G. F. McADAMS.

COUNTING OFF MACHINE.

APPLICATION FILED MAR. 19, 1907.

954,875.

Patented Apr. 12, 1910.

3 SHEETS—SHEET 1.

Fig. 1.

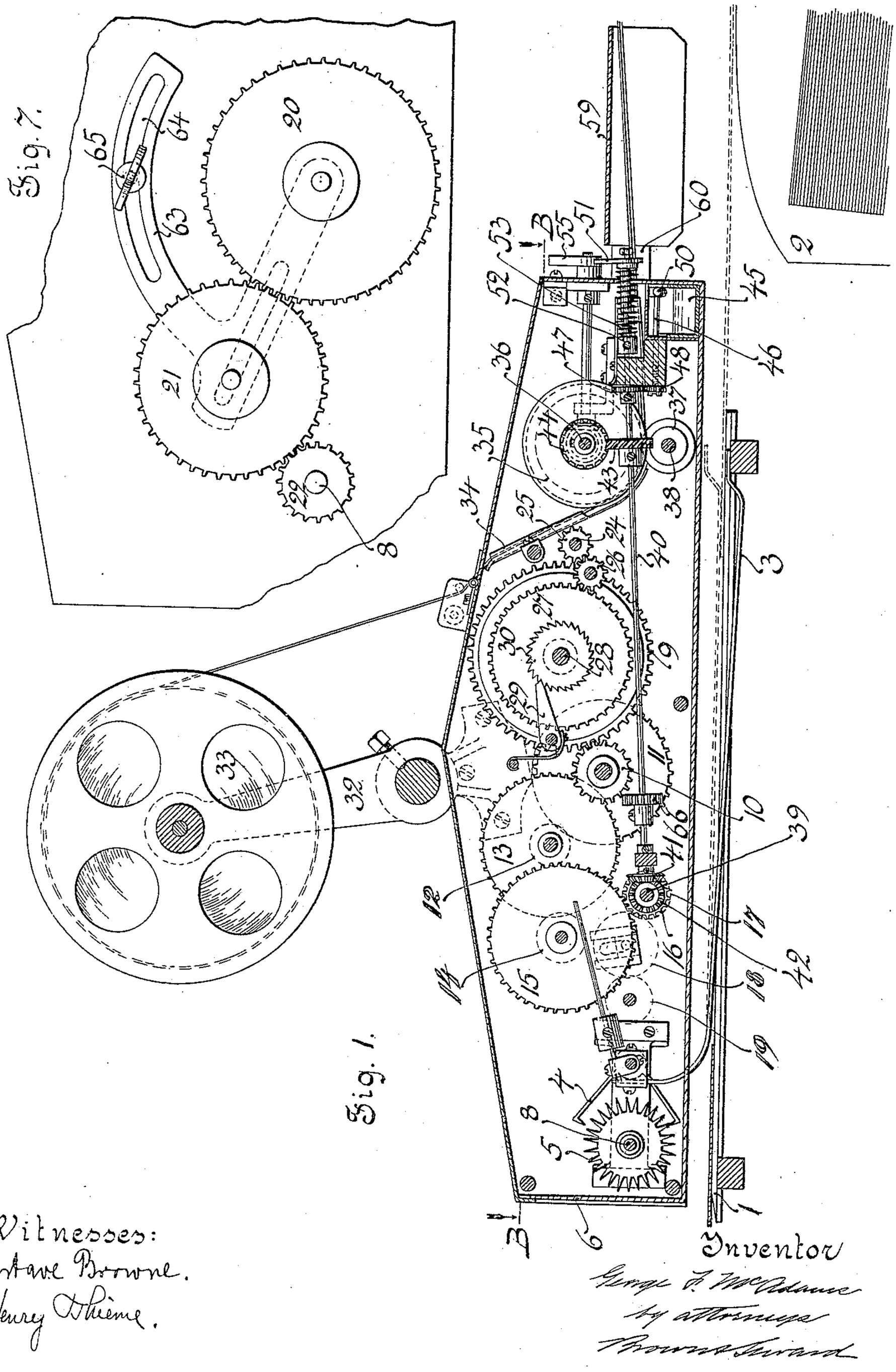

Fig. 7.

Witnesses:
Gustave Browne.
Henry Thieme.

Inventor
George F. McAdams
by attorneys
Browne & Durand

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3 SHEETS—SHEET 2.

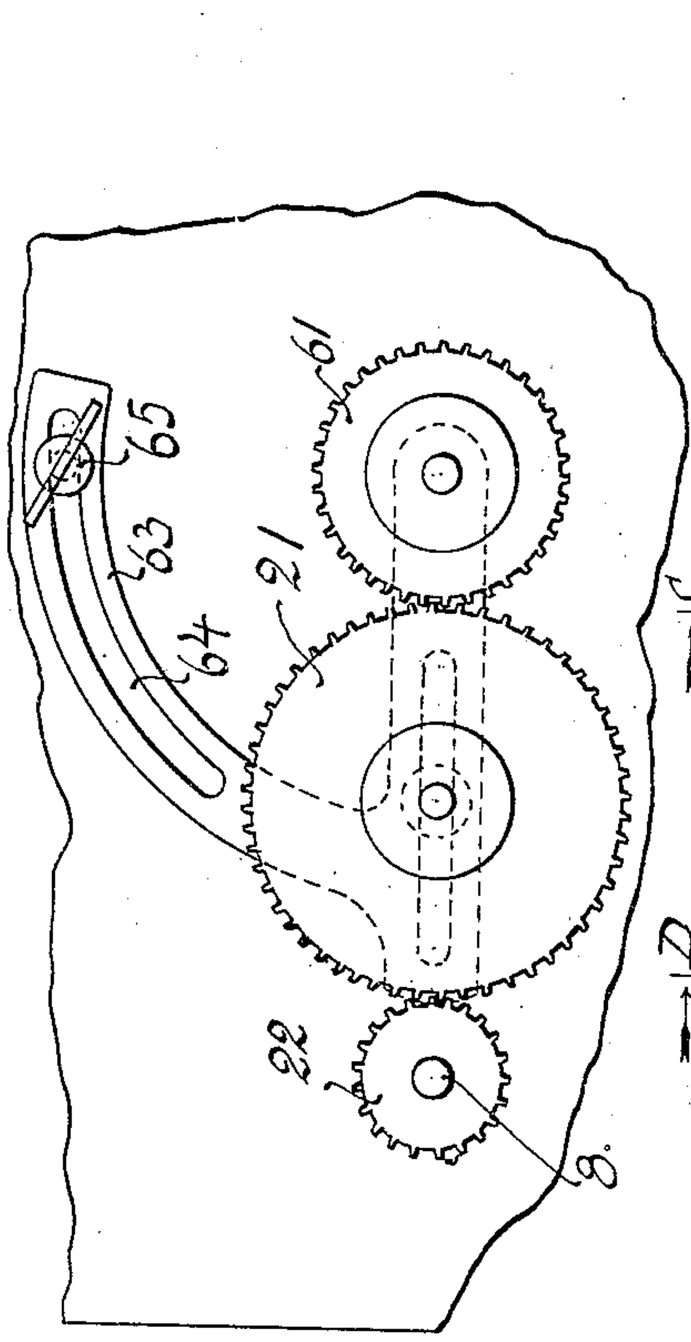

Fig. 8.

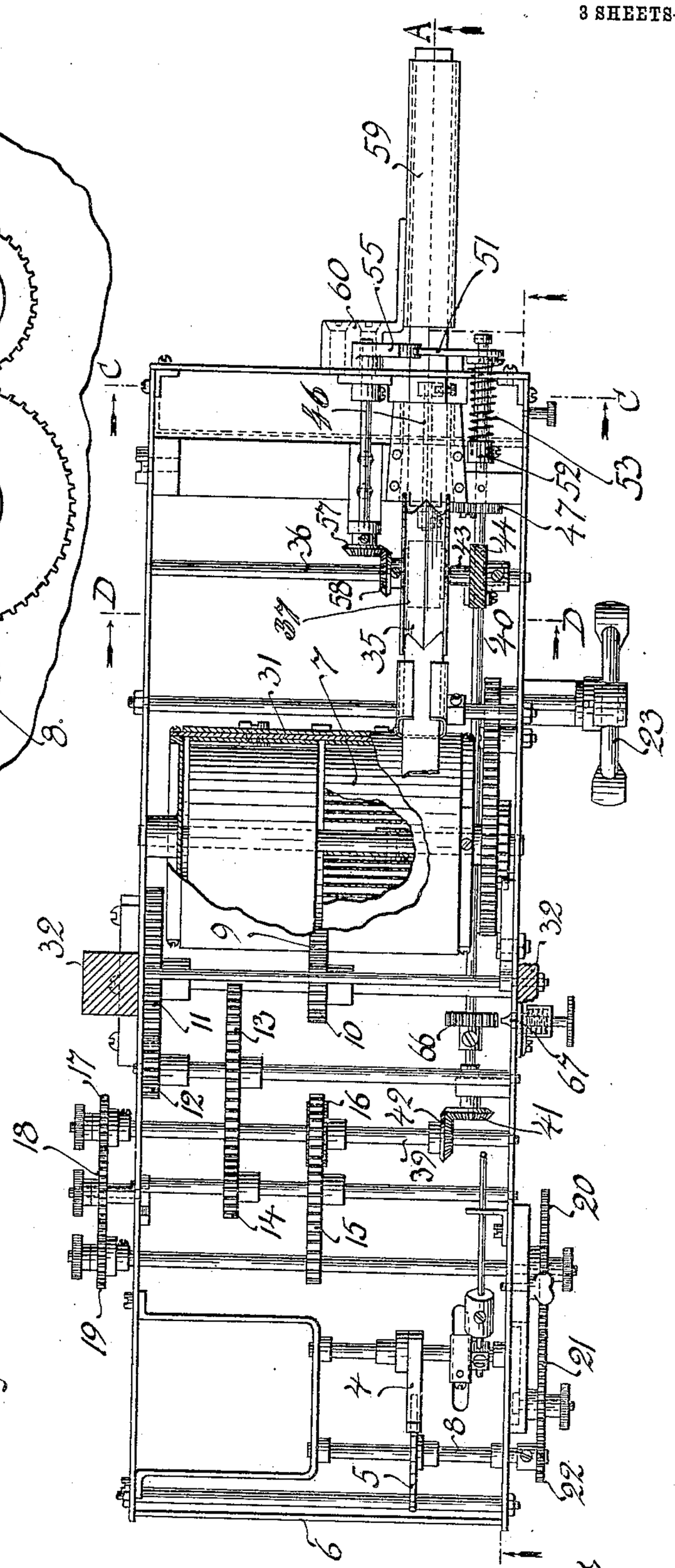

Fig. 2.

Witnesses:
Gustave Browne.
Henry Thieme.

Inventor
George F. McAdams
by attorneys
Brown & Seward

ANDREW B. GRAHAM CO., PHOTO-LITHOGRAPHERS, WASHINGTON, D. C.

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3 SHEETS—SHEET 3.

Fig. 3.

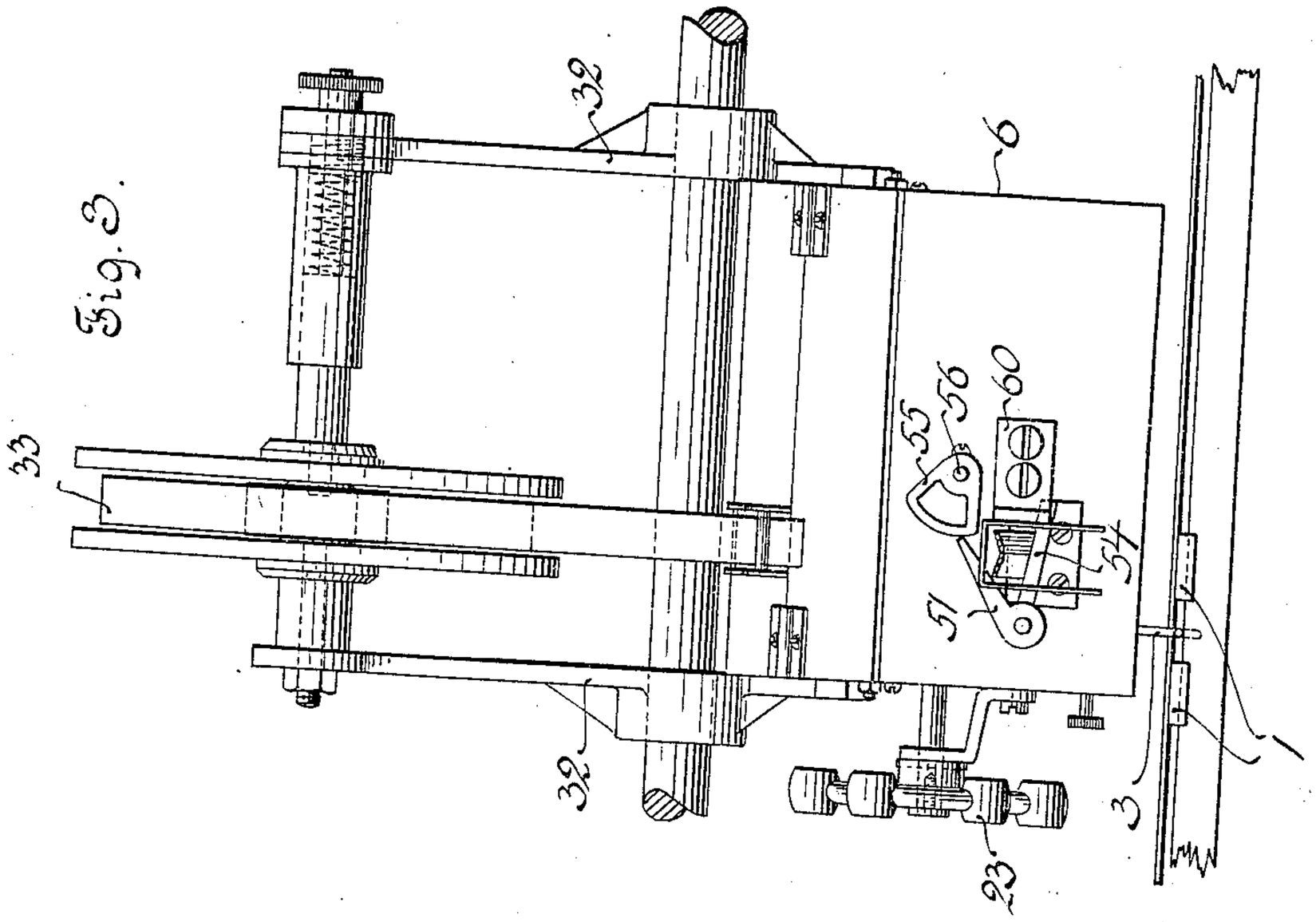


Fig. 4.

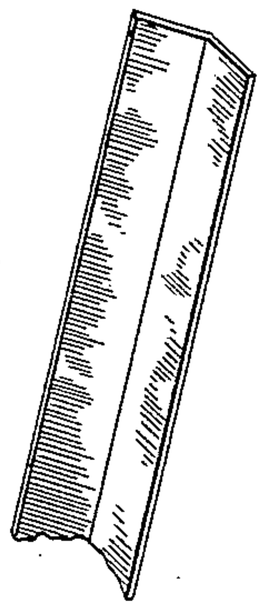


Fig. 5.

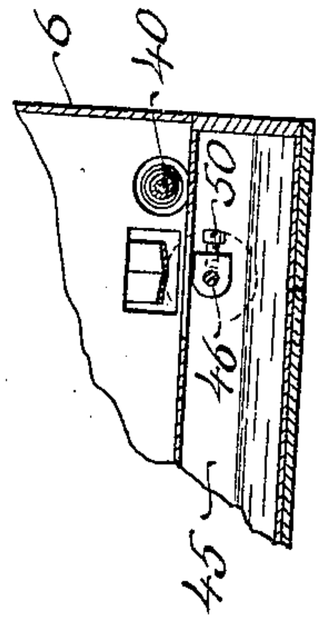
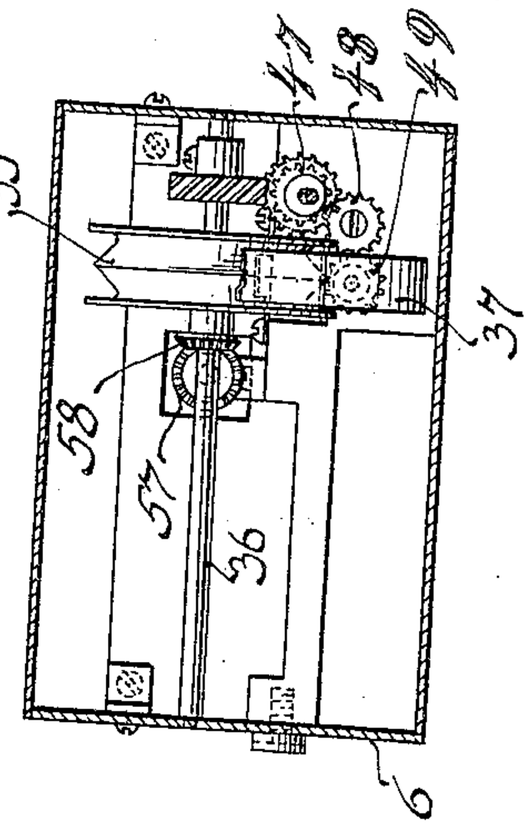


Fig. 6.



Witnesses:
Marshall Browne.
Henry Thieme.

Inventor
George F. McAdams
by attorneys
Brown & Brown

ANDREW B. GRAHAM CO., PHOTO-LITHOGRAPHERS, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

GEORGE F. McADAMS, OF NEW YORK, N. Y.

COUNTING-OFF MACHINE.

954,875. Specification of Letters Patent. Patented Apr. 12, 1910.

Application filed March 19, 1907. Serial No. 363,161.

To all whom it may concern:

Be it known that I, GEORGE F. McADAMS, a citizen of the United States, and resident of the borough of Brooklyn, in the city and State of New York, have invented a new and useful Improvement in Counting-Off Machines, of which the following is a specification.

My invention consists in certain improvements in a counting off machine which is applicable for use in connection with any mechanism which delivers sheets in a pile as, for instance, a ruling machine in which the sheets as they are delivered from the ruling machine are automatically divided by the insertion of separating strips, into divisions having a predetermined number of sheets in each division.

One object of my invention is to provide novel means for creasing the strip longitudinally as it is fed from the roll for permitting the strip to be held in its extended position before it is severed from the roll.

Further objects of my invention are to provide a novel gumming device arranged to gum the strips before they are severed from the roll, novel means for severing the strips from the roll at the desired intervals, and also novel means for insuring the accurate placing of the strips at the required points in the pile of sheets.

A practical embodiment of my invention is represented in the accompanying drawings, in which—

Figure 1 represents the counting off machine in vertical longitudinal section taken in the plane of the line A—A of Fig. 2, looking in the direction of the arrows, Fig. 2 is a horizontal section taken in the plane of the line B—B of Fig. 1, looking in the direction of the arrows, Fig. 3 is a view of the delivery end of the machine, Fig. 4 is a detail view on an enlarged scale of a portion of the longitudinally creased separating or marking strip, Fig. 5 is a detail section taken in the plane of the line C—C of Fig. 2, looking in the direction of the arrows, Fig. 6 is a transverse section taken in the plane of the line D—D of Fig. 2, looking in the direction of the arrows, Fig. 7 is a detail side view of the machine showing the geared connection for controlling the separation and delivery of a marking strip every one hundred sheets delivered to the pile, and Fig. 8 is a similar detail view showing the gear connection arranged for separating and delivering a marking strip every fifty sheets delivered to the pile.

The counting off machine which embodies my improvements, is herein shown as used in connection with a sheet ruling machine, the delivery table of the machine being denoted by 1.

The box for receiving the sheets in a pile is denoted by 2 and is located in the desired position with respect to the delivery end of the ruling machine.

A tripping arm 3 for the escapement mechanism 4, 5, of a suitable clock work motor located within the casing 6 of the counting off machine, is arranged in position to be raised successively by the passage of the sheets delivered from the ruling machine over the delivery table for permitting the escapement wheel 5 to rotate one tooth for each sheet delivered from the ruling machine.

The spring for operating the clock work mechanism is denoted by 7 and it is connected to the shaft 8 of the escapement wheel through a chain of gearing 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22. The spring 7 is wound by means of a handle 23, the shaft 24 of which has a geared connection 25, 26, 27, with the shaft 28 to which one end of the spring is attached.

A pawl and ratchet 29, 30, serves to hold the shaft from reversing under the tension of the spring. In the present instance, I have shown the spring 7 as comprising two coiled members, the outer ends of which are attached to the cylinder 31, on which cylinder the gear 9 is fast.

The casing 6 of the counting off machine is surmounted by a support 32 for the separating or marking strip roll 33. The strip from the roll 33 is led downwardly through the top of the casing 6 into the interior of the casing where it passes through a guide 34 and from thence through a device for producing a longitudinal crease in the strip, which device in the present instance, comprises a creasing roll 35 mounted on a cross shaft 36 and an impression roll 37 mounted on a cross shaft 38. This impression roll is provided preferably with a cushion periphery of rubber or other suitable material which will coact with the creasing roll 36

to produce a distinct crease in the strip for strengthening the strip longitudinally so that when it is extended through the machine to a point where it can be severed and delivered properly to the pile in the box 2, the said strip will not bend under its own weight. This creasing mechanism is driven from the cross shaft 39, which carries the gears 16, 17, as follows: A longitudinal shaft 40 has a bevel gear connection 41, 42, with the shaft 39 and a worm gear connection 43, 44, with the shaft 36. The under side of the longitudinally creased strip is gummed before the strip is severed from the roll by the following device: A tank 45 is provided at the delivery end of the counting machine casing 6 into which tank projects a shaft 46, which shaft is driven from the longitudinal shaft 40 through a train of gears 47, 48, 49. This shaft 46 is provided within the tank with a wiper or pad 50 which is arranged during its rotary movement to be dipped into the gum within the tank 45, and then brought into contact with the bottom of the strip, a hole in the top of the tank 45 being provided for permitting the pad 50 to pass above the top of the tank at the time that it is applying gum to the said strip.

The device which I have shown for severing the strip at the desired intervals is arranged to be adjusted with the greatest accuracy and is constructed as follows:—A rotary knife 51 is loosely mounted on the end of the longitudinal shaft 40 exterior to the delivery end of the counting off machine casing 6, which rotary knife has a spring actuated lost motion connection with the said shaft as follows:—A sleeve 52 is secured to the shaft 40 and a coil spring 53 surrounds the said shaft, one end of the spring being fast to the sleeve 52 and the other end of the said spring being fast to the rotary knife 51.

A stationary blade 54 is secured to the delivery end of the casing 6 in position to coact with the knife 51 for severing the marking strip at the desired moment for permitting it to be dropped onto the pile of sheets in the delivery box 2.

A rotary cam 55 is adjustably secured to a short longitudinal shaft 56, which shaft is rotated from the creasing wheel shaft 36 through bevel gears 57, 58. This cam, during its rotary movement, will gradually lift the free end of the knife 51 and, at the proper time, will release the said knife permitting the knife to sever the marking strip owing to the tension of the spring 53, one end of the said spring being constantly turned by the rotary movement of the shaft 40.

The device which I have provided for insuring the proper delivery of the severed marking strip comprises a hood 59 having its ends and bottom open, which hood is secured by a suitable bracket 60 to the delivery end of the casing 6 in position to receive therein the advance end of the marking strip as it is fed outwardly into its extended position.

The machine is shown as arranged for depositing a marking strip every one hundred sheets delivered into the box 2.

I have provided means for severing and delivering marking strips at any other intervals than every one hundred sheets by a very simple change in the gear. In Fig. 8 I have shown a gear 61, substituted for the gear 20, which geared connection is arranged for the severing and delivery of a marking strip for every fifty sheets delivered to the box 2.

The support 63 for the gear 21 comprises a bracket adjustable on an axis concentric with the axis of the shaft which carries the gear 20 or the gear 61, the said bracket being provided with a concentric groove 64 and a clamp screw 65 arranged to secure the said bracket in the desired position when the two change gears, such as 20, 21, or 61, 21, have been secured in position.

I have provided means for locking the motor when it is desired to shift gears or for any other purposes by providing the shaft 40 with a toothed wheel 66 and providing a spring actuated stop 67 mounted in the side of the casing 6 in position to be manually brought into interlocking engagement with the said toothed wheel 66.

In operation, as the sheets are delivered one by one from the table 1, into the box 2, they will successively raise the trip arm 3 and thereby permit a step by step rotary movement of the escapement device 4, 5. This will permit a general movement of the several gears, the amount of such movement being dependent upon the gear connection between the motor and escapement. This step by step rotary movement of the escapement device will permit a rotary movement of the shaft 40 and cause the creasing device to gradually feed the marking strip through the same, and, at the same time, form a longitudinal crease in the said strip for strengthening the same. As the trip arm is repeatedly raised, the rotary gumming device will be first dipped into the gum and then brought into engagement with the bottom of the strip at a point which will be near the advance edge of the strip after the strip ahead of the same has been severed. As the movements of the trip arm approach the limit, the cam of the strip severing device will gradually raise the knife, the rotary movement of the shaft 40 and the raising of the knife serving to put the knife spring under tension. When the trip arm has been raised the required number of times and the sheets delivered into the box 2, the cam releases the knife and the marking strip is severed.

The hood serves to prevent the knife from throwing the strip out of position as the strip is severed and also serves to guide the strip as it falls onto the pile of sheets in the box 2.

It will be seen that in the machine above described, means are provided for holding the strip in its extended position until the strip is severed. The creasing of the strip furthermore insures the proper gumming contact of the strip with the pile as the sheets begin to be deposited on top of the strip and the weight of the said superposed sheets begins to have effect upon the creased strip.

What I claim is:—

1. In a counting off machine, means for simultaneously feeding and longitudinally creasing a strip, a gumming device arranged to apply gum to the strip at intervals after the latter is creased, and a device for subsequently severing portions from said strip.

2. In a counting off machine, a pair of coacting rolls for simultaneously feeding and longitudinally creasing a strip, a gumming device arranged to apply gum to the strip at intervals after the latter is creased, and a device for subsequently severing portions from said strip.

3. In a counting off machine, means for simultaneously feeding and longitudinally creasing a strip, a gumming device, a device for severing portions from said strip, and a device for insuring the proper delivery of the severed portions.

4. In a counting off machine, means for simultaneously feeding and longitudinally creasing a strip, a gumming device arranged to apply gum to the strip at intervals, a device for subsequently severing portions from said strip, and a device for insuring the proper delivery of the severed portions.

5. In a counting off machine, means for simultaneously feeding and longitudinally creasing a strip, a gumming device, a device for subsequently severing portions from said strip, and a device for insuring the proper delivery of the severed portions.

6. In a counting off machine, a rotary shaft, a device for simultaneously feeding and longitudinally creasing a strip, and a gumming device arranged to apply gum to the strip at intervals, both of said devices being driven directly from the said shaft.

7. In a counting off machine, a rotary shaft, a device for simultaneously feeding and longitudinally creasing a strip, a gumming device arranged to apply gum to the strip at intervals, both of said devices being driven directly from the said shaft, and a device for subsequently severing portions from the said strip.

8. In a counting off machine, a rotary shaft, a device for simultaneously feeding and longitudinally creasing a strip, a gumming device arranged to apply gum to the strip at intervals, both of said devices being driven directly from the said shaft, a device for subsequently severing portions from said strip, and a device for insuring the proper delivery of the severed portions.

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two witnesses, this 15th day of March 1907.

GEORGE F. McADAMS.

Witnesses:
HENRY SHIEME,
F. GEORGE BARRY.