

3 Sheets—Sheet 2.

No. 567,542.

Patented Sept. 8, 1896.



Witnesses:
L. C. Hills
R. R. Bond.

Inventor:
John G. Kersh

3 Sheets—Sheet 3.

Patented Sept. 8, 1896.



Inventor:
John G. Kerst

UNITED STATES PATENT OFFICE.

JOHN G. KERST, OF SPRINGFIELD, ILLINOIS.

BRICK ROUGHER AND SANDER.

SPECIFICATION forming part of Letters Patent No. 567,542, dated September 8, 1896.

Application filed April 11, 1896. Serial No. 587,206. (No model.)

To all whom it may concern:

Be it known that I, JOHN G. KERST, a citizen of the United States, residing at Springfield, in the county of Sangamon and State of Illinois, have invented certain new and useful Improvements in Brick Roughers and Sanders; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, 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 certain new and useful improvements in brick-machines; and it has for its objects, among others, to provide an improved brick sander and rougher in which the main shaft is provided with a crank-wheel and connections whereby the pusher is operated slowly in pushing, but returned rapidly. I provide a mechanism operated from the main shaft for turning or edging the bricks after they have been roughened and sanded. The doors which serve to edge the bricks are provided with a space between the same and at their edges to prevent catching of and injury to the hands of the attendant should he accidentally get his fingers between the doors or between the same and the walls of the opening in which the doors are arranged. The roughing-plates are adjustably and detachably held in position, and the chamber for the sand and the sand-tubes are capable of adjustment to regulate the amount of sand to be delivered, as circumstances may require. I employ a hinged spring-actuated sweep for trimming the edges of the bricks and for supporting and controlling the rougher.

I aim, further, at improvements in the details of construction of the various parts, as well as in the machine as a whole. I provide a guard for preventing the bricks from falling over when they are turned or edged, and in case the bricks are not removed in time, but are there when the next two bricks come along, this guard, which is substantially V-shaped, will serve to prevent injury to the machine by cutting the bricks in two.

Other objects and advantages of the invention will hereinafter appear, and the novel

features thereof will be specifically defined by the appended claims.

The invention in this instance resides in the peculiar combinations and the construction, arrangement, and adaptation of parts, all as more fully hereinafter described, shown in the drawings, and then particularly pointed out in the claims.

The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification, and in which—

Figure 1 is a side elevation of my improved machine. Fig. 2 is a vertical longitudinal section on the line 2 2 of Fig. 4. Fig. 3 is a detail in plan, with portions in section, showing the mechanism for operating the doors that serve to turn or edge the bricks. Fig. 4 is a vertical cross-section on the line 4 4 of Fig. 1, looking in the direction of the arrows. Fig. 5 is a top plan of the platform, showing the doors and the partitions thereon and their springs. Fig. 6 is an enlarged end elevation showing the arms and the slide forming a part of the mechanism that actuates the doors that edge the bricks. Fig. 7 is a detail in end elevation showing the pusher and its hinged plate and spring. Fig. 8 is a vertical section on the line 8 8 of Fig. 4, on an enlarged scale. Fig. 9 shows the needle-bar and its needles. Fig. 10 is a detail of the plate employed on the platform to engage the bricks as they are turned on edge and which serves to prevent injury to the machine in case the bricks are not taken away before another lot are delivered onto the platform. Fig. 11 is a plan, and Fig. 12 a detail, of a modified form.

Like letters of reference indicate like parts throughout the several views.

Referring now to the details of the drawings by letter, A designates the supporting-frame; B, the endless apron or belt, mounted to travel upon rollers *a*, the shafts *a'* of which are mounted to travel or revolve in suitable boxes or bearings *b* on the frame of the machine. This belt or apron receives the bricks as they come from the molds or machine by which they are formed in any well-known manner. This belt is designed to travel in the direction of the arrow in Fig. 2. It derives its motion in this instance from the sprocket-wheel C, secured to the shaft of the

forward roller, over which the belt travels, and this sprocket-wheel is connected by the sprocket-chain C' with the sprocket-wheel D on the main shaft E. This latter shaft is designed to receive its motion from any suitable source in any well-known manner. (Not shown.) The shaft E is mounted in suitable bearings or boxes on the frame. In this instance I have shown intermediate rollers *e*, over which the belt travels, but these need not always be present. The bearing of the rear shaft *a'* is rendered adjustable by means of the screw-rods *c*, which are screwed into the vertical portions of the brackets *b'* and are provided with adjusting-nuts *c'*, as seen best in Figs. 1 and 2.

F is a disk fast upon the extended end of the main shaft E and provided with a crank-pin *f*, which works in the elongated slot *g* of the arm G, which is fast upon and depends from the oscillating shaft G', mounted in suitable bearings in the opposite side portions of the frame, and fast to this shaft, one near each end, are the rods or levers H, to the upper end of which are pivotally connected, as at *h*, the push-bars H', which push-bars are connected at their other ends with the pusher I, the ends of which are provided with the pins or projections *i*, which are designed to travel in the cam-paths J, provided by the substantially diamond-shaped switch-plates *j*, one on each side of the machine, and each pivoted near its center, as at *j'*, and beneath which plates the said pins are designed to travel in pushing the bricks forward, and over which plates the said pins travel in the backward movement of the pusher, as will be readily understood.

K is a spring, one for each switch-plate, and each attached at one end to its plate *j* to the rear of its pivot and its other end held in any suitable manner in a lug or bracket *k* on the vertical portion A' of the frame, as shown in Fig. 1, to normally hold the rear end of the said plate in its downward position by its compression.

The pusher has hinged thereto a pusher-plate L' by suitable hinges *l*, the pintle *l'* of which has coiled therearound a spring L, one end of which bears against the acting face of said plate to hold it to its work, but allows the plate to yield and prevents injury to the machine or to the brick or pusher in case a brick happens to come irregularly along the belt.

M is a box designed to contain sand, from which it is fed or caused to flow through the tubes M', the lower ends of which are preferably flaring, as seen in Fig. 2, the box being provided with a portion of its lid or cover hinged, as seen at *m*. The outlets from the box to the tubes are controlled by the movable gates or valves *m'*, which are arranged within the box and movable over the bottom thereof, as seen best in Fig. 2. These gates or valves are operated by the handles *m''*, arranged upon the under side of the bottom of

the box and secured to the vertical pins M², to the upper ends of which the gates or valves are also fast, so that by movement of these handles the valves may be moved to govern the flow of sand from the box through the tubes. This box with its tubes is removably supported above the platform N in the following manner: Near each end of the box, to the under side thereof, is secured a plate N', the ends of which are bent downward, as seen best in Fig. 1, the ends thereof being provided with openings to receive the vertical posts *n*, upon which are the nuts *n'*, so that the box may be adjusted vertically when desired.

The sand-box is supported over the chamber O, and this chamber is provided with the partitions *o*, which have their front faces rounded, as shown, while at their rear ends they have the openings or chambers *o'*, open at the side, to discharge the sand into the compartments of the chamber, the two outer ones having the spring-plates O', urged inward by the springs O² around the rods *o''*, and the tension of the springs being adjusted by means of the nuts *o'''*.

At the discharge end of the chamber O are the plates P, the upper edges of which are serrated, as shown, and the plates are secured in any suitable manner in the transverse recess *p* at the discharge end of the chamber, and which communicates by the passage P' with the spout Q, arranged beneath the opening in the platform, which is closed by the doors soon to be described. This permits of the escape of the sand that is carried forward from the chamber into the said spout, and clogging of the machine by reason of accumulated sand is prevented.

On the tubes nearest the discharge end of the machine is secured the cross-bar Q', rendered adjustable by means of the elongated slots and bolts, and in suitable openings in this cross-bar are mounted to slide the vertical rods or pins Q², the lower ends of which are hinged to the upper faces of the sweeps Q³, the rear ends of which are pivoted on a rod *q'*, supported at the lower ends of the tubes, as shown. Springs *q''* around these vertical rods serve to hold the sweeps down to their work, but allow them to yield when meeting an obstruction, as a hard substance in the brick. The front ends of these sweeps carry serrated plates Q⁴, as shown in Fig. 4, although I may sometimes employ in lieu thereof a bar *q''*, carrying a plurality of needles *q'''*, as shown in Figs. 8 and 9. The plates Q⁴ are vertically adjustable by slots and screws or bolts, as seen in Fig. 4.

R is an opening in the platform N at the discharge end of the machine, and R' are two oppositely-movable doors hinged at opposite sides of this opening, as shown best in Fig. 5. There is a space or opening *r* left between the ends of the doors and the adjacent walls of the opening, as well as between the adjacent edges of the doors and between their op-

posite sides and the adjacent walls of the opening, as shown clearly in Fig. 5. This is to prevent catching of and injury to the fingers of the attendant. These doors are designed to be operated simultaneously in the following manner: On the main shaft E is a cam S, which is arranged to act upon the under side of the arm S', which is slotted, as seen in Fig. 3, and which is provided with the antifriction-roller s, against which the cam acts, the other end of this arm being fast on the transverse shaft S², supported in suitable bearings s', in which it is adapted to rock. These bearings are on the cross bar or portion A³ of the frame. This cam is adjustably mounted on its shaft, so that it can be adjusted to vary the throw of the arm as occasion may require. Fast on the shaft S² is another arm T, to the under side of which between its ends is pivotally connected, as at t, the depending rod T', which works through an opening in the lug t' on the cross portion A³ of the frame, as seen in Fig. 2, and around this rod, between the under side of the lug and a nut t² on the lower end of the rod, is a spring T². The free end of this arm T has pivotally connected therewith, as at t³, the vertical arm or bar T³, the upper end of which is guided in a guideway t⁴ in the cross portion A⁵ of the frame, as shown best in Fig. 6. Between its ends this vertical bar is provided with the projection or pin T⁵, which is designed to work in the slots u of the arms U, the ends of which overlap, as shown best in Fig. 6, and the other ends of which are fast upon the oscillating or rocking rods or shafts U', extending lengthwise of the machine, one at each side thereof, as seen best in Fig. 3, and mounted in suitable bearings on the frame. The ends of these rods or shafts nearest the discharge end of the machine have fast thereto the arms U³, which extend inward toward each other, as seen best in Fig. 4, and to the adjacent ends thereof are pivotally connected, as at u', the substantially vertically-disposed arms u², the upper ends of which are pivotally connected with the under sides of the doors R', as seen in Fig. 4.

The spout Q is supported from the frame beneath the opening in the platform in which the doors are hinged, as shown, and is provided with an adjustable extension Q⁶, having provision for its adjustment. This consists of the links q⁶, pivotally suspended from the shaft q⁷, secured to the side of the spout, and to the lower ends of these links or hangers are pivotally connected the ends of the yoke Q⁷, which embraces three sides of the extension and is pivotally mounted thereon, as at q⁸, and the pivots thereof work in the vertical slots Q⁸ in the lower end of the spout Q, as seen best in Fig. 4. The upper end of the extension is sleeved over the lower end of the spout, and the yoke is provided with a handle or lever portion Q⁹, by means of which the extension may be moved on its pivot to

raise it, so that a bucket or other receptacle q⁹ may be placed thereunder to catch the sand that passes through the openings in the platform and save waste of the same.

W is an angle-iron which is secured to the platform in proximity to the doors thereof and is designed to prevent the bricks from falling over when turned up or edged. There is one of these at each side of the door-opening, and each is substantially V-shaped with a rounded edge and is so constructed and arranged that if the bricks are not removed in time the following two bricks would force the first ones against this V edge and cut them in two on the same and thus prevent injury to the machine.

With the parts constructed and arranged substantially as above set forth the operation is as follows: Motion being given to the various parts and the bricks fed to or placed on the apron or belt, which travels in the direction of the arrow in Figs. 1 and 2, the levers H and push-rods H' are actuated through the medium of the crank-disk and its wrist-pin and the slotted arm, the pins or projections on the ends of the pusher entering the grooves or ways beneath the switch-plates, and in the continued movements of the parts the said pins or projections are pushed to the utmost forward limit of the grooves, and as soon as the pins or projections have passed the lower ends of the said plates the springs K serve to force the upper ends of the plates up and their lower ends down, so that in the continued movement of the crank-disk the pins will travel up the upper faces of the said plates, compressing the springs till the pins free themselves from engagement with the plates and drop down again to repeat their travel upon the under side of the plates to push another brick along to the sanding-chamber.

It is to be understood that the crank-disk and the other parts are so timed that the bricks will be carried along by the belt or apron at just the required intervals, so that by the time the pusher returns to its normal position after having pushed one brick into the sand-chamber the next brick will have moved so as to be in front of the pusher to be in position to be engaged by the same. The first brick acted upon is pushed by the pusher into the sand-chamber and there left until the next brick is forced against it by the pusher and forced through the chamber between the partitions thereof and through the sand that has dropped thereinto through the tubes connected with the sand-box and the sand is partially rubbed off by the partitions and spring-plates O', and as the bricks emerge from the chamber they are roughened top and bottom by the rougher-plates or the needles, when the latter are employed. As the bricks emerge from the chamber they are forced onto the doors R', after which the said doors are turned on their hinges, so as to turn the bricks upon their edges, so that they may be more easily handled, the cam S being so timed and the connections

being such that the doors are actuated at proper intervals to turn or edge the bricks and be back in their places to receive the next bricks. The sand that follows the bricks out of the chamber is allowed to fall into the spout and from thence into the receptacle provided to receive it.

Modifications in detail may be resorted to without departing from the spirit of the invention or sacrificing any of its advantages.

The machine may be adapted for more or less bricks by varying the width of the belt and the number of compartments in the sanding-chamber. In Fig. 11 I have shown a platform adapted for a four-brick machine. In this form the inner partitions that rub the sand on the bricks are vibratory, as seen in Fig. 11 and in enlarged detail in Fig. 12, in which the sides of the partition Y are hinged at y and their ends turned inward, as at y', a plate or other device Y' being provided to prevent too great separation or movement of the parts Y on their hinge, the inner faces of the said parts being provided with pins or studs y⁴, on which is held the spring Y². A plate y² (shown by dotted lines) is held over the said spring by a pin or other means y³ and can be easily removed when it is desired to adjust the tension of the spring. The outer partitions are adjustably secured to the platform, as seen in Fig. 11, so they may be adjusted for different-sized bricks. The partitions seen in Fig. 5 are rendered adjustable by means of the slots S¹¹ shown therein, and through which pass the screws or other means which secure them to the platform. The support W is also adjustably mounted in position, having its base portion provided with a slot, as seen in Figs. 5 and 10.

Other minor changes may be made and still be within the scope of the invention.

What is claimed as new is—

1. The combination, in a brick-sanding machine, with the sanding devices and the brick-carrying belt and with a pusher having pins, of pivoted plates forming with plates on the sides of the machine a path to be traversed by the pins on the pusher, and a crank-disk and connections embodying a slotted arm the slot of which receives the crank-pin of said disk, and an oscillating shaft from which said arm depends between the same and the pusher for actuating the latter, and hinged doors for edging the bricks as they are delivered from the belt, said doors being connected with and operated from the main shaft, substantially as specified.

2. The combination with the pusher, the push-bars connected therewith, the pivoted switch-plates and the levers, of a shaft carrying the levers, an arm secured to said shaft and having an elongated slot, and a disk provided with a crank-pin working in said slot, and hinged doors connected with and operated from the main shaft for edging the bricks after they are delivered from the belt, substantially as and for the purpose specified.

3. The combination with the sanding devices and the means for moving the bricks, of pivoted doors having their pivots parallel with the line of travel of the brick-moving devices and movable upward at right angles to said device for turning the bricks on edge after they are delivered therefrom, as set forth.

4. The combination with the brick-moving belt and the sanding mechanism, of hinged doors arranged at the discharge end of the belt on pivots parallel with the edges of the belt and movable at right angles thereto to edge the bricks after they are delivered from said belt, substantially as specified.

5. The combination with the brick-moving devices and the sanding mechanism, of the hinged doors for edging the bricks, the main shaft and the cam thereon and intermediate connections for actuating said doors, as and for the purpose specified.

6. The combination with the brick-moving devices and the sanding mechanism, of the hinged doors for edging the bricks, the main shaft, the cam thereon, the arm with roller engaged by said cam, and connections between the shaft of said arm and the doors for actuating the latter, as and for the purpose specified.

7. The combination with the platform and the means mounted for pivotal movement at right angles to the travel of the bricks for edging the bricks on the platform, of means for preventing the bricks from falling over after being edged, as set forth.

8. The combination with the platform and the hinged doors for edging the bricks, of the vertical arm having a sharpened edge as and for the purpose specified.

9. The combination with the platform having an opening, of the doors hinged within said opening with a space around the doors, substantially as and for the purpose specified.

10. The combination with the platform with opening, of the hinged doors mounted for simultaneous opposite movement at right angles to the travel of the bricks and their actuating means, and a spout supported beneath the opening in the platform substantially as specified.

11. The combination with the platform with its opening and hinged doors, of the spout beneath the said opening and the extension adjustably suspended from the spout, as set forth.

12. The combination with the sanding mechanism and the means for delivering the bricks to the same, of a hinged sweep at the discharge end of the machine, and a rougher carried by said sweep, substantially as specified.

13. The combination with the sanding mechanism and the means for moving the bricks thereto, of a hinged sweep at the discharge end of the machine, a rougher carried by said sweep and a spring bearing upon the sweep to hold it down to its work, substantially as specified.

14. In a brick sanding and roughing machine, the combination with the sanding mechanism, of a hinged spring-actuated sweep at the discharge end of the machine, as set forth.

5 15. In a brick sanding and roughing machine, the combination with the sanding mechanism, of a cross-bar secured to the tubes thereof at the discharge end of the machine and sweeps carried by rods mounted to slide
10 in openings in said cross-bar, as set forth.

16. The combination with the main shaft and the cam thereon, of the hinged doors, the oscillating rods arranged at right angles to said shaft, connections between said rods and
15 the doors, a cam on the main shaft, a shaft parallel therewith, a slotted arm mounted on said shaft and provided with a roller with which the cam engages, and connections between said shaft and the oscillating rods, all
20 substantially as and for the purpose specified.

17. In a brick sanding and roughing machine, the combination with the sanding mechanism, of a cross-bar secured to the tubes thereof, sweeps pivotally mounted on the
25 framework and attached to rods mounted to slide in openings in said cross-bar and springs around the said rods substantially as and for the purpose specified.

18. In a brick sanding and roughing machine, the combination with the sanding mechanism, of a cross-bar secured to the tubes, sweeps mounted on the framework and attached to rods mounted to slide through openings in the cross-bar, springs around said rods and a rougher adjustably mounted on
35 each sweep, substantially as specified.

19. The combination with the hinged curved walls of the partitions of the sanding-chamber, of a spring arranged between the same and means for limiting the outward movement of said walls, substantially as specified. 40

20. The combination with the curved walls of the partitions of the sanding-chamber, of hinges therefor, a spring arranged between and connecting the said walls, the plate covering the spring and the plate for engaging the ends of said curved walls to limit their outward movement, substantially as and for the purpose specified. 45

21. The platform designed for a four-brick machine, the same having inner vibrating partitions with spring-pressed walls and a plate for limiting the outward movement thereof, substantially as and for the purpose specified. 50

In testimony whereof I affix my signature
55 in presence of two witnesses.

JOHN G. KERST.

Witnesses:

ELMER L. CAPPS,

THOS. E. MCCURLEY.