July 28, 1925. 1,547,802

H. M. GASSTROM

STUCCO APPLYING DEVICE

Filed March 18, 1922 3 Sheets-Sheet 1

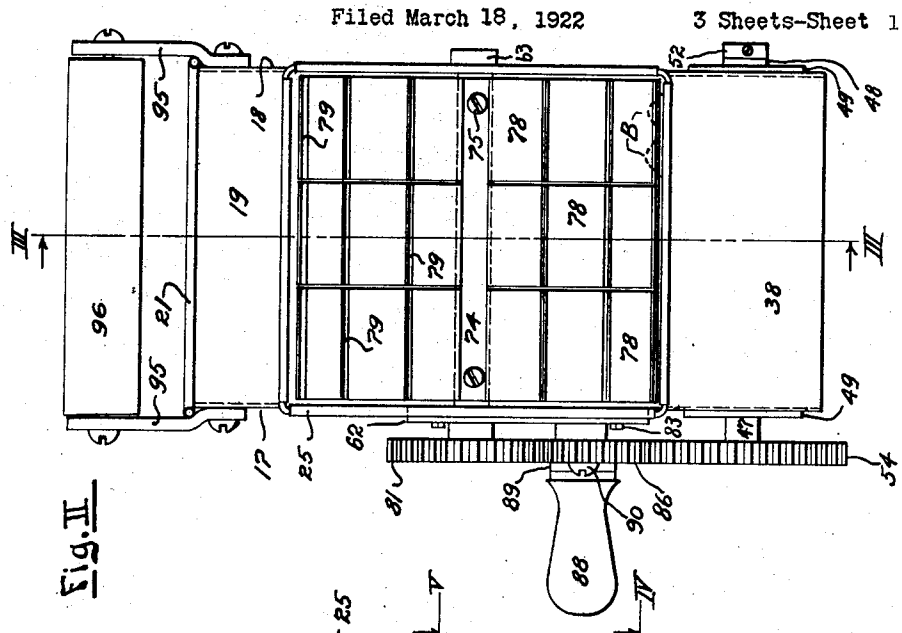


Fig. II

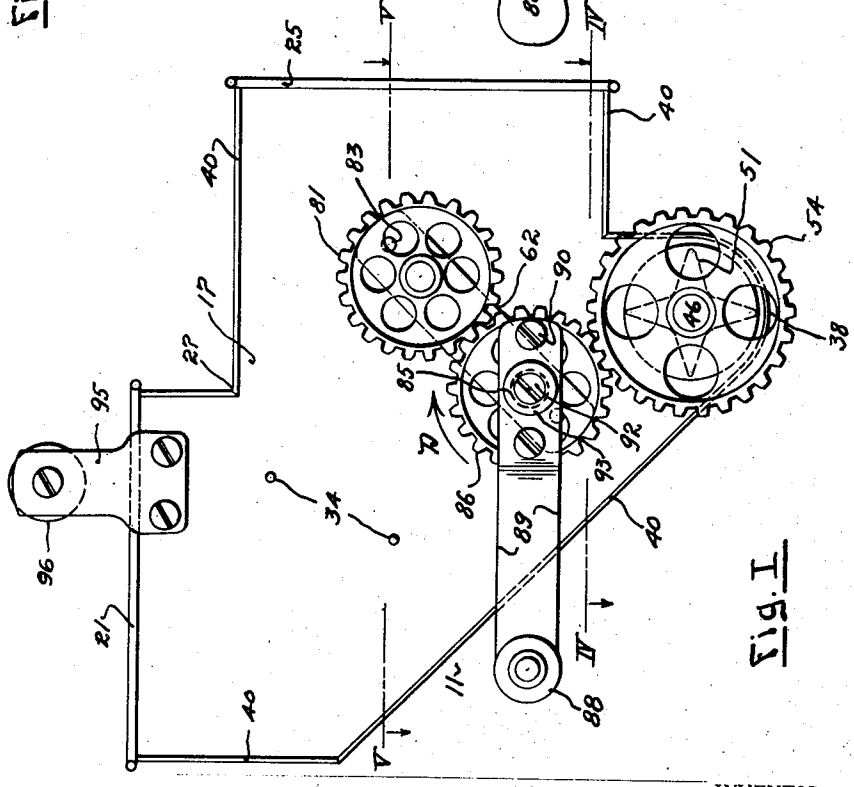


Fig. I

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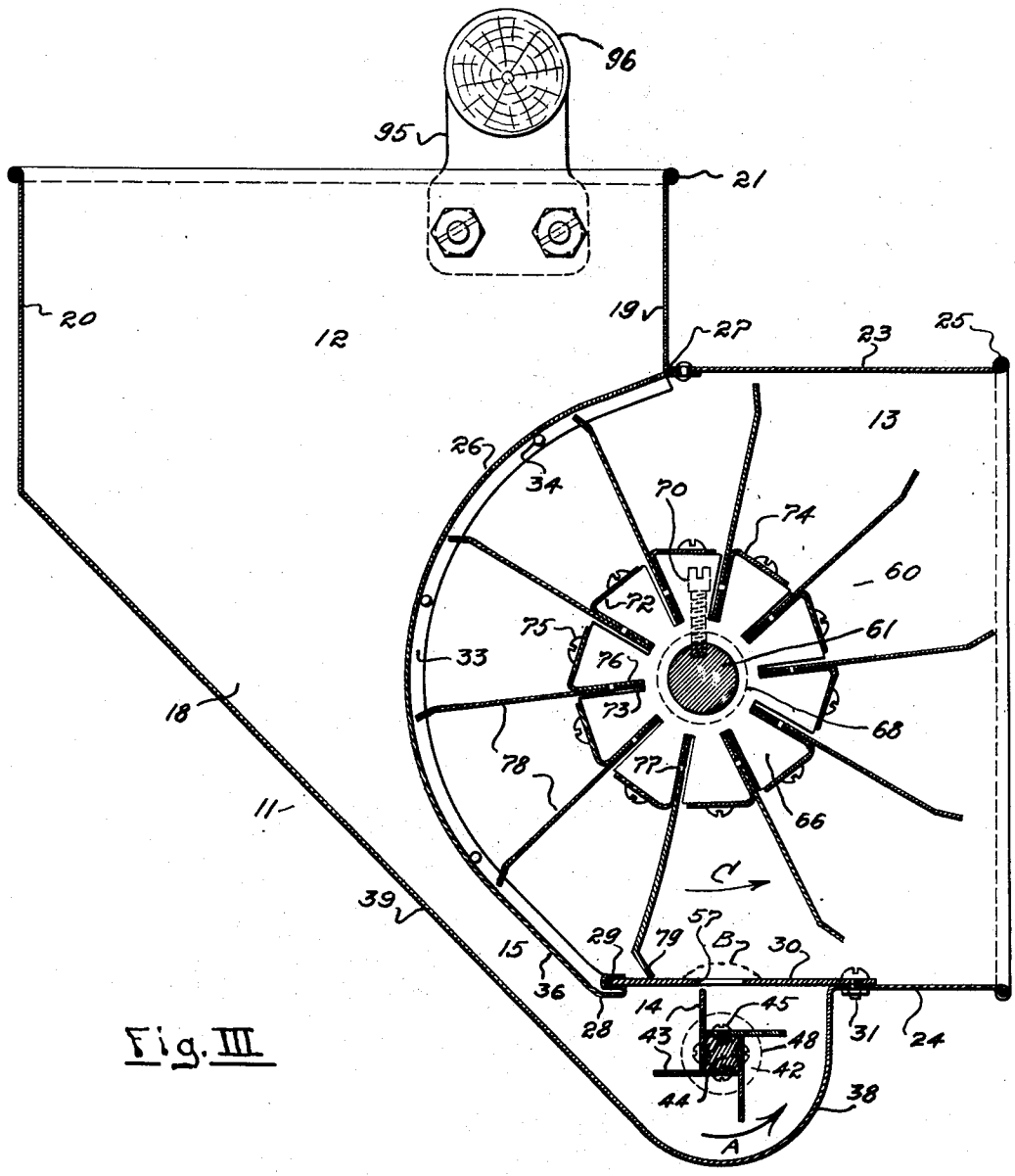


Fig. III

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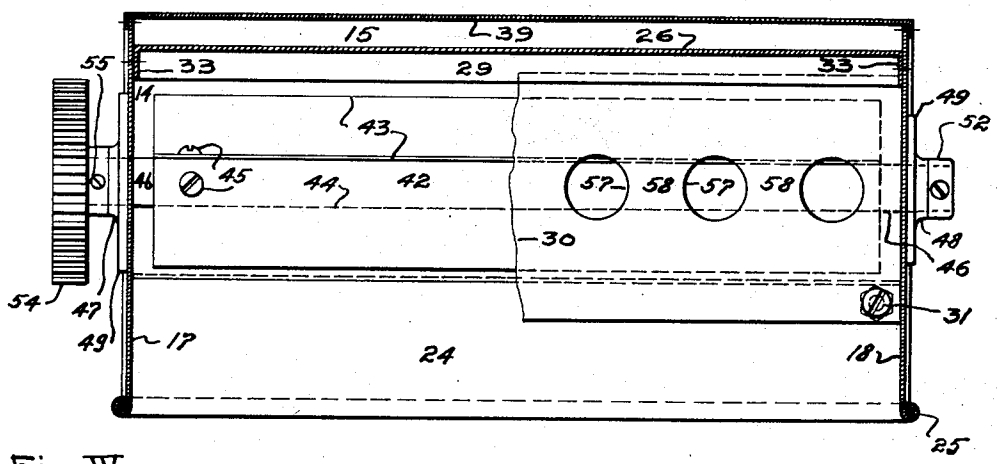


Fig. IV

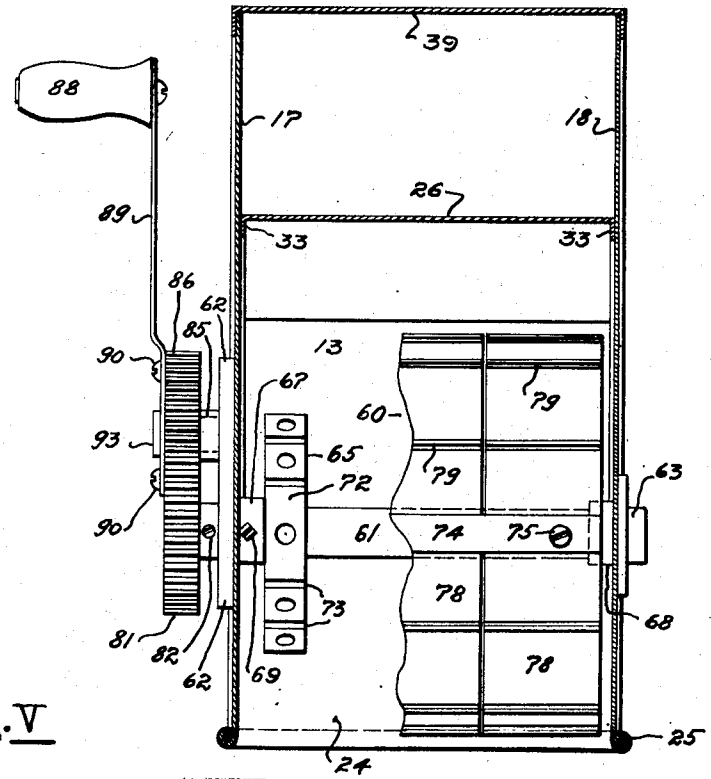


Fig. V

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Patented July 28, 1925. 1,547,802

UNITED STATES PATENT OFFICE.

HERMAN M. GASSTROM, OF MOUNT VERNON, NEW YORK, ASSIGNOR TO MASTER RULE MFG. CO. INC., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

STUCCO-APPLYING DEVICE.

Application filed March 18, 1922. Serial No. 544,833.

To all whom it may concern:

Be it known that I, HERMAN M. GASSTROM, a citizen of the United States, and a resident of the city of Mount Vernon, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Stucco-Applying Devices, of which the following is a specification.

This invention relates to a device for applying plastic materials such as mortar to walls or like surfaces, and it more particularly appertains to a machine for throwing the finish coats upon stucco work.

The primary object of the invention is to provide an improved device of the character described for spattering a cement wash on to stucco walls, in a manner superior to manually applied dash-coatings both with regard to rapidity and appearance of the finish as well as economy of materials used.

Another object is to produce a device of the nature set forth wherein the material to be thrown is fed onto a fixed element acted upon by resilient individual members having each a scraping contact with this element whereby they become flexed, successive liberations of the tensioned members occurring suddenly and causing them to swiftly project outwardly the material propelled by the same, with the least loss of imparted momentum.

A further object is the production of a device of the type specified including a feeder arranged to exert a preliminary drawing as well as agitating effect on the material handled, prior to placing it on the before named fixed element in position to be acted upon by the throwing members previously referred to.

Still another object is the provision in a device of the class mentioned of means subdividing the same into a plurality of compartments so correlated that the material in transit always passes thru their lower portions from one to the other.

A still further object is to furnish a device of the kind referred to, the operating elements whereof can be quickly removed for cleaning, inspection and repairs, or renewal of worn out parts.

An additional object is to supply a practical device of the genus alluded to, composed of few and simple elements, of light but strong and durable construction, readily assembled or taken apart, conveniently operated as well as easily maintained in working order, besides amenable to low cost of manufacture.

Other objects and advantages of the invention will become apparent as the specification proceeds.

With the aforesaid objects in view, the invention consists of the novel combinations and arrangements of parts hereinafter described in their preferred embodiments, pointed out in the subjoined claims, and illustrated on the annexed drawings, wherein like parts are designated by the same reference characters throughout the several views.

Generally described, the invention under consideration includes in its organization a portable casing partitioned at one side to provide an open compartment adapted to contain a revolvable mortar throwing member. The latter is composed of subdivided resilient, radially disposed blades having during part of their travel a chordal scraping contact with an apertured plate, that constitutes the bottom of the compartment and thru which is fed the plastic material to be spattered on the surface under treatment. The resilient blades, as they pass over the feed plate, first become tensioned and then are suddenly released, which causes the material dragged forwardly thereby to be swiftly projected out of the before mentioned open compartment, in front of the casing. Below the above named bottom plate is a chamber, housing a rotatable feeder that not only delivers a predetermined quantity of material but serves also to keep it stirred up and exerts a drawing action upon the material moving thru a contracted controlling passage intervening between the chamber last referred to and a hopper in which the plastic material is deposited. Means are further provided for actuating the throwing member and the feeder at selected ratios of speed.

The advantages of the invention as here outlined are best realized when all of its features and instrumentalities are combined in the one and same structure, but, useful devices may be produced embodying less than the whole.

It will be obvious to those skilled in the art to which the invention appertains, upon

becoming conversant with the details thereof, that the same may be incorporated in several different constructions. The accompanying drawings, therefore, are submitted merely as showing the preferred exemplification of the invention.

In the said drawings:—

Figure I is a view of the device looking from the near or right-hand side thereof;

Fig. II is a view of the front ends of the same, looking towards the right of the preceeding figure;

Fig. III is an enlarged longitudinal section taken on the line III—III of Fig. II looking in the direction pointed out by the arrows;

Fig. IV is a horizontal section taken on the line IV—IV of Fig. I, looking downwards; and

Fig. V is a similar section taken on the line V—V of the last named figure, viewed in the direction of the arrows thereto appertaining.

Referring now to these views for a detailed description of the invention, the reference numeral "11" denotes a casing presenting a substantially L-shaped or angular outline when viewed from the side thereof according to Fig. I. The interior of this casing is partitioned off to provide a mortar receiving hopper 12, a compartment 13 housing a mortar throwing member, a feeder containing chamber 14, and a flow reducing passage 15, intermediate the latter and the hopper. Of these different divisions, the said hopper 12 is bounded by right and left side walls 17, 18 and by approximately vertical front and rear walls 19, 20 respectively. The side walls 17, 18 which are common to the various compartments and chambers, terminate together with the front and rear walls 19, 20 of the hopper at the upper end thereof, the latter being open and provided with a beading 21 around the same.

The compartment 13 located in front of and below the hopper 12, is also inclosed by the said walls 17, 18 on its sides, being defined above and below by horizontally extending top and bottom walls 23, 24, which together with the side walls end at a vertical line, thereby affording a similarly disposed opening that may be reinforced by a beading 25 therearound. A semi-circularly formed partition 26 running from a corner 27 where the exterior walls 19 and 23 meet to a point 28 located about on level with the bottom wall 24. At this place the said partition is provided with a keeper 29 adapted to receive one edge of a detachable foot plate 30, which will be more fully hereinafter referred to. The other or front end of this plate overlies and is secured to the said bottom wall 24 as by means of a screw bolt 31.

It will be perceived upon inspection of Fig. III, that the said keeper 29 consists of an integral part of the lower portion of the partition 26, which is folded upon itself in S-formation to constitute a continuous retainer between the upper and intermediate transverse stretches thereof. These folds impart a considerable rigidity to the said partition's lower portion, which materially assists in carrying the said plate 30 as well as resisting strains incidentally imposed thereon.

In order to securely tie together the partition 26 and the side walls 17, 18, the opposed edges of the former are provided with flanges as indicated at 33, thru which and the casing walls are passed rivets 34. It will be noted with particular reference to Fig. III, that the intervening part of the said lower portion which is tangent to the partition's curvature and the keeper 29 runs substantially straight as represented at 36, for a purpose that will be later pointed out.

The walls that compose the chamber 14 disposed underneath the compartment 13 are the lowermost portions of the side walls 17, 18, which form the ends thereof, while a scoop or lobe-shaped wall 38 constitutes the front and bottom of the said chamber. Reaching from the bottom corner of the rear wall 20, in a direction tangential to the curved under-surface of the said wall 38, is a downwardly slanting wall 39. The latter is spaced a certain distance from and in parallelism with the above mentioned wall 36, so that the constricted passage 15 before referred to is formed intermediate of the bottom of the hopper 12 and the side of the chamber 14, in rear of the compartment 13. The entire force of the flow due to the weight of the mortar or plaster contained in the hopper is thereby prevented from crowding into the said chamber any faster than it is expelled therefrom. The partition, the plate and the various walls of the casing are preferably made of galvanized sheet iron, and the outer or abutting edges thereof may be joined by exteriorly disposed seams 40, (see Fig. I).

Within the chamber 14 is operatively maintained a feeder 42 which may be constructed with a plurality of rigid wings 43, four of which have been represented in the present embodiment of the invention. These wings as shown, form between them substantially right angular pockets, and are fastened to the sides of the spindle 44 as by screws 45. The former may be of square cross-section so as to afford an adequate bearing surface for the wings, which incidentally are made to abut one against another to increase their interrelative stiffness.

The extremities of the said spindle 44 are of round or cylindrical formation as indicated at 46, being rotatably carried in hubs 47, 48 of bearings which are secured by their flanged portions 49 to the opposite

ends of the chamber 14. Of these bearings, the one which is located on the near side of the casing may be detachable. The adjoining end of the chamber has preferably provided therein a star-shaped opening 51 (Fig. I) of a size to permit the wings of the feeder to be passed therethru after a collar 52 set-screwed to the other extremity of the spindle 44 has been removed to allow the feeder in its entirety to be withdrawn from the chamber for purposes of inspection, cleaning or repairs. On the opposite or proximate extremity 46 of the said spindle is held a gear 54 as by means of a set-screw 55 threaded thru the hub portion thereof. This gear and the said collar 52 keep the feeder 42 in axial alignment with respect to the bearings 47, 48. The means for setting the said gear 54 and the therewith connected elements in motion will be referred to farther on.

In the before described plate 30 is provided a plurality of spaced apertures 57 located directly over the longitudinal centre of the feeder 42 (Figs. III and IV) and disposed in a row with stretches or bridges 58 of the metal from which the plate is made intervening between the several apertures. The function of the feeder is not only to force the mortar or other mixture in predetermined quantities upwardly thru the said apertures 57, but during its revolutions it serves also as an agitator, by keeping the mass in the chamber 14 properly stirred up. By the simple expedient of providing plates having different sizes of perforations, for interposition over the said feeder, the amount of mixture elevated thru the said apertures can be changed to suit various working conditions. The mortar as it is raised up, welters over the edges of the apertures, forming small mounds B which are separate one from the other due to the distances between the said apertures. During the revolving motion of the feeder 42, the same not only acts to draw positively thru the contacted passage 15, part of the material flowing or sliding thereinto from the hopper 12, but its wings further serve to retard this material and prevent the same from seeking its way directly out through the apertures 57. The consistency of the matter supplied to the chamber and thence carried up thru the feed plate 30, is therefore maintained uniform at all times.

Concentric with respect to the partition 27 as well as central relatively to the top and bottom walls 23, 24, respectively, is arranged within the compartment 13, a mortar throwing member 60. In the present exemplification of the invention, this member comprises a shaft 61 journalled in bearings 62, 63, which are attached to the sides 17, 18, respectively, of the casing. Upon the said shaft 61 are mounted spiders 65, 66 having hub portions 67, 68, holding them in spaced relation to the interior faces of the said sides 17, 18. Set screws 69, 70, threaded each thru said hubs 67, 68, disconnectably secure the spiders in their assigned position upon the shaft 61. The said spiders have been given the contours of irregular decagons, that is, the sides 72 thereof, instead of being as usual, for regular ten-sided polygons, 72° to lines radial to their corners, are 90° on one and 54° at the other corner, while the center angles remain as ordinarily is the case, 36°. These figures are only approximate and may be varied to suit.

Incisions or slots 73 are made to extend inwardly of the spiders to a certain depth along their said radial corner lines. Acutely angular pieces 74 having one of their legs (74) designed to overlie the sides 72 of the spiders are fastened thereto as by screws 75, for easy removal or replacement. The other leg 76 of the angle piece is arranged to snugly hug the adjacent side of the slot 73. To this latter leg is secured as by rivets 77, resilient blades 78, in about three subdivided sections, contiguous one to another to each of the said angles 74. The distance from the center of the member 60 to the outer ends of the blades 78 is greater than the central height of the former above the plate 30. As will be seen with particular reference to Fig. III, these blades have their outer ends offset or bent forwardly to a slight extent as at 79, and are spaced so as to clear the top wall 23 and partition 27 of the casing, while having a scraping contact with the bottom or feed plate 30.

When the throwing member 60 is rotated in the direction of arrow C, each blade as its point or forward edge touches the apertured plate 30 thereunder, is retarded for an instant, and has imparted to it a flexure by direct contact with the plate, which flexure increases up to a certain degree as the scraping or contact motion progresses. Energy is thereby stored up in the individual blade sections during their tensioned or chordal travel, which may also be termed surface movement since these blades sweep clean a certain area in front of them, until the angle of inclination of the blades with the plate on the forward side of a line passing thru the centers of the spindle 44 and shaft 61, becomes such that the said blades are enabled to liberate themselves Then their free ends snap or fly out swiftly after the manner of a freed leaf spring.

Concurrently with the movement of the blades, the mortar or plaster which has been fed into the compartment 13, up thru the apertures 57 in the said plate 30, is dragged outwardly by the moving blades 78, until the latter as before stated are suddenly released but the releasing moment occurs prior

to the material being picked up by the said blades. At such times as this liberation occurs for each successive blade, the mortar is catapulted forwardly out of the vertically facing opening of the said compartment upon the wall or other surface that is being treated or dressed. By virtue of the offsets 79, the material thrown forwardly outward is raised sufficiently high to clear the lower outer corner of the said opening. One set of the blades 78 is brought in contact with the bottom plate 30, before the set in advance thereof has become released. The arrangement of the said blades is preferably such, that during the flexure thereof, the free, offset extremities of the same are situated approximately on lines extending normally radial to their relatively fixed points of anchorage.

Due to the fact that the resilient blades 78 are subdivided while yet arranged in a straight row formation transversely across the face of the apertured feed plate 30, these blade sections are enabled to yield independently of each other, in the event an obstruction, like a pebble or coarse grains of sand should happen to become jammed in between any one of them and the said plate. Under normal or average working conditions, the blades of the throwing member 60, as they sweep forwardly over the feed plate, act to scrape off all of the mortar that has come up thru the apertures 57, which latter are disposed in pairs opposite each section of the said blades. In case of excessive wear on the free terminals of the blades 78, the angular anchorage pieces 74, can be set out by interposing shims between their undersides and the outer faces of the sides 72 of the spiders 66, the screws 75 being capable of holding the shims as well as the said angular pieces firmly in position.

At the near end of the shaft 61 for the throwing member, is affixed beyond the bearing 62 thereof, a gear 81, as by a set-screw 82 or the like. The said bearing 62 which preferably consists of a comparatively heavy strap is held to the outer face of the side wall 17, by rivets 83 or other suitable means. From this strap bearing projects out a stud 85 upon which is revolubly carried the hub of a gear 86 having its teeth in meshing engagement with those of the before mentioned gears 54 and 81. Motion may be imparted to the driving gear 86, by means of a handle 88 fixed to the free extremity of a crank arm 89, the other end whereof is secured as for instance by screws 90 to the outer or near side of the said gear. Altho the working parts of the device have been represented as manually impelled, obviously any other mode of driving the same can be substituted therefor. In order to maintain the gear 86 endwise upon the stud 85, the latter is tapped axially for a screw 92 arranged to hold an underlying washer 93 up against the arm 89, while still permitting turning thereof.

The crank arm 89 is rotated by its handle grip 88 in a clockwise direction, while the gears 54 and 81 driving the mortar throwing member and the feeder run oppositely thereto. Similarly, the adjacent portions of the blades of the member 60 and the wings of the feeder 42 turn in opposite directions above and below the apertured plate 30. The proportions of the gears 54 and 81 are such that in spite of the feeder having four wings 43 and the mortar throwing member, ten blades 78, the interrelative movement between the said blades and wings is unitary, or in other words, they travel in unison, one feeds while the other is removing the material handled.

At 95 are shown ears attached to the longitudinal sides 17, 18, adjacent to the edge of the top or filling opening of the hopper 12. A bar 96 of wood or other appropriate material is made to reach between these ears so as to constitute a carrying handle for the device in its entirety. Notwithstanding that this handle has been represented in a particular position relative to the hopper it will be understood that the former may be located at any suitable place for the operator's convenience.

In describing the use of the device, it is sufficient to point out in conjunction with the foregoing, that the hopper 12 is charged with a certain quantity of the plasterous compound of gruel-like consistency which is to be applied as a finish coating to an already existing stuccoed or mortar covered wall. The stucco wash flows down into the chamber 14 thru the contracted throat 15 which prevents an undue overcrowding or choking effect in the chamber. The operator in working this mortar throwing or spraying device, as it may also be termed, holds it with one hand against his body by the bar 96, so as to afford it additional support, while standing on the ground or mounted on a ladder, scaffold and the like, maintaining the vertical discharge opening from the compartment 13, a few feet away from the surface under treatment. Then by turning the crank-arm 89 in the direction of the arrow D, the person manipulating the device imparts motion to the feeder 42 which brings the mixture up thru the feed controlling apertures 57, as well as to the throwing or mortar spattering member 60, the blades 78 whereof act in rotation upon the mortar mass as it welts or heaves over the edges of the said apertures. These blades after they have become tensioned by contact with the apertured plate 30, push the stucco-finish before them until the moment of liberation occurs when they fling forwardly outward the material wherewith the wall or

other surface is to be dressed. When the device is to be cleaned or inspected, it is an easy matter to loosen the screws 69, 70, which enables the shaft 61 with the gear 81 at its extremity to be withdrawn. In a like manner by simply removing the collar 52, the feeder 42 may be retracted from its chamber thru the opening 51, thereby enabling both of these elements as well as the interior of the casing's various divisions to be rinsed free from particles of mortar or plaster mixtures.

While a certain preferred embodiment of this device has been shown and described, it will be understood that changes in the form, arrangements, proportions, sizes and details thereof may be made, without departing from the scope of the invention as defined by the appended claims.

Having described my invention what I desire to secure by Letters Patent and claim, is:—

1. A device of the character described including a relatively stationary plate into which the material is fed upwardly, a superposed throwing member having blades exceeding in length the distance thereof at the center from said plate, and means for actuating said member.

2. A device of the character described including a feed plate upon which the material is delivered from below, and a throwing member arranged substantially centrally over the place whereon the material is delivered to said plate, said member having blades the free ends whereof scrape on the plate according to the path of a chord when passing thereover.

3. A device of the character described including a feed plate, a rotary throwing member provided with blades arranged to travel in a path intersecting said plate so as to have a chordal contact therewith, the free ends of said blades being bent in the direction of their movement.

4. A device of the character described including a plate into which material is fed upwardly, and a throwing member revolvable over the same, said member having resilient blades positioned to be flexed by contact with said plate and then suddenly liberated prior to lifting the material off the latter.

5. A device of the character described including a plate upon which matter to be spattered is fed from below, and a throwing member in a real scraping contact therewith for part of its travel, said member having a resilient blade adapted to store up energy through flexion directly with said plate while pushing the matter in front thereof and subsequently to spatter the latter when released so as to utilize the stored-up energy.

6. A device of the character described including a casing provided with an outlet opening, means for feeding the matter upwardly onto the bottom of the latter, and a throwing member in said casing designed to act upon the matter so that it will be spattered through said outlet, said member having subdivided blades arranged contiguously in a row facing the opening transversely thereof, and the subdivisions of said blades being yieldable independently of one another.

7. A device of the character described including a casing provided with a delivery opening for material to be catapulted therethrough, and a throwing member in said casing having blades with offset ends directed upwardly opposite said opening, the said ends acting to give an elevated trajectory of the catapulted material.

8. A device of the character described including a casing formed with an outlet for matter deposited therein, a member having blades the lower ends whereof are designed to throw the matter through said outlet, and a plate provided with an aperture serving to deliver the matter in comminuted form upwardly against said blades.

9. A device of the character described including a container for material to be spattered, a throwing member having sectional blades designed to act upon the material, and a plate interposed between said container and the underside of said member provided with openings and intervening bridges arranged in spaced relation opposite the blade sections, the lower ends of the latter acting upon the material rising through said openings.

10. A device of the character described including a container for material to be spattered, a throwing member arranged to receive the material therefrom, an apertured plate intermediate the latter and said container, and means for detachably securing said plate in position, the same permitting substitution of plates with openings of different sizes whereby the quantities of material supplied therethrough to the throwing member can be varied.

11. A device of the character described including an apertured plate through which the material to be spattered is fed upwardly, a rotatable member above the same, a carrier on said member, and a plurality of divided blades secured to said carrier in contiguous alignment thereon, said divided blades being capable of yielding independently of one another upon encountering obstructions in the material.

12. A device of the character described including a chamber containing material to be spattered, a compartment above the same, an apertured plate separating said chamber from said compartment, a revolving feeder operating to lift part of the material up through the apertures in said plate while re-

tarding a portion thereof, and a member having blades adapted to throw beyond the compartment the material heaving out of said apertures.

13. A device of the character described including a chamber containing material to be spattered, a compartment overlying the same, an apertured plate interposed between said compartment and said chamber, a revolving feeder in the latter functioned to pass up the material through the apertures in said plate, and a bladed member arranged to throw beyond the compartment the material coming out of said apertures, said feeder having wings forming right-angular pockets disposed beneath the plate and cooperating with the said member thereabove by presenting to its blades a predetermined quantity of the material to be thrown out.

14. A device of the character described including a casing adapted to receive material to be spattered, a rotary member having a shaft supported from side walls of said casing, multisided spacing elements secured to said shaft inside said walls, carriers extending between said elements clamped thereto, blades affixed to said carriers reaching towards the bottom part of the casing, and means for imparting rotation to said member to cause said blades to throw the material off said bottom part.

15. A device of the character described including a chamber containing material to be spattered, and a feeder therein comprising a spindle, wings on said spindle arranged tangentially thereto and in right angular relation to each other, and spindle rotating means, combined with a throwing member above said feeder adapted to receive the material delivered upwardly therefrom for the spattering operation.

16. A device of the character described including a compartment with an outlet opening in the front thereof, a bladed throwing member mounted for rotation in said compartment so that its lower portion will revolve in an outward direction relatively to said opening, a winged feeder revolvable with its proximate part oppositely to said lower portion of the throwing member, and an apertured plate intervening between the latter and said feeder, the apertures in said plate directing the material set in motion by the feeder upwardly intermediate of the blades of said member.

17. A device of the character described including a chamber and a compartment having intercommunication through an apertured plate separating the bottom of the latter from the top of the former combined with an agitator in said chamber arranged to exert a drawing and lifting action therein upon material to be spattered and to feed the same up through the apertures in said plate, and a member mounted in said compartment in position to throw the material fed thereinto out of the same.

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