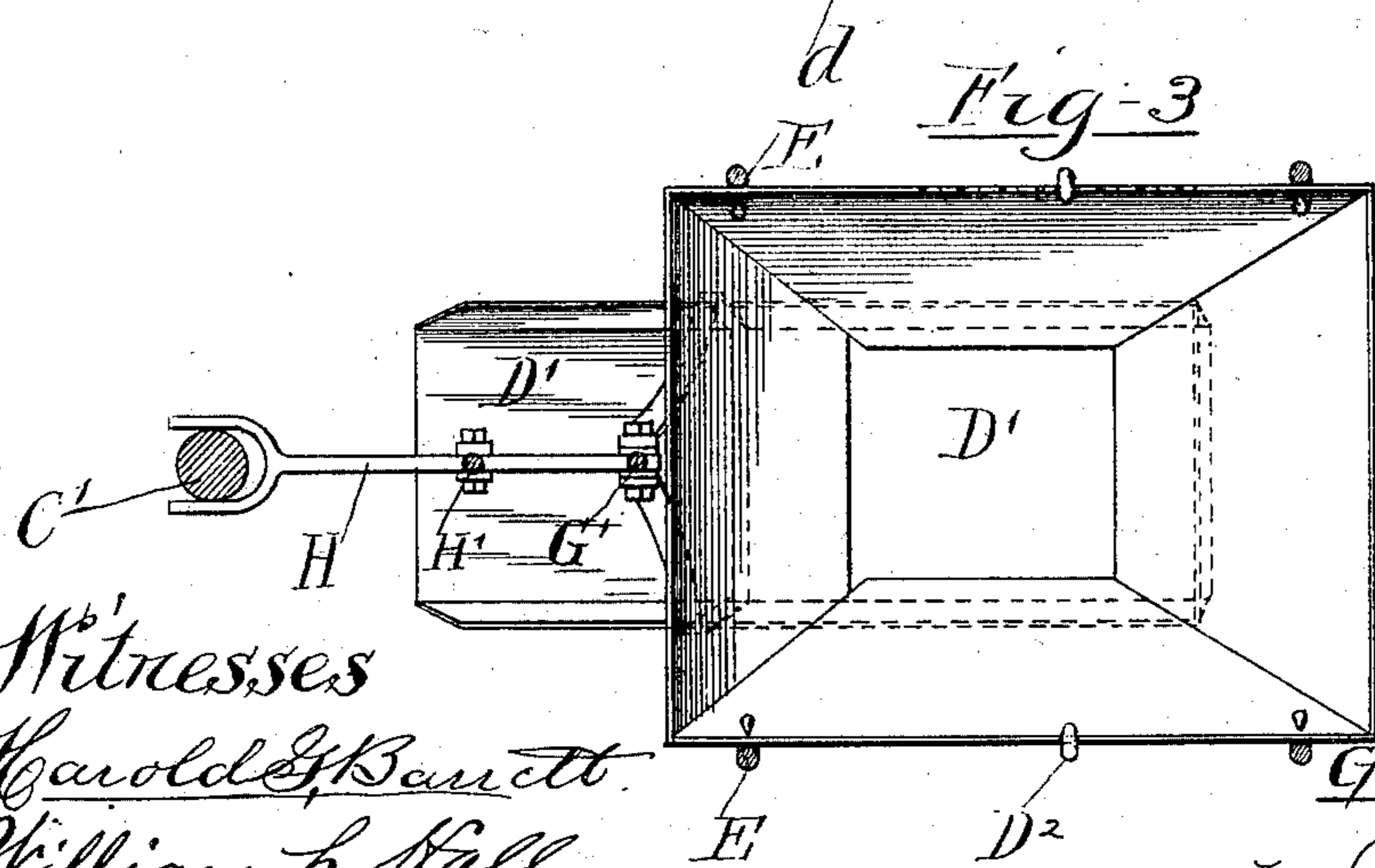
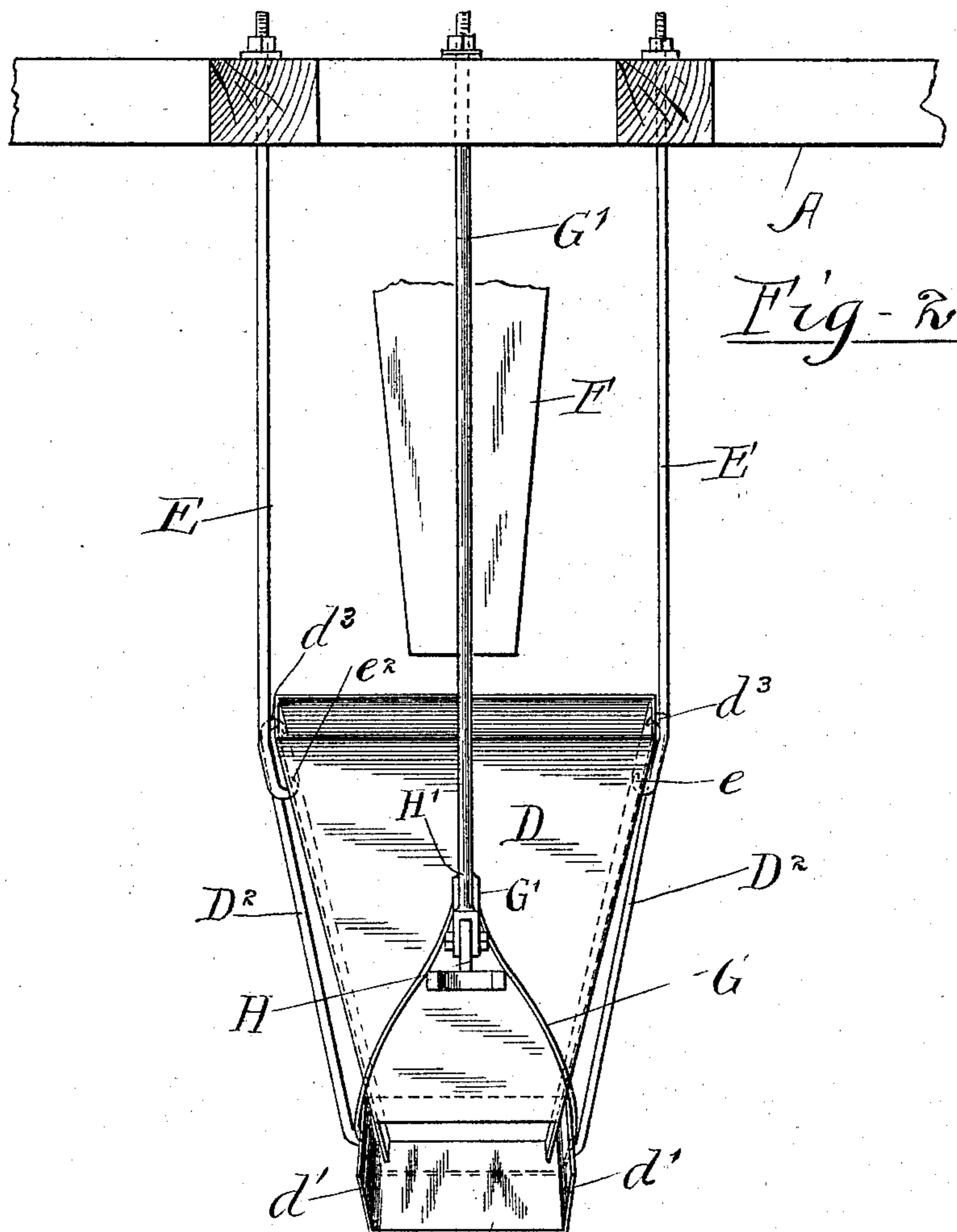
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UNITED STATES PATENT OFFICE.

GEORGE WOOD, OF PRESCOTT, ARIZONA TERRITORY.

FEEDER FOR STAMP-MILLS.

SPECIFICATION forming part of Letters Patent No. 605,266, dated June 7, 1898.

Application filed June 12, 1897. Serial No. 640,449. (No model.)

To all whom it may concern:

Be it known that I, GEORGE WOOD, of Prescott, in the county of Yavapai and Territory of Arizona, have invented certain new and useful Improvements in Feeders for Stamp-Mills; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in ore-handling apparatus, and refers more specifically to an apparatus for transferring ore from a crusher or from the ore-storage bin or floor to a stamp-mill and means for regulating the feed of the ore to the mill and for actuating said feeding means.

The invention consists in the matters hereinafter set forth, and more particularly pointed out in the appended claims.

In the drawings illustrating one embodiment of my invention, Figure 1 illustrates in side elevation the apparatus constructed in accordance with my invention. Fig. 2 is a front elevation thereof, and Fig. 3 is a top plan view thereof.

As illustrated in said drawings, A designates the floor of an ore-bin, upon or near the level of which may be positioned the ore-crusher. (Not shown.)

B designates a stamp-mill of any preferred or convenient form, which is shown as located below the level of the floor A.

The stamp-mill herein shown is of that kind known as a "steam-stamp," and is provided with a centrally-located stamp, which is operatively connected with and adapted to be reciprocated by a suitable engine C. In the construction shown the piston-rod C' of the engine will desirably be connected directly with the stamp of the stamp-mill and form the stem thereof, so that said stamp will be positively actuated in the reciprocation of said rod in each direction by the action of the steam upon the piston (not shown) within the cylinder C². As herein shown, the cylinder C² is supported upon a standard B', extending upwardly from the frame of the stamp-mill B, said cylinder being mounted upon the upper end of the standard in any suitable manner, so that the piston therein will be in aline-

ment with the axis of the stamp. Said standard is provided adjacent to the upper end of the frame of the stamp-mill with a laterally projecting guide-bracket B², through which the piston-rod C' extends and which forms a guide for said rod. The bracket B² is shown as provided with an upwardly-extending boss B³, through which the piston-rod C' extends and which forms a more substantial bearing therefor. The engine may be of any preferred form, and as this constitutes no part of my present invention I have not deemed it necessary to illustrate the same in detail.

Referring now to the parts more particularly concerned with my present invention, D designates a suspended transfer-hopper which is supported from the floor A of the ore-bin and above the level and slightly in rear of the stamp-mill B. The said hopper is herein shown as supported from the floor by means of rods E, passing through apertures in said floor, and are provided on their upper ends with screw-threaded portions e, which are engaged by securing-nuts e', by means of which the rods are held in place. As herein shown, the rods E are four in number and are secured in the upper corners of the hopper D by being turned inwardly to form hooks E², as shown in Figs. 2 and 3, which engage apertures in the side walls of said hopper. The particular manner of supporting the hopper D is not essential, and it may be mounted in any convenient or desired manner.

The hopper D is designed to be filled by means of a spout or chute F, which will extend from the discharge-mouth of the crusher, while its lower end extends over and in close proximity with the upper open end of the hopper. The crusher is not illustrated, and the spout F is therefore shown as broken away at its upper end. While the spout F has been described as leading from an ore-crusher or like machine, it may be mounted to deliver ore from an ore-storage bin or other place into which the crushed ore is stored. The hopper D will preferably have the form of a truncated pyramid, with the smaller end directed downwardly. Said lower end is herein shown as made open to provide an unobstructed passage for the ore therefrom.

D' designates an open-topped chute suspended below the hopper D in position to re-

ceive ore as it is discharged therefrom. As shown, said chute is of rectangular form and comprises a bottom wall d , side walls d' , and a rear wall d^2 and is made of sufficient width to embrace the lower side of the hopper D. Said chute or trough D' is of a length to extend to the rear side of the stamp-mill D and is arranged to discharge into a suitable hopper D⁴ in the rear upper side of said mill. The chute D' is shown as supported at the rear end thereof from the hopper D by means of rods D², which are pivotally attached to the rear end thereof and engage the upper edges of the side walls of said hopper. The rods D² are in this instance made of hook form at their upper ends, as shown at D³, which hook over the upper edges of said side walls, as clearly shown in the drawings. The chute D' is supported at its front end by means of a bail or hanger G, which is connected at its upper end with a vertically-extending supporting-rod G', which is mounted at its upper end in the floor A of the ore-bin. The bail or hanger G consists in the present instance of a single piece of strap-iron, which engages between its ends the chute D' and the opposite ends of which are brought together and secured to the rod G' by means of a pivot-bolt g , whereby a flexible connection is formed between said parts, and the chute is permitted to swing toward and from the stamp-mill upon the rods D². It is desirable to so support the chute D' that the angle thereof with relation to a horizontal line passing therethrough may be changed to vary or regulate the discharge of ore therefrom. This is conveniently accomplished by providing the upper edges of the side walls of the hopper D, with which the rods D² are engaged, with a plurality of notches or recesses d^5 , with which the hook portions of the rods D² may be engaged. The forward end of the chute being stationary it will be obvious that when the rods D² are engaged with the rearmost notches d^5 the inclination of the chute with relation to such horizontal line will be increased, and the ore delivered thereto will be more rapidly discharged into the hopper of the stamp-mill. When the rods D² are engaged with the front notches or recesses d^5 , the chute will approach more nearly a horizontal position and the delivery of the ore therefrom consequently retarded. The upper edge of the side walls of the hopper are inclined, as clearly shown in Fig. 1 of the drawings, so that the rear end thereof lies in a higher plane than the forward end.

In order to prevent the ore from clogging in the chute D' and its delivery to the stamp-mill retarded, I have provided means for oscillating the forward end of said chute so that the lumps of ore may be dislodged therefrom and its passage therethrough unobstructed. Said chute may be oscillated either vertically or horizontally; but with the construction herein illustrated it is preferred to oscillate the same in a vertical plane. Such oscillatory motion is preferably given to the chute

from a moving part of the stamp-mill and may be conveniently accomplished by providing operative connection between the piston-rod C' of the engine and the supporting bail or hanger G of the chute. As shown, the piston-rod C' is provided adjacent to said hanger with a collar C³, which is adjustably mounted thereon by means of a set-screw c , whereby its position may be adjusted lengthwise of said rod.

H designates a tappet arm or lever which is pivotally engaged at its rear end with the bail or hanger G and extends forward and is provided with a bifurcated end portion which embraces the piston-rod C' and engages the lower end of the collar C³, mounted thereon. Said arm or lever H is pivoted between its ends so as to be oscillated in a vertical plane, and in the present instance is shown as pivotally engaged with the lower end of the vertical rod H', which extends downwardly from the floor A of the ore-bin. It will be assumed that the stamp, as shown in Fig. 1 of the drawings, is at the downward limit of its movement, in which position the collar C³ on the rod C' will act to depress the outer end of the arm H, and to thereby raise the forward end of the chute D', rod G being vertically movable within its support A to permit of this movement. When the piston-rod and the collar thereon are raised and the arm H disengaged from the collar, the weight of the trough D' will cause the forward end thereof to drop down into its lowermost position. The outer end of the lever or arm H will now be at the upper limit of its movement and in position to be engaged in the downward movement of the collar C³ and the trough again oscillated upwardly, as shown in Fig. 1 of the drawings. With this construction the trough D' will be oscillated at each reciprocation of the piston-rod, the amplitude of the swing of said trough being determined by the position of said collar upon the piston-rod, it being obvious that the lower the collar is adjusted on the piston-rod the greater will be the amplitude of the vibration of the arm and the trough connected therewith. By this means the exact adjustment required may be obtained and the ore fed rapidly or slowly through the chute, as desired. Adjustment must also be secured by moving the rod H' upwardly or downwardly, and to thereby change the position of the fulcrum of the lever H.

In order to cushion the jars upon the floor A when the forward end of the trough D' and supporting-rod G drops into their lower position as the piston-rod is raised and the arm H released, a rubber washer g' is interposed between the nut g^2 and the upper surface of said floor. It may also be found desirable in practice to interpose a similar washer between the nut h of the bolt H' and adjacent upper surface of the floor.

The rods E, E', G', and H' are provided at their ends with elongated screw-threaded por-

tions, by means of which the vertical position of the apparatus may be varied within certain limits, as desired.

As a further improvement I have shown in Fig. 1 means for adjusting the length of the rod H' , by which the fulcrum of the lever H will be changed and the length of the throw of the lever H varied. In said figure the rod is divided between its ends and an adjusting-screw H^2 interposed between the same, which acts on the two parts of said rod to draw the same together or force them apart and thus vary the length of said rod. Said adjusting-screw may be made of any preferred form, but as herein shown consists of an ordinary turnbuckle. It will be desirable to provide said rod with a check-nut H^4 , adapted to act upon one end of said buckle to prevent it from turning under the excessive vibration to which it is subjected. With this construction the adjustment of the length of the rod H' and the action of the bar H will be within easy reach of the operator.

It will be seen that I have provided an extremely simple and economical apparatus for feeding ore to a stamp-mill, and one which requires but little space. The operation of said mill is capable of adjustment to the highest degree and the free and unobstructed passage of the ore therethrough obtained.

While I have shown what I deem to be a preferred form of my invention, it is obvious that many changes may be made in the details of construction without departing from the spirit of the invention. I do not wish to be limited to such details of construction; but as some of said details are exceedingly simple and effective in their operation they are hereinafter made the subject of specific claims.

I claim as my invention—

1. An apparatus for feeding ore to a stamp-mill, comprising a hopper open at both ends and suspended from a superstructure between an ore-bin and the stamp-mill, means for delivering ore to said hopper, a chute for delivering ore from said hopper to the stamp-mill, means for suspending said chute under the hopper comprising supporting-rods pivotally engaged at their lower ends with the rear end of said chute and engaging at their upper ends the upper edges of opposite walls of said hopper, and a flexible support engaging the forward end of said chute and movably mounted at its upper end in said super-

structure, and means for oscillating said chute comprising a tappet-lever pivoted between its ends and engaging at one end said movable support, and adapted to be intermittently engaged at its opposite end by a moving part of said stamp-mill.

2. An apparatus for feeding ore to a stamp-mill, comprising a hopper open at both ends and suspended from a superstructure between an ore-bin and the stamp-mill, means for delivering ore to said hopper, a chute for delivering ore from said hopper to the stamp-mill, means for suspending said chute under the hopper comprising supporting-rods pivotally engaged at their lower ends with the rear end of said chute and engaging at their upper ends the upper edges of opposite walls of said hopper, and a flexible support engaging the forward end of said chute and movably mounted at its upper end in said superstructure, and means for oscillating said chute comprising a tappet-lever pivoted between its ends and engaging at one end said movable support and adapted to be intermittently engaged at its opposite end by a moving part of said stamp-mill, said hopper being provided in its walls engaged by said supporting-rods with inclined serrated edges, by means of which the angle of the chute to the horizontal may be regulated.

3. An apparatus for feeding ore to a stamp-mill, comprising a hopper suspended from a superstructure and open at its lower end, a chute pivoted at its rear end below the open end of said hopper by means of rods which are pivotally engaged at their lower ends with said rear end of the chute, and pivoted at their upper ends to said hopper, a supporting-bail engaging the forward end of said chute, a supporting-rod movable in said structure and pivotally engaged with said bail, a lever pivoted between its ends and engaging at one end said supporting bail and rod at the junction thereof, and means on the stamp-stem for intermittently engaging the opposite end of said lever.

In testimony that I claim the foregoing as my invention I affix my signature, in presence of two witnesses, this 27th day of May, A. D. 1897.

GEORGE WOOD.

Witnesses:

CHAS. H. AKERS,
F. A. TRITTLE, Jr.