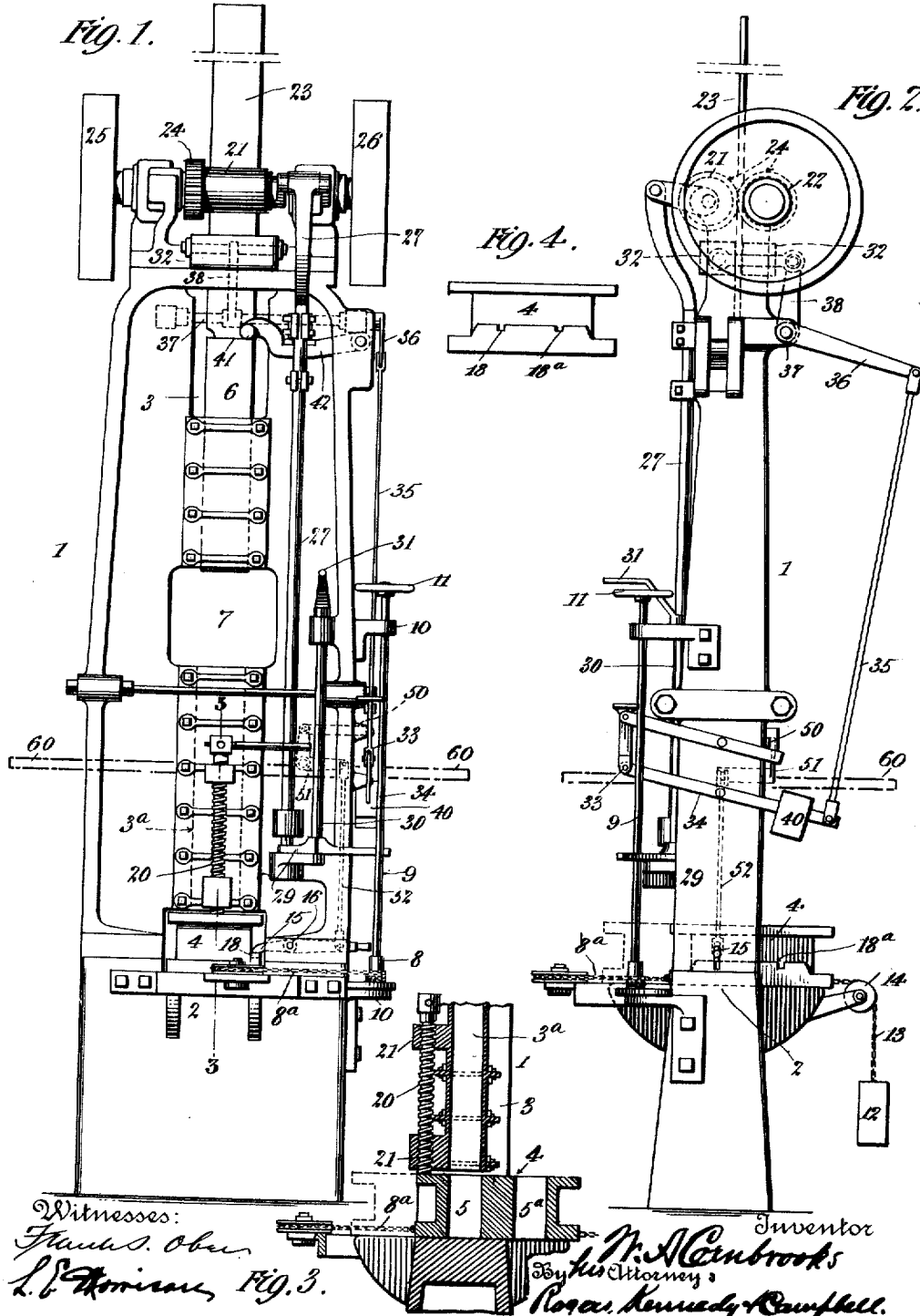


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 APPARATUS FOR PACKING LOOSE MATERIAL.  
 APPLICATION FILED MAR. 9, 1911.

1,013,277.

Patented Jan. 2, 1912.



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# UNITED STATES PATENT OFFICE.

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## APPARATUS FOR PACKING LOOSE MATERIAL.

1,013,277.

Specification of Letters Patent.

Patented Jan. 2, 1912.

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*To all whom it may concern:*

Be it known that I, WILLIAM A. CORNBROOKS, a citizen of the United States, residing at Moline, in the county of Rock Island and State of Illinois, have invented certain new and useful Improvements in Apparatus for Packing Loose Material, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to mechanism for compressing or condensing loose material into compact form for convenience in handling same, and the invention is designed particularly for the treatment of scrap sheet iron with the view to reheating and re-rolling the same.

According to my invention the scrap material is fed to a suitable receptacle or chamber and there subjected to forcible pressure, preferably by repeated blows, whereby the loose pieces of metal will be compressed and baled into a compact and dense form. In this form the material may be conveniently handled for heating and subsequent re-rolling into sheets or plates.

In its preferred form my invention consists of the combination with the packing receptacle or box, of a trunk or feeding chamber leading thereto and into which the material to be packed may be introduced, and a packing plunger movable in the trunk and adapted to act on the material fed therein and compress the same into a condensed and compact definite form in the box.

The invention consists also of a packing box provided with a plurality of compartments and adapted to be adjusted so that either of the compartments may be brought into registry with the feeding trunk, to the end that while the material is being packed into one compartment, the compressed body of material in the other compartment may be conveniently discharged.

The invention consists also in suitable means for holding the packing box so that its compartments will be in proper registry with the feeding trunk.

The invention consists further in combining with the means for controlling the action of the packing plunger, and with the means for determining the position of the packing receptacle, a stop device controlled

by the latter means and arranged to prevent the operation of the plunger except when the receptacle of the packing box is in proper registry with the feeding trunk.

The invention consists also in the details of construction and combination of parts hereinafter described and claimed.

In the accompanying drawings: Figure 1 is a front elevation of a mechanism embodying my invention. Fig. 2 is a side elevation of the same. Fig. 3 is a vertical section from front to rear taken on the line 3—3 of Fig. 1. Fig. 4 is a side elevation of the packing box or receptacle.

Referring to the drawings: 1 represents a suitable column or frame provided at its base with an anvil or abutment 2 over which is arranged a vertical guideway 3, a space being left between the anvil and the lower end of the guideway, in which space is arranged a receptacle or box 4 provided with a plurality of open-ended compartments 5, 5<sup>a</sup>, the box being movable horizontally on the anvil to cause either of the receptacles to register with the guideway for the purpose presently to be described. In the guideway is mounted, so that it may move up and down freely, a packing plunger 6, the cross-sectional form and size of the plunger, guideway and compartments in the receptacle being the same, so that the plunger will fit snugly in the guideway and may enter the packing receptacle. Some distance above its lower end the guideway is cut away or interrupted as at 7, thereby producing an opening in which the material to be compressed may be introduced and fed into the upper end of the lower portion of the guideway, such lower portion of the guideway constituting in effect a feeding trunk or chamber 3<sup>a</sup> leading to the compartment in the box which for the time being is in register therewith.

In the operation of the mechanism so far described, the plunger being in an elevated position as indicated in Fig. 1, the material to be compressed is fed into the upper end of the feeding trunk 3<sup>a</sup> through the opening 7 and will enter the compartment of the packing box in register with the trunk and will pile up in the trunk. The plunger is then alternately raised and allowed to fall, with the result that the material will be subjected to a series of forcible blows and will

be driven down in the trunk and packed and compressed in a condensed mass or body of definite form in the compartment of the receptacle at the lower end of the trunk.

5 When by repeated packing operations the compartment has become completely filled with the material in condensed form, the box is moved forward to the position shown by dotted lines in Fig. 3, thereby bringing  
10 the empty compartment 5<sup>a</sup> in position beneath the trunk to receive its charge, and carrying the filled compartment 5 to position in front of the trunk where its contents may be conveniently discharged. The foregoing filling and packing operations are now repeated for the second compartment, and when this has received its packed charge the box is moved in the opposite direction to its original position, thereby bringing the  
20 first compartment again beneath the feeding trunk, and carrying the second filled compartment to position at the rear of the trunk where its contents may be discharged.

The packing box may be shifted back and forth as described in any suitable manner, but I prefer to employ for this purpose a vertical drum 8 fixed on the lower end of a vertical rotary rod 9 mounted in suitable bearings 10 on the frame, and provided at its  
30 upper end with a hand wheel 11 for turning it. The drum has wound on it a chain 8<sup>a</sup> which passes around a horizontal guide pulley mounted on the frame in front of the trunk, the end of the chain being connected with the front of the box. By the rotation of the hand wheel 11 the chain may be wound up on the drum, and the box drawn forward from the position shown in full lines in Fig. 2 to that shown in dotted  
40 lines. The box may be returned or moved in the opposite direction by any suitable means, for instance, through the medium of a weight 12 suspended from a cord or chain 13 passing over a guide pulley 14 mounted  
45 on the frame of the machine at the rear of the trunk, the end of the cord being connected with the rear side of the box.

In order that the packing box may be held in position so as to insure the proper register of its compartments respectively with the feeding trunk, I provide a convenient and effective device in the form of a horizontal latch 15 pivoted between its ends as at 16 to the frame and adapted at its inner  
50 end to engage in either of two notches 18, 18<sup>a</sup>, formed in the side of the box, the relation of the notches to the compartments being such that when the latch is engaged respectively therein the corresponding compartment will be in exact registry with the  
60 end of the feeding trunk.

In order that the packing box may be held flat and firmly down on the anvil and be prevented from being forced up by the forcible packing of the material therein and

in this way bind against the lower end of the feeding trunk, I provide a clamping screw 20 screwed in upper and lower lugs 21 on the front of the feeding trunk, with the lower end of the screw in position to  
70 bear on the upper side of the box, as clearly shown in Fig. 3. When the box is in the position shown by full lines in Fig. 3, with the forward receptacle 5 in register with the trunk, the clamping screw will bear on  
75 the forward edge of the box. When, however, the box is shifted forwardly to bring the rear compartment 5<sup>a</sup> in position for filling, the clamping screw will bear on the partition between the two compartments.  
80 In the filling operations, the screw will hold the box down flatly on the anvil and will prevent the material from being forced laterally from the lower end of the compartment and between the box and the anvil,  
85 which action would raise the box and bind the same against the trunk and this would prevent the box from being shifted to its different positions. By the use of the screw in thus preventing the box from rising, the material may be packed into condensed form  
90 in the compartments, and after being properly packed the screw is released to permit the box to be changed in position.

The plunger 3 may be operated in any  
95 suitable and appropriate manner to subject the material in the box to the packing blows. I have shown for this purpose a form of mechanism well-known in connection with power hammers and operating to  
100 positively raise the plunger to an elevated position, and then release the same so that it may by gravity fall and in cooperation with the anvil subject the material to blows. This mechanism, as shown in Figs. 1 and 2,  
105 comprises a pair of friction rolls 21 and 22 arranged to act on opposite sides of a board or plate 23 fixed to and rising from the upper end of the plunger. These rolls are  
110 movable to and from each other so that when rotated and moved together they will engage the board and feed it to an elevated position, and when separated from each other they will disengage the board so that the plunger may be allowed to fall. The  
115 rolls are rotated by intermeshing gears 24 receiving motion from constantly operating drive pulleys 25 and 26. The movements of the rolls to and from each other are controlled by a depending rod 27 operatively  
120 connected at its upper end with one of the rolls, and adapted to rest at its lower extremity upon a finger 29 projecting inwardly from the lower end of an oscillating shaft 30, the upper end of which is provided with  
125 a handle 31 for oscillating. The end of the finger 29 engages beneath the lower end of the rod 27 and when, by the oscillation of the handle 31, the finger is moved laterally from beneath the same the rod will fall, and  
130

when the handle is oscillated in the opposite direction the finger may be moved beneath the rod and hold the same elevated. After the rolls have been clamped against the board and rotated to elevate the plunger, the board when the rolls are again separated, is sustained by suitable clamping devices 32, which hold the plunger in an elevated position and are adapted to be released to permit the plunger to fall. These clamps are controlled by means of a foot lever 33 pivoted at its lower end on the forward end of a lever 34 to the rear end of which is jointed a rod 35 pivoted at its upper end to the rear end of an arm 36, fixed at its forward end to a rock shaft 37. The rock shaft carries an arm 38 which is operatively connected with the clamping jaws 32. When the foot lever 33 is depressed, by means of the connecting mechanism described, the clamping jaws will be separated and the board will be released and the plunger will fall. On the release of the foot lever 34, a weight 40 mounted on the lever 34, will act to return the parts to their former position and close the clamps. In the operation of the mechanism described, and assuming that the rod 27 is holding the feeding rolls separated, the operator turns handle 31 of the oscillating rod 30 and moves the finger 29 from beneath the rod 27. This allows rod 27 to fall, whereupon the rolls will be moved together, and, impinging on the board, their rotation will elevate the same and thereby elevate the plunger. The rise of the plunger will continue until a shoulder 41 thereon engages beneath a lever 42, which action will shift the lever and by suitable means will act on the rod 27 in such manner that the latter will be elevated and will cause the rolls to be separated. On the separation of the rolls the clamps 32 are thrown into action and binding on the board will hold the same suspended. The foot lever 34 is now depressed, which will release the clamps and allow the plunger to fall. It is seen that by this operation the plunger is positively elevated by the feed rolls and allowed to fall by gravity, the controlling mechanism being operated by the hand and foot and resulting in the alternate rise and fall of the plunger.

In order that there will be no possibility of the operation of the plunger when the receptacles in the packing box are not in proper registry with the feeding trunk, I provide a stop device controlled in its action by the latch 15 and operating to obstruct the movement of the foot lever 34, except when the latch is engaged in one of the notches in the feeding box. This stop device may be of different forms and constructions, but in the present instance it consists of a lateral

elbow lever 51 and a vertical rod 52 to the outer end of the latch 15, these connections being such that when the outer end of the latch is depressed to disengage its inner end from the notches in the box, the bolt will be projected in the path of the vibrating lever 53 connected with the foot lever, and when so projected will prevent the foot lever from being depressed and consequently will prevent the clamp from being opened to release the plunger. It is seen, therefore, that this bolt is only retracted when the latch is in engagement with one of the notches in the box, the result being that the foot lever can only be operated when the latch is so engaged, so that there will be no liability of the descent of the plunger when the receptacles are out of register with the feeding trunk.

In feeding the material into the opening at the upper end of the feeding trunk, the operator stands on a platform 60 indicated by dotted lines in Figs. 1 and 2.

In the accompanying drawings, I have shown my invention in the form which I prefer to adopt and which in practice has been found to answer to a satisfactory degree the ends to be attained.

It is manifest that the details of the mechanism may be variously modified without departing from the limits of my invention, and it is to be understood that the invention is not to be limited to any particular form or construction of the parts, except in so far as such limitations are specified in the claims.

Having thus described my invention, what I claim is:

1. In a machine of the type described, the combination of the framework, a reciprocating plunger mounted therein, a stationary anvil situated beneath the plunger, a fixed feeding trunk for guiding the plunger in its movements, a packing box supported by the anvil and provided with a plurality of compartments, and means for moving the box relatively to the anvil and trunk for bringing any selected one of its compartments into operative relation to the trunk.

2. In a machine of the type described, the combination of an abutment, a feeding trunk arranged thereover, a reciprocating plunger movable in the trunk, a packing box provided with two compartments, said box being reciprocable back and forth along the abutment to bring one or the other of the compartments into registry with the trunk, the abutment being so related to the box that when one compartment is in registry with the trunk, the other compartment will be disposed beyond the effective portion of the abutment and may have its contents discharged therefrom, and when the latter compartment is in registry with the trunk, the other compartment will be dis-

posed to the opposite side of the abutment beyond its effective portion and may have its contents discharged therefrom.

3. In a machine of the type described, the  
5 combination of an abutment, a feeding trunk, a packing box between the feeding trunk and abutment provided with a compartment adapted to register with the trunk, a packing plunger movable in the trunk,  
10 means for determining the registering position of the compartment with the trunk, means for controlling the action of the plunger, and a stop device controlled by the registry-determining means and coöperat-  
15 ing with the plunger-controlling means.

4. In a machine of the type described, the combination of an anvil or abutment, a packing box mounted thereon and provided with an open-ended compartment to receive the material to be packed, a packing plunger 20 movable in the trunk, and releasable means for holding the packing box firmly down on the anvil.

In testimony whereof I have affixed my signature in presence of two witnesses.

WILLIAM A. CORNBROOKS.

Witnesses:

C. R. ROSBOROUGH,  
H. G. SEHNERT.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."

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