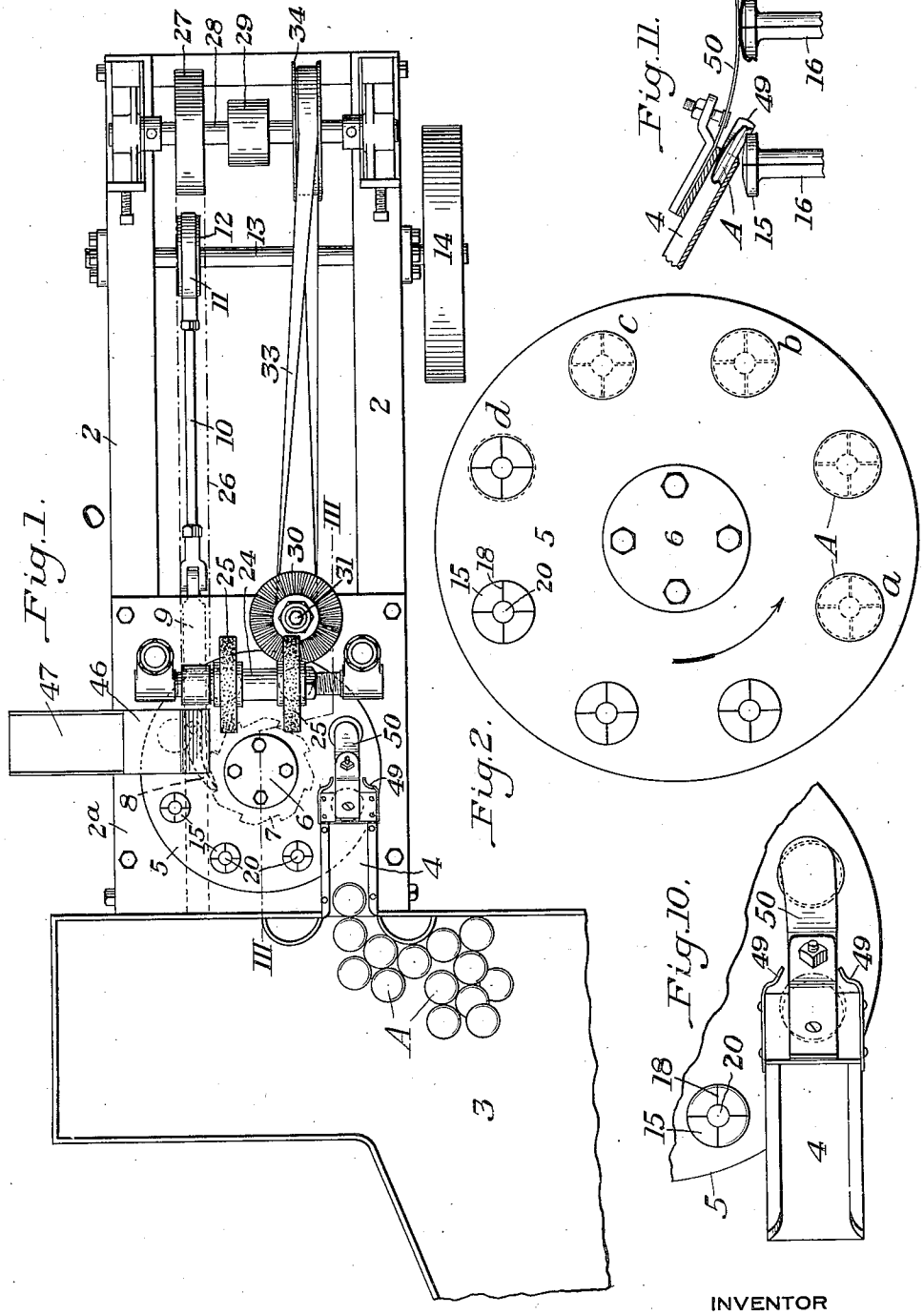
Dec. 9, 1924. 1,518,971

A. L. EDWARDS

SCRATCHING MACHINE

Filed July 12, 1921 3 Sheets-Sheet 1



INVENTOR

Alonzo L. Edwards

by his attorneys

Byrnes Stubbins, Burgess & Kimmel

Dec. 9, 1924. 1,518,971

A. L. EDWARDS

SCRATCHING MACHINE

Filed July 12, 1921 3 Sheets-Sheet 2

Fig. 3.

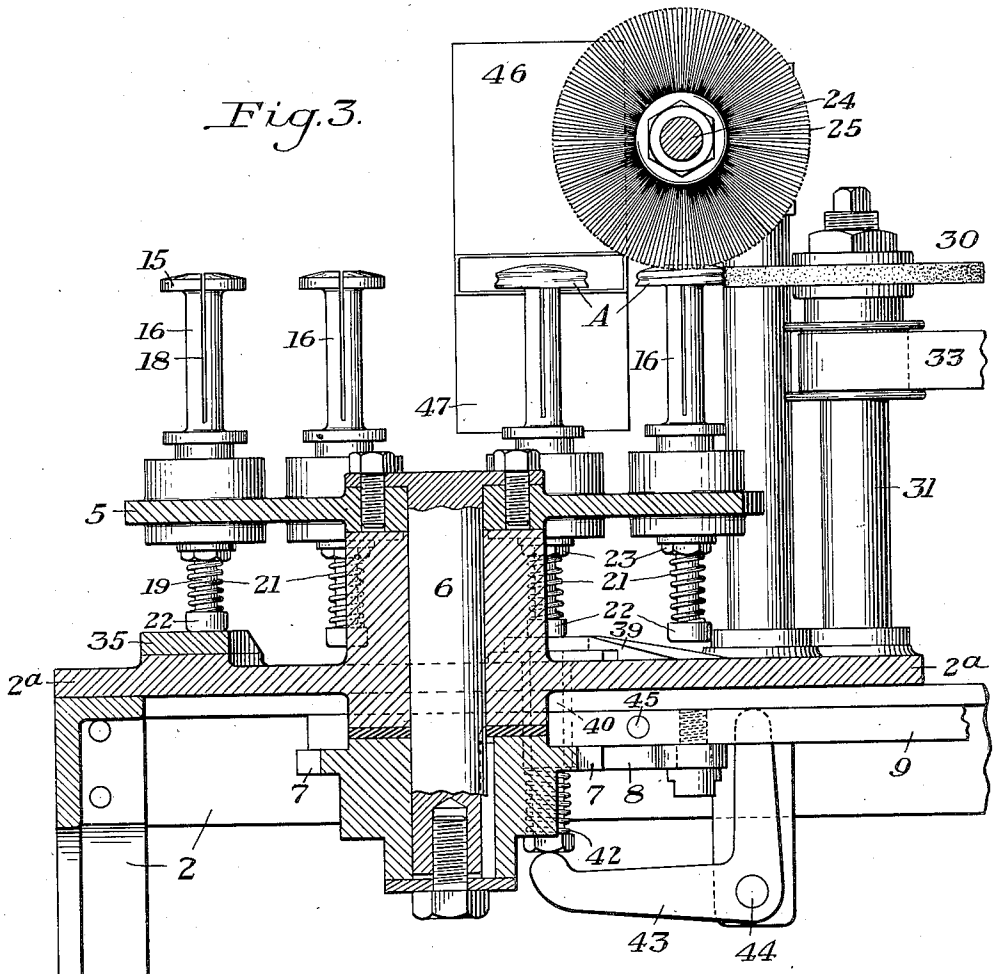


Fig. 4.

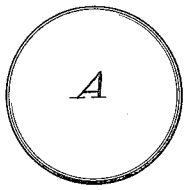


Fig. 5.



INVENTOR

Alonzo L. Edwards

by his attorneys

Byrnes, Stebbins, Burgess & Pannell

Dec. 9, 1924. 1,518,971

A. L. EDWARDS

SCRATCHING MACHINE

Filed July 12, 1921 3 Sheets-Sheet 3

Fig. 6.

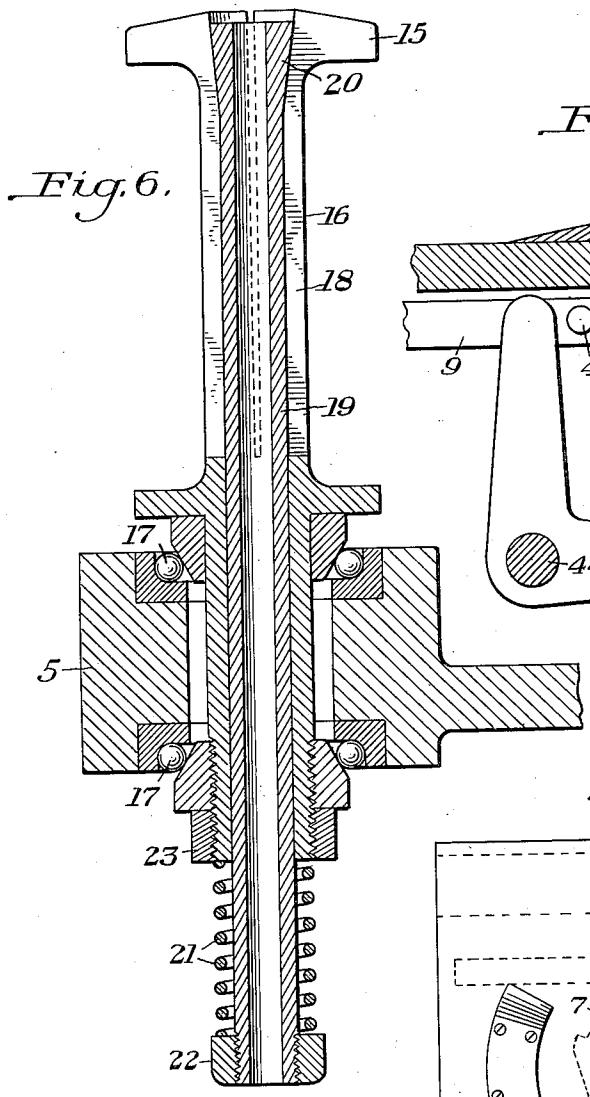


Fig. 7.

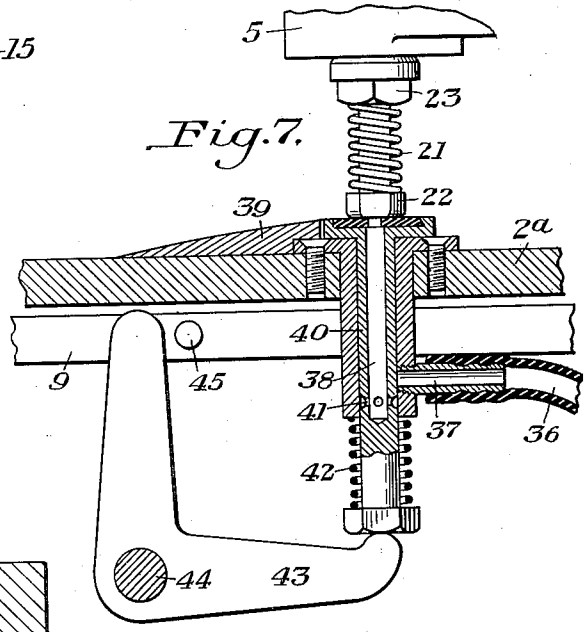


Fig. 8.

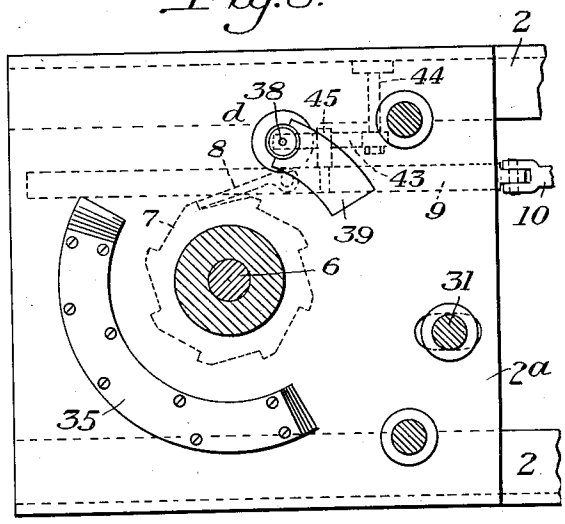
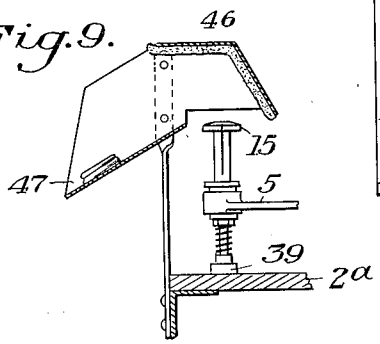


Fig. 9.



INVENTOR

Alonzo L. Edwards

by his attorneys

Byron, Stubbins, Burgess & Pamelee

Patented Dec. 9, 1924. 1,518,971

UNITED STATES PATENT OFFICE.

ALONZO L. EDWARDS, OF WHEELING, WEST VIRGINIA, ASSIGNOR TO WHEELING STAMPING COMPANY, OF WHEELING, WEST VIRGINIA, A CORPORATION OF WEST VIRGINIA.

SCRATCHING MACHINE.

Application filed July 12, 1921. Serial No. 484,073.

To all whom it may concern:

Be it known that I, ALONZO L. EDWARDS, a citizen of the United States, residing at Wheeling, in the county of Ohio and State of West Virginia, have invented a new and useful Improvement in Scratching Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof and in which:—

Figure 1 is a plan view of a machine embodying my invention, with a portion of the feed or supply table broken away;

Figure 2 is a diagrammatic plan view of the rotary table and its chucks;

Figure 3 is a section taken on the irregular line III—III of Figure 1;

Figure 4 is a plan view, and Figure 5 a vertical section, of one form of cap or closure upon which the machine is designed to operate;

Figure 6 is a vertical section through one of the chucks and its associated parts;

Figure 7 is a detail sectional view illustrating the blow-off for removing the finished articles;

Figure 8 is a sectional plan view illustrating certain parts of the machine;

Figure 9 is a detail sectional view showing the discharge chute at the blow-off station; and

Figure 10 is a detail plan view, and Figure 11 a detail vertical section, illustrating the article feeding devices.

My invention has relation to scratching machines for imparting a dull finish to metallic articles, such, for instance, as the aluminum caps or covers used on jars or similar receptacles for toilet creams and other preparations, although the machine may be readily adapted for use for a variety of different articles.

Heretofore, in so far as I am aware, it has been necessary for an attendant to hold the articles to be finished to the action of the scratch brush and to manipulate the same so as to scratch all portions of the surface to be finished. This operation requires considerable skill on the part of the attendant in order to obtain a uniform finish free from high lights etc. My invention is designed to provide a machine in which the articles are mechanically brought to the action of the scratch brushes and are caused to be operated upon by the brushes in such a manner as to insure a uniform and desirable finish.

The nature of my invention will be best understood by reference to the accompanying drawings, in which I have shown a preferred embodiment of my invention, and which will now be described, it being premised, however, that various changes may be made in the details of construction, arrangement, and combination of the several parts without departing from the spirit and scope of my invention as defined in the appended claims.

In these drawings, the numeral 2 designates the frame of the machine, and 3 a feed or supply table upon which the flanged caps A to be finished are placed in quantities. This table may be provided with a forwardly extending, narrow throat portion 4 into which the caps may be moved separately by an attendant and fed to the chucks.

5 designates a horizontal table which is mounted to rotate about the axis of the vertical shaft 6, which is suitably mounted in the frame 2, as best shown in Figure 3. The table is arranged to have a step-by-step rotary movement, which may be effected in any suitable manner. For this purpose, I have shown the lower end portion of the shaft 6 as having keyed thereto a ratchet wheel 7 which is engaged by a pawl 8 mounted on a reciprocating carrier 9 and actuated by a connection 10 with the strap 11 of an eccentric 12 secured to a transverse shaft 13. The shaft 13 may be rotated in any suitable manner, as by a belt pulley 14.

The rotary table 5 is provided with any desired number of cap holding chucks which are preferably equally spaced thereon. Each of these chucks comprises a head portion 15 which is of the proper diameter to receive one of the caps or closures A thereon, the depending flange of the closure seating over the peripheral edge of the head. This head is carried by a hollow spindle 16, which is rotatably mounted to turn about a vertical axis on the table 5, suitable bearings being provided, such as the upper and lower ball bearings 17, as best shown in Figure 6. The upper portion of the chuck spindle, and also the head 15, are split vertically, as indi-

cated at 18, the metal of the spindle having sufficient inherent spring character to permit the two parts of the split portion of the spindle and head to be slightly compressed and expanded relatively to each other. In order to effect the expansion of these parts, there is placed within each spindle a hollow expander 19, which extends vertically through the spindle and for some distance below the lower surface of the table 5. The upper end portion of each expander is provided with a tapered head 20 which is adapted to seat within a correspondingly tapered portion of the opening within the head at the upper portion of the spindle. The expanders are normally held in expanding position by means of springs 21, one of these springs being seated between a nut 22 on the lower end of each expander and another nut 23 on the lower end of the spindle. The springs 21 are compression springs and act to normally draw the expanders downwardly within the spindles.

24 is a transverse shaft upon which are mounted the two wire scratch brushes 25, the shaft being so arranged relatively to the table 5 that as said table is rotated the articles on the chucks will be brought underneath and subjected to the successive action of these two brushes. The shaft 24 may be driven in any suitable manner, as by the belt 26 (shown in dotted lines in Figure 1), which is, in turn, driven by a pulley 27 on a transverse shaft 28 having a driving pulley 29. 30 indicates a third scratch brush which is secured to a vertical shaft or spindle 31 in position to act upon the depending flanges of the metal caps on the chucks. The shaft 30 is shown as driven by a belt 33 from a pulley 34 on the shaft 28 before referred to.

The table portion 2^a of the frame 2 below the table 5, has on its upper surface a segmental cam 35, best shown in Figures 3 and 8, which is in a position to be engaged by the nuts 22 on the lower ends of the expanders 19, as the table is rotated, this cam acting to successively raise the expanders and thereby permit the split chuck heads to contract by their inherent elasticity. This is for the purpose of enabling the caps or closures A to be readily placed upon and removed from the chucks.

I preferably provide means for automatically removing the caps or closures after they have been subjected to the action of the scratch brushes. The means preferably employed for this purpose are best shown in Figures 7 and 9. 36 designates an air supply pipe which communicates with any source of air under pressure and which has a discharge connection at 37 with a passage 38 which extends upwardly through the table portion 2^a. The upper end of the passage 38 extends and discharges through the high portion of a cam member 39 secured to said table portion 2^a, and which is designed to be engaged by the heads 22 on the expanders as the chuck is successively brought around to the discharge position. The passage 38 is formed in a vertically movable sleeve member 40 having ports 41 therethrough, which, when the sleeve member is in elevated position, are arranged to register with the discharge connection 37 of the air supply pipe 36. The sleeve member 40 is normally held in its lowered inoperative position, shown in Figure 7, by the action of a spring 42. 43 designates a bell crank lever pivoted at 44, one arm of this bell crank lever engaging the head of the sleeve member 40 and its other arm extending upwardly in position to be periodically engaged by a pin or stud 45 on the reciprocating pawl carrier 9 before referred to. The arrangement is such that as each chuck is brought to the position shown in Figure 7, with the lower end of its hollow expander 19 directly over the discharge opening of the passage 38 (the expanders having been raised by the action of the cam 39), the stud 45 will actuate the bell crank lever 43 to raise the sleeve member 40 and thus admit a puff of air from the supply pipe 36 into said passage 38. This air is discharged upwardly at the upper end of the hollow expander, and serves to blow the cap or closure therefrom, the split chuck heads being at this time in contracted condition. A felt-lined hood 46 is preferably placed over the discharge or blow-off station, so as to direct the caps or closures as they are blown off in the manner just described, into a downwardly inclined discharge chute 47.

While the articles to be scratch-finished may be placed upon the chucks by hand, I have provided a mechanical feed for this purpose. The devices for this purpose are shown in detail in Figures 10 and 11. The feed chute 4 into which the articles are pushed one by one by an attendant, has at its lower portion the lateral spring friction members 49 which temporarily hold the articles in position in the path of movement of the chucks. A spring member 50 forms the top of the lower portion of the chute, and which is extended over the next point of rest for the chuck. As the chucks come around to their receiving positions, they engage the articles, and upon the next movement pull the articles out of the friction springs 49. The articles are then properly seated and held on the chuck by the action of the spring 50 until the chuck is expanded.

The operation will be readily understood from the foregoing description. The attendant places one of the closures A upon each chuck as these chucks are brought by the step-by-step rotation of the table 5 to

the position *a* in Figure 2. The rotation of the table brings the articles successively to the stations *b* and *c* (Figure 2), where they are subjected to the action of the scratch brushes 25 and 30. The blow-off or discharge station is located as indicated at *d* in Figure 2.

As before stated, at the time the closures are placed upon the chucks at position *a* of Figure 2, the cam 35 is acting to hold the expander 19 of that particular chuck in its raised inoperative position, permitting the split head 15 of the chuck to contract so that its outer diameter is materially smaller than the internal diameter of the closure. The closure can therefore be readily placed upon the chuck. The continued rotation of the table 5 carries the expander off from the end of the cam 35, and the spring 21 immediately forces the expander downwardly into operative position. This expands the split chuck heads sufficiently to cause them to frictionally engage the closures sufficiently to hold the closures against rotation on the chucks. As the closures come to the action of the scratch brushes, they are rotated, together with the chucks and chuck spindles, by the frictional action of the brushes. This insures a uniform action of the brushes since all parts of the closure are subjected equally to such action. The result is a highly desirable uniform finish. After leaving the brushes, the chucks pass successively to the discharge or blow-off position, where the closures are automatically discharged in the manner before described.

The entire machine is simple in its construction and mode of operation. One of these machines is capable of finishing a large number of closures with the aid of a single unskilled attendant. The finish imparted by the action of the machine is greatly superior to any finish which can be obtained where the skill of an attendant is depended upon to properly manipulate the articles while holding them manually to the action of a scratch brush.

It will be apparent that the machine herein described may be modified in various ways without departing from the spirit and scope of my invention as defined in the appended claims. Thus, the driving mechanism for the parts may be widely changed; the articles may be placed upon the chucks by hand or may be fed in various other ways; the number of chucks employed may be varied; and various other changes may be made within the scope of the appended claims.

I claim:

1. A scratching machine comprising a scratch brush, means for rotating the brush, an article holding chuck, a movable carrier arranged to bring the chuck with the article thereon to the action of said brush, a blow-off hood, and means for blowing the finished articles from the chuck into said hood, substantially as described.

2. A scratching machine comprising a rotary scratch brush, an article holding chuck, a movable carrier for said chuck and arranged to move the chuck with the article thereon to the action of the brush, said chuck being mounted to rotate with the article thereon under the action of the brush, a blow-off hood, and means for blowing the finished articles from the chuck into said hood, substantially as described.

3. A scratching machine comprising a plurality of rotary scratch brushes, a rotary carrier, means for imparting a step-by-step movement to said carrier, a plurality of hollow chucks mounted on said carrier, each of said chucks having means for holding an article to be scratched, and means for passing a blast of air through each hollow chuck at a predetermined position, substantially as described.

4. A scratching machine comprising a rotary scratch brush, a carrier mounted for step-by-step rotation, a plurality of chucks on the carrier, means for periodically expanding and contracting the chucks including a hollow reciprocable stem, springs urging the stem to chuck expanding position, cams for moving it to chuck contracting position, means for actuating the carrier in a step-by-step manner to cause the chucks to dwell when in position relative to the brush and means associated with one of said cams for successively blowing air through the stems after they pass the brush, substantially as described.

5. A scratching machine comprising scratching means, a carrier, a chuck on the carrier, said chuck consisting of a split head, a split spindle carrying said head, means movable within said spindle for causing the alternate expansion and contraction of the spilt portions of the chuck, means for moving said last-mentioned means in a direction when the chuck reaches a predetermined station, and means at said station for emptying the chuck, substantially as described.

6. A scratching machine comprising scratching means, a carrier, a chuck mounted on carrier, said chuck consisting of a split head, a split spindle carrying said head, means for causing the alternate expansion and contraction of the split portions of the chuck, said means comprising an expander automatically movable in one direction within the chuck and means for automatically actuating the expander in the opposite direction during the operation of the machine, and means for emptying the chuck when contracted, substantially as described.

7. In a scratching machine, a hollow chuck spindle carrying a check, said spindle and

chuck having split portions, a vertical movable expander working within the chuck, a spring for normally holding the expander in operative position, cam means arranged to act on the expander in opposition to the spring, and means for emptying the chuck when the cam has actuated the expander, substantially as described.

8. In a scratching machine, the combination with a hollow chuck for holding the articles while being scratched, of means for periodically admitting air under pressure through said chuck for ejecting scratched articles from the chuck, substantially as described.

9. In a scratching machine, the combination with an expansible and contractible hollow chuck for holding the articles while being scratched, means for causing the expansion and contraction of the chuck at proper times, and means for periodically admitting air under pressure through the chuck when in the contracted condition, substantially as described.

10. A scratching machine comprising scratching means, a rotary carrier having a plurality of article holding chucks arranged to subject the articles to the action of said scratching means, means for periodically expanding and contracting the chucks, each of said chucks having an air passage therethrough, a supply connection for air under pressure and having a discharge passage with which the chucks are arranged to be successively brought into communication, and valve means for controlling the discharge of air from the supply connection into said chuck, substantially as described.

11. A scratching machine comprising scratching means, a rotary carrier having a plurality of article holding chucks arranged to subject the articles to the action of said scratching means, means for periodically expanding and contracting the chucks, each of said chucks having an air passage therethrough, a supply connection for air under pressure and having a discharge passage with which the chucks are arranged to be successively brought into communication, and valve means for controlling the discharge of air from the supply connection into said chuck, together with actuating means for the carrier and for the valve mechanism working in timed relation to each other, substantially as described.

12. A scratching machine comprising a carrier, a plurality of expansible and contractible article holders on the carrier and having air passages therethrough, means for moving the carrier step-by-step to successively bring the article holders to charging and discharging stations, a scratch brush at a brushing station, means for expanding the article holders to grasp the articles after passing the charging station, and means for effecting a contraction of the holders at the discharging station, and means for blowing air through each holder when so contracted, substantially as described.

13. In a scratching machine, the combination with a carrier having an article holding chuck, means for moving the carrier to move the article holding chuck past a charging station, of downwardly inclined means for feeding articles by gravity singly into position to be engaged by the chuck and to be moved from the feeding means by the movement of the chuck, substantially as described.

14. In a scratching machine, the combination with a rotating carrier having a plurality of expansible and contractible article holder chucks, means for moving the carrier, of means for feeding the articles singly and successively onto the chucks by gravity when the chucks are brought into proper relation with the feeding means, the chucks and feeding means being so related that the chuck will draw the articles from the feeding means in their movement, and means for holding the chucks in contracted condition to receive the articles while at the feeding means, substantially as described.

15. In a scratching machine, the combination with a carrier having an expansible and contractible article-holding chuck, a feed chute for delivering the articles singly and successively to said chuck, means for holding the chuck contracted to receive the articles as they are fed, means for causing the subsequent expansion of the chuck to retain the article thereon, means for again contracting the chuck, and means for then subjecting the article on said chuck to a blast of air for removing the same, substantially as described.

16. In a scratching machine, the combination with a carrier having an expansible and contractible article-holding chuck, a feed chute for delivering the articles singly and successively to said chuck, means for holding the chuck contracted to receive the articles as they are fed, and means for causing the subsequent expansion of the chuck to retain the article thereon, said feed chute having oppositely disposed frictional means for engaging and holding the articles in position to be engaged by the chuck and be withdrawn from the chute by the operation of the carrier, substantially as described.

17. In a scratching machine, the combination with a carrier having an expansible and contractible article-holding chuck, a feed chute for delivering the articles singly and successively to said chuck, means for holding the chuck contracted to receive the articles as they are fed, and means for causing the subsequent expansion of the chuck to retain the article thereon, said feed chute having frictional means for engaging and holding the articles in position

to be engaged by the chuck, together with means for insuring the positioning of the article on the chuck until the chuck is expanded, substantially as described.

18. A scratching machine comprising a scratch brush, a movable carrier having a plurality of article-holding chucks, means for imparting a step-by-step movement to the carrier, means for feeding the articles onto the chucks, and air blast means for automatically removing the articles from the chucks after they have been operated upon by the scratch brush, substantially as described.

19. A scratching machine, comprising a plurality of scratch brushes, a rotary carrier having a plurality of spaced article-holding chucks thereon, means for imparting a step-by-step rotation to the carrier, means for placing the articles on the chucks, and air blast means for causing their removal from the chucks, substantially as described.

20. A scratching machine, comprising a plurality of scratch brushes, a rotary carrier having a plurality of spaced expansible and contractible article-holding chucks thereon, means for imparting a step-by-step rotation to the carrier, means for placing the articles on the chucks, and air blast means for causing their removal from the chucks, together with means for expanding and contracting the chucks at the proper times, substantially as described.

21. In a scratching machine, scratching means, a carrier, article holding means on said carrier adapted to subject the articles to the scratching means, means for delivering articles to said article holding means, and means for intermittently delivering air blasts to said holding means to effect removal of the scratched articles, substantially as described.

22. In a scratching machine, scratching means, a carrier, article holding means on said carrier adapted to subject the articles to the scratching means, means for delivering articles to said article holding means, means for intermittently delivering air blasts to said holding means to effect removal of the scratched articles, and a blow-off hood above said holding means for receiving said articles, substantially as described.

23. In a scratching machine, scratching means, a carrier, means for intermittently moving the carrier, article holding means on said carrier adapted to subject the articles to the scratching means, means for delivering articles to said article holding means, and means operated by the carrier operating means for intermittently delivering blasts of air to said holding means to effect removal of the scratched articles, substantially as described.

In testimony whereof, I have hereunto set my hand.

ALONZO L. EDWARDS.