Dec. 13, 1927.

W. F. EVANS

1,652,820

SCRAPING MACHINE

Filed Jan. 10, 1927

Fig. 1.

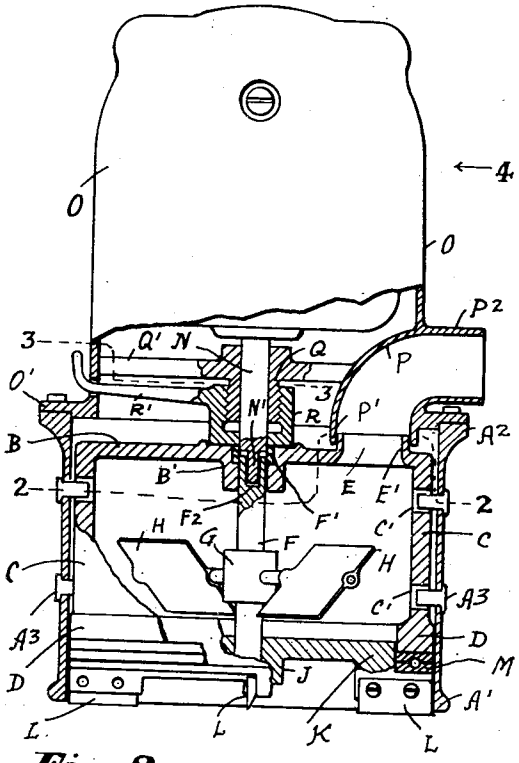


Fig. 4.

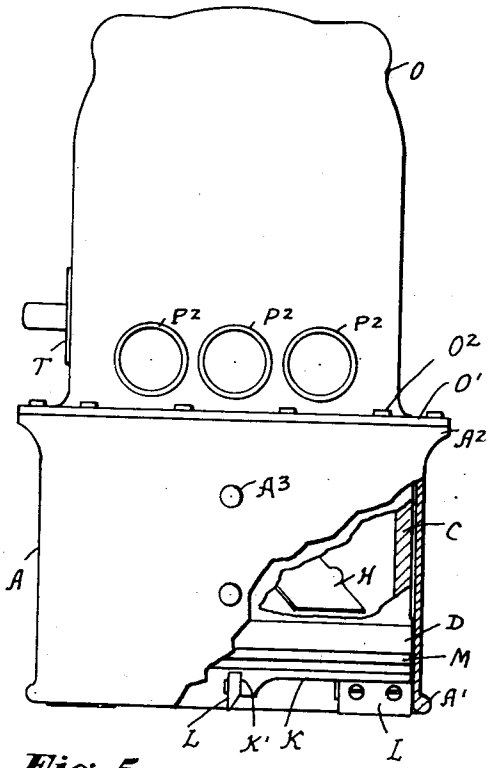


Fig. 2.

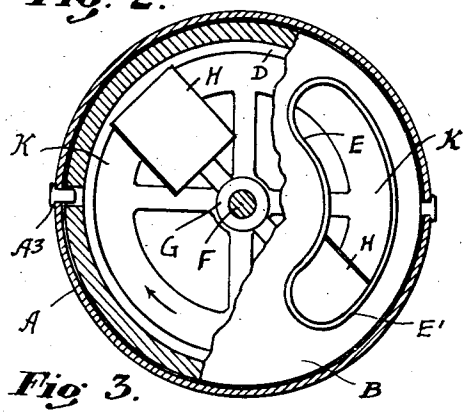


Fig. 5.

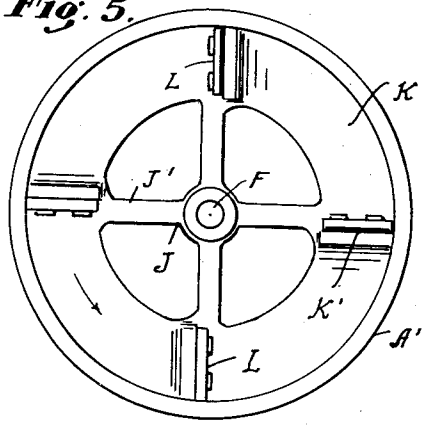
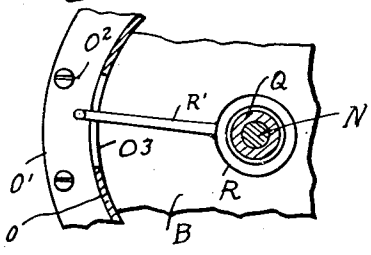


Fig. 3.



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UNITED STATES PATENT OFFICE.

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SCRAPING MACHINE.

Application filed January 10, 1927. Serial No. 160,197.

This invention relates to improvements in machines for scraping or smoothing and has especial reference to machines of this kind intended for the scraping or smoothing of walls or ceilings which are incumbered with mutilated and fragmentary remains of wall paper or like surface coverings.

The removal of such material by the use of hand tools is not only tedious and time consuming but is generally accompanied by disagreeable and injurious odors and dust. There is also the soiling of the wood-work and floors, and more or less chipping or nicking of the wall surface which even then is not entirely ridden of small fragments of paper.

The object of this invention is to provide a portable implement or machine tool by which the above named disadvantages may be overcome, and which machine, while being relatively small in size and light in weight, is highly efficient, and is capable of being operated by a person of only ordinary skill.

A form of embodiment of my invention which is considered desirable for the general purposes for which it is intended, is that shown in the drawings, and described in the following specification. The invention is defined in the several claims. The several parts of my invention are identified by suitable characters of reference applied to them in the several views in the drawings, in which—

Figure 1 is a side view of my improved scraping machine, a portion of the handle or motor housing being broken away, and the casement being shown in cross-section.

Figure 2 is a sectional top plan view taken on line 2—2 in Figure 1.

Figure 3 is a sectional top plan view taken on line 3—3 in Figure 1.

Figure 4 is a view of Figure 1 taken in the direction of arrow 4 in Figure 1, a portion of the casement being broken away.

Figure 5 is a bottom plan view Figure 4.

The present form and construction of machine for carrying my invention into effect, comprises a cast aluminum casement having a cylindrical bore and being provided with a smooth mouth rim, which is adapted to lie against the surface which is to be scraped. Retained in this casement against rotative movement but movable longitudinally is a cup shaped frame element which may be termed a dust cup, there being a discharge opening in the head portion of said cup. Journaled in the head portion of said cup is a power shaft which is adapted to be actuated by a driving shaft from an electric motor, or from any other suitable source of power. Secured to the frontal portion of the power shaft is a cutter device consisting of a spider having an annular rim of diameter to loosely occupy the bore of the casement at its mouth, and being provided with cutter blades which register on a plane substantially co-incidental with the plane of the mouth of the casement. At the rear of the said cutter device a fan wheel which is secured to the said power shaft is operable to gather the dust and shavings produced by the knives, and to discharge same from the cup. A handle element or housing which is secured to the casement is of form to enclose a driving shaft which may consist of a flexible shaft from any suitable source of power, or from the shaft of an electric motor which may be enclosed in the handle element or housing adapted to be held by the operator's hand. An annular anti-friction bearing between the peripheral portion of the cutter element, and the base rim of the dust cup, is provided. A pressure element arranged between the housing element and the dust cup is operable to vary the position of the dust cup to cause the cutter device to operate on a plane beyond the plane of the mouth of the casement.

The metal casement A is about 4 inches in diameter and has the annular lip A^1, and the machined annular flange A^2. Spaced studs A^3 secured in the walls of said casement perform the functions to be presently described. A cast frame structure which is made of form to loosely occupy the bore of the said casement, and which is designated as a dust cup consists of a head plate B, walls C and base ring D. In the head plate is provided a discharge opening E, as shown in Figure 2, and which has the upstanding lip E^1. A central boss B′ formed integral with the head plate B, constitutes a bearing for the power shaft F which is retained in said bearing by a shoulder F′. Hub G which supports the fan vanes H and H, is secured to the body portion of the said power shaft. On the forward end of the power shaft is secured the hub J of a spider like structure whose spokes J^1 support annular rim K. Secured to each of the spaced seats K^1 of said rim K, is a cutter blade L. Seat-

ed in an annular seat of the rim K, is a ball race M which constitutes an antifriction bearing between the said cutter element and the base ring D of the dust cup walls. Spaced slots C^1 in the walls of the dust cup loosely engage the studs A^3. With the hub J secured to the power shaft the several parts just described are retained in the assembled form as shown in Figure 1.

In the shouldered end of the power shaft F is a central angular recess F^2, into which an angular stem N^1 of the driving shaft N is engaged.

To the casement A there is secured a handle element by which the machine as an entirety may be held and manipulated by the user. The present machine being designed to have its driving shaft N actuated by an electric motor connected at position close to the said casement, the handle element is made to serve also as a frame or housing for the motor, and it may be designated as a housing O. The machined annular flange O^1 of this housing is secured by cap screws O^2 to the flange A^2 of the casement.

Formed integral with the said housing is a discharge conduit P whose downwardly disposed lips P^1 are of contour and depth to register with and to close the opening between the said conduit and the opening E of the head of the dust cup. The discharge portion of said conduit P is composed of nozzles P^2. To these nozzles, suitable hose pipes that extend to a dust receiving bag or receptacle (not shown) are to be attached. A boss Q of a cross member Q^1 of the housing frame, has its body portion threaded. On this threaded body portion is disposed a pressure sleeve R whose lower face engages a suitable seat in the head plate B of the dust cup. A handle bar R^1 extends from said sleeve through a suitable opening or slot O^3 therefor in the housing. The threads of the said boss Q are of such pitch that a movement of the bar R^1 only a slight distance obtains the desired pressure against the head plate of the dust cup. For operating the machine on ordinary wall surfaces, the sleeve R is set so that the cutting blades L project very slightly beyond the plane of the mouth of the casement.

It is obvious that the operative may obtain a very effective and equable pressure on the cutting blades L, the thrust therefor being transmitted from the base ring D through the anti-friction bearing element M and the peripheral portion of the spider element which carries said blades. While the said blades are, in the present structure, set in radial alignment, it is obvious that they may be set at an angle, or at an incline. The shavings or cuttings produced by the said blades readily pass between the spokes of the spider frame whence they are drawn away by the fan device. While a positive and effective cutting or scraping is obtained, the machine is free from vibration or dancing and is steady and dependable in operation. The shavings, dust particles and effluvia rising in the dust cup are caught by the fan wheel and blown through the discharge conduits E and P. From the nozzles P^2 which lead from the discharge opening P, suitable pipes may be extended to a bag like receptacle (not shown) which the operative may carry on his shoulder. No preparatory treatment of the wall surface is necessary. My improved machine is simply set in motion by attaching an electric conductor to the plug connection T. The pressure sleeve R having been adjusted so that the cutting blades L are at the correct cutting plane, the operative moves the machine along the wall surface. The material being scraped from the wall being retained against escapement into the air, the work of scraping the wall is rendered sanitary, and the soiling of wood work and the floors is prevented.

I am aware that my invention may be embodied in mechanisms of detail and structure different from that shown in the present drawings and specification, and within the scope of the invention as defined in the appended claims, without departing from the spirit of the invention.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A scraping machine of the kind described, comprising a casement having a mouth to engage the surface of the object to be scraped, a cutter element operable at said mouth, a dust receptacle frame in said casement to receive the scraped contents and having a discharge opening, the said receptacle being held against rotative movement but being free to move longitudinally, a fan element to discharge the contents of said receptacle, a handle element secured to the casement, an anti-friction bearing between the cutter element and the said dust receptacle, a driving means to drive the cutter element and fan element, and a device to move and hold the dust receptacle frame at varied projected positions.

2. A machine of the kind described, comprising an open casement having a mouth to engage the object to be scraped, a cutter element operable at the mouth of the casement, a dust receptacle retained in said casement held against rotative movement but free to move longitudinally, and whose forward end is in anti-frictional bearing engagement with the cutter element and which said dust receptacle has a discharge opening therein, a fan element to discharge the contents of said cup, a handle frame element secured to the casement and having a discharge conduit to communicate with the discharge opening of said dust receptacle, a

driving means to drive the cutter element and the fan element, and a device operable between the handle element and the dust receptacle to move and hold the latter at varied projected positions longitudinally of the casement.

3. A machine of the kind described, comprising an open casement having a housing or handle frame secured thereto, and being provided with a mouth to engage the surface of the object to be scraped, a cup shaped frame retained in said casement and having a discharge opening therein, a power shaft extending through the head plate of said cup frame, a cutter element secured to the said shaft and operable at the mouth of said casement, an anti-friction bearing between the cup frame and the said cutter element, a fan element secured to the said shaft and adapted to discharge the contents of said cup frame, and a device between the casement and housing structure and the head plate of the cup frame to vary the position of the latter longitudinally of the casement.

4. A scraping machine of the kind described, comprising a casement having cylindrical bore, a cup shaped frame loose in said bore there being a discharge opening therein, a power shaft journaled in said cup frame, a cutter wheel actuated by said shaft and having its knives operable at the mouth of said casement, an anti-friction bearing between the peripheral portions of the cup frame and the cutter wheel, a fan wheel operable inside the cup frame to drive the contents therefrom, a motor housing secured to the casement, and means to vary the distance between the said housing and the said cup frame.

5. A machine of the kind described, comprising a casement having a cylindrical bore, a cup frame retained in said casement against rotative movement but free to be moved longitudinally, and there being a discharge conduit leading from said cup frame, a power shaft journaled in said cup frame, a cutter wheel secured to said shaft and having its knives disposed at an angle to the axis of said shaft and at the peripheral portion of said cutter wheel, a fan wheel secured to said shaft and operable to blow the contents of the cup through the discharge opening, a motor housing secured to the said casement, a driver shaft actuated by the motor and being adapted to flexible engagement with the aforesaid power shaft, an anti-friction bearing between the peripheral portions of the cup frame and the cutter wheel, and a device operable from outside the casement and housing, to move and to hold the cup frame at positions adjusted longitudinally of the casement.

6. A scraping machine, comprising an open casement having a cylindrical bore, a housing associated with said casement, a driver shaft journaled in said housing, a cup shaped frame having its head plate provided with a discharge opening and its base ring being of diameter to register with the bore of the casement, means to hold the cup frame against rotative movement and free for movement longitudinally of the casement, a power shaft journaled centrally of said cup frame, and adapted to receive flexible connection with said driver shaft, a cutter wheel secured to said power shaft and being of diameter to occupy the mouth portion of the bore of the casement, an annular anti-friction bearing ring between the peripheral portion of the cutter wheel and the base ring of the cup frame, and a device between the housing and the cup frame to vary the position of the cutter wheel relative to the plane of the mouth of the casement.

7. A machine of the kind described, comprising a casement having open forward end, a housing secured to said casement, a motor in said housing, a pressure frame mounted loose longitudinally in said casement and which is held against rotative movement, a power shaft journaled and retained in said pressure frame, power transmitting connections between the said power shaft and said motor, a rotary cutter secured to said shaft, an anti-friction bearing between the end of the pressure frame and the said cutter, and an adjuster sleeve between the pressure frame and the housing, to vary the position of pressure frame longitudinally of the casement.

WILLIAM F. EVANS.