July 26, 1949. O. G. RUDE 2,477,392

MECHANICAL CALCULATOR

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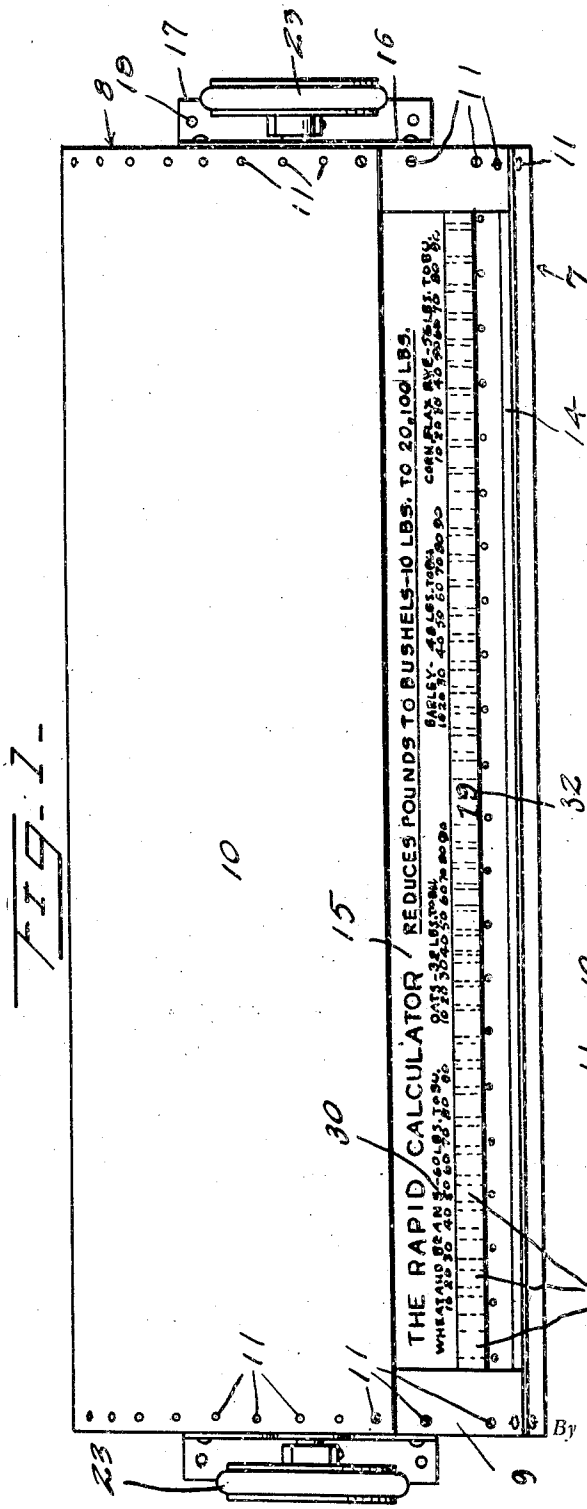


Fig. 1.

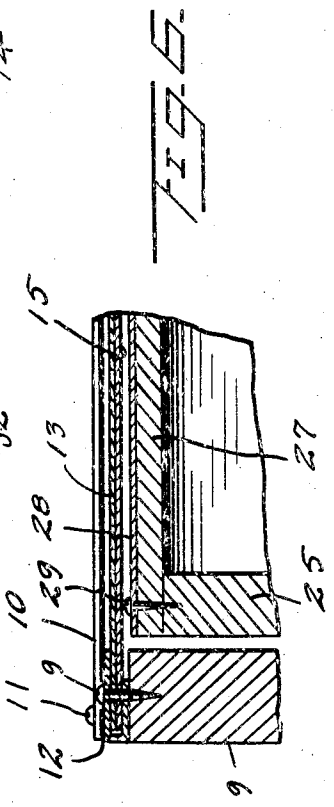


Fig. 5.

Inventor

Ole G. Rude

By Randolph & Reavers

Attorneys

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Fig. 2.

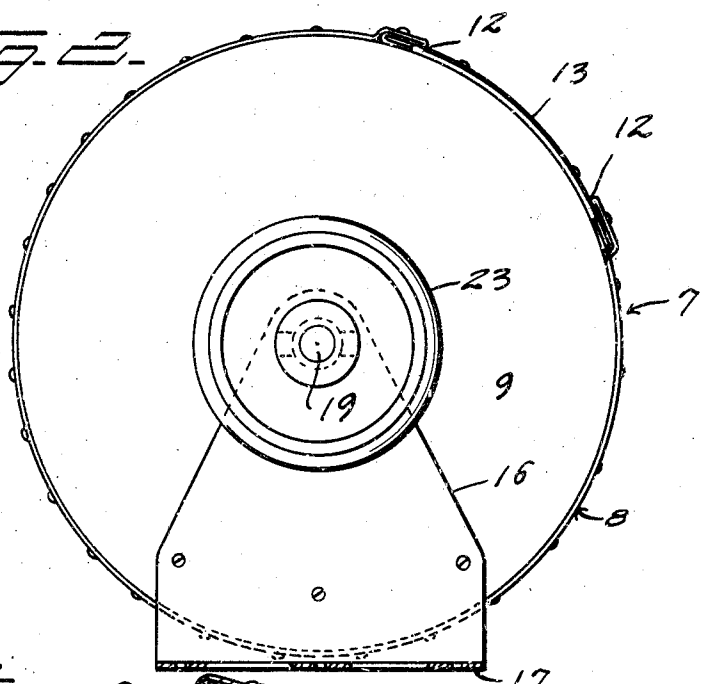
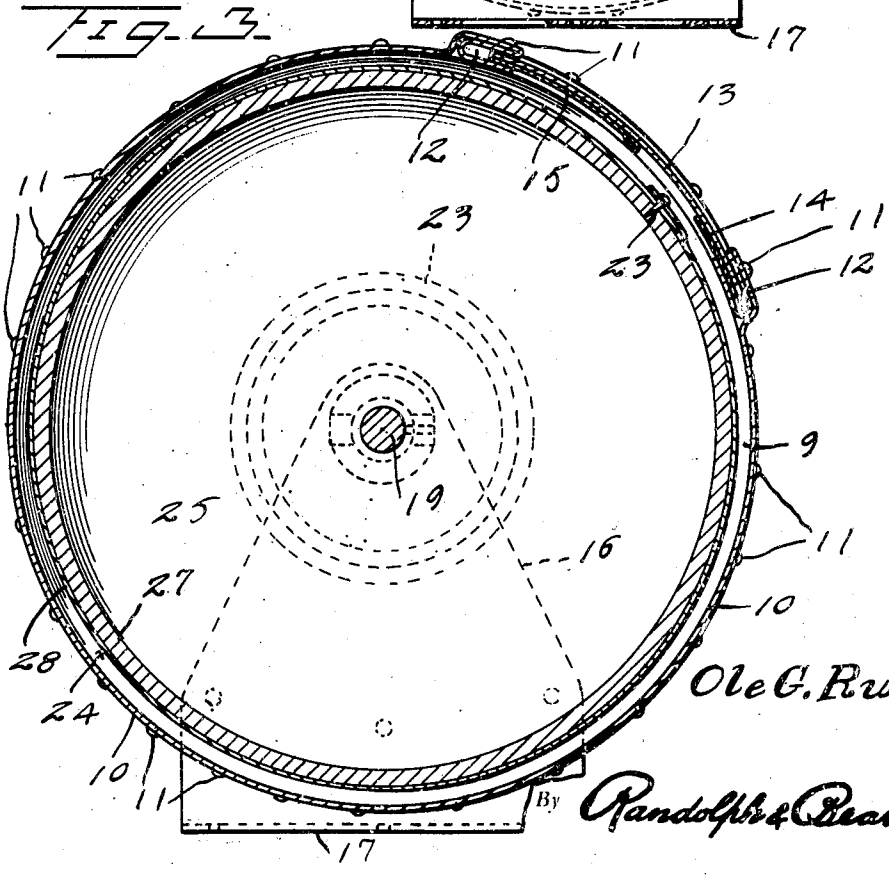


Fig. 3.



Inventor

Ole G. Rude

By Randolph & Beavers

Attorneys

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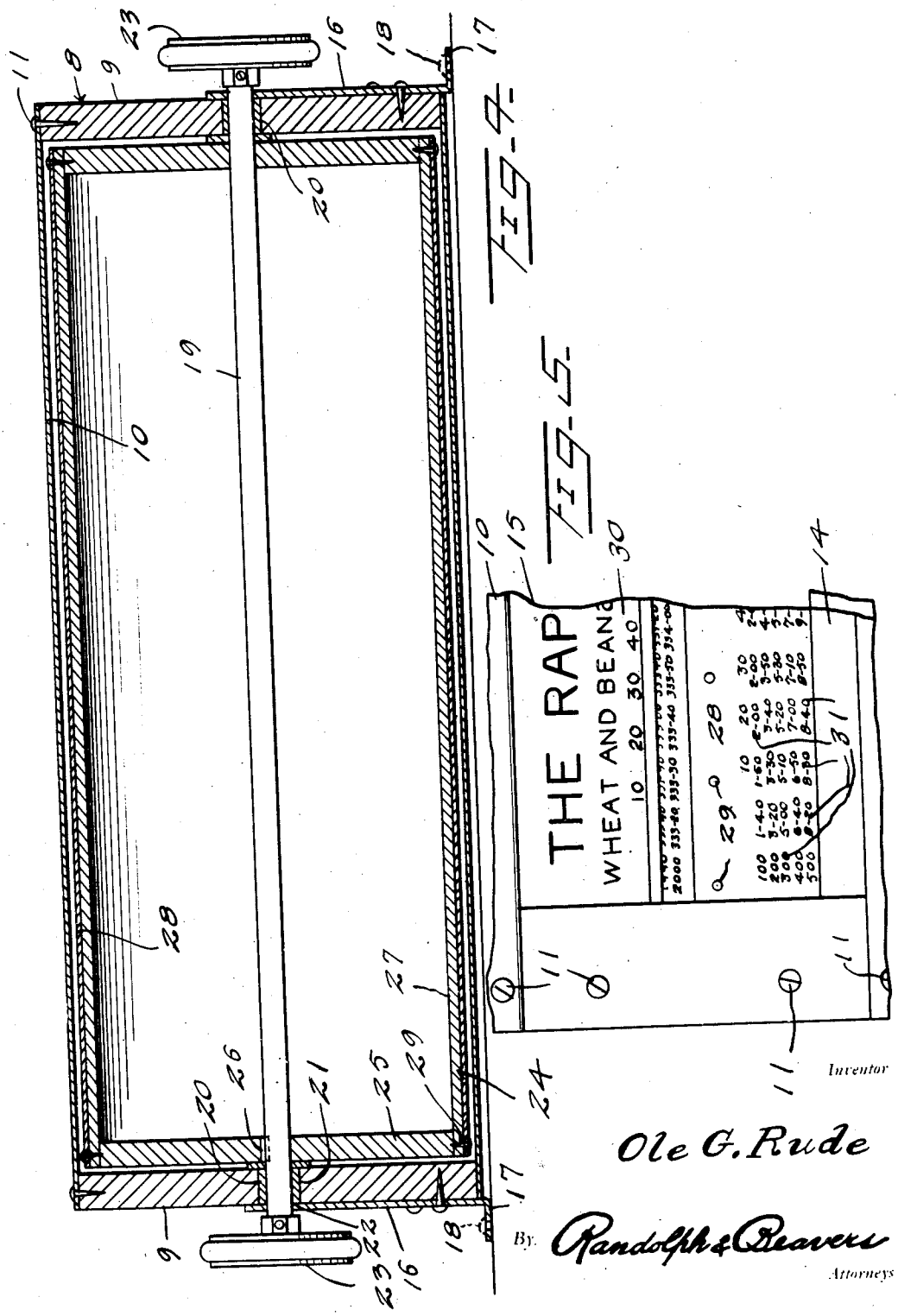


FIG. 4.

FIG. 5.

Inventor

Ole G. Rude

By Randolph & Beavers

Attorneys

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UNITED STATES PATENT OFFICE

2,477,392

MECHANICAL CALCULATOR

Ole G. Rude, Sacred Heart, Minn.

Application June 10, 1946, Serial No. 675,686

2 Claims. (Cl. 235—87)

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This invention relates to a machine for rapidly calculating the number of bushels that a given number of pounds of a particular commodity will equal and is especially intended and adapted for converting pounds of various grains to bushels where grain in handled in small quantities, such as a grain elevator or country mill.

Another object of the invention is to provide a machine including a rotatable drum containing the indicia for converting such items as wheat, beans, oats, barley, corn, flax and rye from pounds to bushels and which is operable within a fixed cylinder having a window through which portions of the indicia bearing part of the drum is visible and is provided with additional indicia for calculating fractions of a bushel.

Still another aim of the invention is to provide a machine of the above described character including a rotatable drum which is so balanced that it can be manually revolved very readily, but will remain in any position in which it is set so that the indicia bearing parts thereof to be used will remain exposed in the window and relatively to an index line thereof, once the drum has been correctly positioned.

Other objects and advantages of the invention will hereinafter become more fully apparent from the following description of the drawings, which illustrate a preferred embodiment thereof, and wherein—

Figure 1 is a top plan view of the machine in its entirety;

Figure 2 is an end view in elevation thereof;

Figure 3 is a transverse sectional view thereof;

Figure 4 is a longitudinal, substantially central sectional view thereof;

Figure 5 is an enlarged fragmentary plan view of the machine, and

Figure 6 is an enlarged fragmentary longitudinal sectional view thereof.

Referring more specifically to the drawings, the machine in its entirety is designated generally 7 and includes the cylider, designated generally 8, which includes relatively thick disks forming the end walls 9 thereof, and an elongated strip of metal or other suitable material 10 which is arcuate in cross section and which extends substantially around the disk 9 and which is secured at its ends thereto, by suitable fastenings 11. The longitudinal edges of the strip 10 are folded inwardly twice, as best seen in Figure 3, to form inwardly opening channels 12 which are adapted to receive the longitudinal edges of a transparent strip 13 which forms the window of the cylinder 8 and which extends substantially the length thereof. Opaque strip 14 is disposed beneath a portion of the transparent strip 13 and has one longitudinal edge portion located in the lower channel 12 and with the other edge portion thereof exposed. Additional fastenings 11 extend

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through the lower channel 12, and the portions of the strips 13 and 14 which are engaged therein and said fastenings are anchored in the end walls or disks 9 for clamping said portions 13 and 14 in the lower channel 12. An opaque index strip 15 is disposed under the upper portion of the window 13 and has its upper longitudinal edge portion disposed in the upper channel 12 and said portion and the upper edge of the window 13 are similarly fixed in the upper channel 12 by additional fastenings 11 which extend therethrough and are anchored in the cylinder ends 9. As seen in Figure 1, additional fastenings 11 may extend through the end portions of the window 13 and the opaque strips 14 and 15 for securing said end portions to the disk 9.

The cylinder 8 is provided with supporting members 16 which are fastened to the outer side of the cylinder ends 9, and which are provided with depending outturned feet 17, which are apertured to receive fastenings 18 for securing the feet to a suitable supporting surface for fixedly mounting the machine 7 and with the cylinder 8 thereof in a slightly elevated position.

A shaft 19 extends axially through the cylinder 8 and has portions thereof journaled in bushings 20 which are contained in axial openings 21 of the disks 9. The shaft 19 also extends rotatably through openings 22 in the upper portions of the support 16. Hand wheels 23 are detachably keyed to the protruding ends of the shaft 19, for a purpose which will hereinafter be apparent.

A hollow drum, designated generally 24, is rotatably supported in the cylinder 8 on the shaft 19 and includes a pair of disk members 25 through which the shaft 19 axially extends and which are keyed thereto by keys 26. A hollow cylindrical wall 27 is disposed with its ends engaging around the peripheries of the disk members 25 and may be secured thereto in any suitable manner. An indicia bearing sheet 28, of any suitable material, is wrapped around the outer side of the cylindrical wall 27 and the ends thereof are fastened in overlapping relationship thereto, by suitable fastenings 29, as seen in Figures 3 and 5. The sheet 28 is of the same width as the length of the drum 24 and the ends thereof are attached to the drum by additional fastenings 29 which extend through the cylindrical wall 27 and into the disk members 25, as seen in Figure 4.

As seen in Figures 1 and 5, the upper side of the fixed index strip 15 contains suitable indicia 30 which is visible through the window 13 and which includes various sections relating to the number of pounds equaling a bushel, and it will be noted that this indicia sets forth the ratios of wheat and beans as 60 pounds to a bushel, oats 32 pounds to a bushel, barley 48 pounds to a bushel, and corn, flax and rye as 56 pounds to a bushel.

Beneath each of these sections of the indicia are the numerals 10, 20, 30, 40, 50, 60, 70, 80 and 90, representing pounds and which are disposed over indicia columns 31 of the indicia bearing sheet 28, which columns 31 extend circumferentially around the sheet 28.

As seen in Figure 5, the indicia on the outer side of the chart or sheet 28 and forming the columns 31 also are arranged in lines lengthwise of the machine and parallel to the upper edge of the guide strip 14.

The upper row of figures, directly below the connected ends of the chart 28 begins in the third column and beneath the indicia 19 of the indicia bearing section 30 entitled "Wheat and Beans" and this first row of figures bears the same value as the numerals "10, 20, 30 etc," previously referred to on the index strip 15 up through "50." The column under the numeral 60 is inscribed "1–00" indicating that 60 pounds represents one bushel and the following three columns are designated "1–10" "1–20" "1–30" indicating that 70 pounds represents one bushel and 10 pounds, 80 pounds, one bushel and 20 pounds, and 90 pounds, one bushel and 30 pounds. The upper row of numerals of the chart 28 located beneath the other sections of the indicia 30 are also numbered in the same manner, but to reflect the ratio between the number of pounds and bushels, so that for oats, weighing 32 pounds to the bushel, under the indicia 40 will appear the figures, "1–08" indicating that 40 pounds equals one bushel and 8 pounds. The second row of figures begins with two columns to the left of the upper column of the first row, as seen in Figure 5, and the first number thereof in heavy type is the number "100" and the number thereafter is "1–40," indicating that 100 pounds equals one bushel plus 40 pounds. The indicia in the column beneath the numeral 10 is 1–50 indicating that 110 pounds equals one bushel 50 pounds, and the next indicia is 2–00 indicating that 120 pounds represents exactly two bushels.

One half of the first portion of the indicia of the chart 28 is shown in Figure 5, said portion extending through 999, and the next section thereof beginning with the numeral 1000 in the left-hand column. The chart 28 contains twenty of said sections and beginning with the section covering "1000–2000" a large index number "1," not shown is provided intermediate of the ends of the chart and for the next section extending from "2000 to 3000" bears the index number 2. The last section bears the index number "19" as seen at 32 in Figure 1. These index numbers "1" through "19" provides a ready means for quickly setting the drum 24 for securing the desired reading.

The upper exposed edge of the opaque indexing or guide strip 14 provides a ready guide line for separating the longitudinal rows of numbers on the chart 28 so that the drum 24 can be positioned so that the operator may look along the desired line directly over the upper edge of the opaque strip 14, as illustrated in Figure 5 and quickly and accurately secure a desired reading for converting pounds to bushels of any of the items listed up to and including 20,000 pounds. The drum 24 is so balanced that it will maintain any position at which it is set so that the user may set the drum with the assurance that it will remain in set position until again manually moved.

Various modifications and changes are contemplated and may obviously be resorted to without departing from the spirit and scope of the invention as hereinafter defined by the appended claims.

I claim:

1. A casing for a calculating machine comprising a substantially cylindrical housing including disk members forming the ends thereof and an opaque member of arcuate cross section fastened at its ends to the said disks and extending substantially therearound, the longitudinal edges of said arcuate member being folded inwardly and forming opposed outwardly opening channels for engaging the longitudinal edges of a transparent strip forming a window and combining therewith to form the cylindrical side wall of the housing, an elongated opaque index strip having one longitudinal edge portion clamped in one of the channels of said arcuate member and positioned thereby beneath one longitudinal edge portion of said window, said housing being adapted to contain a drum rotatably disposed therein, and said window being adapted to expose indicia on the periphery of the drum as it is revolved in the housing.

2. In a calculating machine casing, a substantially cylindrical housing including disk members forming the ends thereof and an opaque member of arcuate cross section fastened at its ends to said disks and extending substantially therearound, the longitudinal edges of said arcuate member being folded inwardly and forming opposed outwardly opening channels, an elongated transparent strip extending the length of said arcuate member and having its longitudinal edges clamped in said channels to form a window and combining with said arcuate member to form the cylindrical side wall of the housing, an elongated opaque index strip supported by each of said channels, said strips being disposed inwardly of the transparent strip and each having a longitudinal edge anchored in one of the channels, the opposite longitudinal edges of said index strips being disposed in spaced apart substantially parallel relationship to form an opening therebetween, said housing being adapted to contain a drum rotatably disposed therein, the portion of the transparent strip located between the adjacent edges of the opaque index strips being adapted to expose portions of indicia on the periphery of the drum as it is revolved in the housing, and the adjacent, substantially parallel edges of said indexing strips forming indexing lines, one or both of said indexing strips being adapted to contain indicia on the external side thereof.

OLE G. RUDE.

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