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J. S. CAMPBELL ET AL

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STAMPING APPARATUS FOR FRANGIBLE ARTICLES

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2 Sheets-Sheet 1

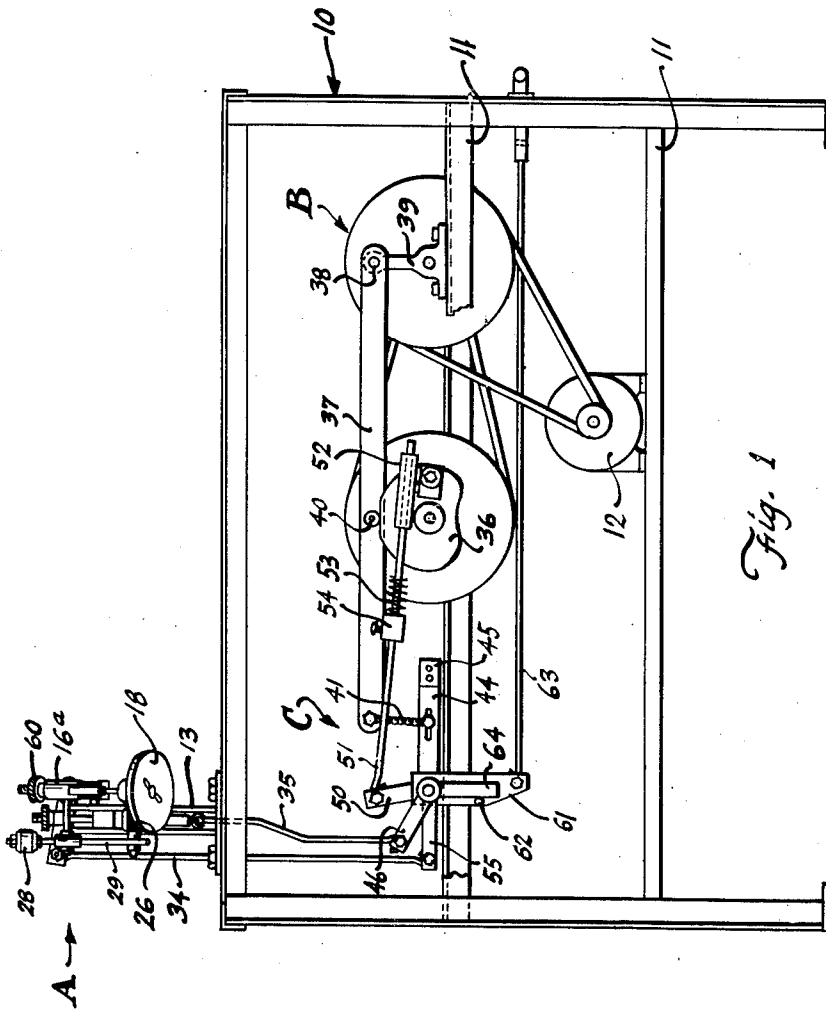


Fig. 1

INVENTORS
J. S. CAMPBELL
W. BROWN
G. A. DOUGLAS

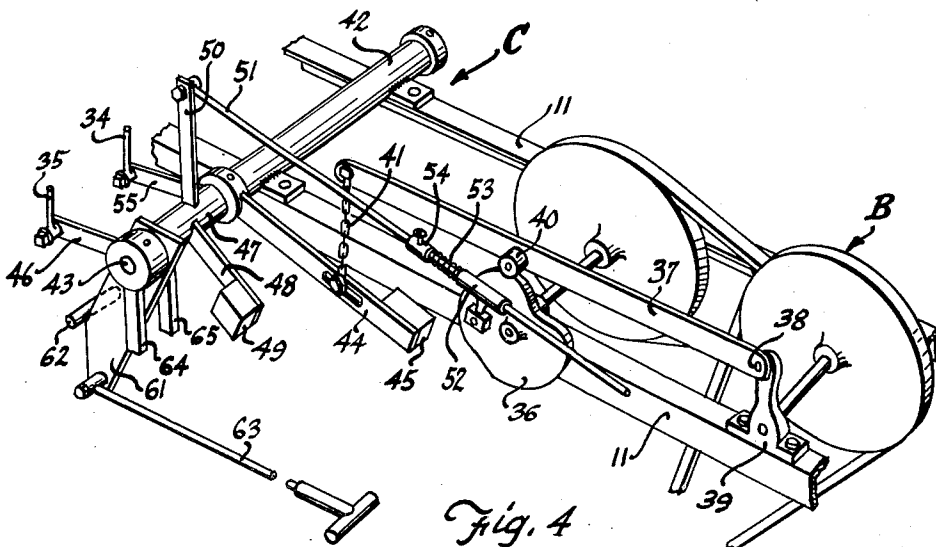
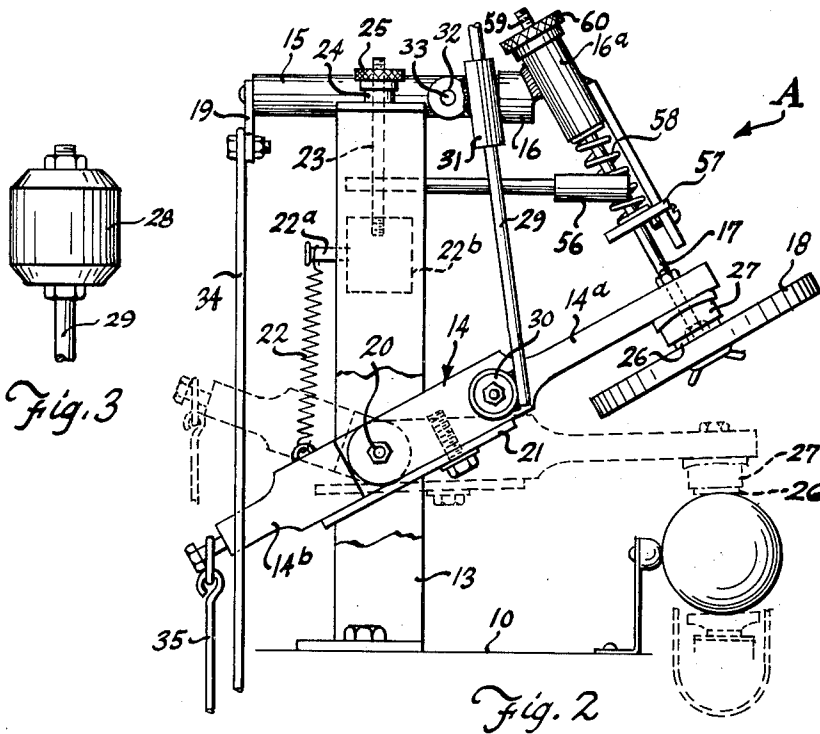
By: Featherstonhaugh & Co
ATT'YS

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INVENTORS
J. S. CAMPBELL
W. BROWN
G. A. DOUGLASS

G.A. DOUGLASS
By: Fetherstonhaugh & Co.
ATT'YS

UNITED STATES PATENT OFFICE

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STAMPING APPARATUS FOR FRANGIBLE ARTICLES

John Stewart Campbell and William Brown, Melbourne, Ontario, and George Alexander Douglas, Mount Bridges, Ontario, Canada

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5 Claims. (Cl. 101—44)

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The object of this invention is to provide a stamping apparatus adapted to stamp a stream of frangible articles as each article is brought to a temporary halt beneath the apparatus.

The apparatus of our invention has been especially designed for use in conjunction with an egg grading machine such as that disclosed in our United States Patent No. 2,381,035 in which the egg rolls down an inclined plane onto a cup, and is carried away therefrom by means of parallel bars which act in conjunction with a group of scales to dispose of the egg in one of a number of compartments, in accordance with the weight of the egg.

We envisage that the egg-stamper of our invention will be employed in conjunction with an egg grader of this nature, the stamping taking place as the egg lies stationary in the cup; but it might equally well be employed with any other device so long as the conditions are fulfilled that frangible articles are delivered to a point beneath the apparatus, temporarily halted at this point, and then carried away.

It is an object of this invention to provide a stamping apparatus which is capable of stamping eggs and similar frangible articles without danger of breaking the articles stamped.

It is a further object of the invention to provide a stamping apparatus which stamps a clear impression upon frangible articles of differing sizes and differing shapes.

A still further object of the invention is to provide a stamping apparatus which is of a simple, economical construction, lending itself to low-cost production on a large scale.

With these and other objects in view, our invention generally comprises a standard adapted for rigidly mounting upon an egg-grader or other device which brings a stream of frangible articles to a temporary halt, a stamper arm pivotally mounted upon said standard so as to be swingable in the vertical plane, a stamp at the free end of said stamper, an inker arm swingably mounted on said standard and having its swingable movement in an arcuate path transversely of the swingable movement of said stamper arm, an inking tray secured to said inker arm and adapted to be engaged by said marking means in an inking position, and driving means adapted to pivot said stamper arm in and out of stamping position and to cause said inking tray to engage said marking means when said stamping arm is out of stamping position.

In order that the present invention may be fully understood and readily carried into prac-

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tice, the present specification has been illustrated by drawings wherein:

Figure 1 shows a front elevation of the stamping device of our invention mounted upon an egg-grader frame;

Figure 2 is a side elevational view of the stamping device showing the device in full lines in a non-stamping position and in dotted line in a stamping position;

Figure 3 is an enlarged scale view of a weight used in conjunction with the device of Figure 2;

And Figure 4 is a perspective view of the drive mechanism used to impart the desired motion to the stamping and inking arms of the apparatus of our invention.

Throughout the drawings like reference numerals refer to similar parts.

Referring in detail to the drawings, reference numeral 10 indicates the frame of typical egg-grading machine, having longitudinally extending bars 11, mounted on one of these bars 11 is a drive motor 12, which is used to drive both the egg-grading means, and the stamping means which constitutes the present invention and is represented by the symbol A. The stamping means A is mounted upon frame 10 and is connected to the drive motor 12 by a conventional speed reduction drive B, and a suitable driving linkage C. Driving linkage C will be more fully described in a subsequent portion of this disclosure.

Stamping means A, as best seen in Figure 2, comprises a standard 13 rigidly mounted upon frame 10, a stamper arm 14 pivotally mounted on said standard 13, so as to be swingable in the vertical plane; a sleeve-like bearing 15 rigidly mounted upon standard 13 transversely of the longitudinal axis of the latter and a shaft (not shown), rotatably mounted within said bearing. This shaft preferably has an enlarged head 16 whereby a sleeve 16a, adapted to mount inker arm 17, is attached by welding or brazing. The method of mounting inker arm 17 will be described later. Inker arm 17 carries an inker tray 18. An actuating arm 19 is attached to the free end of the shaft mounted in bearing 15; said arm being designed to cause inker tray 18 to move through an arcuate path at right angles to the plane of movement of the stamper arm 14.

Stamper arm 14 is made up of two parts 14a and 14b which are independently pivotally mounted upon standard 13, by nut and bolt means as indicated at 20. A bar 21 is attached to the under surface of part 14a and extends rearwardly of part 14a, so as to prevent independ-

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ent rotation of part 14b downwardly past the longitudinal axis of part 14a. No corresponding check is provided against independent rotation of part 14b upwardly about nut and bolt means 20. A tension spring 22, attached to the upper surface of part 14b and to a pin 22a attached to a block 22b, which in turn is rigidly attached to a tensioning rod 23, whereby part 14b is normally urged upwardly. Spring tensioning rod 23 is threaded and is adjustably secured to the upper surface of standard 13, by means of a washer 24 and a knurled nut 25 which is threaded so as to co-operate with the threads of the rod 23. By turning nut 25, the length which rod 23 projects below the upper surface of standard 13 may be varied, and since spring 22 is secured at one end to pin 22a, and at the other end to part 14b, turning of nut 25 varies the tension in spring 22.

Part 14a of stamper arm 14 is provided at its free extremity with a rubber stamp die 26 held by a sponge rubber cushion 27, the latter being secured to part 14a in any suitable manner. A number of different weights are provided for use in conjunction with the apparatus. One of these weights, as indicated in the drawings by numeral 28, is mounted so as to co-operate with arm 14a. The weight used should not be heavier than that required to stamp a clear impression. Weight 28 is carried by a rod 29, which is pivotally mounted upon part 14a, as at 30. The path followed by rod 29, as part 14a is reciprocated, is controlled by means of a tubular guide member 31, which slidably encloses rod 29. This method of mounting prevents the weight from bouncing and blurred impressions are avoided. Guide member 31 is pivotally mounted as at 32 upon a stud 33 which extends from sleeve-like bearing 15.

Actuating arm 19 is connected to the driving linkage C by means of connecting rod 34, and part 14b is connected to the driving linkage C by means of connecting rod 35. Drive motor 12 through speed reduction drive B drives a cam 36 at a reduced speed relative to that of the motor. An arm 37 is pivotally mounted as at 38, upon a bracket 39 which is rigidly mounted upon one of the members 11. Arm 37 carries a roller 40 adapted to ride upon cam 36, whereby bar 37 is given a vertical reciprocating motion as cam 36 revolves. A chain 41 depends from the free end of bar 37. A tubular bearing 42 is mounted transversely of two members 11 which are in the same horizontal plane. An assembly axle 43 is rotatably mounted in bearing 42. An arm 44, carrying a weight 45 at its free end, is rigidly mounted upon rotatable axle 43. Chain 41 is connected to arm 44, whereby vertical reciprocation of arm 37 causes vertical reciprocation of arm 44. Secured to the end of axle 43 is an actuating arm 46, which is also given a reciprocatory motion when arm 44 is reciprocated, since arm 44 is rigidly mounted upon the axle 43. Connecting rod 35 is pivotally attached to the end of actuating arm 46.

Therefore, as the roller 40 rides on the cam 36, actuating arm 46 is given a reciprocatory motion, which, through connecting rod 35, causes part 14b of stamper arm 14 to pivot about nut and bolt means 20; whereby part 14a, by virtue of weight 28 and bar 21, is caused to pivot about said nut and bolt means, and stamp 26 thereby travels back and forth in an arcuate path in and out of the stamping position.

Axle 43 is further provided with a sleeve 47,

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rotatably mounted thereon. An arm 48 extends from sleeve 47, carrying a weight 49 at its free end. A second arm 50 extends from sleeve 47. A rod 51 is pivotally connected to the free end of arm 50, and rod 51 passes through a sleeve member 52 which is pivotally mounted in an eccentric position upon cam 36. Rod 51 slides freely in sleeve 52, but the rod is provided with a helical spring mounted upon the rod and positioned thereon by means of a stop 54. Sleeve 47 is provided with a third arm 55 which extends therefrom and is pivotally connected at its end to connecting rod 34, which in turn is connected to actuating arm 19, as previously mentioned.

As the cam 36 rotates, sleeve 52 is carried around with the cam and slides back and forth upon rod 51.

During this course of travel, sleeve 52 is caused to bear against spring 53, and spring 53 is compressed against stop 54, forcing rod 51 rearwardly, and arm 55 is thus rotated in an anticlockwise direction as viewed in Figure 4. As the cam rotates further, the pressure is removed from spring 53, and arm 55 is caused to rotate in a clockwise direction by means of weight 49. This movement of arm 55 is translated via connecting rod 34, actuating arm 19, shaft 16, and inker arm 17, into a movement on the part of inker tray 18 in an arcuate path transverse of the swingable movement of stamper arm 14. A stop 56 attached to standard 13 is provided to limit the movement of inker arm 17.

It will be seen from the foregoing description that as roller 40 rides on cam 36, and as sleeve 52 is caused to move back and forth on rod 51 by the rotation of the cam, movements are imparted to stamper arm 14 and inker arm 17. These movements are so related that when stamp 26 is in its uppermost position, inker tray 18 is brought therebeneath and ink is applied to stamp 26; and as the inker arm moves outwardly transversely of the swingable movement of stamper arm 14, then stamper arm 14 moves downwardly and stamper 26 stamps an inked marking upon a frangible article brought to a temporary halt beneath the apparatus; then as stamper arm 14 moves upwardly after performing its allocated task, inker arm 17 moves inwardly so as to provide stamp 26 with fresh ink from inker tray 18.

I preferably attach inker arm 17 to the enlarged head 16 in such a manner that inker tray 18 may be raised or lowered. One method of accomplishing this is shown in Figure 2. The sleeve 16a is rigidly attached to the enlarged head 16, inker arm 17 is provided with a stop 57, and a helical spring 58 is concentrically mounted on arm 17, so as to rest against stop 57. Arm 17 is further provided with threading 59. Arm 17 is mounted on the apparatus by passing said arm through sleeve 16a and compressing spring 58 between sleeve 16a and stop 57. A nut 60 is then turned on the threads 59. By adjustment of nut 60, inker tray 18 may be raised or lowered.

Means are provided for stopping the movements of the stamper arm and the inker arm, without stopping of the drive motor 12. This means comprises a bar 61 rotatably mounted on axle 43, said bar carrying a crosspiece 62 extending laterally on each side of the bar, and an operating lever 63, pivotally attached to said bar. Axle 43 and sleeve 47 are provided with arms 64 and 65 respectively. Operating lever 63 may be pulled forwardly, bringing crosspiece 62 to bear against arms 64 and 65, causing axle

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43 and sleeve 47 to rotate in an anti-clockwise direction, whereby chain 41 is slackened and sleeve 52 no longer makes contact with spring 53. In this manner, movement of the stamping apparatus is halted without halting the reduction drive B. This feature is of special value where the reduction drive drives an egg-grading machine as well as an egg-stamping device, as in the present illustration.

It will be apparent from the foregoing description that we have provided a device for stamping frangible articles which achieves the objects previously set out as desirable.

With apparatus of this nature, the incidence of breakage is much lower than in the case of hand stamping, and we have successfully stamped a clear impression on as many as four hundred cases of eggs without a single case of breakage occurring.

Modifications of the apparatus of our invention will be apparent to persons of mechanical skill and it is therefore intended that the invention shall be limited only by the scope of the appended claims.

What we claim as our invention is:

1. An apparatus for marking frangible articles such as eggs and the like and adapted to be mounted upon a device which brings individual members of a stream of frangible articles to a temporary halt therebeneath, comprising, a standard, a stamper arm pivotally mounted upon said standard so as to be swingable in the vertical plane, a stamp at one end of said arm, an inker arm swingably mounted on said standard, said inker arm having its swingable movement in an arcuate path transversely of the swingable movement of said stamper arm, an inking tray secured to said inker arm, and driving means adapted to pivot said stamping arm in and out of stamping position, and to swing said inker arm causing said inking tray to engage said stamp when said stamping arm is out of stamping position, said inker arm being adjustably mounted in a tubular member, said tubular member being secured to a shaft, said shaft being rotatably mounted in a sleeve-like bearing, said bearing being rigidly secured to said standard, said shaft being connected to said driving mechanism by means of an actuating arm and a connecting rod, said stamper arm being connected to said driving means by means of a connecting rod, said driving means including a drive motor, a speed reduction drive, and a driving linkage connecting said reduction drive and said connecting rods.

2. An apparatus for marking frangible articles such as eggs and the like and adapted to be mounted upon a device which brings individual members of a stream of frangible articles to a temporary halt therebeneath, comprising, a standard, a stamper arm swingably mounted upon said standard so as to be swingable in the vertical plane, a stamp at one end of said arm, an inker arm swingably mounted on said standard, said inker arm having its swingable movement in an arcuate path transversely of the swingable movement of said stamper arm, an inking tray secured to said inker arm, and driving means adapted to pivot said stamping arm in and out of stamping position, and to swing said inker arm causing said inking tray to engage said stamp when said stamping arm is out of stamping position, said driving means including a drive motor, a speed reduction drive designed to drive a cam at reduced speed, a rigidly

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mounted tubular bearing, an axle rotatably mounted in said bearing, an arm extending from said axle and rigidly mounted thereupon, a weight secured to said arm, a pivotally mounted arm carrying a roller adapted to ride upon said cam, flexible means connecting said first mentioned arm to said second mentioned arm, an actuating arm extending from said axle and rigidly mounted thereupon, and a connecting rod pivotally connected to said actuating arm and linking the latter to said stamper arm, whereby as said roller rides on said cam, said stamper arm is pivoted in and out of stamping position.

3. An apparatus for marking frangible articles such as eggs and the like and adapted to be mounted upon a device which brings individual members of a stream of frangible articles to a temporary halt therebeneath, comprising, a standard, a stamper arm pivotally mounted upon said standard so as to be swingable in the vertical plane, a stamp at one end of said arm, an inker arm swingably mounted on said standard, said inker arm having its swingable movement in an arcuate path transversely of the swingable movement of said stamper arm, an inking tray secured to said inker arm, and driving means adapted to pivot said stamping arm in and out of stamping position, and to swing said inker arm, causing said inking tray to engage said stamp when said stamping arm is out of stamping position, said driving means including a drive motor, a speed reduction drive designed to drive a cam at reduced speed, a rigidly mounted tubular bearing, an axle rotatably mounted in said bearing, an arm extending from said axle and rigidly mounted thereupon, a weight secured to said arm, a pivotally mounted arm carrying a roller adapted to ride upon said cam, flexible means connecting said first mentioned arm to said second mentioned arm, an actuating arm extending from said axle and rigidly mounted thereupon, and a connecting rod pivotally connected to said actuating arm linking the latter to said stamper arm, whereby as said roller rides on said cam, said stamper arm is pivoted in and out of stamping position, a sleeve freely mounted on said axle, an arm extending from said sleeve, a weight at the free end of said arm, a second arm extending from said sleeve, a rod pivotally connected to said second arm, a helical spring mounted on said rod, a stop adapted to position said spring, a sleeve member pivotally mounted in an eccentric position on said cam, said rod being held by said sleeve member so as to ride back and forth in the latter as said cam rotates, said stop so positioning said spring that the latter is compressed by said sleeve member during part of the rotation of said cam, and a third arm extending from said sleeve member, and a connecting rod pivotally connected to said third arm and linking the latter to said inker arm, whereby when said rod rides back and forth in said sleeve member, movement is imparted to said inker arm.

4. An apparatus for marking frangible articles such as eggs and the like and adapted to be mounted upon a device which brings individual members of a stream of frangible articles to a temporary halt therebeneath, comprising, a standard, a stamper arm pivotally mounted upon said standard so as to be swingable in the vertical plane, a stamp at one end of said arm, an inker arm swingably mounted on said standard, said inker arm having its swingable movement in an arcuate path transversely of the swingable

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movement of said stamper arm, an inking tray secured to said inker arm, and driving means adapted to pivot said stamping arm in and out of stamping position, and to swing said inker arm causing said inking tray to engage said stamp when said stamping arm is out of stamping position, said driving means including a cam, an oscillatable arm having a roller designed to ride upon said cam, a rotatable assembly shaft, a tubular bearing mounting said assembly shaft, an actuating arm extending from said assembly shaft for link connection to said stamper arm, a weighted arm extending from said assembly shaft, collapsible means connecting said weighted arm to said oscillatable arm whereby said stamper arm is actuated by the contour of said cam, a sleeve pivotally connected to said cam, a mounting sleeve freely mounted on said assembly shaft, a weighted member extending therefrom, an arm extending therefrom, a rod pivotally connected to said arm which extends from said mounting sleeve, an adjustable stop and a spring on said rod designed to engage said sleeve on said cam, a second arm extending from said mounting sleeve and link connecting means pivotally connected to the latter and linking said inker arm for movement of said inker tray.

5. In an apparatus for marking frangible articles such as eggs and the like and adapted to be mounted upon a device which brings individual members of a stream of frangible articles to a temporary halt therebeneath; a standard, a stamper arm swingably mounted on said standard, a stamp at one end of said arm, drive means

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for swinging said stamper arm away from a frangible article, means including a predetermined weight acting in the gravitational field for swinging said stamper arm into contact with a frangible article, said stamper arm comprising two sections, each of said sections being pivotally mounted about a common point on said standard, said stamp being mounted adjacent the free end of one of said arm sections, said drive means operatively connecting adjacent the free end of the other one of said arm sections, rigidifying means carried on the underside of said arm section on which said stamp is mounted designed to engage with the underside of said arm section with which said drive means connects to rigidify said arm sections as said stamp is swung away from a frangible article and to permit said sections to pivot independently of each other as said stamp swings towards a frangible article, said means for swinging said stamper arm into contact with a frangible article acting upon said arm section that carries said stamp.

JOHN STEWART CAMPBELL.

WM. BROWN.

GEORGE ALEXANDER DOUGLAS.

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